

**The Emergence of Adaptive Contrast:  
Evidence and Lack thereof from Dutch Voiceless  
Sibilants**

**Xinyu Zhang**

Under the Supervision of

**Paul Boersma**

A Thesis submitted for the degree of Master of Arts  
in  
General Linguistics

University of Amsterdam



## Acknowledgments

Gratitude should never be summarized. But still, I would like to thank my supervisor Paul Boersma, for his teaching, mentoring, guidance, for being my Dutch informant in this small project, but mostly, for bearing with me. Some of the most delightful and most intellectually stimulating conversations in my life so far has happened in Paul's office during our meetings. Words won't do justice to the great fun I have been having studying from Paul.

I would also like to thank my second reader Silke Hamann, not only for expanding my interest from phonetics to phonology, but also for the teaching and mentoring since my very first Phonetics & Phonology class. Countless things wouldn't have been possible without Silke. This thesis included.

I can never thank Silke and Paul enough, but I will most definitely try from time to time.

Lastly, I thank Maggie for her mere existence.



## **Abstract**

Dispersion theoretic analyses on sound change predict that small contrasts are likely to either become more dispersed or merge into one category through time. Previous research on adaptive dispersion is mostly done on vowel inventories. The current study makes an attempt at examining the change in the acoustic and auditory dispersion of Dutch voiceless sibilants, which are acoustically and perceptually similar to each other. Acoustic data was collected from two age groups of native speakers. Mixed-effect linear regression, spectral principal component analysis, as well as decision tree and random forest modeling were adopted. Results show that the two age groups investigated in the current study do differ in their contrasts in the two sibilants in some metrics but not in others.



# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Topic and Goals . . . . .	1
1.2	Outline . . . . .	1
<b>2</b>	<b>Some Phonetics and Phonology of Voiceless Sibilants</b>	<b>2</b>
2.1	The Articulation and Acoustics of Voiceless Sibilants . . . . .	2
2.2	Voiceless Sibilants in Dutch . . . . .	3
2.3	Sibilant Inventories . . . . .	6
<b>3</b>	<b>Diachronic Change in Inventories</b>	<b>9</b>
3.1	Sound Change . . . . .	9
3.2	Adaptive Dispersion . . . . .	9
<b>4</b>	<b>A Phonetic Space for Voiceless Sibilants</b>	<b>11</b>
4.1	Possible Dimensions . . . . .	11
4.2	Two-Dimensional Mapping . . . . .	12
<b>5</b>	<b>Data Collection</b>	<b>13</b>
5.1	Participants . . . . .	13
5.2	Material and Design . . . . .	13
5.3	Acoustic Analysis . . . . .	14
5.3.1	Linear Mixed-Effects Models . . . . .	17
5.3.2	Spectral Principal Component Analysis . . . . .	19
5.3.3	Random Forests . . . . .	27
5.4	Auditory Estimations . . . . .	29
<b>6</b>	<b>Discussion</b>	<b>30</b>
	<b>References</b>	<b>33</b>
	<b>Appendix A Participant Statistics</b>	<b>38</b>
	<b>Appendix B List of Stimuli</b>	<b>38</b>
	<b>Appendix C Post Test Questionnaire</b>	<b>42</b>
	<b>Appendix D Praat Script for Acoustic Measurements</b>	<b>45</b>
	<b>Appendix E R Script for Linear Models</b>	<b>49</b>
	<b>Appendix F R Script for Classification Trees and Random Forests</b>	<b>89</b>
	<b>Appendix G Full Results of Acoustic Measurements</b>	<b>112</b>



# 1 Introduction

## 1.1 Topic and Goals

Since the 1970s, and as early as [Passy \(1891\)](#) and [Roudet \(1910\)](#), many scholars (e.g. [Liljencrants & Lindblom, 1972](#); [Lindblom, MacNeilage, & Studdert-Kennedy, 1983](#); [Disner, 1983](#); [Maddieson & Disner, 1984](#); [Vallée, 1994](#); [Flemming, 1995](#) et seq.; [Schwartz, Boë, Vallée, & Abry, 1997](#) et seq.; [Boersma, 1998](#) et seq.; [Boersma & Hamann, 2008](#); [Hauser, 2017](#); etc.) have looked at the universal trends of phoneme inventories more or less within the framework of dispersion theory. Most of the previous work has been in the realm of vowel inventories with the exception of e.g. [Schwartz, Boë, Badin, and Sawallis \(2012\)](#) and [Hauser \(2017\)](#) on stop consonants, and [Boersma and Hamann \(2008\)](#)'s computational simulations on sibilants. Among them, most are concerned with synchronic distributions except for [Boersma and Hamann \(2008\)](#), although their model did not include language-specific articulatory learning, and the learning algorithm in [Boersma and Hamann \(2008\)](#)'s simulation is to some extent supervised in such a way that it was provided in the algorithm that the input is to be classified into two categories. While in reality, newborns do not have the same instruction when acquiring phonemic inventories. Additionally, the model has not yet been tested on real-world data in any specific language, to my best knowledge.

The current study makes an attempt at investigating diachronic changes in the acoustic and auditory dispersion of voiceless sibilants in Dutch. Dutch sibilants were chosen as the subject of investigation because unlike in other languages such as German and English that also have two voiceless sibilants, the two voiceless sibilants in Dutch seem to be very much articulatorily and perceptually similar to the extent that arguments about their phonemic status have repeated been raised. Hence, there is a possibility that the two sibilants are either becoming more dispersed or gradually merging into one category diachronically. It is also worth looking into whether the generalizations and predictions made by previous work apply to the Dutch voiceless sibilants.

## 1.2 Outline

The outline of the current paper is as follows: the first section describes the topic and goals of the current study and lays out a map of the paper. The second section provides some relevant background information about the acoustics and articulation as well as the inventories of voiceless sibilants. The third

section serves as a general overview of sound change and adaptive dispersion. Section Four tries to define a phonetic space for the Dutch voiceless sibilants. The penultimate section describes the experiment and the analyses. The sixth and final section discusses the implications and limitations of the results, and speculates on possible future research.

## 2 Some Phonetics and Phonology of Voiceless Sibilants

In this section I briefly sketch out some relevant background information in some aspects of the phonetics and phonology of sibilants, especially voiceless sibilants, that are relevant to the current study.

### 2.1 The Articulation and Acoustics of Voiceless Sibilants

Sibilants are a subset of fricatives. Articulatorily, fricatives are produced by close approximation of two articulators so that the airstream is partially obstructed and turbulent airflow is produced ([Ladefoged & Johnson, 2011](#), p.14). According to [Ladefoged and Johnson \(2011\)](#), there are two ways to produce said “turbulent airflow”: it may be the result of the air passing through a narrow gap, as in the formation of [f], or it may be because the air stream is first sped up by being forced through a narrow gap and is then directed over a sharp edge, such as the teeth, as in the production of [s]. Conventionally, the latter kind is categorized as sibilants, described by [Ladefoged and Maddieson \(1996\)](#) as “produced by the high-velocity jet of air formed at a narrow constriction going on to strike the edge of some obstruction such as the teeth”.

Acoustically, fricatives have random energy distributed over a wide range of frequencies, and sibilants have more acoustic energy at a higher pitch than the other fricatives ([Ladefoged & Johnson, 2011](#)). In general, [ʃ] will have a lower pitch than [s] due to both the lower velocity of the airstream and the lengthening of the vocal tract by the added lip-rounding in [ʃ]. Fricatives and sibilants could of course also be sub-divided by voicing but since the current paper only studies the voiceless fricatives, the focus will not be put on voicing or voiced fricatives. The same goes for fricatives whose place of articulation is not alveolar, palato-alveolar or alveolo-palatal. According to [Hughes and Halle \(1956, p.308-309\)](#), the most useful measurement found to distinguish [s] and [ʃ] in English was “the

energy in dB in the band from 4200 cps to 10 kc subtracted from the energy in dB in the band from 720 to 10kc". Similarly, [Strevens \(1960\)](#) investigated isolated and lengthened voiceless fricatives including some of which that would usually only occur in para-linguistic communication of English speakers, and described [s] as having its lowest frequency "almost always above 3500 cps" whereas for [ʃ] the lowest frequency "varies between 1600 and 2500 cps".

[Olive, Greenwood, and Coleman \(1993\)](#) observed that in American English, /s/ shows the greatest concentration of energy above 3700Hz and /ʃ/ has its highest energy concentration between 1700Hz and 4500Hz, and that since the palato-alveolar /ʃ/ is articulated close to the velum, a velar pinch may be expected for some vowels. In addition, they also noted that the vowel that follows the sibilant has some effect on the acoustics of the fricative. From their descriptions of the spectrograms, in both /s/ and /ʃ/ the lower edge of the frication frequency is dependent on the F2 of the following vowel, and since palato-alveolars are the most constrained in their distribution of formant values (indicating that the tongue has less freedom to prepare for the following sound), the fricative region of the palato-alveolars does not extend as far into the lower frequency as it did for the alveolars. But [Olive et al. \(1993\)](#) did not provide specific values. F2 transitions are also included as one of the factors in [Flemming \(2018\)](#)'s prediction of markedness in sibilant inventories.

In a less language-specific study, [Boersma and Hamann \(2008\)](#) stated that sibilants in a language can often be ordered along a continuum of the spectral center of gravity or the spectral mean which, articulatorily, correlates to frontness of the tongue and to the frontness of the place of articulation. But they did also mention that auditory dispersion by means other than Center of Gravity is possible for sibilants, although without exploring said possibilities further. This is indeed confirmed in e.g. [Kochetov \(2017\)](#) where he found that the anterior [s] can be palatalized to [s̯] with only minimal reduction in Center of Gravity especially at the midpoint and offset of the frication and in female speakers.

## 2.2 Voiceless Sibilants in Dutch

The literature on Dutch<sup>1</sup> phonology is not in agreement on the phonemic status of the palatal sibilant /c/, which is sometimes also transcribed as /ʃ/<sup>2</sup>.

---

<sup>1</sup>The Dutch language discussed here is limited to the Dutch spoken in the Netherlands.

<sup>2</sup>This non-/s/ voiceless Dutch sibilant will be transcribed as /c/ instead of /ʃ/ throughout this text due to its palatalized nature and the frontness in its place of articulation.

[Mees and Collins \(1982\)](#), p.6) described that the sequence /sj/ is realized as an alveolo-palatal fricative [ç] in Standard Dutch (*Algemeen Beschaafd Nederlands*, or ABN for short), and that it differs from the /ʃ/ in English, French, or German in that there is no labialization in the Dutch [ç]. According to Collins and Mees, the occurrence of the <sj> sequence is restricted only to loanwords and forms resulting in assimilation, hence did not merit a phonemic status in their analysis. They did acknowledge that there are arguments for regarding /sj/ as an additional phoneme /ç/, however, the example they gave of such an argument was a comparison of English and Dutch pronunciations in an English pronunciation guide for Dutch speakers by [Gussenhoven and Broeders \(1976\)](#).

In a description of Dutch phonology, [Booij \(1999\)](#), p.7) listed /s/ as the sole voiceless sibilant in the Dutch consonant inventory and analyzes [ʃ, ʒ, c, n̪] as /s,z,t,n/ palatalized before /j/, and the postalveolar fricatives that occur in loan-words such as *chique* [ʃik] and *jury* [ʒy:ri] as “phonologically, combinations of /s, z/ and /j/ with the fricatives realized as the postalveolar allophones”.

[Nooteboom and Cohen \(1984\)](#), p.22) listed /ʃ/ as a separate phoneme in Dutch consonants on the basis that there exist minimal pairs distinguishing /s/ from /ʃ/. Similarly, [Schatz \(1986\)](#) also treated both /s/ and /ʃ/ as sibilant phonemes in Standard Dutch, and in a feature matrix distinguished the two by various features (see Table 1). However, she did point out that the SPE feature *distributed* [dist] might be redundant for Dutch consonants because laminals and apicals in Dutch have different places of articulation. According to [Schatz \(1986\)](#), in “plat Amsterdam”, or Broad Amsterdam Speech, before a word boundary or morpheme boundary, [s] is often palatalized when preceded by the short vowels /a/, /ɛ/, /u/, or /ɪ/, and also when it is at an initial position in a word or a morpheme. However, participant 13 in the current study, who was born and raised in Amsterdam and has lived in Amsterdam all his life, does have a distance of 1358 Hz between the CoG of his two voiceless sibilants, which is even slightly higher than the mean CoG distance of 1347 Hz between /s/-/ç/ among all young participants. This is possibly also affected by sociolinguistic reasons (see e.g. [Faddegon \(1951\)](#) and [Schatz \(1986\)](#) for more details).

[Evers, Reetz, and Lahiri \(1998\)](#) compared acoustic characteristics of sibilants between languages where /s/ and /ʃ/ are separate phonemes and languages in which the [s] and [ʃ] are allophonic. Dutch was included in the languages they examined and the sibilants [s] and [ʃ] were treated as allophones with [s] as the “default consonant” (p.351). The results show that the same predictor is equally efficient at distinguishing the two phones regardless of their phonemic status. As

Feature	/s/	/ʃ/
[high]	-	+
[mid]	+	-
[ant]	+	-
[dist]	-	+

Table 1: Feature matrix for Dutch consonants /s/ and /ʃ/, adapted from Schatz (1986)

such, whether [s] and [ʃ] are two separate phonemes or allophones of the same phoneme should not be a major concern of this paper.

In terms of comparing the Dutch sibilants to sibilants in other languages, apart from the phonemic status of /ç/ mentioned in the beginning of this section, the /s/, as well as /z/, in Dutch is also “far less articulatorily tense comparing to their counterparts in German, French and English” and produced with more lip protrusion, while the Dutch /ç/ is generally produced with no lip-protrusion (Mees & Collins, 1982). The lip-protrusion and the lack of tenseness in [s] lower its CoG while the palatalization and lack of lip-protrusion raise the CoG in [ç], making the two sibilants acoustically closer. Figures 1 and 2 show the spectrograms of the [s] and [ʃ] produced by a native speaker of British English (the Received Pronunciation)<sup>3</sup> and the [s] and [ç] produced by one of the participants in this study.

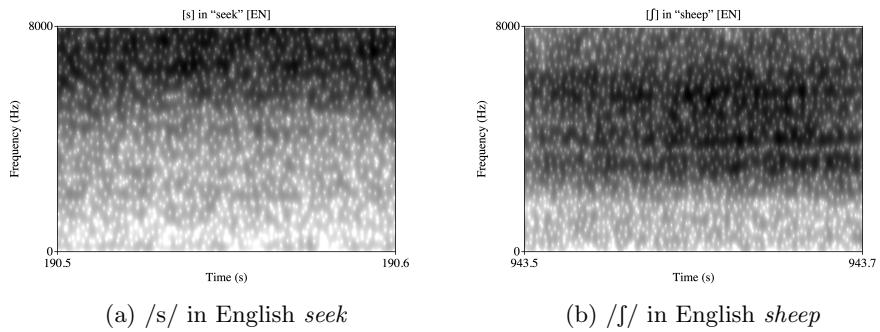


Figure 1: /s/ and /ʃ/ in English

<sup>3</sup>Extracted from BBC Learning English (<https://www.youtube.com/watch?v=htmkbIboG9Q>)

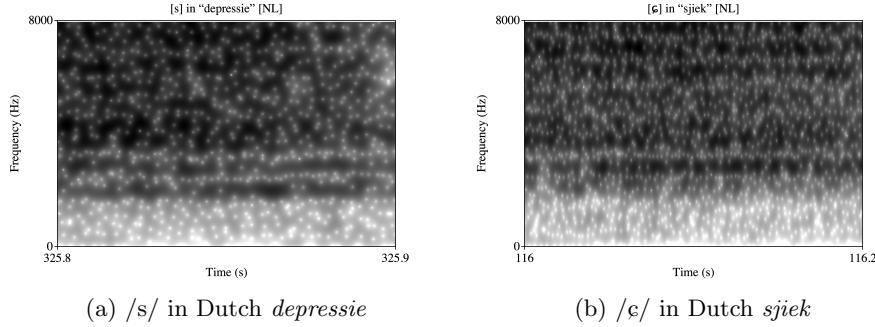


Figure 2: /s/ and /ç/ in Dutch

### 2.3 Sibilant Inventories

The sibilants [s] and [ʃ] are rather common in consonant inventories. Of the 317 languages that [Maddieson and Disner \(1984\)](#) investigated, about 83% of them have at least one anterior (dental or alveolar) /s/ ([Maddieson & Disner, 1984](#), p.44). They concluded that /\*s/ (referring to all types of s-sounds with unspecified dental or alveolar place) is the most common fricative, appearing in 88.5% of the languages that have fricatives, and that /s/ is the most common member of the group /\*s/. The next most frequent fricative after /\*s/, according to [Maddieson and Disner \(1984\)](#), is the voiceless palato-alveolar sibilant /ʃ/. [Schatz \(1986](#), p.77) also mentioned that [s] is “reasonably frequent” in the Dutch speech she collected, at the frequency of 35 times in a five-minute stretch of speech. In a study on markedness of sibilant inventories, [Flemming \(2018\)](#) showed that /s/ is the least marked sibilant, and that in two-sibilant inventories, [s, ʃ] is maximally distinct, [s, ʃ] minimizes effort, and that [s, ç] only occurs when the weighted F2 transition distance is high (when the assigned weight for the contribution of F2 transitions is larger than 0.87, in a component-weighting scheme similar to [Schwartz et al. \(1997\)](#)). The markedness of [s, ʃ], [s, ʃ] and [s, ç] pairings were not compared in [Flemming \(2018\)](#) since the former two are considered CoG-only contrasts (with zero weighted F2 distance difference) and [s, ç] is already harmonically bounded by [s, ʃ] and [s, ʃ] with the existence of “wF2=0” (i.e. when no weight was assigned to the contribution of F2 transitions). [Maddieson and Disner \(1984\)](#) also proposed the possibility that languages prefer saliency and that sounds that are more frequent in the inventories across languages are the ones with more acoustic energy, entailing good transmission properties. In this regard, [Maddieson and Disner \(1984](#), p. 50) compared the intensity rank-

ranking	Intensity	Frequency of Occurrence
1	ç	“s”
2	ʃ	ʃ
3	x	f
4	s	x
5	χ	χ
6	f	ɸ
7	θ	θ
8	ɸ	ç

Table 2: Ranking of fricatives by intensity and frequency of occurrence, adapted from Maddieson (1984)

ings of fricatives as measured in [Strevens \(1960\)](#) to the frequency (i.e. rate of occurrence, not frequency in the sense of vocal fold vibrations per second) rankings of the fricatives (see Table 2). The results did not seem to indicate much correlation between intensity and the frequency of occurrence<sup>4</sup>.

Earlier theories of inventory typology include Quantal Theory, markedness theory, and dispersion theory. Quantal theory has been criticized to have made incorrect predictions such as [ɛ] being unstable, and the existence of universally preferred hot spots (see e.g., [Carré, 1996](#); [Disner, 1983](#); [Livijn, 2000](#)). Traditional markedness theory has faced the objection that it merely formalizes the attested facts, rather than explaining them in terms of constraints on human articulation, perception, and processing ([Vaux & Samuels, 2015](#)). Dispersion theory takes a more functional approach and incorporates factors like articulatory effort and perceptual contrast, and proposes principles of e.g. minimizing articulatory effort, maximizing perceptual contrasts, etc..

Building on [Liljencrants and Lindblom \(1972\)](#) on vowel inventories which focused more on perception rather than production, [Lindblom and Maddieson \(1988\)](#) mentioned that different from vowel inventories, more articulatory factors need to be considered in addition to perceptual distinction in consonant inventories, and stated that “consonant inventories tend to evolve so as to achieve maximal perceptual distinctiveness at minimum articulatory cost”. [Lindblom et al. \(1983\)](#) proposed that languages are self-organizing systems and that phoneme inventories are emergent from the interaction of subsystems such as certain pho-

---

<sup>4</sup>According to [Maddieson and Disner \(1984\)](#), intensity readings in the table were “obtained and divided by subglottal air-pressure readings for the same tokens obtained using a nasal catheter inserted into the oesophagus. From this procedure a rank-order of intensity per unit air-pressure was obtained”.

netic tendencies over time. The constraints used for speakers in [Lindblom et al. \(1983\)](#)'s simulations were "sensory discriminability" and "preference for 'less extreme' articulation"; the listener-based constraints used were "perceptual distance" and "perceptual salience" (*ibid*, p.191).

Similarly, [Flemming \(2017\)](#) described a three-way conflict of constraints, namely among "MAXIMIZE CONTRAST", "maximizing distinctiveness", and "effort-minimization". "MAXIMIZE CONTRAST" refers to the preference of a higher number of contrasting sounds in the inventory. "Maximizing distinctiveness", as a distinctive constraint, favors more distinct contrasts, and "effort-minimization" penalizes articulatory effort. Among the three (types of) constraints, MAXIMIZE CONTRAST conflicts with maximizing distinctiveness since the space (hence the possible places and manners of articulation) in the oral cavity is limited, and fitting more contrastive sounds into the same limited space would result in less sharp distinctions between sounds. Additionally, effort-minimization conflicts with both MAXIMIZE CONTRAST and "maximizing distinctiveness" in such a way that the latter two constraints necessitate auditorily and articulatorily peripheral sounds which are difficult to realize without violating some effort-minimization constraints.

However, articulatory effort has been criticized as being difficult to measure (e.g. [Stevens, 1980](#); [Ohala, 1993](#), p.260), and dispersion theory has been undercut by the existence of vowel inventories such as that of Wari' ([MacEachern, Kern, & Ladefoged, 1997](#), p.4-8). Additionally, more recent work (e.g., [Schwartz et al., 2012](#); [Hauser, 2017](#)) tends to show that dispersion theory cannot fully explain stop consonant inventories in terms of place of articulation, though, arguably, [Hauser \(2017\)](#)'s metrics were only based on acoustic measurements and did not explicitly address the role of auditory perception, e.g. by taking into account e.g. that F1 is perceptually more salient than F2 (see, e.g. [Diehl, Lindblom, & Creeger, 2003](#)).

Nonetheless, it is true in vowel systems that inventories involving acoustically well-dispersed vowels are easier to both acquire and process because they are easier to discriminate, creating a tendency for languages to recruit such inventories ([Joanisse & Seidenberg, 1998](#), p.335). Additionally, evidence such as the Hyperspace Effect ([Johnson, Flemming, & Wright, 1993](#); [Johnson, 2000](#)), and that infant-directed speech tend to have more extreme vowel qualities ([Kuhl et al., 1997](#)) provide some tentative support for the notion that a more dispersed system reduces perceptual confusion and is thus more learnable and more likely to remain stable diachronically. [Vaux and Samuels \(2015\)](#)'s model also supports

the hypothesis that more dispersed inventories are more easily learnable.

### 3 Diachronic Change in Inventories

#### 3.1 Sound Change

Ohala (1993, 243-247) described the process of sound change as when (synchronic) variation in production is hypo-corrected (where new categories are created) or hyper-corrected (where one phone is perceived as another existing phone) by the perceiver. In other words, there exist a fair amount of acceptable variation in production between speakers, and such variation within what is considered by the listener as the same category are acceptable, hence utterances within the acceptable variation range are perceived as the same sound. Hypo-correction is when enough individuals start producing outliers and the outliers don't get corrected by e.g. puzzlement or amusement from an interlocutor, resulting in the phonetic perturbations getting "phonologized". Hyper-correction, on the contrary, is when the listener implements a correction when the phonetic/auditory input was actually what was intended by the speaker (i.e. when no correction was needed). It is worth noting that the mechanism of sound change according to Ohala (1993), is not teleological. The change occurs not in the message source (the speaker's brain) nor the message destination (the listener's brain) but in the transmission channel between them. This includes the speech production system and the listener's decoding system(ibid., p.262). Besides categorizing it as non-teleological, this account of sound change also ascribes the "locus of control" primarily to the listener's side and locates the mechanism centrally in the phonetic domain.<sup>5</sup>

#### 3.2 Adaptive Dispersion

Adaptive dispersion refers to the hypothesis that the distinctive sounds of a language tend to be positioned in phonetic space so as to maximize perceptual contrast (Johnson, 2000). Some scholars (e.g. Liljencrants & Lindblom, 1972; Boersma, 1998) also consider the interaction between production and perception constraints.<sup>6</sup> This can be traced back to Martinet (1955, p.62)'s prediction

---

<sup>5</sup>See Hamann (2009) for a counter argument, and see Fruehwald (2017) for more details on how phonologization could happen simultaneously with the onset of phonetic changes.

<sup>6</sup>Flemming (2002) stresses that "articulatory representations have no bearing on distinctiveness".

of the general mechanism of the evolution of sound systems “*Les unités distinctives, les phonèmes qui coexistent, tendront à utiliser au mieux les latitudes que leur offrent les organes dits de parole; ils tendront à être aussi distants de leurs voisins qu'il est loisible pour eux de l'être tout en restant facile à articuler et facile à articuler et facile à percevoir*”. From the previous sections, it can be predicted that the less optimally dispersed sound inventories (i.e. inventories where the perceptual distances between phonemes are not wide enough to maintain perceptual distinctiveness, or where the articulations of phonemes e.g. in terms of manner and/or place, are more extreme than necessary) are less likely to remain stable and more likely to become more optimally dispersed diachronically and that languages may apply diverse phonological processes to avoid a perceptually weak contrast. This has been observed in several attested sound changes e.g., in Korak (Bright 1978), where the contrast between the sibilants [s] and [š] (the former described as “a very far-forward apico-dental sound” and the latter as an “apico-alveolar”, and further identified as “a retracted ess”) was enhanced in younger speakers by pronouncing the former as an interdental [θ]; the voicing-only contrast between /g/ and /k/ was enhanced in Arabic by fronting and affricating /g/, in Japanese by nasalizing /g/, in low German by spirantizing /g/, and in Czech, Slovak, and Ukrainian by both spirantizing and pharyngealizing /g/ (Li, 2017, elaborated in Boersma, 1998). However, to quantify the auditory dispersion in consonants, or sibilants to be more precise, in a less impressionistic manner, an auditory (or at least acoustic) space might be needed.

Instead of making only post-hoc guesses of causes and mechanisms, the current study makes an attempt to investigate whether the diachronic change in the acoustic and auditory dispersion of the Dutch voiceless sibilants is in consistency with the predictions made in previous work. A small contrast such like that between the Dutch [s] and [ç] is likely to become more dispersed after even one generation, according to Boersma and Hamann (2008). If also taking into account the fact that infants are not provided with the number of categories of the input they receive during first language acquisition, in a case like the Dutch voiceless sibilants where the two categories are too close or even overlap to certain extent, the infant acquiring the phoneme inventory might establish only one category instead of two. In this regard, a merger could also occur. The current study hypothesizes that the two sounds would become more dispersed rather than to merge. The reason being that mergers happen as a way to enhance contrast, namely, when a merger happens, which usually locates somewhere in

the middle of the auditory range between the two categories (assuming it is a merger of two categories) that are merged, the auditory distance between the merged sound and the remaining categories become larger than the pre-merger state ([Becker-Kristal, 2010](#)). Thus, though non-teleological, a merger is more likely to happen if there are other neighboring categories. Given that there are no other voiceless sibilants than /s/ and /ç/ in the Dutch consonant inventory to increase contrast from, if /s/ and /ç/ were to merge into one category, the condition does not fit with that which would enhance contrast.

## 4 A Phonetic Space for Voiceless Sibilants

As all dispersion models assume a phonetic space whereby phonetic distances are measured, in this section I describe the acoustic measurements adopted as an attempt to define a phonetic space for voiceless sibilants, and give some brief justifications of the choices made.

### 4.1 Possible Dimensions

The literature has different metrics for differentiating fricatives acoustically. [Ladefoged and Johnson \(2011\)](#) mentioned multiple possibilities to distinguish fricatives such as voicing, articulatory gestures, tongue shape (tongue grooved v.s. tongue flat), and concluded that a better way is to separate them into groups on a purely auditory basis, for instance, according to the loudness in high pitches, which distinguishes the sibilants from non-sibilant fricatives, but they did not go into detail about the acoustic or auditory measurements that would separate one sibilant from another. [Hayward \(2014\)](#) listed frequency of main spectral peak, diffuse-compact (e.g. [f] and [θ] being more diffuse, and [ʃ] more compact), and slope of the overall spectrum ([ʃ] rises steeply to its peak and [s] rises more gradually) to distinguish fricatives. She also mentioned that the spectra of English fricatives vary considerably from speaker to speaker, and that at least for English, it seemed appropriate to describe fricative spectra by category in terms of the above perspectives rather than in terms of specific formant frequencies as in vowels. Also for the fricatives in English, [Jongman, Wayland, and Wong \(2000\)](#) found that acoustic properties such as spectral peak location, spectral moments (mean, variance, skewness, kurtosis), normalized amplitude, normalized duration, F2 onset frequency, and relative amplitude, are all relevant and are all robust enough in distinguishing /s/ and /ʃ/.

In [Bolla and Varga \(1981\)](#)'s observation, palatalized fricatives in Russian have a higher intensity than non-palatalized fricatives. But [Bolla and Varga \(1981\)](#)'s results were only based on one (male) speaker. In a similar study on Russian fricatives, [Kochetov and Radišić \(2009\)](#) did not find intensity useful in distinguishing palatalized fricatives from their non-palatalized counterparts.

In a more recent Optimality Theoretic typological study, [Kokkelmans \(2019\)](#) showed that “distributedness” is one possible dimension to implement auditory dispersion in sibilant inventories.

Other factors such as lexical frequency can also influence dispersion (see e.g., [Lindblom, 1996](#); [Van Son, Beinum, & Pols, 1998](#); [Bybee, 2003](#)).

In sum, a phonetic space (as dispersion theory models usually adopt) for fricatives is far less established than the vowel space. Since the present study focuses on voiceless sibilants, I will opt for measurements that are more relevant for sibilants or fricatives in general.

## 4.2 Two-Dimensional Mapping

As was mentioned in Section 4.1, previous studies categorized fricatives by different metrics such as spectral peak location, frequency of main spectral peak, spectral center of gravity, diffuse-compact-ness, slope of the overall spectrum, spectral moments, F2 onset frequency, intensity, and duration, etc.

Among the above, spectral center of gravity contains information including spectral peak location and the frontness of the place of articulation, and auditorily correlates to the listener's averaging of frequency and intensity components of a speech-like signal ([Fagelson & Thibodeau, 1994](#)). Additionally, according to [Gordon, Barthmaier, and Sands \(2002\)](#)'s cross-linguistic study of the acoustics of voiceless fricatives in seven languages, “gravity center frequencies robustly differentiated many of the fricatives in the examined languages” (pg. 29). Diffuse-compact and distributedness could roughly translate to the width of the spectral peak acoustically, since more distributed sounds have more filtering in the vocal tract thus leading to energy spreading out over a wider range of frequencies and consequently a wider peak or even multiple “diffuse” peaks ([Johnson, 2011](#); [Stevens, 2000](#)).

Considering that factors such as the slope of the overall spectrum, spectral peak location, and frequency of the main spectral peak are partially represented by the spectral center of gravity and that spectral center of gravity alone is often robust enough in differentiating different fricatives ([Gordon et al., 2002](#)),

the present study uses a two-dimensional space of spectral center of gravity and width of the spectral peak as an acoustic space for the sibilants in question.

## 5 Data Collection

### 5.1 Participants

Native speakers of Dutch of two age groups were recruited mainly from the University of Amsterdam and were paid for their participation. One group aged between 19 and 27 (5 female, 3 male, mean age = 23.38, standard deviation= 2.20). See Appendix A for an anonymized list of participant age and gender. All participants in this age group were students at the University of Amsterdam and none of them studied linguistics. The other group aged between 61 to 75 (8 female, 2 male, mean age = 67.60, standard deviation = 4.32), mostly consisting of professors and staff members from the University of Amsterdam, none of whom specialized in phonetics or phonology. All participants had been raised in monolingual households with native Dutch-speaking parents. All participants reported to have no abnormalities in their vision or speech.

### 5.2 Material and Design

A list of 113 Dutch sentences were constructed (see Appendix B for the full list<sup>7</sup>). The sentences contained 33 tokens of /s/, and 26 tokens of /ç/<sup>8</sup>. 54 sentences containing neither of the two target sibilants served as fillers. All the target sibilants were situated in intervocalic positions and in stressed syllables. Among the /s/ tokens, 10 were word-initial, 7 were word-medial, and 17 were word-final. Among the /ç/ tokens, 13 were word-initial, 7 were word-medial, and 6 were word-final<sup>9</sup>. All but the utterance-final sibilants were in inter-vocalic environments.

The list of sentences were randomized for each participant. A trial sentence with multiple sibilants built in (“this is a sentence that I am reading aloud to help set up the recording devices”) was shown as an example to familiarize the participant with the procedure, as well as to help the experimenter adjust the gain constant of the microphone while the participant was reading the trial

---

<sup>7</sup>I thank Paul Boersma for being my Dutch informant in creating this list.

<sup>8</sup>There were instances where the participant pronounced the words *jus* and *jam* as [ʒy] and [ʒem] respectively. Such tokens were not used in the analysis.

<sup>9</sup>Some stimuli contained more than one sibilant in more than one positions, e.g. *cynisch* has both word-initial /s/ and word-final /s/.

sentence aloud. The participant is then prompted to press a key to start the experiment. The prompting speed was controlled by each participant by pressing a key after they finish reading each item out loud. The recording started each time the participant pressed a key to show a sentence, and stopped when the participant pressed the key to indicate that they had finished reading and that the next sentence should be shown. 50ms of delay was added after the pressing of the key as a buffer. Each chunk of recording was labeled automatically with the index of the sentence from the stimuli list and then concatenated by the sequence of the list so that the sequence of the sentences was identical in each final product without being influenced by the randomization of the stimuli at the time of the recording.

The recordings were done in a soundproof studio in the Speech Lab at the University of Amsterdam, using a Senheiser MKH105T microphone and a pre-amplifier designed and built by the lab technicians at the Speech Lab. The subjects were recorded one by one in a seated position. They were each instructed to keep a constant distance of 20 cm between their mouth and the microphone. To reduce the effect of read speech and to preserve naturalness to some extent, participants were instructed to first look at the sentence and then read it out loud as if the sentence was part of a conversation. Prior to the recording, participants were informed in the consent form that the purpose of the recording was to collect natural speech samples of Dutch phrases. Each participant filled out a post-test questionnaire after the recording (see Appendix C) to gather information about the speaker's language background including their age, profession, birth place, cities and towns that they lived in in the Netherlands and abroad for over 6 months, whether they were raised in a monolingual household and their second language(s). The post-test questionnaire also asked each participant for their speculations about the topic of the study in order to exclude the results of participants who might have guessed the targets and hyperarticulated during the recording. None of the participants guessed correctly or even close.

### 5.3 Acoustic Analysis

Acoustic measurements are done in PRAAT(Boersma & Weenink, 2020). All the relevant sections (i.e. the target sibilants and their surrounding vowels) in the recordings were segmented by hand. Annotation was automated by a script that fills in the annotation of the underlyingly identical segments in different recordings (e.g. the /ç/'s in all the *koosjer* tokens). The script ignores the instances

where the pronunciation does not match the intended sibilant (e.g. when *jus* was pronounced as [ʒy]) which were not segmented in the TextGrids to begin with therefore not annotated or extracted for measurements<sup>10</sup> (see Appendix D for the script).

For more precise calculation of the spectral center of gravity and the spectral standard deviation of the sibilants, the sibilants were segmented in such a way that as little formant transition as possible was included, as is shown in Figure 3, where part of the very beginning of /c/ in *pistache* was intentionally left out to avoid the influence of voicing, and in Figure 4, where the transition into and out of /s/ in *tussen* was left out. For this reason, in addition to the fact that participants varied in speaking rate, durations of the sibilants were not measured<sup>11</sup>. Each relevant part (i.e. every annotated sibilant segment in every recording) was extracted with a rectangular window shape. Each of the 916 extracted tokens was subjected to a spectral analysis, and passed through a stop Hann Band filter from the frequency of 0 Hz to 550 Hz, with 50 Hz smoothing. The spectral center of gravity (CoG) was measured from each of the spectra. The width of the spectral peak was measured as the spectral standard deviation (power = 2). See Appendix G for the full results of the acoustic measurements.

Figure 5 shows a scatter plot of sibilants produced by the speakers aged between 19 and 27, with one sigma ellipses numbered by participant ID, /c/ in red circles, and /s/ in blue plus signs. The scatter plot of the speakers aged between 61 and 75 is shown in Figure 6. Without much statistical analysis, one can already see that there is more overlapping between the two sibilants in the groups aged between 61 and 75. The only overlapping of /c/ and /s/ in the younger group occurs *between* different speakers (i.e. the /c/ of Participant 11 overlaps with both the /s/ produced by Participant 10 and slightly with the /s/ produced by Participant 15), but never *within* speakers. Additionally, there is more variance in spectral standard deviation in the older group as well as more within-category variation in general in the older group.

In a slightly different scheme, Figures 7 and 8 show the ellipses of the sibilants produced by each participant in the two groups, assigning each participant in a different color of ellipsis, with the sibilants marked in the center of each ellipsis. It can be seen from Figure 7 that the ellipses of the same colors never merge in the younger group. However, the ellipses of the same colors are located much closer in the older group, as is shown in Figure 8. One of colors has visible overlapping,

---

<sup>10</sup>I thank Dirk Jan Vet for the technical support and scripting help.

<sup>11</sup>This might be improved by using a different segmentation scheme.

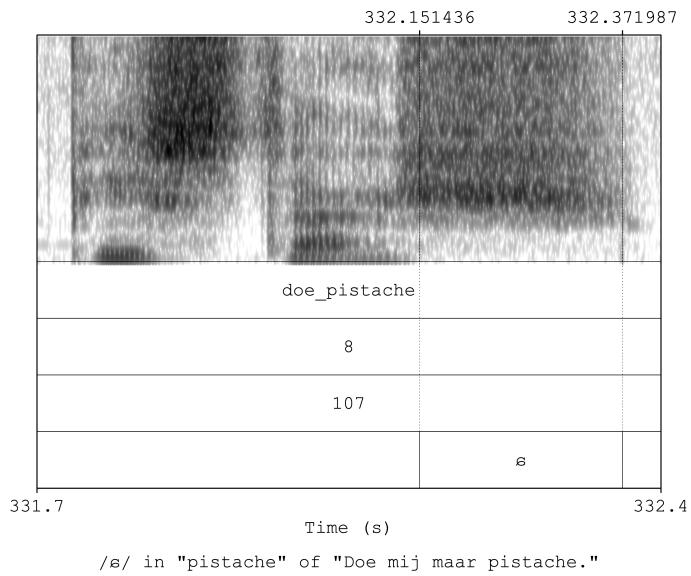


Figure 3: Spectrogram of “pistache” in the stimulus “Doe mij maar pistache” with dashed lines marking the duration segmented for and annotated as /c/

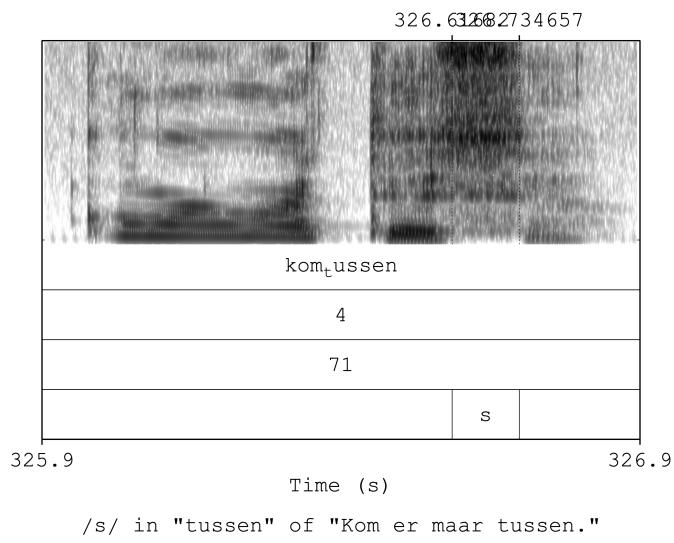


Figure 4: Spectrogram of “tussen” in the stimulus “Kom er maar tussen” with dashed lines marking the duration segmented for and annotated as /s/

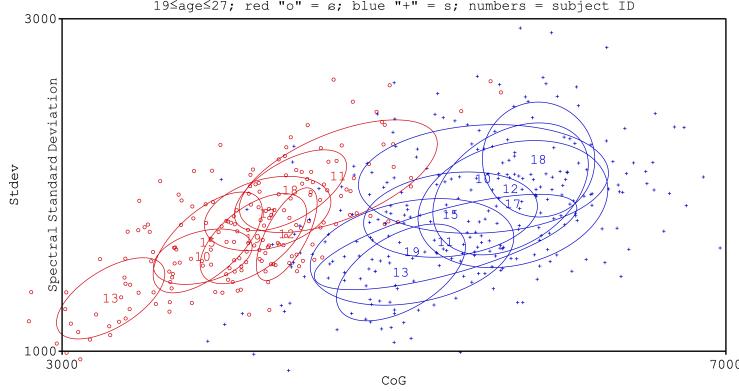


Figure 5: Scatter plot of the sibilants produced by younger speakers

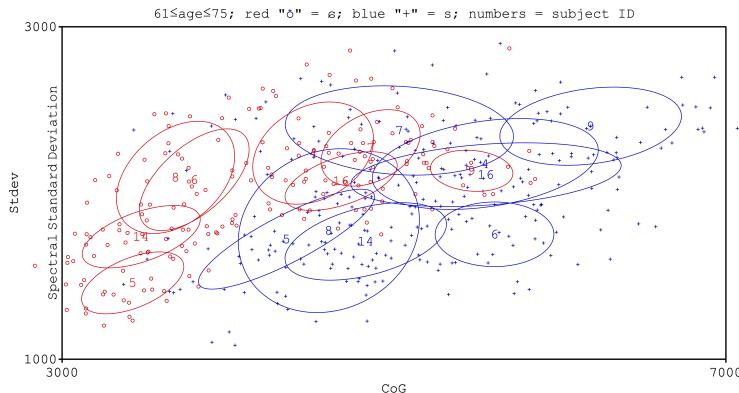


Figure 6: Scatter plot of the sibilants produced by older speakers

and several others are very much closer together, indicating the overlapping of CoG and spectral standard deviation. There is also a fair amount of between-speaker overlapping between the two sibilants. For instance, the black /c/ locates completely within the blue /s/, and the CoG range of the green /c/ is entirely within the CoG range of the red /s/. Moreover, in the older group, some /c/'s are higher in CoG than the /s/'s produced by a different speaker in the same group.

### 5.3.1 Linear Mixed-Effects Models

The data was analyzed in R ([R Core Team, 2020](#)) using linear mixed-effects models. *Age Group* and *Sibilant*, as well as the *height*, *rounding*, and *frontness*

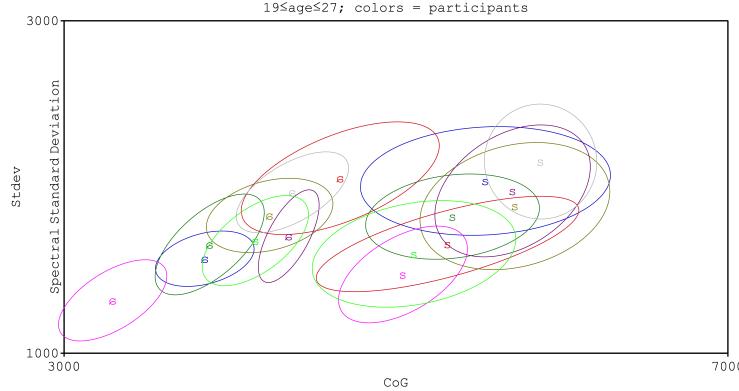


Figure 7: Ellipses of the sibilants produced by younger speakers, with each participant in one color

of the succeeding vowel were the fixed effects that were modeled. The *Index* of the token and *Participant ID* were included as random effects. The height of the succeeding vowel was coded as a ternary predictor, with /æ/, /au/, /a/, /ai/, /ā/ coded as “low”, /ɔ/, /ɪ/, /o/, /ə/, /ə̄/, /au/ coded as “mid”, and /i/, /u/, /y/ coded as “high”. Rounding was coded as a binary predictor. Frontness was coded as a ternary predictor, with /æ/, /au/, /a/, /ai/, /ɪ/, /i/, /ā/, /y/ as “front”, /ə/ as mid, and /ɔ/, /o/, /u/, /ə̄/ as “back”. All levels of all predictors and contrasts are both orthogonal to each other and orthogonal to the intercept. See Appendix E for the formula and coding of contrasts and predictors.

The same sets of fixed effects and random effects were used in the two models, one with CoG as the dependent variable, and one with the width of the spectral peak as the dependent variable.

## CoG

Results show that without taking Age into consideration, the spectral center of gravity is 1546.18 Hz higher in /s/ than in /ç/ on average (95% confidence interval = 1272.588 Hz .. 1818.093 Hz;  $t = 9.981$ ) among all the Dutch speakers who participated. This fits the general expectation. The estimated mean for the interaction effect of AgeGroup and Sibilants is 391.03 Hz, meaning the CoG difference between the two sibilants is 391.03 Hz higher in the younger group than the older group. The effect is not significant (95% confidence interval = -44.039 Hz .. 829.662 Hz;  $t = 1.723$ ). In other words, from the data collected in this study alone, we cannot conclude that the CoG difference (on the Hertz

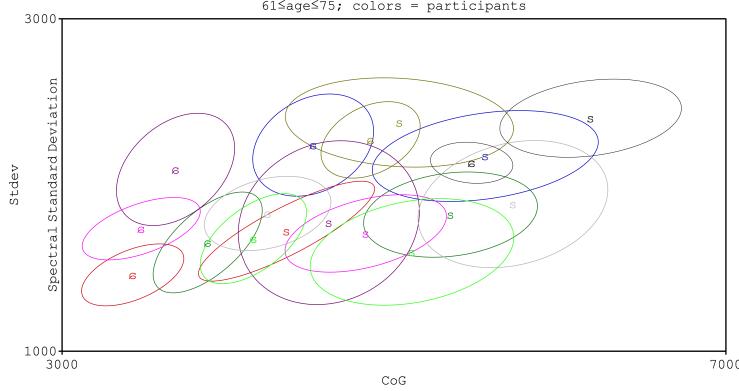


Figure 8: Ellipses of the sibilants produced by older speakers, with each participant in one color

scale) between the two sibilants /s/ and /ç/ is significantly different between the two age groups.

### Width of Spectral Peak

The same fixed and random effects as in the CoG analysis were modeled as a function of the width of the spectral peak, with the same contrasts coding used in the linear regression model for CoG (see Appendix E for the formula and the contrast coding scheme). Results show that the difference of spectral standard deviation between the sibilants /s/ and /ç/ of the participants in the younger group is 389.80 Hz wider than that of the older group, which is statistically significant (95% confidence interval = 75.491 Hz .. 705.519 Hz;  $t = 2.331$ ).

#### 5.3.2 Spectral Principal Component Analysis

Although considered important by many (e.g. [Flemming, 2018](#); [Olive et al., 1993](#)), formant transitions are not considered in the present study, due to the difficulty to control for different vowels that surround the sibilants in the stimuli. Additionally, even though formant transitions can be a prominent cue in perception, formant trajectories are not easily detectable in fricative signals, and therefore might not be as useful as spectral information for classifying fricatives, especially when retroflexion is involved, as is pointed out in [Hamann \(2003\)](#) and shown in [Harris \(1954\)](#).

For a more in-detail comparison and description of the between-sibilants

acoustic difference between the two age groups, a spectral principal component analysis was conducted. The purpose of adopting spectral principal analysis is to take into account the spectral shape as a reflection of the characteristic energy difference between frequencies in the two sibilants, as was suggested in [Evers et al. \(1998\)](#). The pre-processing of the acoustic signal for the spectral component analysis is described as follows. A long-term average spectrum (LTAS) analysis was performed on each of the relevant segments. Each LTAS was computed with a bin width of 250 Hz and a frequency range of 550-10000 Hz. The energy in each of the 38 250-Hz-bins of each LTAS of each of the 916 relevant tokens was calculated.

### Pooled Data

A principal component analysis was run on both sibilants produced by both age groups. Figure 9 shows the eigenvalues of each of the principal component.

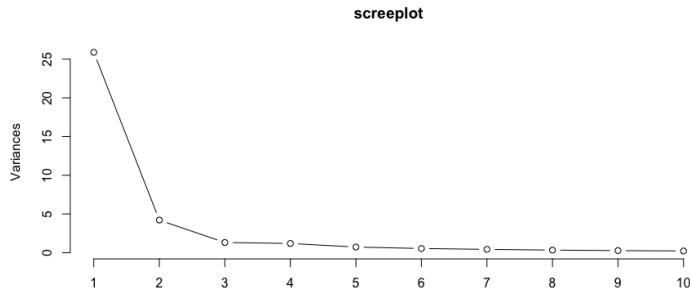


Figure 9: Eigenvalues of each principal component

Figures 10 to 13 show eigenvectors 1 to 4. As was explained above, the elements on the x-axis represent frequency bins with the width of 250 Hz, and the y-axis indicates energy in the corresponding bins. The first eigenvector has no zero crossings, indicating that it differentiates the sounds by loudness only. This distinction is irrelevant for the purpose of investigating spectral shape.

The second eigenvector has one zero crossing near bin14 which shows that eigenvector 2 is an indication of whether the energy level is on average higher in the frequency range below or above  $550\text{ Hz} + 14 * 250\text{ Hz} = 4050\text{ Hz}$ . This is slightly lower than the threshold of 4.2k Hz in [Hughes and Halle \(1956\)](#), mentioned in §2.1.

Eigenvector 3 has three zero crossings, indicating that it differentiates the

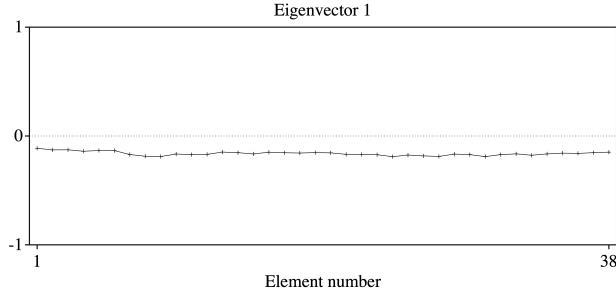


Figure 10: Eigenvector 1 of all speakers and both sibilants

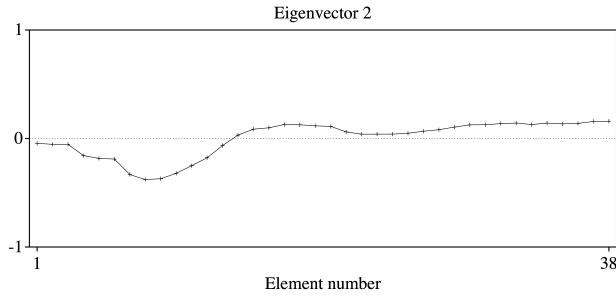


Figure 11: Eigenvector 2 of all speakers and both sibilants

spectra between energy in three frequency ranges, namely bin 8 to bin16 (i.e.  $550 \text{ Hz} + 8 * 250 \text{ Hz} = 2550 \text{ Hz}$  to  $550 \text{ Hz} + 16 * 250 \text{ Hz} = 4550 \text{ Hz}$ ), bin 17-bin 29 (i.e.  $550 \text{ Hz} + 17 * 250 \text{ Hz} = 4800 \text{ Hz}$  to  $550 \text{ Hz} + 29 * 250 \text{ Hz} = 7800 \text{ Hz}$ ), as well as above bin30 (i.e.  $550 \text{ Hz} + 30 * 250 \text{ Hz} = 8050 \text{ Hz}$ ).

The fourth eigenvector reflects the variation of energy in more specific parts of the spectra.

Thus, the second and third principal components together account for the main differences. Figure 14 is the sibilants plotted according to their eigenvalues in the second and third principal components. The marks “sy”, “cy”, “so” “co” represents data points of [s]’s and [c]’s produced by “y”ounger and “o”lder speakers among the participants, respectively. It can be seen from the scatter plot that there is some overlap between the 1SD ellipses of “co” and “so”, but a wide gap between the edges of the “cy” and “sy” ellipses, denoting that the acoustic distance between the two sibilants is indeed wider in the younger generation.

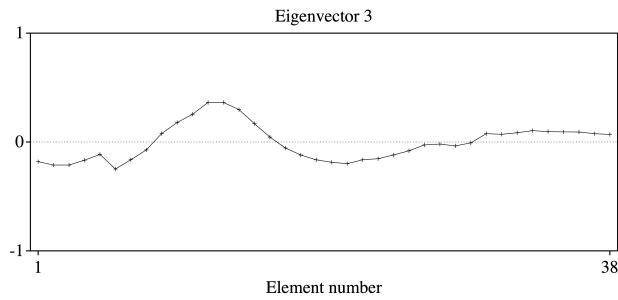


Figure 12: Eigenvector 3 of all speakers and both sibilants

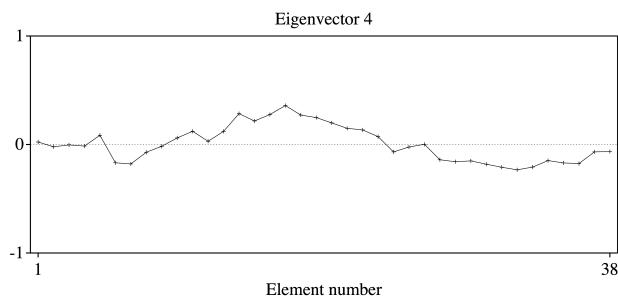


Figure 13: Eigenvector 4 of all speakers and both sibilants

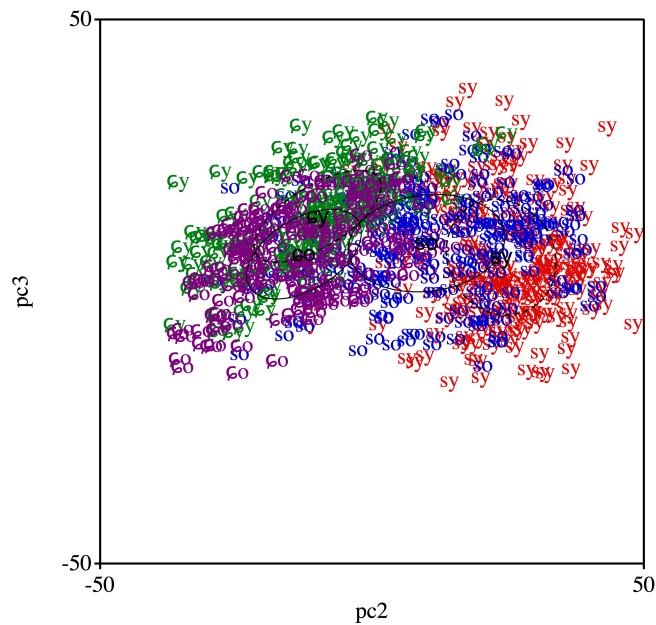


Figure 14: two sibilants produced by two age groups

### Age Group Data

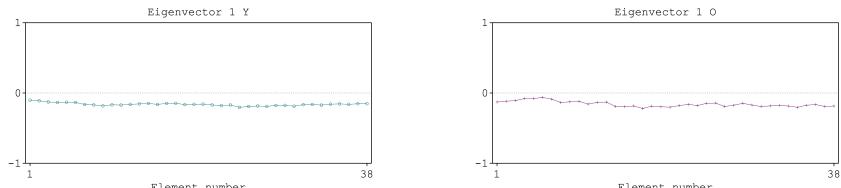
To better compare how the two age groups differ in the way they differentiate the two sibilants in production, one separate principal component analysis was run for each age group. Figures 15a and 15b show the scree plots of the younger group and the scree plot of the older group, respectively.



(a) Scree plot of the younger group data      (b) Scree plot of the older group data

Figure 15: Scree plots for the age group data

Figures 16a and 16b show the first eigenvector of the spectral principal component analysis of the two age groups, and Figures



(a) Eigenvector 1 of the younger group      (b) Eigenvector 1 for the older group

Figure 16: Eigenvector 1 for the age group data

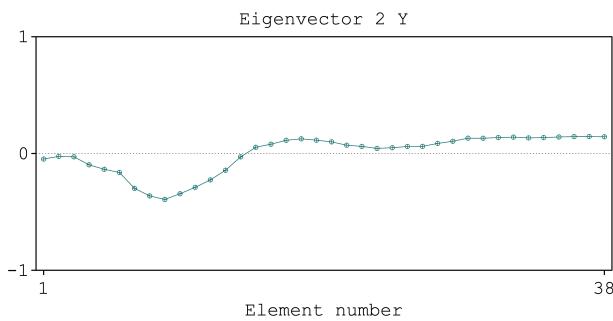


Figure 17: Eigenvector 2 of both sibilants produced by the younger group

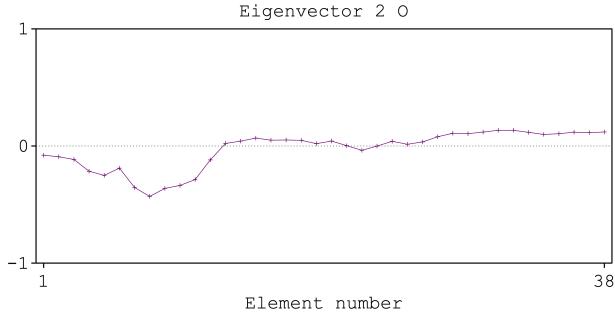


Figure 18: Eigenvector 2 of both sibilants produced by the older group

There is no fundamental difference in the first two eigenvectors between age groups, except that there is some distance in bin 13 ( $550 \text{ Hz} + 13 * 250 \text{ Hz} = 3800 \text{ Hz}$ ). Looking at each of the two age groups separately, the younger group has a zero crossing at a frequency range slightly higher than bin14, and the older group has a zero crossing at bin13. In other words, the younger group distinguish the two sibilants by whether the energy level is on average higher in the frequency range below or above bin14 ( $550 \text{ Hz} + 14*250 \text{ Hz} = 4020 \text{ Hz}$ ), while for the older group the threshold is slightly above bin 13 ( $550 \text{ Hz} + 13*250 \text{ Hz} = 3800 \text{ Hz}$ ).

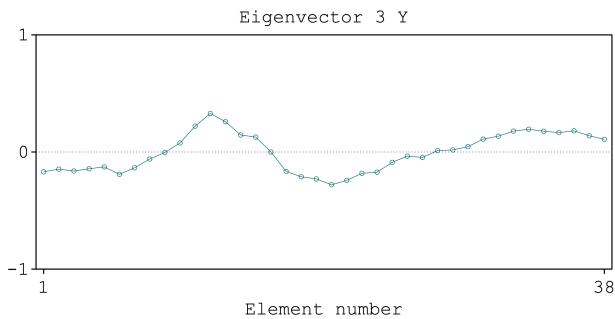


Figure 19: Eigenvector 3 of both sibilants produced by the younger group

It can be seen in the third eigenvectors (shown in Figures 19 and 20) that the younger group has a prominent peak in energy between bin 9 to bin 16 (i.e.  $550 \text{ Hz} + 9*250 \text{ Hz} = 2800 \text{ Hz}$  to  $550 \text{ Hz} + 16*250 \text{ Hz} = 4550 \text{ Hz}$ ) marked by two zero crossings and a valley between bin 16 and bin 27 (i.e.  $550 \text{ Hz} + 16*250 \text{ Hz} = 4550 \text{ Hz}$  to  $550 \text{ Hz} + 27*250 \text{ Hz} = 7300 \text{ Hz}$ ), while the peak of energy in

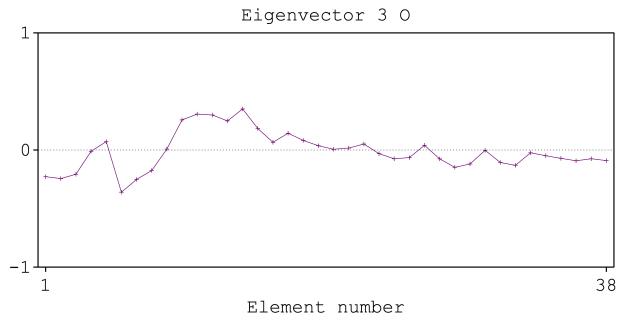


Figure 20: Eigenvector 3 of both sibilants produced by the older group

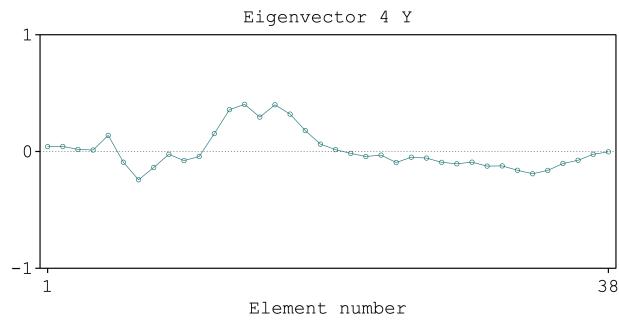


Figure 21: Eigenvector 4 of both sibilants produced by the younger group

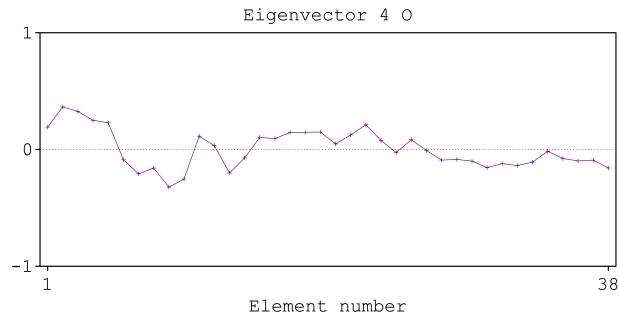


Figure 22: Eigenvector 4 of both sibilants produced by the older group

the older group is less sharp and more prolonged, between bin 9 to bin 23 (i.e.  $550 \text{ Hz} + 9*250 \text{ Hz} = 2800 \text{ Hz}$  to  $550 \text{ Hz} + 23*250 \text{ Hz} = 6300 \text{ Hz}$ ), as well as a valley between bin 5 and bin 9 (i.e.  $550 \text{ Hz} + 5*250 \text{ Hz} = 1800 \text{ Hz}$  to  $550 \text{ Hz} + 9*250 \text{ Hz} = 2800 \text{ Hz}$ ). That is, the younger group differentiates the two sibilants

by the energy difference between the frequency ranges of 550 to 2800Hz, 2800 to 4550 Hz, 4500 to 7300 Hz, and above 7300 Hz. The older group differentiates the two sibilants by the energy differences between the ranges of 1800 to 2800 Hz, 2800 Hz to 6300 Hz, and above 6300 Hz.

Additionally, the biggest contrast in energy between the two sibilants is between the points of bin 6 and bin 14 (i.e. energy at 2050 Hz and energy at 4050 Hz) for the older group, while for the younger group the contrast is between the points of bin 12 and bin 20 (i.e. energy at 3550 Hz and energy at 5550 Hz) for the two sibilants.

From the principal component analyses above, it is clear that in production, the two age groups differentiate the two sibilants in different ways. Namely, the frequency range(s) where the main difference resides are different between the two age groups.

As principal components 2 and 3 are the two components that should differentiate the two sibilants the best besides principal component 1, which is irrelevant for spectral shape, I now scatter plot each token of /s/ and /ç/ in each age group by their eigenvalues in the second and third principal components in Figures 23 and 24.

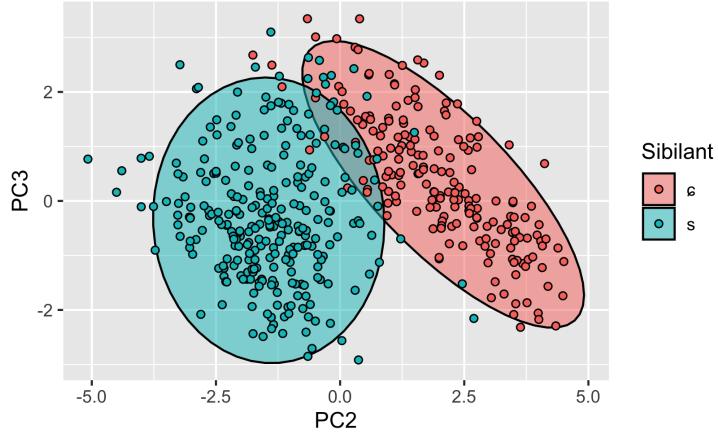


Figure 23: Both sibilants produced by the younger group plotted by their eigenvalues in principal components 2 and 3

The second and third principal components are the two principal components with the highest eigenvalues that are of interest in this study for both age groups. It can be seen from the scatter plots that the second principal component of the younger group can mostly separate the two sibilants. However, for the

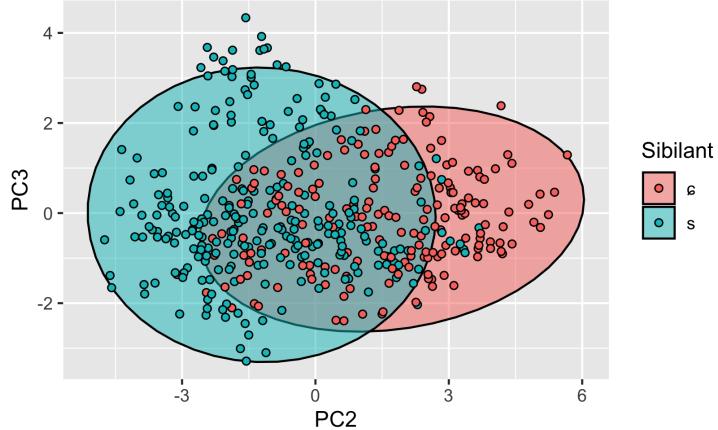


Figure 24: Both sibilants produced by the older group plotted by their eigenvalues in principal components 2 and 3

older participants, even by looking at the two group-specifically most important principal components, neither of them classify the two sibilants very well.

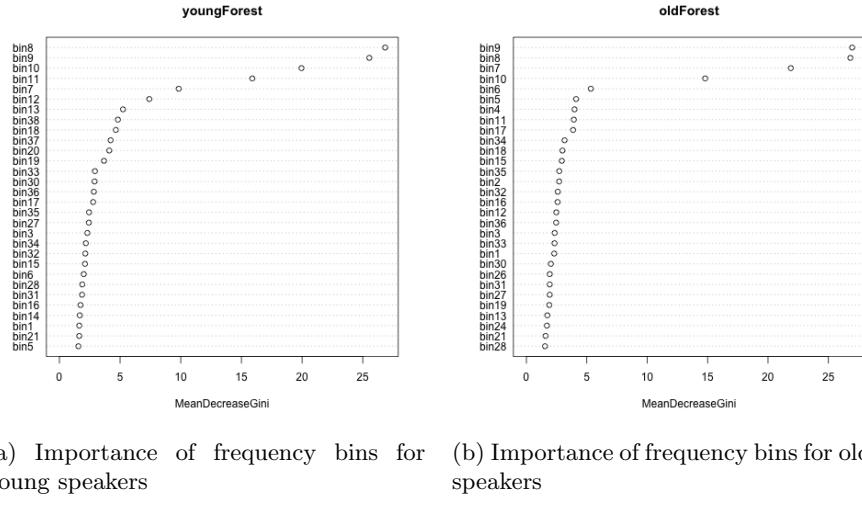
### 5.3.3 Random Forests

Since principal component analysis has the drawback of being subject to overfitting, and its result becomes difficult to interpret once the eigenvectors fluctuate, modeling by decision trees and random forests were done on the spectra. Decision tree learning is a supervised learning approach that has the benefit of e.g., being able to handle collinearity in the data, having built-in feature selection, as well as producing more easily interpretable outcomes. Random decision forests correct the single decision trees' over-fitting to the training set by training a multitude of trees and using bootstrap aggregation in selecting the training set for each tree and then using a random subset of features when training each tree, before averaging across all trees that are trained to get a final model. In other words, each tree in the forest is trained on randomly re-sampled data, with a random subset of all the features, therefore producing a model that is less susceptible to over-fitting.

The spectra of each group were randomly divided into two parts: one training set (80%) and one test set (20%). The same long-term average spectra and the same frequency bins used for the principal component analyses were used for the decision tree training. The energy in each frequency bin was used as input.

The frequency bins were treated as parameters, and the sibilants corresponding to the spectra were used as labels. A total of 500 trees were trained for each age group, and a random forest was grown for each age group by feature-bagging to reduce over-fitting. See Appendix [reftreesandforests] for the R code used for training the trees and forests).

A random forest model was fitted for each age group, Figures 25a and 25b show the difference in the ranking of frequency bins between two age groups. Tables 3 and 4 are the confusion matrices of the forests for each age group respectively.



		Reference	
Prediction		c	s
c	41	1	
s	2	45	

Table 4: Confusion matrix for the older participants

The rankings of parameter importance show that the two age groups indeed used different rankings of frequency bins to distinguish the two sibilants. Additionally, the out-of-bag error rate for the older group is always higher than that of the younger group (the test accuracy of the random forests models for the older and younger groups are 0.987 and 0.989, respectively, and the Area Under Curve evaluated with the test sets of the older and younger groups in the random forest models are 0.985 and 0.998, respectively), indicating that the sibilants produced by the older age group are more difficult to classify, providing tentative support for the hypothesis that the two sibilants are more merged for the older speakers.

#### 5.4 Auditory Estimations

In consideration of the potential role that perception plays in the dispersion-theoretic non-teleological diachronic changes (e.g. [Flemming \(1995\)](#) and [Boersma \(1998\)](#) both explicitly point out that the dispersion concerns *auditory* distance as opposed to *acoustic* distance), perception studies are also needed to fully understand a phonemic system.

Due to the limit of time and scope of the current project, I chose to convert the acoustic measurements into a psychoacoustically relatively appropriate estimation in order to indirectly examine the dispersion auditorily. To do so, I convert the measurement of Center of Gravity from the Hertz scale to the ERB scale, since the ERB scale corresponds to a good agreement to the direct physical audio filter bandwidths defined in terms of *place* along the basilar membrane, in the frequency interval [400 Hz, 6.5 kHz] in humans ([Greenwood, 1990](#), p.2601). The spectral standard deviation is not directly convertible into the ERB scale due to the non-linear nature of the ERB scale and the linearity of the Hertz scale, as well as the fact that the spectral standard deviation is a distance measure rather than a point value. For an estimation, I take the center of gravity, which is the mean frequency weighted by spectral power, convert the

value from Hz to ERB (CoG\_Erb). I then convert the value of one standard deviation of the CoG from Hertz to ERB (SD\_Erb). Next, I add one standard deviation in Erb to the mean in Erb to get the upper bound, and subtract one standard deviation in Erb to the mean in Erb to get the lower bound. Lastly, I divide the difference between the upper bound and the lower bound by 2. The formula<sup>12</sup> below illustrates the process:

$$StdevErb = 0.5 * [hertzToErb(CoG + CoG\_SD) - hertzToErb(CoG - CoG\_SD)]$$

### Linear Mixed-Effects Models

The same fixed and random effects as in the acoustic analyses were modeled as a function of CoG in ERB and the spectral standard deviation in ERB, respectively. Contrast coding also remained the same as the acoustic analyses (See Appendix E for the R script and full results in detail).

Results show that the CoG difference (on the ERB scale) between the two sibilants is 0.69 Erb larger in the older group than in the younger group of speakers who participated in the recording, which is not significant (95% confidence interval = -0.246 Erb .. 1.640 Erb; t = 1.387). The difference of the width of spectral peak (on the ERB scale) between the two sibilants /s/ and /ç/ is 0.65 Erb wider in the older group than in the younger group, which is not significant (95% confidence interval = 0.653 .. 0.444; t = 1.470).

### Caveat

The residuals in the linear models are not normally distributed in the linear regression model for the width of the peak both on the Hertz scale and the ERB scale (termed as StdevHz, and StdevErb in the analyses above), neither were they Gaussian in the linear regression model for the CoG on ERB scale (CoGErb). Only the residuals of CoGHZ are normally distributed. Hence the robustness of the relevant models might be affected. Due to the shape of the data, step-wise model comparison was also not implementable.

## 6 Discussion

The results from linear regression models in the current study, robustness aside, are inconclusive. Among the four dependent variables, only one showed a signif-

---

<sup>12</sup>In the format of the Praat scripting language.

icant difference, namely the width of the spectral peak of the sibilants between age groups.

It is plausible that any generalization could be violated within a small subgroup and still holds true at population level, and since the participants from the current study come from rather limited socio-economic classes (i.e. university students and professors), more participants from more diverse backgrounds are needed for a more valid conclusion.

Despite the inconclusive results from the linear regression models, spectral analyses lend some support for a difference in the way that the two age groups differentiate the two sibilants in production. Random forest modeling confirms the difference.

Nonetheless, there are still some variables that were not well-controlled in the current study. For instance, there might be different degrees of reduction happening in different stimulus items, depending on the word frequency ([Bybee, 2003](#)) and neighborhood density (e.g. [Goldrick, Vaughn, & Murphy, 2013](#); [Fox, Reilly, & Blumstein, 2015](#)), given that sound change is very often first observed to take place in high-frequency words of a language ([Phillips, 1984](#); [Morley, 2019](#)). Additionally, the within-category variance in each sibilant was not well-incorporated in the current study. It might be worth investigating whether there are changes in within-category variance across generations, by e.g. the Jeffreys-Matushita distance.

Counter-arguments can be made that such changes found in the current study might not necessarily be explained by adaptive dispersion, but rather by factors such as increased exposure to second languages such as English (where the acoustic/auditory distance between the two sibilants are further) in the younger generation. This is admittedly possible, and previous longitudinal research has shown phonetic change (VOT, F0) occurring in the first language as early as two weeks into a second language class ([Chang, 2010](#)). However, the same increased exposure is arguably also happening in the older generation at the same time instead of only affecting one of the two sub-populations. It might be worth further investigation to look into the difference of phonemic status of the two sibilants across generations, by, e.g., wug-testing loanword adaptation involving the two sibilants across generations with non-words. One other aspect that may be of interest is the acoustic and auditory distance for different generations to consider two sibilants as different.

More importantly, in order to shed light on the (a)symmetry of production and perception, it is interesting to find out whether younger and older listeners

also use different auditory cues to distinguish the two sibilants, in the same way as they do in production (see §5.3.2), as recent studies (e.g. [Luthra, Correia, Kleinschmidt, Mesite, & Myers, 2020](#)) even claim that acoustic information does not play any role at all in the perception of the /s/-/ʃ/ contrast.

## References

- Becker-Kristal, R. (2010). *Acoustic typology of vowel inventories and Dispersion Theory: Insights from a large cross-linguistic corpus* (PhD dissertation). University of California, Los Angeles.
- Boersma, P. (1998). *Functional phonology: Formalizing the interactions between articulatory and perceptual drives*. Den Haag, Holland Academic Graphics/IFOTT.
- Boersma, P., & Hamann, S. (2008). The evolution of auditory dispersion in bidirectional constraint grammars. *Phonology*, 25(2), 217–270.
- Boersma, P., & Weenink, D. (2020). *Praat: doing phonetics by computer*. Retrieved from <http://www.praat.org>
- Bolla, K., & Varga, L. (1981). *A conspectus of Russian speech sounds* (Vol. 32). Akadémiai Kiadó.
- Booij, G. (1999). *The phonology of Dutch*. Oxford University Press.
- Bybee, J. (2003). *Phonology and language use* (Vol. 94). Cambridge University Press.
- Carré, R. (1996). Prediction of vowel systems using a deductive approach. In *Proceeding of Fourth International Conference on Spoken Language Processing. icslp'96* (Vol. 3, pp. 1593–1596).
- Chang, C. B. (2010). *First language phonetic drift during second language acquisition* (PhD dissertation). University of California, Berkeley.
- Diehl, R. L., Lindblom, B., & Creeger, C. P. (2003). Increasing realism of auditory representations yields further insights into vowel phonetics. In *Proceedings of the 15th International Congress of Phonetic Sciences* (Vol. 2, pp. 1381–1384).
- Disner, S. F. (1983). *Vowel quality: The relation between universal and language specific factors* (Vol. 58). Phonetics Laboratory, Department of Linguistics, UCLA.
- Evers, V., Reetz, H., & Lahiri, A. (1998). Crosslinguistic acoustic categorization of sibilants independent of phonological status. *Journal of Phonetics*, 26(4), 345–370.
- Faddegon, B. (1951). Analyse van een Amsterdamse klankwet. *Album Dr. Louise Kaiser*, 26–30.
- Fagelson, M., & Thibodeau, L. M. (1994). The spectral center of gravity effect and auditory filter bandwidth. *The Journal of the Acoustical Society of America*, 96(5), 3284–3284.

- Flemming, E. (1995). *Auditory representations in phonology* (PhD dissertation). University of California, Los Angeles.
- Flemming, E. (2002). *Auditory representations in phonology*. Routledge.
- Flemming, E. (2017). Dispersion theory and phonology. In *Oxford Research Encyclopedia of Linguistics*.
- Flemming, E. (2018, Oct. 6). Systematic markedness in sibilant inventories. In *Annual meeting on phonology 2018*. San Diego, California. Poster. Retrieved from <http://phonology.ucsd.edu/program/sunday/posters-2/>
- Fox, N. P., Reilly, M., & Blumstein, S. E. (2015). Phonological neighborhood competition affects spoken word production irrespective of sentential context. *Journal of memory and language*, 83, 97–117.
- Fruehwald, J. (2017). The role of phonology in phonetic change. *Annual Review of Linguistics*, 3, 25–42.
- Goldrick, M., Vaughn, C., & Murphy, A. (2013). The effects of lexical neighbors on stop consonant articulation. *The Journal of the Acoustical Society of America*, 134(2), EL172–EL177.
- Gordon, M., Barthmaier, P., & Sands, K. (2002). A cross-linguistic acoustic study of voiceless fricatives. *Journal of the International Phonetic Association*, 141–174.
- Greenwood, D. D. (1990). A cochlear frequency-position function for several species—29 years later. *The Journal of the Acoustical Society of America*, 87(6), 2592–2605.
- Gussenhoven, C., & Broeders, A. (1976). *The pronunciation of english: A course for dutch learners*. Wolters-Noordhoff-Longman. Retrieved from <https://books.google.nl/books?id=2WmNAAAACAAJ>
- Hamann, S. (2003). *The phonetics and phonology of retroflexes*. Netherlands Graduate School of Linguistics.
- Hamann, S. (2009). The learner of a perception grammar as a source of sound change. In P. Boersma & S. Hamann (Eds.), *Phonology in perception* (pp. 111–149). Berlin: Mouton de Gruyter.
- Harris, K. S. (1954). Cues for the identification of the fricatives of american english. *The Journal of the Acoustical Society of America*, 26(5), 952–952.
- Hauser, I. (2017). A revised metric for calculating acoustic dispersion applied to stop inventories. *The Journal of the Acoustical Society of America*, 142(5), EL500–EL506.

- Hayward, K. (2014). *Experimental phonetics: An introduction*. Routledge.
- Hughes, G. W., & Halle, M. (1956). Spectral properties of fricative consonants. *The Journal of the Acoustical Society of America*, 28(2), 303–310.
- Joanisse, M. F., & Seidenberg, M. S. (1998). Functional bases of phonological universals: A connectionist approach. In *Annual meeting of the Berkeley Linguistics Society* (Vol. 24, pp. 335–345).
- Johnson, K. (2000). Adaptive dispersion in vowel perception. *Phonetica*, 57(2-4), 181–188.
- Johnson, K. (2011). *Acoustic and auditory phonetics*. John Wiley & Sons.
- Johnson, K., Flemming, E., & Wright, R. (1993). The hyperspace effect: Phonetic targets are hyperarticulated. *Language*, 505–528.
- Jongman, A., Wayland, R., & Wong, S. (2000). Acoustic characteristics of English fricatives. *The Journal of the Acoustical Society of America*, 108(3), 1252–1263.
- Kochetov, A. (2017). Acoustics of Russian voiceless sibilant fricatives. *Journal of the International Phonetic Association*, 47(3), 321–348.
- Kochetov, A., & Radišić, M. (2009). Latent consonant harmony in Russian: Experimental evidence for agreement by correspondence. In *Proceedings of FASL* (Vol. 17, pp. 111–130).
- Kokkelmans, J. (2019). A typological model of sibilant inventories and the principles which shape them. In *The 27th Manchester Phonology Meeting*. Poster. Retrieved from <http://www.lel.ed.ac.uk/mfm/27mfm-prog.pdf>
- Kuhl, P. K., Andruski, J. E., Chistovich, I. A., Chistovich, L. A., Kozhevnikova, E. V., Ryskina, V. L., ... Lacerda, F. (1997). Cross-language analysis of phonetic units in language addressed to infants. *Science*, 277(5326), 684–686.
- Ladefoged, P., & Johnson, K. (2011). *A course in phonetics*. Wadsworth, Cengage.
- Ladefoged, P., & Maddieson, I. (1996). *The sounds of the world's languages*. Blackwell.
- Li, M. (2017). *Sibilant contrast: Perception, production, and sound change* (PhD dissertation). University of Kansas.
- Liljencrants, J., & Lindblom, B. (1972). Numerical simulation of vowel quality systems: The role of perceptual contrast. *Language*, 48(4), 839–862.
- Lindblom, B. (1996). Role of articulation in speech perception: Clues from production. *The Journal of the Acoustical Society of America*, 99(3),

- 1683–1692.
- Lindblom, B., MacNeilage, P., & Studdert-Kennedy, M. (1983). Self-organizing processes and the explanation of phonological universals. *Linguistics*, 21(1), 181–204.
- Lindblom, B., & Maddieson, I. (1988). Phonetic universals in consonant systems. *Language, Speech and Mind*, 62–78.
- Livijn, P. (2000). Acoustic distribution of vowels in differently sized inventories—hot spots or adaptive dispersion. *Phonetic Experimental Research, Institute of Linguistics, University of Stockholm (PERILUS)*, 11.
- Luthra, S., Correia, J. M., Kleinschmidt, D. F., Mesite, L., & Myers, E. B. (2020). Lexical information guides retuning of neural patterns in perceptual learning for speech. *Journal of Cognitive Neuroscience*. Retrieved from [https://sahilluthrasite.files.wordpress.com/2020/06/lgpl\\_mvpa\\_ms\\_accepted.pdf](https://sahilluthrasite.files.wordpress.com/2020/06/lgpl_mvpa_ms_accepted.pdf)
- MacEachern, M., Kern, B., & Ladefoged, P. (1997). Wari' phonetic structures. *Journal of Amazonian Languages*, 1, 3–28. Retrieved from [http://etnolinguistica.wdfiles.com/local--files/artigo%3Amaceachern-1997/maceachern\\_et\\_al\\_1997\\_wari.pdf](http://etnolinguistica.wdfiles.com/local--files/artigo%3Amaceachern-1997/maceachern_et_al_1997_wari.pdf)
- Maddieson, I., & Disner, S. F. (1984). *Patterns of sounds*. Cambridge University Press.
- Martinet, A. (1955). *Economie des changements phonétiques*. Francke, Bern.
- Mees, I., & Collins, B. (1982). A phonetic description of the consonant system of Standard Dutch (abn). *Journal of the International Phonetic Association*, 12(1), 2–12.
- Morley, R. (2019). *Sound structure and sound change: A modeling approach*. Language Science Press. Retrieved from <https://books.google.nl/books?id=Uci5DwAAQBAJ>
- Nooteboom, S. G., & Cohen, A. (1984). *Spreken en verstaan: een nieuwe inleiding tot de experimentele fonetiek*. Van Gorcum.
- Ohala, J. J. (1993). The phonetics of sound change. In C. Jones (Ed.), *Historical linguistics: Problems and perspectives* (pp. 237–278). London: Longman.
- Olive, J. P., Greenwood, A., & Coleman, J. (1993). *Acoustics of American English speech: a dynamic approach*. Springer Science & Business Media.
- Passy, P. E. (1891). *Étude sur les changements phonétiques et leurs caractères généraux*. Firmin-Didot.
- Phillips, B. S. (1984). Word frequency and the actuation of sound change. *Language*, 320–342.

- R Core Team. (2020). R: A language and environment for statistical computing [Computer software manual]. Vienna, Austria. Retrieved from <https://www.R-project.org/>
- Roudet, L. (1910). *Éléments de phonétique générale*. H. Welter.
- Schatz, H. F. (1986). *Plat Amsterdams in its social context: a sociolinguistic study of the dialect of Amsterdam* (Vol. 6). PJ Meertens-Instituut voor Dialectologie, Volkskunde en Naamkunde.
- Schwartz, J.-L., Boë, L.-J., Badin, P., & Sawallis, T. R. (2012). Grounding stop place systems in the perceptuo-motor substance of speech: On the universality of the labial–coronal–velar stop series. *Journal of Phonetics*, 40(1), 20–36.
- Schwartz, J.-L., Boë, L.-J., Vallée, N., & Abry, C. (1997). The dispersion-focalization theory of vowel systems. *Journal of Phonetics*, 25(3), 255–286.
- Stevens, K. (1980). Discussion. In *Proceedings of the 9th International Congress of Phonetic Sciences* (Vol. 3, pp. 181–194).
- Stevens, K. (2000). *Acoustic phonetics* (Vol. 30). MIT Press.
- Strevens, P. (1960). Spectra of fricative noise in human speech. *Language and Speech*, 3(1), 32–49.
- Vallée, N. (1994). *Systèmes vocaliques: de la typologie aux prédictions* (PdD dissertation). Université Stendhal (Grenoble).
- Van Son, R. J., Beinum, F. J. K.-v., & Pols, L. C. (1998). Efficiency as an organizing principle of natural speech. In *Fifth International Conference on Spoken Language Processing*.
- Vaux, B., & Samuels, B. (2015). Explaining vowel systems: dispersion theory vs natural selection. *The Linguistic Review*, 32(3), 573–599.

## A Participant Statistics

Participant ID	Age	Group	Gender
1	66	o	f
2	66	o	f
4	68	o	f
5	75	o	m
6	61	o	f
7	73	o	f
8	71	o	f
9	67	o	f
10	19	y	m
11	23	y	f
12	24	y	f
13	24	y	m
14	66	o	m
15	23	y	f
17	23	y	f
17	63	o	f
18	24	y	f
19	27	y	m

Table 5: Participant age and gender

## B List of Stimuli

Sentence	ReclIndex
ik voel me somber	1
ik voel me blij	2
dat doen we samen	3
dat doen we apart	4
ik zoek de suiker	5
ik zoek de melk	6
je vindt me saai	7
je vindt me leuk	8
dat is mijn saldo	9
dit is mijn rondje	10
ik wil de saus	11
ik wil de mayonaise	12
ik wil de jus	13
ik wil de boter	14
doe mij maar sinas	15
doe mij maar cola	16
wat doe je cynisch	17
wat doe je raar	18
daar komt de sint	19
daar komt een klant	20
dat gaan we sussen	21
dat gaat ons lukken	22
ik voel me sjofel	23
ik vind je jofel	24
wat ben je sjiek	25
wat ben je lief	26
help me maar sjouwen	27
help me maar bouwen	28
een mooie sjaal	29
een mooie trui	30
doe mij maar Chinees	31
doe mij maar friet	32
dan gaan we sjoelen	33
dan gaan we dammen	34
ze zat te sjansen	35
ze zat te kijken	36
je loopt te sjokken	37
je loopt te hinken	38
doe mij maar jam	39
doe mij maar honing	40
ik zie de machine	41

ik zie de fabriek	42
ik lees de brochure	43
ik lees de folder	44
daar loopt je meisje	45
daar loopt je vriend	46
ik wil een flesje	47
ik wil een beker	48
da's niet zo koosjer	49
da's niet zo handig	50
knibbel knabbel knuisje	51
pief paf poef	52
ik pak een glaasje	53
ik pak een kopje	54
je bent het haasje	55
jij bent af	56
de gele hesjes	57
het groene hart	58
ik ga me douchen	59
ik ga me scheren	60
ik zal je missen	61
ik zal je bellen	62
in een depressie	63
in een deuk	64
wij vrouwen eisen	65
wij willen brood	66
ga lekker vissen	67
ga lekker tukken	68
ga je wassen	69
ga maar lopen	70
kom er maar tussen	71
kom er maar bij	72
dat gaan we sussen	73
ik wil de saus	74
ik ga onder de douche	75
ik ga in bad	76
ik loop naar de crèche	77
loop naar de maan	78
ze komen voor de hasj	79
ze komen voor de bollen	80
je maakt me boos	81
je maakt me blij	82
ik sta op het ijs	83
ik sta op de brug	84

je bent niet goed wijs	85
je bent niet goed snik	86
ik ga naar huis	87
ik ga naar bed	88
ik hang voor de buis	89
ik zit in de keuken	90
ik loop in het bos	91
ik loop door de duinen	92
een mooie poes	93
een mooie hond	94
doe mij maar kaas	95
doe mij maar ham	96
een rotte kies	97
een gat in mijn tand	98
ik lig in het gras	99
ik lig op de grond	100
een mooie bloes	101
een mooi hemd	102
kom naar de les	103
kom naar de fuif	104
het is hier niet pluis	105
ik vind het hier eng	106
doe mij maar pistache	107
doe mij maar vanille	108
ze plakt aan het pluche	109
ze zit in de kamer	110
doe mij maar sinas	111
wat doe je cynisch	112
doe mij maar Chinees	113

## **C Post Test Questionnaire**

# Post-Test Questionnaire

Thank you for participating in our experiment. In order to interpret the results as best as we can, we would like you to answer the questions below. Your data will be kept confidential, and we will make sure that no information will be revealed in ways that it could be traced back to you.

## Personal Information

First Name:

---

Last Name:

---

Age:

---

Gender:

---

Profession:

---

## Geographical Background

Birth Place:

---

In which cities in the Netherlands have you lived and for how long:

City 1, length of time:

---

City 2, length of time:

---

City 3, length of time:

---

City 4, length of time:

---

How long you have lived(if longer than 6 months) *outside of* the Netherlands, and where:

---

---

## Language Background

Were you brought up in a monolingual home?

Yes     No

If "no", please indicate your native languages other than Dutch:

---

---

Have you learned any second languages? For example in school, university, from friends etc.? For each language, please indicate the name and level of proficiency:(see next page)

**Language 1:**

---

Proficiency:

- Near-Native
- Fluent
- Intermediate
- Beginner

**Language 2:**

---

Proficiency:

- Near-Native
- Fluent
- Intermediate
- Beginner

**Language 3:**

---

Proficiency:

- Near-Native
- Fluent
- Intermediate
- Beginner

**The Experiment**

Please indicate below what you think this experiment was about:

---

---

---

**Thank you for your participation!**

## D Praat Script for Acoustic Measurements

```

path$ = "Result"

binNames$ = ""
for ibin from 1 to 38
    binNames$ += " bin" + string$ (ibin)
endfor
result = Create Table with column names: "Result", 0, "Subject Age Index IPA Sibilant
CoG Stdev Position Vp Vf CoGERb StdevErb" + binNames$
resultPtr = 0

dl = Create Strings as directory list: "directoryList", path$
dl_nos = Get number of strings
for dir from 1 to dl_nos
    selectObject: dl
    dirName$ = Get string: dir
    @AnalyzeFolder (dirName$)
endfor

procedure AnalyzeFolder (.dirName$)

    .r = Read from file: path$ + "/" + .dirName$ + "/" + .dirName$ + ".wav"
    .tg = Read from file: path$ + "/" + .dirName$ + "/" + .dirName$ + ".TextGrid"

    .dt = Down to Table: "no", 6, "yes", "no"
    Rename: "Full"
    .exName = Extract rows where column (text): "tier", "is equal to", "Name"
    .exName_nor = Get number of rows
    Rename: "Name"

    for .i to .exName_nor
        selectObject: .exName
        .tmin = Get value: .i, "tmin"
        .tmax = Get value: .i, "tmax"

        selectObject: .r
        .snd2 = Extract part: .tmin, .tmax, "rectangular", 1, "no"
        .duration = Get total duration
        .midTime = .duration/2
        selectObject: .tg
        .tg2 = Extract part: .tmin, .tmax, "no"

        .interval = Get interval at time: 1, .midTime
        .name$ = Get label of interval: 1, .interval
        .interval = Get interval at time: 2, .midTime
        .subject$ = Get label of interval: 2, .interval
        .interval = Get interval at time: 3, .midTime
        .index = Get label of interval: 3, .interval

        .dt2 = Down to Table: "no", 6, "yes", "no"
        Rename: "Sentence"

```

```

.ipa = nowarn Extract rows where column (text): "tier", "is equal to",
"IPA"

.ipa_nor = Get number of rows
for .row to .ipa_nor
    selectObject: .ipa
    .tmin2 = Get value: .row, "tmin"
    .tmax2 = Get value: .row, "tmax"
    .ipa$ = Get value: .row, "text"

    selectObject: .snd2
    .snd3 = Extract part: .tmin2, .tmax2, "rectangular", 1, "no"
    Rename: "IPA"
    .spec = To Spectrum: "yes"
    Filter (stop Hann band): 0, 550, 50
    .cog = Get centre of gravity: 2
    .stdev = Get standard deviation: 2
    .ltas = To Ltas: 250

    selectObject: result
    if index (.ipa$, "s")
        sibilant$ = "s"
    elseif index (.ipa$, "ə" )
        sibilant$ = "ə"
    else
        exitScript: "Found neither an s nor a ə in text ", .ipa$,
"in interval", .interval, "of TextGrid", .tg2, "."
    endif

    v1$ = left$ (.ipa$, index (.ipa$, sibilant$) - 1)
    v2$ = right$(.ipa$, length(.ipa$) - index (.ipa$, sibilant$))
    if v2$ = ""
        position$ = "final"
    elseif index (v2$, "ə") or .ipa$ = "ɛsi"
        position$ = "medial"
    else
        position$ = "initial"
    endif

    selectObject: result
    Append row
    resultPtr += 1
    Set string value: resultPtr, "Subject", .subject$
    Set numeric value: resultPtr, "Index", .index
    Set string value: resultPtr, "CoG", fixed$ (.cog, 0)
    Set string value: resultPtr, "Stdev", fixed$ (.stdev, 0)
    Set string value: resultPtr, "IPA", .ipa$
    Set string value: resultPtr, "Vp", v1$
    Set string value: resultPtr, "Sibilant", sibilant$
    Set string value: resultPtr, "Vf", v2$
    Set string value: resultPtr, "Position", position$

```

```

        Set string value: resultPtr, "CoGERb", fixed$(hertzToErb(.cog), 0)
        Set string value: resultPtr, "StdevErb",
fixed$(0.5*(hertzToErb(.cog + .stdev)- hertzToErb(.cog - .stdev)), 0)
            for ibin to 38
                Set numeric value: resultPtr, "bin" + string$ (ibin),
object [.ltas, ibin + 2]
            endfor
            selectObject: .snd3, .spec, .ltas
            Remove
        endfor
        selectObject: .snd2, .tg2, .dt2, .ipa
        Remove
    endfor
    selectObject: result
    Formula: "Age", ~ if self ["Subject"] <= 9 or self ["Subject"] = 14 or self
["Subject"] = 16 then 0 else 1 fi

    selectObject: .dt, .exName
    Remove
endproc

```

## E R Script for Linear Models

# Statistic Analysis

Xinyu Zhang

Participants and Stimuli stats:

participants:

```
#filtering out younger speakers
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
participants <- read.csv("participants.csv")
young <- participants%>%
  #count(Group == "y")
  filter(Group == "y")
young
```

```
##   ID Age Group Gender
## 1 10  19      y      m
## 2 11  23      y      f
## 3 12  24      y      f
## 4 13  24      y      m
## 5 15  23      y      f
## 6 17  23      y      f
## 7 18  24      y      f
## 8 19  27      y      m
```

```
#arranging Age by ascending order for min and max
young%>%
  arrange(Age)
```

```
##   ID Age Group Gender
## 1 10  19      y      m
## 2 11  23      y      f
## 3 15  23      y      f
## 4 17  23      y      f
## 5 12  24      y      f
## 6 13  24      y      m
## 7 18  24      y      f
## 8 19  27      y      m
```

```
#mu & sigma  
mean(young$Age)
```

```
## [1] 23.375
```

```
sd(young$Age)
```

```
## [1] 2.199838
```

```
#counting female  
young%>%  
  filter(Gender == "f")
```

```
##   ID Age Group Gender  
## 1 11  23     y      f  
## 2 12  24     y      f  
## 3 15  23     y      f  
## 4 17  23     y      f  
## 5 18  24     y      f
```

```
#counting male  
young%>%  
  filter(Gender == "m")
```

```
##   ID Age Group Gender  
## 1 10  19     y      m  
## 2 13  24     y      m  
## 3 19  27     y      m
```

```
#filtering out older speakers & count total number  
participants <- read.csv("participants.csv")  
old <- participants%>%  
  filter(Group == "o")  
old
```

```
##   ID Age Group Gender  
## 1  1  66     o      f  
## 2  2  66     o      f  
## 3  4  68     o      f  
## 4  5  75     o      m  
## 5  6  61     o      f  
## 6  7  73     o      f  
## 7  8  71     o      f  
## 8  9  67     o      f  
## 9 14  66     o      m  
## 10 17  63    o      f
```

```
#arranging age by ascending order for min and max  
old%>%  
  arrange(Age)
```

```
##   ID Age Group Gender  
## 1  6  61     o     f  
## 2 17  63     o     f  
## 3  1  66     o     f  
## 4  2  66     o     f  
## 5 14  66     o     m  
## 6  9  67     o     f  
## 7  4  68     o     f  
## 8  8  71     o     f  
## 9  7  73     o     f  
## 10 5  75     o     m
```

```
#mu and sigma  
mean(old$Age)
```

```
## [1] 67.6
```

```
sd(old$Age)
```

```
## [1] 4.325634
```

```
#counting females  
old%>%  
  filter(Gender == "f")
```

```
##   ID Age Group Gender  
## 1  1  66     o     f  
## 2  2  66     o     f  
## 3  4  68     o     f  
## 4  6  61     o     f  
## 5  7  73     o     f  
## 6  8  71     o     f  
## 7  9  67     o     f  
## 8 17  63     o     f
```

```
#counting males  
old%>%  
  filter(Gender == "m")
```

```
##   ID Age Group Gender  
## 1  5  75     o     m  
## 2 14  66     o     m
```

Stimuli Stats:

```
library(dplyr)
fulltable <- read.csv("ResultswSlope.csv")
#selecting subject 4 for description of stimulus because it is used as the model to automate all the rest
subject4 <- fulltable %>%
  filter(Subject == 4)
subject4 %>%
  count(Sibilant == "s", Position == "initial")
```

```
##   Sibilant == "s" Position == "initial" n
## 1      FALSE          FALSE 12
## 2      FALSE          TRUE 13
## 3      TRUE          FALSE 25
## 4      TRUE          TRUE 10
```

```
subject4 %>%
  count(Sibilant == "s", Position == "medial")
```

```
##   Sibilant == "s" Position == "medial" n
## 1      FALSE          FALSE 18
## 2      FALSE          TRUE  7
## 3      TRUE          FALSE 28
## 4      TRUE          TRUE  7
```

```
subject4 %>%
  count(Sibilant == "s", Position == "final")
```

```
##   Sibilant == "s" Position == "final" n
## 1      FALSE          FALSE 20
## 2      FALSE          TRUE  5
## 3      TRUE          FALSE 17
## 4      TRUE          TRUE 18
```

```
subject4 %>%
  count(Sibilant == "ç", Position == "initial")
```

```
##   Sibilant == "ç" Position == "initial" n
## 1      FALSE          FALSE 25
## 2      FALSE          TRUE 10
## 3      TRUE          FALSE 12
## 4      TRUE          TRUE 13
```

```
subject4 %>%
  count(Sibilant == "ç", Position == "medial")
```

```
##   Sibilant == "ç" Position == "medial" n
## 1      FALSE          FALSE 28
## 2      FALSE          TRUE  7
## 3      TRUE          FALSE 18
## 4      TRUE          TRUE  7
```

```
subject4%>%
  count(Sibilant == "ç", Position == "final")
```

```
##   Sibilant == "ç" Position == "final"   n
## 1          FALSE             FALSE 17
## 2          FALSE              TRUE 18
## 3          TRUE             FALSE 20
## 4          TRUE              TRUE  5
```

Acoustic Analysis:

```
fulltable <- read.csv("ResultswSlope.csv")
library(dplyr)
nobins<-fulltable %>%
  select(Subject, Age, Index, IPA, Sibilant, CoG, Stdev,Position, Vp, Vf, CoGERb,Stde
vErb)

nobins$Sibilant <- as.factor(nobins$Sibilant)

nobins$Age <- as.factor(nobins$Age)
#saving the csv:
write.csv(nobins, file = "nobins.csv")
```

coding for features in vowels, and contrasts:

```

library(dplyr)

#high-low only contrast
erbs <- read.csv("ResultswSlope.csv")
hrxf <- erbs %>%mutate(
  heightP = case_when(
    Vp == "ɛɪn" ~ "h",
    Vp == "y"~"h",
    Vp == "i" ~ "h",
    Vp == "u" ~ "h",
    Vp == "ɛi" ~ "h",
    Vp == "œy" ~ "h",
    Vp == "au"~"h", #"a" w/ a hat but not distinguished because of font in R
    Vp == "ei"~"l",
    Vp == "ou" ~ "m",
    Vp == "ə" ~ "m",
    Vp == "ɔ" ~ "m",
    Vp == "ɛ" ~ "m",
    Vp == "aɪ" ~ "l", #"a" w/ a hat but not distinguished because of font in R
    Vp == "a" ~ "l" #"a" w/ a hat but not distinguished because of font in R
  )
)
hrxf$heightP <- as.factor(hrxf$heightP)

hrxf <- hrxf %>%mutate(
  heightF = case_when(
    Vf == "œy" ~ "l",
    Vf == "ɔ" ~ "m",
    Vf == "a" ~ "l", #"a" w/ a hat but not distinguished because of font in R
    Vf == "ai" ~ "l", #"a" w/ a hat but not distinguished because of font in R
    Vf == "ɪ" ~ "m",
    Vf == "o" ~ "m",
    Vf == "i" ~ "h",
    Vf == "u" ~ "h",
    Vf == "ā" ~ "l", #"a" w/ a hat but not distinguished because of font in R
    Vf == "y"~"h",
    Vf == "ə" ~ "m",
    Vf == "ɛ" ~ "m",
    Vf == "au" ~ "m" #"a" w/ a hat but not distinguished because of font in R
  )
)
hrxf$heightF <- as.factor(hrxf$heightF)

#contrast for preceding vowel
contrast1 <- cbind (c(0.5, -0.5, 0), c(-1/3, -1/3, +2/3))#h,l,m
colnames(contrast1) <- c("+h-l", "-hl+m")
contrasts(hrxf$heightP) <- contrast1

#contrast for the following vowel
contrast2 <- cbind(c(0.5, -0.5, 0), c(-1/3, -1/3, +2/3))#h,l,m
colnames(contrast2) <- c("+h-l", "-hl+m")
contrasts(hrxf$heightF) <- contrast2

```

```

hrxf <- hrxf %>%mutate(
  roundingP = case_when(Vp == "ɔ" ~ "r",
                        Vp == "ou" ~ "r",
                        Vp == "œy" ~ "r",
                        Vp == "u" ~ "r",
                        Vp == "y" ~ "r",
                        Vp == "au" ~ "r", #"a" w/ a hat but not distinguished because of font in R
                        TRUE ~ "nr")
  )

hrxf$roundingP <- as.factor(hrxf$roundingP)

hrxf <- hrxf %>%mutate(
  roundingF = case_when(Vf == "ɔ" ~ "r",
                        Vf == "œy" ~ "r",
                        Vf == "o" ~ "r",
                        Vf == "u" ~ "r",
                        Vf == "y" ~ "r",
                        TRUE ~ "nr")
  )

hrxf$roundingF <- as.factor(hrxf$roundingF)

hrxf <- hrxf %>%mutate(
  rhoticityP = case_when(
    Vp == "ax" ~ "x", #"a" w/ a hat but not distinguished because of font in R
    TRUE ~ "nx"
  )
)

hrxf$rhoticityP <- as.factor(hrxf$rhoticityP)

hrxf <- hrxf %>%mutate(
  rhoticityF = case_when(
    Vf == "ə" ~ "x",
    TRUE ~ "nx"
  )
)

hrxf$rhoticityF <- as.factor(hrxf$rhoticityF)

#frontness of preceeding vowel
hrxf <- hrxf %>%mutate(
  frtP = case_when(
    Vf == "ɔ" ~ "b",
    Vf == "ou" ~ "b",
    Vf == "u" ~ "b",
    Vf == "au" ~ "b",
    Vf == "ə" ~ "m",
    TRUE ~ "f"
  )
)

hrxf$frtnsP <- as.factor(hrxf$frtP)

```

```
#frontness of following vowel
hrxf <- hrxf %>%mutate(
  frtF = case_when(
    Vf == "ə" ~ "m",
    Vf == "ɔ" ~ "b",
    Vf == "o" ~ "b",
    Vf == "u" ~ "b",
    Vf == "ø" ~ "b",
    TRUE ~ "f"
  )
)

hrxf$frtnsF <- as.factor(hrxf$frtF)
```

```
library(lme4)
```

```
## Loading required package: Matrix
```

```

#contrast coding for the rounding of the preceeding vowel
contrast3 <- cbind (c(+0.5, -0.5))
colnames (contrast3) <- c ("+nr-r")
contrasts(hrxf$roundingP) <- contrast3

#contrast coding for the rounding of the following vowel
contrast4 <- cbind (c(+0.5, -0.5))
colnames (contrast4) <- c ("+nr-r")
contrasts(hrxf$roundingF) <- contrast4

#contrast coding for the rhoticity of the preceeding vowel
contrast5 <- cbind (c(+0.5, -0.5))
colnames (contrast5) <- c ("+nx-x")
contrasts(hrxf$rhoticityP) <- contrast5

#contrast coding for the rhoticity of the following vowel
contrast6 <- cbind (c(+0.5, -0.5))
colnames (contrast6) <- c ("+nx-x")
contrasts(hrxf$rhoticityF) <- contrast6

#contrast coding for the frontness of the preceeding vowel, using the schwa as the reference level
contrast7 <- cbind (c(-0.5, +0.5, 0), c(-1/3, -1/3, +2/3))#b,f,m
colnames (contrast7) <- c ("-b+f", "-bf+m")
contrasts(hrxf$frtnsP) <- contrast7

#contrast coding for the frontness of the following vowel, using the schwa as the reference level
contrast8 <- cbind (c(-0.5, +0.5, 0), c(-1/3, -1/3, +2/3))#b,f,m
colnames (contrast8) <- c ("-b+f", "-bf+m")
contrasts(hrxf$frtnsF) <- contrast8

#contrast coding for position, using the medials as the reference level
hrxf$Position <- as.factor(hrxf$Position)
contrast9 <- cbind(c(0, -0.5, +0.5),c(2/3, -1/3, -1/3))#f,i,m
colnames (contrast9) <- c ("-i+m", "+f-im")
contrasts(hrxf$Position) <- contrast9

#contrast coding for Sibilants
#hrxf$Sibilant <- as.factor(hrxf$Sibilant)
contrast10 <- cbind(c(-0.5, +0.5))
colnames(contrast10) <- c ("-ç+s")
contrasts(hrxf$Sibilant) <- contrast10

#contrast coding for Age
hrxf$Age <- as.factor(hrxf$Age)
contrast11 <- cbind(c(-0.5, +0.5))#0,1
colnames(contrast11 ) <- c ("-0+1")
contrasts(hrxf$Age) <- contrast11

all <- hrxf %>% mutate(
Gender = case_when(
  Subject == "10" ~ "M",
  Subject == "13" ~ "M",
  Subject == "19" ~ "M",
  Subject == "5" ~ "M",
  Subject == "14" ~ "M",

```

```
TRUE ~ "F")
)
#contrast coding for Gender
all$Gender <- as.factor(all$Gender)
contrast12 <- cbind(c(0.5, -0.5)) #F,M
colnames(contrast12) <- c("+F-M")
contrasts(all$Gender) <- contrast12

#checking whether c is treated as alphabetically preceding s
contrasts(hrxf$Sibilant)
```

```
## -c+s
## c -0.5
## s 0.5
```

```
write.csv(all, file = "forPraat.csv")
```

```
modelCoGERb <- lmer(CoGERb ~ Age*heightF*roundingF*frtnsF*rhoticityF*Sibilant + (Sibilant | Subject) + (Sibilant|Index), data = all, REML = TRUE, na.action = "na.omit")
```

```
## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients
```

```
## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
## Model failed to converge with max|grad| = 0.0160721 (tol = 0.002, component 1)
```

```
summary(modelCoGERb)
```

```

## Linear mixed model fit by REML ['lmerMod']
## Formula: CoGERb ~ Age * heightF * roundingF * frtnsF * rhoticityF * Sibilant +
##           (Sibilant | Subject) + (Sibilant | Index)
## Data: all
##
## REML criterion at convergence: 1291.6
##
## Scaled residuals:
##    Min     1Q Median     3Q    Max
## -3.8071 -0.6009  0.0639  0.6696  3.1470
##
## Random effects:
##   Groups   Name        Variance Std.Dev. Corr
##   Index   (Intercept) 0.01401  0.1184
##          Sibilant- $\zeta$ s 0.04357  0.2087  -0.51
##   Subject (Intercept) 0.75358  0.8681
##          Sibilant- $\zeta$ s 0.47182  0.6869  -0.69
##   Residual            0.50463  0.7104
## Number of obs: 551, groups: Index, 35; Subject, 16
##
## Fixed effects:
##                               Estimate Std. Error t value
## (Intercept)                27.31405  0.36030 75.810
## Age-0+1                  -0.51926  0.61370 -0.846
## heightF+h-1                 0.05857  0.18139  0.323
## heightF-hl+m                 0.19154  0.21068  0.909
## roundingF+nr-r                 0.38800  0.25076  1.547
## frtnsF-b+f                  -0.50929  0.50364 -1.011
## frtnsF-bf+m                 -1.18799  0.50980 -2.330
## rhoticityF+nx-x                 1.45602  0.63451  2.295
## Sibilant- $\zeta$ s                  2.44834  0.29015  8.438
## Age-0+1:heightF+h-1             -0.27244  0.29128 -0.935
## Age-0+1:heightF-hl+m             -0.33572  0.31510 -1.065
## Age-0+1:roundingF+nr-r              0.32456  0.38795  0.837
## heightF+h-1:roundingF+nr-r             -0.08816  0.33947 -0.260
## heightF-hl+m:roundingF+nr-r              0.89695  0.79821  1.124
## Age-0+1:frtnsF-b+f                  -1.10920  0.76850 -1.443
## Age-0+1:frtnsF-bf+m                 -1.00448  0.80252 -1.252
## Age-0+1:rhoticityF+nx-x                 1.53292  0.95237  1.610
## Age-0+1:Sibilant- $\zeta$ s                  0.69369  0.50025  1.387
## heightF+h-1:Sibilant- $\zeta$ s                 -0.47424  0.27792 -1.706
## heightF-hl+m:Sibilant- $\zeta$ s                 -0.64965  0.58013 -1.120
## roundingF+nr-r:Sibilant- $\zeta$ s                 0.27191  0.34571  0.787
## frtnsF-b+f:Sibilant- $\zeta$ s                  -0.87703  0.94297 -0.930
## Age-0+1:heightF+h-1:roundingF+nr-r             0.82026  0.58434  1.404
## Age-0+1:heightF-hl+m:roundingF+nr-r             1.77855  1.20050  1.482
## Age-0+1:heightF+h-1:Sibilant- $\zeta$ s                 0.11514  0.41972  0.274
## Age-0+1:heightF-hl+m:Sibilant- $\zeta$ s                 -0.86785  0.88861 -0.977
## Age-0+1:roundingF+nr-r:Sibilant- $\zeta$ s                 0.28064  0.54333  0.517
## Age-0+1:frtnsF-b+f:Sibilant- $\zeta$ s                 -1.52921  1.46547 -1.043

```

```

##
## Correlation matrix not shown by default, as p = 28 > 12.
## Use print(x, correlation=TRUE) or
##      vcov(x)      if you need it

```

```
## fit warnings:  
## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients  
## convergence code: 0  
## Model failed to converge with max|grad| = 0.0160721 (tol = 0.002, component 1)
```

```
confint(modelCoGERb)
```

```
## Computing profile confidence intervals ...
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```











```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep
```

```
## Warning in profile.merMod(object, which = parm, signames = oldNames, ...): non-
## monotonic profile for heightF+h-1:roundingF+nr-r
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0
```

```
## Warning in confint.thpr(pp, level = level, zeta = zeta): bad spline fit for
## heightF+h-1:roundingF+nr-r: falling back to linear interpolation
```

```

##                                     2.5 %      97.5 %
## .sig01                           0.00000000  0.17068075
## .sig02                           -1.00000000 1.00000000
## .sig03                           0.00000000  0.34136151
## .sig04                           0.60832298  1.15112948
## .sig05                           -0.88271761 -0.27914044
## .sig06                           0.45416796  0.92749477
## .sigma                            0.65929443  0.74543043
## (Intercept)                      26.68419971 27.90466956
## Age-0+1                           -1.67847923  0.63513211
## heightF+h-l                      -0.26613210  0.33061701
## heightF-hl+m                     -0.16476824  0.51994717
## roundingF+nr-r                   0.00691897  0.82000538
## frtnsF-b+f                       -1.37660281  0.25772032
## frtnsF-bf+m                      -2.05939103 -0.40869779
## rhoticityF+nx-x                  0.48085538  2.52760047
## Sibilant-€+s                      1.96092771  2.94739946
## Age-0+1:heightF+h-l              -0.83602244  0.29131773
## Age-0+1:heightF-hl+m              -0.94383913  0.27568367
## Age-0+1:roundingF+nr-r            -0.42439316  1.07684097
## heightF+h-l:roundingF+nr-r       -0.59954026  0.53233664
## heightF-hl+m:roundingF+nr-r     -0.32480989  2.25627647
## Age-0+1:frtnsF-b+f               -2.59834227  0.37584107
## Age-0+1:frtnsF-bf+m              -2.55930105  0.54622976
## Age-0+1:rheticityF+nx-x          -0.30671872  3.37897912
## Age-0+1:Sibilant-€+s              -0.24618551  1.64000452
## heightF+h-l:Sibilant-€+s         -0.92345696 -0.02085844
## heightF-hl+m:Sibilant-€+s        -1.63087852  0.24573043
## roundingF+nr-r:Sibilant-€+s      -0.25163796  0.89089903
## frtnsF-b+f:Sibilant-€+s          -2.50319119  0.56889183
## Age-0+1:heightF+h-l:roundingF+nr-r -0.31456668  1.94706674
## Age-0+1:heightF-hl+m:roundingF+nr-r -0.54087431  4.10502848
## Age-0+1:heightF+h-l:Sibilant-€+s -0.70122537  0.92313484
## Age-0+1:heightF-hl+m:Sibilant-€+s -2.58994201  0.84864633
## Age-0+1:roundingF+nr-r:Sibilant-€+s -0.77213916  1.33042939
## Age-0+1:frtnsF-b+f:Sibilant-€+s -4.36714047  1.30389431

```

```

modelStdevErb <- lmer(StdevErb ~ Age*heightF*roundingF*frtnsF*rheticityF*Sibilant +
(Sibilant | Subject) + (Sibilant|Index), data = all, REML = TRUE)

```

```

## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients

```

```

## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
## Model failed to converge with max|grad| = 0.0214093 (tol = 0.002, component 1)

```

```

summary(modelStdevErb)

```

```

## Linear mixed model fit by REML ['lmerMod']
## Formula: StdevErb ~ Age * heightF * roundingF * frtnsF * rhoticityF *
##           Sibilant + (Sibilant | Subject) + (Sibilant | Index)
## Data: all
##
## REML criterion at convergence: 967.9
##
## Scaled residuals:
##   Min     1Q Median     3Q    Max
## -3.4418 -0.6159 -0.0852  0.6341  3.5529
##
## Random effects:
##   Groups   Name        Variance Std.Dev. Corr
##   Index   (Intercept) 0.00843  0.09182
##          Sibilant- $\zeta$ s 0.21554  0.46427 -0.95
##   Subject (Intercept) 0.04515  0.21249
##          Sibilant- $\zeta$ s 0.50487  0.71054 -0.66
##   Residual            0.27151  0.52107
## Number of obs: 551, groups: Index, 35; Subject, 16
##
## Fixed effects:
##                               Estimate Std. Error t value
## (Intercept)                3.889609  0.338173 11.502
## Age-0+1                  -0.378568  0.335423 -1.129
## heightF+h-1                0.006518  0.192221  0.034
## heightF-hl+m              -0.058036  0.250735 -0.231
## roundingF+nr-r              -0.479657  0.281104 -1.706
## frtnsF-b+f                 -0.132032  0.578145 -0.228
## frtnsF-bf+m                 0.108689  0.553248  0.196
## rhoticityF+nx-x             -0.817053  0.743353 -1.099
## Sibilant- $\zeta$ s              -1.109329  0.317944 -3.489
## Age-0+1:heightF+h-1         0.256755  0.213664  1.202
## Age-0+1:heightF-hl+m        0.167635  0.231163  0.725
## Age-0+1:roundingF+nr-r       0.059524  0.284334  0.209
## heightF+h-1:roundingF+nr-r   0.011528  0.306441  0.038
## heightF-hl+m:roundingF+nr-r  0.050227  0.932427  0.054
## Age-0+1:frtnsF-b+f          -0.257409  0.563487 -0.457
## Age-0+1:frtnsF-bf+m         -0.306065  0.588476 -0.520
## Age-0+1:rhoticityF+nx-x      -0.200029  0.698151 -0.287
## Age-0+1:Sibilant- $\zeta$ s        0.653116  0.444364  1.470
## heightF+h-1:Sibilant- $\zeta$ s      0.329742  0.326793  1.009
## heightF-hl+m:Sibilant- $\zeta$ s      -0.078569  0.659438 -0.119
## roundingF+nr-r:Sibilant- $\zeta$ s      0.528454  0.381269  1.386
## frtnsF-b+f:Sibilant- $\zeta$ s        -0.309544  1.051600 -0.294
## Age-0+1:heightF+h-1:roundingF+nr-r -0.312639  0.428620 -0.729
## Age-0+1:heightF-hl+m:roundingF+nr-r -0.263497  0.880585 -0.299
## Age-0+1:heightF+h-1:Sibilant- $\zeta$ s      -0.076150  0.307931 -0.247
## Age-0+1:heightF-hl+m:Sibilant- $\zeta$ s      -0.449609  0.651971 -0.690
## Age-0+1:roundingF+nr-r:Sibilant- $\zeta$ s      -0.155608  0.398662 -0.390
## Age-0+1:frtnsF-b+f:Sibilant- $\zeta$ s      -0.972293  1.075209 -0.904

```

```

##
## Correlation matrix not shown by default, as p = 28 > 12.
## Use print(x, correlation=TRUE) or
##      vcov(x)      if you need it

```

```
## fit warnings:  
## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients  
## convergence code: 0  
## Model failed to converge with max|grad| = 0.0214093 (tol = 0.002, component 1)
```

```
confint(modelStdevErb)
```

```
## Computing profile confidence intervals ...
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```

```
## Warning in FUN(X[[i]], ...): non-monotonic profile for .sig01
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```

```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in  
## profile: using minstep
```









```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): Last two rows have
## identical or NA .zeta values: using minstep
```

```
## Warning in FUN(X[[i]], ...): non-monotonic profile for .sig02
```



```
## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep

## Warning in nextpar(mat, cc, i, delta, lowcut, upcut): unexpected decrease in
## profile: using minstep
```

```
## Warning in FUN(X[[i]], ...): non-monotonic profile for .sig03
```



```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0

## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted
## to 0
```

```
## Warning in confint.thpr(pp, level = level, zeta = zeta): bad spline fit
## for .sig01: falling back to linear interpolation
```

```
## Warning in confint.thpr(pp, level = level, zeta = zeta): bad spline fit
## for .sig02: falling back to linear interpolation
```

```
## Warning in regularize.values(x, y, ties, missing(ties)): collapsing to unique
## 'x' values
```

```
## Warning in confint.thpr(pp, level = level, zeta = zeta): bad spline fit
## for .sig03: falling back to linear interpolation
```

	2.5 %	97.5 %
##	0.01223826	0.26139626
## .sig01	-1.00000000	0.28504655
## .sig02	0.02408719	0.49838851
## .sig03	0.12689935	0.31246575
## .sig04	-0.90113467	-0.20065906
## .sig05	0.47097988	1.00654482
## .sig06	0.48373156	0.54879122
## .sigma	3.35713137	4.46662723
## (Intercept)	-1.02665844	0.26760343
## Age-0+1	-0.28973442	0.35476785
## heightF+h-l	-0.45715913	0.37171487
## heightF-hl+m	-0.96841993	-0.04272955
## roundingF+nr-r	-1.03330313	0.87979694
## frtnsF-b+f	-0.75292453	1.05822067
## frtnsF-bf+m	-2.09440292	0.35144218
## rhoticityF+nx-x	-1.65784367	-0.57556537
## Sibilant-¢+s	-0.15748311	0.67122704
## Age-0+1:heightF+h-l	-0.28131092	0.61528234
## Age-0+1:heightF-hl+m	-0.49382231	0.61020694
## Age-0+1:roundingF+nr-r	-0.54907473	0.50450010
## heightF+h-l:roundingF+nr-r	-1.57546140	1.51006401
## heightF-hl+m:roundingF+nr-r	-1.34980665	0.83568524
## Age-0+1:frtnsF-b+f	-1.45028293	0.83367627
## Age-0+1:frtnsF-bf+m	-1.55568188	1.15395890
## Age-0+1:rhoticityF+nx-x	-0.20698480	1.50655547
## Age-0+1:Sibilant-¢+s	-0.20600328	0.86382762
## heightF+h-l:Sibilant-¢+s	-1.11134819	1.05424718
## heightF-hl+m:Sibilant-¢+s	-0.17666393	1.11944491
## roundingF+nr-r:Sibilant-¢+s	-1.94871244	1.53279306
## Age-0+1:heightF+h-l:roundingF+nr-r	-1.14153487	0.52096127
## Age-0+1:heightF-hl+m:roundingF+nr-r	-1.96757143	1.44853682
## Age-0+1:heightF+h-l:Sibilant-¢+s	-0.67121171	0.52314950
## Age-0+1:heightF-hl+m:Sibilant-¢+s	-1.71941801	0.81011290
## Age-0+1:roundingF+nr-r:Sibilant-¢+s	-0.92585908	0.62047228
## Age-0+1:frtnsF-b+f:Sibilant-¢+s	-3.06513635	1.10609679

```
modelCoGHz <- lmer(CoG ~ Age*heightF*roundingF*rhoticityF*Sibilant + (Sibilant | Subject) + (Sibilant|Index), data = all, REML = TRUE)
```

```
## fixed-effect model matrix is rank deficient so dropping 24 columns / coefficients
```

```
## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
## Model failed to converge with max|grad| = 0.00285879 (tol = 0.002, component 1)
```

```
summary(modelCoGHz)
```

```

## Linear mixed model fit by REML ['lmerMod']
## Formula: CoG ~ Age * heightF * roundingF * rhoticityF * Sibilant + (Sibilant |
##           Subject) + (Sibilant | Index)
##           Data: all
##
## REML criterion at convergence: 8002.3
##
## Scaled residuals:
##   Min     1Q Median     3Q    Max
## -3.3049 -0.5497 -0.0395  0.5762  3.4880
##
## Random effects:
##   Groups   Name        Variance Std.Dev. Corr
##   Index   (Intercept) 6890     83.01
##          Sibilant-€+s 42632    206.48   0.85
##   Subject (Intercept) 270077   519.69
##          Sibilant-€+s 110648   332.64   -0.36
##   Residual           168076   409.97
## Number of obs: 551, groups: Index, 35; Subject, 16
##
## Fixed effects:
##                               Estimate Std. Error t value
## (Intercept)                  4873.76   156.13  31.216
## Age-0+1                     -60.13    291.99  -0.206
## heightF+h-l                  173.95   176.50   0.986
## heightF-hl+m                 78.27    126.25   0.620
## roundingF+nr-r                10.13    119.97   0.084
## rhoticityF+nx-x               107.41   124.43   0.863
## Sibilant-€+s                 1546.18   154.91  9.981
## Age-0+1:heightF+h-l          141.00   204.34   0.690
## Age-0+1:heightF-hl+m         94.29    141.16   0.668
## Age-0+1:roundingF+nr-r       14.16    145.33   0.097
## heightF+h-l:roundingF+nr-r   -451.49   353.11  -1.279
## heightF-hl+m:roundingF+nr-r  -378.33   275.86  -1.371
## Age-0+1:rhoticityF+nx-x      168.42   219.43   0.768
## Age-0+1:Sibilant-€+s         391.03   226.94   1.723
## heightF+h-l:Sibilant-€+s    -452.65   334.47  -1.353
## heightF-hl+m:Sibilant-€+s   -74.54    129.86  -0.574
## roundingF+nr-r:Sibilant-€+s -189.23   240.07  -0.788
## Age-0+1:heightF+h-l:roundingF+nr-r -50.57   409.02  -0.124
## Age-0+1:heightF-hl+m:roundingF+nr-r -153.58   281.96  -0.545
## Age-0+1:heightF+h-l:Sibilant-€+s -428.07   409.47  -1.045
## Age-0+1:heightF-hl+m:Sibilant-€+s -104.50   162.15  -0.644
## Age-0+1:roundingF+nr-r:Sibilant-€+s -213.13   280.03  -0.761
## heightF+h-l:roundingF+nr-r:Sibilant-€+s  368.38   668.23   0.551
## Age-0+1:heightF+h-l:roundingF+nr-r:Sibilant-€+s  948.48   816.45   1.162

```

```

##
## Correlation matrix not shown by default, as p = 24 > 12.
## Use print(x, correlation=TRUE) or
##   vcov(x)      if you need it

```

```
## fit warnings:  
## fixed-effect model matrix is rank deficient so dropping 24 columns / coefficients  
## convergence code: 0  
## Model failed to converge with max|grad| = 0.00285879 (tol = 0.002, component 1)
```

```
modelStdevHz <- lmer(Stdev ~ Age*heightF*frtnsF*roundingF*rhoticityF*Sibilant + (Sibilant | Subject) + (Sibilant|Index), data = all, REML = TRUE, na.action = "na.omit")
```

```
## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients
```

```
## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :  
## Model failed to converge with max|grad| = 0.00404318 (tol = 0.002, component 1)
```

```
summary(modelStdevHz)
```

```

## Linear mixed model fit by REML ['lmerMod']
## Formula: Stdev ~ Age * heightF * frtnsF * roundingF * rhoticityF * Sibilant +
##           (Sibilant | Subject) + (Sibilant | Index)
## Data: all
##
## REML criterion at convergence: 7357.5
##
## Scaled residuals:
##   Min     1Q Median     3Q    Max
## -2.9558 -0.5757 -0.0277  0.6168  4.6154
##
## Random effects:
##   Groups   Name        Variance Std.Dev. Corr
##   Index   (Intercept) 3016     54.92
##          Sibilant- $\zeta$ +s 4314     65.68  -0.71
##   Subject (Intercept) 43174    207.78
##          Sibilant- $\zeta$ +s 54112    232.62  -0.11
##   Residual           54926    234.36
## Number of obs: 551, groups: Index, 35; Subject, 16
##
## Fixed effects:
##                               Estimate Std. Error t value
## (Intercept)                2046.37    88.97 23.000
## Age-0+1                  -245.58   141.14 -1.740
## heightF+h-l                300.54   268.06  1.121
## heightF-hl+m               132.94   112.49  1.182
## frtnsF-b+f                 40.60   150.26  0.270
## frtnsF-bf+m                -125.58   61.32 -2.048
## roundingF+nr-r              -215.50   62.82 -3.430
## rhoticityF+nx-x              -215.26   165.96 -1.297
## Sibilant- $\zeta$ +s                148.77   102.09  1.457
## Age-0+1:heightF+h-l            299.16   359.67  0.832
## Age-0+1:heightF-hl+m            132.18   162.83  0.812
## Age-0+1:frtnsF-b+f              -76.81   204.30 -0.376
## Age-0+1:frtnsF-bf+m             -207.38   101.69 -2.039
## heightF+h-l:frtnsF-b+f            -564.20   580.99 -0.971
## Age-0+1:roundingF+nr-r              -76.25   89.92 -0.848
## heightF+h-l:roundingF+nr-r            -41.51   113.90 -0.364
## Age-0+1:rhoticityF+nx-x              166.80   209.20  0.797
## Age-0+1:Sibilant- $\zeta$ +s                389.80   167.23  2.331
## heightF+h-l:Sibilant- $\zeta$ +s                29.28   101.26  0.289
## heightF-hl+m:Sibilant- $\zeta$ +s              -196.43   208.78 -0.941
## frtnsF-b+f:Sibilant- $\zeta$ +s                -417.24   337.63 -1.236
## roundingF+nr-r:Sibilant- $\zeta$ +s                178.15   123.95  1.437
## Age-0+1:heightF+h-l:frtnsF-b+f            -394.91   792.34 -0.498
## Age-0+1:heightF+h-l:roundingF+nr-r            -29.57   192.79 -0.153
## Age-0+1:heightF+h-l:Sibilant- $\zeta$ +s                116.51   138.49  0.841
## Age-0+1:heightF-hl+m:Sibilant- $\zeta$ +s            -421.41   293.33 -1.437
## Age-0+1:frtnsF-b+f:Sibilant- $\zeta$ +s            -662.53   483.69 -1.370
## Age-0+1:roundingF+nr-r:Sibilant- $\zeta$ +s            -64.56   179.30 -0.360

```

```

##
## Correlation matrix not shown by default, as p = 28 > 12.
## Use print(x, correlation=TRUE) or
##      vcov(x)      if you need it

```

```
## fit warnings:  
## fixed-effect model matrix is rank deficient so dropping 116 columns / coefficients  
## convergence code: 0  
## Model failed to converge with max|grad| = 0.00404318 (tol = 0.002, component 1)
```

```
coefficients <- coef(summary(modelStdevHz))  
confint(modelStdevHz)
```

```
## Computing profile confidence intervals ...
```

```
## Warning in FUN(X[[i]], ...): non-monotonic profile for .sig02
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in cov2sdcor(tcrossprod(m) * s^2): NA values in sdcor matrix converted  
## to 0
```

```
## Warning in confint.thpr(pp, level = level, zeta = zeta): bad spline fit  
## for .sig02: falling back to linear interpolation
```

```

##                                     2.5 %      97.5 %
## .sig01                           0.0000000  65.9510529
## .sig02                           -1.0000000  1.0000000
## .sig03                           0.0000000 131.9020758
## .sig04                           139.6176769 290.3354402
## .sig05                           -0.5523394  0.3874256
## .sig06                           148.9611129 332.3548121
## .sigma                            217.5298606 246.0760567
## (Intercept)                     1894.9471161 2196.1945465
## Age-0+1                          -511.4539258 19.9143918
## heightF+h-l                      -144.3038269 719.5988157
## heightF-hl+m                     -54.8226516 307.6330711
## frtnsF-b+f                        -208.5586949 277.1887727
## frtnsF-bf+m                      -220.2300549 -23.4770969
## roundingF+nr-r                   -317.7577047 -113.7702679
## rhoticityF+nx-x                  -478.1404893 59.8139685
## Sibilant-¢+s                      -25.8143634 318.8241547
## Age-0+1:heightF+h-l              -394.9209271 997.4679767
## Age-0+1:heightF-hl+m              -181.7801086 448.5612286
## Age-0+1:frtnsF-b+f                -470.7945317 320.1173321
## Age-0+1:frtnsF-bf+m               -405.4814781 -11.8249032
## heightF+h-l:frtnsF-b+f           -1461.1966603 410.7601344
## Age-0+1:roundingF+nr-r            -250.5042324 97.5936362
## heightF+h-l:roundingF+nr-r       -241.3220814 131.8037116
## Age-0+1:rhoticityF+nx-x          -238.7685533 571.1353774
## Age-0+1:Sibilant-¢+s              75.4910200 705.5187786
## heightF+h-l:Sibilant-¢+s         -134.4253388 192.9964789
## heightF-hl+m:Sibilant-¢+s        -519.2342870 152.2730036
## frtnsF-b+f:Sibilant-¢+s          -937.7313494 154.7954548
## roundingF+nr-r:Sibilant-¢+s      -38.0232422 369.0190778
## Age-0+1:heightF+h-l:frtnsF-b+f   -1933.0655823 1134.3301029
## Age-0+1:heightF+h-l:roundingF+nr-r -403.0003662 343.4134050
## Age-0+1:heightF+h-l:Sibilant-¢+s -151.5504892 384.6049086
## Age-0+1:heightF-hl+m:Sibilant-¢+s -991.3621139 144.1249306
## Age-0+1:frtnsF-b+f:Sibilant-¢+s -1601.9233725 270.5412084
## Age-0+1:roundingF+nr-r:Sibilant-¢+s -410.9762384 283.1054229

```

```
shapiro.test(residuals(modelCoGHz))
```

```

##                                     Shapiro-Wilk normality test
## data: residuals(modelCoGHz)
## W = 0.9852, p-value = 2.186e-05

```

```
shapiro.test(residuals(modelStdevHz))
```

```

##                                     Shapiro-Wilk normality test
## data: residuals(modelStdevHz)
## W = 0.98925, p-value = 0.000459

```

```
shapiro.test(residuals(modelCoGERb))
```

```
##  
## Shapiro-Wilk normality test  
##  
## data: residuals(modelCoGERb)  
## W = 0.99539, p-value = 0.1023
```

```
shapiro.test(residuals(modelStddevErb))
```

```
##  
## Shapiro-Wilk normality test  
##  
## data: residuals(modelStddevErb)  
## W = 0.99025, p-value = 0.001034
```

```
#calculating the mean CoG of /s/ in speaker 8  
library(dplyr)  
CoG8s <- fulltable%>%  
  filter(Subject == "8", Sibilant == "s")%>%  
  select(CoG)%>%  
  mutate(CoG = as.numeric(CoG))  
mean(CoG8s$CoG)
```

```
## [1] 4607.294
```

```
#calculating the mean CoG of /ç/ in speaker 8  
library(dplyr)  
CoG8ç <- fulltable%>%  
  filter(Subject == "8", Sibilant == "ç")%>%  
  select(CoG)%>%  
  mutate(CoG = as.numeric(CoG))  
mean(CoG8ç$CoG)
```

```
## [1] 3683.696
```

```
#calculating the mean CoG of /s/ in speaker 13  
library(dplyr)  
CoG13s <- fulltable%>%  
  filter(Subject == "13", Sibilant == "s")%>%  
  select(CoG)%>%  
  mutate(CoG = as.numeric(CoG))  
mean(CoG13s$CoG)
```

```
## [1] 5041.943
```

```
#calculating the mean CoG of /ç/ in speaker 13
library(dplyr)
CoG13ç <- fulltable%>%
  filter(Subject == "13", Sibilant == "ç")%>%
  select(CoG)%>%
  mutate(CoG = as.numeric(CoG))
mean(CoG13ç$CoG)
```

```
## [1] 3292.652
```

```
#calculating the mean of CoG of /s/ in younger speakers
library(dplyr)
CoGYS<- fulltable %>%
  filter(Age == "1", Sibilant == "s")%>%
  select(CoG)%>%
  mutate(CoG = as.numeric(CoG))
mean(CoGYS$CoG)
```

```
## [1] 5454.341
```

```
#calculating the mean of CoG of /ç/ in younger speakers
library(dplyr)
CoGYç<- fulltable %>%
  filter(Age == "1", Sibilant == "ç")%>%
  select(CoG)%>%
  mutate(CoG = as.numeric(CoG))
mean(CoGYç$CoG)
```

```
## [1] 4107.141
```

## F R Script for Classification Trees and Random Forests

# TreesAndForests

Xinyu Zhang

6/29/2020

```
fulltable <- read.csv("NewResult.csv")
#head(fulltable)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
young <- fulltable %>%
  filter(Age == 1) %>%
  dplyr::select(-Subject, -Age, -Index, -IPA, -CoG, -Stdev, -Position, -Vp, -Vf, -CoG
Erb, -StdevErb)
head(young)
```

```

##   Sibilant      bin1      bin2      bin3      bin4      bin5      bin6
## 1      s -9.052738 -8.556997 -4.870987 -4.218492 -4.850850 -6.4336164
## 2      s -2.948580 -4.879446 -2.060097 -2.011352  2.026905 -1.1402887
## 3      s -6.117940 -7.691914 -3.942539 -2.621272 -0.913079  6.7347466
## 4      s -7.470004 -6.927923 -2.576884 -8.418656 -8.956720 -4.4691433
## 5      s -3.647721 -7.621700 -4.805937 -9.255555 -1.093329  0.9828912
## 6      s -5.793275 -5.878609 -1.390356 -4.743696 -5.864162 10.2314562
##      bin7      bin8      bin9      bin10     bin11     bin12     bin13
## 1 -9.370378 -7.752136 -8.965112  0.4495370  3.8068596 11.1640723 16.0745454
## 2 -4.632750 -5.243153 -1.184720  1.5086332  2.6536686  3.3904228  7.8810884
## 3 -3.460427 -5.391177 -0.934101  4.3435204  0.9056229  3.5931128 10.1739540
## 4 -7.916696 -6.002341 -8.196552 -0.8540085 -1.5642317 -5.8005777  0.6155142
## 5 -6.337333 -7.819851 -5.640433 -1.6501971 -2.7620005  0.1089989  4.4720045
## 6  1.489044 -1.819993 -4.039301  6.2573727  5.6231383  6.8641713  9.4173490
##      bin14     bin15     bin16     bin17     bin18     bin19     bin20
## 1 16.547785 14.194455 13.132448 11.870301 11.218071 12.07828  9.152985
## 2 13.128567 15.637285 13.795315 20.076671 16.624866 16.03775 14.326997
## 3 14.250188 17.706188 13.647122 13.380362 11.903631 12.47035  8.167565
## 4  2.981070  8.416862  2.171053  2.837635  6.971331 10.02746  9.496309
## 5  7.862442 10.683707 13.786008 20.300074 23.024090 17.87379 13.381629
## 6 11.038473 14.321497 15.186060 17.908704 22.731755 20.47064 19.450198
##      bin21     bin22     bin23     bin24     bin25     bin26     bin27
## 1 12.896152  6.998751  8.270279  6.748858  7.035672  8.845540 11.705263
## 2 14.517203 12.050778  9.508779  9.654701 11.066853 10.855544 10.907322
## 3  8.935988  7.046180  6.754974  7.694643  6.787817  7.959011  5.268743
## 4 10.276865  8.726646 10.692209 12.919726  8.616948  7.775069  9.993443
## 5 16.871098 13.175957 12.240556 12.854929  9.639143  8.937537  9.873585
## 6 20.236146 14.840057 17.694142 16.608715 14.276433 14.588616 13.873548
##      bin28     bin29     bin30     bin31     bin32     bin33     bin34
## 1 13.099344  5.840506  6.105147 10.665144 13.831340 19.000859 16.323290
## 2  6.748886  9.402706 10.395039  8.402617  9.725059 13.127745 12.165429
## 3  5.795232  2.518056  6.897152 10.219491  9.305398 11.885174 10.357887
## 4  8.809584  9.509015  6.250082  7.822943  6.502482  5.431262  2.821759
## 5 11.527875 11.912453 11.725899 12.562875  9.106247 12.484106  9.748338
## 6 11.423138 13.023069 12.058883 14.845923 12.886212 13.515536 13.205338
##      bin35     bin36     bin37     bin38
## 1 12.727929 13.035199  7.8862157  8.5584810
## 2  9.993567  9.396044  7.8533025  6.9327306
## 3  9.125429  7.752784  7.4645417  3.2338963
## 4 -3.354909 -1.112687 -1.6734236 -0.4542861
## 5  6.150656  5.909042  0.4569055  2.6961351
## 6 11.319922  8.375685  7.4774573  2.8314308

```

```

old <- fulltable %>%
  filter(Age == 0) %>%
  dplyr::select(-Subject, -Age, -Index, -IPA, -CoG, -Stdev, -Position, -Vp, -Vf, -CoG
Erb, -StdevErb)
head(old)

```

```

##   Sibilant      bin1      bin2      bin3      bin4      bin5      bin6
## 1      s  0.03079822  5.368053  1.3356620  3.8024194  7.638946  8.518428
## 2      s -1.07993498  4.732777  4.1342010  3.8134596  9.258956  9.534831
## 3      s -1.89311451  2.843402 -1.0546411  0.8310224 10.217786  8.706969
## 4      s -2.62480302  3.399465 -3.0490131 -1.1306421  4.636302  5.944460
## 5      s -1.76925924  2.587684 -0.4604427  1.8163580  6.344636  7.024475
## 6      c -4.35499190 -4.189306 -2.5512102  3.1702479  9.836333 19.194536
##      bin7      bin8      bin9      bin10     bin11     bin12     bin13
## 1  3.9305149  7.1123151 15.230600 17.545210 19.596762 22.25446 22.374452
## 2  2.7117942  6.1003611  8.216539 11.317408 10.496400 21.12455 25.931900
## 3  1.3153554  0.7429933  8.701973  9.501857 18.532883 26.15295 28.422889
## 4  0.6982653  0.2469375  7.000124  8.336731 11.804192 19.63063 25.143991
## 5  3.1415236  4.8106590  7.773033 10.197163  9.174671 16.51992 19.929402
## 6 16.6411375 15.8706811 11.708023 11.532916  7.521156  5.11676  6.078382
##      bin14     bin15     bin16     bin17     bin18     bin19     bin20
## 1 16.807175 16.849622 19.824146 15.705370 15.731594 17.366291 15.171438
## 2 23.925333 21.541203 22.652723 23.515866 22.685180 22.588432 17.838364
## 3 19.400775 19.631410 21.793965 17.189007 16.072513 17.223698 12.740024
## 4 23.287909 22.252068 23.965798 22.861844 22.989191 19.770836 17.148074
## 5 19.566929 18.510509 14.033934 19.170929 17.259525 17.562984 12.246112
## 6  1.008853  7.788682  8.780875  9.029114  5.842555  8.395622  9.309483
##      bin21     bin22     bin23     bin24     bin25     bin26     bin27     bin28
## 1 22.50508 22.26885 18.184247 24.981560 25.13370 16.813799 20.099184 21.0763254
## 2 21.81495 24.60651 20.602070 22.524704 23.01943 16.198076 16.844628 18.6271211
## 3 20.13430 20.47248 16.252307 16.363761 16.04937 8.279066 11.772129 14.5855535
## 4 18.70550 19.35043 17.030038 16.664481 18.57928 12.715267 12.068423 17.0858940
## 5 15.72888 16.38258 12.786221 11.935313 14.18757 9.113775 11.132812 14.3556308
## 6 17.94750 15.25452  9.562816  9.191713  6.80332 -1.594965  2.154858  0.2669866
##      bin29     bin30     bin31     bin32     bin33     bin34     bin35
## 1 17.869202 14.208469  8.541668 10.113432 11.542438  8.343518  9.655772
## 2 17.947814 21.079367 15.129374 16.850892 13.509220 10.642141 10.924920
## 3 11.682313  7.478382  7.020007  5.375419  1.836066  3.119932  5.005802
## 4 15.263576 16.560007 12.458058 10.117296 12.824886  8.218765  8.858684
## 5 12.349997 14.109316 12.141184  6.679127 10.883913  4.958634  3.895202
## 6 -4.606697 -7.917246 -6.766860 -4.830006 -4.852801 -7.000025 -6.344956
##      bin36     bin37     bin38
## 1 11.739608 10.6788560  7.6120026
## 2 11.276608 10.1731825  8.1175219
## 3  3.533633  0.9776531  4.5100433
## 4  9.822343  7.9448941  6.3261298
## 5  5.768801  5.0784504  2.3530547
## 6 -1.665697 -3.6907411 -0.1649988

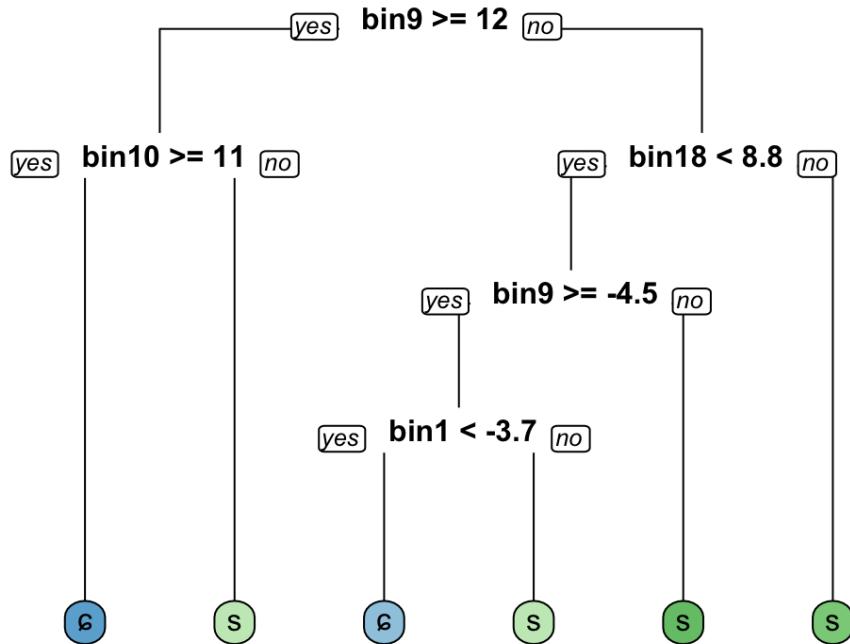
```

single tree

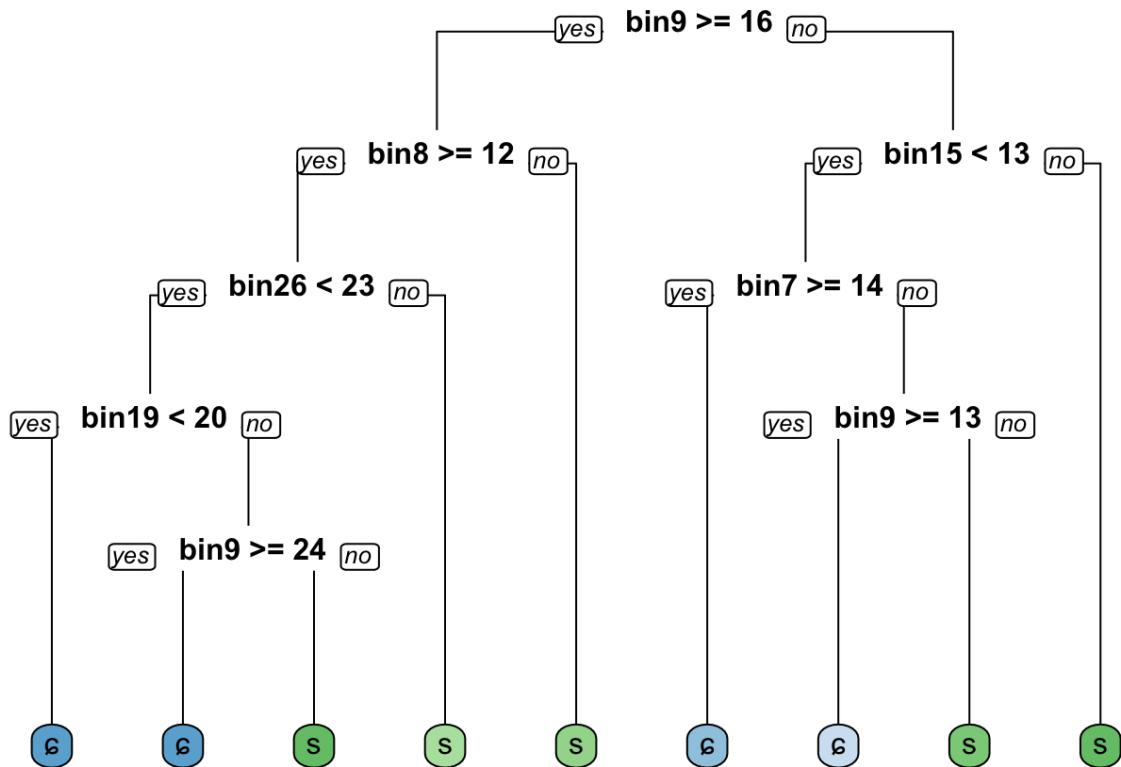
```

library(rpart)
sibtreeY <- rpart(formula = Sibilant ~ .,
                   data = young,
                   method = "class")
library(rpart.plot)
rpart.plot(x = sibtreeY, yesno = 2, type = 0, extra = 0)

```



```
sibtree0 <- rpart(formula = Sibilant ~ .,  
                    data = old,  
                    method = "class")  
rpart.plot(x = sibtree0, yesno = 2, type = 0, extra = 0)
```



Actual training of single trees:

Partitioning:

```

yn <- nrow(young)
yn_train = round(0.80*yn)
#set seed for reproducibility
set.seed(1830)
y_train_indices <- sample(1:yn, yn_train)
y_train <- young[y_train_indices,]
y_test <- young[-y_train_indices,]

#same for the other age group
on <- nrow(old)
on_train = round(0.8*on)
#set seed for reproducibility
set.seed(1834)
#split
o_train_indices <- sample(1:on, on_train)
o_train <- old[o_train_indices,]
o_test <- old[-o_train_indices,]

```

The models:

```

y_tree <- rpart(formula = Sibilant ~ .,
                  data = y_train,
                  method = "class")
y_tree

```

```

## n= 377
##
## node), split, n, loss, yval, (yprob)
##      * denotes terminal node
##
## 1) root 377 152 s (0.40318302 0.59681698)
##    2) bin9>=12.1626 96   8 c (0.91666667 0.08333333)
##      4) bin10>=10.70791 89   3 c (0.96629213 0.03370787) *
##      5) bin10< 10.70791 7   2 s (0.28571429 0.71428571) *
##    3) bin9< 12.1626 281   64 s (0.22775801 0.77224199)
##      6) bin17< 8.561642 111   54 s (0.48648649 0.51351351)
##      12) bin8>=-3.876849 57   4 c (0.92982456 0.07017544) *
##      13) bin8< -3.876849 54   1 s (0.01851852 0.98148148) *
##    7) bin17>=8.561642 170   10 s (0.05882353 0.94117647) *

```

```

o_tree <- rpart(formula = Sibilant ~ .,
                 data = o_train,
                 method = "class")
o_tree

```

```

## n= 356
##
## node), split, n, loss, yval, (yprob)
##      * denotes terminal node
##
## 1) root 356 141 s (0.39606742 0.60393258)
##    2) bin9>=16.21045 125   20 c (0.84000000 0.16000000)
##      4) bin7>=11.45434 108   9 c (0.91666667 0.08333333) *
##      5) bin7< 11.45434 17   6 s (0.35294118 0.64705882) *
##    3) bin9< 16.21045 231   36 s (0.15584416 0.84415584)
##      6) bin15< 12.81072 86   31 s (0.36046512 0.63953488)
##      12) bin7>=7.709157 38   12 c (0.68421053 0.31578947)
##        24) bin9>=11.88803 17   0 c (1.00000000 0.00000000) *
##        25) bin9< 11.88803 21   9 s (0.42857143 0.57142857)
##          50) bin15< 7.032271 7   0 c (1.00000000 0.00000000) *
##          51) bin15>=7.032271 14   2 s (0.14285714 0.85714286) *
##        13) bin7< 7.709157 48   5 s (0.10416667 0.89583333) *
##      7) bin15>=12.81072 145   5 s (0.03448276 0.96551724) *

```

Evaluating the trees by computing a confusion matrix:

```
library(caret)
```

```
## Loading required package: lattice
```

```
## Loading required package: ggplot2
```

```

#generating thee predicted classes:
class_predictionY <- predict(object = y_tree,
                             newdata = y_test,
                             type = "class")
class_predictionO <- predict(object = o_tree,
                             newdata = o_test,
                             type = "class")
#calculating the confusion matrix for the test set
confusionMatrix(data = class_predictionY,
                 reference = y_test$Sibilant)

```

```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction  C   S
##             C 33  2
##             S  7 52
##
##             Accuracy : 0.9043
##                 95% CI : (0.826, 0.9553)
##     No Information Rate : 0.5745
##     P-Value [Acc > NIR] : 1.948e-12
##
##             Kappa : 0.8009
##
## McNemar's Test P-Value : 0.1824
##
##             Sensitivity : 0.8250
##             Specificity  : 0.9630
##             Pos Pred Value : 0.9429
##             Neg Pred Value : 0.8814
##             Prevalence    : 0.4255
##             Detection Rate : 0.3511
##     Detection Prevalence : 0.3723
##             Balanced Accuracy : 0.8940
##
##             'Positive' Class : C
##

```

```

confusionMatrix(data = class_predictionO,
                 reference = o_test$Sibilant)

```

```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction   C   S
##                 C 36  4
##                 S  7 42
##
##                         Accuracy : 0.8764
##                         95% CI : (0.7896, 0.9367)
## No Information Rate : 0.5169
## P-Value [Acc > NIR] : 6.293e-13
##
##                         Kappa : 0.752
##
## McNemar's Test P-Value : 0.5465
##
##                         Sensitivity : 0.8372
##                         Specificity  : 0.9130
## Pos Pred Value : 0.9000
## Neg Pred Value : 0.8571
## Prevalence    : 0.4831
## Detection Rate : 0.4045
## Detection Prevalence : 0.4494
## Balanced Accuracy : 0.8751
##
## 'Positive' Class : C
##

```

Bagging:

```

library(ipred)
#setting seed for reproducibility
set.seed(1943)
y_bag <- bagging(formula = Sibilant ~ .,
                  data = y_train,
                  coob = TRUE)
y_bag

```

```

##
## Bagging classification trees with 25 bootstrap replications
##
## Call: bagging.data.frame(formula = Sibilant ~ ., data = y_train, coob = TRUE)
##
## Out-of-bag estimate of misclassification error:  0.0477

```

```

o_bag <- bagging(formula = Sibilant ~ .,
                  data = o_train,
                  coob = TRUE)
o_bag

```

```

## 
## Bagging classification trees with 25 bootstrap replications
## 
## Call: bagging.data.frame(formula = Sibilant ~ ., data = o_train, coob = TRUE)
## 
## Out-of-bag estimate of misclassification error:  0.1067

```

Evaluating the bagged trees:

```

library(caret)
#generating thee predicted classes:
class_predictionYbag <- predict(object = y_bag,
                                 newdata = y_test,
                                 type = "class")
class_predictionObag <- predict(object = o_bag,
                                 newdata = o_test,
                                 type = "class")
#calculating the confusion matrix for the test set
confusionMatrix(data = class_predictionYbag,
                 reference = y_test$Sibilant)

```

```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction   C   S
##           C 38  2
##           S  2 52
##
##                   Accuracy : 0.9574
##                           95% CI : (0.8946, 0.9883)
##     No Information Rate : 0.5745
##     P-Value [Acc > NIR] : <2e-16
##
##                   Kappa : 0.913
##
## McNemar's Test P-Value : 1
##
##                   Sensitivity : 0.9500
##                   Specificity : 0.9630
##      Pos Pred Value : 0.9500
##      Neg Pred Value : 0.9630
##                  Prevalence : 0.4255
##      Detection Rate : 0.4043
## Detection Prevalence : 0.4255
##      Balanced Accuracy : 0.9565
##
##      'Positive' Class : C
##

```

```

confusionMatrix(data = class_predictionObag,
                 reference = o_test$Sibilant)

```

```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction  C   S
##             C 41   3
##             S  2  43
##
##                 Accuracy : 0.9438
##                 95% CI : (0.8737, 0.9815)
##     No Information Rate : 0.5169
##     P-Value [Acc > NIR] : <2e-16
##
##                 Kappa : 0.8876
##
## McNemar's Test P-Value : 1
##
##                 Sensitivity : 0.9535
##                 Specificity  : 0.9348
##                 Pos Pred Value : 0.9318
##                 Neg Pred Value : 0.9556
##                 Prevalence  : 0.4831
##                 Detection Rate : 0.4607
##                 Detection Prevalence : 0.4944
##                 Balanced Accuracy : 0.9441
##
##                 'Positive' Class : C
##

```

^improved upon the single trees.

Calculating the AUC of the bagged trees:

```

probpredY <- predict(object = y_bag,
                      newdata = y_test,
                      type = "prob")
probpredO <- predict(object = o_bag,
                      newdata = o_test,
                      type = "prob")
library(Metrics)

```

```

##
## Attaching package: 'Metrics'

```

```

## The following objects are masked from 'package:caret':
##
##     precision, recall

```

```

auc(actual = ifelse(y_test$Sibilant == "s", 1, 0),
    predicted = probpredY[, "s"])

```

```

## [1] 0.9928241

```

```
auc(actual = ifelse(o_test$Sibilant == "s", 1, 0),  
    predicted = probpred0[, "s"])
```

```
## [1] 0.983822
```

^ very close to 1

k-fold cross-validation to reduce variance of estimates:

```
#specifying the training configuration  
ctrl <- trainControl(method = "cv", #cross validation  
                      number = 5, #number of k in "k-fold"  
                      classProbs = TRUE,  
                      summaryFunction = twoClassSummary)#calculating the ROC curve for  
AUC  
#training configuration  
#reproducibility  
set.seed(2009)  
ytreebag <- train(Sibilant ~ .,  
                   data = y_train,  
                   method = "treebag",  
                   metric = "ROC", #for AUC  
                   trControl = ctrl)  
ytreebag
```

```
## Bagged CART  
##  
## 377 samples  
## 38 predictor  
## 2 classes: 'c', 's'  
##  
## No pre-processing  
## Resampling: Cross-Validated (5 fold)  
## Summary of sample sizes: 301, 302, 301, 302, 302  
## Resampling results:  
##  
## ROC      Sens      Spec  
## 0.9941099 0.9546237 0.9911111
```

```
otreebag <- train(Sibilant ~ .,  
                   data = o_train,  
                   method = "treebag",  
                   metric = "ROC",  
                   trControl = ctrl)  
otreebag
```

```

## Bagged CART
##
## 356 samples
## 38 predictor
## 2 classes: 'C', 'S'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 284, 285, 285, 285, 285
## Resampling results:
##
##    ROC      Sens      Spec
##    0.9551581 0.8431034 0.9488372

```

```

#generating predictions
predbagY <- predict(object = ytreebag,
                      newdata = y_test,
                      type = "prob")
predbagO <- predict(object = otreebag,
                      newdata = o_test,
                      type = "prob")
#computing the AUC
auc(actual = ifelse(y_test$Sibilant == "S", 1, 0),
     predicted = predbagY[, "S"]) #young

```

```
## [1] 0.9923611
```

```

auc(actual = ifelse(o_test$Sibilant == "S", 1, 0),
     predicted = predbagO[, "S"]) #old

```

```
## [1] 0.9843276
```

Random Forest:

```

library(randomForest)

## randomForest 4.6-14

## Type rfNews() to see new features/changes/bug fixes.

```

```

##
## Attaching package: 'randomForest'

## The following object is masked from 'package:ggplot2':
## 
##     margin

```

```

## The following object is masked from 'package:dplyr':
## 
##     combine

```

```
set.seed(2029)
youngForest <- randomForest(formula = Sibilant ~ .,
                             data = y_train) #sqrt(38)=6.16, default mtry = 6
youngForest
```

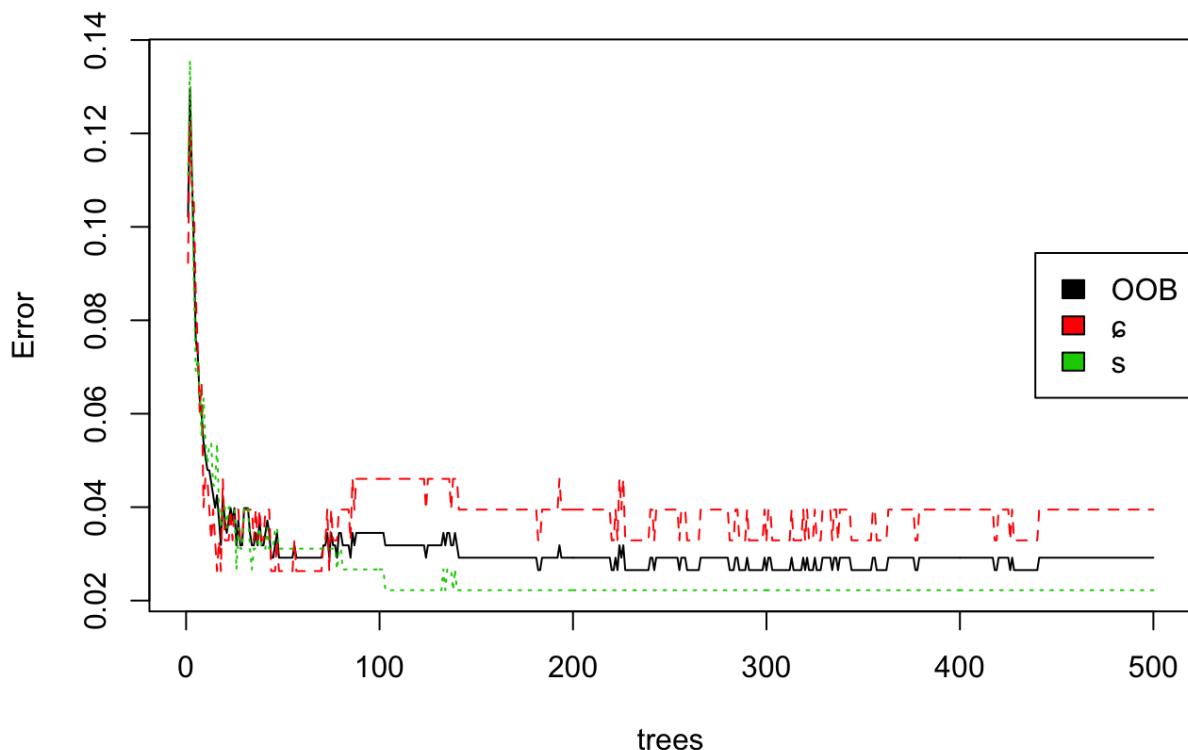
```
##
## Call:
##  randomForest(formula = Sibilant ~ ., data = y_train)
##          Type of random forest: classification
##                      Number of trees: 500
## No. of variables tried at each split: 6
##
##          OOB estimate of  error rate: 2.92%
## Confusion matrix:
##      C   S class.error
## C 146   6  0.03947368
## S   5 220  0.02222222
```

```
oldForest <- randomForest(formula = Sibilant ~ .,
                           data = o_train)
oldForest
```

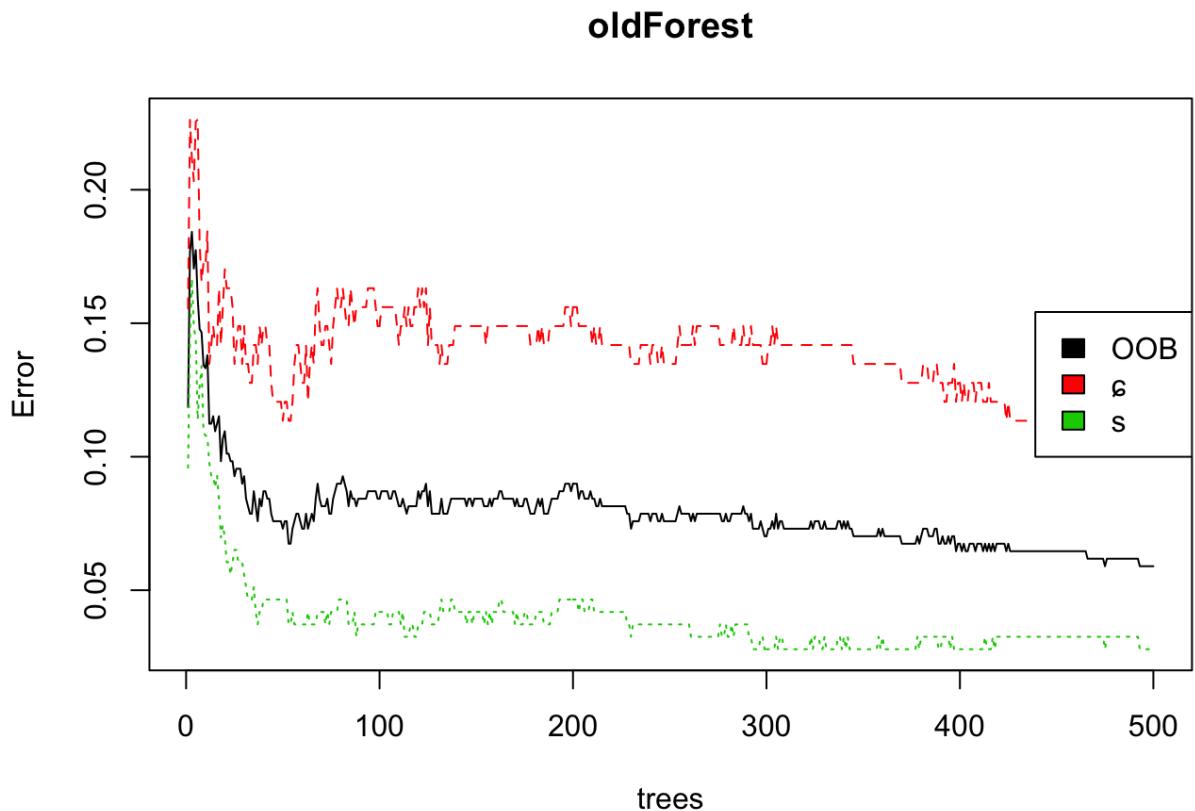
```
##
## Call:
##  randomForest(formula = Sibilant ~ ., data = o_train)
##          Type of random forest: classification
##                      Number of trees: 500
## No. of variables tried at each split: 6
##
##          OOB estimate of  error rate: 5.9%
## Confusion matrix:
##      C   S class.error
## C 126  15  0.10638298
## S   6 209  0.02790698
```

```
errY <- youngForest$err.rate
errO <- oldForest$err.rate
plot(youngForest)
legend(x = "right",
       legend = colnames(errY),
       fill = 1:ncol(errY))
```

## youngForest



```
plot(oldForest)
legend(x = "right",
       legend = colnames(error),
       fill = 1:ncol(error))
```



```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction   C   S
##             C 40   1
##             S   0  53
##
##                 Accuracy : 0.9894
##                 95% CI  : (0.9421, 0.9997)
## No Information Rate : 0.5745
## P-Value [Acc > NIR] : <2e-16
##
##                 Kappa : 0.9783
##
## Mcnemar's Test P-Value : 1
##
##                 Sensitivity : 1.0000
##                 Specificity  : 0.9815
##                 Pos Pred Value : 0.9756
##                 Neg Pred Value : 1.0000
##                 Prevalence    : 0.4255
##                 Detection Rate : 0.4255
## Detection Prevalence : 0.4362
## Balanced Accuracy  : 0.9907
##
## 'Positive' Class : C
##
```

```

## Confusion Matrix and Statistics
##
##             Reference
## Prediction  C   S
##             C 41  1
##             S  2 45
##
##                 Accuracy : 0.9663
##                 95% CI : (0.9046, 0.993)
##     No Information Rate : 0.5169
##     P-Value [Acc > NIR] : <2e-16
##
##                 Kappa : 0.9325
##
## McNemar's Test P-Value : 1
##
##                 Sensitivity : 0.9535
##                 Specificity  : 0.9783
##                 Pos Pred Value : 0.9762
##                 Neg Pred Value : 0.9574
##                 Prevalence  : 0.4831
##                 Detection Rate : 0.4607
##                 Detection Prevalence : 0.4719
##                 Balanced Accuracy : 0.9659
##
##                 'Positive' Class : C
##

```

```

oob_errY <- errY[nrow(errY), "OOB"]
oob_errO <- errO[nrow(errO), "OOB"]

#comparing test sets accuracy to OOB accuracy
paste0("Test Accuracy (younger group): ", ycm$overall[1])

```

```
## [1] "Test Accuracy (younger group): 0.98936170212766"
```

```
paste0("OOB Accuracy (younger group): ", 1-oob_errY)
```

```
## [1] "OOB Accuracy (younger group): 0.970822281167109"
```

```
paste0("Test Accuracy (older group): ", ocm$overall[1])
```

```
## [1] "Test Accuracy (older group): 0.966292134831461"
```

```
paste0("OOB Accuracy (older group): ", 1-oob_errO)
```

```
## [1] "OOB Accuracy (older group): 0.941011235955056"
```

Evaluating test set AUC:

```
#generating predictions on the test set
predfrstY <- predict(object = youngForest,
                      newdata = y_test,
                      type = "prob")
auc(actual = ifelse(y_test$Sibilant == "s", 1, 0),
     predicted = predfrstY[, "s"])
```

```
## [1] 0.9976852
```

```
predfrstO <- predict(object = oldForest,
                      newdata = o_test,
                      type = "prob")
auc(actual = ifelse(o_test$Sibilant == "s", 1, 0),
     predicted = predfrstO[, "s"])
```

```
## [1] 0.9853387
```

Importance of bins:

```
importance(youngForest)
```

```
##          MeanDecreaseGini
## bin1      1.6380489
## bin2      1.3796836
## bin3      2.3024663
## bin4      1.2753666
## bin5      1.5647548
## bin6      2.0058502
## bin7      9.8308005
## bin8      26.8463727
## bin9      25.5383454
## bin10     19.9473681
## bin11     15.8953911
## bin12     7.4079618
## bin13     5.2388464
## bin14     1.6767303
## bin15     2.1080205
## bin16     1.7388535
## bin17     2.7811341
## bin18     4.6499822
## bin19     3.6744119
## bin20     4.1087982
## bin21     1.6340413
## bin22     1.3395234
## bin23     1.1293322
## bin24     1.3311670
## bin25     0.6755835
## bin26     1.2228560
## bin27     2.4254639
## bin28     1.8861379
## bin29     1.4909992
## bin30     2.8976410
## bin31     1.8670790
## bin32     2.1373712
## bin33     2.9276755
## bin34     2.1772970
## bin35     2.4411565
## bin36     2.8396451
## bin37     4.2191296
## bin38     4.8214350
```

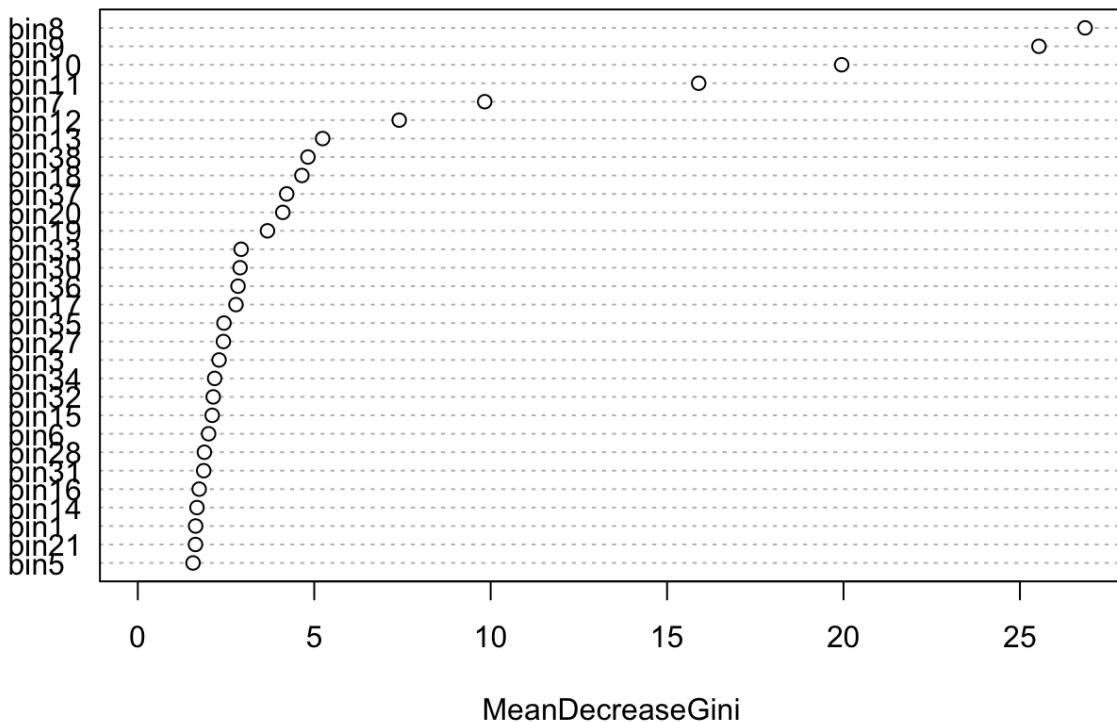
```
importance(oldForest)
```

```
##          MeanDecreaseGini
## bin1      2.3017923
## bin2      2.7118105
## bin3      2.3399730
## bin4      3.9826869
## bin5      4.1123224
## bin6      5.3333261
## bin7      21.8883512
## bin8      26.8176590
## bin9      26.9679821
## bin10     14.8008070
## bin11     3.9264227
## bin12     2.4751545
## bin13     1.7319649
## bin14     1.4303022
## bin15     2.9315024
## bin16     2.5822882
## bin17     3.8637288
## bin18     2.9835684
## bin19     1.8948187
## bin20     1.1127499
## bin21     1.5873533
## bin22     1.4883683
## bin23     1.5093237
## bin24     1.6983714
## bin25     1.0736549
## bin26     1.9340230
## bin27     1.9283709
## bin28     1.5414181
## bin29     1.3231258
## bin30     2.0241907
## bin31     1.9299164
## bin32     2.5981397
## bin33     2.3295162
## bin34     3.1588652
## bin35     2.7201841
## bin36     2.4618176
## bin37     1.4880216
## bin38     0.9524424
```

Plotting the importance:

```
varImpPlot(youngForest)
```

## youngForest

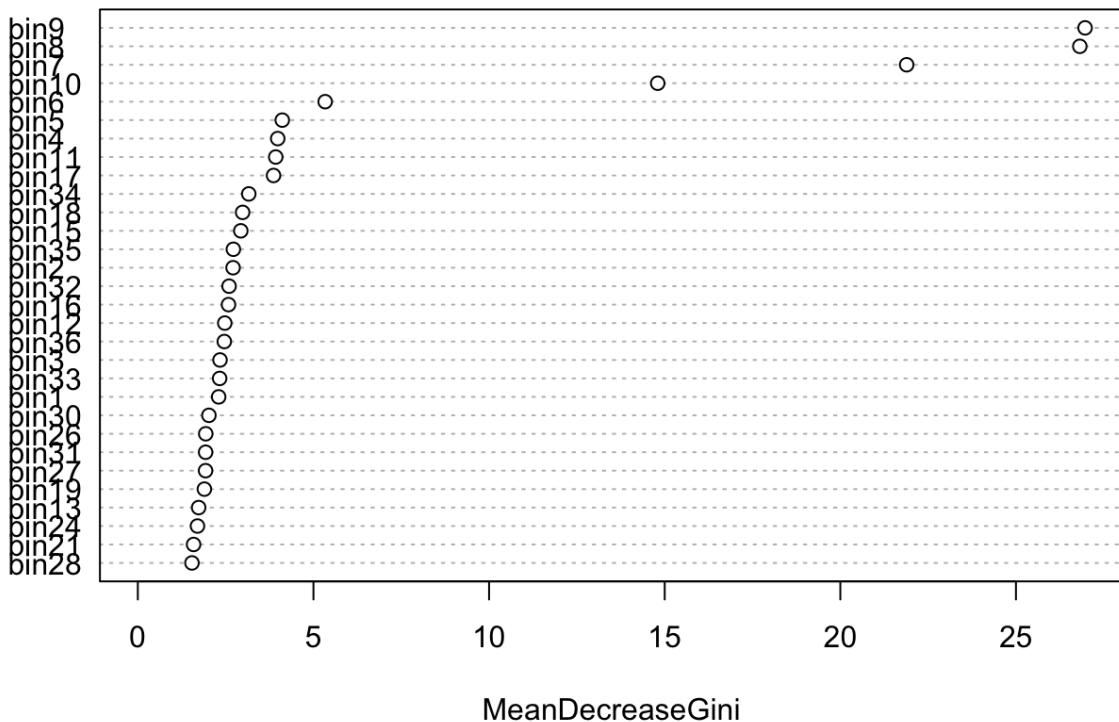


```
#png(filename="youngForest.png")
#varImpPlot(youngForest)
#dev.off()
```

^ most relevant bins: 8 >> 9 >> 10 >> 11 >> 7 >> 12

```
varImpPlot(oldForest)
```

## oldForest



```
#png(filename="oldForest.png")
#oForest
#dev.off()
```

^ most relevant bins 9 >> 8 >> 7 >> 10 >> 6

## **G Full Results of Acoustic Measurements**

##	Subject	Age	Index	IPA	Sibilant	CoG	Stdev	Position	Vp	Vf	CoGErb	StdevErb	bin1	bin2	
## 1		10	1	1	əsɔ	s	6690	2349	initial	ə	ɔ	31	3	-9.052737886	-8.55699719
## 2		10	1	3	əsa	s	5858	1933	initial	ə	a	30	3	-2.948580403	-4.87944627
## 3		10	1	5	əsəy	s	5655	2133	initial	ə	əy	29	3	-6.117940023	-7.69191386
## 4		10	1	7	əsai	s	6415	1613	initial	ə	ai	30	2	-7.470003695	-6.92792255
## 5		10	1	9	ɛinsa	s	5644	1486	initial	ɛin	a	29	2	-3.647720936	-7.62169959
## 6		10	1	19	əsɪ	s	5846	1580	initial	ə	i	30	2	-5.793274777	-5.87860853
## 7		10	1	23	əçə	ç	3791	1799	initial	ə	o	26	4	-3.888146454	-5.90104687
## 8		10	1	25	əçi	ç	4068	1559	initial	ə	i	27	3	-5.100049203	-8.54449548
## 9		10	1	27	əxɔ	ç	3382	1406	initial	əx	a	25	4	-3.685360398	-5.76555653
## 10		10	1	29	içə	ç	3842	1542	initial	i	a	26	3	-4.053327250	-6.41943624
## 11		10	1	33	əçu	ç	3688	1612	initial	ə	u	26	4	-7.073384557	-11.69456119
## 12		10	1	35	əçā	ç	3848	1515	initial	ə	ā	26	3	-4.231667934	-9.66090680
## 13		10	1	37	əçə	ç	4035	1812	initial	ə	o	27	4	-2.056469583	-8.78840499
## 14		10	1	41	əçi	ç	3777	1556	initial	ə	i	26	4	-2.363106121	-6.45593296
## 15		10	1	43	ɔçy	ç	3961	1751	initial	ɔ	y	27	4	-7.916671449	-7.85080077
## 16		10	1	45	ɛiçə	ç	3966	1352	medial	ɛi	ə	27	3	-7.894207108	-11.86832239
## 17		10	1	47	ɛçə	ç	4242	1415	medial	ɛ	ə	27	3	-9.592495567	-12.99172578
## 18		10	1	49	ouçə	ç	3681	1624	initial	ou	ə	26	4	-2.703709230	-6.83663424
## 19		10	1	51	çeyçə	ç	4209	1669	medial	çey	ə	27	3	-8.745685263	-12.20306986
## 20		10	1	53	açə	ç	4598	1968	medial	a	ə	28	4	-6.600972718	-8.39006208
## 21		10	1	55	açə	ç	4058	1364	medial	a	ə	27	3	-5.477072650	-9.29847345
## 22		10	1	57	ɛçə	ç	3989	1463	medial	ɛ	ə	27	3	-6.697597788	-10.15299216
## 23		10	1	57	əs	s	5258	2002	final	ə		29	3	-11.275692059	-12.16777374
## 24		10	1	59	uçə	ç	3678	1528	medial	u	ə	26	4	-7.807198556	-11.51284584
## 25		10	1	61	isə	s	6443	2133	medial	i	ə	30	3	-3.971738069	-6.46349983
## 26		10	1	63	ɛsi	s	6012	1940	medial	ɛ	i	30	2	-7.727732161	-9.69835174
## 27		10	1	65	ɛisə	s	4397	2233	medial	ɛi	ə	27	4	-12.309585957	-12.54937044
## 28		10	1	67	isə	s	6748	2346	medial	i	ə	31	3	-9.511476901	-11.91031164
## 29		10	1	69	asə	s	5621	1769	medial	a	ə	29	2	-9.898402329	-11.44334947
## 30		10	1	71	ysə	s	4981	1875	medial	y	ə	28	3	-5.071171548	-10.78975481
## 31		10	1	73	əsy	s	6574	2430	initial	ə	y	30	3	-6.732436003	-7.44030725
## 32		10	1	73	ysə	s	4867	2075	medial	y	ə	28	4	-3.002536718	-5.25685663
## 33		10	1	74	əsau	s	6193	1878	initial	ə	au	30	2	-1.777580541	-5.46404095
## 34		10	1	74	aus	s	4401	1704	final	au		27	3	-12.918680992	-14.56738804
## 35		10	1	75	uç	ç	3395	1719	final	u		25	5	-10.725046807	-11.24546716
## 36		10	1	77	ɛç	ç	3646	1479	final	ɛ		26	3	-9.202777219	-16.38684052
## 37		10	1	79	aç	ç	3381	1557	final	a		25	4	-8.767544013	-15.37659103
## 38		10	1	81	ous	s	4114	1853	final	ou		27	4	-18.214962116	-20.10388090

## 39	10	1	83	ɛis	s 5469	2247	final	ɛi	29	3	-16.123248648	-15.59750790
## 40	10	1	85	ɛis	s 5005	2397	final	ɛi	28	4	-3.943473653	-10.92913525
## 41	10	1	87	ɛy̬s	s 4994	2317	final	ɛy̬	28	4	-12.821662588	-15.49052549
## 42	10	1	89	ɛy̬s	s 4685	1989	final	ɛy̬	28	4	-10.214830595	-11.58354454
## 43	10	1	91	ɔ̬s	s 4435	1591	final	ɔ̬	27	3	-11.654554454	-13.19962251
## 44	10	1	93	us	s 5761	2944	final	u	29	4	-11.894184499	-13.25774985
## 45	10	1	95	as	s 6186	1943	final	a	30	2	-17.264090183	-18.09306331
## 46	10	1	97	is	s 6090	2250	final	i	30	3	-15.264979880	-13.60678133
## 47	10	1	99	as	s 5364	1837	final	a	29	3	-18.046869874	-17.76108998
## 48	10	1	101	us	s 6025	2288	final	u	30	3	-11.449108858	-12.48257074
## 49	10	1	103	ɛs	s 6965	1621	final	ɛ	31	2	-17.766379004	-18.08695404
## 50	10	1	105	ɛy̬s	s 4678	1847	final	ɛy̬	28	3	-16.252784687	-16.98789833
## 51	10	1	107	a̬s	č 3663	1444	final	a	26	3	-9.833108366	-12.49237291
## 52	10	1	109	y̬s	č 4036	1658	final	y̬	27	3	-3.421929289	-8.71785992
## 53	10	1	111	a̬x̬si	s 4858	1684	initial	a̬x̬ i	28	3	-1.661139272	-5.95641694
## 54	10	1	111	as	s 5198	2100	final	a	29	3	-16.612659814	-14.35253116
## 55	10	1	112	ə̬si	s 6060	1885	initial	ə̬ i	30	2	-4.060149713	-5.50074804
## 56	10	1	112	is	s 5367	2386	final	i	29	4	-15.539719367	-16.52093353
## 57	10	1	113	a̬x̬i	č 3565	1284	initial	a̬x̬ i	26	3	-6.275528776	-9.43280942
## 58	10	1	113	eis	s 5001	2615	final	ei	28	5	-12.805057242	-14.52538537
## 59	11	1	1	ə̬sɔ̬	s 4760	2060	initial	ə̬ ɔ̬	28	4	-3.612325886	-4.49871091
## 60	11	1	3	ə̬sa	s 5419	1642	initial	ə̬ a	29	2	-10.919379033	-7.45879535
## 61	11	1	5	ə̬sɔ̬y̬	s 5873	1743	initial	ə̬ ɔ̬y̬	30	2	-11.200815777	-11.31978410
## 62	11	1	7	ə̬sai	s 5642	1638	initial	ə̬ ai	29	2	-9.028866407	-8.19295982
## 63	11	1	9	ɛinsa	s 6162	2092	initial	ɛin a	30	3	-9.117141069	-6.27503720
## 64	11	1	13	ə̬c̬y̬	č 5582	2624	initial	ə̬ y̬	29	4	-14.718170067	-12.32966374
## 65	11	1	19	ə̬sɪ	s 6761	1876	initial	ə̬ i	31	2	-9.353213617	-9.62571367
## 66	11	1	23	ə̬c̬o	č 4378	2287	initial	ə̬ o	27	5	-10.221611325	-10.56821560
## 67	11	1	25	ə̬c̬i	č 5103	2042	initial	ə̬ i	29	3	-9.961267332	-5.96432012
## 68	11	1	27	a̬x̬a	č 3865	1884	initial	a̬x̬ a	26	4	-3.620008874	-4.51098854
## 69	11	1	29	i̬ca	č 4944	1765	initial	i̬ a	28	3	-16.507716385	-13.38864640
## 70	11	1	33	ə̬c̬u	č 5405	2444	initial	ə̬ u	29	4	-12.698505173	-14.58774087
## 71	11	1	35	ə̬c̬ā	č 4775	1830	initial	ə̬ ā	28	3	-5.390368273	-8.10842381
## 72	11	1	37	ə̬c̬o	č 5644	2557	initial	ə̬ o	29	4	-6.345299176	-9.69937986
## 73	11	1	41	ə̬c̬i	č 5102	1991	initial	ə̬ i	29	3	-14.729159267	-13.60455928
## 74	11	1	43	ə̬c̬y̬	č 4752	2501	initial	ə̬ y̬	28	5	-11.849182038	-11.44891643
## 75	11	1	45	ɛi̬c̬ə	č 5023	1777	medial	ɛi̬ ə	28	3	-7.326815121	-10.37549858
## 76	11	1	47	ɛc̬ə	č 4650	1764	medial	ɛ ə	28	3	-7.117701961	-8.75004356
## 77	11	1	49	ou̬c̬ə	č 4974	2600	initial	ou̬ ə	28	5	-16.012888200	-15.12087235
## 78	11	1	51	ɛy̬c̬ə	č 4927	2380	medial	ɛy̬ ə	28	4	-16.410089212	-16.28593462

## 79	11	1	53	aCə	¢	3376	1443	medial	a ə	25	4	-4.033176550	-3.79858680
## 80	11	1	55	aCə	¢	4681	1934	medial	a ə	28	3	-7.367899201	-5.12308679
## 81	11	1	57	ɛCə	¢	4966	1781	medial	ɛ ə	28	3	-9.942042636	-11.86154946
## 82	11	1	57	əs	s	5059	1172	final	ə	28	2	-19.557514139	-19.39551630
## 83	11	1	59	uCə	¢	3954	2241	medial	u ə	27	5	-11.813526671	-11.43421925
## 84	11	1	61	iſə	s	5749	1733	medial	i ə	29	2	-6.267217596	-5.70620851
## 85	11	1	63	ɛsi	s	6319	2141	medial	ɛ i	30	3	-13.909533631	-13.20740865
## 86	11	1	65	ɛisə	s	5591	1508	medial	ɛi ə	29	2	-11.204294299	-9.55045464
## 87	11	1	67	iſə	s	5727	2065	medial	i ə	29	3	-12.267286835	-11.05491792
## 88	11	1	69	aſə	s	5441	1713	medial	a ə	29	2	-7.989390590	-8.84219994
## 89	11	1	71	yſə	s	4701	1569	medial	y ə	28	3	-7.359801359	-11.92781294
## 90	11	1	73	əsy	s	4585	1658	initial	ə y	28	3	-10.320747496	-12.05173118
## 91	11	1	74	əſau	s	6864	2048	initial	ə au	31	2	-13.058659114	-11.11165165
## 92	11	1	74	aus	s	4269	1642	final	au	27	3	-12.529555382	-12.93075092
## 93	11	1	75	u¢	¢	3717	1760	final	u	26	4	-16.883523292	-18.65128428
## 94	11	1	77	ɛ¢	¢	4557	1744	final	ɛ	28	3	-14.132384171	-14.91110250
## 95	11	1	79	a¢	¢	4241	1627	final	a	27	3	-13.297762482	-15.22748217
## 96	11	1	81	ous	s	4378	1522	final	ou	27	3	-15.966115195	-17.75306524
## 97	11	1	83	ɛis	s	5705	1558	final	ɛi	29	2	-14.558996214	-17.12164149
## 98	11	1	85	ɛis	s	5639	1620	final	ɛi	29	2	-9.167929947	-14.07042701
## 99	11	1	87	əys	s	4604	1440	final	əy	28	3	-15.020932629	-18.57403822
## 100	11	1	89	əys	s	4702	1474	final	əy	28	3	-14.483878666	-17.19909447
## 101	11	1	91	ɔſ	s	3878	1060	final	ɔ	26	2	-12.729409200	-15.18608432
## 102	11	1	93	us	s	4340	1239	final	u	27	2	-15.017442285	-16.88393116
## 103	11	1	95	as	s	4797	1436	final	a	28	2	-15.015699659	-15.30322268
## 104	11	1	97	is	s	6145	1933	final	i	30	2	-13.393516226	-13.95234819
## 105	11	1	99	as	s	5267	2060	final	a	29	3	-15.243283854	-18.64618612
## 106	11	1	101	us	s	4086	1226	final	u	27	2	-16.915243364	-19.51680301
## 107	11	1	103	ɛs	s	5510	1467	final	ɛ	29	2	-12.143820191	-12.24023756
## 108	11	1	105	əys	s	4460	1448	final	əy	27	3	-12.679817445	-16.38080921
## 109	11	1	107	a¢	¢	4605	2140	final	a	28	4	-16.547934016	-15.13495417
## 110	11	1	109	y¢	¢	3720	1907	final	y	26	5	-18.413276990	-18.27791663
## 111	11	1	111	ařsi	s	5883	1988	initial	ař i	30	3	-12.666546983	-10.86750631
## 112	11	1	111	as	s	4321	1275	final	a	27	2	-13.232700959	-11.13446752
## 113	11	1	112	əsi	s	6344	1740	initial	ə i	30	2	-10.793060789	-9.66520345
## 114	11	1	112	is	s	6029	1761	final	i	30	2	-15.154505198	-15.67231092
## 115	11	1	113	ařci	¢	4995	2245	initial	ař i	28	4	-7.776716476	-4.84009685
## 116	11	1	113	eis	s	5549	1795	final	ei	29	3	-13.863659387	-14.44510304
## 117	12	1	1	əſo	s	7051	3350	initial	ə ſ	31	4	-4.339779547	-6.98817099
## 118	12	1	3	əſa	s	5792	2530	initial	ə a	29	4	-1.581178752	-2.33790038

## 119	12	1	5	əsəy	s 6187	2242	initial	ə ey	30	3	-6.136063764	-7.56796674
## 120	12	1	7	əsai	s 5655	1499	initial	ə ai	29	2	-7.205201403	-7.48115500
## 121	12	1	9	ɛinsa	s 5567	2067	initial	ɛin a	29	3	-5.981936474	-7.84305434
## 122	12	1	13	əçy	ç 4370	1802	initial	ə y	27	3	-8.532444310	-13.27984053
## 123	12	1	19	əsi	s 6006	1815	initial	ə i	30	2	-9.412025893	-10.59839070
## 124	12	1	23	əçö	ç 4480	2360	initial	ə o	28	5	-8.360691592	-9.74714480
## 125	12	1	25	əçi	ç 4451	1544	initial	ə i	27	3	-9.398265011	-12.36687293
## 126	12	1	27	açça	ç 4112	1599	initial	aç a	27	3	-9.162884512	-13.57197320
## 127	12	1	29	içä	ç 4428	1511	initial	i a	27	3	-5.763761202	-8.32751236
## 128	12	1	33	əçü	ç 4735	1820	initial	ə u	28	3	-4.544623734	-5.19730136
## 129	12	1	35	əçä	ç 4578	2003	initial	ə ä	28	4	-9.977739741	-9.48304222
## 130	12	1	37	əçö	ç 4685	2238	initial	ə o	28	4	-9.440763095	-8.15369558
## 131	12	1	39	aççé	ç 4217	1756	initial	aç ε	27	4	-10.861941734	-14.58522213
## 132	12	1	41	əçi	ç 4576	1774	initial	ə i	28	3	-9.150853976	-9.70627468
## 133	12	1	43	ɔçy	ç 4498	1957	initial	ɔ y	28	4	-3.287045322	-4.01900299
## 134	12	1	45	ɛiçä	ç 4369	1530	medial	ɛi ə	27	3	-10.221415875	-10.68900039
## 135	12	1	47	ɛçä	ç 4286	1518	medial	ɛ ə	27	3	-9.886766792	-9.80749944
## 136	12	1	49	ouçä	ç 4338	1848	initial	ou ə	27	4	-12.991980812	-12.86913796
## 137	12	1	51	çyçä	ç 4077	1370	medial	çy ə	27	3	-8.648351569	-11.61271865
## 138	12	1	53	açä	ç 4127	1220	medial	a ə	27	2	-11.493915190	-13.86845864
## 139	12	1	55	açä	ç 4249	1248	medial	a ə	27	2	-7.298530226	-6.78530746
## 140	12	1	57	ɛçä	ç 4411	1759	medial	ɛ ə	27	3	-10.756689341	-12.15085103
## 141	12	1	57	əs	s 5825	2064	final	ə	30	3	-14.192705783	-16.36368242
## 142	12	1	59	uçä	ç 4196	1788	medial	u ə	27	4	-12.474097742	-13.85291355
## 143	12	1	61	isə	s 6112	2132	medial	i ə	30	3	-6.893419984	-8.05581868
## 144	12	1	63	ɛsi	s 6517	2081	medial	ɛ i	30	2	-11.036697744	-14.01291919
## 145	12	1	65	ɛisə	s 5387	1920	medial	ɛi ə	29	3	-2.936616183	-5.54829518
## 146	12	1	67	isə	s 6368	1449	medial	i ə	30	2	-5.514010854	-9.35927375
## 147	12	1	69	asə	s 5925	1913	medial	a ə	30	3	-6.069132245	-6.90372084
## 148	12	1	71	ysə	s 5599	1376	medial	y ə	29	2	-9.844490826	-8.82565637
## 149	12	1	73	əsy	s 5728	2195	initial	ə y	29	3	-5.977703223	-6.53660166
## 150	12	1	73	ysə	s 4790	1573	medial	y ə	28	3	-2.807953828	-4.92536352
## 151	12	1	74	əsau	s 5963	1797	initial	ə au	30	2	-5.258000451	-7.76507513
## 152	12	1	74	aus	s 5082	1852	final	au	28	3	-11.478404572	-9.90596248
## 153	12	1	75	uç	ç 4300	1651	final	u	27	3	-10.937306296	-11.81308499
## 154	12	1	77	ɛç	ç 4259	1523	final	ɛ	27	3	-9.055897534	-10.11446287
## 155	12	1	79	aç	ç 4225	1590	final	a	27	3	-15.944241590	-17.66649137
## 156	12	1	81	ous	s 5513	2328	final	ou	29	3	-7.811888766	-7.72653127
## 157	12	1	83	ɛis	s 5526	1694	final	ɛi	29	2	-0.130197693	-3.76420404
## 158	12	1	85	ɛis	s 5504	2214	final	ɛi	29	3	-7.033205695	-7.86809391

## 159	12	1	87	əys	s 5616	1873	final	əy	29	3	-8.292346362	-8.38945598
## 160	12	1	89	əys	s 5098	1807	final	əy	29	3	-9.638798564	-10.97809573
## 161	12	1	91	ɔs	s 5502	2654	final	ɔ	29	4	-12.110599126	-11.05060108
## 162	12	1	93	us	s 5247	2425	final	u	29	4	-9.529737418	-10.44791774
## 163	12	1	95	as	s 5612	1573	final	a	29	2	-8.772053388	-10.01994954
## 164	12	1	97	is	s 6378	1956	final	i	30	2	-9.069335156	-10.19199683
## 165	12	1	99	as	s 5514	1778	final	a	29	3	-9.718496814	-10.31042598
## 166	12	1	101	us	s 5078	1878	final	u	28	3	-10.412891495	-10.53686259
## 167	12	1	103	ɛs	s 5259	1588	final	ɛ	29	2	-3.840026088	-4.93069895
## 168	12	1	105	əys	s 6060	2278	final	əy	30	3	-9.103498197	-10.76965639
## 169	12	1	107	ɑɔ	ç 4334	1638	final	a	27	3	-12.283563114	-12.60616417
## 170	12	1	109	yç	ç 4501	2079	final	y	28	4	-6.197423429	-9.43783258
## 171	12	1	111	ərzi	s 5593	1971	initial	ər i	29	3	-10.141633173	-9.44335434
## 172	12	1	111	as	s 5001	2043	final	a	28	3	-3.372750320	-7.41149952
## 173	12	1	112	əsi	s 6017	1997	initial	ə i	30	3	-8.157504492	-10.76962466
## 174	12	1	112	is	s 5772	1974	final	i	29	3	-8.290504427	-8.36986242
## 175	12	1	113	ərçi	ç 4040	1479	initial	ər i	27	3	-6.171520952	-8.66564625
## 176	12	1	113	eis	s 5745	1293	final	ei	29	2	-6.820312396	-9.86443324
## 177	13	1	1	əɔ	s 5464	1970	initial	ə ɔ	29	3	-3.690105454	-7.92445968
## 178	13	1	3	əsa	s 5487	1598	initial	ə a	29	2	-2.916335042	-4.31651371
## 179	13	1	5	əsəy	s 5492	1716	initial	ə əy	29	2	-0.635270760	-4.34535106
## 180	13	1	7	əsai	s 5420	1451	initial	ə ai	29	2	-2.930114183	-8.25043269
## 181	13	1	9	ɛinsa	s 4859	1176	initial	ɛin a	28	2	0.922279381	-7.39323550
## 182	13	1	19	əsɪ	s 5256	1594	initial	ə r	29	2	-6.678750881	-7.66396072
## 183	13	1	23	əço	ç 3517	1762	initial	ə o	26	4	2.183334270	-0.62452126
## 184	13	1	25	əçi	ç 3647	1238	initial	ə i	26	3	-0.441547333	-1.39272287
## 185	13	1	27	ərçä	ç 3652	1416	initial	ər a	26	3	0.211982106	-0.92893462
## 186	13	1	29	içä	ç 3205	1221	initial	i a	25	3	0.344314949	-2.64840045
## 187	13	1	33	əçu	ç 4248	1801	initial	ə u	27	4	1.974485318	-3.00985856
## 188	13	1	35	əçā	ç 3667	1465	initial	ə ā	26	3	-1.422238380	-4.19054550
## 189	13	1	37	əçø	ç 3410	1400	initial	ə o	25	4	-1.303574444	-3.83236380
## 190	13	1	41	əçi	ç 3053	1166	initial	ə i	24	3	-2.929434070	-2.22764386
## 191	13	1	43	ɔçy	ç 2814	1355	initial	ɔ y	24	4	-4.277223520	-5.67794573
## 192	13	1	45	ɛicə	ç 3407	1253	medial	ɛi ə	25	3	-5.612097300	-8.32326886
## 193	13	1	47	ɛçə	ç 3168	1070	medial	ɛ ə	25	3	-0.792833531	-4.98267561
## 194	13	1	49	ouçə	ç 3019	1253	initial	ou ɔ	24	4	-2.480867485	-6.08113866
## 195	13	1	51	əyçə	ç 2968	1046	medial	əy ə	24	3	-6.069874932	-12.50623196
## 196	13	1	53	açə	ç 3027	991	medial	a ə	24	3	-0.305485625	-4.37000129
## 197	13	1	55	açə	ç 3290	1097	medial	a ə	25	3	3.710914283	-0.46181546
## 198	13	1	57	ɛçə	ç 3284	1150	medial	ɛ ə	25	3	1.281707083	-3.60858737

## 199	13	1	57	əs	s 4830	1193	final	ə	28	2	-4.982190445	-8.83255457	
## 200	13	1	59	uçə	ç 3465	1905	medial	u	ə	25	5	1.017602862	-4.41118596
## 201	13	1	61	işə	s 5241	1278	medial	i	ə	29	2	-1.960798922	-5.20257051
## 202	13	1	63	ɛsi	s 5158	1818	medial	ɛ	i	29	3	-2.950279711	-7.69404159
## 203	13	1	65	ɛisə	s 5755	1756	medial	ɛi	ə	29	2	-3.357272851	-7.68632659
## 204	13	1	67	işə	s 5186	1597	medial	i	ə	29	2	-1.181778985	-3.17579576
## 205	13	1	69	aşə	s 5752	2054	medial	a	ə	29	3	3.984601030	2.61695073
## 206	13	1	71	yşə	s 5034	1654	medial	y	ə	28	3	-2.069342903	-5.31531766
## 207	13	1	73	əsy	s 4904	1792	initial	ə	y	28	3	-2.977023431	-5.09810260
## 208	13	1	73	yşə	s 4776	1660	medial	y	ə	28	3	-4.194176992	-4.79070526
## 209	13	1	74	əsau	s 5315	1833	initial	ə	au	29	3	0.036822315	-1.50495290
## 210	13	1	74	aus	s 4613	1525	final	au		28	3	-6.406282326	-11.27314962
## 211	13	1	75	uç	ç 2800	1180	final	u		24	4	-3.162926271	-7.46875464
## 212	13	1	77	ɛç	ç 3356	1324	final	ɛ		25	3	-3.909049628	-9.10455728
## 213	13	1	79	aç	ç 3097	1115	final	a		25	3	-2.302695223	-7.51239892
## 214	13	1	81	ous	s 4631	1541	final	ou		28	3	-11.022343399	-15.97852019
## 215	13	1	83	ɛis	s 5003	1248	final	ɛi		28	2	-7.632316568	-13.09472697
## 216	13	1	85	ɛis	s 4856	1311	final	ɛi		28	2	-8.447342882	-13.88374770
## 217	13	1	87	əys	s 4657	1129	final	əy		28	2	-8.181148784	-13.78644463
## 218	13	1	89	əys	s 4701	1425	final	əy		28	2	-7.436226832	-13.19417649
## 219	13	1	91	ɔs	s 4395	1532	final	ɔ		27	3	-2.929673829	-5.57498802
## 220	13	1	93	us	s 4373	1289	final	u		27	2	-3.704822097	-12.34080688
## 221	13	1	95	as	s 5001	1053	final	a		28	2	-10.447982851	-14.26256069
## 222	13	1	97	is	s 5876	1668	final	i		30	2	-4.014998498	-9.83270739
## 223	13	1	99	as	s 4865	1281	final	a		28	2	-6.635684989	-11.00204241
## 224	13	1	101	us	s 4508	1583	final	u		28	3	-7.576453271	-12.42544149
## 225	13	1	103	ɛs	s 5147	1247	final	ɛ		29	2	-7.882080171	-10.73061821
## 226	13	1	105	əys	s 4497	742	final	əy		28	1	-10.276020045	-13.93212611
## 227	13	1	107	aç	ç 3229	1554	final	a		25	4	-0.204958204	-7.51836968
## 228	13	1	109	yç	ç 3025	1354	final	y		24	4	-6.864548433	-8.83346647
## 229	13	1	111	açsi	s 4914	1302	initial	aç	i	28	2	-5.155329350	-10.18224266
## 230	13	1	111	as	s 4983	1142	final	a		28	2	-9.657584641	-12.09745419
## 231	13	1	112	əsi	s 5449	1781	initial	ə	i	29	3	-4.416353483	-8.35623413
## 232	13	1	112	is	s 5103	1077	final	i		29	2	-6.898666683	-11.19564199
## 233	13	1	113	açi	ç 3383	1197	initial	aç	i	25	3	-2.986094004	-4.31739153
## 234	13	1	113	eis	s 4967	1571	final	ei		28	3	-3.913727066	-8.63052794
## 235	14	0	1	əsɔ	s 5633	1762	initial	ə	ɔ	29	2	0.030798224	5.36805283
## 236	14	0	3	əsa	s 5350	1579	initial	ə	a	29	2	-1.079934978	4.73277669
## 237	14	0	5	əsəy	s 4298	1335	initial	ə	əy	27	3	-1.893114512	2.84340176
## 238	14	0	7	əsai	s 4933	1470	initial	ə	ai	28	2	-2.624803020	3.39946532

## 239	14	0	9	ɛinsa	s 5106	1745	initial	ɛin	a	29	3	-1.769259238	2.58768379
## 240	14	0	13	əçy	ç 3782	2039	initial	ə	y	26	5	-4.354991904	-4.18930649
## 241	14	0	19	əsi	s 5863	1897	initial	ə	i	30	3	3.048982262	9.41614347
## 242	14	0	23	əçö	ç 3513	2070	initial	ə	o	26	5	-2.729805916	0.11139600
## 243	14	0	25	əçi	ç 3722	1682	initial	ə	i	26	4	-4.197086139	-1.91198258
## 244	14	0	27	əxçä	ç 3346	1812	initial	əx	a	25	5	5.233870805	3.57410512
## 245	14	0	29	içä	ç 3520	1647	initial	i	a	26	4	-4.302758437	-1.14692310
## 246	14	0	33	əçü	ç 3077	1755	initial	ə	u	24	5	-1.569897801	-0.10003733
## 247	14	0	35	əçä	ç 4587	2076	initial	ə	ä	28	4	-1.542149708	-0.69136115
## 248	14	0	37	əçö	ç 3345	1776	initial	ə	o	25	5	-1.546886803	2.21505292
## 249	14	0	39	əxçë	ç 3670	1604	initial	əx	ɛ	26	4	-1.406911907	0.05829302
## 250	14	0	41	əçi	ç 3371	1354	initial	ə	i	25	3	-2.469071107	-1.38833255
## 251	14	0	43	ɔçy	ç 3764	2069	initial	ɔ	y	26	5	-9.394495260	-6.40638358
## 252	14	0	45	ɛicə	ç 3537	1485	medial	ɛi	ə	26	4	-2.470942440	0.17475599
## 253	14	0	47	ɛçə	ç 3660	1786	medial	ɛ	ə	26	4	0.609891305	2.04919855
## 254	14	0	49	ouçə	ç 3148	1752	initial	ou	ç	25	5	3.046234161	5.41372686
## 255	14	0	51	çyçə	ç 3032	1580	medial	çy	ə	24	5	-0.932877694	-0.15247714
## 256	14	0	53	açə	ç 3483	1753	medial	a	ə	26	5	-0.998343267	0.92224695
## 257	14	0	55	açə	ç 3728	1779	medial	a	ə	26	4	-1.500643949	-0.60847252
## 258	14	0	57	ɛçə	ç 3367	1532	medial	ɛ	ə	25	4	0.415474582	2.32460338
## 259	14	0	57	əs	s 4629	1572	final	ə	s	28	3	-11.278760086	-4.85472951
## 260	14	0	59	uçə	ç 3192	1621	medial	u	ə	25	5	1.137642814	1.08462011
## 261	14	0	61	isə	s 4950	1626	medial	i	ə	28	3	6.014469621	7.53558567
## 262	14	0	63	ɛsi	s 4723	1546	medial	ɛ	i	28	3	0.685600060	0.55168466
## 263	14	0	65	ɛisə	s 4891	1548	medial	ɛi	ə	28	3	3.719363420	5.05163193
## 264	14	0	67	isə	s 4983	1794	medial	i	ə	28	3	-1.634014499	2.98048570
## 265	14	0	69	asə	s 4902	2196	medial	a	ə	28	4	2.433548667	8.50213151
## 266	14	0	71	ysə	s 5108	1874	medial	y	ə	29	3	-2.041343968	3.72079456
## 267	14	0	73	əsy	s 5176	1962	initial	ə	y	29	3	0.645732369	2.62344646
## 268	14	0	73	ysə	s 5166	1785	medial	y	ə	29	3	-3.314795189	-2.24122376
## 269	14	0	74	əsau	s 4839	1771	initial	ə	au	28	3	-0.513768717	2.85049514
## 270	14	0	74	aus	s 4436	1603	final	au		27	3	-5.794741205	0.82587532
## 271	14	0	75	uç	ç 3035	1615	final	u		24	5	-2.667305103	-0.09210780
## 272	14	0	77	ɛç	ç 3735	1932	final	ɛ		26	5	-7.744931726	-4.08348197
## 273	14	0	79	aç	ç 3274	1688	final	a		25	5	-1.866173008	1.49841118
## 274	14	0	81	ous	s 4183	1597	final	ou		27	3	2.619836897	1.45001329
## 275	14	0	83	ɛis	s 4823	1776	final	ɛi		28	3	-6.954641098	-0.46543469
## 276	14	0	85	ɛis	s 4619	1547	final	ɛi		28	3	-5.512686932	-0.10049616
## 277	14	0	87	çys	s 4745	1806	final	çy		28	3	-4.557990844	0.36458517
## 278	14	0	89	çys	s 4159	1858	final	çy		27	4	-9.520414192	-1.71447240

## 279	14	0	91	ɔs	s 5236	2299	final	ɔ	29	4	-1.623949202	2.40649353	
## 280	14	0	93	us	s 4894	1637	final	u	28	3	-6.811278274	-2.31733563	
## 281	14	0	95	as	s 4487	1687	final	a	28	3	-5.144818812	-0.71332587	
## 282	14	0	97	is	s 4838	1443	final	i	28	2	-7.934083467	-4.10788456	
## 283	14	0	99	as	s 5374	2405	final	a	29	4	-4.750452411	2.08069876	
## 284	14	0	101	us	s 4249	1626	final	u	27	3	-7.199161785	-0.95118855	
## 285	14	0	103	ɛs	s 4682	1638	final	ɛ	28	3	-7.066553768	-1.79142829	
## 286	14	0	105	ɛys	s 4245	1657	final	ɛy	27	3	-6.443672268	-0.14969614	
## 287	14	0	107	ɑɔ	ç 3394	1760	final	a	25	5	1.231003288	4.26239381	
## 288	14	0	109	yç	ç 2836	1562	final	y	24	5	-0.659692007	-0.39469308	
## 289	14	0	111	ɑɔsi	s 4870	1597	initial	ɑɔ	i	28	3	-0.201545495	-0.98401565
## 290	14	0	111	as	s 4714	1468	final	a	28	3	-4.138330408	0.32005640	
## 291	14	0	112	əsi	s 5717	1685	initial	ə	i	29	2	1.745778528	4.87731387
## 292	14	0	112	is	s 3371	1450	final	i	25	4	-2.221829724	-0.04429451	
## 293	14	0	113	ɑɔi	ç 3800	1696	initial	ɑɔ	i	26	4	-1.847361284	-1.29092547
## 294	14	0	113	eis	s 4845	1559	final	ei	28	3	-4.406570302	0.04384157	
## 295	15	1	1	əəɔ	s 5835	2405	initial	ə	ɔ	30	3	-4.187263810	-5.50048847
## 296	15	1	3	əəa	s 6660	1949	initial	ə	a	31	2	1.574858943	0.28732149
## 297	15	1	5	əəɛy	s 5119	1422	initial	ə	ɛy	29	2	0.190012668	-1.10878785
## 298	15	1	7	əəai	s 6567	1970	initial	ə	ai	30	2	-4.959702171	-3.03188579
## 299	15	1	9	ɛinsa	s 5315	1880	initial	ɛin	a	29	3	0.593186368	0.42549485
## 300	15	1	13	əɛy	ç 3991	1658	initial	ə	y	27	4	-6.629673002	-8.01871997
## 301	15	1	19	əəi	s 5884	1832	initial	ə	i	30	2	-4.004127828	-2.74207903
## 302	15	1	23	əəo	ç 4125	1948	initial	ə	o	27	4	-9.184510520	-8.16513250
## 303	15	1	25	əəi	ç 4273	1524	initial	ə	i	27	3	-5.530607061	-5.30012965
## 304	15	1	27	ɑɔə	ç 3459	1728	initial	ɑɔ	a	25	4	-1.709068361	-4.94038980
## 305	15	1	29	iɔə	ç 4247	1636	initial	i	a	27	3	-4.004369794	-3.37282565
## 306	15	1	33	əəu	ç 4351	2227	initial	ə	u	27	4	-6.988854817	-7.71065111
## 307	15	1	35	əəā	ç 4377	1919	initial	ə	ā	27	4	-6.050673803	-5.05899570
## 308	15	1	37	əəo	ç 4052	1848	initial	ə	o	27	4	-3.745086498	-3.95934365
## 309	15	1	39	ɑɔəɛ	ç 3709	1533	initial	ɑɔ	ɛ	26	4	-6.845165499	-8.37017316
## 310	15	1	41	əəi	ç 4305	1944	initial	ə	i	27	4	-8.413994606	-9.15839631
## 311	15	1	43	ɔɔy	ç 3909	1898	initial	ɔ	y	26	4	-6.580561845	-9.07871443
## 312	15	1	45	ɛiɔə	ç 4028	1416	medial	ɛi	ə	27	3	-7.706971681	-7.10059402
## 313	15	1	47	ɛɔə	ç 3896	1611	medial	ɛ	ə	26	4	-7.780881392	-10.80461284
## 314	15	1	49	ouəɛ	ç 3675	1622	initial	ou	ɛ	26	4	-4.334301493	-8.07697610
## 315	15	1	51	ɛyɔə	ç 3649	1295	medial	ɛy	ə	26	3	-3.906875449	-6.84744701
## 316	15	1	53	aɔə	ç 4018	1773	medial	a	ə	27	4	-8.541113279	-7.92045534
## 317	15	1	55	aɔə	ç 3660	1378	medial	a	ə	26	3	-2.914218166	-6.93458869
## 318	15	1	57	ɛɔə	ç 3898	1521	medial	ɛ	ə	26	3	-8.151387605	-7.95509622

## 319	15	1	57	əs	s 4849	1495	final	ə	28	2	-9.228397753	-8.42681774	
## 320	15	1	59	uçə	ç 3795	2084	medial	u	ə	26	5	-7.088869305	-10.10970646
## 321	15	1	61	işə	s 6104	1786	medial	i	ə	30	2	-6.370544338	-6.62606514
## 322	15	1	63	ɛsi	s 5528	1654	medial	ɛ	i	29	2	-5.483415102	-4.70575912
## 323	15	1	65	ɛisə	s 5273	1515	medial	ɛi	ə	29	2	-8.823954994	-7.98515109
## 324	15	1	67	işə	s 6080	1905	medial	i	ə	30	2	-6.229367734	-5.62511764
## 325	15	1	69	aşə	s 5497	2041	medial	a	ə	29	3	-2.207946367	0.42267032
## 326	15	1	71	yşə	s 5307	2019	medial	y	ə	29	3	-4.673074158	-5.82559369
## 327	15	1	73	əsy	s 5685	2272	initial	ə	y	29	3	-1.436834150	-2.92949460
## 328	15	1	73	yşə	s 4870	1669	medial	y	ə	28	3	-2.369423699	-4.19693399
## 329	15	1	74	əsau	s 5726	2174	initial	ə	au	29	3	1.549479171	0.89155468
## 330	15	1	74	aus	s 4968	1693	final	au		28	3	-6.449727852	-7.42778398
## 331	15	1	75	uç	ç 3528	1718	final	u		26	4	-12.023472439	-12.55444500
## 332	15	1	77	ɛç	ç 3343	1177	final	ɛ		25	3	-9.529582549	-13.99498390
## 333	15	1	79	aç	ç 3551	1354	final	a		26	3	-7.333783103	-8.15720840
## 334	15	1	81	ous	s 5135	2168	final	ou		29	3	-7.989940592	-10.30626367
## 335	15	1	83	ɛis	s 5578	1602	final	ɛi		29	2	-8.832596664	-10.44340782
## 336	15	1	85	ɛis	s 5469	1415	final	ɛi		29	2	-9.669746812	-9.91479276
## 337	15	1	87	əys	s 4853	1942	final	əy		28	3	-4.721047849	-5.12136794
## 338	15	1	89	əys	s 4938	1986	final	əy		28	3	-5.638681199	-6.78139323
## 339	15	1	91	ɔs	s 4389	2138	final	ɔ		27	4	-0.325497038	-3.68721350
## 340	15	1	93	us	s 4838	2130	final	u		28	4	-4.263342924	-6.27579460
## 341	15	1	95	as	s 5020	1376	final	a		28	2	-2.762332360	-5.72584471
## 342	15	1	97	is	s 5112	1559	final	i		29	2	-5.952031032	-6.80512444
## 343	15	1	99	as	s 5046	1954	final	a		28	3	-2.460198229	-3.31483735
## 344	15	1	101	us	s 4981	1828	final	u		28	3	-6.047817764	-7.15232590
## 345	15	1	103	ɛs	s 5458	1686	final	ɛ		29	2	-7.582162737	-7.94469379
## 346	15	1	105	əys	s 4853	1775	final	əy		28	3	-6.897503385	-8.25409158
## 347	15	1	107	aç	ç 3110	951	final	a		25	3	-9.451524227	-13.89948110
## 348	15	1	109	yç	ç 3904	2086	final	y		26	5	-6.420066470	-8.72314756
## 349	15	1	111	açsi	s 4490	1793	initial	aç	i	28	3	-8.636511505	-10.81793570
## 350	15	1	111	as	s 4918	1543	final	a		28	3	-5.870662042	-6.47696584
## 351	15	1	112	əsi	s 5757	1858	initial	ə	i	29	3	-2.831662992	-4.83123641
## 352	15	1	112	is	s 5243	1668	final	i		29	3	-10.256283586	-9.35603918
## 353	15	1	113	açi	ç 4080	1510	initial	aç	i	27	3	-5.987733568	-6.55517943
## 354	15	1	113	eis	s 5575	1664	final	ei		29	2	-2.998855753	-6.88067533
## 355	16	0	1	əsɔ	s 5489	2438	initial	ə	ɔ	29	4	-5.418808438	-2.93421721
## 356	16	0	3	əsa	s 6068	2218	initial	ə	a	30	3	4.578612481	3.03773190
## 357	16	0	5	əsəy	s 5391	1871	initial	ə	əy	29	3	2.576076380	-0.28147202
## 358	16	0	7	əsai	s 5763	2089	initial	ə	ai	29	3	-3.145465899	-5.91121288

## 359	16	0	9	ɛinsa	s 6356	2096	initial	ɛin	a	30	3	4.877987830	-1.67228031
## 360	16	0	19	əsi	s 6859	2390	initial	ə	i	31	3	8.598618899	4.24009378
## 361	16	0	23	əeo	ç 5101	2319	initial	ə	o	29	4	-2.109735395	-6.36618182
## 362	16	0	25	əgi	ç 4824	2221	initial	ə	i	28	4	6.142146938	1.72714326
## 363	16	0	27	aʒɑ	ç 4347	2076	initial	aʒ	a	27	4	8.201862388	2.72847675
## 364	16	0	29	içɑ	ç 4929	1949	initial	i	a	28	3	3.729395918	-0.65680958
## 365	16	0	33	əçu	ç 5072	2307	initial	ə	u	28	4	1.930823129	-3.76938543
## 366	16	0	35	əçā	ç 4574	1993	initial	ə	ā	28	4	2.393115337	-1.64210144
## 367	16	0	37	əçɔ	ç 5209	2150	initial	ə	o	29	3	0.833680534	-3.24239573
## 368	16	0	41	əçi	ç 4431	1901	initial	ə	i	27	4	-0.919329420	-5.93352343
## 369	16	0	43	ɔçy	ç 5087	2302	initial	ɔ	y	29	4	3.164011187	-3.20993088
## 370	16	0	45	ɛiçə	ç 4636	2055	medial	ɛi	ə	28	4	4.697696422	-1.08447173
## 371	16	0	47	ɛçə	ç 4468	2085	medial	ɛ	ə	27	4	6.003111844	2.22735384
## 372	16	0	49	ouçə	ç 4607	2362	initial	ou	ə	28	4	2.580253014	-2.76111217
## 373	16	0	51	əyçə	ç 4764	2199	medial	əy	ə	28	4	0.266781486	-4.81165172
## 374	16	0	53	açə	ç 4666	2237	medial	a	ə	28	4	-0.662846888	-4.97310240
## 375	16	0	55	açə	ç 4493	1895	medial	a	ə	28	4	-0.251599069	-1.90228885
## 376	16	0	57	ɛçə	ç 4051	1804	medial	ɛ	ə	27	4	-2.097620336	-6.93154582
## 377	16	0	57	əs	s 4391	1694	final	ə	s	27	3	-6.249614383	-13.28305625
## 378	16	0	59	uçə	ç 4932	2026	medial	u	ə	28	3	0.247606516	-4.38215622
## 379	16	0	61	isə	s 5536	2011	medial	i	ə	29	3	-0.015365441	-4.52019755
## 380	16	0	63	ɛsi	s 5522	2185	medial	ɛ	i	29	3	5.168576643	-0.46982365
## 381	16	0	65	ɛisə	s 7069	2389	medial	ɛi	ə	31	3	6.774765464	-0.79486716
## 382	16	0	67	isə	s 5646	2013	medial	i	ə	29	3	0.877008427	-3.47242730
## 383	16	0	69	aṣə	s 5408	2091	medial	a	ə	29	3	1.716276830	-3.13104956
## 384	16	0	71	ysə	s 6675	2301	medial	y	ə	31	3	5.318582713	4.66080780
## 385	16	0	73	əsy	s 4478	1883	initial	ə	y	28	4	3.939342865	-2.82676283
## 386	16	0	73	ysə	s 4525	1976	medial	y	ə	28	4	3.125392269	-5.29248165
## 387	16	0	74	əsau	s 6610	2270	initial	ə	au	30	3	13.777304068	7.11701168
## 388	16	0	74	aus	s 5354	1946	final	au		29	3	9.018451901	4.99918532
## 389	16	0	75	uṣ	ç 5129	1993	final	u		29	3	0.285179127	-3.85859120
## 390	16	0	77	ɛç	ç 4662	1786	final	ɛ		28	3	-0.929401452	-5.92497383
## 391	16	0	79	aç	ç 3872	1800	final	a		26	4	-1.434284872	-6.72048694
## 392	16	0	81	ous	s 4236	2112	final	ou		27	4	1.590599825	0.26485813
## 393	16	0	83	ɛis	s 5300	2142	final	ɛi		29	3	2.242932306	-4.38995696
## 394	16	0	85	ɛis	s 5367	2104	final	ɛi		29	3	4.485475106	-4.08436290
## 395	16	0	87	əys	s 5131	1916	final	əy		29	3	1.272913343	-3.73098662
## 396	16	0	89	əys	s 5775	2067	final	əy		29	3	0.164936995	-3.38597645
## 397	16	0	91	ɔs	s 6070	2238	final	ɔ		30	3	-5.924333183	-6.37630668
## 398	16	0	93	us	s 3432	2379	final	u		25	7	-2.121971271	-5.31504139

## 399	16	0	95	as	s 5842	2418	final	a	30	3	3.456432845	0.22953937
## 400	16	0	97	is	s 5889	1931	final	i	30	3	-5.530772079	-9.69172642
## 401	16	0	99	as	s 5444	2034	final	a	29	3	1.441937288	1.56008788
## 402	16	0	101	us	s 5079	2304	final	u	28	4	-0.579579290	-5.12777597
## 403	16	0	103	ɛs	s 6346	2021	final	ɛ	30	2	3.123164715	-2.03696807
## 404	16	0	105	ɛys	s 4517	2215	final	ɛy	28	4	-3.567587731	-8.91790235
## 405	16	0	107	ɑ̄s	č 4770	1897	final	a	28	3	-4.552088669	-9.58149288
## 406	16	0	109	yč	č 4469	2135	final	y	28	4	0.196470096	-3.44502306
## 407	16	0	111	ɑ̄xsi	s 6344	2214	initial	ɑ̄x i	30	3	7.693594759	2.26599543
## 408	16	0	111	as	s 6577	1797	final	a	30	2	1.978614979	-2.53579267
## 409	16	0	112	əsi	s 5811	2142	initial	ə i	30	3	4.130337221	2.37319889
## 410	16	0	112	is	s 4622	1758	final	i	28	3	-4.307871161	-7.42907150
## 411	16	0	113	ɑ̄xči	č 4578	2158	initial	ɑ̄x i	28	4	5.800962760	1.27698932
## 412	16	0	113	eis	s 5485	2202	final	ei	29	3	-1.270205160	-6.61781955
## 413	17	1	1	əsɔ̄	s 7397	2358	initial	ə ɔ̄	31	2	6.917615231	1.00399751
## 414	17	1	3	əsa	s 6560	2135	initial	ə a	30	2	3.862266749	4.02985456
## 415	17	1	5	əsɛy	s 6034	2033	initial	ə ɛy	30	3	2.036824316	-0.94277257
## 416	17	1	7	əsai	s 5926	1611	initial	ə ai	30	2	0.199531670	2.92308296
## 417	17	1	9	ɛinsa	s 5952	1972	initial	ɛin a	30	3	2.573747572	5.24398148
## 418	17	1	19	əsɪ	s 6158	1552	initial	ə ɪ	30	2	4.602958226	5.45385706
## 419	17	1	23	əčo	č 4858	1814	initial	ə o	28	3	6.950659368	4.29790524
## 420	17	1	25	əči	č 4520	1550	initial	ə i	28	3	6.992392306	-1.23113883
## 421	17	1	27	ɑ̄ča	č 3537	1541	initial	ɑ̄x a	26	4	8.561448752	8.94702933
## 422	17	1	29	iča	č 4056	1721	initial	i a	27	4	4.985638683	5.04745059
## 423	17	1	33	əču	č 4944	2362	initial	ə u	28	4	5.419183227	4.87201405
## 424	17	1	35	əčā	č 4487	1783	initial	ə ā	28	3	4.618396656	6.12093256
## 425	17	1	37	əčo	č 4190	1960	initial	ə o	27	4	6.685700932	5.42582206
## 426	17	1	39	ɑ̄čɛ	č 4189	1609	initial	ɑ̄x ɛ	27	3	2.981702658	-0.85410991
## 427	17	1	41	əči	č 4184	1866	initial	ə i	27	4	5.717513780	3.89148773
## 428	17	1	43	əčy	č 4559	2222	initial	ə y	28	4	1.881461420	-0.74794703
## 429	17	1	45	ɛičə	č 4308	1642	medial	ɛi ə	27	3	6.830920647	5.25643777
## 430	17	1	47	ɛčə	č 4226	1480	medial	ɛ ə	27	3	2.148582952	0.24605589
## 431	17	1	49	oučə	č 4138	1882	initial	ou ə	27	4	6.789713012	2.74415022
## 432	17	1	51	ɛyčə	č 4477	2036	medial	ɛy ə	28	4	1.379901376	-3.05542087
## 433	17	1	53	ačə	č 4261	1820	medial	a ə	27	4	2.551552031	-0.47289765
## 434	17	1	55	ačə	č 4568	1564	medial	a ə	28	3	-1.439934217	-2.91629899
## 435	17	1	57	ɛčə	č 4758	2041	medial	ɛ ə	28	4	3.367329917	2.58276714
## 436	17	1	57	əs	s 5060	1771	final	ə	28	3	0.102834823	1.47345938
## 437	17	1	59	učə	č 3785	1871	medial	u ə	26	4	6.637229900	1.49093822
## 438	17	1	61	isə	s 5863	1433	medial	i ə	30	2	6.804328829	3.55386497

## 439	17	1	63	ɛsi	s 5776	2039	medial	ɛ	i	29	3	0.856721636	-2.81286147
## 440	17	1	65	ɛisə	s 5402	1542	medial	ɛi	ə	29	2	2.464132194	0.67527333
## 441	17	1	67	isə	s 5878	1512	medial	i	ə	30	2	7.093997733	6.50918786
## 442	17	1	69	asə	s 5916	2067	medial	a	ə	30	3	3.135366380	8.44246361
## 443	17	1	71	ysə	s 5693	2149	medial	y	ə	29	3	2.963669152	4.70915475
## 444	17	1	73	əsy	s 6045	2078	initial	ə	y	30	3	9.729487403	9.38601400
## 445	17	1	73	ysə	s 6626	1722	medial	y	ə	30	2	2.687988187	1.91333287
## 446	17	1	74	əsau	s 5852	1939	initial	ə	au	30	3	3.899841526	6.60116819
## 447	17	1	74	aus	s 4900	2427	final	au		28	4	1.751028869	2.59881226
## 448	17	1	75	uč	č 3591	2023	final	u		26	5	2.663941317	-2.25746384
## 449	17	1	77	ɛč	č 4041	1764	final	ɛ		27	4	1.703447131	1.57432973
## 450	17	1	79	ač	č 4279	1850	final	a		27	4	2.752620379	-0.58875939
## 451	17	1	81	ous	s 4758	2113	final	ou		28	4	3.423147875	5.11129906
## 452	17	1	83	ɛis	s 5412	1588	final	ɛi		29	2	3.388495534	1.90540530
## 453	17	1	85	ɛis	s 5632	1920	final	ɛi		29	3	4.126380674	4.75829619
## 454	17	1	87	əsys	s 5263	2550	final	əy		29	4	3.866710381	3.98106111
## 455	17	1	89	əsys	s 6111	2477	final	əy		30	3	0.246897904	-0.17069440
## 456	17	1	91	ɔs	s 5898	2647	final	ɔ		30	4	1.760764935	4.88014635
## 457	17	1	93	us	s 5682	2062	final	u		29	3	2.175146508	2.38803250
## 458	17	1	95	as	s 5660	1625	final	a		29	2	4.592160486	2.34757617
## 459	17	1	97	is	s 4974	1531	final	i		28	2	6.868452325	4.98004431
## 460	17	1	99	as	s 5963	2224	final	a		30	3	3.010664799	3.53496819
## 461	17	1	101	us	s 6095	1815	final	u		30	2	-2.152075700	-1.18701711
## 462	17	1	103	ɛs	s 5776	1293	final	ɛ		29	2	3.380441540	3.51191486
## 463	17	1	105	əsys	s 4605	1703	final	əy		28	3	1.042190967	-0.24638523
## 464	17	1	107	ač	č 4150	2093	final	a		27	4	4.650805556	5.21371121
## 465	17	1	109	yč	č 3497	1746	final	y		26	4	0.566710836	-0.10831519
## 466	17	1	111	axsi	s 5395	2049	initial	ax	i	29	3	2.620598390	0.59006552
## 467	17	1	111	as	s 5063	1819	final	a		28	3	1.909457815	1.99162995
## 468	17	1	112	əsi	s 6351	2000	initial	ə	i	30	2	1.407635504	1.52226247
## 469	17	1	112	is	s 5003	1227	final	i		28	2	-2.784166286	-1.29664448
## 470	17	1	113	axči	č 4122	1651	initial	ax	i	27	3	7.478230838	8.07488258
## 471	17	1	113	eis	s 5400	994	final	ei		29	1	4.208379823	3.62482833
## 472	18	1	1	əsɔ	s 5722	2473	initial	ə	ɔ	29	4	2.155248256	-3.56823134
## 473	18	1	3	əsa	s 6280	2265	initial	ə	a	30	3	-0.567820981	-2.25357732
## 474	18	1	5	əsɔy	s 5594	2232	initial	ə	ɔy	29	3	1.105622309	-2.60714462
## 475	18	1	7	əsai	s 6094	1830	initial	ə	ai	30	2	0.091400631	-0.59025790
## 476	18	1	9	ɛinsa	s 5856	1973	initial	ɛin	a	30	3	7.004911954	-0.52590063
## 477	18	1	13	əčy	č 4349	2058	initial	ə	y	27	4	-2.783775697	-3.94016656
## 478	18	1	19	əsi	s 5840	2032	initial	ə	i	30	3	4.176899329	0.66615874

## 479	18	1	23	ə̚o	¢	4135	2061	initial	ə	o	27	4	1.799417147	-0.09716483
## 480	18	1	25	ə̚i	¢	4496	1940	initial	ə	i	28	4	5.124307508	-0.37824161
## 481	18	1	27	ā̚ca	¢	4555	1910	initial	ā̚	a	28	4	2.995600639	-1.94711789
## 482	18	1	29	ī̚ca	¢	4738	1963	initial	i	a	28	3	1.886054790	-2.00340578
## 483	18	1	33	ə̄̚u	¢	4411	2090	initial	ə	u	27	4	3.698338317	1.06828011
## 484	18	1	35	ə̄̚ā	¢	4849	2126	initial	ə	ā	28	4	0.674342471	-4.26292639
## 485	18	1	37	ə̄̚o	¢	4342	2174	initial	ə	o	27	4	1.698939239	0.01511383
## 486	18	1	39	ā̄̚c̄̚e	¢	4158	1636	initial	ā̚	ɛ̄̚	27	3	-2.488928715	-3.50435278
## 487	18	1	41	ə̄̚i	¢	4246	1856	initial	ə	i	27	4	3.444021908	1.02846363
## 488	18	1	43	ɔ̄̚y	¢	4636	2634	initial	ɔ̄̚	y	28	5	0.434233063	-1.71922956
## 489	18	1	45	ɛ̄̚ī̚e	¢	4001	1780	medial	ɛ̄̚ī̚	e	27	4	-3.018928425	-5.62070807
## 490	18	1	47	ɛ̄̚ē̚	¢	4714	1973	medial	ɛ̄̚	ē̚	28	3	4.479087869	-2.52686560
## 491	18	1	49	oū̄̚ē̚	¢	3943	1717	initial	oū̄̚	ē̚	27	4	12.486535859	5.84186199
## 492	18	1	51	ə̄̚ȳ̚ē̚	¢	4166	2004	medial	ə̄̚ȳ̚	ē̚	27	4	-1.154457297	-5.92393927
## 493	18	1	53	ā̚ē̚	¢	4998	2109	medial	ā̚	ē̚	28	3	-3.845848960	-6.11568815
## 494	18	1	55	ā̚ē̚	¢	4350	1695	medial	ā̚	ē̚	27	3	3.232592668	-1.36490766
## 495	18	1	57	ɛ̄̚ē̚	¢	4509	1642	medial	ɛ̄̚	ē̚	28	3	1.132760784	-3.50956762
## 496	18	1	57	ə̄̚s	s	5569	1844	final	ə̄̚	s	29	3	-7.008446763	-10.34849037
## 497	18	1	59	ū̚ē̚	¢	4305	2154	medial	ū̚	ē̚	27	4	1.482397831	-1.80107556
## 498	18	1	61	ī̚ē̚	s	6254	1736	medial	ī̚	ē̚	30	2	-1.382462942	-3.69773818
## 499	18	1	63	ɛ̄̚ī̚	s	6001	2082	medial	ɛ̄̚	ī̚	30	3	4.865425709	2.13176189
## 500	18	1	65	ɛ̄̚ī̚ē̚	s	5887	1695	medial	ɛ̄̚ī̚	ē̚	30	2	0.817693066	-1.31745825
## 501	18	1	67	ī̚ē̚	s	6072	1481	medial	ī̚	ē̚	30	2	1.330099016	1.90444827
## 502	18	1	69	ā̚s̄̚ē̚	s	6194	1947	medial	ā̚	ē̚	30	2	3.753904695	3.00213024
## 503	18	1	71	ȳ̚s̄̚ē̚	s	5297	2405	medial	ȳ̚	ē̚	29	4	0.812575192	-3.85391896
## 504	18	1	73	ə̄̚s̄̚ȳ̚	s	5808	2502	initial	ə̄̚	ȳ̚	30	3	0.739082233	-0.01853306
## 505	18	1	73	ȳ̚s̄̚ē̚	s	5442	2362	medial	ȳ̚	ē̚	29	4	-0.817117411	-5.34877680
## 506	18	1	74	ə̄̚s̄̚au	s	6391	2340	initial	ə̄̚	au	30	3	-0.789476845	-3.46468693
## 507	18	1	74	ā̚us	s	5984	2533	final	au		30	3	-4.121087308	-9.75197649
## 508	18	1	75	ū̚s̄̚	¢	4895	2440	final	ū̚		28	4	1.557051742	-2.69350911
## 509	18	1	77	ɛ̄̚s̄̚	¢	3868	1772	final	ɛ̄̚		26	4	1.478553208	-3.52659731
## 510	18	1	79	ā̚s̄̚	¢	4227	1844	final	ā̚		27	4	-0.758767103	-5.86032681
## 511	18	1	81	ous	s	6282	2827	final	ou		30	4	-0.483123650	-5.14677026
## 512	18	1	83	ɛ̄̚is̄̚	s	6293	1976	final	ɛ̄̚ī̚		30	2	-4.401208516	-5.45257715
## 513	18	1	85	ɛ̄̚is̄̚	s	5628	2040	final	ɛ̄̚ī̚		29	3	0.630607992	-2.31896069
## 514	18	1	87	ə̄̚s̄̚ȳ̚	s	5608	2323	final	ə̄̚s̄̚		29	3	-0.578667256	-5.92598992
## 515	18	1	89	ə̄̚s̄̚ȳ̚	s	5916	2609	final	ə̄̚s̄̚		30	4	-1.175469244	-7.41778704
## 516	18	1	91	ɔ̄̚s̄̚	s	5141	2216	final	ɔ̄̚		29	4	1.032087012	-1.21664804
## 517	18	1	93	us	s	6100	2590	final	u		30	3	-2.622499441	-7.25985429
## 518	18	1	95	as	s	5504	1626	final	a		29	2	4.709198182	-1.01772241

## 519	18	1	97	is	s 6359	1959	final	i	30	2	-2.233354292	-3.98905187
## 520	18	1	99	as	s 5543	2217	final	a	29	3	-7.628327721	-7.20421468
## 521	18	1	101	us	s 5949	2916	final	u	30	4	0.125747206	-4.82880115
## 522	18	1	103	ɛs	s 5936	1710	final	ɛ	30	2	1.708806861	-2.87373680
## 523	18	1	105	ɛys	s 5636	2604	final	ɛy	29	4	-0.011565676	-6.18633017
## 524	18	1	107	ɑ̆	č 4447	2008	final	ɑ̆	27	4	-0.788326132	-6.65837629
## 525	18	1	109	yč	č 3548	1597	final	y	26	4	3.038527005	-1.15027419
## 526	18	1	111	ɑ̆sɪ	s 5954	2047	initial	ɑ̆ i	30	3	2.590658914	-0.89956657
## 527	18	1	111	as	s 5221	1779	final	a	29	3	-2.442945730	-5.63910970
## 528	18	1	112	əsɪ	s 6401	2069	initial	ə i	30	2	3.073747889	-0.67538655
## 529	18	1	112	is	s 6043	2074	final	i	30	3	-2.132493581	-4.98992844
## 530	18	1	113	ɑ̆sɪ	č 4511	2017	initial	ɑ̆ i	28	4	2.302010181	-0.94138812
## 531	18	1	113	eis	s 5696	2044	final	ei	29	3	-1.128631532	-5.17867613
## 532	19	1	1	əsɔ̆	s 5631	2069	initial	ə ɔ̆	29	3	-7.917571334	-3.76362715
## 533	19	1	3	əsa	s 6271	1533	initial	ə a	30	2	-0.362991039	1.04800358
## 534	19	1	5	əsɛy	s 6524	2008	initial	ə ɛy	30	2	-0.004524336	6.94866299
## 535	19	1	7	əsai	s 5655	1616	initial	ə ai	29	2	-3.242551905	-4.37539835
## 536	19	1	9	ɛinsa	s 5548	1467	initial	ɛin a	29	2	1.865941999	-3.09170862
## 537	19	1	19	əsɪ	s 5297	1615	initial	ə ɪ	29	2	-2.118358901	-0.43364225
## 538	19	1	23	əɔ̆	č 4133	1993	initial	ə o	27	4	3.515873721	3.58433630
## 539	19	1	25	əči	č 4384	1571	initial	ə i	27	3	2.622326738	6.24238252
## 540	19	1	27	ɑ̆sɑ̆	č 3782	1290	initial	ɑ̆ a	26	3	8.516787337	8.26662649
## 541	19	1	29	iča	č 4000	1430	initial	i a	27	3	2.712842600	3.62481565
## 542	19	1	33	əču	č 4120	1730	initial	ə u	27	4	-0.694945881	0.35650332
## 543	19	1	35	əčā	č 4009	1499	initial	ə ā	27	3	5.275666270	5.76783474
## 544	19	1	37	əčo	č 4444	2078	initial	ə o	27	4	0.270467963	2.05982880
## 545	19	1	41	əči	č 4413	1581	initial	ə i	27	3	4.116634837	6.87659675
## 546	19	1	43	ɔ̆čy	č 4654	2145	initial	ɔ̆ y	28	4	2.227559058	4.53264742
## 547	19	1	45	ɛičə	č 4109	1536	medial	ɛi ə	27	3	4.781343314	7.63984100
## 548	19	1	47	ɛčə	č 4037	1547	medial	ɛ ə	27	3	1.277360163	5.73534006
## 549	19	1	49	oučə	č 3702	1942	initial	ou ə	26	5	4.675064778	5.54339029
## 550	19	1	51	ɛyčə	č 3990	1784	medial	ɛy ə	27	4	-0.810767364	-2.14777779
## 551	19	1	53	ačə	č 4440	1741	medial	a ə	27	3	8.181063204	4.56569554
## 552	19	1	55	ačə	č 4081	1487	medial	a ə	27	3	4.584567550	1.37283276
## 553	19	1	57	ɛčə	č 4416	1481	medial	ɛ ə	27	3	2.090396404	3.81221857
## 554	19	1	57	əs	s 4745	1227	final	ə	28	2	-8.696012215	-2.76702901
## 555	19	1	59	učə	č 4937	2244	medial	u ə	28	4	0.616956559	3.72761975
## 556	19	1	61	isə	s 4925	1134	medial	i ə	28	2	-1.052415137	0.74151237
## 557	19	1	63	ɛsi	s 5317	1605	medial	ɛ i	29	2	1.424600637	-2.21989116
## 558	19	1	65	ɛisə	s 4868	1552	medial	ɛi ə	28	3	2.789326574	3.08572918

## 559	19	1	67	isə	s 5008	1396	medial	i ə	28	2	1.199763102	5.50864691
## 560	19	1	69	asə	s 5485	1576	medial	a ə	29	2	11.031006990	6.82255601
## 561	19	1	71	ysə	s 4948	1768	medial	y ə	28	3	-0.849178054	0.36040523
## 562	19	1	73	əsy	s 4953	1838	initial	ə y	28	3	4.202402207	3.78663133
## 563	19	1	73	ysə	s 5345	2036	medial	y ə	29	3	0.404420959	1.05467746
## 564	19	1	74	əsau	s 5373	1319	initial	ə au	29	2	1.513786491	1.89036161
## 565	19	1	74	aus	s 4381	1507	final	au	27	3	2.703105692	6.36492298
## 566	19	1	75	u¢	¢ 3461	1352	final	u	25	3	0.065512142	2.27435006
## 567	19	1	77	ɛ¢	¢ 3923	1356	final	ɛ	26	3	1.538944539	5.50840956
## 568	19	1	79	a¢	¢ 4203	1543	final	a	27	3	9.062209208	7.00503885
## 569	19	1	81	ous	s 4750	1823	final	ou	28	3	-5.324285199	-3.12160165
## 570	19	1	83	ɛis	s 5981	1579	final	ɛi	30	2	-1.020390113	3.19850263
## 571	19	1	85	ɛis	s 5347	1557	final	ɛi	29	2	2.039763111	7.74897174
## 572	19	1	87	əys	s 3980	1161	final	əy	27	2	-1.955503043	1.73368729
## 573	19	1	89	əys	s 4433	1754	final	əy	27	3	-4.342587212	-0.93982377
## 574	19	1	91	ɔs	s 5011	2232	final	ɔ	28	4	-0.202735974	3.05570807
## 575	19	1	93	us	s 4958	2015	final	u	28	3	-2.391527712	0.83812504
## 576	19	1	95	as	s 4832	1393	final	a	28	2	2.350666526	6.27746181
## 577	19	1	97	is	s 4365	884	final	i	27	2	-2.533228171	-2.79761583
## 578	19	1	99	as	s 4155	982	final	a	27	2	0.657679327	6.34152638
## 579	19	1	101	us	s 3959	2033	final	u	27	5	-2.017421051	-1.01960101
## 580	19	1	103	ɛs	s 5739	1556	final	ɛ	29	2	0.630552085	2.44930859
## 581	19	1	105	əys	s 4548	1978	final	əy	28	4	-2.868907593	-0.10072428
## 582	19	1	107	a¢	¢ 3895	1677	final	a	26	4	1.417197822	4.85857857
## 583	19	1	109	y¢	¢ 4185	2013	final	y	27	4	-0.588442973	3.54544703
## 584	19	1	111	aṛsi	s 5770	1900	initial	aṛ i	29	3	5.759440409	10.60290167
## 585	19	1	111	as	s 4887	1481	final	a	28	2	-2.482594188	2.49972296
## 586	19	1	112	əsi	s 5941	1540	initial	ə i	30	2	-2.532239853	0.30774716
## 587	19	1	112	is	s 4976	1295	final	i	28	2	-1.812743442	1.59637412
## 588	19	1	113	aṛci	¢ 4190	1555	initial	aṛ i	27	3	4.982440551	7.17541469
## 589	19	1	113	eis	s 4887	1480	final	ei	28	2	-4.959659079	-2.24510127
## 590	4	0	1	əsɔ	s 6526	2516	initial	ə ɔ	30	3	12.918614091	14.41721723
## 591	4	0	3	əsa	s 6192	2028	initial	ə a	30	3	12.492181937	16.23916261
## 592	4	0	5	əsəy	s 6170	2210	initial	ə əy	30	3	7.823743332	11.64369177
## 593	4	0	7	əsai	s 6474	1814	initial	ə ai	30	2	11.917020118	13.89077516
## 594	4	0	9	ɛinsa	s 6283	2244	initial	ɛin a	30	3	5.364641582	7.98911263
## 595	4	0	13	əcȳ	¢ 5695	2870	initial	ə ȳ	29	4	14.353022835	15.74289503
## 596	4	0	19	əsɪ	s 5993	2050	initial	ə r	30	3	13.499763208	17.47697181
## 597	4	0	23	əcō	¢ 4592	2282	initial	ə o	28	4	8.946271243	11.48071115
## 598	4	0	25	əcī	¢ 4392	2049	initial	ə i	27	4	13.046933731	14.60596007

## 599	4	0	27	aꝑ̥a	¢	4862	1906	initial	aꝑ	a	28	3	7.728445668	11.1766887
## 600	4	0	29	iꝑ̥a	¢	4242	2151	initial	i	a	27	4	15.870004980	16.37340778
## 601	4	0	33	əꝑ̥u	¢	4612	2710	initial	ə	u	28	5	9.061714341	12.88325211
## 602	4	0	35	əꝑ̥ā	¢	4426	2225	initial	ə	ā	27	4	6.590389511	6.55406485
## 603	4	0	37	əꝑ̥o	¢	4735	2857	initial	ə	o	28	6	12.405167736	12.52473028
## 604	4	0	39	aꝑ̥ɛ̥	¢	4459	1845	initial	aꝑ	ɛ̥	27	3	5.338543863	4.28923302
## 605	4	0	41	əꝑ̥i	¢	4607	2242	initial	ə	i	28	4	8.838226592	9.02617552
## 606	4	0	43	ɔ̥y	¢	3941	2320	initial	ɔ̥	y	27	5	3.652817770	10.11227334
## 607	4	0	45	ɛi̥c̥ə	¢	4923	1751	medial	ɛi	ə	28	3	10.650874941	10.70579709
## 608	4	0	47	ɛ̥c̥ə	¢	4264	2096	medial	ɛ̥	ə	27	4	5.938159321	8.12229034
## 609	4	0	49	ou̥c̥ə	¢	4262	2111	initial	ou̥	ə	27	4	4.993239210	3.97725428
## 610	4	0	51	ɛy̥c̥ə	¢	4429	2300	medial	ɛy̥	ə	27	5	5.499445249	7.34610913
## 611	4	0	53	ḁc̥ə	¢	4253	1901	medial	ḁ	ə	27	4	6.912994530	7.88172074
## 612	4	0	55	ḁc̥ə	¢	4859	2066	medial	ḁ	ə	28	4	12.239741488	15.53627645
## 613	4	0	57	ɛ̥c̥ə	¢	4110	2180	medial	ɛ̥	ə	27	5	12.152355059	11.45199065
## 614	4	0	57	ə̥s	s	5278	1572	final	ə̥	s	29	2	0.503478733	2.21014927
## 615	4	0	59	u̥c̥ə	¢	4127	2506	medial	u̥	ə	27	6	8.302805889	8.25328377
## 616	4	0	61	i̥s̥ə	s	5031	2275	medial	i̥	ə	28	4	6.895438177	10.63522566
## 617	4	0	63	ɛ̥s̥i	s	4787	1693	medial	ɛ̥	i	28	3	6.139878727	9.49820650
## 618	4	0	65	ɛi̥s̥ə	s	4982	1712	medial	ɛi̥	ə	28	3	5.118408075	12.10956615
## 619	4	0	67	i̥s̥ə	s	4726	2453	medial	i̥	ə	28	5	6.305849780	11.75908471
## 620	4	0	69	ḁs̥ə	s	6191	2128	medial	ḁ	ə	30	3	9.278815763	14.19028975
## 621	4	0	71	y̥s̥ə	s	6004	2476	medial	y̥	ə	30	3	7.334315603	11.43282404
## 622	4	0	73	ə̥s̥y	s	6636	2382	initial	ə̥	y	30	3	8.354024380	11.12268819
## 623	4	0	73	y̥s̥ə	s	6047	2516	medial	y̥	ə	30	3	3.475825599	8.00503714
## 624	4	0	74	ə̥s̥au	s	5571	2223	initial	ə	au	29	3	12.136973795	17.67315700
## 625	4	0	74	aus	s	5085	2372	final	au		29	4	4.363659195	7.13691044
## 626	4	0	75	u̥c̥	¢	4863	2688	final	u̥		28	5	4.227530211	9.21064389
## 627	4	0	77	ɛ̥c̥	¢	4325	1867	final	ɛ̥		27	4	3.282047765	6.83272625
## 628	4	0	79	ḁc̥	¢	4786	2045	final	ḁ		28	4	5.448209710	9.12609636
## 629	4	0	81	ous	s	4763	2264	final	ou		28	4	0.920068939	2.07760530
## 630	4	0	83	ɛ̥is̥	s	4747	1916	final	ɛi̥		28	3	2.852949832	4.55712313
## 631	4	0	85	ɛ̥is̥	s	4762	2064	final	ɛi̥		28	4	3.776590212	6.52024757
## 632	4	0	87	ə̥ys̥	s	5500	2333	final	ə̥y̥		29	3	8.567099846	9.55318092
## 633	4	0	89	ə̥ys̥	s	5323	2514	final	ə̥y̥		29	4	3.568749970	6.08305609
## 634	4	0	91	ɔ̥s̥	s	6932	2696	final	ɔ̥		31	3	3.913272433	8.37711811
## 635	4	0	93	us̥	s	5278	2097	final	u		29	3	-1.189194094	3.00821931
## 636	4	0	95	as̥	s	5200	1801	final	a		29	3	-1.135977708	6.52493805
## 637	4	0	97	is̥	s	5128	2255	final	i		29	4	-0.107628448	3.40513307
## 638	4	0	99	as̥	s	5135	2063	final	a		29	3	1.934302655	10.32050809

## 639	4	0	101	us	s 5875	2231	final	u	30	3	0.807376041	3.79143873
## 640	4	0	103	ɛs	s 6339	2242	final	ɛ	30	3	5.428959970	7.74944096
## 641	4	0	105	ɛȳs	s 4618	2650	final	ɛȳ	28	5	4.016308403	4.08357796
## 642	4	0	107	ač̄	č 4355	2269	final	a	27	5	6.471925169	5.71121297
## 643	4	0	109	yč̄	č 4186	2508	final	y	27	6	0.311992374	3.58536718
## 644	4	0	111	ač̄si	s 4856	2142	initial	ač̄ i	28	4	10.562026485	11.91050067
## 645	4	0	111	as	s 6485	2304	final	a	30	3	3.948077180	7.42015050
## 646	4	0	112	əsi	s 5423	1980	initial	ə i	29	3	11.633834611	12.26639232
## 647	4	0	112	is	s 4659	1935	final	i	28	3	-2.817879929	-0.72873633
## 648	4	0	113	ač̄i	č 4517	2258	initial	ač̄ i	28	4	9.565246662	11.00100151
## 649	4	0	113	eis	s 5251	1951	final	ei	29	3	-2.407505639	2.26169801
## 650	5	0	1	əsɔ̄	s 5435	2167	initial	ə ɔ̄	29	3	2.310060757	9.02616802
## 651	5	0	3	əsa	s 4548	1895	initial	ə a	28	3	9.701498389	13.19224426
## 652	5	0	5	əsɛȳ	s 4585	1703	initial	ə ɛȳ	28	3	5.261908686	10.63471771
## 653	5	0	7	əsai	s 4643	1662	initial	ə ai	28	3	6.857532738	11.26294092
## 654	5	0	9	ɛinsa	s 4826	1967	initial	ɛin a	28	3	6.617816369	13.85803736
## 655	5	0	13	əč̄ȳ	č 3245	1780	initial	ə ȳ	25	5	13.210958495	11.86777926
## 656	5	0	19	əsɪ	s 4734	1807	initial	ə ɪ	28	3	4.001767158	7.37140340
## 657	5	0	23	əč̄o	č 3310	1389	initial	ə o	25	4	6.038528596	11.40687915
## 658	5	0	25	əč̄i	č 3543	1419	initial	ə i	26	3	4.119639776	6.61671599
## 659	5	0	27	ač̄ca	č 3028	1297	initial	ač̄ a	24	4	6.927046813	11.50875600
## 660	5	0	29	ič̄a	č 3630	1351	initial	i a	26	3	4.677841420	9.32007079
## 661	5	0	33	əč̄u	č 3115	1447	initial	ə u	25	4	1.192953853	7.34950107
## 662	5	0	35	əč̄ā	č 3883	1534	initial	ə ā	26	3	5.161543070	7.94332911
## 663	5	0	37	əč̄o	č 3133	1476	initial	ə o	25	4	5.536221066	8.10262275
## 664	5	0	39	ač̄ɛ	č 3615	1410	initial	ač̄ ɛ	26	3	7.502515753	9.49341121
## 665	5	0	41	əč̄i	č 3494	1414	initial	ə i	26	3	4.024045096	7.02237889
## 666	5	0	43	əč̄ȳ	č 3627	1723	initial	ə ȳ	26	4	2.652466794	3.61367571
## 667	5	0	45	ɛič̄ə	č 4027	1841	medial	ɛi ə	27	4	3.517199649	5.62477700
## 668	5	0	47	ɛč̄ə	č 3425	1232	medial	ɛ ə	25	3	4.949430035	10.15994900
## 669	5	0	49	ouč̄ə	č 3023	1450	initial	ou ə	24	4	0.802702835	5.75688178
## 670	5	0	51	ɛyč̄ə	č 3257	1406	medial	ɛy ə	25	4	5.126397349	5.40983612
## 671	5	0	53	ač̄ə	č 3252	1202	medial	a ə	25	3	5.470448490	9.37403017
## 672	5	0	55	ač̄ə	č 3406	1255	medial	a ə	25	3	6.082603152	8.13621490
## 673	5	0	57	ɛč̄ə	č 3822	1437	medial	ɛ ə	26	3	3.127813713	6.52763629
## 674	5	0	57	əs	s 4332	1710	final	ə	27	3	-1.273139781	3.81304664
## 675	5	0	59	uč̄ə	č 3067	1590	medial	u ə	24	5	8.389897318	10.31973469
## 676	5	0	61	išə	s 4348	1553	medial	i ə	27	3	4.043557273	9.09873031
## 677	5	0	63	ɛsi	s 4551	1866	medial	ɛ i	28	3	3.482702515	7.94360818
## 678	5	0	65	ɛisə	s 4139	1739	medial	ɛi ə	27	4	6.570720654	10.02906372

## 679	5	0	67	isə	s 4564	1707	medial	i ə	28	3	8.247329735	12.88810853
## 680	5	0	69	asə	s 4074	1575	medial	a ə	27	3	6.575575296	14.41268887
## 681	5	0	71	ysə	s 4830	2001	medial	y ə	28	3	4.655589094	9.23994620
## 682	5	0	73	əsy	s 5149	2210	initial	ə y	29	4	3.660817887	13.51774937
## 683	5	0	73	ysə	s 5458	2110	medial	y ə	29	3	3.189745702	7.35973221
## 684	5	0	74	əsau	s 4813	1872	initial	ə au	28	3	4.208716580	10.00824154
## 685	5	0	74	aus	s 3711	1420	final	au	26	3	-1.230755780	0.94565044
## 686	5	0	75	u¢	¢ 3247	1390	final	u	25	4	-1.589878299	-0.38178281
## 687	5	0	77	ɛ¢	¢ 3403	1340	final	ɛ	25	3	0.661655413	4.56103408
## 688	5	0	79	a¢	¢ 3144	1305	final	a	25	4	1.604005984	5.41876501
## 689	5	0	81	ous	s 3880	1664	final	ou	26	4	-0.320405631	1.99383429
## 690	5	0	83	ɛis	s 3672	1400	final	ɛi	26	3	-0.474756863	4.66736749
## 691	5	0	85	ɛis	s 4144	1659	final	ɛi	27	3	0.922219008	4.94138092
## 692	5	0	87	əys	s 2956	640	final	əy	24	2	-4.102966900	-1.83418270
## 693	5	0	89	əys	s 3512	1602	final	əy	26	4	-3.180917203	2.31057889
## 694	5	0	91	ɔs	s 4382	2203	final	ɔ	27	4	1.164747464	5.53864680
## 695	5	0	93	us	s 4100	1747	final	u	27	4	-0.928196042	3.57390993
## 696	5	0	95	as	s 4530	2008	final	a	28	4	-2.219901479	0.34539092
## 697	5	0	97	is	s 4731	1976	final	i	28	3	0.922696618	4.50645051
## 698	5	0	99	as	s 4581	1966	final	a	28	4	-2.428210558	1.48057109
## 699	5	0	101	us	s 4066	1617	final	u	27	3	0.225697008	3.18689870
## 700	5	0	103	ɛs	s 4671	1820	final	ɛ	28	3	-0.920431969	4.26333026
## 701	5	0	105	əys	s 3648	1407	final	əy	26	3	-0.918850023	2.91151438
## 702	5	0	107	a¢	¢ 3143	1275	final	a	25	4	0.621349835	5.22609145
## 703	5	0	109	y¢	¢ 3749	1650	final	y	26	4	1.668522148	7.98069414
## 704	5	0	111	aṛsi	s 4599	1634	initial	aṛ i	28	3	2.822886917	7.27598316
## 705	5	0	111	as	s 3977	1420	final	a	27	3	-1.090882131	1.14882607
## 706	5	0	112	əsi	s 4098	1401	initial	ə i	27	3	6.693208183	10.86384100
## 707	5	0	112	is	s 4255	1686	final	i	27	3	-3.341638282	2.10641846
## 708	5	0	113	aṛci	¢ 4045	1868	initial	aṛ i	27	4	6.547658842	12.46995030
## 709	5	0	113	eis	s 3789	1466	final	ei	26	3	-0.320557829	2.40935043
## 710	6	0	1	əsɔ	s 6108	1570	initial	ə ɔ	30	2	1.295853587	3.38379133
## 711	6	0	3	əsa	s 5744	1466	initial	ə a	29	2	2.062678646	0.78869843
## 712	6	0	5	əsəy	s 5504	1632	initial	ə əy	29	2	2.548281082	2.58006173
## 713	6	0	7	əsai	s 5978	1764	initial	ə ai	30	2	-1.161501085	0.45407031
## 714	6	0	9	ɛinsa	s 5595	1630	initial	ɛin a	29	2	0.285408015	-0.76456250
## 715	6	0	19	əsɪ	s 6246	1778	initial	ə i	30	2	-0.618220837	2.17947341
## 716	6	0	23	əco	¢ 4004	2574	initial	ə o	27	6	3.355375408	3.33596658
## 717	6	0	25	əci	¢ 4026	2136	initial	ə i	27	5	4.171758338	5.47203674
## 718	6	0	27	aṛca	¢ 3284	2102	initial	aṛ a	25	6	1.906721022	1.37056174

## 719	6	0	29	i <u>Ca</u>	¢	4026	2099	initial	i	a	27	5	5.579338360	5.30268767
## 720	6	0	33	ə <u>Ca</u>	¢	4209	2628	initial	ə	u	27	6	4.044555710	4.68263675
## 721	6	0	35	ə <u>Cā</u>	¢	3881	1753	initial	ə	ā	26	4	4.209126542	3.58752569
## 722	6	0	37	ə <u>Co</u>	¢	3762	2151	initial	ə	o	26	5	3.350193807	3.60941106
## 723	6	0	41	ə <u>Gi</u>	¢	3171	1734	initial	ə	i	25	5	3.917495728	4.68140125
## 724	6	0	43	ɔ <u>gy</u>	¢	3964	2450	initial	ɔ	y	27	6	5.453224109	4.86062484
## 725	6	0	45	ɛi <u>Ca</u>	¢	3762	1780	medial	ɛi	ə	26	4	4.078474225	3.46568899
## 726	6	0	47	ɛ <u>Ca</u>	¢	3529	1930	medial	ɛ	ə	26	5	3.214703786	4.58117942
## 727	6	0	49	ou <u>Ca</u>	¢	4425	2449	initial	ou	ə	27	5	7.177178634	5.76764962
## 728	6	0	51	ɔy <u>Ca</u>	¢	3699	2232	medial	ɔy	ə	26	6	3.336750475	2.33349972
## 729	6	0	53	a <u>Ca</u>	¢	3510	1835	medial	a	ə	26	5	2.609296266	2.12703121
## 730	6	0	55	a <u>Ca</u>	¢	3473	1637	medial	a	ə	25	4	3.974382901	3.26145076
## 731	6	0	57	ɛ <u>Ca</u>	¢	3382	1702	medial	ɛ	ə	25	5	6.130707914	4.40103078
## 732	6	0	57	əs	s	5470	1847	final	ə	s	29	3	-4.932282714	-4.34238376
## 733	6	0	59	u <u>Ca</u>	¢	4272	2614	medial	u	ə	27	6	2.890614640	4.39643496
## 734	6	0	61	i <u>sa</u>	s	5567	1579	medial	i	ə	29	2	-4.140234944	-2.40764897
## 735	6	0	63	ɛi <u>si</u>	s	5815	1419	medial	ɛ	i	30	2	0.238488147	-1.50229760
## 736	6	0	65	ɛis <u>ə</u>	s	5724	1395	medial	ɛi	ə	29	2	0.633592936	0.24054052
## 737	6	0	67	i <u>sa</u>	s	5370	1581	medial	i	ə	29	2	0.106134594	1.30397417
## 738	6	0	69	a <u>se</u>	s	5692	1740	medial	a	ə	29	2	1.744686091	2.55250232
## 739	6	0	71	y <u>se</u>	s	5842	1930	medial	y	ə	30	3	2.131516535	2.74291945
## 740	6	0	73	əsy	s	6290	1896	initial	ə	y	30	2	0.783272048	0.99129070
## 741	6	0	73	y <u>se</u>	s	5885	1927	medial	y	ə	30	3	-0.281851331	-1.62893453
## 742	6	0	74	əsau	s	6022	1856	initial	ə	au	30	2	2.537335728	1.27076949
## 743	6	0	74	aus	s	4906	2095	final	au	s	28	4	-0.635255711	-0.63957252
## 744	6	0	75	u <u>Ca</u>	¢	3723	2207	final	u	s	26	6	-0.158582132	0.80950791
## 745	6	0	77	ɛ <u>Ca</u>	¢	3672	1912	final	ɛ	s	26	5	1.474606006	1.98479845
## 746	6	0	79	a <u>Ca</u>	¢	3864	2018	final	a	s	26	5	2.009053556	1.26884837
## 747	6	0	81	ous	s	4865	1977	final	ou	s	28	3	5.102767144	3.42806157
## 748	6	0	83	ɛis	s	5201	1585	final	ɛi	s	29	2	-2.860524912	-3.60265330
## 749	6	0	85	ɛis	s	5156	1598	final	ɛi	s	29	2	-2.908275678	-2.14214987
## 750	6	0	87	ɔys	s	5720	2037	final	ɔy	s	29	3	-1.988792218	-2.22559653
## 751	6	0	89	ɔys	s	5606	1929	final	ɔy	s	29	3	0.158439254	-1.57069231
## 752	6	0	91	ɔs	s	5850	1724	final	ɔ	s	30	2	-4.284970457	0.71194919
## 753	6	0	93	us	s	5540	2088	final	u	s	29	3	-0.226504995	1.84653399
## 754	6	0	95	as	s	5348	1782	final	a	s	29	3	-2.377619494	-1.38061995
## 755	6	0	97	is	s	5436	1828	final	i	s	29	3	-3.016206908	-3.00020755
## 756	6	0	99	as	s	4983	1608	final	a	s	28	3	-0.299068414	0.45737605
## 757	6	0	101	us	s	5810	1986	final	u	s	30	3	-3.034634774	-3.29758873
## 758	6	0	103	ɛs	s	5793	1858	final	ɛ	s	29	2	-1.703513144	-1.73678586

## 759	6	0	105	əys	s 5282	1920	final	əy	29	3	-0.627779699	-3.70801474
## 760	6	0	107	aç	ç 4244	1937	final	a	27	4	7.978781658	8.12820477
## 761	6	0	109	yç	ç 3497	2200	final	y	26	6	0.024704091	-0.48547074
## 762	6	0	111	açsi	s 5577	1802	initial	aç i	29	3	2.727806014	-0.80103412
## 763	6	0	111	as	s 5853	1836	final	a	30	2	-1.242379581	-0.20033606
## 764	6	0	112	əsi	s 5945	1624	initial	ə i	30	2	-0.297092898	-1.97937864
## 765	6	0	112	is	s 5149	1627	final	i	29	3	-3.110664147	-3.04768349
## 766	6	0	113	açi	ç 3935	1757	initial	aç i	26	4	2.873780684	4.50514541
## 767	6	0	113	eis	s 5329	1389	final	ei	29	2	-3.219436003	-3.18404463
## 768	7	0	1	əso	s 5756	2533	initial	ə o	29	4	-11.355213770	-8.37155218
## 769	7	0	3	əsa	s 5996	2195	initial	ə a	30	3	-11.797613622	-11.71258627
## 770	7	0	5	əsəy	s 5073	2384	initial	ə ey	28	4	-2.522735136	0.80148754
## 771	7	0	7	əsai	s 6183	2402	initial	ə ai	30	3	-7.385494758	-4.42511013
## 772	7	0	9	ɛinsa	s 5434	2255	initial	ɛin a	29	3	-6.089998883	-7.25978894
## 773	7	0	13	əçy	ç 5232	2467	initial	ə y	29	4	-9.203695033	-11.45137035
## 774	7	0	19	əsɪ	s 5956	2237	initial	ə i	30	3	-6.886590537	-5.49615728
## 775	7	0	23	əço	ç 5176	2233	initial	ə o	29	4	-7.810489746	-8.67546391
## 776	7	0	25	əçi	ç 5232	2307	initial	ə i	29	4	-4.066672881	-3.26506137
## 777	7	0	27	açä	ç 4991	2359	initial	aç a	28	4	1.273330871	-0.45705382
## 778	7	0	29	içä	ç 4872	2204	initial	i a	28	4	-6.167101456	-8.77475445
## 779	7	0	33	əçu	ç 4742	2300	initial	ə u	28	4	-7.966591984	-6.38729799
## 780	7	0	35	əçā	ç 4878	2307	initial	ə ā	28	4	-10.068462180	-10.23722516
## 781	7	0	37	əço	ç 4873	2155	initial	ə o	28	4	-5.882849495	-8.16208153
## 782	7	0	39	aççε	ç 5243	2283	initial	aç ε	29	4	-7.840326815	-7.71890614
## 783	7	0	41	əçi	ç 5169	2402	initial	ə i	29	4	-1.339401933	-1.38409776
## 784	7	0	43	ɔçy	ç 4798	2383	initial	ɔ y	28	4	-6.113117981	-6.85770178
## 785	7	0	45	ɛicə	ç 4705	2068	medial	ɛi ə	28	4	-9.042927445	-8.87202762
## 786	7	0	47	ɛçə	ç 4836	1822	medial	ɛ ə	28	3	-9.010543188	-9.44972296
## 787	7	0	49	ouçə	ç 4991	2630	initial	ou ə	28	5	-9.121271560	-5.37133359
## 788	7	0	51	əyçə	ç 4898	2428	medial	əy ə	28	4	-7.801157219	-8.76397463
## 789	7	0	53	açə	ç 4459	2068	medial	a ə	27	4	-11.190080763	-10.59789461
## 790	7	0	55	açə	ç 5078	2191	medial	a ə	28	4	-7.953670641	-7.51416198
## 791	7	0	57	ɛçə	ç 3928	1763	medial	ɛ ə	26	4	-17.126030023	-17.14123003
## 792	7	0	59	uçə	ç 5022	2516	medial	u ə	28	4	-6.859013635	-8.04432699
## 793	7	0	61	isə	s 5581	2450	medial	i ə	29	4	-4.824170793	-4.92481537
## 794	7	0	63	ɛsi	s 5524	2326	medial	ɛ i	29	3	-8.066118466	-7.10572374
## 795	7	0	65	ɛisə	s 5020	2601	medial	ɛi ə	28	4	-10.463500033	-8.44359531
## 796	7	0	67	isə	s 5080	2458	medial	i ə	28	4	-12.383421002	-8.82219945
## 797	7	0	69	asə	s 5340	2300	medial	a ə	29	4	-8.570561204	-6.37864555
## 798	7	0	71	yçə	s 5559	2716	medial	y ə	29	4	-8.733090986	-6.41909500

## 799	7	0	73	əsy	s 4682	1992	initial	ə	y	28	4	-9.777155139	-6.84412486
## 800	7	0	73	ysə	s 4912	2430	medial	y	ə	28	4	-12.341061113	-9.65534067
## 801	7	0	74	əsau	s 6161	2387	initial	ə	au	30	3	-5.362248743	-5.42355408
## 802	7	0	74	aus	s 4195	2251	final	au		27	5	-12.315677960	-10.58862842
## 803	7	0	75	u¢	¢ 4289	2584	final	u		27	6	-15.809085788	-17.20487146
## 804	7	0	77	ɛ¢	¢ 4794	2248	final	ɛ		28	4	-11.042138506	-9.90291283
## 805	7	0	79	a¢	¢ 4859	2188	final	a		28	4	-7.071923285	-7.17656111
## 806	7	0	81	ous	s 4044	2442	final	ou		27	6	-8.004347304	-6.41373790
## 807	7	0	83	ɛis	s 4517	2399	final	ɛi		28	5	-13.376952783	-14.74565189
## 808	7	0	85	ɛis	s 5004	2855	final	ɛi		28	5	-9.094373419	-7.82969602
## 809	7	0	87	əsys	s 4564	2672	final	əy		28	5	-12.792682694	-12.18468628
## 810	7	0	89	əsys	s 4547	2312	final	əy		28	4	-10.978710172	-11.66791244
## 811	7	0	91	ɔs	s 4691	2220	final	ɔ		28	4	-15.110596624	-11.42054379
## 812	7	0	93	us	s 3985	2590	final	u		27	6	-13.307495924	-11.49549779
## 813	7	0	95	as	s 3900	2403	final	a		26	6	-14.583242215	-12.68605454
## 814	7	0	97	is	s 4804	2414	final	i		28	4	-11.333885010	-8.60884489
## 815	7	0	99	as	s 4397	2326	final	a		27	5	-16.041050322	-13.67758738
## 816	7	0	101	us	s 4438	2688	final	u		27	6	-12.776148476	-11.68205407
## 817	7	0	103	ɛs	s 5231	2770	final	ɛ		29	5	-12.382171823	-11.84576438
## 818	7	0	105	əsys	s 4228	2548	final	əy		27	6	-12.923514294	-13.37156976
## 819	7	0	107	a¢	¢ 4813	2300	final	a		28	4	-16.640167279	-16.32773837
## 820	7	0	109	y¢	¢ 4771	2677	final	y		28	5	-10.457544765	-11.01852900
## 821	7	0	111	aʒi	s 6303	1602	initial	aʒ	i	30	2	-5.448995975	-4.16179284
## 822	7	0	111	as	s 5027	2047	final	a		28	3	-14.038702939	-12.77722836
## 823	7	0	112	əsi	s 5949	2433	initial	ə	i	30	3	-3.513558081	-2.43320425
## 824	7	0	112	is	s 4736	2502	final	i		28	5	-10.566133130	-9.77643282
## 825	7	0	113	aʒi	¢ 4822	1901	initial	aʒ	i	28	3	-2.845133835	-5.12179294
## 826	7	0	113	eis	s 4284	1650	final	ei		27	3	-14.259273543	-11.50760194
## 827	8	0	1	əsɔ	s 4007	1164	initial	ə	ɔ	27	2	1.694669251	4.41838192
## 828	8	0	3	əsa	s 5328	1842	initial	ə	a	29	3	3.688153018	4.44582865
## 829	8	0	5	əsəy	s 5640	2899	initial	ə	əy	29	4	-1.607979809	0.59831773
## 830	8	0	7	əsai	s 5286	2147	initial	ə	ai	29	3	-0.843349686	1.74306197
## 831	8	0	9	ɛinsa	s 5179	2262	initial	ɛin	a	29	4	-1.136024967	3.49485861
## 832	8	0	19	əsɪ	s 5067	1686	initial	ə	ɪ	28	3	0.968386998	1.42739015
## 833	8	0	23	əɔ̄o	¢ 3771	2461	initial	ə	o	26	6	1.201549924	2.17076147
## 834	8	0	25	əɔ̄i	¢ 4138	2076	initial	ə	i	27	4	-0.566311723	-1.88532098
## 835	8	0	27	aʒɔ̄a	¢ 3622	2239	initial	aʒ	a	26	6	0.750852649	0.91542634
## 836	8	0	29	iɔ̄a	¢ 3482	1872	initial	i	a	26	5	1.990278788	1.73085867
## 837	8	0	33	əɔ̄u	¢ 4474	2773	initial	ə	u	28	6	-1.585374580	-0.89045887
## 838	8	0	35	əɔ̄ā	¢ 3475	1931	initial	ə	ā	25	5	-1.351032391	1.43422472

## 839	8	0	37	ə̚o	¢	3626	2479	initial	ə	o	26	7	2.986820169	5.22880683
## 840	8	0	41	ə̚i	¢	3811	1995	initial	ə	i	26	5	-2.527464650	-1.94117920
## 841	8	0	43	ɔ̚y	¢	3150	1942	initial	ɔ	y	25	6	-5.962262024	-4.17428634
## 842	8	0	45	ɛi̚ə	¢	3767	1500	medial	ɛi	ə	26	3	0.307743327	-1.55409887
## 843	8	0	47	ɛ̚ə	¢	3966	1798	medial	ɛ	ə	27	4	-5.173828376	-3.21882395
## 844	8	0	49	ou̚ə̚	¢	3556	2474	initial	ou	ə̚	26	7	-0.029716423	0.33370386
## 845	8	0	51	ə̚y̚ə̚	¢	3329	2016	medial	ə̚y	ə̚	25	6	-3.083838527	-2.48120594
## 846	8	0	53	a̚ə̚	¢	4196	2511	medial	a	ə̚	27	6	1.010244942	-1.82294853
## 847	8	0	55	a̚ə̚	¢	4208	2305	medial	a	ə̚	27	5	0.369043777	0.19523322
## 848	8	0	57	ɛ̚ə̚	¢	4024	1819	medial	ɛ	ə̚	27	4	-1.637318081	-1.70643726
## 849	8	0	57	ə̚s	s	4347	1379	final	ə		27	3	0.032960562	1.76250837
## 850	8	0	59	u̚ə̚	¢	3199	2077	medial	u	ə̚	25	6	1.052718473	4.31843062
## 851	8	0	61	i̚ə̚	s	5266	1534	medial	i	ə̚	29	2	2.887004549	6.03890500
## 852	8	0	63	ɛ̚i̚	s	5399	2111	medial	ɛ	i̚	29	3	1.945839407	3.14643254
## 853	8	0	65	ɛi̚ə̚	s	4757	1615	medial	ɛi	ə̚	28	3	3.546228591	1.95656271
## 854	8	0	67	i̚ə̚	s	4832	1386	medial	i	ə̚	28	2	-1.976417254	-4.86785316
## 855	8	0	69	a̚ə̚	s	5140	1795	medial	a	ə̚	29	3	8.714371883	9.16937772
## 856	8	0	71	y̚ə̚	s	3903	1102	medial	y	ə̚	26	2	-4.357973184	-0.53321696
## 857	8	0	73	ə̚s̚y	s	4295	1403	initial	ə̚	y	27	3	0.646115160	1.99850207
## 858	8	0	73	y̚ə̚	s	4042	1084	medial	y	ə̚	27	2	-0.812517328	1.28248843
## 859	8	0	74	ə̚sau	s	4807	1570	initial	ə̚	au	28	3	3.254536101	4.97997968
## 860	8	0	74	aus	s	3749	2135	final	au		26	5	-6.945396862	0.68671175
## 861	8	0	75	u̚	¢	3337	2236	final	u		25	7	-8.591211168	-4.73245243
## 862	8	0	77	ɛ̚	¢	3515	1642	final	ɛ		26	4	-3.992973801	-5.08206034
## 863	8	0	79	a̚	¢	3642	2403	final	a		26	6	2.476688581	2.33476768
## 864	8	0	81	ous	s	4373	3097	final	ou		27	7	2.737237388	3.43449441
## 865	8	0	83	ɛis	s	4360	1299	final	ɛi		27	2	-3.542664405	-2.81023698
## 866	8	0	85	ɛis	s	4457	1572	final	ɛi		27	3	-5.980954414	-4.46913182
## 867	8	0	87	ə̚ys	s	4596	2002	final	ə̚y		28	4	-6.208020899	-4.70797529
## 868	8	0	89	ə̚ys	s	4169	2449	final	ə̚y		27	5	-1.719260703	-3.61864702
## 869	8	0	91	ɔ̚s	s	4280	1770	final	ɔ		27	3	-3.902316960	3.30837888
## 870	8	0	93	us	s	3667	2477	final	u		26	7	-3.618069472	0.23959402
## 871	8	0	95	as	s	4886	1465	final	a		28	2	-2.042495310	0.90655403
## 872	8	0	97	is	s	4581	1659	final	i		28	3	-1.541081497	-0.64889493
## 873	8	0	99	as	s	4784	1467	final	a		28	2	-1.996860395	-0.69632810
## 874	8	0	101	us	s	3649	2251	final	u		26	6	-7.158693417	-3.08985421
## 875	8	0	103	ɛs	s	4790	1486	final	ɛ		28	2	1.454181438	2.98449999
## 876	8	0	105	ə̚ys	s	3639	1727	final	ə̚y		26	4	-2.923268616	-3.24976212
## 877	8	0	107	a̚	¢	3145	1690	final	a		25	5	-6.909295981	-7.75785495
## 878	8	0	109	y̚	¢	3641	2299	final	y		26	6	-5.496479663	-2.12108855

##	879	8	0	111	a <sub>xi</sub>	s	5096	1918	initial	a <sub>x</sub>	i	29	3	-1.426549822	2.25579588		
##	880	8	0	111	a <sub>s</sub>	s	4838	1229	final	a		28	2	-6.116463733	-3.33066111		
##	881	8	0	112	a <sub>əsi</sub>	s	4909	2086	initial	ə	i	28	4	-2.088735111	-1.06370310		
##	882	8	0	113	a <sub>əxi</sub>	ç	3651	1618	initial	a <sub>x</sub>	i	26	4	-1.363638015	-3.04106654		
##	883	8	0	113	e <sub>is</sub>	s	4530	1227	final	e <sub>i</sub>		28	2	-2.237653377	-2.28041019		
##	884	9	0	5	a <sub>əsəy</sub>	s	6868	2368	initial	ə	əy	31	3	5.182396858	10.80661056		
##	885	9	0	13	a <sub>əy</sub>	ç	5417	2046	initial	ə	y	29	3	3.317532827	5.81884621		
##	886	9	0	23	a <sub>əo</sub>	ç	5823	2061	initial	ə	o	30	3	3.997801087	6.45099753		
##	887	9	0	25	a <sub>əci</sub>	ç	5597	1993	initial	ə	i	29	3	5.166415383	8.87791717		
##	888	9	0	29	i <sub>çə</sub>	ç	5850	2084	initial	i	a	30	3	4.303835601	5.44603672		
##	889	9	0	39	a <sub>çə</sub>	ç	5076	2174	initial	a <sub>x</sub>	ɛ	28	4	1.243825177	6.78774263		
##	890	9	0	43	ə <sub>çy</sub>	ç	5368	2387	initial	ə	y	29	4	3.104056368	3.78546987		
##	891	9	0	47	ɛ <sub>çə</sub>	ç	5447	2151	medial	ɛ	ə	29	3	4.811418909	9.12243879		
##	892	9	0	49	ou <sub>çə</sub>	ç	5322	2263	initial	ou	ʃ	29	3	1.834593632	4.27070025		
##	893	9	0	51	ə <sub>çyçə</sub>	ç	5687	2158	medial	əy	ə	29	3	2.191757371	5.61493108		
##	894	9	0	55	a <sub>çə</sub>	ç	5465	2182	medial	a	ə	29	3	1.434052347	6.60403312		
##	895	9	0	57	ɛ <sub>çə</sub>	ç	5180	2182	medial	ɛ	ə	29	3	3.852884235	8.94220070		
##	896	9	0	57	ə <sub>s</sub>	s	5901	1699	final	ə		30	2	-0.722199766	7.61291158		
##	897	9	0	59	u <sub>çə</sub>	ç	5545	1989	medial	u	ə	29	3	1.878958169	4.13385047		
##	898	9	0	61	i <sub>çə</sub>	s	6740	2529	medial	i	ə	31	3	5.538743061	12.28993258		
##	899	9	0	69	a <sub>çə</sub>	s	6325	2199	medial	a	ə	30	3	3.568023926	9.67718324		
##	900	9	0	71	y <sub>çə</sub>	s	6734	2696	medial	y	ə	31	3	5.869980927	9.18406859		
##	901	9	0	73	ə <sub>çy</sub>	s	6906	2512	initial	ə	y	31	3	4.492086386	9.84661191		
##	902	9	0	73	y <sub>çə</sub>	s	6203	2230	medial	y	ə	30	3	-1.124518435	4.35775984		
##	903	9	0	77	ɛ <sub>ç</sub>	ç	5231	1902	final	ɛ		29	3	0.638145075	4.42824839		
##	904	9	0	81	ous	s	6004	2667	final	ou		30	4	3.556158892	6.57774180		
##	905	9	0	83	e <sub>is</sub>	s	5852	2616	final	ɛi		30	4	0.531162541	5.59229926		
##	906	9	0	85	e <sub>is</sub>	s	5922	2489	final	ɛi		30	3	3.046079546	7.67304795		
##	907	9	0	87	ə <sub>ys</sub>	s	5116	2102	final	əy		29	3	-1.294538295	4.97922621		
##	908	9	0	93	us	s	5862	2434	final	u		30	3	0.106747286	4.44461323		
##	909	9	0	99	as	s	5297	2436	final	a		29	4	0.104023560	8.14528534		
##	910	9	0	101	us	s	6819	2518	final	u		31	3	1.827486309	4.09181283		
##	911	9	0	105	ə <sub>ys</sub>	s	5870	2480	final	əy		30	3	1.669722604	5.23386514		
##	912	9	0	109	y <sub>ç</sub>	ç	5815	2253	final	y		30	3	1.938889855	3.69842005		
##	913	9	0	112	a <sub>əsi</sub>	s	6832	2383	initial	ə	i	31	3	7.694848918	13.79923803		
##	914	9	0	112	is	s	5732	2542	final	i		29	4	-2.923129949	5.56337845		
##	915	9	0	113	a <sub>əxi</sub>	ç	5196	2181	initial	a <sub>x</sub>	i	29	3	2.138566854	7.87642382		
##	916	9	0	113	e <sub>is</sub>	s	6342	2334	final	ei		30	3	3.413715403	10.31523699		
##				bin3		bin4		bin5		bin6		bin7		bin8		bin9	bin10
##	1			-4.870987403		-4.218491929		-4.85084954		-6.43361639		-9.37037773		-7.75213565		-8.965112119	0.44953704

## 2	-2.060096856	-2.011352432	2.02690536	-1.14028874	-4.63274963	-5.24315302	-1.184719902	1.50863323
## 3	-3.942538691	-2.621271542	-0.91307900	6.73474664	-3.46042668	-5.39117711	-0.934100991	4.34352042
## 4	-2.576883594	-8.418655666	-8.95671953	-4.46914331	-7.91669629	-6.00234128	-8.196552297	-0.85400848
## 5	-4.805937129	-9.255554898	-1.09332878	0.98289121	-6.33733282	-7.81985071	-5.640433241	-1.65019708
## 6	-1.390355619	-4.743695869	-5.86416245	10.23145620	1.48904413	-1.81999343	-4.039300880	6.25737270
## 7	-0.824167003	2.898464496	8.68808620	17.89858165	10.46687574	9.63474035	12.365351204	12.38242027
## 8	-4.563326752	-1.874558140	-4.11159552	3.75137129	4.78184103	7.53250121	10.894737506	19.01172745
## 9	-2.885651998	1.223868843	6.08803333	14.24658228	9.95723500	11.77252067	14.473184060	14.43764981
## 10	-6.560601190	-2.348432003	1.10673458	9.39726651	9.75599646	7.46569456	6.554260500	12.74857353
## 11	-7.022745313	-0.105231764	4.68149422	11.74262293	11.68648626	11.88521681	10.436019302	11.22285251
## 12	-4.869122733	1.441566199	4.07589092	10.19573304	7.54141239	12.23068692	15.799872025	18.11958981
## 13	-4.236301075	2.214090346	11.86381036	14.27210336	9.30277687	11.57655290	10.435192010	13.43578529
## 14	-1.833062632	2.571349761	6.34386393	11.74954385	14.93515483	11.84231275	12.527015415	17.79249592
## 15	-1.782784224	2.039821622	4.54120559	15.02031079	8.74244868	6.64957363	10.534931307	10.43444193
## 16	-12.340440077	-7.142421267	-6.29981423	0.49848947	-3.71718674	-3.43642625	-0.495144634	7.14946709
## 17	-12.116079493	-7.049166773	-3.50335794	2.20616207	2.54673353	-1.30717646	2.221507680	7.59528849
## 18	-2.314254481	0.540705474	6.93012398	14.39429890	9.88015702	11.04963749	13.367783708	10.94073853
## 19	-10.281302655	-9.083187676	-4.31206262	4.02296575	3.00206172	4.56342148	5.405594013	9.49398003
## 20	-5.729750771	-6.579565799	-6.60704629	0.46300827	-1.62877689	-1.22045825	-0.806147425	3.78615399
## 21	-6.256516122	-3.186792218	-1.24130453	3.82119684	2.61193802	1.78860872	6.877539792	15.00712836
## 22	-7.915700681	-3.699297394	-0.33890513	6.52912903	5.43594206	1.16585999	4.940849257	15.21571713
## 23	-8.185167734	-13.379953944	-13.58766043	-4.10934535	-9.25810450	-10.81479059	-14.227980278	-2.66346746
## 24	-8.066419681	0.162871921	3.62553851	9.28919027	8.50599433	10.87109082	15.287907204	14.01670111
## 25	-3.430683034	-7.682228296	-6.84794229	2.71822585	-1.96375976	-2.78539417	-9.223431085	-1.26613338
## 26	-6.636345653	-8.806463327	-10.70906129	7.24088453	6.51844704	-1.88515219	-8.507853159	3.17150072
## 27	-7.876388020	-14.884741029	-12.41763643	18.06991260	7.29997662	-7.27812996	-5.325787853	3.22943955
## 28	-9.061759424	-9.929141723	-7.08696037	4.77015336	-8.04974316	-6.56288102	-10.332753081	-5.65594305
## 29	-8.535131603	-6.954441738	-3.44008687	-3.51133488	-12.20887893	-13.76810688	-12.862920619	-4.03063534
## 30	-5.048021010	-10.170598212	-3.71013799	0.46873754	-11.46261243	-13.72689036	-7.504446810	5.10924505
## 31	-4.541140709	-5.903421670	-7.74973602	4.31269690	-5.86228818	-4.94295229	-6.928250745	3.18069614
## 32	-1.781177473	-6.365916731	-2.85201697	7.86392348	-4.39096958	-4.61464283	-2.363228603	5.67900382
## 33	-3.288312359	-3.467051878	0.48328041	3.00342492	-5.03655545	-6.23052950	-5.900028919	4.17704627
## 34	-12.307146632	-2.150814865	-7.57346636	-7.25615605	-9.66184611	-12.47526020	-11.402936062	-3.62985279
## 35	-10.900581443	-11.960018159	-8.11164471	-1.30445822	2.49597467	0.82650567	-1.628927536	-0.05432472
## 36	-15.798092540	-10.462573689	-7.31758618	-2.20124191	0.15892111	1.19607872	-0.204661834	5.09582195
## 37	-14.006163718	-9.053732445	-3.66348289	2.93518115	0.39366470	-2.36666742	2.602155285	6.28214971
## 38	-19.348643686	-14.423812400	-14.50511169	-17.57737485	-22.92458096	-21.73573131	-17.079445324	-13.01302479
## 39	-16.290010461	-18.331965487	-15.72476060	-2.81819813	-4.87961268	-11.52607578	-14.551587765	-8.11317749
## 40	-11.482826095	-14.384734795	-11.28434641	-1.12852349	-1.80378236	-8.43464058	-8.684425979	0.62154825
## 41	-11.725350403	-14.844789864	-15.93050310	-4.34733174	-8.02760442	-10.69940873	-8.857842659	-1.43617124

## 42	-9.533543793	-13.930709063	-11.29849215	-1.20432319	-6.10983655	-12.18098533	-8.854002895	-1.57011783
## 43	-10.783589075	-6.859325742	-10.29197783	-10.85868288	-18.45845950	-14.68407392	-12.424488578	-2.05887759
## 44	-14.257938648	-3.706565503	-1.99031483	-5.15607857	-10.20800478	-9.37684269	-10.325566005	-6.46204272
## 45	-14.707261764	-14.628021654	-14.08734431	-14.82264207	-17.19359344	-16.98867342	-15.496796454	-18.17815375
## 46	-12.268874492	-13.689020590	-15.16262724	-1.41656234	-1.11228285	-6.72825928	-8.282925492	0.40607673
## 47	-16.520087420	-11.211109993	-13.84986995	-14.73437663	-15.71200831	-17.82704820	-16.603904332	-14.78345325
## 48	-16.688107720	-5.710826961	-13.30843120	-16.64861163	-18.46701955	-15.39291285	-14.154236192	-6.28975789
## 49	-14.920803307	-16.602421662	-14.88315217	-10.53666497	-15.53987699	-16.52919088	-12.255848440	-8.44060855
## 50	-16.681572518	-16.114899765	-15.15753102	-4.28553083	-8.79028825	-15.12609362	-15.332132951	-3.93295704
## 51	-10.251329846	-4.320844345	-0.95328553	5.20192925	2.24507523	7.54050239	7.947916385	8.56204851
## 52	-5.063614534	-3.083188943	1.96474053	7.67834115	9.93070379	8.97102730	8.921602496	13.43133051
## 53	-2.044693004	-4.425496682	-1.94484058	11.09772589	5.69337824	-0.40228071	2.819088255	11.47668983
## 54	-12.410924881	-9.783383223	-8.14316056	-10.81586687	-15.50825577	-17.05950153	-14.388136681	-8.84935627
## 55	-4.906311492	-7.321864124	-11.17094471	0.91845920	7.14259960	0.45613554	-5.603949303	4.96418267
## 56	-12.018483538	-14.851698979	-17.71417822	-1.78702284	-3.89355481	-7.24162234	-11.143317542	1.83047736
## 57	-7.731015119	-1.526123710	0.92771778	8.47426953	7.70248426	3.42574528	8.386255787	17.87392907
## 58	-13.592705648	-16.964074303	-16.34886079	4.46109815	4.23508639	-12.50689468	-13.129744797	-5.16114132
## 59	-7.726878033	-6.004981383	-7.99163391	-11.20099755	-15.05277168	-7.73611912	-5.977182986	-4.48037238
## 60	-7.853534019	-9.477856299	-7.88904615	0.52661694	-7.40818350	-8.27245758	-4.795711332	-3.05110439
## 61	-8.998224146	-13.514888050	-16.32681258	-6.59235000	-12.90771566	-11.86047006	-8.383012059	-4.79069389
## 62	-6.033568329	-9.803074515	-9.80749610	-3.70608540	-10.21059449	-6.49863894	-6.422565181	-4.03264082
## 63	-6.116723136	-12.280496713	-8.63034818	-2.74501013	-12.85611502	-7.46431831	-6.731357976	-4.90117926
## 64	-15.537888129	-15.378909911	-9.55817136	-5.06366234	0.36052668	4.12674636	5.982065242	8.79543343
## 65	-9.450944495	-11.127339855	-11.35282481	-7.81397909	-10.30128162	-9.79269623	-8.759233273	-5.34556004
## 66	-13.086745973	-12.532210183	-7.79933846	-1.31054846	-0.41051909	0.54340823	8.942074267	9.30405951
## 67	-7.780757737	-11.443070118	-6.54461755	-3.70476766	2.46163689	9.48084999	4.620814236	4.82049192
## 68	-5.599348662	-8.669298427	-2.64431956	0.90553090	-1.43631605	10.29586532	17.761948265	15.80029771
## 69	-13.438237459	-13.504948987	-13.05564195	-7.77801048	1.38926731	-1.90466006	0.273078758	2.72905867
## 70	-15.111043395	-15.720444534	-9.86848464	-6.40256335	-0.03924678	3.52118315	6.902724513	9.82894892
## 71	-9.243052384	-10.087659872	-7.03221896	-3.11889515	-3.16143813	-3.17069675	-1.663288152	3.83434132
## 72	-9.837597731	-12.806893250	-5.93857394	1.20959712	1.35863945	0.84950860	8.120090407	6.44647874
## 73	-14.135361133	-14.979917321	-10.98470179	-8.70695190	-6.08191372	1.46997359	2.544302053	3.47759818
## 74	-12.210645378	-11.496539838	-7.62749438	-3.98490842	5.70271832	5.95495496	8.355319611	12.78161898
## 75	-13.446329102	-14.658611571	-8.01149551	-4.96323622	1.53186285	1.86741475	0.554080802	5.83921994
## 76	-12.455365461	-10.751378661	-7.25995638	-5.82881130	-1.16725235	3.83475943	0.441877325	4.74104808
## 77	-14.571248171	-14.860902438	-7.95427578	-1.05100005	-5.15618292	3.38935897	6.308476113	2.21561287
## 78	-17.358687981	-17.844933641	-11.62306658	-6.20519616	-2.80396222	2.60316779	2.352301469	4.78801399
## 79	-9.513826698	-11.857893553	-9.27967336	-5.36676513	1.85204880	3.20938517	0.715461759	7.60991900
## 80	-7.332788207	-9.158446893	-6.27658213	-2.07567872	1.84323028	4.88346297	6.598041439	8.38792405
## 81	-13.265041077	-14.445532197	-7.77901204	-6.26813606	-4.27429015	3.99170058	1.229977507	3.83094466

## 82	-19.359935734	-22.513532562	-17.96677454	-10.49265030	-22.21436904	-15.11381134	-14.224157669	-14.68377831
## 83	-15.356826454	-13.516234006	-6.72252826	4.82136348	8.11430004	10.77883960	9.808866887	14.79398936
## 84	-8.467029153	-7.484430233	-8.82382453	0.29615203	-6.74805012	-7.78630099	-7.158739674	-3.28640210
## 85	-14.030370830	-17.821759742	-15.35662874	-9.65111014	-7.53471563	-8.63447157	-7.778903696	-7.26444514
## 86	-12.746951744	-16.371393616	-14.20252316	-4.85790411	-3.75739461	-6.15226166	-6.480965041	-4.81368185
## 87	-10.505696648	-18.542853227	-13.34766258	-6.18565962	-5.43962475	-11.65853928	-9.289949428	-7.86613451
## 88	-7.288274432	-14.124495147	-10.04156892	-11.11972592	-14.99054897	-10.74340609	-10.195943404	-9.66391708
## 89	-14.310617931	-16.698951969	-14.03687666	-6.68541366	-16.18056006	-11.64505806	-7.661239585	-10.84398316
## 90	-12.615839941	-18.422499329	-1.97297830	1.83531293	-15.47564084	-11.18022171	-7.416095001	-3.40126699
## 91	-12.577159668	-12.107623690	-10.90052980	-6.23425602	-17.00453457	-10.42485977	-10.626750823	-6.88535417
## 92	-11.704121639	-13.925997274	-2.76638899	-2.77936883	-16.34419256	-9.37684167	-7.685262963	-3.10988868
## 93	-19.956138672	-17.959504660	-5.27142692	-3.93126468	-0.96778062	0.90675876	5.768445162	9.80215493
## 94	-14.658009166	-15.939633785	-12.23536433	-8.13507056	-4.96655373	-3.74166277	-0.282257021	0.84299413
## 95	-16.170382178	-15.957520910	-10.70251183	-5.81753960	-5.34902815	1.10973501	1.812719934	6.10304669
## 96	-13.807998162	-19.758997278	-10.61451515	-10.13519000	-18.57779084	-12.44580434	-10.944171400	-7.73495620
## 97	-17.044664577	-19.455589031	-18.02720080	-7.96436530	-16.23587443	-15.50879278	-13.344529498	-12.90763165
## 98	-10.901783856	-16.599108894	-11.14670850	-3.21152897	-15.03901467	-13.92160919	-12.653265634	-11.22499048
## 99	-20.859680275	-21.696872913	-19.44322531	-13.62961724	-15.67930457	-16.67057461	-13.898250010	-9.50757156
## 100	-18.623574159	-18.061393993	-16.91152983	-9.65977742	-16.12093722	-13.63920075	-11.172212645	-10.89444214
## 101	-15.788054790	-14.171742624	-14.89543976	-15.88072340	-18.28766083	-12.89395673	-7.084578737	-5.47676405
## 102	-16.645340491	-17.519773615	-16.85986188	-8.30399036	-18.15351826	-15.28912864	-13.799361679	-8.19525985
## 103	-15.192612653	-15.530470297	-11.76670896	-14.26636870	-18.44760506	-13.15951689	-8.172719810	-4.90883002
## 104	-15.296975707	-16.490948092	-11.85587086	-3.83913922	-5.00666218	-5.93377596	-9.401869932	-7.30406024
## 105	-18.651641618	-16.734742910	-16.48291830	-20.43079218	-20.80437304	-14.84384302	-12.283950492	-11.44834260
## 106	-16.455411864	-18.674013840	-11.53539558	-3.72650993	-16.16696574	-11.96349616	-10.144978690	-4.07824043
## 107	-11.786573262	-13.014941616	-10.61080177	-10.25391620	-13.46006863	-8.46859131	-6.991907616	-6.84524098
## 108	-16.475014799	-17.572404433	-12.16725626	-4.85693124	-17.01593059	-12.13075493	-10.422268950	-5.51232809
## 109	-15.478217398	-18.095971802	-10.09587307	-4.80708248	-7.18402202	-0.46356221	5.997940113	5.96875846
## 110	-18.172198989	-20.288882051	-15.25430408	-7.16819387	-2.78173809	2.43162067	3.141504347	13.84412412
## 111	-10.466695966	-15.035205020	-8.57284197	-9.68263858	-5.97534534	-0.38212693	2.099091753	-1.01893015
## 112	-10.276887213	-12.965565055	-11.07842713	-13.84339617	-18.85474495	-11.63434133	-7.160338584	-5.57343284
## 113	-8.231138114	-10.396438632	-10.47381454	-8.48277082	0.36086048	3.20319904	-3.586565572	-0.80193169
## 114	-13.729760305	-18.780251846	-13.04908366	-3.18279711	-10.34843658	-9.31679096	-8.366788430	-7.09962235
## 115	-7.211764773	-7.966121285	-3.16606280	-2.86859334	-1.84186149	8.57726166	10.711756298	10.78781481
## 116	-14.785373117	-18.576094306	-11.55196622	-1.21120508	-6.90904427	-11.20825023	-8.778178184	-8.98130788
## 117	-11.868121539	-4.284645819	-8.7817030	-11.43327614	-14.83366522	-13.92176569	-12.974825376	-5.96615073
## 118	-4.295804180	-5.218110674	-4.16350541	-2.83727835	-2.01749029	-2.95828800	-9.231094382	-7.66187841
## 119	-7.791848036	-11.680480063	-10.38314936	-6.05215311	-7.72170865	-8.48992081	-11.432006158	-5.54537568
## 120	-7.423637871	-8.597068897	-8.51557396	-8.48686300	-10.27846299	-9.11339831	-12.144573442	-8.09292428
## 121	-9.227924178	-9.313890438	-1.91935923	-3.04510277	-9.07259159	-9.40967056	-10.991092921	-3.88512868

```

## 122 -14.106635155 -15.009001275 -9.33627836 -5.84403394 -3.34035558 -1.41103981 -1.014409583 8.89252221
## 123 -10.491530009 -13.017248695 -13.07689272 0.42241294 -10.22908294 -11.22651941 -11.263985094 -7.84313385
## 124 -12.788427251 -11.344172260 -5.76193880 -0.07784837 1.62827032 6.58460119 5.897202636 6.95760574
## 125 -14.256045412 -14.628279895 -11.82483536 -9.46262260 -4.92922977 -1.89107505 -3.557733242 3.74656320
## 126 -14.344719850 -13.599560776 -9.94692779 -8.96315586 -5.25294433 -1.30196158 -3.574985894 2.67940114
## 127 -11.689803994 -13.617782549 -7.47187659 -3.01616009 -2.64281993 1.24207522 0.545526686 8.71218937
## 128 -5.727089864 -9.437160464 -7.16067538 -2.99856556 -1.87249977 1.36663667 -0.205456053 6.64276802
## 129 -13.245648987 -14.275203223 -11.26556543 -9.92029668 -6.67885048 -2.23699698 -0.442233255 4.37229125
## 130 -9.739187163 -10.352514071 -7.12043525 -2.56850033 -2.76514380 2.58875242 5.449996380 12.53240093
## 131 -19.224097471 -14.126302294 -12.03649889 -9.12382928 -5.12486572 -3.25879833 -0.254099372 4.01670966
## 132 -12.440961054 -13.602406320 -13.71546598 -8.63743390 -7.92202207 -2.83648566 -3.238792312 -0.85333409
## 133 -7.608460286 -8.242319620 -11.80467164 -5.85006606 -5.34226688 -2.87403343 -3.306597254 6.21746533
## 134 -12.982556680 -11.889254152 -9.17735536 -7.83645402 -3.99919202 -1.65664355 -2.176608622 6.40686935
## 135 -10.470353252 -12.828892128 -8.77841844 -7.85535890 -4.84680313 -1.73999999 -0.669721145 2.56345002
## 136 -13.004355192 -13.709124742 -11.07206037 -9.07484405 -2.83289133 0.69794353 1.768513577 4.49230511
## 137 -12.837185657 -12.524730342 -11.98373602 -7.78837750 -4.33711618 -1.82799847 -2.874935343 4.15463703
## 138 -13.951017675 -15.758528861 -13.33307625 -12.68755364 -9.90137027 -3.31811445 -2.732888372 -1.75788815
## 139 -9.927003145 -10.462632995 -7.58861039 -6.37509499 -2.89333793 1.00443318 2.740546303 6.97092419
## 140 -13.629236122 -15.195825543 -10.95490833 -10.28728373 -7.35606979 -2.55010404 -1.316532894 1.67470708
## 141 -18.692853435 -19.853403896 -13.11872432 -15.81997834 -18.41702766 -18.71401935 -20.905683279 -16.86342633
## 142 -17.486210983 -17.424398648 -11.39557685 -9.05419546 -8.32779187 -2.48250907 -0.689731108 -0.45066615
## 143 -13.761021060 -13.770081277 -14.06655691 -10.44870254 -13.75548956 -13.74297192 -15.241748463 -9.04673773
## 144 -15.056072443 -18.501209428 -17.56340061 -9.75099378 -14.64046496 -17.44345272 -14.496593682 -9.99772643
## 145 -8.559255980 -10.863737626 -10.53932822 -3.71422169 -3.65142570 -6.39088893 -9.281891545 -2.89652165
## 146 -13.760599896 -14.779705163 -12.91045253 -5.62311164 -10.53469207 -9.42490335 -11.816011556 -9.84080356
## 147 -9.608215820 -7.458252932 -5.83374055 -12.14005270 -9.33011096 -9.50118873 -12.994980366 -3.84973347
## 148 -12.276151122 -14.114033760 -14.72067203 -10.38996761 -15.33259212 -14.35596970 -12.581088629 -10.59075705
## 149 -9.690030181 -11.420405546 -11.35075713 -8.05221523 -10.45090735 -10.14592006 -12.273434524 -7.66816766
## 150 -9.672481015 -11.378632351 -9.38975153 -5.91930620 -8.56785576 -9.97317152 -12.024439584 -5.94640020
## 151 -7.726140878 -10.016814353 -10.56866024 -6.04160747 -6.70177284 -7.14785330 -8.545647153 -3.72582462
## 152 -13.609992233 -16.526050539 -9.45494435 -8.48058518 -15.93072044 -14.21823590 -14.806524512 -10.08588076
## 153 -13.932485287 -12.386819675 -8.47702910 -5.93562297 -2.55820964 1.04804769 0.120250849 4.74928851
## 154 -12.650346413 -13.948504349 -12.98207748 -9.76194891 -9.14297549 -4.36337127 -3.500295476 2.59151826
## 155 -18.269340073 -17.358773841 -15.64169606 -14.78153142 -11.00781963 -8.04605198 -8.842165862 -3.03804222
## 156 -12.009150106 -14.079445255 -12.43727248 -7.82609370 -10.99457922 -10.84017102 -12.602525771 -9.84938519
## 157 -7.312143880 -9.959866034 -11.15461604 -2.86499279 -1.77397540 -4.01203604 -9.982242154 -5.53180884
## 158 -12.727173038 -15.433457314 -14.57896082 -6.81151667 -11.96557642 -11.66960188 -15.431650747 -10.59830417
## 159 -11.570630275 -13.056920325 -12.06525274 -7.81101567 -10.93545248 -13.03038744 -14.073345718 -10.08002883
## 160 -13.372125561 -15.842579788 -16.22043505 -9.00023223 -12.64406209 -14.42971112 -16.101902023 -14.89885841
## 161 -14.670958618 -13.105151122 -13.89933061 -17.56234741 -16.26342326 -16.55648100 -19.946483203 -13.51230329

```

## 162	-14.651541679	-17.649148145	-8.65958858	-6.41486490	-12.89992566	-11.44147778	-13.843299904	-9.45562171
## 163	-14.649159899	-12.886351082	-10.12592501	-13.94289663	-15.74272122	-14.04888549	-16.952388308	-12.33135809
## 164	-14.063161977	-15.678432810	-13.44150161	-10.28158748	-13.70383932	-14.32604436	-15.369128811	-11.58232183
## 165	-14.498512597	-10.254907601	-10.65218195	-14.95291191	-15.67480281	-15.90790291	-18.600330167	-12.41211084
## 166	-15.021484043	-16.501091571	-12.63766719	-5.94339860	-13.97351435	-15.35725398	-16.256066984	-11.36976904
## 167	-12.071301889	-11.207022605	-6.25817798	-7.68242572	-9.62875210	-9.87860500	-13.068832244	-8.16223611
## 168	-12.872469193	-17.231290602	-10.92072992	-4.85376367	-12.66248202	-11.23433464	-11.153225568	-7.54456166
## 169	-14.757006256	-13.737082297	-9.57015864	-8.86406140	-7.14752814	-2.61905565	-4.432119141	5.61289797
## 170	-10.888212886	-12.354533038	-11.30634957	-7.72460546	-4.39362502	-1.53804792	0.134870594	7.84673087
## 171	-10.406284532	-13.064531279	-13.54266790	-11.29664788	-7.29917522	-4.95062621	-7.028745847	-4.00489544
## 172	-11.802026124	-4.792820444	-4.68841080	-11.01119348	-9.70768408	-9.90430277	-14.047664999	-11.45657521
## 173	-9.187859711	-12.776459409	-12.21711995	-9.30030114	-5.10497099	-6.96698574	-11.147043577	-7.08261462
## 174	-12.698994301	-14.810878170	-14.89152681	-8.93577004	-11.18281974	-12.70345616	-15.126018344	-10.77635144
## 175	-11.192232867	-9.709724561	-5.39583532	-2.29720277	-1.79873566	2.73526348	1.609440820	10.79010104
## 176	-12.137377306	-15.501056367	-14.47296582	-7.47460508	-6.24056585	-9.33806496	-12.187169033	-4.70673612
## 177	-2.866933111	1.631979636	4.25002505	-1.86118609	-8.12602479	-5.39152399	2.148502857	0.94400577
## 178	-2.700706429	-7.436800077	-0.60215751	-1.27669839	-4.56888000	-2.88080402	-0.371195132	1.91053592
## 179	-3.144910656	-5.942149472	-5.16853347	2.24900391	-3.95330275	-3.42694957	2.818137598	-0.37284130
## 180	-1.809399246	-6.309931457	-1.79820828	4.91249188	-3.91037276	-4.79490705	-0.179639129	3.45171514
## 181	-6.177952270	-4.967208080	-2.02414302	-3.67491739	-6.98504188	-6.70610780	1.726253010	4.87555281
## 182	-8.026589555	-10.569263662	-5.44904901	3.74904863	-5.73662056	-2.26566800	4.006006050	-2.58441109
## 183	1.497112109	3.477664164	9.41757480	12.71836192	23.38712203	29.71061134	22.336538481	21.42499680
## 184	0.915349001	3.127715549	7.08456304	10.59908521	17.11599756	21.88131657	22.637570535	27.44561367
## 185	0.870749641	0.778535512	5.85235262	9.75046134	15.45347693	23.42713616	25.773840535	26.58511301
## 186	0.523348020	-3.235356435	4.93905521	6.48609259	17.14011031	23.94978996	27.008787276	25.08283679
## 187	-1.260654138	1.984075588	5.20306310	9.89475974	14.71758379	21.51544858	23.946214231	20.74398287
## 188	-0.723100329	2.046499419	8.10055255	10.50985675	6.81138490	14.39896242	21.773808706	26.00307902
## 189	-1.371040725	2.588721549	10.27008212	15.49509676	22.26883246	29.86510296	30.210235038	24.50859338
## 190	-2.457786408	-2.043338604	5.09037134	6.87347791	13.86040547	21.22534148	24.389564770	20.35160637
## 191	-1.456552110	5.106415032	9.38536587	13.61834169	23.09364503	28.65047860	19.275601255	15.50386211
## 192	-8.561925410	-2.151926223	3.32734202	5.01382117	8.42522365	14.21495834	21.498183223	22.42861858
## 193	-1.154421231	-0.409487036	3.46220915	6.73688840	8.62912887	15.27351844	23.563252000	22.62247630
## 194	-1.242194770	2.641848217	7.11052959	14.70586883	19.18039430	29.11098721	25.039116921	18.92876551
## 195	-13.575805207	-7.175265305	0.67350720	3.83231687	4.83039543	13.22252336	19.523648310	16.40771229
## 196	-4.941952162	-0.949247210	5.24787071	4.89214664	10.30628509	18.12184048	23.931332138	22.07225268
## 197	-1.162471029	1.330109393	6.42807509	11.01711294	14.04651759	18.34546457	28.172828896	27.51644543
## 198	-3.527841723	-0.342577196	7.32770850	8.71302043	17.91376480	22.29616713	24.477120555	25.12090896
## 199	-7.275717620	-10.491925256	-2.80087260	1.42229278	-7.20849540	-8.41229863	0.660813860	5.70552734
## 200	-3.400848022	0.279273240	6.89048835	14.21509169	15.86568309	20.83528456	20.206662756	15.21626914
## 201	-1.906176908	-6.845702355	-0.09973627	6.63218448	-1.31355037	-0.26887169	1.738737616	3.155557066

## 202	-2.360162863	-5.098179389	2.26465217	8.41107525	-0.10974240	-2.28835166	4.855853027	-0.15859537
## 203	-6.038558556	-6.306779786	-8.26454260	5.07263184	-0.39749465	-1.41570874	7.084063037	2.36374163
## 204	-3.897618900	-2.426110251	11.42271600	4.37367022	0.24183582	-0.28792153	10.761848262	5.10906093
## 205	2.842325656	1.915469575	4.83558123	-0.25785827	-2.38002676	-3.02913249	-0.632172536	12.79587294
## 206	-2.490877311	-2.710780651	1.29246208	-0.70939004	-3.57676405	3.18129931	2.314689690	-7.05987663
## 207	-4.492485840	-2.907462804	5.87752022	2.51584235	-3.91912146	-3.88497793	1.155601695	7.49390697
## 208	-3.106511474	-8.816731383	8.61490242	2.41061941	-6.10187148	-6.29650582	3.994355975	12.74561983
## 209	-3.101105440	-3.897287714	1.18769521	-0.95676564	-3.63193452	-4.99882203	3.898427000	5.49769379
## 210	-9.745179019	-7.998946614	0.44736094	-5.21660295	-7.41682045	-7.58954996	-2.171115294	-2.92975882
## 211	-7.346628126	-1.183656266	4.30292337	7.81862377	11.30482851	22.31797687	17.888210936	12.37640239
## 212	-7.801256148	-5.234432690	1.41998180	1.90821002	8.03161347	15.98523022	17.252885891	15.17021986
## 213	-5.128653330	-0.419618391	7.29696194	9.32575040	12.84477721	22.38516011	22.415374582	19.11629567
## 214	-14.181309923	-10.214433504	0.60940410	-8.48000212	-9.35678007	-10.32575774	-7.407370766	-2.39015211
## 215	-10.792695169	-12.019886873	-4.49068280	1.58256674	-4.66432459	-4.48454444	-3.993325057	-7.68959106
## 216	-14.539814552	-12.360992949	-9.39832789	-0.69747507	-5.68586437	-0.52011802	-1.297830696	-6.17442505
## 217	-11.628497051	-12.421042074	-5.49531601	0.38736601	-6.58790687	-8.03212094	-2.971258753	1.73191330
## 218	-11.155228752	-12.468672942	-1.56398093	-0.62256079	-7.10608672	-7.23285306	-1.523478094	-7.65629183
## 219	-1.989729314	-5.123823311	-5.53867743	-10.06446507	-10.57256728	-10.70559119	-10.049091150	3.62837301
## 220	-10.516213545	-13.149996339	1.49412654	1.04571373	-7.32160456	-6.45778061	-6.260056660	-5.55978431
## 221	-12.495577347	-7.534398185	-10.81978953	-13.85548809	-15.99819042	-14.94850875	-10.941919995	-2.60341241
## 222	-5.903914574	-6.533876315	-7.28253974	-1.88230578	-0.63200047	-3.14123503	-2.180627042	-1.56361281
## 223	-9.600346293	-6.442735924	-8.17829538	-12.99230747	-13.12869738	-14.41752702	-9.124164225	-1.15951857
## 224	-10.198292654	-11.490609314	3.89879086	-0.92486118	-4.64239481	-4.76405729	-5.312477645	-5.38877129
## 225	-9.007088275	-7.614621760	-5.21847350	-9.42415124	-8.60227386	-9.27891157	-7.019842744	3.43032735
## 226	-10.350492235	-13.421432113	-12.07190147	-0.47609955	-7.89940414	-10.68736403	-6.635693874	-7.15225580
## 227	-7.858186085	-4.778547910	0.72999001	1.83185319	9.56248259	16.08480775	13.953367538	11.24988013
## 228	-7.039461275	-3.414463951	5.00459172	9.79401313	14.57350186	22.86281821	19.971419118	13.15033458
## 229	-7.257930832	-9.510601967	-6.11348196	-0.36871042	-6.74426680	-1.91151594	6.129459181	9.78695491
## 230	-9.423998632	-10.488753202	-10.42366986	-11.43853103	-11.02707544	-13.50125818	-6.143721141	-1.68175380
## 231	-3.510585973	-8.742902175	-5.01109381	3.47861230	5.05158395	8.45336361	10.105836715	3.87210963
## 232	-11.494575653	-12.390937363	-7.03138392	0.29953625	-4.62816181	-2.35539491	-4.139785183	-5.37984953
## 233	-0.683684441	1.653497566	4.40104572	10.61655808	16.24663235	21.47051885	27.934855004	28.46256951
## 234	-8.768373531	-8.289281245	-2.23169185	0.63794329	-5.96201412	-6.10704628	-6.186616659	-5.27975686
## 235	1.335662018	3.802419407	7.63894584	8.51842762	3.93051485	7.11231507	15.230600015	17.54521049
## 236	4.134200988	3.813459614	9.25895593	9.53483094	2.71179423	6.10036112	8.216538649	11.31740814
## 237	-1.054641143	0.831022438	10.21778607	8.70696875	1.31535539	0.74299331	8.701973002	9.50185698
## 238	-3.049013111	-1.130642065	4.63630207	5.94446025	0.69826533	0.24693754	7.000123942	8.33673084
## 239	-0.460442682	1.816358034	6.34463551	7.02447462	3.14152359	4.81065897	7.773033415	10.19716343
## 240	-2.551210242	3.170247916	9.83633345	19.19453621	16.64113751	15.87068108	11.708023265	11.53291637
## 241	4.945662099	2.031962334	8.47793879	19.09855375	8.68994524	7.07362728	12.314322163	12.12684903

## 242	0.255312249	1.661448336	9.68138719	13.45017071	17.23719549	16.92908608	13.775581634	14.41814473
## 243	-4.357178549	-1.344528688	6.83786654	13.97272560	13.38230204	14.73661895	22.061962602	23.35511904
## 244	3.315099297	9.598871232	13.26509452	21.18031584	23.3118879	22.11971467	22.633640642	22.39823089
## 245	-2.357926268	4.270945542	7.21402885	16.32011983	14.89608323	14.82612752	18.875982423	21.95680667
## 246	1.846290494	8.539526141	16.24753563	22.14036125	21.50436609	20.16033434	19.107492501	18.66940794
## 247	-2.894690431	-0.834225038	5.84090618	13.16183479	13.33201346	15.09161653	20.768063980	21.84194530
## 248	0.709001131	9.347789542	16.49497632	22.25158282	27.25202864	22.23669408	20.825314618	21.77022487
## 249	-0.496946189	5.003790976	10.00901482	16.37176430	18.15310134	18.61507935	22.425106642	25.49571529
## 250	0.107679117	5.524775258	9.36522187	13.40563476	15.60586743	15.53669114	26.600890044	30.78331823
## 251	-2.497050944	5.870720980	6.96175608	16.73824436	16.30902671	10.39275641	8.892093395	12.19366002
## 252	-3.002238345	1.005394801	7.07736459	13.33598437	14.46597401	12.56703653	20.757612482	25.29090928
## 253	0.630424557	3.342211160	11.51179984	17.26385203	13.92558204	17.31860684	22.581431694	24.52454089
## 254	5.191643362	11.533588152	16.41706423	21.02326733	28.60950684	22.38849808	18.338682967	23.30631617
## 255	-3.292161801	3.089450240	12.67437401	17.31914193	18.75758759	19.05541038	16.636327092	16.71917588
## 256	0.255966234	5.551738618	11.50654238	16.79391484	17.52908686	19.29052450	19.679976357	20.28002082
## 257	-3.101029832	4.546862753	9.54704945	14.59466552	16.27794672	18.57954586	19.342073246	22.23205525
## 258	1.667600737	6.396905567	11.01999502	16.07900217	16.68824578	17.82613698	25.694603081	27.02563942
## 259	-10.274627253	-7.323412370	0.80313361	-1.05311748	-0.40168562	0.16364348	3.285230848	10.90601963
## 260	0.955054746	9.799790168	14.38086878	23.26354298	20.25402565	22.48210494	21.532319871	20.11285701
## 261	3.802649087	4.077977627	3.75004129	12.46030722	9.46988950	7.63864357	10.726316625	8.16343752
## 262	-1.881553940	-0.220380528	6.90215030	14.87338383	13.04572931	5.58624585	15.712544355	14.99166699
## 263	0.753777212	3.880579771	10.99385635	17.05348378	10.50713505	8.30824015	15.244380131	13.83568831
## 264	-0.765119544	-0.022314190	7.96299056	14.15520300	6.30572247	5.22831696	16.814902821	15.03980152
## 265	4.627443423	5.109949014	7.92073740	7.97363813	5.40677255	4.51440625	14.137016472	14.27160035
## 266	-1.632150105	3.245411845	9.86337789	13.28050050	2.37499313	7.84887351	8.760943768	19.83664784
## 267	-0.682153169	-2.235179243	8.05415559	11.66146892	2.79251651	2.25876019	12.608993866	14.59251648
## 268	-0.421267873	-2.332558545	7.77401319	7.07951701	1.09163757	5.48424601	10.358639146	14.65573501
## 269	-1.918304892	3.011403100	8.18254867	3.88636866	0.89812752	4.89001370	5.794745746	10.09015292
## 270	-3.426450946	1.213640904	5.99549494	2.50644985	5.27866883	2.68009978	12.350814690	19.18559044
## 271	-3.011338775	3.117533858	9.37301065	15.32027252	17.20492277	10.29604324	9.172979093	12.26325987
## 272	-6.414055524	-3.246380066	1.91676840	6.40568827	10.33779521	11.57395364	15.830649005	15.65338542
## 273	-2.035659750	2.500624431	7.77514009	14.09930683	18.76058013	20.82010835	17.305988902	18.06521357
## 274	4.455620870	8.046649473	14.45819482	10.42087580	7.94077765	8.54303782	16.453072610	20.46299690
## 275	-4.386737550	-3.366396952	2.89866765	9.45434943	6.86758001	8.38404098	8.073022810	11.64550121
## 276	-5.734235349	-2.671518387	2.44595710	12.01359343	9.95666294	6.61118501	8.258302632	8.14379546
## 277	-3.501455661	-1.013965320	7.81728929	9.58202423	9.57253196	10.47163327	8.912178264	13.51140662
## 278	-7.194832506	-2.983856999	9.48468512	5.20520917	7.05598657	5.67476965	7.756767097	15.01427848
## 279	-1.865969233	1.560046559	1.66904333	2.78143530	-1.26438694	-0.04266389	9.130437513	11.62700040
## 280	-4.073526674	5.264691086	11.18508781	9.11622884	5.01910733	6.76742477	7.819475022	12.36873618
## 281	-3.257190905	0.727863810	7.31861855	6.24560355	11.73380293	3.67492117	7.194641544	13.14448014

## 282	-7.624795745	-2.365320116	1.69532785	6.62126517	2.49987333	3.79777289	6.310817062	5.22382070
## 283	-3.504069930	3.944444490	4.41471761	1.20789253	1.08912671	3.29965338	4.201397412	5.89673301
## 284	-4.033988315	5.691846663	11.56148735	7.24639401	3.17728393	2.40207081	5.790414651	18.95329241
## 285	-4.257151735	-2.142394738	5.65355393	8.12805844	7.33351015	-0.38923437	2.006443168	4.32549395
## 286	-5.367747044	-2.882354819	8.85520067	8.13521503	5.83733871	8.61135039	5.803406381	5.56350268
## 287	1.259257331	3.899038771	11.51576489	15.08710351	17.70576619	20.61035919	18.778473660	18.67372046
## 288	1.645871391	6.263881592	14.10295034	21.31873662	23.22768214	19.07274066	14.198961149	13.76237832
## 289	-2.954117429	-0.828187926	5.80600020	13.92514039	8.43061994	9.89873845	18.128600027	18.33542308
## 290	-1.769676309	1.714341553	2.45341780	-0.96924789	-0.88610346	1.29523716	2.019191391	7.28476746
## 291	1.730063611	-1.043502787	2.73867078	9.89044166	10.93987773	6.23454238	15.991645553	14.58486999
## 292	-3.598275881	3.290983182	10.79283660	15.45967091	18.85337241	20.16612147	24.092419311	25.09440837
## 293	-0.078689109	2.566922323	9.13381436	15.85978467	16.76230761	16.97072778	15.140354763	22.31277330
## 294	-2.314238668	-1.763883456	3.17864285	9.18775863	5.45401398	7.11942624	8.853809079	6.60143382
## 295	-4.535028563	-8.149872923	-3.16528502	-5.49578863	-9.01505322	-10.02861239	-8.201486946	0.11848799
## 296	0.424957618	-5.860973835	-2.65074409	-1.09666807	-3.21428618	-3.62346175	-6.845197699	-0.03114837
## 297	-2.604639249	-6.591737714	-3.62154350	5.05831953	-4.69780623	-4.11571041	-3.828516744	2.90674910
## 298	-1.879027271	-8.774395914	-5.94401934	-3.53577018	-8.63949988	-7.84611019	-6.150099942	0.89269956
## 299	-0.434903056	-8.434830986	-4.36704131	3.49189946	-3.84238575	-5.22548792	-4.827099900	-1.07350355
## 300	-5.807570263	-11.421957213	-5.70986361	0.77985268	2.50027188	1.01703564	8.613032351	12.18437088
## 301	-1.535343868	-9.138177507	-6.34811091	5.31402345	-3.50735762	-4.44684980	-7.098145167	-1.48253744
## 302	-7.752335898	-8.840522523	-0.73784246	2.72692808	7.16454092	9.10714095	13.564978773	16.35391000
## 303	-5.632759012	-9.191269955	-2.13244385	1.04869031	8.06139516	9.18177771	7.272790356	17.93600260
## 304	-7.273206150	-4.185019982	3.61559664	7.24208597	13.57144534	17.79977214	20.294680169	20.98416066
## 305	-4.689358090	-10.693864722	-2.32738434	2.62111742	0.40574352	5.81563269	8.700584782	10.60954382
## 306	-10.547121164	-13.582597566	-1.39918861	3.10263713	6.88165854	10.69200460	12.044543124	16.60080628
## 307	-6.972737033	-10.134196940	-1.69503997	2.71830828	5.93163714	9.71455845	11.885488070	14.28668358
## 308	-3.149886352	-6.913687560	-0.45866765	9.98966975	11.72632639	13.31636596	14.921703220	20.79684093
## 309	-5.935803777	-5.956833683	2.21313468	5.36636722	13.16642446	20.54019362	20.661065367	23.18246540
## 310	-9.992115796	-12.210096420	-4.40369966	-0.29520366	1.78395706	7.79099267	7.777728487	14.97202545
## 311	-9.880715723	-10.115305992	1.01691300	7.00903242	9.79522741	8.88861587	12.461492568	12.15634242
## 312	-10.270924126	-12.290784668	-7.30330081	-2.28851092	4.91082404	7.26850918	-0.212311048	12.29892609
## 313	-9.982937907	-11.734367068	-3.09759399	-0.22805021	5.05097094	6.32904437	6.575531164	17.14750398
## 314	-9.973228001	-9.357180061	-1.33605564	5.72703135	4.70024610	7.71974524	12.581499232	10.47508463
## 315	-9.253483767	-8.009281937	-2.83504819	5.43445271	11.11395274	7.19425514	12.170841862	18.81892555
## 316	-10.895592133	-12.713877990	-7.56632890	-1.07097469	-1.74222542	3.65429710	5.428370732	9.61569966
## 317	-7.769672235	-8.540846602	-1.34714339	4.31104634	5.85648843	9.46377446	12.704179481	21.36734442
## 318	-8.915882702	-10.682297372	-1.99873456	-1.95819583	2.35899797	4.26186102	4.511241456	13.89602121
## 319	-10.371192528	-17.249886117	-10.48680631	-5.46248549	-16.31485530	-12.76814536	-13.303609967	-7.67088266
## 320	-10.395975708	-9.594492527	1.13753702	5.05846387	12.16557207	12.51781451	12.533570883	13.16615195
## 321	-3.918269861	-11.212677980	-10.97068192	-1.44770395	-5.78171475	-9.13877004	-8.747632674	-1.02225570

## 322	-5.318454680	-13.337021719	-8.56693640	1.43160852	-6.65820086	-4.92432225	-7.197707340	-2.65086259
## 323	-7.600955605	-10.357186218	-7.76094787	2.36148674	-1.22843445	-4.97397759	-6.704807350	0.77481920
## 324	-5.134010997	-11.790634505	-9.81242891	-1.24184509	-6.29570642	-4.97189114	-7.067186735	0.88795252
## 325	-0.654050739	-4.215300717	-0.52769255	-7.51369958	-12.07466716	-8.47297726	-6.695167036	2.45370367
## 326	-3.325723113	-12.084113191	-3.44425412	-3.26619756	-11.51941616	-8.54001762	-4.922304440	0.68001187
## 327	-0.295049979	-10.071517317	-5.93939977	-0.26219110	-7.57786617	-8.27223274	-11.078536839	-4.37856085
## 328	-3.576815178	-10.521051461	-2.92706808	-0.02750099	-11.27446163	-11.68586221	-9.808857266	-1.11166366
## 329	3.054594156	-5.348340531	-3.78831349	-1.25259447	-5.72148146	-7.02539656	-7.367203641	-2.09663854
## 330	-9.400625994	-14.988800793	0.07477802	-8.63205584	-16.08228745	-10.21652966	-12.112408383	-6.56306582
## 331	-14.563664781	-13.741375665	-4.35838439	1.03876289	5.11338895	5.17744591	10.168775778	7.04897857
## 332	-16.472053801	-14.355103102	-6.15397498	-0.15800359	-0.94622723	4.80090778	9.960736074	10.47348082
## 333	-11.088037489	-11.581695451	-2.31372459	1.29184151	2.40598334	6.90790732	8.191485112	14.25350100
## 334	-10.699860362	-18.162646139	-3.95558359	-7.66808135	-17.28782302	-17.30592938	-15.161389870	-9.81064304
## 335	-10.627710773	-17.933616363	-10.45829573	-5.35589536	-10.05406675	-10.24560192	-9.776067739	-8.96044306
## 336	-12.260637467	-17.517790086	-8.35002018	-1.98711425	-11.71619808	-9.89458223	-9.296886234	-6.22927727
## 337	-6.820173809	-14.971167180	-0.64562794	-1.97144696	-10.54454264	-8.68357525	-4.587453913	-2.94994260
## 338	-8.063823013	-14.385553164	-1.63800821	-0.81117104	-12.40759953	-9.04510394	-7.886501795	-8.37088054
## 339	-5.590514121	-3.769296526	-0.31902857	-9.52590266	-13.40823443	-15.46469454	-12.543152673	-7.44174502
## 340	-7.499953517	-12.249643238	4.99948093	-4.15642323	-9.07531724	-12.21220410	-6.661672315	-3.79132377
## 341	-6.225960994	-10.801934076	-3.87941356	-9.57930195	-14.87992343	-13.21742623	-12.243996586	-3.25394514
## 342	-6.726467351	-14.556532246	-9.00436322	0.96109582	-9.49563100	-10.58428871	-11.499581704	-10.23507945
## 343	-3.792760094	-7.091016046	-1.72744653	-5.18482499	-12.91282970	-10.44655321	-12.064309530	-4.87283768
## 344	-8.735368495	-17.035652862	0.48556976	-6.38082366	-11.60373770	-14.96633398	-13.531054687	-6.96042689
## 345	-8.493456988	-14.144266290	-9.74553743	-8.99152984	-13.45193143	-9.70490714	-10.265748127	-5.38073462
## 346	-9.060975631	-16.981191633	-3.18544837	-3.34695499	-13.15256539	-11.89159953	-8.201821420	-5.86461492
## 347	-17.038401135	-13.961610987	-7.28442819	-3.17011376	-1.66753317	3.33125835	8.552406804	12.12417882
## 348	-11.883808798	-11.752833468	-3.32477448	2.28179704	6.94698516	8.21367554	12.566745641	10.34447403
## 349	-9.077387825	-12.762636854	-8.36827336	-2.57470988	-0.65705733	5.00043188	6.341883714	12.50699545
## 350	-8.052663383	-9.488124346	-6.54157803	-13.50762245	-16.29323264	-14.17579356	-13.856988700	-6.98075334
## 351	-3.328794589	-10.195981088	-6.78701860	1.93971471	8.09223762	3.56839357	-0.336813250	4.02999546
## 352	-11.777993325	-18.383067616	-11.85364876	-0.68259617	-9.89587839	-9.49010923	-11.771639866	-8.32179785
## 353	-5.915646976	-8.351741889	-3.83272138	4.14429694	8.66112020	11.45847554	10.699912950	20.74036610
## 354	-7.176711395	-11.776633124	-3.71992931	0.53251115	-8.02735825	-10.08788509	-7.804796725	-6.00555071
## 355	2.106521034	5.436307227	0.55647758	-6.34935255	-6.42693628	1.27670992	-1.171822763	9.93054512
## 356	6.639276730	2.201371776	6.68262511	10.41890206	-0.20006340	3.18426580	8.962697670	8.26670259
## 357	0.647318705	4.108117306	2.80294959	13.17169060	5.02701976	8.01411049	15.563688545	10.05072261
## 358	-3.811099445	-5.700861168	-3.96623022	-0.02772237	-0.22684064	2.42221709	11.424797346	5.77602631
## 359	2.234968294	-0.476134366	1.95140211	9.65122417	4.44075305	2.63460494	10.666932355	7.43016405
## 360	6.507648414	2.848865111	-1.17749104	6.74872152	9.55578080	2.92855578	5.752974195	13.29464168
## 361	-4.134975344	0.307495040	2.79913335	12.66124645	14.98169485	17.71106254	17.540386273	13.92419584

## 362	3.308212307	3.799590523	5.24805235	11.40714876	19.23846797	14.84332140	27.466516213	27.33162287
## 363	2.774685078	8.767215129	9.02030793	17.96095906	22.92780711	29.55656759	28.662460835	21.29771328
## 364	0.867628206	4.295419257	5.70127882	12.62046390	15.66125341	17.55100749	25.326978684	27.27042499
## 365	-0.418671204	7.588700633	9.67807285	21.14027455	19.77935991	23.22179922	24.599857556	21.70098330
## 366	0.337339846	3.773958205	6.21941209	10.76849669	18.46322953	18.80561466	28.482935414	22.63289925
## 367	-0.410555484	5.602435344	6.75638304	18.41264839	20.03187634	23.82378197	21.526864697	17.55593412
## 368	-1.761826168	3.551938808	3.84628216	8.74479264	13.98073841	16.26842826	23.764935399	22.84157169
## 369	-0.571265741	1.620840973	10.30261914	20.87574429	21.00419563	23.30823491	17.681673388	13.99610691
## 370	-1.473453828	4.235316334	4.95898855	9.48453684	16.27547379	16.28646880	21.461507350	27.77635287
## 371	5.599941416	7.527131903	9.59707454	15.89063605	21.93397964	23.36302400	28.996360409	36.89435082
## 372	-1.420656817	4.182798398	4.54472850	17.11855131	15.25425148	20.54253413	19.902337080	17.42905303
## 373	-5.740599434	3.232229782	4.30286283	10.84131899	16.06031063	22.69030670	20.760598657	21.49676205
## 374	0.909332488	0.769120051	2.36596430	11.32040985	12.38902744	16.29221838	26.031211420	25.56580301
## 375	-2.829335839	2.099133399	0.63388725	8.17339665	13.91416648	14.89424198	20.852893311	18.58206522
## 376	-6.077073963	0.183704630	0.71927091	6.88187991	12.72825312	13.46070548	20.496774542	19.23787444
## 377	-11.369229535	-7.083164250	-6.61858402	4.93586477	-2.42396838	-0.31730605	1.505395897	-2.24421443
## 378	-1.403003356	5.249550277	5.45420482	17.60422042	18.89091349	22.43145518	16.577115618	17.01548208
## 379	-1.809147312	-4.944038979	-2.21970131	11.32631616	2.68911157	7.61930186	12.493505569	4.52709778
## 380	0.430331354	-1.968860818	2.20935836	15.34941556	15.44348382	10.27780498	16.398426335	13.48904772
## 381	-0.851419335	-2.221825545	-3.71105609	4.27326217	7.35762513	4.31962220	10.972129340	3.09898918
## 382	-1.970433168	-1.863171522	-0.59225008	8.43601392	10.14754954	7.74798100	13.973516044	9.28170779
## 383	0.251285256	2.205870348	-0.13667145	-5.74785166	-3.90471712	-1.07281147	8.447370661	1.98720370
## 384	9.021504179	6.133164014	7.98065529	18.40764414	10.95237937	11.18312922	16.839809295	14.98494719
## 385	0.466327543	-0.347598634	4.16549600	6.66114326	1.12442993	9.29780105	12.561400214	4.68985231
## 386	-3.403337809	-5.601209942	5.66333034	12.23816699	-2.41096978	7.00222500	10.817647852	4.13313239
## 387	13.608149355	11.500308571	10.59617672	16.34824879	10.03571863	7.74931717	18.832511089	15.85844586
## 388	11.653030467	22.664521395	16.24890479	14.91802091	14.60703890	18.60336438	22.293738032	29.89011278
## 389	1.387298521	8.887543884	4.73819621	16.17002453	19.89243374	23.37224937	16.480216235	17.01380751
## 390	-3.273686791	0.274705613	3.48068072	11.83756977	15.68353846	18.67966032	22.704999808	18.53906403
## 391	-4.128550214	2.346378938	3.78058145	8.94370221	13.60298011	17.44596609	22.108366790	18.79528135
## 392	9.940335781	19.774302111	9.74774079	5.50822004	3.60102808	8.83868016	13.269137183	20.08567644
## 393	-1.865126340	-3.518110068	-0.67523591	8.70429472	8.47546158	7.49008737	8.101762270	6.04827374
## 394	0.121954539	-2.188671292	-2.41743491	12.68516448	10.23670361	12.63878722	13.125995763	10.41149790
## 395	-0.323595494	8.385062754	7.90635019	8.51536099	3.73984072	7.08953249	7.808828045	17.99035496
## 396	-0.392796423	11.084889482	14.13483754	8.91790611	4.29018484	6.31364564	7.482152981	17.31164648
## 397	-7.210826557	-4.075024799	-12.05857252	-15.87365554	-13.09743439	-8.24675389	0.026098180	1.58721065
## 398	11.585709762	14.428704334	3.92291523	-1.09177429	-3.35572014	-0.68346555	3.542263738	13.22837372
## 399	2.907791492	1.388426690	-0.01635019	-0.20020596	-3.01803586	0.70344320	1.724696807	2.57758802
## 400	-9.495819626	-9.389296465	-7.12435474	2.42793943	4.07111360	1.01102821	4.640694864	-0.85521902
## 401	3.058748861	5.658328564	-3.00110133	0.63934548	-0.44816042	3.81822522	4.737692517	7.54456073

## 402	-0.416423960	13.251226493	13.32986698	6.58434288	3.46015478	6.31753796	5.365639549	10.33301167
## 403	4.052473544	1.222054848	-2.97340170	5.11876332	1.90994363	8.61657657	5.973055809	6.88982451
## 404	-9.268993193	-1.520186641	5.82364431	3.92341965	1.30107466	4.95025349	-2.952241795	8.05018069
## 405	-6.206886054	-0.057247562	1.74900564	7.77728351	13.91724506	17.37303621	12.732176108	9.47127404
## 406	2.886324417	6.578758782	10.97235216	25.37997612	22.48294655	25.95662922	21.265909892	19.30137707
## 407	7.710877665	5.788048596	5.12245705	16.96452791	11.22248932	16.56369558	15.322424347	16.30875119
## 408	4.475579161	5.655901116	1.55207514	-1.62091944	0.11262130	0.64115513	7.528166711	11.01515529
## 409	4.119675256	4.293669912	7.53497024	18.76705474	25.08936007	10.75657683	20.789859928	23.02649932
## 410	-7.317519872	-4.694910391	-0.50669723	10.08288391	17.25810151	9.64150312	12.211028526	14.12370550
## 411	4.061116758	6.948362402	7.77452524	15.05642238	21.77546942	19.53592235	28.047780742	31.59622801
## 412	-6.732255708	-4.828524752	-1.74174522	8.46160240	7.71537696	9.67700774	9.171536733	5.64154780
## 413	-0.133319275	9.448936943	10.44320875	8.52018878	8.23630262	7.48706413	8.842282470	8.53738233
## 414	6.246055560	2.998721729	9.36098136	16.55499821	8.40272842	8.87015359	5.207039348	10.85667617
## 415	0.548480053	-0.702075906	8.03625368	13.72959130	7.91289935	6.49251995	10.283192960	10.42973963
## 416	3.403699275	4.137882942	5.55599106	10.93866350	6.36492472	4.21903232	2.768706643	5.84005314
## 417	6.590770048	5.107031979	8.78953214	8.05238651	4.47311805	1.40786175	2.142658886	10.00086273
## 418	7.453439266	2.459352019	3.30753673	14.81414874	6.51693769	6.88509556	4.004089253	6.99688820
## 419	7.531952022	1.879917977	5.70486610	15.40070749	16.74296723	20.98355449	28.059255137	27.23420578
## 420	4.904357814	5.313597422	5.89071825	9.40181230	16.77144485	21.77722773	22.373195060	28.03269063
## 421	6.170784694	11.388172720	12.18169449	16.67827902	18.36138295	23.87430357	30.547484202	33.95895124
## 422	7.179059258	5.313671676	8.43169843	9.90568519	14.54157755	20.02624279	24.346342229	30.41766626
## 423	7.450261813	5.708875402	13.65266301	15.45106563	17.06427082	19.00400873	23.410919980	23.73123736
## 424	6.050143208	4.291069295	7.31606256	14.63517878	13.84618368	20.44287870	26.454748682	31.23269874
## 425	6.817757212	5.405732324	10.43899770	18.44469267	23.34275195	23.19786087	30.361036082	25.55234930
## 426	0.631490291	1.137440267	3.34731999	7.71800345	14.90092379	17.37519370	26.660844492	23.28812273
## 427	5.742745366	4.737282158	6.85363446	10.58040105	17.71095131	20.33148847	25.890357956	25.45926303
## 428	1.687072241	0.748294760	2.79715756	10.25457999	15.60451783	16.88033273	23.628144026	19.68154123
## 429	8.287318130	7.818275030	7.59664918	8.94199610	14.76760134	18.86807398	22.737934712	29.17731904
## 430	3.104552831	-0.510801378	-0.19180770	6.23120853	8.83958308	16.86795534	19.873236322	23.73962280
## 431	1.841317071	2.046523120	3.93256713	11.26437595	13.73794418	19.78690557	23.852128733	22.35078562
## 432	2.458760190	1.670366685	4.20215381	8.26012295	14.33119149	16.92699919	25.374300889	20.71785959
## 433	4.143856258	-0.109196177	1.51577468	5.26500102	9.70289393	13.36447822	17.944555330	22.17226106
## 434	-1.373905399	-2.702220000	-1.49497395	3.95318458	8.70662144	10.50113832	16.012846437	19.78216270
## 435	2.918554023	1.007902738	2.28800806	5.67114261	9.16337708	13.68704468	19.622394469	22.67636659
## 436	2.642523244	0.314254940	5.14772573	3.33477875	-0.35192249	-1.69075892	6.959777340	6.73905268
## 437	3.848644993	4.039322240	8.73247654	14.20862280	25.26325920	24.98068405	24.352528870	17.66841665
## 438	8.583374119	5.715682108	7.32372423	15.10139513	10.22212403	6.81295565	4.106210229	10.69847280
## 439	-0.611521596	-0.074228852	-0.85256605	15.05777076	9.54825400	7.32993248	8.778456321	9.19588179
## 440	1.368867971	-2.627060962	-0.32015377	9.92238904	4.19610724	2.69188128	5.788020471	8.57194409
## 441	7.841185922	6.506646337	8.07483153	13.60580605	8.91212939	7.07795191	6.546001126	10.04772538

## 442	7.981744904	13.822911656	11.72498811	8.24857711	7.24471361	4.77833936	4.298171829	8.29070951
## 443	6.702409656	4.762723442	13.29263541	10.11597774	6.38431101	1.46657066	6.908230340	10.69696692
## 444	11.012215359	7.095076286	9.18882111	12.82518369	8.85237202	8.49905855	9.278509080	12.07507125
## 445	4.000256924	0.371771616	7.01350757	10.43915680	6.66032502	4.63891136	5.915615424	12.80572939
## 446	5.166734666	-0.180490760	8.05355631	14.46941662	11.21840408	7.62890146	6.883809043	11.58222844
## 447	3.215136764	0.873421669	7.12464104	6.66016996	2.53110823	4.26314673	7.379539534	5.38914510
## 448	-1.009809671	1.095363719	5.89014614	11.63127227	13.56071846	17.19593593	22.124024868	15.48287667
## 449	3.438398453	0.048734638	3.07286106	7.42491816	9.88835747	17.07734312	25.211146791	25.30741857
## 450	2.861779186	1.681472486	1.51232613	9.45799576	11.77368031	15.34733184	23.249791849	26.18620669
## 451	4.669539115	7.104990404	13.48270842	9.67218812	8.14468925	5.83873078	13.272009626	8.23267734
## 452	3.454020104	1.496956445	4.89055945	7.85736892	3.11371930	1.48731284	6.679085007	11.15979787
## 453	5.059653591	1.054896448	6.69386787	9.64549319	7.71906637	4.81616947	10.466830784	7.15944205
## 454	7.282382573	3.719353879	4.31035049	7.54013007	2.80426828	3.40080615	12.847968826	9.65917249
## 455	3.915239287	0.161597307	1.61148296	5.99199498	1.83542581	4.23138906	10.400759843	8.79506002
## 456	9.133412458	9.291766812	5.87370785	3.59654818	4.18625081	3.84886108	5.252676232	11.05252605
## 457	4.341148474	2.412742041	12.67661332	17.29117669	11.58956881	5.55165725	8.809706343	5.47970436
## 458	3.897937049	7.854567581	6.57019602	5.75344918	2.64308630	4.20793455	2.123260529	7.30666767
## 459	7.243378436	0.336394436	5.88782871	12.37285912	11.22235509	10.20740797	10.410136472	11.45047260
## 460	4.696839098	11.875944530	9.80006916	3.87287428	1.75926560	1.82950418	2.758785696	6.44737219
## 461	-0.268833462	-3.684570936	6.94950036	7.14676917	3.28828840	1.48803588	6.874250239	8.41213651
## 462	6.928589110	7.183324381	8.51640736	10.32792684	7.18609700	6.75775597	4.828141583	9.52098991
## 463	1.011466891	-0.111552261	-0.49900453	7.87377203	2.49990234	-1.39339201	8.886240451	6.72009637
## 464	6.369149746	4.170044252	6.85929364	10.49922069	13.59800186	19.66433313	25.544903064	23.07174354
## 465	0.680396812	1.627217831	6.30126633	12.94619900	18.07781482	23.98872266	30.383125861	20.96671028
## 466	3.572123691	1.988259370	5.43720711	6.38137742	11.60776976	15.18016971	18.552720476	25.16372127
## 467	3.892742768	11.324346322	6.69578928	2.20146739	0.63145602	-0.37333607	3.887496345	9.70146123
## 468	5.106992935	2.838098443	0.79587580	7.93902285	18.25559591	15.88751509	10.236892445	16.92357378
## 469	-1.702431728	-4.566694893	-4.43889273	11.74545355	12.79270733	4.91543595	5.674380674	8.02204280
## 470	10.890218800	10.519596898	10.00744428	18.66096024	21.32904855	24.60129112	26.156213227	28.34816449
## 471	5.036637927	2.817677209	4.59295429	11.26899224	8.92335371	4.59848338	7.299849243	7.01377942
## 472	-0.432825972	5.934760789	0.16776896	3.24668866	1.94256839	2.46656215	5.361593837	17.47606450
## 473	-0.865251678	0.026169062	-1.64968442	9.77680425	6.80173530	3.58142011	3.823789870	9.61471942
## 474	-2.049128270	-5.196400245	-3.04057029	11.34829678	6.99199289	0.31007056	2.850316006	19.10742646
## 475	1.118355471	0.301403855	-1.82092713	6.13298111	2.22229682	-1.09807842	5.387189158	15.72394654
## 476	2.060746749	-0.974542505	0.33268446	14.17803293	10.17649627	6.05392161	5.216466650	14.24200787
## 477	-2.645526240	0.155850354	3.65200174	9.65415221	17.73462066	21.63778763	23.377081758	32.03107571
## 478	1.262048232	1.691920538	-1.74991184	17.86898086	19.06604330	7.08669802	4.660479537	15.57071813
## 479	-0.560143859	1.006552098	1.35073897	10.73024916	19.11888430	17.33122188	21.386056840	31.31314582
## 480	2.798373947	3.716152262	5.25725219	7.13732780	17.00926064	18.87326769	19.879941938	27.27009174
## 481	1.492675708	4.176929307	5.32392116	6.66918156	14.93746875	15.89218566	20.918770399	22.73693335

## 482	0.908272316	-0.264999615	1.58474486	7.20775128	13.10386456	13.34540936	17.787549288	24.02226353
## 483	3.684318670	6.447337625	7.15418651	8.44172663	21.86686652	21.73047245	24.935181777	26.84799099
## 484	-0.543080215	0.236134058	0.45418265	3.20209011	12.75963759	14.40390137	18.438539252	26.81232909
## 485	0.318459296	1.781425522	3.21178036	9.73050900	18.46270565	20.31867483	26.506612008	28.12883154
## 486	-1.716706465	-0.410963698	2.61719858	5.67817899	13.75433526	14.44037895	17.974458449	25.08976195
## 487	2.234349951	4.807600894	4.21339690	7.71412055	17.79117756	17.90773592	17.796278545	25.03791622
## 488	-1.106024105	1.470909203	3.96978470	10.80462974	18.07164088	18.76233858	22.090420470	26.30087556
## 489	-3.351715012	0.814362071	2.88695583	3.31077498	10.85268610	13.58103410	16.866871770	20.62698920
## 490	-1.778973922	-0.422821037	4.07081750	5.14625879	12.47255599	15.08001680	19.262515835	23.04812140
## 491	8.509759349	12.275824805	9.84419917	13.05876477	24.56566871	23.47544528	25.154989438	32.28955281
## 492	-4.744341801	1.077633626	3.13040070	3.23112376	12.42790491	14.72094502	19.462943106	23.54895276
## 493	-4.496847738	-2.462957439	-2.21952349	1.55063211	8.51368510	9.79342472	12.954774863	16.42077141
## 494	2.155959421	2.315758344	2.05502818	3.32612300	11.58934127	13.52354818	17.147418845	24.13594279
## 495	-1.183923297	1.733450309	1.21352114	3.53402983	10.93432456	13.82371801	17.904383010	22.77029795
## 496	-5.936453679	-5.625535645	-7.98367090	-11.36095617	-6.50647198	-5.57157394	-2.264888361	3.39772637
## 497	0.920778714	3.751388060	8.15514664	9.71042019	21.73004200	22.97063875	23.774392876	26.79911516
## 498	-2.072612658	-3.188886521	-6.98228954	3.11546666	7.13320749	-3.12034331	-0.383425464	9.64196416
## 499	2.345923630	0.918560426	-0.55475341	-1.43640093	9.48000778	7.13386660	7.651709500	12.24825932
## 500	-1.765769523	-3.192301524	-3.29112536	3.66233473	11.75158033	6.37377871	5.738366799	11.35210163
## 501	4.120025602	1.659955545	-1.52843701	7.30456811	8.55322122	4.17248903	5.241614553	13.42639068
## 502	4.008518323	7.995567955	3.22122991	-0.42464172	1.04532930	-0.46884059	1.724406713	6.57112157
## 503	-3.345173545	-5.826276674	-3.42864688	5.35902567	0.44665931	-0.62247600	8.243783622	18.46649115
## 504	2.553060349	2.648809371	-0.21627210	8.80685472	5.62498818	3.79927779	8.591822762	19.15139603
## 505	-1.388249755	-2.426044061	-1.71895583	1.95859092	1.24444256	0.60008756	6.604399408	15.88510317
## 506	-0.162119169	-1.669763581	-2.56753662	10.08754727	3.28177800	3.12313177	5.046480456	11.96935027
## 507	-6.013599954	-4.072528636	0.37137638	7.71726518	1.60592231	3.26407803	6.542092642	2.97081160
## 508	-0.987689523	0.475900183	2.79808373	7.91440545	15.77652427	16.63604611	21.955427403	25.16430947
## 509	-3.828931067	-0.082742558	3.08261017	3.60051035	6.79628188	14.62909805	20.766953002	18.89563307
## 510	-3.570669368	-0.361327062	0.68349971	0.60677538	7.73303309	12.35920719	17.591537280	24.16539295
## 511	0.084479438	1.803336450	5.73584851	16.63233817	6.68155961	7.18436195	6.579670673	8.02805326
## 512	-2.921988671	-2.524374716	-1.91256726	-1.34207464	5.77245347	4.80219429	2.287236906	9.69596001
## 513	0.168868074	-1.846890245	-0.13661476	5.84542835	14.31950640	6.73909338	2.994027506	9.03197359
## 514	-1.908976838	-3.519202966	-1.28379859	2.45271477	5.79571404	2.53288347	4.859345447	8.20618272
## 515	-4.213981101	-4.706009886	-2.76805690	-0.67718398	3.98892659	6.16132178	10.721469647	12.25032326
## 516	0.688869112	4.625690906	-0.74491680	-5.44891069	-7.09951055	-3.00492936	4.108348713	9.25250381
## 517	-4.287093135	-3.512292021	2.04412181	14.59737476	7.71808686	4.16846992	6.498057856	4.86713508
## 518	-1.194459489	0.088321984	-3.40562801	-7.60012140	-6.57225517	-6.62998852	-1.282047396	3.44134038
## 519	-1.772418097	-0.739010347	0.83132954	3.27212803	12.28569645	4.63968912	6.668149365	13.78921974
## 520	-3.455536026	-1.606109109	-6.48100103	-10.94671278	-10.31289104	-3.49274877	1.458452717	6.58675078
## 521	-1.106863065	0.435706701	3.92125547	9.64776156	12.24216509	7.38051102	6.132052967	6.50882938

## 522	-0.561317886	0.289511942	0.19862967	-4.14507606	-5.34219885	-5.33384899	-0.553971478	5.85145668
## 523	-2.889376962	-2.633547671	-1.31206648	0.99281827	6.93530408	5.36813213	7.791423950	10.09968449
## 524	-5.016254411	-1.957188241	-0.14034747	0.59643888	6.63377458	11.26662637	15.683981005	19.77078805
## 525	1.494570122	2.408118413	4.11086581	8.88961868	18.74971348	19.67976868	24.242870194	29.81129681
## 526	-0.437158903	-0.838602897	-0.53997337	3.12278773	13.47647928	12.77036930	10.101690011	16.87730719
## 527	0.983079885	3.707243033	-1.91325813	-8.06108583	-6.88832748	-3.81007282	2.336178340	6.83331572
## 528	2.727162406	0.620477788	-2.05300881	6.49915075	18.30926532	10.40151662	6.094181645	12.97741172
## 529	-1.423078474	-3.012927761	0.49669237	-0.63853563	5.28772790	3.04102992	5.243642267	7.92702054
## 530	0.936674390	2.486447041	5.41167675	6.06124565	13.83270873	15.48592419	17.911760885	23.89531473
## 531	-2.741057903	-4.185264875	-1.97061010	2.00178630	4.16828825	6.19448138	3.817942454	5.74899383
## 532	2.897229854	9.698777276	7.55802408	2.51063534	3.89906782	7.65824355	10.446891348	16.28857816
## 533	0.727745610	1.869791944	9.72135266	5.17665699	8.79948528	12.55705296	8.183295818	15.75793282
## 534	4.604384640	1.927770185	8.58816189	9.28359927	4.61907211	9.51986444	9.616114086	12.22495985
## 535	-3.662190806	-2.463177479	2.52496683	0.72559469	-3.44430175	3.61821500	4.218459779	6.18956568
## 536	-0.434549194	3.958244837	4.31890558	1.42763562	3.22422127	8.69432946	3.739037708	8.55054058
## 537	-3.854504509	-1.589681268	8.90892884	4.08284234	2.13303806	9.86763041	8.973419351	8.67022018
## 538	5.975389661	8.905427410	17.35665261	24.86079598	27.53242138	27.14280139	23.477864419	30.80344875
## 539	6.229577954	4.266173626	7.23719051	16.67043042	16.11053833	19.19847766	26.824487491	27.00693351
## 540	7.456510734	9.277703264	13.78295345	19.54590947	21.47858608	28.54050750	27.852789735	24.42196159
## 541	5.295692905	6.692852807	12.52319237	17.88748452	19.80199764	27.73665388	31.535077131	25.45503618
## 542	2.166841663	5.941306138	11.19162489	17.64779057	20.22102045	24.66936680	25.169476211	24.12527071
## 543	6.125672126	6.029200930	8.44474934	16.68967053	19.89443410	25.11564297	30.180381132	22.87401971
## 544	6.126668566	9.178741066	12.29647165	24.50587421	28.07884933	30.29311356	25.106973307	29.83457678
## 545	8.417779035	6.351140134	11.52636504	17.94064621	19.64059865	22.02205038	25.923401997	24.50640916
## 546	6.773237219	15.190754173	22.73563184	21.20186080	24.59652889	27.39338135	23.286884421	33.22873265
## 547	5.568643558	4.557494261	8.30242755	17.08763840	17.28177647	19.16355369	26.216511559	25.77989839
## 548	5.699012530	5.250996927	8.21715989	16.19610561	18.10827678	22.76661860	28.984385756	20.69648049
## 549	5.423576887	12.354090006	17.08704509	24.25525112	25.23778801	26.14965852	21.068824128	19.69952729
## 550	-3.352346689	1.989527136	5.05403156	13.63441765	16.59776952	17.31055377	19.490725038	13.95773916
## 551	1.827460701	4.881963889	7.27625460	13.05256609	15.75784315	19.73910319	23.096425508	15.30564201
## 552	2.395211575	0.865315180	1.70751355	10.62113309	10.61778283	16.25071159	23.769177491	17.20084692
## 553	7.903681630	6.123672709	9.95316675	13.97174739	17.84811373	23.62591934	26.465956368	20.83546206
## 554	-6.430213948	-7.396875029	-2.73341417	-1.64472206	0.59144745	3.17667706	7.393264882	3.89836313
## 555	4.704168569	4.233477768	13.97703775	22.91089756	16.83224392	24.53962829	26.279190233	24.87666600
## 556	-1.137591632	-2.587715898	9.52504116	3.17222636	4.12355752	8.05560937	10.174616163	8.54766591
## 557	-2.199899103	-4.401496817	2.36505736	8.98093752	5.72489657	6.42242897	13.940123068	8.58508362
## 558	-0.882732222	-0.227961866	11.81771227	8.93633773	6.55656827	8.97511999	15.954561962	16.01210559
## 559	4.747847937	5.357470895	11.77214222	10.54271755	6.93963450	11.17161885	12.373596860	8.24396126
## 560	3.622609435	5.784834028	6.78786641	4.72809516	7.08317194	12.76411029	11.992831487	12.48133080
## 561	0.714262165	1.341878130	10.10633366	5.65506923	2.56841130	9.19313929	10.309315694	12.15060182

## 562	1.655270676	2.375992998	8.79224241	1.58452359	6.10614891	10.91386954	13.397218821	13.56858360
## 563	0.999454537	0.932239438	14.96379398	4.94353469	2.33633532	13.23383747	11.633212070	14.99081064
## 564	-0.125677007	2.540691361	9.96404329	5.12122974	3.15701074	8.57190177	13.823436636	8.03982871
## 565	6.613386540	8.824572431	7.46687567	4.12286714	3.20234034	1.81154229	3.116459270	8.72204908
## 566	2.206107230	3.981166466	8.42561386	18.93651536	15.41546869	19.69740595	23.876383265	24.49737993
## 567	3.650329180	3.389447463	8.29644534	16.38859909	13.63107065	17.37247226	24.039782734	16.75865707
## 568	5.684655283	6.041686772	11.05820336	18.17278275	18.56794965	21.40502263	24.052454821	25.43694378
## 569	-2.904957187	-1.396236562	11.64180457	4.35765416	-1.24769569	-2.08738851	4.991665323	10.06468395
## 570	1.810644228	0.071292825	3.38287978	7.25118012	1.44291327	3.84664425	4.845175397	5.33826536
## 571	5.067564374	4.614812938	5.22812084	12.97785015	6.39417567	10.55686460	12.154364583	11.43613379
## 572	-0.314301977	0.048417523	6.82027658	-0.75049677	2.95533175	6.51836673	8.884156773	15.74163827
## 573	-4.433015978	-2.433735745	1.43183975	-2.67094631	-3.43176888	1.84747710	4.819022481	6.54423275
## 574	2.647844753	3.875913623	4.63194814	2.15381725	-0.26029780	1.17550861	1.604192288	14.16658535
## 575	-1.698546004	2.488979347	10.34889360	4.82868409	1.84483176	3.49778061	8.476134010	15.28993434
## 576	1.443816879	3.331925970	1.55975202	1.09806944	4.40983390	0.91514346	2.387095473	4.32728479
## 577	-1.691054621	-1.790414452	8.12731714	12.42338522	6.75572055	5.47093076	8.702780712	5.63652430
## 578	2.046106503	4.415433831	5.07041794	3.45469271	4.87698547	5.10135863	8.755003521	7.06528357
## 579	-5.135689439	0.660492384	6.48707732	-0.66274828	5.62770725	3.13459018	4.908146151	16.63913630
## 580	2.760213960	0.163663428	4.47970049	5.45063938	1.71888426	3.00050893	4.368601124	3.42131291
## 581	-0.463004512	-3.306600929	3.91078236	9.91476126	-0.59615886	2.78754931	10.317329694	9.57176707
## 582	4.058927689	2.238325156	4.67455692	10.51737336	11.04666175	15.57963868	17.300721823	15.63819002
## 583	3.129042452	3.774077046	10.35425122	18.52810641	16.20224098	19.66024815	17.797008113	21.97164671
## 584	7.285582665	7.284973415	17.15313075	17.54902961	8.75959915	14.18881348	21.049571163	13.97749120
## 585	-3.182816243	2.813226933	3.52587488	-0.90820065	0.13934066	1.11911268	3.930355708	5.29351224
## 586	1.814213904	-1.964539010	-0.31188225	12.59410381	4.28183123	10.60795837	10.786684984	11.22718936
## 587	-0.471678431	-4.202259622	8.00752658	14.00560596	7.54330212	7.65138044	8.661638965	10.23785867
## 588	6.915041946	6.841189795	10.32969404	17.11040426	17.70646600	21.41758022	24.833211033	22.42937956
## 589	-5.197038725	-6.003721491	3.74586360	6.73949613	2.15687788	5.67996855	10.432064564	8.15744472
## 590	7.775310614	7.464347341	16.44802535	13.42694394	10.05022881	8.99453497	11.428585563	13.80660273
## 591	10.313969421	8.806898434	5.18711518	18.93675642	19.88273892	17.72837420	14.500413653	16.51290696
## 592	8.420678794	4.239662313	0.50280825	18.85070135	11.90548452	11.07575448	6.440949781	6.10715525
## 593	9.611059256	7.981107177	2.20265640	19.85175763	19.40517718	16.78756504	12.568031931	16.60350137
## 594	9.008772217	4.708772441	-3.32785534	12.71149637	7.98904094	9.05613697	6.763372819	2.86236946
## 595	11.283870294	13.261361327	13.03827371	23.01364096	21.68526387	23.78698005	22.370446472	25.84875044
## 596	9.944628908	10.577409183	4.24083670	14.67555986	19.45174307	14.91566846	8.668077718	14.80547679
## 597	7.711586041	4.964169225	1.59342873	16.93453858	18.31947471	19.87100089	21.098796933	14.62668442
## 598	7.684268974	11.313684816	9.83297552	14.95749636	22.77567017	27.06385708	24.631919867	29.72545022
## 599	3.803369918	3.652117453	5.62440999	9.02626926	17.35851223	20.97337756	18.112518969	16.11043526
## 600	13.517897339	9.913729323	1.78746723	17.28217336	22.68112299	25.43746184	25.957134053	25.41705172
## 601	5.035147511	9.514858860	11.86896230	21.65079227	25.81855202	28.29182037	20.778455098	23.58331707

## 602	3.543065913	3.506018585	1.66562017	13.54278486	17.45719499	20.90660727	20.650203136	11.21398578
## 603	9.138422177	10.067941066	6.78807956	24.33133889	26.20270440	26.34236593	21.857003600	16.85662825
## 604	4.375698751	1.893536345	2.65496752	6.23309966	16.13804649	22.24052355	20.175740517	11.77572339
## 605	3.636896713	4.918058838	1.62058125	10.36883763	15.97106556	22.52018812	21.797713227	18.27982808
## 606	0.362646432	6.362772823	11.16581717	21.19550023	20.07052995	16.98296213	8.221374072	12.29371201
## 607	3.512160269	1.669543679	0.49918310	5.42741356	14.21185003	18.74362528	14.591358133	17.62889704
## 608	5.147055194	6.773628407	1.93260737	15.84718948	19.43132967	23.75382297	17.402708951	17.19834098
## 609	-3.158593327	1.210667284	4.84794546	12.74792803	19.07718470	17.49658283	13.769471659	13.44647247
## 610	4.794847625	2.651856767	-0.21769645	10.40429247	13.39981588	19.49240340	24.128740398	11.05076714
## 611	1.472908689	2.099183842	1.93207650	9.47348240	11.99133260	14.44945891	17.873805632	21.34926568
## 612	5.217546701	6.607282322	5.80687796	9.02909926	15.44014275	21.94928234	14.716014297	19.84655325
## 613	11.090415541	13.153734688	9.30765803	16.45140587	22.10267935	25.02286163	22.251984875	15.71518886
## 614	1.673028716	-0.778625123	-4.79921476	4.05412877	1.36154413	5.82233923	3.833907489	-3.58456509
## 615	6.438096399	6.081524044	2.89172211	16.82977872	22.61331971	25.37810005	22.054107736	13.76484425
## 616	5.784569185	3.606868848	-0.66834211	22.93538470	22.33358103	14.49658814	11.040834241	8.45809702
## 617	1.109533405	1.422650441	3.07545896	17.67245806	15.44312092	9.62757102	7.570585605	8.23206621
## 618	3.432118381	2.188460382	8.77634416	21.24178381	20.86607791	15.92238000	11.163478958	10.89651775
## 619	9.963006722	3.059825490	0.55486813	14.63274452	20.19585906	18.18162703	9.400160955	4.75638927
## 620	11.083143810	10.416776531	2.02163581	19.84866638	12.09762385	9.76477338	6.226449273	8.29653078
## 621	8.675782872	5.512906878	-2.85312843	19.66122131	14.79740144	13.71122252	8.531859999	5.40969130
## 622	8.328466620	6.638065928	-0.80616177	17.50965598	11.63215515	11.38014734	7.654680848	8.65414879
## 623	3.504050944	1.445144042	2.83323774	16.84756072	10.97256769	8.37980386	10.684083124	6.29198986
## 624	9.173256070	6.875739357	3.25412385	22.58479026	22.44186730	19.39619124	21.319302685	22.38049779
## 625	-1.964620274	6.066502880	16.51543379	15.26608860	11.70431122	8.82973506	4.436432028	8.04475071
## 626	7.078504392	6.336422414	7.67318229	15.42291427	18.28659653	23.02205490	21.639772978	14.92541367
## 627	-1.529243289	1.471194519	4.20258919	12.21195920	12.57420246	17.49298097	22.234981183	18.80172130
## 628	-0.034796405	2.209124301	2.78858956	9.83499185	14.79414968	15.17507443	12.823592283	17.14783251
## 629	-3.864213023	2.615208049	3.82695867	13.88359783	9.98114085	5.50756098	2.934085050	-0.30956439
## 630	0.959740747	-0.596733600	-2.90561115	9.71173683	13.94892436	13.11476124	2.738311509	-3.43806728
## 631	0.763719505	0.314968628	2.75218389	17.72898229	17.46013952	13.40349732	11.935522844	5.37956496
## 632	1.510246004	5.210672870	14.68265653	18.20914441	13.33414625	10.92884421	6.941011376	10.16976187
## 633	1.095601591	1.682581866	1.22791458	18.46728583	12.49722169	11.30471058	10.895072526	3.57978215
## 634	8.620668633	7.687336777	0.86645113	2.78807275	5.59717227	4.17213994	2.750981148	0.69275903
## 635	-1.260062917	-3.673576362	-1.59013180	13.36204037	6.76038402	5.89706391	5.144391750	1.18698969
## 636	-4.277441040	-1.212167041	1.95084401	0.44658512	1.90115644	-1.53278656	-3.246614400	-3.36458323
## 637	-0.038213004	-1.119096389	-3.99285675	13.65368228	17.77194260	14.04146180	15.247424273	5.89395763
## 638	2.556852153	8.996772896	9.30505938	5.44289023	8.01998670	5.42681807	5.802734623	9.43278614
## 639	-1.628590516	0.840514605	6.84402624	13.91989383	6.63691572	7.54196418	8.363006217	4.45352908
## 640	7.314536804	6.062979447	-1.28136642	13.47053429	11.07075754	11.64105305	8.886561711	0.95290729
## 641	-1.376680184	4.578706227	7.61991164	16.50280456	12.44329651	11.29648416	9.524086222	5.42796129

## 642	2.849849600	4.017497135	4.43813370	10.46807608	15.71196986	22.83343985	19.017808276	14.88922340
## 643	0.032445739	3.858646604	-1.11585047	14.96835270	13.79314663	16.96824471	13.763079456	4.93485583
## 644	8.992229709	5.371761679	1.73264323	17.30578053	25.37187750	25.91222997	17.964731985	9.91936837
## 645	5.830911466	6.464276805	-0.26333317	3.98677592	2.65092281	5.33811421	6.121042007	-0.82141501
## 646	11.047114274	6.741630973	0.49178593	13.73147661	19.98573500	17.33367302	11.522616617	11.22640552
## 647	-2.658024189	-6.825030451	-8.76022514	7.18836096	14.18053213	12.15044625	10.375138042	2.36399843
## 648	7.402710200	4.495688080	0.69330238	13.97637573	17.77149663	25.73104578	20.966951087	14.43270545
## 649	-3.166407672	-4.375385517	-5.53726001	13.82208583	15.03890210	11.87299056	9.234631220	0.58459228
## 650	9.468310375	12.199065495	14.25903386	8.21654670	9.64398381	13.76190219	11.784616568	15.75247435
## 651	13.990577060	8.302557133	16.87557709	6.01297858	13.59509520	17.15700621	12.613432191	19.94598378
## 652	9.554672685	7.421998471	13.40413318	11.41465622	15.53870489	13.38646104	11.700917284	16.09121680
## 653	9.606885972	6.044350930	11.89611620	7.99373787	13.08385635	15.33669654	11.334586695	14.77538341
## 654	9.404425275	9.017717745	13.49021905	14.12216271	15.51680713	19.09266388	15.145476685	17.05690512
## 655	9.606929040	12.565021061	10.81472934	14.89639490	22.61792067	26.92031047	21.865666799	14.49032080
## 656	5.206890177	2.962137429	8.85780464	5.76443477	10.29630167	14.25630249	8.580161470	13.99805078
## 657	10.957108321	12.494211482	18.22286031	22.64828821	28.89773334	32.77818351	34.598932540	27.81976017
## 658	9.312610852	9.620012623	9.85968890	14.20636272	26.39513206	28.91339577	28.594965896	23.49390861
## 659	8.883019847	15.336346902	18.39521471	21.75408668	31.09052124	36.20532234	34.872503022	28.85094314
## 660	8.659646636	7.349683176	13.74329779	16.28335390	24.59321013	27.13081596	27.969877122	22.27310835
## 661	7.937313344	13.021324769	19.50044575	21.91978629	31.29150797	31.21362447	29.394252326	25.75962203
## 662	11.266000114	10.002574665	13.26006044	15.47622392	23.02777334	28.70556958	25.759512494	20.90272912
## 663	11.348532500	16.359154592	17.88604601	22.77476626	34.46416181	34.42946230	28.692219563	25.62190731
## 664	7.450163466	7.585284558	12.24897126	15.77957237	25.54127368	25.54537756	31.625156723	26.89757030
## 665	5.589602066	6.686360759	10.60368072	16.38960053	23.91858283	24.82718649	28.235995674	23.74847482
## 666	3.102306861	9.267276967	20.47724418	21.43744638	24.67960502	26.08671955	18.467228467	24.78986603
## 667	5.157219581	2.699691515	5.68981116	9.47253297	16.21533916	19.37366813	24.999739210	16.87512727
## 668	8.923273249	10.046856713	12.77891916	17.29929587	24.75100054	26.04632595	31.820882459	26.53178789
## 669	6.812280767	15.699534051	18.73286018	23.53885909	29.29920494	29.22599586	20.437391222	21.76231555
## 670	6.796594229	5.554279473	8.49050161	12.53354872	22.63260345	28.31999969	25.249541850	21.04714092
## 671	8.426781527	9.695578794	12.97901905	15.36668563	22.26634851	29.95687968	32.396361802	23.82271039
## 672	6.449157392	7.801506640	9.07149186	14.93206662	22.87621675	25.47895669	28.638755241	26.61627806
## 673	7.659318197	8.861713530	6.44144583	8.75124315	16.22048084	18.34142310	23.916631836	20.46950065
## 674	1.826269762	1.917104728	8.17317991	1.60467558	9.84888358	9.84698577	10.814423251	17.32054689
## 675	12.717311902	19.527268343	22.24910415	29.73067349	32.69311645	30.70589723	24.943237237	22.03454873
## 676	6.867501239	5.120906534	11.49055584	12.88882687	15.10528377	12.22431659	12.405145708	18.18941185
## 677	4.760556828	2.819282979	11.11948523	8.58157338	9.42233209	15.57744782	10.277526312	14.79352976
## 678	4.072456213	7.596462160	18.47410751	5.94602118	15.37717842	15.03548852	13.850457364	21.54061641
## 679	7.383598938	7.345391191	16.92279579	9.59034029	16.43356188	17.18046239	10.067851496	14.11314351
## 680	9.844172455	10.052416467	15.32695738	8.04873248	13.02558638	20.21001463	16.202671812	21.72168987
## 681	5.293879475	3.465727424	7.80629612	6.92045111	12.60833480	19.62782124	10.286367890	18.67458999

## 682	10.293864330	7.010279843	15.34109434	9.44698019	17.11505333	18.97242106	17.596195044	15.09075030
## 683	7.060510193	8.946633540	13.51195012	6.40110173	13.79960639	16.85426188	14.457231558	19.33289146
## 684	8.022338123	7.238097770	18.36123343	7.28409482	10.28364742	15.60287034	5.773270525	12.29346047
## 685	9.832329971	8.290745076	2.75643531	2.00348998	5.07282087	6.42501096	8.980964573	23.51344186
## 686	-1.377153028	6.014522118	15.35662133	12.86558974	23.31503692	20.39473803	18.733895142	20.61635507
## 687	4.345463033	6.638988750	10.88016554	11.20457909	18.70338063	24.58122069	16.550763686	18.21503815
## 688	2.699855107	6.788266228	12.51439332	13.02114605	24.78587699	30.03078131	20.775992094	18.54298229
## 689	8.662270226	15.363295310	8.35961702	3.64110121	10.96514728	13.69753157	22.124456649	21.46769235
## 690	0.545765905	8.905358591	12.05531243	3.33123665	13.09939096	11.61195555	14.679897262	22.11300723
## 691	2.062569088	6.890923535	18.21869473	6.57536436	8.24320983	14.04649086	7.962453613	14.84146602
## 692	-3.322894313	2.592719773	0.68854471	0.26624018	10.78710940	12.42256411	23.522700054	34.99118003
## 693	-1.067750402	5.643170894	6.06048869	-0.94076481	10.34919770	11.63892115	17.445460024	26.11752731
## 694	6.745058554	5.687178092	0.68175755	3.32114369	11.97727242	13.31696983	11.626573870	18.83782222
## 695	4.570163798	13.854027346	12.76407056	6.10384612	16.70438898	21.05513622	20.487150558	20.95490831
## 696	2.485130676	9.426789981	2.73646874	-0.27800504	1.87355545	2.57987960	5.879579399	11.24071956
## 697	3.183911141	9.326113447	15.67589924	7.82251198	9.84262082	11.16196708	9.952167873	14.17585606
## 698	1.260491824	6.593424459	0.99190745	-1.51952351	4.35861168	6.38292097	5.299218424	11.38089637
## 699	3.749617696	14.062729466	8.46236345	6.02653607	14.93277409	17.67651199	20.924096951	20.93669876
## 700	3.136702042	2.734684255	11.32083389	1.27522768	7.21574038	8.75656455	3.598802878	10.30369476
## 701	1.031650557	9.240365841	4.66588081	1.10642996	11.13519176	10.84945584	16.704772520	23.40293852
## 702	1.643208308	7.411340906	15.21823622	12.37551020	22.00768551	28.53255027	16.436710219	24.65322120
## 703	5.752294221	7.557373539	11.41787641	13.97324888	21.45834837	23.22826186	16.218236157	20.88324657
## 704	5.891393851	3.763852474	5.79167265	7.35319742	14.41302808	14.98709922	14.369078005	11.39217627
## 705	-1.385511205	5.619462226	-0.76823090	-4.40081059	5.70835494	5.74261610	7.619260777	13.05511557
## 706	9.776610017	6.429587054	17.17841869	13.631190531	16.14384580	19.02972595	16.952034338	24.66706272
## 707	0.003703177	0.266773588	11.92144574	6.51131331	6.53966133	11.45782489	6.086176238	12.18667928
## 708	8.836179115	10.584477321	11.52853849	12.38449626	23.08551209	25.01339822	26.327615407	26.94394863
## 709	-0.810764101	2.107513521	11.19749636	0.38934826	8.51774311	12.58148597	13.380452454	17.89790130
## 710	0.979929430	8.737868208	5.07601164	2.54015917	9.23862181	18.40037872	17.360065564	14.23016943
## 711	2.728124061	3.076971950	3.99182653	6.94380774	2.42882702	3.96925485	1.509165692	8.31133918
## 712	0.712641992	-0.577207662	2.07006530	8.87397780	3.88113535	7.59243618	9.214347768	12.40043232
## 713	-2.056203151	-1.128447148	2.81046592	7.94275016	1.133459785	1.11648156	5.602030767	6.45454170
## 714	-3.017928214	2.661502527	3.49226377	4.41333688	0.40097718	-0.95422413	6.034883178	9.95415028
## 715	-2.240269998	1.440813481	3.57521204	6.63548282	6.69272251	6.15006024	7.379794507	8.18496497
## 716	4.332879885	13.227691239	20.67404539	23.32162258	27.29384213	30.17310179	27.880268107	26.85663759
## 717	5.367591148	10.208271519	12.73741085	13.98188465	21.46700095	28.32809499	29.885841845	31.41396996
## 718	3.193016129	11.536516288	16.64727625	18.74344714	27.45790828	30.68658687	25.170599764	22.58644531
## 719	3.518302700	9.366303174	12.03640757	13.66742990	21.89918994	27.09051136	29.995124609	29.13988032
## 720	6.444170991	16.917548309	23.30019578	26.56830303	27.77827661	29.52382198	26.200214258	24.22365891
## 721	3.768512412	8.507384893	12.50860747	16.97438313	18.05765593	24.64010361	33.424960021	29.57001974

## 722	4.390126009	13.383872642	16.67282949	18.87875391	25.37577611	31.50620752	28.547871882	25.33230336
## 723	5.108933437	13.844489465	16.58412121	19.04708831	26.41454821	34.65779783	32.202997238	27.75705079
## 724	6.546390364	14.079824867	19.25717439	21.81743474	28.73800151	33.15283270	28.017416476	24.94327725
## 725	2.792549305	8.612099557	11.20659576	11.69140785	18.89684567	24.68226432	28.996942108	29.48109391
## 726	4.306451264	10.526032315	14.96531243	16.40037895	24.41850491	31.32590957	30.505099771	31.22381670
## 727	3.448391214	11.019681333	14.22757732	17.67343804	21.91436064	29.63674085	31.930937323	28.14033526
## 728	2.204895462	9.895576503	13.40760721	15.92044596	22.69322218	29.54867451	27.262194088	26.87923374
## 729	2.724023038	8.473904135	12.39854186	14.59395343	21.04952265	28.00032263	32.551231328	30.13969084
## 730	2.922165012	10.526583849	14.33295241	12.84848144	20.75182402	27.81806328	32.544318500	33.31243929
## 731	6.243002945	11.486658556	17.36565962	18.80985784	24.63032670	32.89576888	33.383066580	30.62078200
## 732	-6.075166485	0.334602736	0.57427650	2.57617573	-2.37038125	2.30320367	6.203611864	6.84615102
## 733	7.473380349	15.514578911	22.23031204	23.78388038	27.88730723	28.63206832	31.763936307	28.84695089
## 734	-2.144281562	-1.577921487	0.95124732	7.22779264	5.11416712	2.17115636	3.737197648	6.71204803
## 735	-4.280153408	0.065992686	2.98699942	5.79346122	11.96954573	11.60907272	8.032527328	9.95007000
## 736	0.116711759	0.150132811	4.66041077	9.44378731	11.20254861	9.41654452	8.099442190	11.69463126
## 737	1.127467872	-0.646687455	5.44917758	9.10261719	13.22808166	7.89188725	6.810532129	10.74934110
## 738	0.983077796	7.001981269	5.03742043	1.49583796	2.12838517	6.06080070	9.289041917	9.30131358
## 739	-0.721821499	6.662928742	9.71965560	8.58222447	6.11231022	10.58871448	20.475696695	19.06217413
## 740	-0.736450879	3.067490036	6.83172436	6.85491026	4.25888623	9.02105378	13.419139748	14.19493878
## 741	-2.557275700	-0.297596411	5.48280187	6.84149153	2.00980284	7.33798197	13.691804133	12.53580677
## 742	-2.451387701	4.952753600	6.24951305	6.69025815	0.57362645	3.43795173	12.393503158	12.94010043
## 743	1.195806829	13.943597910	13.24644603	7.66754582	11.41809931	19.36801308	20.891116609	23.86326512
## 744	2.144256658	12.904958111	16.32146629	19.90757142	25.39969769	28.84829334	27.926104823	24.30812071
## 745	1.534233356	9.725551493	12.32759435	13.31970041	20.10547005	28.95515127	29.507259769	27.22259201
## 746	1.566691100	6.184961467	11.69114708	10.99149018	16.80980516	25.90046176	28.588514846	26.33177821
## 747	5.403222486	16.742604495	18.31863460	12.00075381	17.34400768	22.65820292	22.717030412	24.84058659
## 748	-4.307881173	0.312175591	6.56573880	9.73456208	5.31500084	4.16645164	3.486105691	9.68320215
## 749	-5.690565119	-1.833067699	3.98809930	8.75760827	5.66904261	2.66029516	7.369870080	11.00070941
## 750	-4.986713826	3.564373011	8.99531759	12.05079224	6.64168729	14.17420095	19.767096010	21.64606973
## 751	-2.362015264	7.181013144	13.00507439	14.25568323	8.27199979	18.11810183	23.014432988	22.19741131
## 752	-2.689229853	4.522359666	2.32639674	-4.36408528	0.59208176	12.33061132	16.529306422	14.40988696
## 753	0.107733086	11.464509710	16.52501128	8.59768592	12.88640494	19.28531135	23.852985827	25.24186947
## 754	-1.364809441	3.002352772	4.62417841	3.93680522	2.99877326	4.47662794	7.759672011	6.94930891
## 755	-5.475833039	0.558837499	9.81846659	8.56632969	12.27712140	8.35335085	7.069940493	9.38674851
## 756	-0.526955684	4.214032455	2.94480348	-1.09242942	0.07088333	7.47826098	11.547861128	8.40922178
## 757	-0.444105521	12.724766027	14.55386979	8.30814973	9.41838929	18.43952434	18.189755133	17.78690613
## 758	-1.666832743	1.515826709	4.10885254	6.95660281	2.24498069	3.93262131	5.669759258	8.21303334
## 759	-5.463912152	4.894968336	9.87897827	9.78210281	4.43018668	15.36782034	20.035908548	21.41419697
## 760	7.579154634	11.506938272	15.55582892	16.00931508	21.37237569	28.90346348	31.117412634	30.05490839
## 761	2.115858410	12.056857174	14.87296785	20.09179997	26.95269382	29.15410583	24.680076795	22.83339549

## 762	-3.108852702	-1.833996629	2.03876103	9.58033489	9.14966147	11.25355909	5.091670501	6.25008642
## 763	-2.438443051	3.123939323	2.71473960	0.44887311	-0.48474360	4.68900027	10.035168007	9.27256787
## 764	-2.631705876	-2.633306500	-0.01812871	7.14940419	12.09597177	6.57396018	1.653605203	4.65046234
## 765	-6.311324992	-4.352188761	1.91163902	7.18266334	14.50048908	14.65662559	5.273352301	6.66807979
## 766	2.796033550	8.957545386	12.20853129	13.88950883	19.73994199	26.11683436	30.072107935	33.75974601
## 767	-5.487639789	-1.599614030	6.13623755	8.02079944	8.05865908	7.23310213	6.177842216	7.94430043
## 768	-5.208907578	1.872237784	2.41505294	7.74891873	0.53547772	-1.60785078	2.528784436	3.23705039
## 769	-12.768441312	-8.618143814	-6.95251506	5.11029321	-2.11954752	-6.45720226	6.333846362	8.04174937
## 770	-3.842472632	1.284757891	3.45413677	19.64020629	16.61337387	7.99438683	15.839710377	15.65329700
## 771	-5.070822860	-5.177040603	-6.57817195	12.46482287	4.64329256	-2.36117706	5.031611444	8.76516852
## 772	-7.948164079	-5.333425277	2.71055822	17.20194284	3.53863830	-2.04803763	6.680274582	9.58612801
## 773	-10.006697032	-9.291552043	-6.96878802	5.61805564	12.42944191	7.00166825	10.266843190	16.12233446
## 774	-4.110689163	-5.046618576	-4.44452759	9.49477079	11.43867840	2.57723194	2.077721062	10.31608235
## 775	-6.783257116	-2.443394007	-3.13872387	14.42463128	14.49184597	7.09570221	10.492327543	15.63438601
## 776	-5.258719238	-5.976186900	-3.08895321	6.52783800	13.20218095	12.52807358	18.275032387	24.71515104
## 777	0.032761530	0.677272615	1.58311091	11.88619989	14.97885548	13.40986290	18.945845276	20.50743838
## 778	-9.262574375	-6.804894600	-5.94229327	4.20237229	11.45420544	9.72859793	14.162277022	16.41845060
## 779	-7.674831368	-2.671850170	0.29525581	8.08575430	11.38998569	8.66089328	13.867349573	18.24329676
## 780	-10.103874005	-6.306366589	-6.47268925	6.23068656	11.61204155	10.18623268	15.030011716	19.86667832
## 781	-7.197135782	-4.427583942	-0.73277596	6.85406093	14.00822788	12.98615840	20.622770978	21.46441690
## 782	-11.395644151	-6.824823246	-7.80964182	4.05422757	8.98692667	5.54952879	13.185416694	15.42092865
## 783	-2.408230331	-2.334173025	-2.17510062	7.61282780	10.30929700	14.07569136	15.173416373	24.71763839
## 784	-7.047997892	-1.177565159	2.14695576	13.51589684	15.23644720	7.11481971	15.051252019	14.87813765
## 785	-11.508477147	-8.676025535	-8.83664329	-0.84163379	6.96434114	8.56638439	9.343778523	16.61978548
## 786	-6.998703763	-6.597298435	-3.51608858	3.14212893	8.82114848	10.70979163	11.777632523	14.97350690
## 787	-6.783837340	-3.387847721	-4.15032813	6.71542522	13.23136093	8.93734329	13.408875594	8.62343239
## 788	-10.731922830	-5.432060560	-3.28494060	6.34959207	9.26694531	9.72449507	16.429543537	19.23283946
## 789	-10.778142079	-8.553494858	-8.28850056	1.01504554	7.16581747	5.57252365	14.830218344	18.48594379
## 790	-9.219029213	-6.967606341	-9.38741609	-1.06838198	6.03327177	6.17884188	5.837047924	12.87226505
## 791	-18.259102085	-12.824453711	-10.44318860	8.99978589	-2.04602346	-5.36098889	2.443334381	3.89883363
## 792	-8.406226879	-5.581361514	-2.90805017	11.66038038	16.88214391	9.43244172	8.685452960	14.82180529
## 793	-3.834745424	-4.437300827	-5.39122690	18.66720695	10.79911804	4.24643935	3.937246447	11.42033230
## 794	-10.297597110	-5.991599036	-4.82490490	13.88162187	12.44542285	3.44634321	9.494657663	13.06207107
## 795	-8.421207734	-5.484250673	-5.06855476	11.78742755	8.58602214	4.99579830	3.936489674	6.88340378
## 796	-9.179035522	-8.063867462	-8.96321457	6.29716991	11.06148763	7.81971094	6.317842583	8.81771094
## 797	-4.460019339	3.216824848	7.95597931	5.82706193	1.46587429	-3.48332622	1.648840154	5.62508476
## 798	-11.593809837	-5.808937788	1.18286054	14.47831557	6.72951206	-0.31975470	6.397028400	5.03137565
## 799	-10.161468911	-8.168053102	-11.13276035	7.84474293	4.44880881	-2.64996099	9.246604798	13.54099771
## 800	-14.171763168	-10.033245808	-8.03113724	12.37287610	1.55093747	-5.03837311	7.432005927	8.08268366
## 801	-6.468638352	-5.857349448	1.464448926	11.80928511	6.17139819	0.40227944	1.595006607	7.03063233

## 802	-5.502417133	2.717470495	2.31701058	1.74389905	4.99796225	-1.29445324	-2.344966102	-2.28123838
## 803	-13.925540231	-8.136339723	-7.89349028	6.63269585	4.32340564	-0.71058260	0.004825511	-0.41906186
## 804	-11.111789344	-7.713206487	-7.68668951	3.74640231	7.98653880	4.73393650	6.437884777	10.29003855
## 805	-10.584040848	-6.951390612	-4.27494087	5.55408194	8.36080153	5.49080745	9.494945309	8.11185065
## 806	3.228639505	12.216118144	9.36196686	6.91918047	2.78587558	-2.05892259	-1.124522519	4.48187788
## 807	-15.755884455	-9.156411206	-7.74629969	10.31061769	6.16272071	-4.49702856	-0.047610637	5.72001269
## 808	-8.501647244	-4.640410623	-2.34335165	14.67422376	13.44134991	3.01415912	5.766528279	7.30865799
## 809	-13.059909310	-4.235634250	-0.60553826	6.12730113	2.58687610	-5.94017462	-1.735322181	-0.51555817
## 810	-12.356545341	-7.297157715	0.60754689	9.86011508	-0.23283739	-3.23760738	3.823021886	3.22009414
## 811	-0.041417792	3.046785945	-7.90638271	-2.55794987	-4.92235967	-12.94975412	-7.273171384	2.65762774
## 812	-3.405646516	7.645230557	1.72292724	1.81431016	4.29824427	-3.80706897	-4.590815496	-4.27502023
## 813	-11.607922745	-2.946591003	11.92757248	-3.02252270	2.46408196	-3.20686864	-3.229451360	-4.97786620
## 814	-11.873259101	-7.041622555	-5.29835901	7.27313019	13.61848812	4.02026095	6.004563328	3.74461940
## 815	-10.348293177	1.444013585	-5.76827492	-3.48945590	-0.54874145	-6.51253372	-4.633266884	-2.97062614
## 816	-2.587209513	5.189308961	3.54111914	2.04290500	1.62107075	-2.83434802	-3.755460238	-0.24495663
## 817	-14.372145612	-8.855516733	-4.83234961	13.19341743	2.12629789	-0.62369564	1.014321478	2.70053681
## 818	-12.498769135	-4.071198046	0.96682094	8.66063384	3.97869122	-4.72092849	2.851454469	0.24328213
## 819	-17.977570979	-13.091601997	-12.97413099	0.49740517	4.73878652	-1.58380158	-0.233884615	6.14731020
## 820	-10.339885335	-7.650694345	-3.96898570	8.71932057	14.60624947	6.34613959	6.104239394	4.92503906
## 821	-5.258717066	-8.124396884	-11.60881427	1.55050200	5.70608973	-0.61229206	3.370418960	8.74452925
## 822	-13.008053495	-5.944801767	-1.00011537	-4.76437906	-2.13589559	-9.73422846	-7.184523104	-5.18711765
## 823	-3.552954807	-3.472589956	-2.22284952	14.55923857	15.79967138	9.34654759	16.736528342	13.09645043
## 824	-11.406223089	-9.687927879	-3.62886723	9.74294472	7.42152372	-2.46236473	1.790940410	-2.98457120
## 825	-7.076572500	-4.438891839	-1.70015148	4.85146894	13.05286448	10.43074079	13.248522504	20.63217261
## 826	-14.684292346	-11.329570020	-6.37705170	6.73068455	5.25087687	-3.04615169	4.469811693	1.21517965
## 827	2.066865195	5.350325192	6.44261863	0.93500699	4.36546835	6.09162966	10.174417883	18.55274910
## 828	-0.659468973	5.657791407	5.45133523	5.82355091	4.65444664	5.93599043	8.239064691	16.46417030
## 829	-1.390112213	3.465628662	4.63796948	6.91916328	5.51827927	8.57938868	13.352306509	21.80781551
## 830	-0.482192312	1.084568752	0.80195883	1.36035871	3.47509945	7.66501387	10.169164584	14.66936746
## 831	-5.183418562	-0.007524635	11.83884411	1.48665104	2.81307903	-0.52164874	7.363540731	9.38271923
## 832	-2.912744705	0.356904236	0.78413595	4.82402012	10.45105709	7.61065467	10.297730594	15.47394856
## 833	0.533273658	5.658143999	8.37088771	12.49652184	25.70026070	29.02091738	28.558042761	27.17502243
## 834	-4.002399257	2.227435737	7.20384973	5.48815965	19.50538440	24.44779998	21.455487285	26.93391378
## 835	-2.825762964	10.073539913	13.18761138	10.64251921	15.37255686	22.79239701	21.733880593	17.94824270
## 836	-1.816861073	7.638126703	11.02586438	10.94038867	23.17269206	27.75253614	31.240039672	28.05186088
## 837	-3.506482319	6.536699323	8.97507222	14.61256937	25.59095866	27.63375156	21.141476374	21.30752906
## 838	1.384586716	12.762407364	11.24084593	9.28851477	19.66624546	25.81051051	30.067264551	27.05183561
## 839	2.319236490	14.307284062	16.81002737	18.98595217	26.11502963	26.90406645	26.575283453	25.79778953
## 840	-4.975376325	5.496874523	7.64116579	9.39987904	20.52952724	24.69600294	18.902471014	21.60594830
## 841	-6.239698483	4.642186813	8.16538017	9.73646704	22.27955644	25.13397138	19.842260655	18.30573081

## 842	-6.777800157	2.435507989	3.95899743	3.71568272	15.01697816	21.73679060	18.856085687	25.65991550
## 843	-7.673713586	-0.753457595	2.29648940	0.54144654	14.91561351	19.78709457	20.018675542	23.54487338
## 844	0.875941016	14.118067273	19.37329271	19.24302989	21.83091772	25.46137531	23.511085018	20.19965132
## 845	-6.384434136	3.704759767	8.87003156	7.17538724	22.75857379	27.26977839	23.110287018	19.34607367
## 846	-5.024630003	6.648328266	9.16287193	14.23388685	22.39178682	22.43174093	18.262828732	16.67040170
## 847	-4.100854600	6.707809461	7.36227708	4.95773257	15.10335573	21.93929227	19.334204533	19.15668068
## 848	-6.813170642	1.835715026	4.47771373	4.98680425	16.49212660	22.05777089	20.924679616	27.94703175
## 849	-0.865076199	3.584293783	7.94721171	11.28253447	6.20702736	8.46161443	13.415483440	21.47828324
## 850	2.333357031	13.274035347	14.59288768	16.28717463	24.63732511	31.86351728	25.708922856	20.71006967
## 851	-0.622392017	4.429511884	1.78802049	10.24690416	8.76239768	7.25785752	9.744609337	16.52739659
## 852	-1.755580730	2.417507710	2.84680707	10.66301171	18.82701497	19.27374371	12.622283098	18.12615266
## 853	-6.505119113	2.705821560	8.50684927	12.28185748	18.60142230	17.20905163	15.755335603	16.17043910
## 854	-6.970026600	-5.438778882	-6.38908472	5.06334057	1.72658465	0.71356887	2.470543350	13.74227713
## 855	3.744041990	11.976975075	9.49513640	8.69157406	10.07772221	11.58710166	11.255605742	16.46242461
## 856	-2.675573542	0.845936596	2.09324505	4.92935537	2.54383709	5.80972062	9.859776147	16.69372521
## 857	-2.992412220	-0.634771812	0.36884255	4.45299733	3.82787297	6.50068666	13.629869010	15.46563274
## 858	-4.292279085	-2.871146057	1.86744254	4.34621870	2.53282850	8.29356200	13.611190006	23.23655663
## 859	2.381361869	-0.011659029	8.33158560	9.76354362	5.50784946	6.23821951	8.408382449	13.27127816
## 860	-2.648640140	11.006851844	9.92547487	-1.38289153	2.64971454	13.26923180	13.605523397	17.12665179
## 861	-4.791308594	4.857432035	10.11516989	10.44675855	18.88326858	18.37469156	12.052523232	11.76113113
## 862	-8.426085116	1.588207311	7.93872941	6.78832214	17.85198646	21.47496214	24.396139777	22.10323128
## 863	-1.230466311	8.710671311	12.46129397	16.28983603	26.24460997	28.61359561	19.028354415	19.04611578
## 864	5.206275652	18.607085994	16.32404444	9.70239143	11.52347275	14.46801307	11.455636745	14.77368703
## 865	-5.124499702	2.051761457	9.34085117	3.24015806	6.20608955	10.42242800	8.971699499	13.26025571
## 866	-10.844469169	-7.105668812	2.99787513	3.69057150	2.86223719	-2.76483332	4.229918778	5.66568843
## 867	-9.470233323	6.306001318	10.53860873	2.68577170	4.67355368	5.79777140	9.162407056	7.93697421
## 868	-4.334464376	7.851629710	10.01593685	5.83455264	1.54983643	8.88011172	12.453508235	11.42726830
## 869	-5.973074106	6.047311125	1.70145256	-10.32686256	2.66413417	7.35616994	7.966631932	17.70020444
## 870	-0.045079609	15.705382969	19.33308889	8.37705972	11.82556976	11.46986101	11.723539389	13.42707375
## 871	0.355794438	6.971247638	6.45755127	3.87989062	3.39230224	4.16260118	4.583290337	9.05853429
## 872	-3.180072348	-0.358579133	4.96194731	10.42265746	11.67595995	9.68575115	14.406721710	17.62835694
## 873	-8.769645796	8.718981996	5.46835655	-4.85685827	-0.77285546	5.50540124	7.296652691	10.94941051
## 874	-4.381347372	15.797358805	12.36546723	2.01859311	5.47334079	9.54168513	10.279422322	15.51438654
## 875	5.924818776	5.961855343	12.44140620	13.40970871	8.53457887	12.65364956	8.531805183	12.51619005
## 876	-6.527696182	5.398409852	13.36959404	7.52171446	4.89850264	7.27677500	13.268790046	25.79250459
## 877	-8.726006361	3.685518590	7.73593834	10.15993137	17.62549193	23.66871747	21.331796697	15.42004419
## 878	-8.273277634	4.992306553	8.96174622	9.80879721	19.60429474	22.20003753	20.002820643	16.43845919
## 879	-4.959877850	0.823459720	3.17958506	6.90688564	14.92426712	14.15789152	13.423290746	10.85202578
## 880	-13.194559021	5.697653157	2.52328333	-10.45022043	-5.37963085	-4.30919454	-1.964417144	3.09636219
## 881	-5.237353794	-3.307027748	-0.71418019	4.63039666	12.32409034	13.55728728	11.844207943	16.11609652

## 882	-0.290300667	4.548514073	5.70133060	4.20220145	14.95145075	23.05177509	21.724665233	28.83948144
## 883	-5.164095025	-0.367556188	6.05836049	6.92076280	10.30354298	5.50108961	7.822118837	9.89310110
## 884	3.680787877	-1.805987129	0.13721791	14.61362439	7.10905247	10.13611785	8.389183243	3.13786240
## 885	0.410118296	-3.753507256	-0.18547518	7.11259323	9.57732825	17.43468411	14.347026143	12.38633112
## 886	-0.921516270	-4.793913136	0.40610344	10.91193667	11.35367100	15.48514038	19.627360526	11.50443476
## 887	3.752970836	-1.154508304	1.97944331	5.47483192	8.27570864	16.15679394	13.377791958	17.89382139
## 888	-1.151661588	-0.711029132	-3.13409494	0.88286356	7.41026902	16.63308201	7.547728208	14.72307045
## 889	0.939286369	-4.450681761	0.81297924	5.01955339	8.40263148	19.46231509	17.500543461	16.75291433
## 890	-0.648647509	-4.358478034	2.77817678	12.68193869	11.49057758	15.07469030	18.262354204	9.74454549
## 891	1.491927631	-3.492388798	1.03610846	4.88662574	4.66618013	15.95621846	20.358234297	17.58003505
## 892	0.076926824	1.786415795	-0.63780083	5.48811973	10.63815504	14.56635732	16.209476687	12.51737666
## 893	0.576246636	-9.944594764	-4.52583655	1.99542644	3.18498994	10.46976194	16.338531136	17.09611861
## 894	0.586367738	-3.585366073	1.71161821	4.43693068	4.86266999	13.86548806	18.402545679	17.26998107
## 895	0.770041777	-0.729838793	2.50421425	4.97299091	9.43046907	16.18530932	17.789827314	16.39194781
## 896	3.936815298	-2.016844097	3.46540453	9.62506194	3.35396439	4.61678875	4.434349012	-2.29776984
## 897	4.710831912	-2.952676230	-3.44723050	2.06469582	6.75866555	14.32442158	16.728967835	14.87333305
## 898	6.793392850	-0.368395358	1.40577297	13.85614944	11.26060167	15.19694072	6.721386395	4.43671516
## 899	6.927875689	7.867856867	8.92436244	3.40773933	-2.76263511	1.20789133	-0.894679318	2.09512371
## 900	4.686816013	-1.851186104	-3.01559524	8.90065174	6.13994787	8.45165849	9.015056901	-3.62045757
## 901	4.188279661	-1.272582330	-0.66146315	12.77765588	9.56160277	10.63446201	7.637225744	5.08686651
## 902	0.155869810	-9.507689891	0.82205473	7.63375692	2.55671327	6.64771466	5.847252735	-0.65288268
## 903	-1.511400035	-1.860832558	-3.28377068	-1.53320950	1.05549397	7.69665043	5.241481220	11.96027209
## 904	-0.197132414	-3.926341064	11.44709678	14.89531792	6.52413283	8.26259451	2.983634576	0.07771532
## 905	4.032553882	1.083484786	5.93032245	11.14535629	3.23040360	6.85351426	1.839070365	1.11904759
## 906	1.961818825	-6.570062754	-3.51019561	9.50131518	6.62926564	5.52762531	12.942646852	1.23724837
## 907	0.721973216	-4.825594587	-1.22822088	9.43284836	2.66211941	3.28876715	6.895211965	-0.41847144
## 908	3.803588000	-1.439271710	3.96198129	13.33752213	7.43177495	5.72457143	7.721712475	-1.41760960
## 909	5.298427290	0.238713890	2.24824790	-2.32718172	-6.55140377	-8.33093449	-3.124733078	-3.12066606
## 910	-0.553897975	-5.262831677	3.07192756	10.95822607	3.33255941	3.65591100	2.294927707	-1.60493701
## 911	-3.098624495	-3.463864314	9.02430659	12.99698056	4.82191522	5.71625703	5.115713916	-1.84382641
## 912	-3.172979443	-5.676228356	-2.28423359	3.84068710	6.53883352	12.97782778	13.007891849	7.43128323
## 913	11.224772961	4.985169219	4.45348997	12.47198481	14.60911121	19.70111350	14.140056372	6.87105124
## 914	0.024732784	-9.512113462	-5.85039086	5.52231164	7.42173754	5.77309924	2.266731214	-2.42630876
## 915	4.242991755	-5.020218196	0.41570380	8.26352557	9.32862488	15.56783592	21.096608068	21.03559088
## 916	1.303596656	-7.338108224	1.31224571	10.64501402	5.97368267	12.61949955	8.788959329	7.72953707
## bin19	bin11	bin12	bin13	bin14	bin15	bin16	bin17	bin18
## 1	3.80685961	11.16407234	16.0745454	16.54778466	14.1944554	13.13244826	11.87030067	11.218070563
828043	2.65366862	3.39042284	7.8810884	13.12856668	15.6372852	13.79531545	20.07667117	16.624866475
## 2	16.03							

774868										
## 3	0.90562286	3.59311283	10.1739540	14.25018763	17.7061875	13.64712185	13.38036188	11.903630586	12.47	
034960										
## 4	-1.56423171	-5.80057771	0.6155142	2.98106966	8.4168620	2.17105266	2.83763455	6.971331404	10.02	
746336										
## 5	-2.76200051	0.10899892	4.4720045	7.86244158	10.6837069	13.78600780	20.30007377	23.024090228	17.87	
379359										
## 6	5.62313833	6.86417131	9.4173490	11.03847315	14.3214967	15.18606035	17.90870385	22.731754930	20.47	
063509										
## 7	13.26009691	10.56815884	11.8598433	10.72587742	7.4676565	9.86715932	8.87195785	10.130757529	12.37	
002468										
## 8	17.99634599	13.81125327	14.5853447	14.63801610	9.4332277	11.23981380	9.72937690	9.953557203	11.53	
639863										
## 9	10.98414772	10.91737974	12.4232960	11.16298930	7.5730704	8.22361137	6.13805242	8.143031485	10.02	
263829										
## 10	11.09418847	8.20342883	12.4795978	10.57606177	6.4201500	5.64432083	5.68014288	4.663648073	7.54	
851816										
## 11	6.87924657	5.99222368	9.6914507	6.11757893	4.3847451	5.20582295	7.13287827	8.001525167	10.09	
947773										
## 12	15.96966838	11.60804543	13.2581446	11.85329395	9.2943201	9.89359993	7.68129315	9.249496261	10.75	
353364										
## 13	9.38016518	10.16072416	10.0838362	7.27561624	6.4250576	4.38179756	7.76010605	9.096427615	11.37	
721877										
## 14	15.92227846	11.80810139	15.9524465	13.22893815	11.2226167	11.68392413	9.06113466	8.781962791	9.89	
588674										
## 15	9.54608146	6.40580466	8.6892899	4.95999553	8.1361756	4.35545342	5.84210895	7.292007653	11.06	
713298										
## 16	15.98425473	8.46061530	13.0916485	11.29647588	7.3754748	4.38993962	4.74124265	3.843488312	4.26	
232800										
## 17	11.78157140	7.89014452	9.3049200	13.51561887	11.2122986	7.77015169	5.85064665	4.816799254	6.75	
277616										
## 18	9.18319908	9.09754647	10.6490119	9.63373619	7.0312736	8.54630892	5.44306403	7.773903831	10.55	
617530										
## 19	6.48666956	3.83351851	9.2279088	7.93301567	5.5330330	3.24492896	5.12393502	4.314223571	3.01	
640565										
## 20	10.52731843	4.19541016	8.9665984	10.64378339	8.6092837	2.81158532	2.90565919	3.148616635	3.21	
595262										
## 21	15.62638216	9.37337073	17.8796133	16.45893924	12.4108309	9.05093211	8.55591704	7.768637491	7.65	
842784										
## 22	18.26704441	11.15681767	16.2753885	14.21399208	10.7422720	8.85170904	7.33779583	6.631959878	8.72	

446795												
## 23	-11.04049744	-9.95607006	-6.5349308	-0.52529941	5.2850780	1.36318637	2.47320273	-0.803646273	-1.77			
110529												
## 24	10.83880698	9.48885482	10.0483039	8.60656813	6.0148574	6.07154510	6.56839873	8.034549194	7.13			
413877												
## 25	1.00396916	-1.31623223	3.1931298	5.61618916	5.9786491	5.04233218	7.00179903	7.670306457	9.68			
726025												
## 26	0.76208157	-2.71044918	1.8292034	5.04786078	8.3742807	8.44701907	5.32495947	6.340476544	14.93			
126064												
## 27	1.20660986	-3.36960831	1.4127491	10.80092983	5.1800778	9.30451328	9.22937302	8.500741627	13.03			
868570												
## 28	-8.75494410	-7.11332532	-6.4760738	-2.01336349	2.1971579	2.60041141	1.64462471	1.977468779	6.47			
806519												
## 29	-6.57560440	-2.76701921	6.0032406	9.21020930	12.9925469	9.10351005	14.26977496	14.611905321	10.49			
597797												
## 30	-4.85065720	-0.23521277	8.2119237	15.45251390	14.2852222	6.32247525	8.37573097	2.853447821	3.25			
339531												
## 31	2.24064370	4.35540929	11.1917408	16.50371021	17.2848825	12.60960638	10.63503985	9.062210858	10.25			
331915												
## 32	4.03713616	8.88291485	13.8942036	16.87732172	12.1748710	7.56193721	5.52145925	4.120420634	4.96			
117172												
## 33	2.35728010	1.41180384	5.9154476	10.21508753	16.6334851	14.63481330	18.74890814	16.392909501	16.22			
246777												
## 34	1.81054049	6.76767056	13.8896538	15.42101547	5.7199669	2.15120449	-1.72268259	-1.241176082	-3.75			
332008												
## 35	-1.35565005	-1.21931039	-5.2911654	-7.14478706	-6.2231805	-7.54045566	-8.71740520	-7.030122160	-4.41			
487661												
## 36	5.26240511	-1.05532119	6.7899303	3.93853894	2.5083130	-1.95841013	-3.80238378	-2.390607261	-3.34			
176858												
## 37	3.74495631	-2.25749208	2.4765413	0.57841623	-3.3575438	-3.88167145	-4.82061204	-5.897794854	-3.91			
729675												
## 38	-3.25586612	1.54472946	3.8505047	0.07606854	-6.3190278	-9.03299824	-8.15183409	-12.259205850	-16.01			
338285												
## 39	-9.19520030	-13.29695890	-10.6923609	-5.55834681	-2.2202155	-8.44010876	-3.46990866	-2.909624201	-0.88			
283663												
## 40	-8.52570011	-10.15928871	-6.6459811	-4.31876529	-4.3556065	-7.56564347	-4.81064199	-3.306312607	1.64			
806988												
## 41	-1.81453378	7.50176565	7.7605906	1.80535774	-0.3743963	-4.30573953	-8.95018937	-8.809890909	-6.82			
870169												
## 42	-3.86751878	3.77438075	7.6622724	11.54595305	6.7189879	1.59859562	-0.06670099	-2.167165793	-2.34			

505113											
## 43	-6.06630148	-2.98280171	15.7300068	17.47052813	8.9395460	5.78620907	7.54514979	1.001177205	0.32		
203012											
## 44	1.62108362	3.52052713	2.0770754	-0.14111026	-5.8048689	-6.57056004	-9.76248773	-9.391441983	-9.92		
130573											
## 45	-18.64628278	-13.57463173	-13.0191443	-8.86041926	-6.5988296	-5.82669605	-1.87402143	-6.562213684	1.57		
121848											
## 46	-2.74110280	-3.17480375	-1.9814301	-1.30759108	-0.6532156	1.57316477	1.74148322	-1.089896176	6.51		
400593											
## 47	-13.36679613	-10.59130182	-2.5776977	-4.19604326	2.5716593	-1.88524708	-3.87615220	-1.636725538	1.80		
808954											
## 48	-1.55387774	11.91000777	12.4199543	7.06652272	3.2977942	1.52077667	-1.23521519	-5.356362231	-6.58		
278715											
## 49	-10.96007786	-9.04436906	-7.3682983	-5.05232413	-4.6318529	-4.18724293	-1.61505051	1.637186394	4.75		
302853											
## 50	-6.73371729	-5.56479457	3.2858212	3.53356105	6.8471275	3.77045015	0.99316342	-4.568465315	-7.28		
409084											
## 51	5.38125879	7.59396384	7.0254727	5.88765997	4.7921440	3.70011986	1.62924994	1.235864651	2.88		
611237											
## 52	16.01380428	7.29922644	13.9911991	10.58497967	7.8628904	7.74393009	6.12075282	4.164456392	7.20		
912842											
## 53	4.54359240	8.61675118	12.6769344	14.90397357	18.9046510	13.55117086	11.99757361	14.462882074	15.94		
360867											
## 54	-10.01689064	-11.93584864	-9.1519688	-1.59317876	-4.1792177	-2.46806675	-1.85121732	-2.707737349	0.38		
802450											
## 55	6.71316614	3.56381553	1.5895672	2.91254155	5.8541111	7.59725199	9.73019365	7.870143991	12.34		
930520											
## 56	-4.42253055	-9.65863014	-7.2313235	-8.27655390	-4.0044536	-1.27080213	-3.76543733	-3.007742034	-0.41		
975186											
## 57	12.93305209	7.98332905	14.3526158	10.90520732	8.6933494	8.59052182	4.09217734	4.177643400	6.37		
844473											
## 58	-12.55653330	-13.01165082	-9.4970957	-5.46905680	-4.9449959	-3.48453114	-4.05356698	-3.322959876	-1.63		
386471											
## 59	9.29990098	6.99421043	16.7688267	20.25416498	17.9875714	9.55351152	2.61210001	4.209961020	4.10		
266952											
## 60	-3.83021975	1.26324841	8.3009098	7.61884168	14.8086970	16.75277451	20.51539998	23.671109895	17.00		
353776											
## 61	-5.71167435	1.16845821	4.1962739	6.60290677	13.7052362	12.56643941	21.30490010	18.208319921	14.66		
847182											
## 62	0.55827398	2.61290159	5.0532556	8.77960362	19.3218197	16.28271216	18.77456334	17.912550035	19.37		

442878											
## 63	-3.01990135	0.73326892	8.4487750	11.06124947	17.9593839	18.96417102	17.42713884	12.351028120	11.95		
708011											
## 64	11.09940508	17.76572365	7.5119132	7.10039040	7.2272365	2.91214094	2.01333802	4.895281518	2.35		
698188											
## 65	-3.82822273	-2.17295915	0.3513361	4.56013318	10.5051264	10.01273855	11.79934831	14.499757635	15.51		
822419											
## 66	14.40404444	14.84569811	9.7710246	6.98290442	6.5454754	2.18368598	-1.19812708	2.625078178	0.07		
259456											
## 67	13.96189527	12.77891006	18.3181972	17.27949820	18.2941733	10.71240017	7.07033497	8.621221914	10.92		
169569											
## 68	9.56817187	14.27894515	12.4741290	9.19284986	8.4126243	7.25558486	6.22988338	0.009097977	5.71		
279720											
## 69	7.27907975	14.02980415	15.6832474	16.60323817	19.4801368	12.74801997	9.81199712	6.396247025	7.56		
188013											
## 70	15.08638781	11.21376397	13.0707778	9.75821238	9.3912388	4.84517491	3.39259840	4.910390768	5.56		
540794											
## 71	1.30732632	11.91378328	17.3297075	14.37991496	12.6564689	9.84167890	9.89826944	5.269518162	7.60		
903491											
## 72	12.29565282	13.21999304	13.1405604	8.97565902	7.9209167	6.31685566	2.52675099	6.095896449	3.41		
720105											
## 73	8.84365463	9.17586019	19.5195118	15.87823565	18.5392011	12.16459573	7.62157323	8.655565928	10.99		
282097											
## 74	17.19492314	19.72917188	11.4844562	10.98930429	7.2997728	4.58691078	3.47771583	1.920394550	2.44		
061864											
## 75	6.14648480	7.00528653	12.0121629	14.67700902	15.9302853	14.49413541	12.74941354	10.334766068	11.43		
925289											
## 76	12.59544213	7.53940987	14.8390218	15.68544368	14.8710287	10.06677464	8.63073144	5.174562821	5.12		
968164											
## 77	12.99692531	11.20087341	7.1193205	2.09221933	5.4454454	-0.82181438	-1.50557855	-0.306833673	-1.34		
676336											
## 78	3.18766858	14.06725208	7.2757157	3.50946343	3.4888204	-0.27466261	-0.40180657	-2.663071048	-0.33		
704915											
## 79	9.28115048	-0.03903972	7.3067478	1.69296938	0.2215177	-3.90374694	-1.80134085	-9.147119912	-6.36		
805021											
## 80	8.59483159	15.86912098	15.8411905	12.78182663	13.0746710	9.89666834	3.07986293	7.169298050	6.97		
246409											
## 81	8.77810077	5.81488556	17.3603073	17.48454819	18.2907100	13.38570311	11.92580884	7.787985648	10.39		
578112											
## 82	-11.72267264	-9.79784819	-3.2398535	-1.45061117	5.9487061	5.05469996	14.94752275	10.557285903	9.10		

730311												
## 83	9.25260408	12.17204263	9.7559711	3.48499598	3.7312706	1.78000172	0.97385263	-2.521463345	1.29			
044887												
## 84	1.73130006	-2.14062710	0.6602863	6.50318540	7.8469942	5.37817676	11.16454890	11.325593604	10.94			
905111												
## 85	-5.89877475	-0.33931656	2.7669583	4.74016232	9.9252201	11.63033626	10.20597155	18.124222447	15.56			
638467												
## 86	-1.80838787	-0.79604465	3.3832301	8.01981052	11.1427184	14.15448308	16.23383178	15.245437927	17.93			
050342												
## 87	-7.98997453	-7.75318800	-4.0955143	-0.73727653	4.9541776	-1.01089767	3.31369268	7.858607007	4.54			
541114												
## 88	-3.74290660	-0.02752318	4.2905325	5.53347214	15.0583086	14.08701961	13.37666171	9.524308455	11.52			
794208												
## 89	-4.27557445	-0.51451323	6.4827771	11.26508944	7.4167300	12.01691041	4.25058805	3.868619052	-1.03			
851990												
## 90	-3.59661365	4.14109071	13.0497712	13.38316296	15.5244408	9.31231458	6.63585144	0.343789915	2.64			
473837												
## 91	-2.20291430	0.36783025	1.0717885	4.39917536	11.9000483	13.27808129	11.52033129	14.188293895	19.25			
930996												
## 92	4.90108512	13.70142268	20.7197998	11.30365008	13.5722301	7.58861414	3.98728900	1.092593598	2.94			
016766												
## 93	7.81611568	8.23079389	4.7053925	1.71078990	1.9053917	-2.55921106	-5.15945112	-4.704383110	-4.89			
347133												
## 94	2.62890665	8.41214884	12.0048076	11.91243029	9.1100542	2.96887134	1.99027523	-1.065096668	2.09			
394004												
## 95	13.19877992	13.05575284	10.4186338	8.01954143	6.4748602	2.07562790	1.85958491	1.531773691	-0.17			
510915												
## 96	0.21519142	2.13019624	14.9785558	19.25222584	13.7882394	4.04002054	3.31444669	1.830125798	-0.21			
026665												
## 97	-10.07944220	-6.89201629	-1.9161595	6.86743380	7.0344709	7.71505135	6.92488872	12.862125008	12.08			
140171												
## 98	-9.17483137	-5.61070398	-1.8589684	0.37622139	10.0234415	11.42350258	11.94046373	11.534451885	12.72			
251463												
## 99	-6.51125800	-2.45812907	7.0531881	8.74340873	14.6564934	12.78233989	3.91273592	-0.968041535	1.59			
908210												
## 100	-4.70437783	-1.84543412	3.5165469	10.37659991	18.2853577	13.77988213	12.35023001	4.819511930	3.28			
041029												
## 101	2.68853059	11.76943048	24.1117392	13.93649409	10.3107268	4.57204241	-1.02024592	-1.367682224	-0.56			
778475												
## 102	-1.70629585	-2.37279557	6.1914719	22.08114872	15.9505132	9.79830036	7.98803600	7.036241261	3.91			

428346										
## 103	-5.21360821	2.67319155	5.7796875	10.63437133	16.2622543	10.22782902	10.95303953	5.638748551	6.46	
357519										
## 104	-2.84803631	-1.47541369	1.4674688	3.24089812	9.7151809	5.75075973	7.26626915	8.990490930	9.09	
151861										
## 105	-2.72977285	-0.64935018	6.0772401	5.39179556	11.4124107	11.96160552	9.42600596	2.712489195	2.90	
786619										
## 106	5.18610695	12.34783482	16.1363660	20.23985280	12.7522652	1.52099899	0.41079726	0.486945388	0.23	
390525										
## 107	-1.88242055	-1.55093111	0.5079903	1.32771923	11.7913778	8.23773704	12.86539293	12.976573100	14.38	
861580										
## 108	-2.12388352	3.64131996	9.7064239	15.17484668	11.1035498	7.22769471	5.45129884	0.282614893	0.12	
207961										
## 109	9.00697307	12.25789297	9.0662455	4.79685160	4.1115933	0.72779586	-1.35100044	-2.637161268	0.23	
719548										
## 110	10.09270522	10.34720889	6.7926855	2.58440563	1.5576356	-5.66140788	-1.28109812	-3.341089628	-1.44	
049716										
## 111	6.36944042	4.27983449	8.1419765	6.78423457	12.6039967	13.31807971	9.36103282	9.031125630	13.91	
760546										
## 112	0.78841327	5.47200929	14.1711550	14.98178849	17.5069800	10.83140095	2.52690136	4.314150535	3.81	
829770										
## 113	0.21688260	2.35116764	2.0633804	9.00575244	11.2968778	14.37521742	12.87335695	15.705816567	18.10	
277503										
## 114	-6.18301338	-2.83602550	0.1392091	4.58781187	7.4437796	9.53914739	7.02352473	4.241779305	5.78	
677444										
## 115	11.37461829	8.41061362	12.1726603	14.94957339	11.0823921	10.28844488	5.22628079	3.684774458	6.93	
166466										
## 116	-6.32574846	-2.23326789	3.0648295	5.04174538	12.6806159	11.33702580	12.33878013	10.018180824	9.88	
716010										
## 117	-4.87849615	-5.84487782	8.6503402	6.38437475	0.2825052	6.22693624	4.86859103	1.625497163	2.88	
438422										
## 118	-1.44903732	-7.92364823	0.5637746	5.61599935	0.3750353	3.42607947	12.27956978	10.038682306	10.34	
739466										
## 119	-2.50841857	-7.57959980	1.3231293	3.41947294	2.5057002	6.78597344	13.07653075	9.725749715	11.89	
440089										
## 120	-5.46888587	-10.98309160	-5.7914479	1.26171802	1.4921646	1.75834736	4.39915226	4.439942962	12.77	
211942										
## 121	0.68409169	-6.40398598	4.1567103	8.08402636	5.6422465	11.66816052	11.88393333	10.066687756	9.95	
970336										
## 122	1.14818008	9.98828281	17.1656095	10.37426767	6.1411357	9.57025251	6.17394435	2.950378266	3.05	

279319										
## 123	-4.74004564	-8.16106673	0.4975034	1.14570089	0.5380362	0.92236767	7.72056531	7.352933065	9.64	
635743										
## 124	12.07752946	6.21819758	8.7959281	4.37483316	0.5450201	4.61599983	3.66027440	-0.413712150	2.32	
057169										
## 125	1.00836850	-2.95659887	9.7757142	12.33785212	2.5137754	11.03200212	7.30556327	3.513144344	2.14	
107140										
## 126	4.17773637	4.07575486	10.5885342	6.83245017	0.2847003	3.33778343	2.33614472	-3.146133417	-3.37	
755772										
## 127	8.31325072	3.81367237	17.4302776	16.56639443	8.9091215	9.72579313	12.37511381	7.592917198	9.80	
775598										
## 128	6.41266522	4.98493302	15.2370226	16.75998520	11.2504637	11.72480768	11.72433966	8.783714288	8.68	
247878										
## 129	3.09375705	3.38791062	12.9667570	7.15904802	1.4110313	6.75101077	4.01341881	1.231384967	2.40	
645018										
## 130	10.72832567	8.94126577	14.8227678	12.62813702	5.9181553	8.00578193	7.23437303	4.123635941	4.81	
539715										
## 131	2.08930845	2.25169304	10.5376022	7.23534529	-1.3070653	2.18243172	2.03658822	-1.017515063	-2.03	
833890										
## 132	0.07448103	-2.43561324	8.5634971	9.64889414	0.6771746	6.93298301	5.23141773	1.372484261	-1.02	
958613										
## 133	1.39418336	-0.48614670	12.1397671	11.32613776	2.6452262	4.37460787	5.75414751	0.861328118	1.99	
280532										
## 134	2.48303332	-2.06614181	11.0971393	12.89956103	4.3479051	11.10430345	6.84731545	0.880865679	3.44	
377543										
## 135	5.45199248	3.43736137	13.6800391	12.01303325	3.2674754	8.40678651	8.24440074	1.636286879	1.96	
881675										
## 136	4.20941127	4.61984225	11.7372775	7.58917515	2.2111416	4.05529001	2.27762143	1.438872673	1.58	
038771										
## 137	-0.82591240	-3.14852148	10.7051238	8.96973989	2.7963946	6.07019282	2.62122478	-2.455692887	-2.80	
681932										
## 138	-2.65733530	-4.69276278	10.6762426	11.94761998	3.8788399	3.82978359	4.42276952	-0.091696340	-3.84	
467840										
## 139	3.83524539	4.13941605	15.9742484	13.34161692	6.7275736	14.24434645	11.72429723	6.972486406	4.19	
044983										
## 140	1.81622197	0.34750979	11.2432132	11.31437826	1.7542197	6.44991200	4.91725268	0.752903597	0.98	
243202										
## 141	-13.77077553	-14.48473252	-6.8767765	-4.02793854	-4.9979267	1.26667611	4.54166633	3.578802354	7.71	
463013										
## 142	-1.03822745	0.86232433	7.7251791	1.79210968	-2.3173472	0.87070641	-0.72858121	-2.526437218	-4.30	

570434													
## 143	-12.81330248	-13.33716837	-5.7995230	-4.74507252	-5.5855641	-3.20544804	1.06439539	0.378058098	5.49				
743249													
## 144	-11.23753326	-14.55419741	-7.9857373	-2.16202809	-4.9159303	-4.14885830	0.64558549	0.538099618	3.88				
732255													
## 145	-4.79343518	-11.98775951	-5.8702851	-0.50515831	-6.6608700	-2.62384878	4.12100981	3.594346986	6.62				
596368													
## 146	-8.29685148	-11.70156969	-6.0666901	-1.25253847	-4.0359733	-5.67756884	2.09249224	3.455786247	3.90				
156069													
## 147	-3.24165826	-7.11152721	1.6382283	3.57037814	2.2410900	6.23029890	9.03853023	9.765608079	11.04				
247271													
## 148	-10.29413254	-11.32533493	-6.4076921	-0.21479126	2.5493570	-2.05505740	8.32656984	13.143145040	11.56				
301858													
## 149	-5.74561083	-8.47476202	1.1692919	2.35724427	2.3427759	6.26527648	10.70260803	9.041966771	7.44				
358947													
## 150	-5.90586152	-5.42583115	5.8358723	7.61892932	2.4863449	12.03743995	12.62783483	6.337035989	4.58				
818558													
## 151	-7.21561302	-9.09326085	-1.7803258	-0.59765842	0.6068555	-1.79138294	4.36403561	4.045234006	11.00				
589779													
## 152	-3.10252443	-9.49317819	2.5335879	4.49240822	1.5104746	8.91327127	9.35010312	3.360879842	2.41				
030037													
## 153	1.57572096	1.40389632	13.3355048	8.24834949	1.6388693	7.35128616	5.36025242	1.213401112	3.10				
373541													
## 154	0.46691833	-0.20654469	12.3099866	10.03806612	4.7434284	5.17172273	5.42629571	1.516766016	0.28				
580819													
## 155	-2.34516364	0.23966914	9.4013379	3.62904210	-3.8187247	1.00613846	-2.78235931	-4.237376963	-2.83				
825546													
## 156	-8.80440664	-12.59491923	-3.2269762	-0.68198271	-4.6987591	4.45416449	6.47059936	1.535036348	3.01				
788445													
## 157	-7.20089332	-11.76442188	-4.5473147	-1.37438562	-2.9389511	-3.21149221	1.20400570	5.757639447	10.36				
418295													
## 158	-9.90628162	-16.06027973	-10.3032177	-6.40839896	-7.4892270	-11.10385172	-3.71688425	-3.062178641	-1.30				
063883													
## 159	-10.10475857	-11.93958183	-3.5508600	0.40188182	-7.5046940	-0.57660385	6.62594542	7.108634196	10.15				
891237													
## 160	-12.20692571	-16.03385205	-5.8148768	-2.04167635	-7.0743978	1.21071537	7.14223275	3.609909900	0.58				
415915													
## 161	-12.13744441	-15.03040703	-4.9474705	-4.00637908	-7.8745089	-1.52954599	-1.27868247	-2.047339322	-4.76				
757582													
## 162	-5.89220615	-10.14696411	-1.7699789	-0.56575655	-1.7099021	3.58534830	4.89622464	-1.223699101	-1.24				





354170											
## 203	-3.03245612	5.19548320	14.4828262	13.65007760	14.0340768	22.77007853	26.52709038	25.422151086	23.44		
928659											
## 204	-4.19272673	-1.05257342	13.0221071	13.19322103	8.4654815	17.12862816	21.68570943	20.604644091	19.40		
843693											
## 205	4.65283652	5.03524261	12.5983776	21.41902257	20.4251618	15.49251981	23.75045543	22.175090479	22.67		
896659											
## 206	0.43169319	11.46762042	11.5893756	15.05567470	20.8398989	25.80028898	17.60436659	14.973477606	16.30		
980864											
## 207	-2.56134991	7.72858270	14.0553197	23.00923765	12.0840461	16.92422074	17.98211604	15.122953997	13.16		
690031											
## 208	-2.05345501	8.90414508	18.5701961	22.48637346	19.6009455	22.28343522	14.84214172	14.155943964	16.10		
115591											
## 209	0.82370300	7.88960263	21.3524994	21.33523294	17.4427761	23.75790714	21.71125761	18.255570578	19.46		
098512											
## 210	-0.08089490	9.62749676	16.5853744	20.32733794	17.1328774	15.44448176	11.70049929	7.409212713	10.37		
076049											
## 211	10.60587648	7.44901887	7.9460120	6.97105329	3.1754882	4.04037913	3.19368153	1.811113556	3.51		
449623											
## 212	9.73075750	9.12399411	9.8633431	9.54600846	7.0887650	7.45318866	7.24247604	3.424309311	6.79		
615033											
## 213	15.68749927	13.77083395	13.4020428	13.88960755	10.9369713	10.04848167	12.00527757	8.023260693	12.95		
369754											
## 214	2.04517578	9.18434765	13.8354358	24.30027428	30.9196506	20.38247215	15.40665729	14.173002151	13.85		
520180											
## 215	-9.21960318	-5.41147494	3.8429623	8.67827910	7.5854804	16.42206160	17.33343091	10.552104452	13.19		
294834											
## 216	-7.77784038	-4.60210720	7.0922023	3.89650404	11.4951929	17.72271895	13.04880530	10.117916924	10.65		
867273											
## 217	-6.28374633	-1.54838088	9.6089868	11.00889886	15.5713574	19.20874310	15.46687756	12.091538779	10.26		
744937											
## 218	-7.56421239	1.10959392	5.8418650	15.44696520	14.6364029	13.41333692	11.48250778	8.108618964	8.09		
126730											
## 219	-0.32442473	-0.98364270	13.6165265	18.21725891	9.6704096	8.82618336	9.38810155	4.518606410	5.70		
425001											
## 220	-1.48967854	8.12958457	20.0069981	17.37696758	19.3127722	19.42123220	11.26581317	9.500637837	9.26		
847165											
## 221	-9.12858714	-3.88486902	3.8338086	11.49582909	8.3286239	7.76248419	17.05245181	13.290084738	13.65		
764249											
## 222	-2.80374494	2.18672768	9.5894359	13.81585986	11.9071266	17.78101268	18.14490014	17.664368160	19.51		

6997700										
## 223	-3.22461445	0.90982699	8.8594455	16.82250404	11.1589693	14.61981581	15.88381182	13.710372104	14.69	
999348										
## 224	-1.97249431	6.78463378	20.2574696	15.63580603	18.9130288	17.09967747	11.87690080	10.809729934	8.52	
983163										
## 225	-5.24811065	-2.03306592	5.4645107	13.35289243	10.9879877	11.69944930	17.09407229	17.494335063	16.71	
456926										
## 226	-6.11000914	0.84210427	10.1096501	13.25264990	15.9853047	27.25225551	16.55688377	12.123936769	9.84	
587212										
## 227	7.24158998	5.91727823	4.2780074	5.57147676	2.6217853	3.40637636	3.66295730	0.528401171	4.38	
077481										
## 228	11.23554011	8.94333747	11.3713850	9.06818925	5.1445191	7.80888314	7.29492385	4.677084504	7.27	
241612										
## 229	-4.03705903	2.12447118	13.0650697	19.13747115	12.2273766	20.60446869	19.59732231	15.517601843	17.17	
092466										
## 230	-11.59176483	-2.75156452	1.2585022	9.88024917	-0.5837816	8.15652199	11.76292234	12.946574783	11.52	
191021										
## 231	-1.66978748	6.54374535	11.1084599	12.33039098	17.2772015	23.29705948	24.85486002	19.786552000	18.66	
544478										
## 232	-7.91580452	-0.73248241	4.7673320	12.46172034	8.6663856	12.65146896	18.44304860	13.767958062	17.69	
345534										
## 233	23.44602407	21.77645843	21.3689842	21.69966315	17.3387453	18.14531833	16.36208824	13.267539453	16.21	
506264										
## 234	-2.14996381	-0.41824531	9.2441075	12.98315206	16.1800403	17.46763687	12.87111789	11.823072902	12.02	
570193										
## 235	19.59676242	22.25446450	22.3744516	16.80717473	16.8496223	19.82414599	15.70536957	15.731594446	17.36	
629117										
## 236	10.49639976	21.12454887	25.9319004	23.92533278	21.5412034	22.65272283	23.51586570	22.685179901	22.58	
843179										
## 237	18.53288287	26.15295426	28.4228889	19.40077543	19.6314096	21.79396504	17.18900725	16.072512899	17.22	
369776										
## 238	11.80419206	19.63063031	25.1439906	23.28790884	22.2520678	23.96579815	22.86184428	22.989190610	19.77	
083604										
## 239	9.17467087	16.51992441	19.9294019	19.56692864	18.5105088	14.03393403	19.17092909	17.259524517	17.56	
298365										
## 240	7.52115556	5.11675985	6.0783819	1.00885292	7.7886822	8.78087516	9.02911445	5.842555498	8.39	
562238										
## 241	13.11966468	19.13585909	24.8525047	19.99317329	19.8746325	20.06825277	21.67407869	25.300648590	24.13	
083919										
## 242	7.92020544	7.76894680	7.7031494	2.12195257	4.2442501	8.50843888	3.93662705	4.633443373	2.54	

131899											
## 243	16.52903100	13.01597502	18.4334427	12.77270843	9.1620028	13.12345977	8.93238232	9.426460148	11.20	813642	
## 244	11.45159994	14.86218944	17.0799684	13.73418920	10.3954495	13.81138672	12.42575447	13.007188445	13.60	671717	
## 245	14.97386813	11.14887604	15.1584105	9.34335220	8.0277952	12.73830862	9.06057438	11.095972983	10.01	847256	
## 246	10.61749386	10.43217766	12.8132914	7.07304074	9.0366893	11.51171551	8.98730339	7.762416980	10.66	235583	
## 247	12.35648067	16.17222026	17.7670207	10.68599240	11.2804669	13.19816796	10.90648889	12.462592814	11.33	306196	
## 248	15.46489150	17.20289641	18.7196075	12.23721464	10.8375166	14.87641048	12.93079991	13.244707975	14.21	614648	
## 249	16.40119594	17.82191701	19.1129087	12.04472212	12.8370015	14.72780424	14.00838244	14.816346352	17.06	004130	
## 250	19.80548162	20.18744637	22.8618747	13.09126064	13.7508062	14.60203720	13.79436302	13.120898372	12.20	276705	
## 251	5.06963346	6.44679851	8.2763410	1.08796395	2.4743649	7.20879429	3.96985669	3.924256705	6.25	536470	
## 252	17.99400276	11.68997135	20.0256821	16.69928491	12.7217990	12.48241796	12.71462503	11.868666437	10.40	172034	
## 253	15.41597801	15.82211133	12.5786505	12.07179440	11.3968771	13.31359333	11.66573009	14.718009051	13.34	034202	
## 254	14.01966447	14.67243325	16.9409505	9.82359543	11.2255961	14.19603576	11.81996967	12.503971638	12.29	505723	
## 255	7.54430523	9.36819351	11.3036559	2.80986779	6.3767954	7.13150466	4.61407167	5.564516560	8.16	214060	
## 256	13.40003648	11.57115304	16.5258830	12.63102501	8.6218277	13.05604710	13.03751589	11.366914462	9.90	016116	
## 257	15.67204631	11.57567250	18.4909932	13.60628434	12.9702687	11.92040740	13.18223982	10.979456439	11.99	959045	
## 258	17.78216615	17.16985011	14.7868430	10.98011738	10.2493515	13.31761035	11.54164988	11.568622712	10.40	097221	
## 259	12.80796234	20.77607802	20.1302946	11.32934142	12.1834418	13.94268228	12.08110426	11.685950402	12.35	924807	
## 260	14.09484440	14.05854336	16.8776664	8.68419965	11.5872741	14.77585874	11.61242347	8.970464092	13.12	218396	
## 261	5.00642336	12.59981848	17.8610198	20.63484685	21.4293484	20.52632269	21.94025784	21.777085169	19.74	172513	
## 262	10.83948170	18.73223711	22.5559164	21.87499899	22.0584406	22.17057874	21.09094089	18.983263906	20.03		



551695											
## 283	5.09267143	14.49478234	15.0694142	7.26631409	7.7340662	9.55561386	6.96879070	7.030038288	5.21		
477905											
## 284	21.22527574	16.74786552	12.8717940	9.38760704	11.6496685	13.26993090	10.21272930	9.911639239	12.23		
396920											
## 285	4.26986641	12.28148004	19.0667476	20.02074166	16.5935495	15.84600085	16.40340447	14.059975395	13.37		
439074											
## 286	9.87034708	16.92197821	18.4904181	10.48125671	6.6413063	7.66554873	5.61771859	8.598279179	8.27		
987022											
## 287	10.46788225	11.41863884	12.8725507	6.27933223	7.8746107	10.18622620	8.34066717	9.278713696	10.71		
564927											
## 288	8.60730009	9.82218499	9.4280030	6.08643828	5.8398585	7.13416647	6.92872819	5.920360411	8.21		
923753											
## 289	14.42322435	18.05706337	23.7854312	21.56965462	22.7218791	24.50218500	21.78657019	21.358879855	23.13		
559252											
## 290	9.81476497	18.63062501	22.1263737	16.03380880	13.1710200	17.38538301	14.72485117	15.960412481	15.16		
826671											
## 291	9.91107291	16.73597870	20.3319772	21.70344504	21.6758923	21.86704024	21.49627054	20.826932650	22.06		
470225											
## 292	17.79008625	14.90413082	16.7841865	12.64240751	10.0064229	14.36304493	12.19425980	13.842893614	13.36		
396147											
## 293	19.80339761	17.76740251	19.1976941	14.70585960	9.8292028	13.99490266	12.47882181	13.541799684	11.95		
517516											
## 294	4.49294544	12.41669257	20.7336575	19.45266778	15.6658049	17.89681892	16.54609537	16.793797152	17.24		
187110											
## 295	2.07964725	6.55148601	12.5527297	16.59260690	15.8185546	18.88780193	18.50135906	13.052116726	12.65		
173786											
## 296	-3.70577205	0.88009993	5.5977256	9.65089997	13.6746472	9.68414795	15.94210106	15.582353951	21.33		
548126											
## 297	3.37977361	6.63415635	10.9314329	17.88018081	14.8598880	16.11711436	26.12244832	27.594978007	17.71		
150233											
## 298	1.25490998	5.20176525	8.8951142	12.00661601	14.2775932	10.14874902	17.16258469	17.784368609	20.26		
564371											
## 299	-1.14895054	7.85553174	9.8576209	15.08326621	9.3822813	17.29926647	22.96551729	19.575657411	15.07		
668197											
## 300	9.53812833	23.31286624	16.4340880	11.18429184	6.7757291	8.07665871	5.26294479	4.353119954	1.72		
045743											
## 301	2.96600643	3.19676761	7.9508820	11.45733085	10.1820314	10.98560701	18.30656558	19.479199955	20.76		
409736											
## 302	16.92165300	23.03020111	18.4959659	14.09074986	7.3472721	8.16587211	9.33342732	5.126528000	8.06		

401834											
## 303	12.61986518	16.31656817	25.5445812	21.63691543	12.0500805	18.79721690	19.62672034	13.173343171	13.58		
933471											
## 304	10.11583040	18.50154195	15.4778976	11.18918081	5.8532874	7.78809971	6.74238704	8.082201798	7.17		
797805											
## 305	5.27768925	17.02052875	22.7999824	17.04730202	9.9410500	15.67376900	12.79372346	10.145380702	7.58		
662606											
## 306	17.72669690	19.70965341	13.6487067	11.90649289	7.3920193	7.90041965	8.57969780	5.716685796	7.75		
468450											
## 307	16.78275537	20.74610459	19.0353819	15.97050639	13.5883075	14.59136609	14.47109597	12.118529564	10.73		
795620											
## 308	19.94674927	26.60407506	19.8208007	16.61329353	9.3183204	14.46638835	13.70354592	9.593227796	11.19		
296425											
## 309	16.98816167	21.91294253	24.5735910	17.96834607	15.8667384	15.39615372	17.08421893	11.653924203	12.06		
556650											
## 310	11.66324089	22.24545960	22.3453748	17.44574239	12.5731519	12.99298999	11.07453636	11.866362016	8.58		
015755											
## 311	17.65352030	17.21259657	13.0351898	7.48316045	11.8028032	7.69310185	8.61614634	2.197863002	5.43		
094834											
## 312	9.26395860	10.16499696	17.6110388	15.41024929	4.0068989	11.73078630	11.06565612	5.036471676	3.39		
267813											
## 313	12.65842329	20.63995842	17.9103210	11.75121301	6.0826324	10.74743291	7.94111572	4.299280772	4.64		
617684											
## 314	16.33554979	17.54343696	10.8631687	8.64045635	7.5921556	4.47528249	5.51201542	3.464092387	-0.13		
469314											
## 315	12.95961848	20.48220232	18.1356248	12.06412725	6.7244616	12.68585268	10.51866485	5.521819823	6.58		
097585											
## 316	10.75098383	14.30152064	13.1944683	6.71585710	6.1073955	6.02984598	5.13032596	3.055821880	-1.26		
920781											
## 317	13.27179110	20.49651851	19.3054012	13.21779374	9.4210848	11.71153639	11.01935375	6.043855697	6.45		
542742											
## 318	10.65235466	19.20081513	16.0603151	11.90064536	4.2955089	8.27461791	7.32001408	4.781033277	4.15		
523910											
## 319	-5.82291683	-2.23105386	0.7099313	7.74930116	3.5145928	6.90784382	11.96686127	5.917386696	2.19		
101730											
## 320	15.40533375	14.63784951	10.4081147	9.04826522	5.6641810	5.60991337	5.59052195	0.842349119	2.69		
464445											
## 321	-1.06062025	2.92088872	5.9849455	8.18139453	15.0270730	5.39387852	12.74258406	15.672468843	16.20		
226184											
## 322	-0.90906209	3.82442939	5.4161784	11.10949230	6.6620421	10.38720200	14.87478373	17.253872996	17.09		

428430											
## 323	3.09803944	3.75004935	6.9287451	11.07941549	10.0810907	12.76034817	24.72668124	22.772347163	13.73		
862932											
## 324	1.25861534	3.73536359	6.9339148	9.82145656	14.5447631	8.27922130	15.45322074	18.923065234	17.02		
353026											
## 325	3.66415226	5.84775796	11.2741953	15.19238729	14.6294507	16.54628266	19.81250985	20.005286467	14.31		
125545											
## 326	-0.73075461	7.46556878	10.6653834	15.88249282	11.7053714	22.54348891	17.71769523	15.851300405	11.43		
013479											
## 327	-3.56511639	0.46617144	5.3073104	10.85455588	13.0666039	8.66089925	15.13228096	16.022831930	12.75		
573227											
## 328	0.11244258	5.98069600	11.0507919	19.19135046	11.1755973	16.81278575	19.83249563	11.065705221	9.44		
778788											
## 329	0.56060926	3.62227067	11.2929135	13.74647435	17.4025950	13.30945479	22.19702935	21.686028519	17.65		
832757											
## 330	-3.25688143	-1.24037243	0.8264032	5.44558226	0.3583708	6.31674489	11.83219899	10.146742466	2.95		
162014											
## 331	12.96100940	11.08117133	5.5133160	0.73107867	0.4652171	-1.87888304	-0.50308349	-2.187800053	-4.24		
997799											
## 332	10.05787542	12.42735894	7.3724440	2.13478694	-1.0740186	0.56828709	-0.23727476	-3.460441024	-4.30		
748817											
## 333	8.29573411	16.99651400	11.1037718	5.71446252	4.7372946	3.33594108	1.33677059	2.039975155	-1.07		
426630											
## 334	-4.54833481	-0.43425224	4.4470338	10.17248376	5.7593687	9.91269419	9.38400641	3.547176326	0.28		
991649											
## 335	-5.34633691	-0.60186353	1.1561872	8.06644199	3.1091798	5.33960677	10.92183086	14.526627652	14.33		
626488											
## 336	-4.18883224	-0.81208675	2.0097859	6.49742029	2.0751657	3.63680966	13.56080197	14.208741870	13.41		
848314											
## 337	-0.43008615	5.90961537	9.7644637	13.11786941	5.9484810	11.56689334	11.68188198	6.190556518	6.14		
183993											
## 338	-2.79864030	3.92744507	8.0772452	9.72034995	9.4775719	12.71604583	10.59503425	7.482392001	3.02		
281251											
## 339	-4.62034167	2.48646256	6.1627683	7.72873872	-2.4476021	6.80376795	4.39425658	0.346658432	-2.02		
617397											
## 340	0.47854273	5.25054433	11.9973363	16.22889287	17.2993879	14.47931886	8.56736708	4.226441916	6.41		
433975											
## 341	-5.56643264	-1.23888677	2.2041741	8.86474854	2.6660357	5.96906407	13.83502655	14.907532220	11.09		
670657											
## 342	-5.58450015	-3.83365892	2.6103327	9.16362505	-1.4010959	7.90722215	14.70049691	13.198233209	11.22		

255313											
## 343	-4.32138103	0.38380250	4.5757264	10.43076041	1.1938501	8.59765006	13.35193884	8.339772598	4.39		
955569											
## 344	-3.07065548	0.53648349	6.1673789	12.90034238	3.5339500	17.44993850	15.84834321	8.444707667	7.19		
336874											
## 345	-3.85008948	0.79613825	2.9951445	7.20788854	7.1565680	7.34499237	12.33750191	13.486095207	13.74		
321300											
## 346	-2.12506207	3.42513960	7.3423676	11.12172386	8.0427308	13.73196815	10.91837737	9.196442224	4.06		
912871											
## 347	4.37310681	9.81323460	3.7235687	-1.22225751	-6.7919934	-2.57379066	-4.19598403	-8.859053465	-7.70		
396556											
## 348	13.24267552	14.96508121	8.2120164	6.31153236	1.3973964	3.26843141	3.99458507	-0.753841118	2.05		
759329											
## 349	10.18289129	17.64050738	22.7834039	21.87353287	19.1470147	15.06122155	14.78674187	11.462385544	10.64		
052510											
## 350	-6.10430310	-0.70817068	2.8388883	8.56179517	-0.7239618	11.52025132	12.97201302	9.365521088	5.44		
095560											
## 351	2.70906605	5.92476133	10.4157375	17.71738679	13.0147531	15.02371695	19.67719455	26.050848455	26.75		
116614											
## 352	-6.37126523	-3.19579658	2.1830966	5.96074986	0.9575983	5.87317667	10.95314728	13.180488275	6.88		
320041											
## 353	18.17054191	18.65681926	23.8336021	20.65273133	13.5657158	14.72441468	16.62195536	12.484346827	14.79		
330086											
## 354	-3.90021887	-0.63689390	4.2234412	8.06510541	1.4889654	9.47230857	10.35671822	11.051931827	16.23		
057315											
## 355	8.29598915	4.68793002	8.4570481	0.83175967	0.3724400	6.27078875	1.40573799	7.353320220	2.40		
610049											
## 356	9.54041616	17.08727340	24.7306991	24.10814480	22.1862002	22.73408798	18.03736426	16.551730890	18.27		
968056											
## 357	11.23806664	21.64851710	28.4466228	27.83371031	24.2560432	21.48077920	23.99001302	17.253301608	17.68		
697584											
## 358	10.73220728	20.53724431	29.8776505	22.13484500	22.2915414	19.95518079	21.02145113	15.188291391	17.79		
357831											
## 359	10.85713460	17.52358376	22.6353970	24.04313782	26.8484928	23.78489190	20.59779896	18.659548454	20.66		
886377											
## 360	5.05607152	8.96807999	13.6940523	15.74479091	19.8051634	18.64448852	25.78235971	19.363351102	20.08		
949611											
## 361	12.19603482	19.54194126	16.1816726	11.38356503	9.3534854	10.80394373	8.55069994	9.216571906	4.84		
375944											
## 362	20.55082975	16.00390587	23.3544621	25.12507288	19.1660154	23.68380374	20.89173401	19.015057952	18.64		



740838											
## 383	3.70051424	14.37950383	18.1939010	22.95531980	23.4561342	19.14587988	19.24717817	17.526500636	16.72		
002696											
## 384	19.68264769	31.06938506	27.4629532	20.44073008	21.3619935	20.44798538	16.15642766	18.670805141	21.99		
734128											
## 385	8.81206856	23.58315784	34.3724203	23.37392241	19.3265545	17.46903911	22.24619206	12.799436935	14.87		
032742											
## 386	2.46112763	19.05866996	27.6207242	15.77658474	12.4836018	12.75552979	14.86038930	5.919263176	10.30		
605757											
## 387	18.80521724	29.79009435	34.1364245	32.80275768	28.0997825	27.48378596	31.05602699	29.350014732	25.95		
888598											
## 388	27.13336788	28.15281587	26.6547903	21.91398796	18.8488793	20.23576272	21.66147813	19.996981855	21.49		
178743											
## 389	15.40534606	21.39020093	19.7831925	15.48061598	14.4301410	15.08265118	15.32665662	9.885942325	15.41		
273646											
## 390	14.04335405	27.13923263	24.5897827	19.25201185	17.6273817	18.14654590	19.41084527	11.875483716	14.67		
734356											
## 391	7.96410538	17.02919240	22.4162972	14.55661550	10.5042222	11.87209777	10.81225977	5.512972383	2.86		
142133											
## 392	14.31447278	15.21853109	11.6639890	4.55816127	6.9654521	8.41733529	4.73087186	8.533086476	12.28		
188240											
## 393	12.19285692	18.55214782	24.6050885	21.31409454	23.1387162	23.15274043	20.45612283	13.944429922	15.51		
819625											
## 394	6.17555472	15.41458600	21.5399553	22.04205981	23.5957580	20.47308376	20.08208082	16.571765869	17.94		
237576											
## 395	18.66245075	19.63543762	16.6208651	7.60813786	9.5961301	11.83468579	11.11793445	7.012594388	14.33		
621761											
## 396	22.76046308	24.56073388	20.2092663	17.84385034	13.8511794	16.85532144	14.43054210	14.146560144	12.58		
726792											
## 397	8.51442007	15.96475310	13.9501273	7.40386677	4.5043594	4.74012894	3.67079400	-1.040727954	4.50		
574279											
## 398	5.57247374	4.97239925	2.5561868	-1.19230696	-1.8041436	-1.69835373	-4.00598875	-2.199947469	1.03		
198165											
## 399	8.31778877	18.68917925	22.0112631	19.80603695	18.1849146	16.97079738	12.33824842	9.652181909	12.60		
188029											
## 400	-0.67530736	9.75117571	16.1876558	15.37256331	13.1528823	10.18825883	15.39731284	9.084254353	3.56		
053877											
## 401	11.84374261	25.45753113	24.2047575	19.56510316	17.5585298	14.33548705	11.38917124	15.422336157	15.84		
622422											
## 402	17.00245184	25.94533779	21.2065747	15.37794392	12.8954723	12.57702306	10.96850903	12.920061542	7.14		

271121											
## 403	8.98897330	18.82735348	25.4321419	27.36167269	25.3947289	24.35240404	24.60708493	18.669416495	16.72		
754391											
## 404	14.52153071	13.09425500	9.0902084	2.30952153	1.4515496	1.23460149	1.98633912	-3.162033191	0.17		
837075											
## 405	15.19937422	24.04519584	20.5310855	15.00688552	12.5308508	11.57338841	15.56788180	9.019230878	8.80		
876629											
## 406	17.42131360	22.88487779	18.8465191	13.68509887	15.4196613	14.38078854	13.10806185	16.739231459	18.86		
039551											
## 407	16.31982478	23.65357165	29.7800443	28.18401150	26.0262521	25.99885333	26.09578959	22.339604872	22.24		
161142											
## 408	15.86324632	25.79066434	29.9197828	23.86454809	20.5101853	20.53623925	22.23763782	15.947819776	17.29		
386424											
## 409	13.19680211	19.51334966	25.4194738	28.51138244	28.7858230	28.33098720	26.75941920	26.249217726	27.95		
083631											
## 410	4.92154636	10.49491500	16.0567660	18.44893051	22.5696618	18.19859815	15.67989091	14.084327705	14.02		
141491											
## 411	18.05333952	19.91924435	31.0614823	30.65664784	19.5684445	24.09228322	23.44914317	20.832430855	20.81		
902771											
## 412	0.78976408	12.74286238	19.0953570	20.93621819	17.5486432	19.30520635	18.83500236	14.380832706	9.38		
809276											
## 413	14.77860092	17.47456895	23.0217731	21.03725464	19.7954216	17.65043863	21.30467063	17.727231071	19.92		
548024											
## 414	4.63038860	6.23090698	14.8843504	19.43476822	22.3774069	20.85492970	21.78310610	25.217614498	23.76		
483442											
## 415	3.76698822	6.43374224	17.6369629	21.04418109	19.0344604	22.06692424	20.92735269	20.970190087	20.68		
242841											
## 416	4.66389149	5.75782828	12.3986773	19.00033958	18.7826863	19.94224331	28.37337133	26.870224249	24.91		
604302											
## 417	6.44036697	6.11098339	14.9489220	18.42141492	16.7975018	21.12577458	24.74745239	24.402449984	18.69		
400531											
## 418	4.13365852	5.06643148	9.3067768	14.05835552	18.5990697	17.19129591	21.46418998	23.922251400	25.61		
348597											
## 419	25.45393660	22.06193907	26.2207793	21.23418137	21.0122618	20.23437493	24.06479271	23.305116458	26.34		
765185											
## 420	27.78145256	18.12452007	24.9507067	27.45766397	22.8648954	22.59672872	28.27736726	24.289088779	25.20		
289326											
## 421	26.80447184	19.99245558	25.1078598	24.57969887	20.8496586	21.31512614	18.02386516	19.780381589	17.19		
942064											
## 422	25.95241485	17.96381930	27.6162929	27.40790730	21.5433243	20.58309594	17.13816433	19.698131336	18.97		



922655											
## 443	4.48202131	10.68039909	19.7530933	24.03134914	19.2412251	19.64281639	21.72475766	18.616387125	16.32		
619473											
## 444	11.58548317	16.27737736	25.1718532	25.17420858	22.5705212	20.74060179	23.77598102	22.653442996	21.41		
461881											
## 445	9.01055244	15.52966605	26.5854985	25.84034656	22.9944031	19.82634298	22.32375335	18.156104038	21.75		
666491											
## 446	9.48940055	9.34645509	18.8365255	24.77879792	22.4526894	28.36576943	28.97667069	28.585883330	25.83		
159916											
## 447	8.29324223	10.71862091	10.9684211	7.94122100	4.5261479	3.54823912	5.95923474	6.052036236	4.68		
530435											
## 448	11.46763313	11.68894231	14.3201770	9.13773878	8.4144858	7.78293601	6.99999005	8.788090675	6.79		
443317											
## 449	18.07452537	17.65206768	23.3072642	20.55439229	18.4588697	15.97409296	15.21980994	15.484449398	15.72		
695006											
## 450	17.53833635	21.07540859	21.7665998	19.11874312	15.5694406	14.10791575	14.48725594	14.571339036	16.24		
372938											
## 451	11.40068396	13.84701379	15.7745939	11.12905724	10.2462411	8.02706362	12.56718998	8.649619213	10.72		
193477											
## 452	4.62076163	6.07308408	10.4042186	15.95539561	12.3097782	18.76188440	21.24231558	21.962051908	21.58		
123289											
## 453	2.86044031	3.44646737	13.6207012	17.21559976	16.7076632	18.68517223	21.87417412	21.981136972	19.53		
166010											
## 454	8.53981651	14.93449754	18.4685684	14.67934173	13.0915779	11.69103008	11.19802450	12.168844811	8.58		
895116											
## 455	11.89377230	16.63576465	17.7940514	13.15171369	10.9805425	9.66897766	10.04087959	10.986233957	10.44		
682384											
## 456	14.50865322	14.88001031	15.4765920	13.71022947	10.6645150	8.19855374	9.47917571	8.159792314	7.76		
673153											
## 457	5.17309515	8.32088355	18.8269778	25.28234602	21.9160758	23.68047844	24.08213081	21.584412882	19.51		
555405											
## 458	3.51678602	5.88145128	15.1242094	18.15243610	17.9950659	20.34633123	21.21718367	25.846867774	22.55		
888986											
## 459	9.48486759	12.69390312	22.2314179	24.33017138	22.7667894	26.65183249	26.17689513	24.744031914	21.59		
992340											
## 460	5.14290585	9.09182986	14.7594977	16.69872020	20.7665506	20.92455176	21.87343906	22.590835672	18.69		
868089											
## 461	11.93156365	13.87936352	14.7807765	12.36293462	8.8651158	6.57005892	9.46344965	10.098271964	5.98		
485485											
## 462	5.49526632	5.08760957	13.1910787	18.36500388	18.7752333	23.38484275	23.80567786	26.002652060	28.75		

933181												
## 463	2.54745632	10.18958456	22.9878252	16.81718018	12.5828436	10.24840521	12.81972066	12.356417106	11.49			
224144												
## 464	17.98797747	17.04496921	20.1430162	16.21994619	15.3551702	11.13584990	14.01717494	12.324244821	12.72			
252790												
## 465	14.31582688	18.47547863	17.5701913	15.24150660	13.7581989	13.38928503	15.80274034	15.467100253	13.09			
107797												
## 466	21.77693965	18.33336768	26.9019397	25.50988275	26.3167427	22.15567598	20.43411268	22.571153379	20.31			
443023												
## 467	6.79169882	13.44802462	19.3281157	17.04564165	18.6124280	23.77596381	17.51889366	16.292902505	13.83			
150518												
## 468	10.30966980	7.51196895	14.7830800	19.54009540	22.9786399	18.86124877	26.28447751	29.716308755	28.33			
336515												
## 469	1.48384624	3.14816726	15.6239646	22.28315755	16.7642259	21.25437712	24.38586212	26.733990514	23.79			
283945												
## 470	25.68805867	21.39385267	28.4170610	28.86717862	23.7914985	20.78748030	24.03785678	24.775151563	23.60			
128255												
## 471	3.78231869	4.65914573	10.4496042	16.38500584	10.9788259	13.91166910	19.07168150	24.446650336	27.61			
704655												
## 472	24.92470118	19.12932293	23.4967632	28.77838814	20.0982832	17.59441017	16.37625468	18.508492798	19.61			
339675												
## 473	16.06894185	11.04401996	15.3983890	17.78342149	23.5311167	23.70524071	20.03495886	19.584452116	21.24			
579090												
## 474	15.64921517	10.00519399	18.1524315	27.63240038	23.8196949	20.94953376	18.82968785	24.304914677	23.59			
162601												
## 475	22.80788728	11.54634821	13.7325709	15.73297056	20.8318315	21.70259901	16.57591905	15.855859219	21.07			
783194												
## 476	19.88672324	13.13391128	14.6823124	19.68985106	26.4579145	26.08494362	22.65884667	25.714297593	30.38			
597240												
## 477	26.74338573	19.43418394	25.2454794	19.08411025	18.6763049	16.39705063	20.76565455	20.987319353	19.02			
692250												
## 478	20.41193727	16.59738601	17.5356625	17.93210919	24.3658823	21.93035552	23.53074061	26.025309946	26.51			
852915												
## 479	24.34635937	20.14835315	24.2699529	23.27539372	16.3065504	13.38272691	17.80874645	19.146462730	17.57			
245609												
## 480	26.42874632	20.04765815	24.8796500	23.65042845	17.7269721	17.57983601	14.68932925	17.763700939	21.77			
167501												
## 481	26.26456704	16.29516820	20.6128859	22.99238512	21.9767457	18.84884172	16.48860210	19.034897816	20.26			
096519												
## 482	27.45920044	24.32003701	25.1740488	23.85407847	25.7191199	21.22938294	18.89283845	22.103175552	24.02			

500489												
## 483	23.35384524	20.28010118	22.5801542	20.89444595	15.0894374	15.01001832	11.90373482	15.993922716	18.34			
077610												
## 484	29.02173438	22.46712294	25.3982686	22.12999885	19.7533202	17.14996225	16.15665000	19.171807698	23.52			
175400												
## 485	22.39479823	19.12838643	20.8653831	16.91797860	14.3185590	13.08687761	16.06110908	17.094877575	18.79			
121684												
## 486	27.12056326	21.77296501	20.2286220	24.70218335	19.8393166	13.07090770	8.86761297	20.955052054	20.42			
319011												
## 487	27.82731560	21.06861334	20.8090811	22.65662001	20.2591239	16.23061196	13.68116916	20.418616385	21.37			
309642												
## 488	19.75619900	16.02143992	18.4004896	12.68351770	9.7577053	9.54666134	9.38682657	11.511924609	12.10			
347984												
## 489	22.08864552	15.99283666	16.7418307	16.75500332	13.9558233	12.78282045	10.42615876	8.010464583	10.12			
158041												
## 490	27.27808040	20.96260771	21.8632698	25.99189502	22.4366934	20.30607930	16.05027317	15.541150353	20.40			
220015												
## 491	31.58393102	23.92039726	28.9330504	30.15925691	25.2962197	24.12851631	21.52848752	22.795352887	23.86			
456808												
## 492	24.18210287	14.80341827	21.9937133	19.66041633	11.8923284	17.52495868	10.78294253	10.246683476	9.59			
923097												
## 493	22.20384024	15.07825359	16.6195947	20.14350766	17.2147706	13.63319416	11.75263859	16.021686682	16.03			
022006												
## 494	27.33055832	22.86213999	21.8865749	24.76436730	22.6873360	19.24453620	14.86372558	18.002062632	20.64			
645436												
## 495	27.02537406	21.73513346	20.8288143	21.14407853	23.5768767	20.20152868	16.35338467	20.864357301	21.98			
802757												
## 496	6.90828185	6.28473046	10.8317984	10.03417138	18.5812342	19.24154070	20.57476958	12.994947931	17.33			
586266												
## 497	23.27112640	18.16678868	20.6646355	16.38918512	13.2484497	13.39587633	12.14871285	16.041675606	18.23			
016456												
## 498	18.79582291	11.29224851	9.4283322	9.76432288	16.3924581	18.07199682	12.70328732	15.492964926	18.79			
841896												
## 499	17.57879636	9.05684186	12.0326675	16.05993542	19.4823679	20.62332182	18.34299928	22.494138754	23.56			
485248												
## 500	9.43010474	10.36091829	12.3385040	14.37205090	17.2413566	19.66443613	17.46502396	18.482595238	22.50			
251445												
## 501	13.18304324	9.68155880	15.2977329	15.01988743	18.2576497	16.27617037	16.04626250	23.818414589	25.22			
136616												
## 502	15.01282157	12.85127490	13.3529102	15.52134074	18.8846042	17.67989923	17.20410799	23.202423363	25.55			



99455											
## 523	5.03981663	15.53273114	19.6895385	17.99670457	13.2302542	15.96655292	7.75468854	8.413277923	11.28		
894130											
## 524	14.97724978	8.90573817	15.2245739	17.63425497	10.0667368	10.31429013	6.44157366	4.219287753	7.03		
259351											
## 525	28.17856898	18.69673002	20.4308211	18.29787773	16.1352347	12.14571390	11.91207615	16.583671367	14.99		
206113											
## 526	18.07888777	13.65598802	19.6162294	19.86910965	22.9704043	22.30979024	21.54714421	26.046612851	25.63		
000880											
## 527	11.77613144	7.16164889	12.2805154	16.88535835	20.7549649	22.17796854	16.28445063	16.994896619	17.68		
520822											
## 528	20.36665288	11.83804764	14.8357707	17.40684787	23.9109900	25.82003220	22.75911247	22.604982741	29.00		
804112											
## 529	5.54256658	2.50039236	8.7778778	10.68155150	15.0407948	12.73258058	15.18221614	17.217406195	17.46		
499092											
## 530	27.16530844	20.06713688	20.3497259	22.64487860	22.9549779	17.38758955	13.09118463	16.796545729	19.35		
262272											
## 531	4.12240046	0.50275179	10.1147359	14.38261441	14.3976999	16.90560233	18.44997106	16.529737116	17.12		
983864											
## 532	22.37192806	22.24324074	21.3606568	17.40129099	19.7080802	17.36881193	21.20647063	17.528704004	18.25		
951040											
## 533	20.19118374	24.40952254	22.7930779	19.57762109	18.9420045	16.97208352	20.14336996	27.357601512	32.09		
305764											
## 534	22.28682718	23.85907063	30.7318965	27.74203917	25.5850869	24.29296736	27.03747507	24.787685888	22.05		
239472											
## 535	10.60070499	15.01282299	20.6209666	24.20723758	28.0614352	27.43690318	29.22024320	26.863264263	27.04		
108959											
## 536	14.30529741	16.45757944	25.4303212	26.42544459	26.5834418	27.82438037	30.00411166	27.310087737	27.00		
519406											
## 537	17.27333964	21.11229947	24.5559618	28.52477835	29.4824146	31.02694982	29.28385057	23.121949150	23.06		
324722											
## 538	29.47149925	24.32804108	23.6441766	22.41447310	23.1865686	20.07152388	23.23036379	21.959951625	20.79		
359718											
## 539	23.44716886	28.75138896	31.8634263	27.82153083	25.8853385	25.89327045	25.32148165	25.345240549	24.07		
996443											
## 540	30.44625638	30.90565669	33.1958003	26.45987985	26.1490781	23.06012401	24.39489526	22.550912605	24.63		
763967											
## 541	33.88585527	32.61181864	29.4952545	29.25119455	26.0637057	25.46505385	24.51341768	25.837575916	26.99		
027569											
## 542	28.37072180	24.15072146	23.2949257	20.96130046	20.3513480	20.24636676	23.34059083	18.552623023	19.56		

044342											
## 543	25.56807378	26.23908456	29.6197176	25.43726305	24.9028447	21.21407044	24.09853432	23.377241318	24.52		
925610											
## 544	30.87337889	24.82234679	27.4713247	23.31173534	21.6951354	21.21389863	22.44529878	23.131473664	20.38		
544136											
## 545	33.09446243	32.53556006	36.1215232	35.27485999	32.1777848	28.93131530	29.92265052	27.172794600	26.84		
205109											
## 546	33.58099335	27.59402610	27.7535011	24.74780773	23.7802532	21.26890778	24.16293859	24.506837109	22.34		
361834											
## 547	21.06510130	22.81744483	32.0878095	27.85637941	23.0966295	23.32883644	21.15248756	22.678442941	20.02		
035574											
## 548	24.65477396	27.10637232	29.5909410	24.90262305	23.0555425	22.69663630	21.51637157	20.837244279	21.85		
450601											
## 549	25.84119201	20.47441282	20.3457190	17.07959834	17.4918246	15.78107384	15.83175328	16.112533938	18.83		
761330											
## 550	21.49416302	18.47137397	18.1766567	15.56252100	16.4713532	11.63298186	13.44940450	12.356947655	13.44		
101647											
## 551	20.37567652	22.29623233	26.3709380	22.82941774	20.1235982	17.25246782	21.85521585	20.219682057	20.75		
425854											
## 552	23.90877704	26.18523463	25.6023485	22.78276507	17.1574464	19.16780912	17.77800468	18.348908408	15.83		
481327											
## 553	21.44584147	24.17632810	30.0776816	29.77984726	25.8880589	22.23006518	27.28984813	26.419094067	22.49		
025840											
## 554	7.99187631	11.30593589	17.0391914	18.87141802	22.6534970	20.95256114	20.91259953	18.876043467	15.85		
550336											
## 555	24.04183914	24.22729993	26.4956057	22.45963817	19.3539179	17.92610121	21.34001946	21.375199513	20.64		
180209											
## 556	13.93202317	12.98155835	18.3083698	25.91541408	29.9666819	33.60257293	31.02049371	30.179933666	29.55		
761578											
## 557	13.72078413	16.71947875	23.1014641	27.30667038	29.5285066	33.13984609	29.23456749	29.667703598	28.79		
841961											
## 558	15.64410934	20.89823017	28.4858559	22.87563573	21.3178752	20.93412242	24.72891002	25.413321132	24.83		
480290											
## 559	13.50486271	14.80218851	22.1936906	25.76550201	33.2725482	34.92225462	31.07826724	32.902255524	28.80		
676751											
## 560	15.10320001	19.74027767	30.0011952	31.21613529	30.9308894	28.44829498	32.02085418	34.645092333	32.52		
868747											
## 561	15.69777940	14.47012461	27.7012499	28.09563980	24.4544798	26.78183760	27.26497532	23.202701092	18.83		
660262											
## 562	17.34617611	19.57085856	27.6357466	26.17383044	23.3536996	21.12001808	19.27019478	20.766665828	22.48		

749198											
## 563	22.56576668	25.69631609	30.7203663	29.07701895	26.5930975	25.27516284	23.46767906	25.627847294	25.33		
501536											
## 564	15.11997495	17.32637931	26.7779501	28.86553635	33.0775406	25.96454255	32.66451171	33.094666790	32.93		
185831											
## 565	14.95229766	15.89173274	25.7039633	37.17301931	25.0156399	21.03720869	19.98573414	20.520031038	20.05		
400038											
## 566	31.20110689	19.32248732	20.3427700	14.82448968	14.9863170	12.45319861	16.26822143	15.127039380	12.52		
675303											
## 567	24.89149817	26.50346218	24.9597962	24.08354756	22.4801755	19.95863774	17.48502916	18.707757410	17.88		
286294											
## 568	24.69289645	25.03904996	27.5890333	25.84075391	21.0745166	21.29242604	22.28608281	22.821525104	22.73		
818207											
## 569	16.60556986	18.37616364	26.9762600	24.19367071	20.3954145	15.72384853	14.59260477	16.112377499	14.06		
081023											
## 570	8.59847271	8.23818631	13.8881179	18.44388345	20.8581998	20.43210997	27.65569403	29.551733399	26.54		
701143											
## 571	15.48391800	15.52804807	20.0806946	24.64991479	32.0374906	36.58341470	34.09275832	31.167819366	29.85		
454587											
## 572	17.41318221	22.83921726	35.7597287	25.48077058	19.0049631	17.06475366	18.90620847	18.678335619	18.84		
674934											
## 573	13.96048072	20.79882411	30.5419115	22.34750370	24.9951559	19.56855308	18.92818413	17.000780542	13.78		
216707											
## 574	23.64261419	26.81229333	27.6381480	21.56053821	22.2558651	22.76818767	19.83248369	18.734346013	18.01		
350779											
## 575	20.51482695	20.51871662	22.8882410	21.67319856	25.2706994	21.75621801	21.11729547	20.853740471	20.07		
275699											
## 576	9.83737458	13.75276900	21.9500253	23.22481077	27.1620833	28.84150088	25.92621407	21.046789860	18.65		
579480											
## 577	9.70183176	12.00515544	16.2277661	24.15796186	31.6532738	26.87014039	21.92758109	16.430941368	19.75		
061871											
## 578	14.54573971	19.55613749	28.6067473	33.87187267	27.5591348	26.48309828	19.55419341	21.831635134	18.84		
907949											
## 579	27.04131953	17.55367564	17.3581522	12.23253699	11.2681075	9.51909109	9.40733629	11.017023916	7.45		
386902											
## 580	9.20069373	12.40488810	17.9842643	19.94634055	23.0408988	32.84728115	29.44741737	25.398320609	28.41		
868425											
## 581	14.63137922	25.33179474	27.6063196	21.34464671	16.9434564	14.51539933	17.32324600	15.737496324	14.71		
232349											
## 582	22.35364904	21.21514411	23.1231117	16.68493483	11.0531550	9.83172325	10.84918923	10.785992297	12.33		

723917												
## 583	26.38272957	17.14007672	17.7405299	15.09712851	15.5049373	11.28470300	13.34928163	15.286222833	13.36			
977437												
## 584	18.89359698	22.52488965	28.4169572	30.09819526	32.0765405	32.08102364	34.38762001	33.331879623	29.82			
156317												
## 585	10.20829456	13.01932496	24.4988503	28.23230464	22.8387627	22.84842630	25.23454462	24.256863292	20.67			
322372												
## 586	13.77047641	17.49549271	25.8160977	27.16467036	26.0935367	28.35825770	32.17284976	30.416129566	28.87			
597812												
## 587	8.33627449	13.17522625	17.6458576	21.62069503	23.7899003	25.18213248	26.34578684	26.974462803	24.20			
595214												
## 588	29.00595265	28.92086097	29.4079124	23.83261918	24.6370453	21.86001306	24.31109255	21.380997151	19.24			
149023												
## 589	12.02914072	16.58301026	21.5460964	21.24414355	20.7771193	21.33728044	22.27076049	21.827588497	17.21			
762563												
## 590	14.04710699	26.19390980	27.5795450	19.71201291	22.4035282	25.91489083	20.73449485	12.229139476	17.72			
145430												
## 591	14.29387608	14.51376695	22.2026080	18.91608095	21.5693398	28.86579491	28.89552548	22.633424258	21.57			
787894												
## 592	9.93230376	11.07976242	16.0826082	18.92769595	22.9660844	17.36956475	22.54555491	21.481553466	14.92			
411562												
## 593	11.06566686	13.05646869	19.7206396	17.66049964	20.0738440	27.34344288	26.32630984	23.697343184	25.33			
910218												
## 594	10.45630150	11.83561713	14.9707968	12.48546227	19.1221470	20.87837160	12.01770507	17.923317621	16.01			
148535												
## 595	20.77198122	20.47986221	25.3072918	21.71415116	20.0289110	27.06857342	19.86351102	11.678855612	18.64			
263557												
## 596	15.31927939	12.29802951	21.2979417	23.75047945	15.1107956	28.46137890	32.63024946	22.492378939	18.19			
255959												
## 597	15.14062825	17.58889015	14.7558624	17.87927337	20.4083837	13.21803428	14.64785923	16.178413877	13.58			
933588												
## 598	28.95923217	19.71926294	26.0239553	25.17223461	16.7313356	25.08544608	25.63232620	19.854061020	18.29			
849329												
## 599	12.03163960	15.04535749	22.3091313	15.45533972	19.4155152	21.09799164	17.23862091	6.700878891	15.20			
382990												
## 600	21.16341523	20.36225226	16.6113061	20.80066959	26.0524093	19.65775813	18.31405847	23.131878390	19.09			
042628												
## 601	19.07354464	14.43348333	20.2979121	19.48042429	11.8926065	22.04532715	22.56830334	13.484047683	14.89			
465614												
## 602	12.11332383	16.79164906	17.2405778	8.68635169	19.4715337	19.46899037	10.73992660	13.913543383	15.18			

472944											
## 603	20.61561763	17.56073223	12.6099571	18.46223712	24.0676927	15.87439874	17.48652059	17.964421707	13.15		
280200											
## 604	13.67121049	23.24143632	20.4006120	14.26849198	22.7712903	22.64484417	12.87142524	17.253653288	15.56		
120750											
## 605	13.82816660	12.32572981	19.0051221	14.90055324	18.9928990	15.88455744	19.01040147	18.031909461	16.63		
845522											
## 606	8.45288289	5.75700401	12.4454703	9.84219858	6.3647791	12.31453381	10.74736952	3.078802433	3.69		
657336											
## 607	17.53407572	10.70972733	16.5066478	18.77238471	8.7502697	22.74595307	23.95274123	14.575449503	13.92		
839058											
## 608	18.60289554	12.88438341	15.7334511	18.29599215	20.2124596	15.06986558	17.12452217	17.183048607	13.09		
580946											
## 609	8.51335426	9.14832663	13.1244353	11.45411703	6.3920765	13.54590617	12.90876226	5.440730911	3.02		
288627											
## 610	10.81173509	15.88935565	18.3655337	7.79921544	19.1343256	17.76046769	9.08121814	8.758323181	8.85		
662693											
## 611	14.07681093	14.08422281	19.3413078	14.40303902	4.8879803	18.46068359	17.49811169	9.692511001	5.48		
641478											
## 612	23.23347900	11.79113566	19.2739491	20.77607505	11.3969795	22.83510465	24.42297614	16.232431205	9.66		
555048											
## 613	19.90506410	21.00810115	21.0615936	17.79303889	21.1507476	22.93076034	15.01695535	19.288512479	16.65		
368158											
## 614	5.15746860	15.02294328	16.8516313	11.38662823	19.6183873	22.37384011	15.08897956	17.256900853	15.93		
478183											
## 615	18.20724097	18.59944205	11.7826795	9.01805044	20.4361695	16.05510323	9.77256055	14.917533829	12.02		
900352											
## 616	9.85465426	7.65272120	16.7654321	17.68618175	20.2292879	18.11296033	20.45110805	20.757822658	18.89		
866392											
## 617	9.63239707	13.16998099	21.5562931	22.54342558	12.3558679	23.75717732	22.42778795	16.665329088	14.78		
523679											
## 618	12.09493362	9.97101627	17.7660612	19.07026893	19.3028875	29.03477870	27.69663816	20.061775387	16.22		
930680											
## 619	11.46224953	12.92191616	13.0969686	13.69104319	20.1833824	19.25208608	12.13529512	18.443092029	15.38		
107425											
## 620	13.72980994	12.22180477	10.9458213	17.36116752	21.1004818	19.20826945	24.52148284	26.800745076	19.25		
545763											
## 621	12.46731576	15.85389302	16.7918725	18.04969339	26.5644776	21.76629272	16.33927420	17.417611320	15.37		
565438											
## 622	10.12146687	9.13909697	14.9285150	23.01159954	19.4303606	14.80850203	16.02242657	16.913797178	15.80		



996034										
## 643	7.57423445	9.95930825	3.7635503	6.52152773	10.3753680	6.28045496	2.80604793	7.155443621	2.01	
675131										
## 644	18.80026894	18.61888115	16.4104414	18.57910209	24.4252841	26.40384852	17.84481676	22.989611093	22.60	
741512										
## 645	4.24650102	10.16110943	8.7623225	6.53018122	14.8958794	18.41861677	13.47618746	18.337643811	15.90	
493369										
## 646	14.74220190	16.82308846	15.0118341	12.70294170	21.1599603	28.36355704	20.24956472	25.227831695	21.76	
421902										
## 647	1.30234014	4.21308918	0.2636049	0.72491217	9.6333943	15.61328125	9.78576221	13.223985281	11.41	
320259										
## 648	16.46351348	17.67732498	15.1396258	17.23260980	21.1125246	18.33321711	14.78818899	17.882504365	14.43	
292400										
## 649	4.38830934	5.59032779	4.8575568	10.17134219	14.7692001	14.57903749	13.54900396	18.175155940	13.46	
067696										
## 650	23.26921727	28.17587994	20.3294042	23.82989917	23.2812991	19.33109931	20.16319679	19.349639835	16.06	
878934										
## 651	27.26041410	34.19430855	27.2847757	28.73006543	27.7842440	24.76199243	24.52957706	24.151435311	18.05	
051047										
## 652	22.68324580	29.67041529	28.6405420	30.91250615	31.4840933	22.53166296	22.53978748	21.431750634	16.59	
467793										
## 653	19.28443924	27.10097904	25.4329400	29.77259173	30.3859626	24.48385658	23.83348190	22.267173029	19.86	
175468										
## 654	23.30551802	30.22988747	24.4328312	29.06020960	30.2004557	23.32152272	24.04375722	23.898808613	20.41	
856070										
## 655	23.15088269	13.73332663	11.5491227	15.00306536	12.1723429	7.63974875	11.40457911	11.995118906	8.19	
566805										
## 656	18.43859237	23.25863091	23.3508304	30.35564712	26.2365836	22.01322197	18.74090183	20.201101160	15.97	
015935										
## 657	31.08706952	29.13671417	22.6521464	26.61601522	25.9363710	19.19350253	22.45556098	22.517180775	19.64	
394056										
## 658	25.47682036	30.42683411	17.6930995	24.92310301	25.3315151	21.35733772	19.61879788	18.414751613	18.96	
092616										
## 659	25.06554202	27.53634950	21.5424114	25.70553566	26.6220789	20.40670440	20.40340971	22.692794095	19.60	
090607										
## 660	29.84800032	32.16446264	22.0903987	26.64392392	25.1634893	20.03850420	20.96188102	20.768372644	19.63	
900547										
## 661	27.07382893	25.76446728	18.4221764	22.59981939	20.5520110	19.03256619	17.08945179	17.869910942	16.82	
435259										
## 662	28.79003273	30.26591740	20.6265620	27.36549299	25.1272849	21.56881708	19.85876805	18.461270899	23.26	





016626											
## 703	22.73619615	18.31934015	12.2976107	19.15866736	16.7695122	13.43622088	15.13056293	14.683393569	12.15		
299999											
## 704	17.54087247	25.16887923	25.0238392	31.08959863	26.6806740	25.62836683	23.51817119	22.969247232	19.88		
176630											
## 705	22.94593065	24.21253996	15.7040286	17.52614000	19.3305477	12.49560433	13.47120244	12.212671079	11.65		
342484											
## 706	33.83372255	36.04113775	27.9086857	32.72187598	29.4830749	27.19749091	26.91140444	25.725887617	22.50		
397415											
## 707	18.80471512	23.91125190	13.3270188	19.21065153	18.5106787	12.89227916	11.18469373	13.993248345	11.04		
288547											
## 708	29.67336603	30.49485883	26.2125420	22.55697686	26.3214481	21.02572659	18.15186583	19.865914044	19.70		
106494											
## 709	29.90736270	27.50071617	16.2781673	17.03758253	18.5298955	15.37009911	12.89148877	13.899870899	13.37		
049855											
## 710	15.43651880	21.37742727	24.3070666	25.81677893	21.9955227	20.43811699	24.68904229	24.142437226	24.18		
090451											
## 711	8.42378731	9.61316783	15.1811924	20.24998527	22.7163255	20.39740596	29.69599891	26.561844412	26.86		
134739											
## 712	14.09447858	17.55376562	24.2214517	28.91982873	25.9223519	20.11147206	24.53898211	22.766386870	21.97		
609724											
## 713	5.40359783	10.63472887	11.1179872	14.85083766	19.5212590	20.02180978	26.14720134	22.684720350	23.10		
586371											
## 714	11.75393416	15.10286573	17.9287477	27.88760944	25.3817710	21.66142269	23.39354177	19.480690172	21.11		
239008											
## 715	1.76546274	7.93017392	13.2641501	18.80153758	22.0449672	23.20698032	25.84206177	25.796122109	23.88		
378272											
## 716	21.12732653	19.89976366	19.1263577	21.93551345	17.0295865	16.47485419	18.85264053	19.178169984	20.47		
582723											
## 717	26.30796532	24.70934862	24.9833808	24.89317229	22.2416794	19.11767453	23.01410586	20.078289729	19.84		
074536											
## 718	15.97961218	17.74527623	16.2656106	16.97839563	14.1737967	11.11211599	15.61498150	13.093249786	14.89		
075392											
## 719	26.50709457	24.29510620	24.6635266	23.45899974	20.2726234	20.41739679	20.46723252	18.666082265	21.39		
607515											
## 720	19.66925725	16.20857554	20.1507860	21.30298632	16.1703216	21.34886833	19.23425982	16.589708490	22.92		
267669											
## 721	26.36210208	28.60527827	26.7526424	26.25677295	22.6513985	20.44830380	24.00632191	22.615100319	22.00		
069843											
## 722	22.01773076	23.00416113	19.7368489	20.03915704	15.3036747	16.21934773	17.66374364	16.432815048	20.06		







191695											
## 783	15.42289914	12.03928917	18.3242686	20.19531937	19.1440654	16.90348413	11.15051609	14.646086638	14.50		
957193											
## 784	6.76234310	11.12168090	18.9518581	10.49838700	6.7005859	7.56285493	-0.82457800	6.454483782	6.50		
571053											
## 785	6.90123679	9.33990204	18.5281213	21.03268497	11.8195093	10.69116440	6.21017838	10.632043256	7.42		
361472											
## 786	7.04186784	12.93805485	22.1802753	14.68275163	15.1619172	15.31257130	7.54893933	12.477379404	11.28		
375911											
## 787	1.57616196	4.84444710	7.2854218	5.68349775	4.8999573	3.00736122	1.44572098	1.210642849	-1.65		
723759											
## 788	5.94289474	9.84989671	17.7827324	11.37407764	8.9066835	7.29461304	4.99592994	5.837068943	3.95		
955498											
## 789	7.75130537	14.34006196	20.4759037	15.16453744	10.7741524	9.06189723	6.03712041	8.734095394	4.46		
668448											
## 790	0.29635243	6.14390256	15.2093737	14.83989404	7.4952430	5.74319951	2.64496524	4.549584804	2.57		
202220											
## 791	-5.40573162	8.91901865	14.3536906	5.32294298	1.6397276	-1.89907427	-6.95415522	-3.662474230	-6.53		
757849											
## 792	3.53493140	12.20644590	18.1955563	8.79178577	6.9655869	4.66619252	3.65542615	6.655625021	1.53		
718954											
## 793	3.49315739	8.99434292	14.9898499	15.82937730	17.2854177	16.58753257	15.96812061	14.817622569	12.32		
980113											
## 794	3.43002569	7.91817421	16.6624846	16.74395579	17.1280841	19.14855785	9.43536595	11.902820325	11.94		
635816											
## 795	-0.57390546	7.24696236	15.3930058	13.94559599	10.1891687	6.89603692	2.77709868	6.312180605	1.54		
290404											
## 796	1.17837183	2.11055458	7.3801028	10.97765084	10.7728866	9.49160903	4.82435730	7.807486709	4.36		
925399											
## 797	3.09201278	12.00272752	17.3885935	12.00225862	6.5982163	6.26713622	4.54576582	4.486312214	2.72		
125845											
## 798	2.56890710	12.67124338	20.2244446	14.52043216	10.4184018	9.61855282	4.47679394	7.252575610	1.66		
394641											
## 799	9.61888150	22.60351164	22.0438716	13.90661890	11.4102897	7.55631436	4.94337762	8.784582492	5.35		
968110											
## 800	11.43293910	16.76542369	15.2132718	9.77028938	7.9739984	4.13394864	0.43559180	2.634176890	0.55		
455602											
## 801	2.10041211	9.43670691	16.5003012	19.20873908	17.0116806	15.64567405	8.90604136	12.665527953	8.17		
369941											
## 802	-7.90544511	5.70603812	9.2344830	2.02045903	-2.1874484	-4.53587811	-4.27746830	-4.927811767	-7.54		

418139											
## 803	-7.04797882	-4.07133241	2.6188592	-1.88065645	-5.9461920	-4.24965101	-9.57243038	-5.508344515	-7.07		
808689											
## 804	-0.63975376	5.46933088	11.8798279	8.85706043	6.8975845	5.17057928	-0.43061809	4.578720643	0.50		
308157											
## 805	0.03728054	7.54974162	16.9899113	11.40516389	10.8917697	8.84129808	-0.61841861	6.872620742	4.76		
545999											
## 806	6.88883023	12.48203709	9.0657659	1.09954066	4.7931126	2.39697997	-5.07606968	1.343667762	2.64		
435857											
## 807	-0.68635249	2.52139383	10.3464595	8.16560647	6.4538830	4.25044355	-1.95223118	1.196288832	-2.95		
287260											
## 808	-1.83590903	6.56406897	13.8323961	12.98617314	7.8361375	5.52828270	1.35005289	6.850727203	3.40		
816114											
## 809	-5.82231756	0.81686506	7.4310772	0.74198544	-3.3848345	-5.60862703	-6.20723790	-5.335862089	-7.73		
140555											
## 810	8.16272104	15.07662527	10.9543102	1.33919813	3.8743730	1.34095459	-7.35835685	-0.043284926	-1.18		
727894											
## 811	7.19716288	6.89534335	3.3491660	-2.65973463	-3.8931305	-5.46199291	-8.06689615	-2.643838138	-6.07		
654674											
## 812	-12.43405954	2.10218625	5.1539856	-2.51036368	-8.1636800	-5.98294525	-9.06643160	-6.041965742	-8.21		
646503											
## 813	-8.12274796	2.71090063	8.1981813	4.85014563	2.7415731	1.15466288	-2.56403677	-1.006226623	-3.91		
216120											
## 814	-0.92572186	11.06796020	15.2895733	12.20070220	7.7893876	9.30044096	2.44095034	3.577461340	2.74		
234592											
## 815	-10.62675780	-1.04235241	6.6097144	3.36786990	-1.3549352	-2.71798632	-6.49059659	-4.039811306	-8.85		
591354											
## 816	-0.56919577	1.48108528	0.9437021	-4.62168502	-6.7457246	-8.27149951	-9.51666045	-4.871519976	-9.71		
765243											
## 817	-3.34318618	6.87826620	15.8438257	11.69836660	7.0995137	4.07138045	0.63747982	4.496183127	1.58		
822285											
## 818	-5.87347974	10.04111997	4.1938800	-1.52782061	-3.7602252	-5.31488252	-7.47168262	-4.818993953	-8.01		
596141											
## 819	-5.13832141	4.43665501	12.1271610	7.89950574	0.8108446	0.84671531	-3.29798134	0.337678343	0.58		
939119											
## 820	-2.90819683	8.05530849	14.4898138	6.32988358	2.0563230	2.19958027	-1.61679187	0.653004875	-2.67		
192153											
## 821	2.71317696	11.39559225	17.2903671	16.00679823	17.2366387	14.99500657	14.10977835	13.150332588	11.66		
972963											
## 822	-6.12310481	5.11058997	12.2939534	7.76825695	2.1430387	0.98424544	1.53037351	-1.183998700	-3.04		

065827											
## 823	6.07058898	16.07200861	21.1281001	18.65418053	23.4723674	20.90337303	13.84750748	17.597368108	17.20		
051488											
## 824	-7.15799060	3.31481628	7.8286177	6.75055456	8.2456292	7.19765870	-0.90154306	5.594163983	2.91		
199230											
## 825	11.53387793	19.68268091	27.0494876	19.85558654	17.6397444	18.21557725	8.73604080	13.973999842	16.20		
032569											
## 826	1.78168291	14.42088385	18.4069410	15.45730685	10.0978987	10.62816857	0.78774976	6.390158353	3.12		
355674											
## 827	17.64421660	22.36926320	36.3971202	39.64362443	23.4846917	17.86519163	22.92678028	15.670831458	16.72		
163357											
## 828	15.02334204	18.51049701	24.0605810	31.17031116	28.6393486	30.42590575	32.13039073	29.306166728	25.94		
856328											
## 829	20.04077292	22.83632192	27.2344280	33.38517673	27.2871248	24.84798888	24.27416000	21.708786322	20.64		
920587											
## 830	14.35812812	20.49399501	19.5280036	32.94620972	30.3442988	22.50257157	30.64892349	30.017337496	20.57		
411341											
## 831	8.77963242	20.68812132	21.9623422	26.60248350	18.3712924	17.42199209	20.15342933	13.287785758	13.96		
043321											
## 832	15.65305679	17.95136854	25.0018565	29.13882033	35.0736175	28.65204845	31.54167720	28.999005333	27.11		
763184											
## 833	22.03701807	18.36131230	19.1435855	20.35060906	16.5481749	15.38953752	17.34886453	14.335460452	12.74		
424395											
## 834	22.36609194	16.80945532	21.9538134	24.16107680	20.2383055	16.88708424	19.48937870	19.519529085	15.48		
173593											
## 835	16.41442193	11.94594976	13.5039614	15.50585010	12.3165558	9.51901689	11.01155679	11.044159034	8.25		
567637											
## 836	23.55290148	17.50950324	20.5919144	23.72182617	18.7585714	16.46934180	23.80880207	18.724132034	13.44		
717714											
## 837	19.14209873	13.72550773	18.1728993	20.06376944	13.9643436	14.41966827	19.85845424	14.291537095	14.74		
179551											
## 838	22.11304624	19.26801548	20.3716974	20.81231044	18.0819397	15.12325290	18.65762564	16.598577114	11.10		
075965											
## 839	23.01992979	18.03825952	16.8983252	19.19096443	13.3309686	15.20979618	17.38212286	11.426388135	13.73		
411886											
## 840	23.13209648	17.29461126	19.1016678	21.12375478	16.4897924	16.84521582	18.02598667	15.739310914	13.05		
111791											
## 841	13.34030395	11.06265816	12.6263763	14.82926754	9.0824044	6.86437032	11.53677234	8.260456593	6.99		
137609											
## 842	26.42218477	17.56947756	17.9824597	24.42558266	21.1335237	14.32455580	21.12222705	17.203216842	13.41		

954061											
## 843	19.47816360	13.59831597	18.4504783	22.42005029	16.7429380	14.22055548	16.46024198	13.422473942	11.80		
222591											
## 844	20.73125704	13.24675862	18.5672860	15.68083244	11.0604657	12.59758774	12.29501666	6.962196487	11.81		
660532											
## 845	16.40283579	12.35855255	19.2853906	18.46612687	14.5670018	10.24022310	15.25159942	13.931093604	9.76		
627594											
## 846	16.71790074	15.13510683	13.3250672	16.74533484	12.8526147	12.90477881	15.97586101	12.695103904	11.88		
348842											
## 847	18.18373260	16.05042506	11.9216076	20.36848737	17.4682352	13.03517241	17.40199799	17.514871708	11.91		
126316											
## 848	20.60469536	14.48416199	25.9512992	25.41120916	21.5790257	16.11007140	17.75500592	13.517720965	15.93		
934543											
## 849	16.71274666	21.02392619	34.9111428	34.63874777	28.5831860	25.83189102	29.26131171	22.284197229	21.26		
203620											
## 850	19.47628180	16.38218233	17.7251538	20.02784578	15.7480113	11.04074528	16.98363913	14.059135308	10.82		
620802											
## 851	19.50033160	16.90122847	16.3231726	24.62878866	28.2593846	30.38323434	28.40842750	36.288081492	27.61		
138090											
## 852	18.96680618	20.84421379	19.8973900	29.53861155	32.0554566	30.22667809	32.50331605	29.481979816	29.16		
926420											
## 853	18.97455782	18.99183129	25.8928989	35.19341024	32.2304754	29.01003173	33.36005191	27.531688338	25.03		
343006											
## 854	13.90452590	12.58417347	16.5647050	27.94872732	26.8355211	23.54170935	25.51837632	25.265245052	20.38		
005728											
## 855	19.46276657	20.42466849	20.8171744	32.56568332	35.9411448	28.01353675	34.54829827	32.424366967	26.88		
516204											
## 856	12.57184480	23.76529460	36.3964433	30.66882625	24.8188000	15.45559592	21.34098757	16.327379098	15.42		
710950											
## 857	18.57657110	18.61237012	23.2749307	38.90913706	32.0781518	20.88820902	23.62465261	22.433567090	18.32		
249766											
## 858	18.55372645	20.80788802	31.6178554	40.36989308	28.4679060	21.09339178	27.02722436	23.093481083	17.08		
964918											
## 859	16.85084734	18.52641477	23.8887804	34.10360857	33.8505132	27.72663271	30.46484996	28.299517177	26.03		
264045											
## 860	14.85668147	15.80856125	10.2869371	11.85253694	9.3588234	3.73011248	8.18800256	5.522082608	2.31		
625751											
## 861	10.44444256	10.39324122	7.2628210	10.46079662	6.6327868	2.50723408	6.46719847	3.335119952	3.45		
377721											
## 862	15.76247081	15.41839481	20.2450576	20.94119676	13.8852483	12.42194014	15.02936379	11.639151956	9.24		

340697											
## 863	17.56261399	16.38566146	13.6728379	16.06138968	14.8667136	15.57478544	18.67917492	14.581694903	14.85		
625882											
## 864	20.91371027	17.39913937	10.9726220	12.36949744	7.0989554	4.09072957	9.04462245	7.472991247	8.46		
077753											
## 865	18.06802931	17.84435995	26.6562426	33.12492918	27.7190675	24.18395480	26.71649674	21.849722968	17.47		
651443											
## 866	10.62485721	14.05342461	20.4402381	25.54118607	17.4117761	12.66564375	16.98760541	13.487352920	10.51		
209479											
## 867	15.51640893	22.86039551	20.1950441	19.64081058	14.7218961	11.84473355	15.82486490	11.831549192	10.93		
354455											
## 868	14.24694475	15.70927603	10.9545041	9.42969296	6.7859337	4.47672090	7.84349345	4.255831334	3.31		
040424											
## 869	23.99192543	26.10637418	25.3331840	23.20507189	19.2577563	18.76714959	19.27942731	15.923877061	14.47		
445730											
## 870	19.47282172	18.89824873	12.5170767	13.01638746	8.7323013	7.48929349	10.14567741	5.814262238	5.39		
449167											
## 871	14.03217755	14.62853840	17.0527622	26.40871449	25.4394094	23.78478140	31.47279373	26.615199269	18.02		
353116											
## 872	20.08265090	22.16379002	25.9620970	35.49399305	32.1724246	25.74485551	28.46097152	25.829706301	20.04		
997964											
## 873	14.63046692	17.49846691	19.6407497	30.07088247	32.4793314	25.31271076	32.46273515	25.938816655	23.44		
333102											
## 874	17.69066724	14.87928773	10.3847697	11.91817039	6.6561468	5.99888427	8.65285663	4.368501131	3.85		
319356											
## 875	13.63022936	14.99854457	19.4203903	28.82371190	27.9604702	25.75634763	27.41552154	29.402028663	20.79		
280191											
## 876	24.36567380	18.57894738	14.5593542	14.68072093	10.3001337	10.19035248	12.85763231	8.841590785	6.35		
309717											
## 877	12.27068904	12.88008594	12.0927387	14.55978316	10.1101459	4.94612154	10.94029366	7.665818240	4.63		
447370											
## 878	14.09130268	13.71342423	14.1952056	15.25479986	10.2871616	8.00264688	14.54320331	10.407333911	8.89		
888006											
## 879	15.01871432	19.57497732	26.1170285	31.26011970	32.5238478	27.08773902	30.44086972	27.007681896	23.57		
522344											
## 880	1.50316117	7.89842095	14.9498909	21.77082885	19.2980509	21.61114496	28.13463747	19.364247650	16.77		
475278											
## 881	17.61915626	20.60811094	21.2035464	33.61753232	29.4016415	20.38036763	27.79024288	22.817410980	17.01		
268212											
## 882	26.62062288	17.47229588	18.3760710	24.99350142	20.0049883	15.37963827	18.20715823	19.152943824	12.54		

	759144	## 883	11.58946789	15.89579701	24.4735110	27.50625342	34.9510418	28.93078615	28.37337159	23.259546463	17.73
931902		## 884	4.87959341	11.50402953	13.4240837	11.63312692	16.2577088	18.04716102	15.03062898	16.126994767	17.78
349473		## 885	11.49035524	12.52481981	17.1836979	10.74423083	12.7259644	8.68887668	11.10009484	14.069665021	15.30
448859		## 886	13.01440683	22.36051923	20.4083321	12.25899814	16.1755468	13.47712514	13.67466876	18.481096780	17.86
190168		## 887	16.05384730	15.54058100	15.8605209	18.46784502	17.0905043	11.09841565	16.14845056	19.022867176	18.86
688745		## 888	17.19790798	12.12201847	11.7271992	19.90417735	17.8481154	14.50094617	14.85076529	15.381141433	16.66
507421		## 889	19.57294753	14.90185230	14.6051969	14.48676740	16.2979025	10.88174595	11.17100087	13.891402148	12.99
538730		## 890	12.92558663	13.92440222	12.3925506	9.79023916	13.4551687	8.55403342	10.78540836	14.715052291	12.89
330363		## 891	16.29334904	15.76843368	21.3929985	12.90962247	15.2214969	10.32007769	12.29150428	17.249581428	17.38
874637		## 892	12.55410799	16.26732801	15.4212758	12.35003902	15.9258077	8.79370301	10.14657616	13.939831196	14.48
656756		## 893	7.25921581	13.60113965	17.4817996	10.61024953	11.2510964	11.20236275	7.43717498	7.110733353	11.20
137839		## 894	18.00888002	13.24671326	20.8122190	14.63560477	15.7523395	12.95596033	10.31470577	15.406003945	13.80
470716		## 895	17.85505609	19.11263795	20.3872442	14.54524947	15.0825611	11.01180121	14.56981167	16.161927422	16.35
241031		## 896	4.26404493	12.25691106	14.3462205	12.20755443	17.0995512	15.88089365	12.16615267	14.645714655	16.78
881099		## 897	8.57562328	15.06550664	21.7756276	15.97615259	15.5077397	15.58646573	10.93187420	11.460561477	16.66
312820		## 898	3.56013853	7.85208038	7.0772612	1.85337732	15.7930880	8.36860372	11.22277246	18.121216666	21.20
328363		## 899	6.69989229	7.74581677	8.2309512	7.64506327	15.1553245	6.75245385	9.20501393	15.350204044	17.13
155410		## 900	-1.09316772	5.74442650	7.0288357	10.88617476	16.8137684	6.93885469	13.29032577	15.288814915	15.39
235138		## 901	3.48580933	7.31360198	8.3600437	10.98203293	18.2304998	12.26276207	11.79549190	17.513623684	15.00
746576		## 902	-0.21962488	8.69281975	11.3482987	10.61034068	11.4532751	12.45304216	15.15175501	10.370741265	10.15



## 11	9.72570976	10.57057872	5.57243531	4.22880391	3.35389982	-1.608617741	-3.90906676	-5.77685628
## 12	11.27969468	14.23248652	11.26666223	10.21915124	6.94942540	3.675258425	2.02420557	-0.35310062
## 13	13.52272465	15.25028617	8.69354511	11.47205836	4.89586782	3.650209574	1.39091385	1.19504897
## 14	8.35424511	12.78876601	10.20212469	11.08418155	9.11662281	6.017008630	5.65890976	3.81556904
## 15	10.58710914	14.09883224	10.73661710	6.13319336	1.10553922	-0.394835839	-1.53089801	-4.43493284
## 16	3.48914981	5.30795505	2.50963466	2.91472920	-0.06170952	2.103917473	-0.67164231	-0.53946282
## 17	4.58059448	4.49246579	4.77164159	3.44043795	5.46630621	1.962179286	0.63749230	1.38599114
## 18	9.63553768	12.60325961	6.86010157	6.56978595	3.86709563	-1.531742617	-1.82835317	-2.42753113
## 19	6.32424054	7.01942163	4.07873361	5.92362235	-1.03793350	-3.601463761	-3.03513861	-5.39010071
## 20	-0.62758962	0.80298645	-1.34547616	-0.99871468	2.58924540	0.652904055	2.83507408	1.04822622
## 21	5.80821928	10.19950819	5.61967549	7.56775225	8.01701157	6.736341229	4.62404072	2.22032883
## 22	6.65304471	7.51739333	6.34380619	8.91848864	7.68557134	7.002704224	7.48962735	3.97350488
## 23	-0.52930323	-0.72561842	-2.68865323	-5.38252258	-2.56018955	-5.996606535	-5.31452399	-5.17278133
## 24	8.42405027	9.07868216	7.71353523	7.80899269	5.68580346	-1.372548326	1.32718020	-3.43502268
## 25	9.38794046	8.51639207	6.38673137	7.05010870	9.20321852	4.129986180	6.68149222	6.59783430
## 26	10.83186440	11.88009283	10.72701587	8.74452242	12.90183905	8.643266234	5.96055821	9.14987497
## 27	10.99263882	9.47392517	6.36049309	7.71548940	6.77575258	3.431609709	6.23143125	7.79835546
## 28	5.35724766	6.52967465	4.45468774	4.19206676	5.29932720	0.063611963	1.34766149	3.32686844
## 29	8.07576259	8.09977130	9.19154116	5.08125329	7.88242746	3.560153878	7.28057598	5.82649136
## 30	0.54533844	0.44694092	1.46986503	1.69637334	2.24872340	2.096679823	-1.23801890	0.59025085
## 31	8.11437667	11.48247436	7.34904893	9.22640255	7.62865580	9.599937103	8.42131688	8.13311544
## 32	0.95107489	5.72878081	2.30922297	1.56788600	2.55187166	0.244777677	3.87687478	2.05769975
## 33	13.67977013	13.55907229	11.57526439	11.88935576	12.22263582	13.182800573	9.24260817	12.45873887
## 34	-4.39561113	-3.06364724	-5.03772070	-4.42321932	-6.17221406	-7.377535079	-3.26066607	-4.69574428
## 35	-3.61031073	-1.87921623	-3.66339918	-9.74801431	-10.63969036	-14.674823028	-14.13747343	-19.06872653
## 36	-4.90590151	-3.95111172	-7.55024095	-5.79223471	-7.28841046	-10.005133406	-8.97484349	-11.09139926
## 37	-5.33235460	-2.86189738	-6.69370736	-3.46447525	-5.30489341	-9.576599896	-11.23610153	-14.12798921
## 38	-14.28841200	-13.04191753	-17.24649231	-16.88459627	-16.67462905	-18.603260964	-15.77564468	-18.40913146
## 39	-1.85045871	-1.69823422	-3.18202372	-4.31079493	-5.81702067	-8.391476133	-6.03520886	-6.12467869
## 40	-0.67394359	-1.42567082	-1.06506927	-3.81841651	-3.40694328	-8.877305529	-3.49579953	-3.68503759
## 41	-8.02661147	-6.69756525	-12.56215365	-8.59762472	-6.27210805	-8.622829936	-6.53981018	-7.25782145
## 42	-7.32752347	-4.63693224	-5.59961899	-6.49759856	-5.74384508	-7.542807899	-6.40710478	-7.02937169
## 43	-3.27521265	0.52548979	-3.01694951	-3.19736799	-1.82136064	-4.112059230	-4.63721206	-3.36434347
## 44	-12.28207815	-11.48876086	-11.83268973	-11.60273811	-9.75340466	-12.149053458	-9.54586140	-8.20881070
## 45	0.66987546	-2.97255584	-3.98260342	-6.96289214	-3.87589639	-7.377053960	-2.64251884	-0.93698705
## 46	4.71922873	5.31442716	2.64125371	2.95215346	1.30163471	-2.035738041	1.22092676	0.04311801
## 47	-2.74731407	-2.82181539	-2.98519667	-8.43146086	-6.82880596	-8.905793762	-5.23553123	-5.08142116
## 48	-9.04392607	-4.75045070	-7.21171567	-5.71694926	-3.49354983	-6.177768844	-2.00369826	0.42701445
## 49	1.87509730	4.42550317	-1.43368906	-2.44961800	7.07605770	5.350401308	2.42092216	2.82346096
## 50	-6.89855904	-8.23614364	-8.66304613	-10.34948189	-8.04402837	-8.193073659	-8.85712714	-12.14180480

## 51	1.14070216	4.80517762	1.94946051	2.33101675	0.02383875	-3.082675688	-3.40030163	-8.84571228
## 52	6.38101934	8.14363342	9.47181191	9.00544271	11.15126527	6.268078953	4.59182288	0.18488920
## 53	11.27945996	8.87090169	10.75901284	9.03632670	8.38243040	5.841523198	8.15027479	10.47297590
## 54	-4.08531778	-3.89155954	-6.27343827	-6.66493599	-7.94638903	-9.616924372	-10.40238768	-8.67623137
## 55	11.51017292	14.46146240	10.55633885	8.73963709	10.41806235	7.433690428	6.99735950	7.72893636
## 56	-1.16540421	1.03454500	-2.58200641	-2.82660519	-7.12668873	-5.727872610	-3.66650329	-5.59627502
## 57	4.23659704	5.35764427	4.89447596	6.09785918	0.67133878	-0.455578243	-0.34007722	0.06861121
## 58	-1.91841949	1.00997686	-1.72759501	0.52093822	-0.77063111	-5.306186979	-6.00961409	-1.78972022
## 59	4.05052343	0.36763312	3.61364993	2.50463296	2.26638435	2.595326794	3.83190796	3.18976592
## 60	15.41430928	6.47944399	7.33978241	11.69983066	7.12124316	6.727317394	10.74258269	11.13444318
## 61	15.21517034	10.56337063	3.98431951	9.04799925	8.77163855	7.280170497	10.10238099	11.74927927
## 62	15.43878869	9.35544977	11.74860250	13.79058557	14.11876120	12.562133479	13.54026176	13.27640191
## 63	13.67663052	8.68347826	9.34421354	10.84792356	12.55439216	12.072533983	13.62093865	8.81896478
## 64	1.29686722	2.11773507	6.53656514	4.21978030	1.34449530	9.995616472	7.68224285	5.73896512
## 65	16.30381879	16.47382623	15.91508436	12.22097758	13.05930447	16.371854126	13.74549043	12.83447048
## 66	0.74414496	0.31134449	3.01183097	1.84045128	-0.26202721	0.834314649	0.95412792	-1.12016160
## 67	9.79390698	10.65953011	10.19338715	11.34820265	12.26433512	12.332936045	10.79844387	7.77954377
## 68	5.14595641	-0.88063997	0.85227956	7.84132942	6.05298651	3.368198548	6.96530124	3.78745474
## 69	6.88030375	9.81459065	11.33916255	9.69014847	10.85631692	10.059215946	6.19499505	6.66580645
## 70	1.18259961	4.40751611	8.81447774	6.10391362	11.25407284	8.836190576	5.73916782	6.59794927
## 71	3.27275595	3.49647295	5.80589969	4.59199274	4.05287119	9.305173347	2.27264498	5.50902962
## 72	3.43432818	0.70667010	9.74505578	8.78480209	5.99855008	7.904460565	7.86673228	9.58580156
## 73	9.63198859	8.67855725	10.09345095	10.20295791	9.56248129	9.280104798	8.97977855	4.86372927
## 74	2.22119184	3.58091523	3.53762848	2.90078871	7.07019830	8.066325636	2.84232648	7.20845439
## 75	8.64989629	9.24250027	7.05862648	4.74075594	10.86538263	7.558728359	1.61271257	6.48408148
## 76	2.49021334	3.24449097	4.10207698	0.19041607	2.39838526	6.237066951	4.53916613	3.11518225
## 77	-1.00238320	-6.32459698	1.32337091	0.21549938	1.59766849	1.244510020	3.96812480	3.46964107
## 78	-1.03193559	-5.42733243	0.74182575	2.33486078	-1.77177428	-0.996477509	1.62827993	1.44376002
## 79	-7.12549161	-7.41195491	-8.36511086	-10.79248439	-10.31793736	-7.479639735	-10.91529118	-11.19724216
## 80	5.45991975	3.08915854	5.21541063	4.93523483	5.41973220	8.272964108	6.81740443	6.47729438
## 81	8.33092525	3.68846230	4.28991179	7.37431230	6.77912384	8.017174795	9.29225060	8.30911194
## 82	4.38901087	-0.92062587	-5.07191031	-3.23020986	-2.31589843	-2.247775862	-2.66258279	-3.33379469
## 83	-0.87037545	-4.60142864	-1.77561153	-2.09899196	-2.33238608	-2.431959160	0.53220639	0.32606718
## 84	10.54976412	8.38609391	7.68807085	4.86580181	3.05953446	9.008260037	3.17758492	3.81194216
## 85	12.88187820	7.72020170	10.98357796	9.41129993	3.90863042	9.468626278	10.26797563	6.26455401
## 86	15.82716739	8.04495221	6.14148568	10.56648135	8.11858508	5.574563851	9.50471240	8.55163794
## 87	2.67419491	-3.12561352	-4.85305905	-0.02697138	-0.60021226	-1.856565753	-0.41453090	-2.97140970
## 88	7.82092374	2.34724359	5.41908840	4.09596564	5.75878654	6.137807381	6.00946023	6.03140972
## 89	-2.48772913	-2.48916586	0.49752400	-1.85832149	-3.98438148	0.650714972	-2.75416558	-2.81010684
## 90	1.95241528	-4.46240042	-0.01001866	1.88246239	-2.76023098	3.315833634	3.11511671	-1.46185461

## 91	19.08283589	10.73861138	15.89194667	13.35124871	14.32137714	15.721063727	13.04036213	11.89905884
## 92	1.03543888	0.62145334	-0.74111979	-1.01009518	2.75201494	3.665026071	-1.10797200	-0.39500724
## 93	-6.09588293	-8.34876354	-4.47617864	-5.55891782	-6.17136029	-5.484238024	-6.69955710	-7.76186236
## 94	0.21544858	-1.48554460	1.46800847	-1.19892296	-0.93697621	1.116061852	-0.37784481	-2.30132356
## 95	-2.21755807	2.55873185	1.02193067	1.72686346	7.13977028	5.247200854	0.08034392	2.87949250
## 96	-2.33489247	-3.23228596	-0.66668733	0.90704059	-2.72478252	-1.455976759	1.46117260	1.44941716
## 97	12.33861909	10.35176816	6.58041557	1.20787923	5.33085167	8.18183382	1.74512440	2.28445713
## 98	7.16115471	3.77239541	1.95707706	2.71834697	4.45386443	5.195242754	7.20717140	3.73298592
## 99	-3.98268684	-8.08102035	-4.84078677	-5.58503372	-6.26616568	-2.543355641	-0.75049124	-7.14862701
## 100	1.34907857	-1.11922695	1.92743544	0.51797550	-1.44231155	-1.861885506	0.10054552	0.45724186
## 101	-0.39038239	-4.31845432	-1.55147966	-1.90836276	-4.05862071	-1.702218694	0.69372639	-1.03986234
## 102	1.17999130	3.06311804	2.29183212	-1.03195226	3.58230812	1.991126801	-2.65183234	1.77326522
## 103	5.79879443	-1.15608997	-1.49964680	2.67787113	1.47287737	-0.830785491	2.20973225	2.12470108
## 104	9.92045589	7.12146458	9.69514975	6.35793987	6.52064630	6.664683380	3.80677748	1.99976721
## 105	-0.60342364	-7.09964284	-1.95941147	-5.79841067	-3.32705394	-1.679743402	-3.08656634	-4.09909625
## 106	-1.63982078	0.99498282	0.45523000	-2.47649931	-1.15773513	-5.107121853	-5.02908310	-0.87309556
## 107	9.34385778	4.46951590	8.96845534	4.07580231	3.48479818	9.738097012	5.14883019	2.34822639
## 108	-0.27855272	-3.76876512	1.72303984	-2.34635313	0.09260605	1.367666731	-1.96450403	-1.05699362
## 109	1.07311335	-5.65383875	-2.77881481	0.64642540	-1.19655488	-0.004949377	2.58153357	1.57990001
## 110	-3.14163695	-3.78954985	-6.17811827	-7.87567155	-4.42476581	-5.502482787	-11.02531351	-5.81717776
## 111	12.68321162	9.73494561	8.61538918	8.81069024	8.49860139	8.630925549	8.95983076	6.85510696
## 112	-3.84919037	-2.36285190	-2.92332767	-2.61132533	-2.30833696	-0.206550359	-1.50241301	-2.48777207
## 113	13.89939722	15.01795064	15.44945699	9.50218168	17.45260811	14.264973340	11.47581488	13.44586231
## 114	3.50370566	8.23222143	7.32700488	7.44267553	8.72717357	8.454114408	1.79737126	3.71468993
## 115	5.00827312	0.04410008	5.32515633	8.44152234	6.31759342	8.043676734	8.68536813	7.71014381
## 116	11.94840221	2.58949768	2.70423021	3.67200379	2.02731662	4.483362987	3.43945414	3.99104795
## 117	3.26604277	-3.40972586	-2.26137489	0.74023405	-7.27514831	-1.235169400	-0.80370648	1.08411881
## 118	9.39863759	6.18324455	3.96631057	4.90431466	-4.25911766	-3.112167804	2.52626446	0.58175763
## 119	14.43715731	8.00160263	6.33431404	8.07366853	0.09475947	3.638644949	3.81697104	3.14358353
## 120	15.35257282	6.37630869	4.06015423	5.98257581	-0.00421278	3.351995182	0.12113501	-1.47176431
## 121	11.18949617	4.55688733	2.31231983	7.48227659	-2.96704970	1.597046669	2.93668349	-1.25063104
## 122	4.56052974	-0.74957920	0.41729599	2.87616765	-7.67640254	1.157429017	2.11595773	-3.17343589
## 123	12.71204354	7.97198841	7.35386288	9.80316016	0.40427141	3.483406022	1.76645358	2.01583531
## 124	2.16812328	-2.06276661	-0.65795542	2.13864210	-7.28861328	0.207152185	-0.14203260	-2.91065617
## 125	2.08497917	-2.37201172	-1.01456636	-0.50085691	-8.05105370	-2.620878198	-2.75996923	-6.27284317
## 126	-1.66893184	-6.19564018	-5.79895326	-4.21227508	-8.06711016	-8.308831942	-6.14737900	-7.80573830
## 127	8.45260035	3.98882121	6.89883234	4.65919799	-2.25392464	2.127714176	3.77255861	-0.13126282
## 128	10.18320119	4.13176340	2.50025128	5.88990511	-1.09126543	2.099256011	5.96625194	1.31454589
## 129	3.49329898	-3.76502426	-2.01211689	1.38311371	-4.64972300	-4.517504015	-1.48437021	-3.86816923
## 130	6.35141458	1.40696863	2.26110961	5.00142000	-2.42803392	3.339866669	3.37111599	-1.21365332

## 131	-0.33554912	-7.70439502	-3.38995305	-3.43256870	-11.00231140	-8.113337850	-2.90674065	-10.03361467
## 132	2.09379052	-1.69053205	-7.62741090	-1.45625677	-5.26211127	-5.169812636	-2.42990620	-7.20492489
## 133	2.91023639	-2.04575907	0.90707438	0.65193479	-7.74568266	-2.096540801	-1.43280649	-2.73405799
## 134	3.58308169	-2.82797977	0.68465542	0.59469308	-8.66191866	-2.861865854	-2.23411557	-5.95064026
## 135	1.63914618	-1.51687469	-1.58521380	0.43608618	-9.35915268	-3.365613893	-1.38826226	-4.10988613
## 136	0.83919736	-3.09604317	-1.74791158	-0.67189666	-9.39627438	-3.306257278	-4.16061601	-4.80419054
## 137	-0.34004271	-5.16567194	-4.50856121	-2.43030111	-9.50414089	-7.269137636	-7.24607708	-8.11677886
## 138	-0.32531325	-6.55850448	-7.09624124	-6.13533365	-12.48795520	-9.588084086	-7.09374600	-10.03846891
## 139	6.31419132	1.91716633	0.57919065	0.13689010	-6.49802892	-1.880225144	-1.33015626	-4.89292824
## 140	1.00229907	-5.29701106	-2.19540375	-2.80338911	-7.90865080	-3.676959921	-6.05574585	-6.74927711
## 141	4.36809812	-2.77872731	-3.72094769	-3.90179557	-12.27472158	-7.428871404	-5.79793485	-7.86052014
## 142	-2.48651642	-9.26817083	-7.10164748	-6.38695920	-15.12858020	-8.959988016	-7.54449913	-12.64071911
## 143	7.44128511	-0.57776920	0.52729098	1.01469993	-8.49137874	-2.610112197	-2.12087890	-4.46648003
## 144	11.06585076	6.97297609	5.97222418	4.97256042	-2.43359323	0.570610180	1.01488616	0.51604880
## 145	10.00436935	4.39652058	2.81169041	0.97036109	-6.07082448	-5.004343173	-4.70737338	-5.93608709
## 146	11.01039388	6.97718925	8.52158829	10.91918134	5.71585129	8.547860878	7.44092871	7.43738605
## 147	13.22607623	8.82738691	8.11593629	6.36272670	-1.31677258	5.312143008	4.45741961	2.46488042
## 148	14.71941805	11.25589071	8.87365909	7.43674273	-0.71433268	-1.498662532	2.62250013	0.14949691
## 149	7.40831772	2.51286873	2.51357370	2.24362875	-4.35304413	1.173880260	-0.42352458	-2.94366177
## 150	3.78258212	1.24655394	0.06377158	-0.30524540	-9.66449190	-5.597132017	-6.42711864	-5.88169438
## 151	14.92220168	5.30795626	4.47689150	9.94221292	1.78371606	2.641019956	1.99234058	2.29617718
## 152	3.14489142	-1.63397640	-2.73461685	-1.01412042	-8.41975403	-6.611228200	-4.63233303	-9.70898402
## 153	3.04327859	-3.37312978	-1.81963876	-0.86153606	-10.54366064	-3.773414150	-2.43115298	-6.51233461
## 154	1.13788635	-2.83256521	-3.96366462	-2.62422506	-9.68371998	-7.929450861	-5.36645052	-8.36909506
## 155	-2.88268832	-9.09844769	-7.70163485	-6.27428090	-12.61842320	-8.288095008	-6.47007632	-11.53219142
## 156	2.86417609	-3.81733226	-2.40738143	-3.32012911	-10.64667952	-6.994516526	-5.43132173	-8.56985161
## 157	13.58741864	8.76589709	5.02910411	4.21522728	-4.85975772	-4.137975420	-1.87778457	-2.16728039
## 158	3.93608170	-0.96640277	-5.35501656	-2.03395861	-7.52879470	-9.496542813	-6.51789423	-7.26904223
## 159	10.40129631	3.92155099	1.90737653	0.53077072	-5.53724209	-7.477881917	-2.83624593	-7.71881942
## 160	-0.77972011	-5.68247269	-7.54215039	-7.84254725	-14.78851435	-12.213372917	-8.28865300	-11.11546516
## 161	-5.77634242	-10.86495843	-8.97070347	-10.06960635	-17.57699273	-12.151227910	-12.47998707	-13.80360520
## 162	-2.39434869	-5.61606306	-6.31941634	-5.33885067	-12.85557277	-9.858500578	-8.93530740	-10.00314578
## 163	9.34612272	3.60970327	-0.36986835	-3.21047591	-6.58337414	-4.976233276	-3.35896533	-6.35194057
## 164	4.96975500	3.80410917	3.11597479	5.79678024	-1.66729495	-4.578774039	-0.66745282	-3.61552294
## 165	5.28154177	1.23594375	3.16654274	0.22088152	-9.89899539	-6.412237832	-3.87725079	-8.08953594
## 166	1.01582377	-5.25193937	-5.44984776	-4.51035699	-11.52380540	-9.648181509	-5.85662366	-11.41556613
## 167	9.33239141	2.40017459	-0.41715110	2.81723982	-7.39426303	-6.882186101	-5.93459360	-6.50598012
## 168	6.52015475	-1.22076454	2.59311751	2.25516588	-6.05977874	-2.920710681	-2.16063450	-3.47960337
## 169	2.25692732	-3.38456799	-2.30233895	-1.19024737	-8.83751975	-5.100041922	-4.91757777	-6.74872050
## 170	1.68439874	-2.65187687	-0.76588291	-1.54483880	-8.93928410	-4.221193670	-1.82090131	-6.54130528

## 171	9.12710318	2.94224146	5.38894222	5.43639990	-4.64737428	-2.230226912	-0.57031980	-4.37798970
## 172	4.91844508	-2.85407967	-4.63381132	-3.77580363	-10.30642209	-10.553871780	-8.19227588	-9.70058924
## 173	11.33638054	5.96920295	7.17131413	6.67440114	-0.29192224	-0.639450115	0.70115317	0.58593138
## 174	5.90324502	1.86519760	0.64257366	1.14803526	-9.16237027	-5.323204040	-5.40463112	-6.56354092
## 175	4.64388321	-1.74101305	0.23000709	-0.71472341	-6.79706772	-3.557760797	-1.68008874	-4.51961676
## 176	11.35735914	6.79045614	8.10592239	9.29167949	-2.39197809	-3.474248289	3.16436649	-0.27995041
## 177	18.86346434	14.11823058	10.49955572	13.41933045	9.46448581	11.428787520	12.67276829	7.41286038
## 178	15.25791262	13.78974451	13.54300896	15.68633035	9.63197846	9.08943412	8.65018507	12.57891506
## 179	19.97572223	17.33093463	15.13010100	17.96824030	12.32349987	16.112694959	17.62610331	12.37597861
## 180	23.21694735	17.46972952	15.41643712	16.05775924	11.77509674	14.418783114	15.58706243	14.34593155
## 181	19.43856440	16.81305099	14.66002985	14.59805411	12.28982529	12.924327805	12.65806885	10.92107357
## 182	18.16154949	14.66393229	14.27617799	16.57236260	7.86527008	9.660194569	12.18159136	12.57572397
## 183	18.18562784	18.31891210	15.17425952	17.19330599	15.82411621	17.146033783	17.51664941	11.38645720
## 184	17.64416173	17.29015645	13.51210103	15.11901810	10.57138486	11.478918923	9.36373587	8.47712485
## 185	18.91970303	16.16398453	13.74226186	18.96782717	11.73927907	13.946308695	11.67784734	11.35106226
## 186	16.01660432	12.01048772	9.79531158	11.35401218	11.97742795	7.211021018	9.12088511	5.08899678
## 187	19.00142484	15.58032945	20.16568415	18.02158037	15.06308987	14.033530081	11.92676276	10.36364961
## 188	17.16477117	13.90407101	12.42790930	15.10988578	7.89575010	4.385307751	7.16889007	1.23012903
## 189	22.37087122	19.76227348	19.37915251	17.14761096	9.26689278	12.997651558	7.59255817	6.30124758
## 190	8.68833261	7.73505006	5.85128867	7.57311861	5.21186700	4.184606300	4.84071901	2.64959079
## 191	9.82824484	7.51240721	5.58258436	10.10328530	7.59355453	8.166805519	9.02622268	7.03519227
## 192	11.05581984	8.76293161	7.92964068	11.38414721	6.56632335	8.111476397	7.13803799	3.11359274
## 193	9.69439758	7.76581621	4.06673766	7.24015014	1.40390905	4.581536965	3.08209195	-1.73915636
## 194	14.15713161	11.27890247	10.19772835	11.34388032	11.86263640	7.675893923	8.64619634	9.40570346
## 195	2.30579423	-0.24697192	-3.71605740	-0.75530732	-2.51431705	-3.535324126	-1.65183723	-2.92819124
## 196	9.36134939	8.33996755	3.65945151	4.51306713	1.29777182	4.996076885	4.34111511	0.56371749
## 197	15.84245453	16.12943785	9.57406080	12.05241039	11.29176356	9.671107842	10.39106555	4.55425302
## 198	13.84364068	11.83857818	12.19845918	13.41934406	6.31307103	6.850091678	6.41591073	0.13048049
## 199	14.47889639	9.60996115	7.71922088	9.58018745	2.82911942	5.920663749	5.42543088	5.44561650
## 200	8.36180129	5.19969916	8.43204329	9.59488416	5.58017324	10.829981801	8.18322224	4.38191991
## 201	22.59371305	19.51071412	13.68401800	13.86047405	11.88387817	12.449673434	11.54556042	11.37002992
## 202	10.83433779	7.46986744	9.52306719	8.28380660	6.66237691	5.187327201	4.54833728	9.89630163
## 203	23.47311921	21.78267998	17.82168475	20.18059223	17.00972121	15.676453529	15.93445548	13.72802906
## 204	17.40736446	15.84914510	13.23675526	13.45496194	11.55041404	9.825359674	10.41006365	7.23966951
## 205	22.16005559	20.91525646	16.02767942	17.35033299	15.00406631	13.039426630	15.32041058	15.00152500
## 206	14.14160382	11.97751307	10.12269617	12.23988752	7.66145830	7.472519957	10.46591408	6.13210798
## 207	12.38094404	13.29365186	8.60293865	8.88764510	10.86127376	5.551800156	8.44949218	8.67259156
## 208	14.77161463	12.92017670	9.98536784	12.06337194	7.13118114	8.334626687	11.99061626	4.81991598
## 209	18.66731898	17.08984336	13.61009762	15.68440329	10.76851509	11.958451962	12.39668619	15.27434038
## 210	10.10817277	5.98045351	6.49250935	6.81911527	-0.02475097	5.820551289	4.86105416	2.22807364

## 211	3.36970930	1.54661668	-1.79385042	1.51878264	-2.23176036	0.250514455	2.51399223	-0.27344139
## 212	9.05752329	7.62876210	5.11355641	5.25283478	-0.20089461	0.588291254	2.98550793	-2.47956356
## 213	8.90112957	9.81681175	6.71960658	7.59882858	2.81523929	5.355558682	1.76685647	-1.92067832
## 214	10.94559622	9.30433879	3.43629201	11.03596972	5.45442946	5.788674234	8.21477981	4.54354817
## 215	12.62311935	8.21275272	3.46082767	4.62675406	1.10336483	5.480834340	4.35498448	1.64103434
## 216	9.52384511	4.90403000	4.41296588	1.25775369	-1.57167020	1.743648610	3.43048232	0.72747040
## 217	8.82639883	5.94703643	1.77454893	2.62981349	-0.95729044	1.142190965	1.19204234	-2.49934707
## 218	9.01203856	7.16875381	0.61586324	2.18416573	3.04289424	-1.916775329	-0.20516861	0.90396312
## 219	4.98904489	2.80454038	-1.03196866	3.01172586	-1.90875637	-0.329806968	0.09937124	-2.32708017
## 220	7.95311893	2.84070385	3.99560000	4.14276344	1.63727086	2.832493004	1.07633052	-0.54904369
## 221	12.00341783	9.80505628	4.23797878	4.80265052	-2.31359102	1.476457600	3.65848138	-1.07070830
## 222	17.63303777	14.89417823	15.81085774	16.37816078	9.27381018	15.263654366	13.21235459	12.17146422
## 223	11.67922201	8.26417297	5.38444959	6.82933316	0.92242237	3.742040324	3.97147745	0.42221136
## 224	7.10266789	4.87378877	6.51200202	4.87394297	-1.66497520	0.992954867	0.73291932	0.46673975
## 225	13.77284492	11.11569312	7.43398719	7.86267684	2.75716230	5.645268519	7.09781660	5.73258896
## 226	7.58372379	4.59365189	4.23241269	4.30333273	-1.61739575	1.992204460	2.48679022	2.57146508
## 227	4.37109750	2.03746380	-0.50339972	2.76833643	-1.38930207	1.971288336	3.06862136	0.92726751
## 228	7.45169093	6.18783050	3.44108214	6.37815619	5.32634411	6.466896765	7.20767039	4.66334999
## 229	17.36034068	13.55967987	8.69551283	9.87146017	5.02245685	10.656950285	8.96334077	7.38724352
## 230	8.39213545	3.76358503	1.90983861	2.23051584	-4.39425356	-0.033311010	-1.09519208	-2.32999352
## 231	20.43471829	16.80464231	15.18332227	15.49471646	13.82540436	13.580632009	13.32918225	10.54056843
## 232	16.03038970	11.37277896	9.18567918	8.81066801	5.59027928	4.709312396	5.60754328	4.08367819
## 233	18.73050088	16.62774586	13.26782241	15.26527667	9.07902224	13.133716615	11.23604916	8.72293225
## 234	11.62217773	7.70849191	4.50482677	4.29390543	0.53671288	5.577048997	5.53889593	3.22584430
## 235	15.17143826	22.50508247	22.26885348	18.18424684	24.98155965	25.133700833	16.81379869	20.09918447
## 236	17.83836432	21.81494971	24.60650966	20.60207010	22.52470405	23.019427590	16.19807644	16.84462802
## 237	12.74002353	20.13430395	20.47248369	16.25230656	16.36376093	16.049368577	8.27906559	11.77212912
## 238	17.14807381	18.70549758	19.35043386	17.03003781	16.66448097	18.579280845	12.71526742	12.06842288
## 239	12.24611186	15.72888461	16.38257551	12.78622124	11.93531345	14.187570605	9.11377451	11.13281205
## 240	9.30948298	17.94749770	15.25451686	9.56281591	9.19171291	6.803319924	-1.59496544	2.15485803
## 241	21.57476213	22.37869575	22.66974440	20.22712824	22.55082682	22.195429051	21.12905589	19.87332980
## 242	-0.06520152	8.30643191	10.05020681	7.71498612	9.62946680	10.004161138	1.96436318	5.25535033
## 243	8.50759984	12.66286644	15.22925191	9.57025440	12.02164655	15.664730857	10.73898608	6.57721922
## 244	7.69599630	15.57340896	14.69565684	10.49215783	14.47469348	12.246789394	11.00117535	8.27964387
## 245	6.89721421	13.68837143	13.16584402	9.23458530	9.21162722	7.956614869	1.99710737	3.73616868
## 246	7.92216035	14.82187480	14.14528947	9.90392926	11.69722167	12.006938823	4.41456876	4.31150615
## 247	7.53685230	15.47677078	14.99566052	14.17804893	17.93654317	17.228892275	14.12268438	11.77190166
## 248	11.64277607	21.09049741	19.51723355	14.91220659	16.64550547	14.699661900	9.27663242	5.32787943
## 249	12.32678027	15.57996320	16.95729842	12.98007517	13.03009907	13.167140194	10.98966174	9.25369859
## 250	9.99581810	13.33215950	16.53253908	12.79139788	11.76086786	15.209181509	11.84843985	10.69689701

## 251	0.19819146	9.37793154	12.19317130	8.57628110	12.09445319	12.030738440	4.70231242	2.38197321
## 252	9.83280758	11.50620037	10.51119145	9.03903398	10.23001690	9.856683156	5.36363555	7.01856653
## 253	8.36847014	14.50070747	13.98528255	9.20090277	12.25946310	12.763303224	6.85874092	9.61798376
## 254	14.07218696	20.57632641	17.79638654	12.71314972	16.71288353	11.994946762	7.74053159	6.55332532
## 255	2.09805279	8.28035156	8.83553107	7.12239745	7.45200862	10.810489636	3.85681055	6.04005542
## 256	7.77935761	12.36850786	13.02291347	9.57086553	10.34830324	9.607729760	8.51866171	3.68462707
## 257	7.28191735	11.10184891	12.15768057	10.47315507	10.14332349	12.758450349	8.94306876	6.81809424
## 258	8.00942553	11.17457030	13.78481592	12.22201378	12.56479648	15.014057910	9.17243552	10.16628739
## 259	10.46000884	14.31093815	14.62440803	10.21275348	11.37008995	11.547856231	8.61099428	7.99239206
## 260	8.61122170	15.93154674	18.93640884	14.08509383	10.73142129	6.772694791	3.29124839	3.08195257
## 261	14.04124819	15.06532218	18.22447694	12.68123163	12.23261594	10.449318520	11.03138299	10.31473565
## 262	16.22820665	19.18596892	17.97359120	15.57652548	15.47874506	15.837677437	11.85835605	12.11314420
## 263	18.16468895	18.26856414	19.75507455	15.83276111	17.74116740	17.665609492	14.54671360	14.65220224
## 264	14.40459897	17.85024706	18.06235138	14.91365023	18.25984977	16.413968988	11.61608213	13.24516663
## 265	7.43152534	13.68507349	14.54144675	9.07155096	13.87307270	14.391529203	8.58917027	12.58092786
## 266	10.93020876	18.35532126	19.40139930	16.37330545	18.50424557	19.245142686	15.49651231	14.03901742
## 267	10.41624004	17.19208401	18.66372064	12.32565116	16.45241868	19.691989912	12.50014820	11.11949092
## 268	10.70001465	17.00336154	17.93342747	15.05797605	19.92172979	22.639634652	18.91970742	15.68607097
## 269	9.25170421	13.54288990	12.32469923	10.34042123	11.00676913	16.320713879	10.91861157	14.18492593
## 270	8.52393997	13.71543603	14.87017546	14.97556975	13.84662106	13.648692713	6.69127616	6.56945575
## 271	1.49562024	9.75018662	8.29517697	4.45096962	4.63301357	0.920977376	-4.12425070	-6.09718264
## 272	1.52013235	5.31525619	8.00925100	3.92185667	6.08278366	6.195059713	2.32489324	1.08837117
## 273	4.24579347	11.30992836	10.29404295	7.67820592	10.90763912	10.800515098	3.39910358	2.76645331
## 274	10.44455311	19.65376784	19.26531010	14.95160108	10.40570340	10.231566577	2.42341423	3.38299888
## 275	10.32274982	9.61318528	12.23317383	9.82397699	7.29516429	7.501678469	5.56972304	5.06404757
## 276	10.99412912	12.12616332	13.57389227	9.20582618	6.86170612	10.578911199	7.69514415	7.00991169
## 277	8.02756981	13.60156895	12.93522358	9.92799251	11.48383098	17.024096494	11.55767385	11.94527102
## 278	3.71006377	8.71514757	8.39257892	5.03995742	6.53177272	7.539701744	1.68573016	5.96798159
## 279	2.08509487	5.48893996	5.81053510	1.56781086	7.72513516	8.804533442	6.87665171	11.44310741
## 280	9.64300503	16.44907941	18.13155569	11.99993906	15.15279252	13.483880070	7.16667484	2.58568245
## 281	10.24735629	9.76682122	10.18571053	7.37001722	4.91698738	3.998433380	5.87450442	3.88374594
## 282	7.23917442	12.48522345	12.02294049	9.06425145	9.36446983	10.062237929	4.89352408	5.52574015
## 283	1.25117086	6.99204105	6.88093636	2.21154627	5.34122423	6.506527148	3.36486090	8.48767077
## 284	8.81044401	16.48911690	16.36816012	9.90434249	13.07902200	14.043651258	6.98645318	8.78238243
## 285	11.18935207	8.12445802	13.52215892	9.50795072	7.06742878	8.780704250	5.22075244	3.67580477
## 286	5.66974375	7.40599757	9.76325852	4.23846516	11.60914972	8.202648486	3.71087966	5.54110203
## 287	6.59666691	10.86551170	13.21373847	10.61526066	10.35305315	11.961127905	6.84217197	3.49361798
## 288	5.01120603	13.81622564	12.95464759	10.17048570	9.69514034	8.995891122	0.92271732	0.47974391
## 289	16.91607309	19.50420526	19.48739404	15.36597838	16.69809870	17.872283462	14.42384124	11.422380124
## 290	12.10680586	15.93101613	14.50989994	11.43133064	13.72455204	14.120062316	9.62643376	7.21010635

## 291	17.00512415	20.43892981	20.72751818	19.06109264	18.87131469	22.793602208	20.36792983	19.93472888
## 292	8.31268863	13.27143025	15.30642222	11.30299806	14.40576638	12.403577698	7.42646686	7.11462859
## 293	10.59799677	11.87323266	14.55105609	9.44776318	12.25523076	12.712259025	8.31450886	7.08694679
## 294	11.05692337	15.87182543	14.05153469	11.80251408	11.69252590	12.339504071	8.84255288	8.34046827
## 295	11.48169086	10.19009047	7.50376556	8.44401900	4.13844076	7.343836389	5.98384517	7.17592550
## 296	23.95471645	20.66816545	17.58309361	17.09963550	12.70520643	16.778552933	13.11774555	14.17948382
## 297	18.85013734	14.10127222	11.78261823	8.66856791	8.18319200	7.257814271	9.16152775	8.70397406
## 298	23.21230301	22.04422519	17.21719674	20.31055889	14.97454603	13.555860312	15.75613512	14.10848571
## 299	14.71858916	13.10421679	8.93806216	8.99447383	10.18052075	3.756786474	6.42427796	4.53041496
## 300	3.07867161	5.19694898	1.24934400	-1.40376268	1.28214010	-0.38394616	3.34444819	2.64220498
## 301	20.12061371	19.05752218	14.13815977	14.82684332	12.31434561	8.573113432	10.44746721	11.15186646
## 302	8.17276332	5.14866713	2.53412122	5.77103280	1.62855918	5.157298325	6.70297552	5.44188769
## 303	13.08571225	9.87732572	8.11145473	8.29004207	4.07495166	7.732580467	7.00965716	5.83370966
## 304	7.29994820	6.47886209	2.41771970	4.66100611	3.36913358	3.543598595	4.50011262	4.68677636
## 305	7.36195813	7.47228266	4.05870061	2.54580311	5.31557831	2.441132145	3.27209942	3.85685865
## 306	8.83714930	6.25435990	5.37109304	6.16515342	2.19318292	4.864341428	5.39465316	5.24797618
## 307	11.59308824	7.70492045	7.04813795	7.61902014	5.95494551	6.463793541	6.51235894	6.05959747
## 308	11.65817164	9.83210485	8.51347772	9.67158589	6.51989792	8.793213593	9.94791802	9.49892736
## 309	12.02052874	9.93600759	7.31707968	7.72955523	6.75153632	6.251537727	9.18642656	6.08777142
## 310	8.24268146	7.20344863	6.63776102	3.93048412	6.35463426	2.866883924	5.15870112	3.45853846
## 311	5.20705743	1.64001347	0.19499258	3.29533036	-1.61250302	-0.628613333	0.27081163	1.98048274
## 312	4.53140071	2.04000053	1.89495810	1.67849143	-1.96282271	-2.755895672	-0.31022848	-2.02617178
## 313	4.86232920	3.75831128	1.48920272	2.83699016	1.31094771	0.504701131	3.07897878	0.98434876
## 314	3.47397740	2.23383182	-1.00091559	-0.28096794	-1.11000202	-3.732263740	-1.84984587	-0.35546519
## 315	8.75284367	2.80420841	3.12139473	3.57130618	-1.10530229	3.599060211	1.31910705	-0.65165115
## 316	1.31564470	2.03995751	-1.48327304	-3.05704585	-1.35642122	-3.342719298	-2.74340965	-4.89976344
## 317	9.11491136	5.24413619	3.29217943	5.74558342	2.29737323	0.659533110	2.88554585	-0.45868920
## 318	5.05840444	3.18339977	0.79816697	0.52130940	-0.52416122	-1.471729924	-0.07901926	-1.30532302
## 319	2.84261522	1.24951533	-3.20696968	-2.84614541	-5.48071141	-6.030366495	-4.84145428	-6.07905765
## 320	2.23241281	1.06420212	-1.39557906	1.51697994	-1.63479097	-2.289954918	-2.42953731	-1.17228447
## 321	20.54820162	18.41076808	15.15498393	12.22359188	12.65391909	7.729337285	8.71718009	9.17316547
## 322	15.86828842	11.09347981	7.73651936	11.31010887	9.02877998	3.688523393	5.68213408	4.58623416
## 323	16.60468741	13.38909778	10.13860409	9.55457543	8.72848452	4.602345766	8.96743597	6.63267609
## 324	17.82758208	17.10334018	14.91407225	11.27439297	9.18971349	8.211876943	9.90856824	10.99036242
## 325	13.01097387	12.36976353	9.76833140	4.77266759	8.41370009	6.202406140	5.75081374	7.53245217
## 326	11.81231898	10.78270151	6.83608994	6.30872905	6.13154272	3.832404599	4.74092919	4.10219102
## 327	9.79666454	6.79404238	6.35049498	1.54313964	5.80746057	2.383537951	2.11607423	2.83471635
## 328	8.93272585	8.30342904	6.18073913	2.38343305	6.94601385	3.064974842	2.20808187	2.44149899
## 329	17.03939428	11.42826146	11.54126899	8.39169156	11.78322183	6.898149250	8.99344029	7.22739597
## 330	3.49080440	1.29106143	-1.51103614	-4.49031967	-2.94231116	-8.615553290	-4.33130570	-5.90563313

## 331	-1.37173675	-4.88610874	-4.86026534	-7.23567738	-4.90801150	-9.169966276	-6.53319050	-6.67425653
## 332	-3.70307180	-5.82008231	-6.96783642	-6.81440794	-6.93470824	-10.359662969	-7.93731344	-9.89961948
## 333	-1.01463789	-1.22344261	-1.54289930	-5.04412382	-2.95674658	-5.624740556	-2.47682221	-3.71826932
## 334	1.76327118	-0.49779844	-3.83592926	-4.56327148	-4.86639544	-6.743861083	-3.50566565	-4.97017966
## 335	14.18012675	11.88643225	7.91719439	5.19682823	5.56159335	0.347685366	3.77887421	2.49918217
## 336	16.08678713	10.96081279	8.12585181	4.09251121	5.06647774	2.155900871	2.10148354	0.59894333
## 337	5.85990597	2.17921566	-0.31625845	0.86416450	-3.95676909	-1.481561389	-2.27286284	-2.81202123
## 338	4.39973387	2.05638669	-1.52929399	-2.39944856	-1.40136978	-5.342992238	-2.82570140	-3.94096179
## 339	-0.58380942	-3.95792041	-6.21011715	-7.51163949	-7.70388486	-10.699329252	-9.29333550	-9.78583795
## 340	4.10717623	-0.18875421	-0.40548171	-1.79122151	-4.52466029	-1.308929380	-1.53316170	-0.44327481
## 341	9.61642717	5.48248907	1.25797123	-0.41611898	-1.80084462	-3.732715391	-2.12159516	-4.64345809
## 342	7.77921411	6.06190247	1.81135966	0.99160243	-1.34030528	-3.340170490	-1.83461306	-2.89935514
## 343	5.53650858	2.25084296	0.38157623	-2.17057178	0.25400410	-4.273301312	-3.28334050	-2.05492614
## 344	5.40563234	2.48059887	-0.74819842	1.17456584	-4.64871831	-1.313387783	-1.72708239	-2.75450959
## 345	11.31993997	8.46366973	4.52553722	4.89976129	2.46052018	-0.091245519	1.05234132	1.47727697
## 346	4.25255358	2.21039071	-0.72685663	-3.70314892	-1.10282935	-4.367213371	-2.90475408	-4.32596438
## 347	-7.42122226	-10.77085361	-12.08482446	-11.83052928	-14.78096251	-11.477146346	-13.00504615	-14.62881332
## 348	2.76325574	-0.39200201	-3.74215233	-1.05915261	-2.83341042	-3.811195044	-0.84934402	-0.76393807
## 349	9.16001628	9.85612346	9.27928619	6.67575838	8.86584473	6.316062715	6.92588226	6.27814477
## 350	4.58880434	1.71620562	0.34600584	-3.49312917	-1.58534607	-6.688335241	-3.68764557	-5.44551833
## 351	22.01707110	16.76958732	15.94951423	10.97646661	15.78830969	12.491981639	10.53596017	13.00245894
## 352	8.19412675	4.58595156	1.77011060	-2.82673190	-0.39831236	-2.247865213	-2.09445128	-2.36780875
## 353	13.03559278	8.40023037	8.90253545	7.25980009	8.20158265	8.932458383	7.70495468	8.63074750
## 354	14.04024286	9.52958098	9.40565456	5.93001217	1.80996725	4.587245697	2.37537001	2.37121141
## 355	8.06371376	12.43740341	9.08248713	7.82572135	7.91733813	6.123037142	5.37397371	7.78730077
## 356	18.69279680	20.08784108	17.90666220	19.25320067	23.88192990	19.476744884	23.41810886	20.01311363
## 357	21.11385468	23.06908083	21.47413735	22.90680241	23.06403662	25.181547878	25.36666875	21.86439256
## 358	19.81847683	21.62049197	18.46972129	19.86999812	24.67965808	21.648730385	23.75579076	22.23065953
## 359	22.58085942	22.28678507	19.33398591	21.96929322	20.84944571	17.873652815	21.93163983	21.62180636
## 360	24.53932592	21.46866374	17.00570270	18.02141843	18.06779453	19.394018904	18.65487905	18.46458979
## 361	13.93038217	13.15564440	11.37553114	15.24139376	17.75813901	15.716801524	18.08698956	17.62543955
## 362	19.34348365	20.25120850	17.39518101	21.61594882	19.67308436	20.022689182	21.99093105	19.00018703
## 363	23.82961293	21.71588489	17.14260943	22.17542668	17.98380690	21.217014298	20.68362611	20.90182605
## 364	15.68162757	19.33013953	22.19119991	19.56015631	24.06832711	23.156198106	20.95864246	22.28808449
## 365	21.29748476	24.05632641	20.48477977	23.81254528	23.65050397	20.916455436	21.03107408	20.71291302
## 366	16.85230457	19.50828083	18.55284308	23.01500051	22.08193621	21.517280664	20.61103300	21.32995741
## 367	23.18330121	21.43292883	21.14463640	24.07084401	24.16256398	23.835286965	20.66705504	17.34090389
## 368	14.88174134	17.31189437	12.94128389	12.21956527	14.74156975	15.718116682	15.42293776	17.89752316
## 369	16.11363623	14.31729986	16.37195067	20.71563830	21.37413655	24.130521212	23.01382836	15.68024330
## 370	14.69082553	16.39303401	15.51506171	14.15850254	18.97392662	19.288621715	21.15610885	22.89472221

## 371	25.35147678	24.29866905	22.98434688	25.18227149	25.32738724	22.140228120	25.37786429	23.88879443
## 372	13.74038454	12.88229400	12.50599584	12.43741142	16.75872039	15.865895561	16.84306384	15.80928898
## 373	9.88388657	12.02491322	15.05036191	12.38498004	17.31946498	18.322790075	19.49079844	20.87629374
## 374	19.29017113	18.97970267	18.65103604	16.00610717	19.31570417	17.107776881	15.85006861	16.77566712
## 375	12.70762264	15.01763755	14.09982477	14.66543790	16.64953528	16.750784784	16.05736599	17.78314190
## 376	11.94886052	11.27990694	8.26505064	11.17270411	11.48915902	9.393619119	10.76550506	9.28784482
## 377	5.29316353	5.41339900	2.47376282	5.02713816	4.37424698	3.705571414	5.58150194	4.62479911
## 378	15.54418392	18.08258689	18.19082260	19.69923680	25.03387241	20.970217678	17.40737738	15.95453872
## 379	15.17870242	15.58137945	13.57910981	14.98350033	16.37678442	17.592144958	18.17021982	18.39918094
## 380	21.06241880	20.53418746	18.79095155	20.35517290	20.44066555	18.188589064	18.33217802	17.54384462
## 381	17.33430830	20.84817825	14.44384850	17.62856265	17.66272673	18.352942272	21.60042967	20.27693574
## 382	15.14908591	16.79445277	16.58926458	16.02250576	15.76785801	17.407853489	17.51024539	18.74382565
## 383	16.98170526	14.58058260	13.58643529	11.99272171	15.26569429	13.962376361	12.82198317	11.58349970
## 384	24.78241679	19.37382255	22.25626827	25.43559689	22.54067964	22.880622463	26.99161613	22.82122267
## 385	15.91461969	16.29179075	14.99605851	14.74436674	15.99192988	13.694133824	18.05476005	16.09884264
## 386	9.80170595	12.95459307	7.55753273	9.08633916	10.43320989	8.053010975	12.62882512	8.81578019
## 387	26.60827671	29.37715003	27.77853044	29.62887989	29.34293213	27.709888924	31.76950961	31.96000378
## 388	19.29280059	29.90938357	30.93482557	29.09817763	30.87959072	28.668098903	25.71850119	25.35527529
## 389	18.41491028	21.29113316	20.66285821	22.89024603	24.98251301	24.067267496	19.68629319	14.80469498
## 390	18.07081161	22.37953975	19.43389504	20.40976374	22.21577530	19.127027040	20.45763251	19.20508677
## 391	6.69966207	9.94142182	7.39285713	7.54441060	9.35388634	9.414564248	11.29293184	12.27397007
## 392	18.49869024	18.53983066	17.18706047	16.64278653	12.57854882	9.664870042	8.21533530	6.32633167
## 393	17.86965652	16.63088183	11.93504870	14.08505995	13.53914848	14.581461889	16.57533466	14.93579821
## 394	18.57760289	17.60518125	13.37243746	15.78106794	14.72791773	14.887008761	14.72638859	14.48358004
## 395	18.11828674	18.29409269	17.45849442	20.97556178	18.28351650	15.674386219	13.29069522	9.75475162
## 396	13.35248493	17.33867194	17.91158807	16.49729840	21.62879700	23.238012712	24.30289854	25.46538096
## 397	1.95377799	3.83675143	3.83354953	5.94033388	9.04271220	10.264393585	6.72280262	11.78061660
## 398	2.38011231	4.40423527	6.20209590	9.75947788	7.44979941	3.525626009	4.02421493	-0.04504410
## 399	14.71169974	14.37402048	10.13860052	13.39170502	13.30164221	13.685307202	13.94191945	14.53994500
## 400	7.82930925	9.48195333	9.87527195	8.35286446	11.72610479	13.085321004	15.79465472	14.20061547
## 401	15.46702540	18.61307131	19.05353894	21.15564577	21.35098365	18.711832180	19.90483064	21.85462356
## 402	13.20058978	12.57327926	12.82962971	12.45919898	17.45932841	14.904506370	17.95903373	18.68935481
## 403	19.67512078	23.65937693	20.30979868	22.96103899	24.70274712	24.046875787	26.59648973	26.57562421
## 404	2.06509221	4.81346397	3.95822630	2.06914840	5.04511348	6.026295695	7.51212000	7.26868148
## 405	10.54829125	16.37633886	14.84221752	13.93644919	17.57926319	17.777637865	18.99923398	17.13387195
## 406	21.80985636	19.47430204	23.29783742	25.01717189	23.46134458	20.469729218	17.13906763	16.71790852
## 407	25.99493969	27.22143000	24.29714752	23.10631789	24.06497559	27.572411942	28.26899517	26.70134844
## 408	19.79589578	23.84859034	20.94301500	22.27123838	25.68301005	29.551068065	29.27886282	32.72097232
## 409	26.73811366	25.31757404	24.16366085	27.61707537	25.26025991	24.982159671	23.82753063	25.19090124
## 410	11.43690327	12.57547075	9.13698486	13.96800794	11.18047146	8.378463071	11.93900231	9.58457135

## 411	22.92292015	22.76674044	21.12937399	21.00584937	21.73442598	19.022666836	20.99759217	22.56390160
## 412	15.41623596	11.61234281	13.56427923	10.58089706	11.52872715	10.493492769	12.44423352	12.92152020
## 413	16.24186745	18.46896936	17.90612278	20.05717104	16.72933052	16.904590507	18.22695479	20.93766514
## 414	23.18393148	23.80800795	22.22509494	17.82372331	21.86218517	21.119248436	22.04546139	20.25125811
## 415	21.01361580	15.60552032	17.50159467	13.52100979	19.92986429	16.719617994	18.96200414	9.65871418
## 416	26.16189387	22.45951005	22.46820576	21.20052559	22.36921852	19.780323193	22.39327154	18.53504662
## 417	21.84470890	18.93119187	20.62091952	15.39964375	21.30308040	17.086278647	20.80311830	12.50808962
## 418	32.10848665	26.48943237	25.45847830	19.95600516	20.89437590	19.436506062	22.57087025	18.59539250
## 419	21.91873364	26.34955240	25.82513426	26.30072466	27.10717232	24.883616303	24.34902458	20.04363016
## 420	24.26759502	22.36553737	22.67370132	21.87732419	20.42660284	21.449792350	21.87658146	21.36364584
## 421	20.16818968	17.03402429	18.87214889	16.53835308	19.98157706	17.713143747	18.85047584	18.90435024
## 422	18.95774833	15.31361611	15.78225175	14.99727229	18.52380445	18.465948867	17.75685940	19.10646360
## 423	19.45501673	15.44576660	21.38095406	18.45612610	23.29451087	20.411560452	20.83146162	18.47817656
## 424	24.76397089	22.59416087	23.46652500	24.35136058	25.87204407	20.560528342	23.55267120	22.15755155
## 425	20.27890277	21.79937053	23.64905120	22.62973385	22.14537437	22.474019394	20.13618012	17.34761819
## 426	20.81138673	22.30120616	23.02787890	14.65052625	18.63591049	14.072399786	15.37119379	8.10375204
## 427	19.05514746	15.40896457	17.54915736	18.68770142	17.62726598	18.513389598	19.63857752	16.65460118
## 428	12.85855549	10.88788465	15.04840061	14.06620922	18.15595794	13.553069205	17.03369254	15.48943181
## 429	23.34899164	16.96959844	18.94970523	16.83917235	18.45871782	17.386408405	21.51743015	16.59270527
## 430	18.74051830	17.25465667	13.53575053	16.82764240	15.28282868	12.652372719	15.44425945	14.76663275
## 431	14.47841059	14.39344400	16.39339105	16.30637901	17.64614872	15.616286730	16.39240866	11.92490084
## 432	16.92190785	16.89792853	15.73917170	14.77478463	16.88246169	16.075019932	17.63422234	12.05146694
## 433	14.26211583	10.87200563	11.60546625	9.75120752	12.77107185	11.304813989	12.66729368	14.31446673
## 434	17.19245576	13.39902671	17.47066773	15.83844683	16.64144349	11.960460140	16.10034163	13.05711680
## 435	14.08764580	10.28742473	15.71259415	12.43992753	15.02221748	14.156645012	16.16679591	16.17497661
## 436	13.86170381	10.07789010	12.03416086	10.57115181	14.76174808	10.780671000	13.13188158	12.99072248
## 437	16.82622644	19.01352176	19.92236928	23.00117518	18.12747907	10.512417086	9.59522238	6.00158791
## 438	33.54897635	27.49574856	27.75888712	23.78642422	21.97594527	21.872885660	22.19508671	19.67022411
## 439	22.25219454	17.45641977	16.71654602	14.06062603	17.91474292	15.291389795	14.61143996	9.97511534
## 440	18.56983655	15.71440921	16.41549139	16.73622199	16.37424470	14.778544081	12.51953246	12.70738527
## 441	27.36400043	27.83012939	23.83151157	23.07268667	22.17184702	22.270820333	23.37999053	18.80799441
## 442	24.69227114	20.59581301	18.80134133	18.77499567	20.52817138	17.764848002	18.40860436	15.50137399
## 443	16.74748870	18.20546965	18.10959525	16.54947334	18.47114540	14.030767394	17.66775289	15.47311096
## 444	20.66228337	21.57519269	21.08726737	20.65789861	23.40566060	25.566580477	26.56071446	21.83062637
## 445	20.45248010	19.12645974	20.63955865	21.94470046	24.52229394	22.891837971	24.89923374	20.27025391
## 446	25.57481899	21.21994445	23.73410258	19.09585351	20.19632939	20.929475754	24.04761104	19.10315596
## 447	6.14263245	2.96125903	6.03946041	3.16017630	10.86647680	5.239286494	9.68649288	7.43185424
## 448	8.57222089	3.76400011	8.87719989	8.31658373	9.37221623	7.587382817	8.74302688	6.81857749
## 449	16.28765358	9.62951644	14.18314880	11.81804877	15.87135588	13.353458584	15.47312753	14.13022151
## 450	17.48439960	12.91634493	19.03624049	17.42693682	19.55851846	14.344943052	17.16556955	16.55160948

## 451	12.07563605	12.44557840	13.60716556	17.16331899	15.41629940	10.477168163	8.07054131	6.27305482
## 452	21.61967731	18.98080045	13.34693210	14.24464324	9.64697356	13.011493395	11.82464710	15.14132423
## 453	19.53774204	16.99451175	19.43316277	16.67363738	16.44820785	13.017364691	14.86506034	11.77780602
## 454	11.99688866	9.54388076	13.08041251	10.42833486	14.14385539	12.786426366	10.95883228	10.44908264
## 455	10.32739231	5.23566550	11.73204635	7.13894177	11.04292841	9.105933533	10.06449831	9.40706692
## 456	8.16645767	5.41352235	7.48436187	9.95008523	13.35532281	4.974000487	9.99439608	9.73720335
## 457	19.36145875	21.48991210	20.03279555	20.12634679	18.62098019	16.386826504	20.25052665	17.97655447
## 458	23.77953609	18.01205979	20.14764647	16.33533941	19.86631892	16.154430637	18.43566786	14.35364259
## 459	22.34808485	18.74442437	17.52924529	15.95407149	20.51653771	16.297667424	17.64630693	14.30477442
## 460	20.08397345	16.68538597	13.35816966	9.74157811	16.66170230	10.047643510	14.96313877	14.27270859
## 461	11.30613211	9.12282214	12.50145073	11.34737880	15.04495552	16.355732693	22.57410730	19.20734394
## 462	31.27126321	27.18520002	27.72645138	24.76400452	25.34123301	19.464936298	20.07038405	18.81812864
## 463	14.78037709	10.74263020	8.11207117	6.35722060	10.64141337	8.943268046	10.38341069	8.01020040
## 464	14.36436293	11.91752768	14.54009839	14.35701191	16.54623132	15.287356863	17.23383285	13.38782175
## 465	15.45962027	12.92966578	14.24915153	14.77318590	18.53401203	15.093088336	18.63374074	12.83780088
## 466	22.88434040	17.98770206	19.77009535	16.66636559	22.65250349	22.079078501	25.13703082	23.60138758
## 467	15.03917653	11.84750145	10.72432626	9.21023639	15.63102313	8.895954164	12.70850981	12.42005161
## 468	28.92311962	25.74246974	26.86803411	25.03921855	25.73383575	19.804659523	24.35401118	23.14451257
## 469	20.18447651	13.87144121	17.57731264	14.14989972	15.92760479	8.007878299	13.78532147	10.09994859
## 470	19.77697613	20.09874433	18.42135775	18.72139151	20.33682475	16.693871411	20.44190788	18.82828115
## 471	30.97972996	22.01600194	20.39892228	16.89217462	17.70372121	9.433594786	13.43217614	14.96815120
## 472	17.05650496	14.81487281	17.41688510	13.94616116	14.70948424	12.941406778	17.17878212	22.04508611
## 473	21.33906744	21.48770524	19.50227806	18.69977961	18.98059535	17.872037201	17.03395063	18.89385220
## 474	18.97312763	15.49740267	17.96499462	14.45908616	17.28876565	12.359271138	15.67266321	17.25441037
## 475	25.36493436	24.41187890	20.03232040	22.49411167	25.09354021	22.796509904	17.99520654	20.78668128
## 476	27.02324675	24.27451062	22.49617191	18.71571270	21.45833318	18.768145844	16.93320524	19.53337063
## 477	19.24555879	20.10364627	21.06349855	16.46944159	20.29266658	18.044948930	22.89392501	22.84912877
## 478	23.60580153	26.43471963	24.21718220	21.44871223	24.08616914	18.801772464	17.65932820	17.08552986
## 479	15.52002962	17.86179972	15.83484157	12.62101198	14.55409638	15.291805388	15.23418542	19.14735985
## 480	20.81997418	18.27479845	20.69069040	21.04492578	20.19362883	21.234704678	17.63594999	15.63307808
## 481	19.94938590	17.41031655	22.04087617	15.93028666	15.98629894	15.411595753	13.18760989	10.15541981
## 482	18.49821758	19.03449881	18.57600226	16.50264547	19.94805272	13.783925314	17.99868797	20.29202004
## 483	17.44594093	18.56611334	18.65909369	18.56478078	21.78635815	22.310223337	19.37370207	17.06470513
## 484	20.78175445	20.08310285	19.24038659	19.29635214	22.38987115	19.532121549	19.17764088	20.37975201
## 485	16.24480471	16.22128300	17.75431448	16.29605648	19.26320015	15.976948819	19.21330655	18.65627876
## 486	20.64215368	17.80074220	15.54967055	14.43485572	17.12241070	14.409419276	8.31601323	7.50135277
## 487	17.02208906	17.01418200	16.97993595	15.57962463	16.75621441	14.921957790	13.74642651	15.19865662
## 488	9.79508120	8.95767034	12.41598349	9.74695377	11.91396232	8.329845083	10.60867398	15.47485910
## 489	11.39787182	12.69096992	9.54402413	8.90584421	8.59247515	11.784740652	12.56933665	9.19582291
## 490	18.78771034	18.62052991	18.41688149	18.41700149	18.66367160	19.931892768	21.23189779	17.32047800

## 491	22.22086021	21.65206134	19.51454917	18.41538406	19.39667567	16.261364039	16.01969859	16.14660049
## 492	10.82654045	10.79915629	10.76059863	9.67721018	8.60766458	12.317826986	13.92775282	12.14416553
## 493	16.32158372	16.56118722	16.01539687	14.06276518	14.80585960	14.258905736	9.17932564	8.89988439
## 494	19.95642289	18.79609386	18.28455885	14.37996392	16.89541095	16.520142149	15.34635401	16.16501060
## 495	21.79828511	20.86992372	18.29763898	14.87504278	20.20973950	14.994829869	13.41765740	15.43573953
## 496	16.51464634	14.63612881	10.81428066	7.83671327	10.04640867	10.969264569	7.99013116	8.70286603
## 497	18.73642928	17.92048065	19.22880390	16.36758612	18.94576941	17.320941556	18.80563173	17.29393168
## 498	24.04551663	24.08871047	23.25995525	20.48452777	23.31213563	19.232729437	15.81045874	16.32532976
## 499	23.08617633	22.72315156	19.17843025	18.67060066	16.84928060	16.475785215	16.91759242	14.42093447
## 500	23.13073035	26.41563248	19.83886123	13.86550452	16.46056669	16.859366922	13.71828741	13.70990789
## 501	26.90200088	25.46234521	26.34481990	25.19495335	23.16160096	21.883218398	20.81530761	21.57314208
## 502	25.43237223	22.88810272	21.29500683	17.37207646	18.07843590	18.941898639	13.99149459	17.97554633
## 503	14.39854555	13.11982356	12.33255991	11.46146920	8.71431654	11.093341709	13.87533078	13.56487232
## 504	21.34469824	20.55393684	18.95634350	12.38517807	18.29132029	16.537631070	16.77164365	17.71582140
## 505	14.31624599	16.47037558	13.47266599	12.58197560	11.48838343	14.467290559	15.68878343	17.35993647
## 506	24.42897162	21.33543209	21.14814040	18.55750296	20.06494243	22.678817702	19.22721293	20.09938474
## 507	10.80757566	11.45613578	9.04488817	9.13228987	9.72600102	13.568587115	13.97935685	14.44445685
## 508	14.81106982	14.69472558	15.56177709	14.29512489	15.30015962	13.693360298	16.51914403	17.07912221
## 509	9.39626248	7.81643069	10.15757114	10.72336490	10.49432197	12.534368239	10.81269492	9.46208491
## 510	14.69797164	12.75177955	14.15974897	11.25643636	15.00578114	13.103426375	12.38676378	9.92015009
## 511	12.12981705	9.86406202	9.00742278	10.05979284	12.17504416	12.863449266	11.86724887	10.72116710
## 512	18.76504540	19.06064081	15.47505965	14.40997759	14.80777151	15.793930663	15.14057871	12.46906784
## 513	18.16959802	17.90435381	16.03581155	11.94582001	12.74150115	11.114374647	9.58630155	10.46820095
## 514	12.78916444	9.16452941	7.24937760	7.93404022	7.61191893	8.047103155	6.65371767	7.47462535
## 515	8.40768536	9.47384328	7.64547464	6.15192002	8.22909056	9.785776428	9.18681686	9.02108648
## 516	10.48753561	7.72283531	10.90431015	10.03332851	7.59973283	7.737762835	11.38221586	10.22535676
## 517	13.74072972	11.39880319	12.63076074	8.92397814	12.74125115	11.162206679	9.95714852	10.22219698
## 518	23.58856536	19.41094853	16.02141783	8.40802857	8.02357745	9.711759608	7.49553365	7.18582715
## 519	18.51203199	18.65351410	20.88556333	18.31616344	16.30951060	19.305103697	18.81502201	16.72246786
## 520	12.58792204	9.73717194	8.69454963	7.71123198	4.28155810	7.713467412	9.86298224	11.83678400
## 521	11.04881624	7.30968536	8.74063092	8.70251526	8.95659898	10.327403558	10.20070173	9.64941348
## 522	20.01138153	20.54946977	21.13741626	16.83050414	10.12968296	12.031796972	11.73715928	9.66750567
## 523	8.70866928	7.38685105	6.91409394	7.21042526	8.21176757	8.027977271	5.23887116	6.50265910
## 524	9.43541823	10.74824172	10.07027114	8.44511487	9.68709829	12.091965276	13.20596915	11.63108272
## 525	13.04616477	13.80404926	12.87500305	10.73296193	13.20237030	10.836769787	14.01513323	15.86531303
## 526	24.12683789	22.23661209	18.62018357	18.53573776	21.78177420	18.323495011	15.87780402	17.36763157
## 527	16.56392057	15.73472641	13.08616230	9.19513586	8.95569715	11.184490027	8.38964127	7.49224251
## 528	25.92420762	24.33608392	25.55639543	22.11052548	26.24244738	24.614253066	21.57873212	22.48594580
## 529	14.98881082	15.01354289	13.77629852	10.31289704	10.20199293	12.525400923	12.48219249	12.84739660
## 530	16.80407437	17.40406694	14.60276400	15.72839906	16.75572826	17.567094518	14.08763999	14.55933289

## 531	15.28456700	10.31820326	10.99794677	11.64382188	8.86530802	10.901954340	9.25387071	7.26564921
## 532	18.51604373	21.66414241	24.26202638	23.12918223	19.37893714	18.552662856	17.84749952	14.10220588
## 533	28.08661322	25.99835824	27.36653274	27.44674441	26.58128168	28.208519814	31.39441023	28.44841177
## 534	21.75620828	23.64588023	26.56387903	23.25052145	25.11209106	30.203058242	26.35936196	32.11136387
## 535	24.05818068	24.37957521	23.81601300	24.62842286	24.98690084	26.135998999	24.72900489	22.87265956
## 536	26.39649684	25.97381857	28.51484175	28.82797136	25.96643417	28.273695345	25.53317753	22.28895575
## 537	21.12654681	21.72642972	23.30108910	25.15222023	21.05856049	23.286635070	20.52204324	23.74757384
## 538	22.95561590	22.52710733	26.53613727	23.38389366	22.95576888	22.525589020	21.30635911	23.23717906
## 539	22.36454871	21.39364005	22.64716635	23.04214982	23.81410420	23.202422058	22.44912978	20.46675400
## 540	23.34047653	21.99875483	24.16435994	20.54250420	19.73100778	18.162961042	18.77050740	15.20557425
## 541	26.51879747	26.13760211	25.26477250	24.78408386	23.12693477	21.962878902	23.23447902	20.70858124
## 542	20.94256600	20.46174914	22.61374137	20.97403926	20.01591772	19.732531337	18.71494469	16.72329464
## 543	23.41111878	22.69166803	23.34826380	21.41606560	20.44768291	18.368812306	16.79203526	14.81700602
## 544	20.99949360	24.62799645	27.24846969	25.33963938	28.18704742	27.029308142	26.74599904	23.66129509
## 545	26.01297659	24.73478956	26.28473477	25.19432625	23.49413537	28.714390315	26.89051786	25.33145172
## 546	22.94661458	22.26787476	24.64255723	26.49929842	25.64467558	28.325956691	29.73677862	29.75078804
## 547	18.28918579	18.10910625	18.05165486	17.78873634	16.62446528	16.597507768	17.28911921	18.16173102
## 548	19.86307437	20.29730972	19.69900565	21.19272192	21.16464599	18.250445698	19.15886288	16.70701000
## 549	19.06993273	17.81635660	19.84775044	20.22313881	19.23277808	18.091260076	16.42718818	11.86280594
## 550	14.74060433	10.92405523	12.22498650	14.41486329	12.76783072	11.686341255	10.28379986	10.16021180
## 551	17.94290104	19.78147823	19.39940386	17.08067409	18.31866286	16.910098857	16.11830665	15.66581630
## 552	16.23837675	14.92938866	14.66554750	14.45862337	17.69321037	16.529977629	17.84645989	13.32222982
## 553	21.06109946	22.54969380	23.88895522	22.20675545	23.43038935	21.121647594	16.54797109	18.87350262
## 554	12.85216219	12.06572316	10.12800703	9.45080950	13.62822495	12.446884662	11.64457336	10.52161669
## 555	19.40401208	18.56920402	22.16628588	18.80987435	22.14472070	22.604431783	25.65154074	25.92687765
## 556	25.46508013	25.51838622	23.73942086	22.68908632	21.97492728	21.742115973	18.76756842	18.36426145
## 557	26.11883742	25.91010419	27.01535163	24.51065840	27.46461681	23.629889847	22.08639458	21.34556883
## 558	20.24358628	20.13092776	21.39739275	16.45902838	19.91122738	18.821911095	15.52359049	15.13598407
## 559	25.56550512	21.54722995	25.34286244	20.07212267	21.27825439	21.207775170	21.64023871	23.83979624
## 560	32.97944131	30.47290464	30.09338610	28.81107941	29.73290372	25.333464288	26.41437245	25.29391436
## 561	19.02521240	18.38250904	18.58154135	18.34486802	16.50875598	20.295343467	21.39280618	20.53385340
## 562	21.42606220	20.10826461	21.82225913	20.99792453	16.89408617	16.195497452	15.95920661	13.85224697
## 563	23.83809661	21.38742508	20.77745553	25.67808679	21.47967852	25.682751711	20.74894187	20.87910626
## 564	31.07165099	29.80548704	30.64011774	28.92417167	26.59796040	27.412691076	27.34378506	27.76238123
## 565	17.49917887	15.17788176	15.23785136	15.27185916	14.74586600	16.913007199	17.21870078	16.60414025
## 566	13.86404654	14.02211806	16.48785916	14.32157776	12.80919251	15.647051329	13.66882314	14.93239403
## 567	16.13874005	15.71951908	14.83404008	15.50481542	15.74738337	16.123216111	14.63782494	13.57545869
## 568	22.36074904	19.58598240	21.30654848	21.78689107	20.58145991	19.776916431	16.26615856	16.03126984
## 569	14.25203808	13.59234165	12.29806208	13.96100532	13.72970898	15.569553916	17.23538304	18.45520564
## 570	24.92974182	21.15164294	25.86375040	25.45068172	23.38404651	24.097060360	21.02056335	22.49832825

## 571	28.22673220	25.30159434	25.81701867	25.69277827	25.75367627	26.547780883	25.84428325	24.00377364
## 572	15.77440136	14.14816500	15.63454790	14.62250138	15.03916187	15.952346511	13.83247646	12.70016086
## 573	10.90446728	10.60880959	14.57268154	11.12711158	13.63728683	14.116738437	12.39365791	13.26708774
## 574	16.22064647	13.78934224	16.69555473	17.58165286	19.65241705	19.588599921	18.05603962	17.28512749
## 575	16.60240669	16.12456262	18.01002480	14.70171037	14.99755684	15.632230867	14.39660328	13.43453224
## 576	17.29061176	16.49109048	17.67552074	14.45492786	14.71696602	16.253254593	16.13943174	16.15922957
## 577	17.41776265	11.05450803	11.19397713	9.17534552	10.66356085	11.720273699	8.90999054	10.83110623
## 578	16.99118359	14.96727478	14.07222054	14.48830422	14.87248586	13.870895923	10.41186857	12.90416857
## 579	5.96429871	6.06480038	7.52789991	8.79605306	6.57493181	7.668760380	4.79677286	8.94521797
## 580	24.69554826	18.83551621	19.46385706	19.28984362	23.33941193	24.546888616	25.64351750	29.12601219
## 581	12.72516021	13.20727067	15.64037391	10.93707773	11.28545553	14.354078559	14.08001913	15.17001563
## 582	8.09954717	5.07854284	8.82929952	8.40092165	8.59905119	11.465470088	9.31110894	8.92485087
## 583	13.02831348	13.34440413	15.81460726	15.12611805	17.38345834	20.011967425	17.23134452	14.66695763
## 584	31.13555738	30.12511796	28.39935150	28.38153274	29.45841009	27.959984866	29.36210906	29.36244237
## 585	18.05068353	16.13556522	18.25113001	17.54130601	15.93666439	17.313807477	19.52975095	18.35552812
## 586	25.55107130	26.88314894	29.60441548	29.15121283	30.38774797	29.733756071	27.58965608	29.49507383
## 587	20.38312088	20.27126379	17.94210193	16.35613080	16.36797629	16.461546472	14.63783321	13.99786333
## 588	21.53066660	18.42255063	23.45561368	20.79228222	20.61449832	22.419220873	21.42360531	19.09765920
## 589	16.05808820	14.99794908	15.65558178	12.01303264	11.28937053	14.341762796	15.04243586	15.84007236
## 590	21.02031077	18.12014834	15.07958417	18.40741907	18.30873484	13.269392773	18.78657883	26.78373411
## 591	28.38039359	27.63255128	19.13297627	21.97316916	25.01383692	22.083440170	15.54854892	26.06954290
## 592	17.69920340	14.85804902	16.18571621	20.60095345	16.31343679	10.322102767	23.94584307	21.95055549
## 593	27.65146107	27.72277530	17.97789663	24.30946203	27.80403721	20.963001961	13.91722470	27.16425873
## 594	17.12441825	13.63655743	16.94764527	17.91577019	15.03929834	14.466081416	9.69543626	15.28865279
## 595	24.39036027	21.45475268	20.90708712	23.60504888	26.98516700	27.318988005	18.90008587	24.19269193
## 596	24.80305374	23.99151599	17.16549298	22.57964023	25.31419496	22.240002216	14.70221295	22.49512434
## 597	16.49154109	12.29337005	14.45348300	21.64486434	18.05990395	8.553260557	16.48955152	15.49004542
## 598	23.71196279	25.40332619	18.48016091	23.28676612	25.50921473	20.687200091	16.06447195	15.01193118
## 599	19.41140800	18.99015159	13.95879031	19.84750155	23.08755414	17.701897705	7.84577888	16.34387383
## 600	16.63052355	19.70291560	13.08161179	18.66311424	21.94731762	12.607369114	18.55238133	19.02977496
## 601	23.34507150	23.63565259	18.33402321	20.04494210	23.21245756	18.828113801	11.40805108	14.95381558
## 602	14.57055783	15.68744169	14.82747886	17.32066432	17.09622153	14.273553271	6.08454800	7.43596926
## 603	14.99201878	15.56722110	15.50147338	22.37965312	19.44545017	14.663971696	22.65256753	23.58634292
## 604	17.54654744	18.64048546	16.95401089	19.16024598	16.40608083	14.250583678	12.05476741	13.67629989
## 605	15.29366062	8.47383674	19.79970327	18.45108524	10.77913155	13.048119955	16.34998310	13.78146875
## 606	12.85171594	13.55211560	5.39841466	10.35046680	18.62694502	15.935756100	7.64557887	10.52584245
## 607	18.89388535	18.75716305	11.79036338	18.22873238	22.81009382	13.385956530	8.24591257	14.47925585
## 608	17.57526414	14.08597829	17.45619742	17.44186374	14.28277066	11.285435395	15.18126616	13.06181222
## 609	10.43207608	13.89081578	10.19077047	11.61331445	17.48250930	14.325052133	3.91325778	7.05200404
## 610	9.08389783	10.30575862	6.53269097	11.50677971	15.47206763	14.027527273	12.20131415	17.72409737

## 611	12.79301881	13.65699004	7.75339946	6.18955077	15.20779095	14.100663123	8.48592080	6.83052961
## 612	17.87860920	20.64372583	15.49642714	14.55354572	21.91559401	20.089952399	13.21040649	13.21399438
## 613	17.23728618	15.62625081	14.70479194	17.01851724	16.76617065	15.001106871	11.44657360	12.58024579
## 614	16.04085094	14.75980817	12.32662977	16.65719106	18.74418805	15.961706940	12.72463725	13.11921467
## 615	10.00080416	14.06511073	12.19319625	15.36181743	16.78427748	13.314229125	15.33747754	15.28271777
## 616	18.01698186	14.09122222	21.22322367	21.45493338	13.60838014	10.522425828	20.97356438	19.08302259
## 617	17.57735037	19.50107984	10.96413198	14.01953500	18.37729189	15.094679351	6.74356728	10.15625122
## 618	20.48090809	20.66033717	17.81290485	18.71454434	22.43896919	20.947690404	13.95016167	11.51440918
## 619	13.95417463	13.30117290	10.20300053	12.26617102	11.82420567	12.391962251	3.93749744	11.62577941
## 620	22.99137442	19.34714121	16.12760631	23.52175031	19.85572777	14.924467576	23.20084259	26.28215954
## 621	12.28488285	14.15451526	11.15676639	15.07847590	12.89309326	12.941158090	12.13414457	20.47244343
## 622	15.49044769	14.32622289	14.77333143	21.09208347	14.02583408	13.918004065	20.93178185	21.42107647
## 623	11.19109143	9.82726923	10.76325621	14.12905202	11.37187417	10.927638957	18.45131448	18.60070392
## 624	26.99896752	25.58010954	17.52402307	22.64247286	25.29863435	20.817393295	14.42541678	24.71523239
## 625	11.33892153	10.91039032	5.28532608	11.81415238	13.27122150	8.599489149	2.86741657	16.32796072
## 626	10.06155969	10.69317931	19.42370401	17.42838350	10.83370107	15.678757817	16.94681676	19.07366520
## 627	13.75661913	15.72285788	9.23883137	11.79107967	18.65796971	16.003752728	4.93874731	9.23727774
## 628	15.30795474	16.21083502	10.66364570	12.15996858	16.77777339	13.598757586	8.43654067	8.45393700
## 629	5.85297697	2.55964259	6.96730724	14.52326515	10.08672320	2.906075067	11.58807637	11.09002494
## 630	9.89486556	8.00794753	7.35714886	12.54067893	9.89722542	8.664763575	1.46005759	5.17738760
## 631	13.61328251	7.42877005	14.95476266	17.08349870	12.52261219	3.385127748	14.10395777	11.91580367
## 632	13.52609859	14.63968445	8.87974896	8.80944523	17.67742833	15.864283030	6.61877316	15.74537977
## 633	6.41611656	4.95385736	9.95227485	13.74355321	10.54541898	7.255030073	13.52820395	16.45326187
## 634	7.41303285	5.23946554	1.76043563	5.64363443	6.97824713	4.585534228	5.24467318	9.03688751
## 635	10.36753043	4.43896720	11.39212728	16.91098310	8.08265722	8.924602855	13.80679304	12.76099543
## 636	10.83785464	10.61709766	3.80422403	6.62799866	10.17319789	6.922946086	-2.95255866	0.41098626
## 637	9.50184944	12.91572906	10.39096455	13.88340874	16.73736324	8.493040445	12.88499151	15.57072116
## 638	13.78077873	13.01232146	4.30566508	10.82408446	14.57004255	12.037780692	7.38670941	10.70134636
## 639	12.29551397	9.57785356	15.67261511	19.50593313	9.73091938	11.376593826	16.66769747	17.07615911
## 640	19.95894140	17.00532256	13.54723319	15.29551125	14.68141394	13.180142361	9.06493740	13.94609012
## 641	7.02078062	1.00932671	9.94145480	10.52111046	1.39047035	6.249642842	10.49048011	11.26426784
## 642	14.22962098	8.72547810	13.16192888	16.79450429	16.47205440	11.108898951	7.79499902	14.54729434
## 643	5.32282856	6.04343706	4.91582187	11.67588929	11.18203243	4.964079485	8.20999825	10.28820396
## 644	18.84847483	21.27154734	17.98512365	22.58555892	23.49643204	20.998609402	14.06979111	21.19663219
## 645	13.40545518	13.59725896	13.63926608	13.64587686	11.98863703	10.205842869	6.73825528	14.16075035
## 646	20.37695484	21.19429420	19.60176460	22.98735311	19.29323979	21.449934627	19.59993645	19.64192052
## 647	7.51506035	8.96538353	9.26124238	8.22179621	10.58449996	10.739208939	4.90125000	6.6560164
## 648	13.52644003	13.90160291	14.34344069	19.53746074	19.12424683	11.407334432	17.05794287	19.65567669
## 649	12.07987766	12.45957168	9.56412842	14.83236211	19.13374744	6.208375230	12.13565778	12.49302442
## 650	14.35449606	20.14935719	21.20312753	22.39703011	22.11836052	23.436859885	24.58379813	19.05093199

## 651	18.54489975	20.40346874	19.62336646	20.59384810	18.51482831	21.185904399	24.60117887	23.60362420
## 652	17.83746536	21.98476571	20.80222978	18.58549136	19.26910955	21.801626725	20.20903300	19.78024570
## 653	18.17884172	19.69823588	23.64679544	18.57833082	17.28988980	14.917008305	15.95687175	15.13063921
## 654	15.89255190	20.97569451	22.95973758	18.93200878	19.17146391	20.567754505	23.03745032	18.30588466
## 655	7.06688461	11.67653038	15.16954060	11.35125487	17.04233032	15.525687344	10.83636748	10.18170191
## 656	15.27555882	17.71380075	19.95846126	16.31730877	17.32780538	17.149360707	18.11551549	14.83215348
## 657	18.28435234	21.64530297	23.01110106	21.44652697	21.23935607	21.179531454	21.61189206	16.77447041
## 658	17.68610234	20.01194105	20.05991155	21.80793956	16.25468877	15.366931219	17.64966406	15.73651712
## 659	15.55320168	20.11779340	23.89410364	20.61179286	18.91574504	19.229051398	17.63613924	18.27305874
## 660	18.79108022	18.07863802	20.95874899	18.10164519	18.76685030	17.623128410	16.46366295	16.61055961
## 661	16.43766032	18.71199947	21.13314793	18.85702304	17.05433781	17.468822513	18.59851914	17.04959175
## 662	19.96449672	20.47589518	24.28486168	24.38551846	17.38298262	16.041306113	18.11217405	16.80200325
## 663	24.90518669	20.27924354	20.93941714	23.18840187	19.93428702	16.846817056	14.77615408	16.67040022
## 664	18.34016864	20.24131219	21.47723790	19.61923994	16.34359760	18.017825723	19.23931111	17.36748712
## 665	14.40668368	13.88945445	17.51504429	15.42629049	11.78862824	11.742328223	14.18458757	17.17039321
## 666	14.07878095	13.58160794	21.93442119	23.46172056	13.20079179	13.512509164	12.89585919	11.91516607
## 667	12.70799731	13.29444191	14.04492929	12.71885436	9.12645163	10.435568599	13.73951441	12.82362242
## 668	15.38213902	16.82678001	18.42473881	17.96253686	15.40914032	15.615707888	17.85926810	17.05275612
## 669	15.04274050	17.23907934	18.66771614	17.98144634	15.75097465	15.907664788	15.39222536	12.47454649
## 670	6.56048765	9.09122356	14.05694664	13.76022308	9.51965039	12.823846412	13.15589365	11.29830765
## 671	12.58879125	14.36354997	20.50662609	14.76140563	14.53861677	15.773277501	17.12888068	14.75716744
## 672	12.94409992	14.90337218	16.67439983	13.54345756	13.58836068	13.177860949	16.64977010	14.14654665
## 673	11.17022555	13.66296962	17.07228640	13.15838064	10.90847114	14.812450100	15.32802941	13.32684299
## 674	8.80733863	10.93666356	16.04839513	12.83151946	9.01057916	12.899882074	17.38592009	15.43951060
## 675	21.15414935	20.82303340	22.99995923	20.87989379	12.78981529	17.166506400	13.65524433	13.44042729
## 676	18.07195255	14.65431879	18.14069829	14.17841517	9.95182573	9.884998031	17.19082168	15.23917707
## 677	16.68253238	17.68316352	20.06204122	17.04949233	13.64188007	16.287198930	17.91861795	17.27724924
## 678	14.62852080	15.17946672	19.45817752	18.93287933	14.60067828	15.311232217	14.98841158	15.87449384
## 679	16.17944979	20.49452636	20.95003825	20.66677957	17.87084508	20.313522664	18.85555189	21.22204341
## 680	16.27778964	16.05215668	20.74182032	18.74997925	14.95929949	19.838860933	23.19766423	22.37162668
## 681	16.04576161	18.71214838	23.32163625	19.55814935	21.95100937	21.923896480	19.66703735	15.61124396
## 682	16.25905552	20.26285128	21.44722840	16.48957302	18.42285304	21.833092327	23.37941199	21.11788159
## 683	14.51746885	18.15041437	23.76515888	23.14723730	21.40640094	22.987291037	22.46405436	18.81373685
## 684	16.71773640	20.99934763	22.80013414	20.06339560	15.85648551	17.850902326	18.57899913	19.27160894
## 685	9.89544122	13.88587106	15.17409194	15.17113628	11.12661950	11.171663327	12.23598539	8.96512886
## 686	11.50781876	13.88635354	14.88631189	11.00787132	5.79721434	6.628088176	6.02237108	3.59151637
## 687	11.56195272	11.73965638	14.77088278	11.95470344	8.09962688	9.313239895	12.28116248	10.72134837
## 688	13.56854602	13.38465297	17.82435110	14.33312587	11.58741678	11.234638828	11.89100000	11.72161746
## 689	12.17121720	15.03833075	18.54009700	15.09949567	9.83327620	9.864836511	10.52110786	8.37027561
## 690	10.00412869	11.36114059	14.85092508	10.39752378	7.54031444	7.591153627	9.21354300	9.00626432

## 691	12.61120635	12.68260798	16.41530064	12.06570969	8.72643652	10.270200404	14.15060806	12.71660314
## 692	5.65409564	7.15427009	11.47971859	8.77148871	4.22791369	1.842236592	4.18730680	7.20939355
## 693	8.02353057	7.36424006	8.83648560	8.42933163	5.36640377	8.940700442	8.18339484	6.79859742
## 694	7.51863612	11.69585299	12.94153974	9.02846579	8.55973091	10.075546048	11.23942079	10.41429342
## 695	14.44814732	18.25573786	21.24242303	15.31195661	10.57649075	11.965017703	12.91441589	11.41179259
## 696	8.10671501	8.05485769	14.28206724	11.21165075	8.12725467	10.143911161	13.29088785	12.65078476
## 697	12.78273369	10.12100247	17.49223942	16.79191757	9.89937979	12.422825892	12.93641925	16.19801825
## 698	13.35398761	6.52227757	12.21662823	15.01226061	12.72467105	11.882196318	9.48660109	9.57935046
## 699	10.71878101	18.12237266	19.67562823	17.56260075	12.63072714	13.131023577	10.64221083	8.31589951
## 700	10.23867089	11.55271651	13.30202854	9.59200270	7.52906230	11.539234022	13.69489455	12.19806325
## 701	8.75941616	13.92082662	15.55494622	12.67184874	8.90067606	9.402529994	8.84088183	8.37591247
## 702	12.72869220	12.20164130	16.91749940	13.30600849	10.67445478	10.354379405	11.99514489	10.53055843
## 703	12.67439279	17.79236965	20.30635470	13.54937319	14.86921263	13.578313103	11.01015211	8.15809150
## 704	19.52696445	15.91723357	19.54215084	17.50505233	16.33712157	15.406276448	17.07188748	16.14558637
## 705	10.03962974	8.78210214	12.37220403	10.26384946	8.17721545	7.016590879	10.28581304	8.98294582
## 706	21.53081405	24.88637233	28.78536671	22.28765404	17.74371057	18.702410535	19.11924531	18.23763069
## 707	9.57972849	10.33800383	15.16953287	12.42649381	8.70993555	8.384582626	9.33278340	9.75287129
## 708	15.14793176	15.99955226	21.88337185	18.70027528	14.64137575	18.718631293	18.91294780	20.51998466
## 709	9.14899921	10.28831126	16.47514274	14.41385617	8.19535705	13.338710727	12.43975494	12.86180311
## 710	30.01440949	28.05502487	23.82255949	29.02070779	30.28433010	23.48418100	29.58486568	27.55512078
## 711	29.63452042	27.77897014	22.21707852	25.70490562	25.69640180	15.322852993	21.45350835	22.54162866
## 712	27.56445010	26.33757840	20.39162452	27.08074371	25.68781758	17.416344495	23.11730166	22.59806001
## 713	26.67323035	22.84923830	17.81194614	22.30070109	21.88069744	10.115935204	16.02588032	18.42122547
## 714	26.66912972	24.63859070	18.25449095	24.39543764	23.57888377	16.781906548	22.10112911	22.07269736
## 715	27.26876949	27.53684555	19.88829176	24.76254834	24.78889172	15.474386922	22.63733810	24.15152554
## 716	20.44283373	19.43462326	13.72020942	21.18776902	18.58547585	14.177533202	19.12852555	20.66689967
## 717	25.13239277	22.69628732	15.59623144	21.32220268	21.05863814	12.065064178	17.49342642	18.30710009
## 718	17.03945712	16.36789592	8.50326727	15.05222126	13.12218643	8.130433798	14.42770785	14.01181709
## 719	23.07059612	23.66342703	15.89077205	20.27497046	18.39270486	13.720911348	18.86623874	18.63763986
## 720	24.75746339	20.42327980	17.99807096	18.61539845	13.82074490	17.618053583	21.80616580	22.81152088
## 721	25.07035461	24.36863053	17.43200397	21.95762236	23.15762154	13.381241563	20.06260410	18.94703373
## 722	22.52415274	22.24462967	14.34129771	22.37881404	20.20950806	14.197631077	19.76400709	18.54543780
## 723	20.00740325	19.50152822	12.55374248	16.96476524	14.30643253	6.328393595	14.94881710	21.50697080
## 724	23.87544995	21.10799164	17.53807927	23.54264358	19.76371806	16.903282033	19.91778258	20.85373418
## 725	20.58647847	21.28442805	13.30804673	18.17869769	18.34811239	11.361945462	16.28120531	15.98181823
## 726	20.77574239	20.72303817	14.36260847	18.92815891	17.56540291	10.219307650	13.87531552	17.02582028
## 727	24.77616829	23.88752048	18.19162644	22.56014648	22.20316597	16.141094021	22.39559094	24.25608804
## 728	17.14132708	17.07703599	11.30894818	16.50399323	13.29531372	10.709490395	16.45700834	18.01775067
## 729	20.72889620	18.79691891	13.33872574	19.41178308	17.39139788	10.509279524	15.48349006	16.56927149
## 730	22.04341050	19.51351336	15.66450966	20.08076108	19.14780083	13.596609486	16.71152665	17.85430286

## 731	22.09199024	19.82239283	14.60643774	21.51225052	17.59447232	12.276709079	19.39146660	18.97011465
## 732	21.42827964	20.91713149	13.35591212	20.27340991	19.84761104	12.998028034	18.33004506	20.27136445
## 733	23.82303419	19.94924283	20.13591322	24.86613027	20.37086524	16.528797720	20.64430259	19.06381145
## 734	26.71449462	27.66434292	19.74587980	23.84906945	23.97113371	14.598860992	20.84361593	20.77251351
## 735	31.24830582	29.87778125	19.55889001	27.38902975	26.54947405	19.049671417	24.55165071	24.62066967
## 736	29.72317961	30.14872324	21.72292426	28.31617785	29.04894856	18.123709519	21.85223267	25.56740472
## 737	26.30139827	24.58172429	18.51043000	23.58061515	22.81294247	15.721161697	17.71897668	21.04737207
## 738	26.47007900	23.93522725	20.23773346	23.72887714	24.16498704	14.155828568	20.49913699	22.18682585
## 739	26.26619023	24.76386955	21.94330958	27.54524063	24.91739618	20.340302891	27.90112248	25.17175888
## 740	24.18140955	22.08074992	17.30573049	24.60172537	24.62855775	16.818930601	26.54314931	26.60613755
## 741	24.95905687	22.72308781	16.75583610	23.83360679	24.58119947	17.064345229	26.06659137	22.71557535
## 742	23.49710860	20.97670167	19.56943453	23.91578251	23.23786636	14.078034180	19.64225037	20.02167180
## 743	22.07191833	21.95518017	14.19265876	21.09738182	19.04924405	14.019119887	19.47403529	18.82899351
## 744	21.06583671	13.67092941	16.21936079	17.89639362	13.41608353	13.189572551	16.87621960	17.86965389
## 745	21.67292429	21.01926726	12.23343836	18.56592616	19.62695604	10.353718733	16.14434584	16.83223064
## 746	19.42194299	19.49496355	11.79236067	17.79455723	17.48377172	8.836290876	15.64181301	17.24273671
## 747	26.20996213	22.85368583	21.15675493	26.06382371	21.31854802	17.528745913	20.78061479	19.89125823
## 748	23.29800387	22.20440916	16.42272456	19.41910204	21.57773216	15.351547057	15.44471710	20.45685397
## 749	23.78530258	24.35581716	15.75661198	19.54126274	21.42963329	12.522064817	15.87422564	18.08419542
## 750	22.93021301	20.01285609	16.74384677	23.52320809	20.65424582	19.093301294	22.62005684	20.79001192
## 751	24.64734045	23.56212550	20.83755494	26.60773308	23.55649232	17.466756831	24.04035426	24.24942840
## 752	21.83091038	21.35110556	17.52633705	23.18617724	22.46075846	17.831327271	22.90232604	23.71107211
## 753	26.66094049	23.66454765	20.48373242	26.17672576	24.90950804	21.017614236	26.12094703	25.05383477
## 754	22.40265149	23.77223370	17.52878945	18.29928957	21.37913737	13.016681358	15.16612504	21.48877638
## 755	22.58255547	21.51921845	15.32030093	18.47227603	19.40153343	11.270891107	16.59443369	18.21114950
## 756	19.94262527	18.63781320	9.70663492	17.07600590	18.41940120	9.609714713	12.77030662	15.19997626
## 757	23.02291406	21.24764423	17.97604235	22.81599259	22.93665346	19.959934321	25.13303867	22.63316423
## 758	23.98820782	24.13512459	16.28946798	20.87643127	21.85994022	12.628108647	17.75189267	20.61126920
## 759	22.37087452	23.67057745	14.93574417	22.08189649	22.50250858	13.484973993	19.87105739	19.57140330
## 760	27.85840784	27.03832232	18.42723336	24.60399173	26.50365826	17.396298958	21.68822056	22.24736848
## 761	17.64493823	15.62302461	8.92091941	15.08437017	14.50160670	11.536066999	17.62303999	18.79868741
## 762	26.83083431	24.02693996	16.67926195	20.33130743	19.37172626	11.815323626	17.50198669	21.81850220
## 763	23.22856434	22.73086781	15.46087148	21.09184139	21.23834901	10.512574025	16.81856474	18.28156199
## 764	28.59275572	24.88254626	19.39486385	24.83200465	25.07770962	15.343730362	22.41661468	22.47799576
## 765	23.07778159	20.21224534	13.33331383	17.59593904	18.35677324	9.646915340	15.24175802	16.53160185
## 766	24.53560592	23.63186341	17.40149927	22.04283357	23.31983262	13.280903425	21.77937994	21.17328525
## 767	24.91038354	23.83899461	15.79974265	22.06536952	21.94897246	13.344196743	18.64224098	21.18331326
## 768	4.58573600	10.68644377	5.40566126	8.35492650	14.31126020	9.953789600	5.33776858	7.95802376
## 769	10.87007620	8.71400245	9.76093405	14.13232080	13.23745750	10.386461516	11.86539815	17.50909547
## 770	11.97895263	10.55898777	14.20286848	18.45093432	16.38366464	11.517475245	18.25785400	18.73580464

## 771	11.77231577	13.54828252	9.87309739	11.05099687	16.97401747	13.988736832	5.76218392	15.01858283
## 772	13.30572633	11.82421183	9.46865870	12.22083940	16.92350451	10.495313955	12.25016938	17.95061176
## 773	5.59232440	5.18202488	2.83597731	9.93665126	13.64674605	6.525986810	6.05424275	11.03577087
## 774	16.07507533	17.17868266	14.47587686	14.03076718	17.70484687	12.953847153	7.38350806	17.91097668
## 775	9.38433708	13.16920412	11.93888117	13.70490995	19.86113736	12.947351098	6.57460511	13.38265464
## 776	15.83325606	9.82211765	13.11674527	18.74081006	17.65974744	11.852228402	19.51382519	20.43052573
## 777	10.30565578	13.05617079	6.52564237	10.76067375	17.38358494	11.201224681	8.02667310	17.48973833
## 778	8.82548247	7.39837384	1.58439531	9.14859061	12.54043126	6.620947436	9.79626974	14.61459418
## 779	7.87438123	10.70369657	7.80373487	11.22291858	16.83710889	8.447103663	4.18626606	11.44695140
## 780	6.90667314	9.36814673	10.01229400	8.60480242	14.49570085	11.225254482	7.36653870	15.25982025
## 781	11.30366896	8.77872486	9.69957384	17.16584262	19.19374433	8.620559563	18.37967128	20.32949517
## 782	7.07774572	7.95745766	6.28315993	7.06179198	13.30898392	11.473463969	2.08847500	12.62387676
## 783	13.67131367	6.99050596	10.13207235	14.31899803	11.94012684	8.067659574	15.05258589	14.93399469
## 784	7.09551170	4.96439524	5.78917256	11.93846913	12.76552102	5.756169052	14.17891545	11.00113193
## 785	6.90171978	8.09361693	7.11142530	4.17581483	12.13620445	8.291234020	3.59248191	7.67006350
## 786	11.83258616	7.45192881	11.90795009	13.67691618	13.71685428	6.917079927	15.52684780	14.78004209
## 787	4.00380085	3.22564989	1.56575865	5.72118475	10.19917490	6.371723338	8.40545632	9.93140783
## 788	6.80115923	2.56576483	4.65450445	11.40629636	10.36413852	1.754329423	7.59680005	13.01850429
## 789	5.90909496	8.56879356	4.57376535	5.62331352	11.79241108	10.279133093	1.06789519	9.21875417
## 790	4.81763174	6.02890867	1.76811248	5.8689386	12.58657184	4.166416979	0.64756879	10.16576423
## 791	-4.18552214	-2.62795017	-4.01928021	-3.34570729	4.05389886	1.188702282	-5.10813470	-5.19912993
## 792	7.25477896	8.49172862	5.36680448	9.05311193	16.18065842	8.310115182	5.71008535	12.86412237
## 793	11.31705697	13.18208135	10.90672782	8.15173299	16.65090649	13.781330131	7.77204224	9.20100358
## 794	10.34257134	13.24274731	9.33293620	7.75080312	15.80368639	11.846897637	6.67999190	11.05466184
## 795	3.10470560	3.22537288	1.45833239	3.633373315	7.63903323	7.066812456	-0.05538228	4.04185141
## 796	6.01536541	8.53135951	4.33306367	1.46795614	9.79982726	5.109547118	0.41035635	3.97134085
## 797	7.01258131	5.73966072	2.13200521	6.39766861	10.68676939	5.056792214	4.37324951	11.68274567
## 798	4.52434747	6.77855049	1.88614290	8.23714697	13.31770334	7.085190818	4.58846254	10.98562365
## 799	8.31895062	11.24743586	7.72007384	10.06346609	13.69622450	11.431206256	3.54779434	14.84786213
## 800	1.95540585	3.28729490	2.28334054	4.68558419	6.71189134	4.235225103	-4.49224013	7.49700073
## 801	9.29752910	9.61441419	9.95603286	11.64082473	15.75605513	12.754274540	8.53524715	14.33153893
## 802	-6.16964962	-2.21631887	-1.98993871	-2.86960018	3.82791080	2.548688231	-2.33487119	-3.18203061
## 803	-8.23724475	-3.75687294	-6.56479218	-7.92412213	0.63814641	-2.294439515	-9.43621882	-0.25690240
## 804	2.99395726	4.30389747	-0.13320605	2.81260540	9.06150707	3.555346785	-1.98680856	5.83472065
## 805	5.66570039	1.06376543	6.10039072	7.47796926	5.67353760	1.821932132	7.68602105	6.30362381
## 806	-0.35880722	0.12427029	5.86931903	6.05362632	2.63204314	4.992304850	7.69570653	3.56445804
## 807	-0.90487605	0.64987372	-3.48613934	0.07562771	3.63964958	0.296900303	-3.03579398	3.80869217
## 808	2.03706420	6.21738856	5.89783106	1.14443398	9.47856574	6.669722708	0.98359792	3.52919392
## 809	-6.31744841	-3.68383097	-6.84396574	-8.17083688	-0.97212833	-4.416791460	-10.87947564	-5.50125104
## 810	-3.23563036	-4.44629384	1.53490377	0.62662903	-4.67331391	0.095758058	3.83300218	1.36436300

## 811	-1.74673754	1.31665764	0.01475267	0.44722505	7.39974422	3.853190493	-3.04597468	-0.35001224
## 812	-5.57161903	-1.00193095	-3.88129770	-2.46109007	5.11385725	0.807018489	-5.88650494	-1.12292282
## 813	-2.04802922	-3.80630039	-5.77863410	-0.85753915	2.62621085	-6.566507024	0.32774295	3.16985823
## 814	3.08369203	0.71471289	1.62646098	7.33897027	7.85790416	0.243210438	4.64155811	8.27251062
## 815	-5.21801379	-4.54947411	-8.05553273	-6.40134920	-0.64873070	-6.636186044	-11.55386470	-3.08656952
## 816	-4.26840088	-1.81277607	-5.31336513	-1.16095604	4.11994846	0.949806854	-7.14257541	-0.33075547
## 817	2.18858029	3.90883330	-0.05221024	2.04407406	6.35505675	-0.065780393	-1.76657154	4.96153682
## 818	-6.06314565	-3.09976685	-4.72715997	-6.16615956	1.91134765	-0.806013893	-7.53233370	-1.35199357
## 819	-1.40493543	-0.14188362	-2.64000619	-2.57075482	3.62063047	-0.454016446	-6.38702744	0.05347815
## 820	2.10578328	3.23671111	0.97296823	4.24055857	8.86193968	2.639255849	-1.02439438	8.70470504
## 821	15.81996075	15.50349358	12.62089618	21.17809378	23.22140229	14.603046686	18.13386172	21.03642560
## 822	-2.99985178	-1.18532866	-4.30963338	-1.68494733	6.02326433	-0.022539295	-7.67329331	4.11220697
## 823	15.07964340	10.51247152	16.70323544	17.35849539	13.59209614	12.614581813	18.10953503	15.76197585
## 824	-0.27765065	-1.00453407	3.91479737	3.63809121	-1.97547235	-1.670615433	2.02740315	-0.74513257
## 825	15.34783154	11.42917824	19.79421458	18.06637466	11.52802572	15.220939544	18.32794728	15.96497879
## 826	3.24459521	-1.72349400	1.79428036	5.88977145	2.81526086	-1.244328974	5.42305713	4.59592111
## 827	18.10934608	12.03594451	13.40854111	14.09754046	14.67500116	12.144415049	16.11052952	11.20811115
## 828	24.79018082	25.48895146	25.43604114	19.78469824	21.18046953	23.088105940	23.94060910	21.34570416
## 829	20.25631865	18.84646024	17.87823383	18.70392987	16.06446216	17.775530700	20.51315969	18.95612061
## 830	22.35659471	21.02909251	18.90002829	19.50009433	19.17216581	17.325698677	20.09877437	19.12334516
## 831	15.99752405	14.30581294	10.88124273	13.28332742	14.15629827	12.181752573	16.98871621	10.93933191
## 832	25.38960976	24.93442407	23.86660958	22.39073338	21.11616972	17.402105089	24.14363137	20.31477839
## 833	14.74406326	12.58929390	12.72906167	12.30912614	13.23390106	12.661804948	14.77315881	16.76949121
## 834	15.95702194	12.51638688	14.12774893	13.47345093	15.35504834	10.859408253	17.40937139	14.13660541
## 835	10.86070809	7.13642272	6.19535152	7.23271834	8.25455423	6.713095995	12.70833181	6.42712754
## 836	16.41057641	15.78260424	13.41325746	13.77172744	14.39216234	10.931477196	15.35550062	12.14400148
## 837	15.16368763	15.28585667	16.29622394	15.34684414	19.24845263	15.862386824	17.64140807	16.47857966
## 838	13.46933723	12.11656934	12.93396200	11.30526562	9.26578189	11.920535191	13.90409951	12.43147021
## 839	12.18549032	11.04932385	10.51845142	9.69737417	10.48338638	10.609602447	10.36186820	12.35573709
## 840	13.12688302	11.29786408	11.17343422	9.44696116	10.83586276	11.364094080	10.19269015	10.55774313
## 841	6.96591122	5.65758916	6.10523843	4.46343102	4.96870719	4.802424627	9.82117702	2.44141926
## 842	13.46680605	12.61078907	11.94682211	10.91953380	11.11852486	9.327738034	12.37393672	10.83834745
## 843	13.64487181	12.78167808	9.97968122	8.89388689	10.21650751	9.886990266	14.27964071	12.00759979
## 844	12.66519663	10.41569699	9.76866937	8.65895929	9.47870515	11.049139109	6.99363796	9.63091573
## 845	10.93586020	9.32398348	8.61333544	10.46303816	9.12635957	6.370547975	9.57824509	7.15827522
## 846	13.20326342	13.79571443	13.63400057	13.77312310	11.8409669	10.472894722	11.60237722	10.19170754
## 847	12.47423967	12.35664499	8.28958369	8.98511245	11.42025084	6.903393248	12.04384406	7.35410066
## 848	17.23191097	14.01492783	16.94431628	14.42232974	13.69161701	14.799586312	16.72874966	12.65741403
## 849	22.26913063	19.18678415	20.59681501	20.97148349	19.26249612	18.603593141	22.24250191	17.39029370
## 850	13.47592393	9.70344907	12.75125794	8.84603582	11.16953726	9.073529195	10.63518387	12.05010724

## 851	25.01858501	21.74178380	22.92190290	23.43543492	16.65721383	19.189151948	21.75496084	19.43125046
## 852	26.40669967	24.30727361	23.86269320	20.54048551	18.69617450	21.163650738	19.16595235	21.10155423
## 853	24.56345668	19.98258482	21.28502130	18.53503332	17.40901333	18.315023756	19.94340575	19.89114944
## 854	20.16848216	18.39315436	15.79637082	15.00932959	15.34784517	12.840457468	17.85358665	13.07276158
## 855	28.84592527	26.04027135	24.25365189	21.74421802	18.94794703	21.867196804	22.82110391	24.68193911
## 856	15.83198683	12.77222217	10.57738092	11.37054706	8.39226746	8.251858165	11.84104680	15.14452421
## 857	17.75192953	15.23941909	12.96850380	11.80737711	13.98176330	9.434588968	13.91502788	11.59540450
## 858	19.92795168	16.83325985	13.08434487	14.20570192	14.22158578	11.293067662	14.18923568	10.51481242
## 859	26.75351507	21.92691970	21.98114078	20.22702907	20.13683673	19.979864485	22.91746255	18.99343222
## 860	5.26745837	5.09695869	2.53342890	4.27757818	4.19079557	0.184955267	4.31496455	2.80239087
## 861	3.99301152	2.91575268	2.10526295	1.93693852	2.93033111	0.183081345	5.35368665	-0.33075366
## 862	12.24339302	10.90126174	8.64806845	8.82816722	8.72781198	5.594273854	10.40688823	7.96966697
## 863	15.96889869	12.26630384	11.82459609	11.28568955	12.33896151	12.695158602	12.80448859	13.31241781
## 864	7.58195128	6.74580418	5.44632053	3.96271513	6.70403080	4.579234771	6.33450911	9.32681720
## 865	18.09158062	16.28565805	15.59161467	13.57818439	13.09734764	13.091398895	15.11098391	13.76440348
## 866	11.16520493	9.35692499	8.99039897	6.71586699	8.29103917	2.290564970	9.21803483	9.27237889
## 867	12.54828878	10.74830703	9.29472656	10.23380898	10.27772789	7.423966243	14.13552949	10.85347686
## 868	3.98037652	3.28167713	2.29436618	1.80980795	2.56831433	1.003413174	5.86970991	2.96027463
## 869	15.54688195	12.79373530	12.74437629	13.47591702	12.83712697	9.381777372	14.23450244	11.50883559
## 870	9.40062497	7.81673383	6.14015256	4.74262661	5.00438618	2.335831971	5.07185672	2.36725668
## 871	19.38975699	18.40184503	15.25097600	14.48716204	13.00922301	10.605979604	14.50328785	13.33518395
## 872	19.42633485	16.84992791	18.71460054	16.36882805	14.15577881	15.899780599	17.53782675	15.35063469
## 873	21.90844837	18.58798834	19.41135440	16.23417617	17.45642600	15.924958596	17.19670002	15.71927135
## 874	6.86444594	5.13148065	3.80753186	2.66654495	2.55641357	2.728162214	4.03601953	3.12228475
## 875	20.49000444	19.20413902	18.24765839	15.11224309	13.72346130	14.883110827	15.79592197	13.37683274
## 876	8.90542036	7.92269802	7.52098599	7.84755956	9.41377153	6.678458035	10.32710558	4.46116130
## 877	6.44884960	6.21548110	4.93901095	2.87528539	4.52450797	3.115947122	7.32077155	3.69880337
## 878	9.35504785	8.91273726	6.87564475	6.30543139	7.24556110	4.187469852	8.32571451	6.37864673
## 879	22.33955269	23.54115990	21.44956355	21.75098793	20.62745649	18.516894568	22.14996535	19.76362418
## 880	16.31355422	12.91870027	11.41968597	9.81663297	10.95165113	8.945829438	12.68922947	9.50202426
## 881	19.87918629	18.41942087	16.15372368	16.32183057	16.03344450	14.389229102	17.66686611	17.02378643
## 882	12.80488414	13.83398839	11.96414707	8.93614398	10.72142993	7.607997473	12.50586040	10.43490110
## 883	20.60446840	17.49529359	15.88923205	14.92733498	13.73239516	11.524945346	16.95577814	14.06128754
## 884	13.43696740	16.29788925	16.53506279	12.43904314	16.92707418	16.671721279	13.74094577	16.59420572
## 885	13.07758269	15.86860366	17.55448176	11.51060985	17.92341855	21.669156940	11.99401705	14.82074860
## 886	14.58982770	20.11182138	18.56922965	15.23577613	24.83253854	23.014216159	18.45638652	19.86566739
## 887	16.60000824	18.78947467	18.13904244	16.80097377	20.68541106	20.887594227	18.25271341	19.21272946
## 888	17.23303706	16.72863310	11.48795118	17.47995610	20.59988492	13.941321742	18.62238494	19.92858416
## 889	12.15995278	17.86247436	12.28635354	11.54844862	20.43483370	15.729724868	14.04293163	18.51264417
## 890	10.72062398	17.71652035	17.29203705	14.66813985	17.27604854	17.430445152	13.14253690	13.10126933

##	891	13.20991414	16.43586610	19.69132652	17.51174919	16.71111376	18.847640214	19.14891459	17.48589121
##	892	12.59616034	15.98984226	14.28104253	13.00782591	18.08912718	17.731601819	12.45794985	14.58516793
##	893	10.80885492	9.82124775	15.99052130	16.30281497	9.82484942	18.003201771	21.03979753	15.39696214
##	894	15.00000362	14.21716909	18.15222551	15.80005028	14.41908178	18.072322925	19.26960120	17.97401783
##	895	10.86497859	18.04163849	17.66728206	11.68884819	18.62637428	16.696131089	12.73227513	17.21522093
##	896	13.39134200	15.92729941	20.07927877	17.87638332	17.12976023	19.401703507	18.08287018	15.66697414
##	897	14.53850048	13.32429496	19.64380464	19.19435315	13.67776303	20.994847272	21.76136954	14.64506026
##	898	18.69714383	19.05531245	19.43690362	15.73871126	12.16204052	17.554790320	16.88233873	14.43416917
##	899	13.46063981	13.65601305	13.50124063	7.93694686	14.71454491	15.481947003	10.08912436	14.86938905
##	900	9.53590883	10.74345138	12.18822677	6.62146537	12.99526218	13.199998754	8.46105375	10.65828677
##	901	13.66231806	14.75946655	13.36687643	9.58371101	15.31396863	16.948120797	12.02046466	17.73477697
##	902	7.85038721	4.94829479	11.33172984	12.97040166	7.59966447	9.182014150	13.87317681	11.39313875
##	903	11.21843737	14.98401253	9.47460052	11.20218044	12.18776398	9.984640301	10.83063102	10.99805855
##	904	5.78887550	10.46126673	8.99026463	5.20167252	11.89649328	14.129711654	11.38440027	12.15829295
##	905	8.63743349	8.53829915	9.27569953	2.67640406	7.24936726	8.613897994	4.91738623	8.58252899
##	906	13.24354021	7.53399751	7.66989650	11.10313236	7.02137927	8.893544862	13.46853366	11.87281462
##	907	6.07757380	2.96994445	11.38764782	11.96554173	7.19185168	10.776165341	11.19164080	6.54421566
##	908	8.61324590	5.24191811	9.75868656	12.60958033	8.11596206	11.766161118	14.96935009	12.18750842
##	909	5.78198898	-0.92811471	6.81705154	6.05340415	-0.43597075	6.350831033	8.11591105	7.49973028
##	910	10.32739499	10.40907610	9.18549763	4.36791171	11.10380841	13.319019663	8.17482864	10.68092354
##	911	7.62571461	10.38897959	12.84920939	6.46002851	8.41751864	12.947544746	10.77333709	11.01443406
##	912	8.52951992	15.04374779	11.14495921	13.88211213	15.81227474	14.925838638	14.58226795	16.45126785
##	913	19.84361300	18.30792516	22.00040632	18.59394871	17.51430905	20.830277532	19.38848887	19.86417590
##	914	8.31125023	0.89499857	6.20797246	9.79135946	0.69479735	8.863987076	10.41371868	7.07793236
##	915	14.78587807	11.06885103	16.37710982	19.95581291	15.73543653	16.817376124	21.59851695	20.79720841
##	916	12.81257553	14.57763132	16.69823351	10.72926704	13.88196315	16.877497100	11.44172681	12.91706625
		bin28	bin29	bin30	bin31	bin32	bin33	bin34	bin3
5									
##	1	13.099343868	5.840505593	6.10514688	10.665143507	13.83134043	19.00085851	1.632329e+01	12.7279291
0	2	6.748885989	9.402705958	10.39503895	8.402617386	9.72505886	13.12774546	1.216543e+01	9.9935673
9	3	5.795231899	2.518056416	6.89715244	10.219490640	9.30539825	11.88517425	1.035789e+01	9.1254290
5	4	8.809584007	9.509015065	6.25008214	7.822943271	6.50248224	5.43126175	2.821759e+00	-3.3549090
1	5	11.527874960	11.912452564	11.72589897	12.562874879	9.10624693	12.48410646	9.748338e+00	6.1506557
7	6	11.423137644	13.023069288	12.05888341	14.845922757	12.88621173	13.51553635	1.320534e+01	11.3199222

```

## 7   -0.761270728  -4.183985915  -1.95579542   -4.163358912  -4.53574438   -2.73657237  -5.325000e+00  -4.0380852
## 8    3.616399972   0.054719060  -1.50607558   -0.683390659  -4.71117104   -0.87227828  -1.124903e+00  0.6699858
## 9   -4.482685065  -8.224754310  -7.04849511  -8.233936509  -8.93770603  -9.18479458  -9.022520e+00  -11.8173155
## 10  -3.997271311  -6.731415477  -6.86749261  -9.227658607  -10.85750983  -10.32413020  -8.131452e+00  -8.9579459
## 11  -6.885514032  -8.209073177  -7.68226298  -8.846345031  -7.40815651  -7.08898440  -1.015707e+01  -9.2384022
## 12  -1.015059482  -4.065029472  -4.47989312  -4.861618012  -5.22408205  -3.74072391  -3.952028e+00  -6.5889497
## 13  -1.214056758  -4.394367272  -3.86098162  -8.081501912  -4.49997817  -4.44374573  -8.457254e+00  -3.6024594
## 14  -1.091569336  -1.719689029  -2.76371713  -3.064717512  -5.23498302  -4.66168044  -5.240547e+00  -6.8045033
## 15  -6.408423733  -8.432788733  -6.78059473  -8.097197693  -9.33304737  -9.23168237  -8.027393e+00  -9.1115022
## 16  -2.560255238  -2.583294765  -3.89443727  -4.741451919  -4.88671586  -5.23615117  -4.584743e+00  -8.7249511
## 17  -0.072409932  -2.026492153  -4.98104422  -6.214816209  -6.42634044  -8.57944294  -9.727523e+00  -8.8454178
## 18  -5.806058133  -6.763950656  -7.02580165  -8.025093065  -6.46774677  -5.62603298  -6.700685e+00  -10.3557182
## 19  -5.815188225  -10.553935785  -6.23854121  -6.532332832  -7.41900567  -8.41504947  -8.854237e+00  -6.1864552
## 20  0.408942803  -2.892349532  -4.11535586  -2.566391538  -1.56065483  -1.74082516  5.771501e-02  0.9118651
## 21  2.217938573  -0.845019546  -4.96810273  -0.547740804  -3.35945464  -4.11606848  -6.520696e+00  -6.5906437
## 22  1.935021161  -1.023893082  -2.78870311  -4.266468134  -4.24792825  -4.97080067  -5.984092e+00  -6.1160343
## 23  -3.067020197  -6.013692528  -6.31975273  -4.444866683  -3.95644757  -5.46415469  -6.632022e+00  -7.1371120
## 24  -5.236458671  -6.581173383  -6.16030029  -6.579836032  -6.89213333  -6.49473884  -8.257207e+00  -8.7861860
## 25  5.616695279  4.661407571  7.64557121  5.994256980  6.41226258  6.75977621  3.992660e+00  5.5659165
## 26  8.334639532  6.867279246  4.62439293  7.439325865  3.27522303  5.05482395  5.076821e+00  3.8885928

```





## 67	10.045641036	9.837629159	8.36105319	6.383021663	8.72373745	5.34937067	5.890482e+00	7.5165554
## 68	3.029502259	4.640028957	1.72857820	-0.881124570	0.93276819	-0.18629973	-1.754079e+00	-4.3205066
## 69	7.619107645	5.075469844	3.91078065	7.795773100	4.94618131	5.59117667	5.559171e+00	5.3876388
## 70	7.673488083	3.898162752	5.33444025	7.319838402	6.99368626	5.33187834	6.494578e+00	5.2681305
## 71	7.496633801	1.566495794	3.44147839	3.497810201	4.17706324	0.99426105	3.116871e+00	0.5619407
## 72	7.881481201	7.793659054	5.11510186	2.667285440	8.50172131	4.94661496	5.406597e+00	4.8630243
## 73	6.791071179	6.034389174	5.05398954	6.646422026	8.49347609	8.12523262	6.949866e+00	8.9654518
## 74	7.361934861	1.487393529	6.82893706	6.991177123	4.74561925	7.69974807	9.352443e+00	5.7420733
## 75	5.028221531	2.958591965	4.47681293	4.689263598	3.08358297	1.88750296	2.405545e+00	0.9294025
## 76	6.377608646	7.275614880	5.66946368	4.867498493	4.03747659	2.15966989	1.013535e+00	0.6336233
## 77	1.661465352	4.047895153	0.54307576	-1.253069903	-0.81607554	0.94498927	1.494466e+00	0.1851828
## 78	1.708591090	3.023100184	2.38629722	-1.490506941	2.08209352	3.46873284	1.850952e+00	-2.0127925
## 79	-8.577938076	-11.538712837	-12.99028897	-12.716217255	-12.47470162	-16.30879553	-1.294167e+01	-13.5179158
## 80	7.823719898	6.301683500	2.33212450	2.922552557	5.90239312	2.95872951	1.689840e+00	2.9885876
## 81	7.119208464	9.854771468	8.44372618	7.507449504	9.45454074	6.03394841	5.119074e+00	2.9155150
## 82	-1.720815751	0.604546690	-2.74125218	-4.585116765	-4.38201147	-3.95022813	-6.792164e+00	-5.3884220
## 83	1.852115284	3.568682512	1.10971127	0.171951793	1.13492355	1.32476907	1.117733e+00	1.5551327
## 84	7.223494418	5.351871086	3.40223718	3.304488469	3.47370211	2.03304065	2.306893e+00	-1.3857758
## 85	3.864969805	9.408002652	5.32266738	4.463819314	8.30130653	8.23789205	6.659473e+00	7.6752334
## 86	6.384601046	8.979574278	8.45104420	5.083919416	6.58848077	4.87002288	5.928086e+00	3.0270435

```

## 87 -3.530591312 -1.008980520 -1.73669985 -6.022565554 -0.03414225 -5.62808861 -9.044120e+00 -4.9661965
5
## 88 8.543337984 7.532753855 3.50422192 3.931653744 4.59622033 2.53274634 5.954750e-01 -1.5873346
3
## 89 1.631000197 -4.753377748 -5.42780119 -4.183399378 -8.84450691 -8.97074868 -5.849227e+00 -7.9276355
7
## 90 1.088692816 1.838604177 -1.30363323 -2.141697115 0.45029047 -4.86601156 -5.302650e+00 -1.5856952
9
## 91 12.158371133 13.344243403 12.91857842 13.623685079 13.05566458 9.94875440 1.112429e+01 11.9790232
2
## 92 4.239595340 2.734508602 0.94317907 1.223162635 -1.58743905 -3.08983365 1.146522e-01 2.3658861
5
## 93 -5.154094750 -3.370312995 -7.41154959 -6.678000503 -7.62241689 -7.52615586 -7.677343e+00 -5.0536885
6
## 94 1.717486050 -0.046830189 -3.57864402 0.277674163 -0.05532337 -3.59480508 -2.633642e+00 -2.3066819
2
## 95 2.248394112 -0.863591898 -0.60071506 -2.522270941 -4.04813244 -5.03719333 -6.982222e+00 -9.6960227
6
## 96 0.994844523 4.305918705 0.24646568 -3.657515624 -1.78966875 -3.80521856 -3.212779e+00 -1.0869254
6
## 97 0.890239307 2.138210827 2.16881116 1.349897660 2.11455856 -0.84957588 3.516270e-01 -0.9803555
7
## 98 5.754229487 5.923945309 5.19388878 3.934457785 3.10585930 1.33087077 -6.112255e-01 -0.3425469
7
## 99 -5.213005655 -2.339074854 -3.53482076 -4.749849774 -0.93814961 -4.78829536 -6.083564e+00 -6.2973214
1
## 100 -2.489575069 -0.644013879 -1.28823247 -2.192476945 -0.42197580 -2.45446165 -9.227244e-01 -6.2256686
8
## 101 -1.758454730 0.425742554 -5.12095673 -4.389304827 -4.94090766 -4.51042056 -5.827627e+00 -4.1520240
1
## 102 1.433837110 -1.457242145 3.55082918 -0.071129901 -3.94564315 -2.30276547 -2.048739e+00 -4.3915626
1
## 103 0.012240477 2.392407461 1.07716934 -1.457237854 -3.94790603 -1.96702959 -2.812806e+00 -6.0078153
6
## 104 6.427673109 4.961502325 1.36872192 5.267945393 3.74881834 2.24334944 2.327476e+00 3.4294524
6
## 105 0.125775097 0.320819859 -3.30803020 -1.326304990 -0.97748641 -1.15687232 -1.250051e+00 -0.9041801
5
## 106 -3.686462687 -2.478132540 1.06000715 0.008695570 -6.97540440 -7.02479396 -4.697592e+00 -7.7606976
1

```



```

## 127 2.094587859 0.844438885 -2.14013408 -0.108898173 -0.49721694 -4.84797402 -3.312650e+00 -3.4757671
8
## 128 4.367034427 3.821558422 -1.20888910 2.510798539 1.19038429 -2.35026503 -9.468167e-01 0.2850021
6
## 129 -1.017384926 -2.076163450 -6.75670347 -3.602040244 -4.29150083 -8.09508356 -6.111919e+00 -6.2277881
0
## 130 2.668806974 5.683509920 0.44882346 3.498894892 3.97288202 -1.78638081 8.693654e-01 1.6289578
0
## 131 -5.585266281 -7.387871917 -11.61752433 -6.213303251 -7.48772530 -11.78205567 -7.644685e+00 -10.8387871
0
## 132 -5.467821927 -5.611649221 -11.02884514 -7.984792639 -5.38422537 -10.29404097 -7.156557e+00 -7.0992447
9
## 133 -0.619052460 -1.721902688 -5.84485514 -2.865750097 -5.08186732 -8.00755544 -6.051861e+00 -7.6159904
9
## 134 -2.406066659 -5.725941638 -9.39632394 -5.181614648 -7.42115978 -9.85191485 -5.536521e+00 -6.9541925
1
## 135 -2.732375017 -4.343988659 -7.66461690 -6.172669477 -5.64937206 -8.72285605 -7.044959e+00 -7.6305538
4
## 136 -2.395733564 -3.404085542 -8.22021736 -3.937300456 -8.54254155 -8.66438784 -7.014230e+00 -9.3801349
0
## 137 -8.376013959 -9.165508848 -12.25505322 -10.794557490 -11.11465462 -12.95620151 -1.205260e+01 -12.0440224
5
## 138 -8.481820095 -8.982525057 -9.37267246 -9.244651347 -8.52661250 -12.65260255 -1.167283e+01 -10.9905847
1
## 139 -0.102365370 -2.206979769 -6.15496185 -3.950401590 -4.89500408 -7.97364920 -6.811700e+00 -7.5976048
8
## 140 -4.334894238 -5.588320287 -9.85041880 -3.626978517 -7.40526447 -9.27129653 -7.395589e+00 -8.4960179
3
## 141 -5.691962896 -5.289940491 -9.17886831 -4.330593223 -5.83106175 -8.72224290 -6.851908e+00 -7.3779594
6
## 142 -8.272658432 -8.680539261 -13.24835174 -8.817604944 -10.92302629 -16.00834934 -1.302162e+01 -12.9710117
1
## 143 -0.081411870 -1.599306950 -4.09622407 -1.927666987 -3.73046412 -9.21081489 -6.075321e+00 -5.8573425
1
## 144 4.679525701 0.008954620 -5.66356799 0.539893138 0.65549407 -5.21570207 -3.700176e+00 -4.4400859
8
## 145 -3.216449477 -3.511119097 -9.08686579 -6.937126740 -7.83722335 -10.37455321 -8.954363e+00 -9.4481025
9
## 146 6.588479258 6.390543075 -0.92990204 0.536831117 -3.00171468 -1.96374314 -1.629782e+00 -1.4882415
9

```

```

## 147 5.672321191 4.567594494 -0.66635131 1.139136813 -1.22319223 -4.93671556 -6.653701e-01 0.2922208
3
## 148 0.160706074 -0.007992277 -4.95413188 -2.820782763 -2.71784620 -4.25316606 -3.621129e+00 -4.0655327
7
## 149 1.828884730 -0.941857051 -2.27464282 -0.005379572 -2.36128770 -3.69911930 -2.193604e+00 -2.3501795
4
## 150 -2.809576413 -2.792331463 -6.37987711 -3.840927407 -3.22997778 -8.29967452 -8.145735e+00 -9.2288169
9
## 151 2.597836126 1.704196861 -2.85345509 0.302561618 0.03674054 -3.17032184 -7.733174e-01 -2.6219846
1
## 152 -4.840227175 -5.774529921 -8.60850837 -4.889685137 -3.59749511 -9.40744397 -6.010331e+00 -6.6396347
0
## 153 -2.048588956 -3.316760562 -7.56216589 -4.902040693 -6.94423116 -8.71348329 -7.458530e+00 -7.5120667
9
## 154 -4.927231372 -7.542557710 -11.57507096 -7.782073155 -7.78888264 -12.07665164 -1.012573e+01 -9.6991045
8
## 155 -9.368918701 -9.828055344 -15.67882267 -11.720022414 -12.07016039 -15.86755105 -1.369791e+01 -13.5900118
0
## 156 -3.699487204 -5.435740080 -10.45872051 -3.915691900 -7.11046698 -12.05945413 -8.866145e+00 -9.5057722
7
## 157 1.876412598 -0.610721086 -7.96666411 -2.414098279 -3.89985070 -8.64848256 -5.642869e+00 -6.1808494
8
## 158 -7.341437033 -7.063552040 -10.43431953 -14.340277839 -9.99396540 -13.77481053 -1.639292e+01 -11.3878579
0
## 159 -2.839066634 -3.976313255 -8.50486252 -5.268865265 -5.04320207 -11.97652379 -7.500995e+00 -7.5053714
3
## 160 -8.583284961 -11.359965474 -14.50727562 -7.915011766 -10.09113607 -14.37990043 -1.230525e+01 -13.2912232
9
## 161 -9.089156552 -13.056989889 -15.20940893 -9.770390691 -12.86342027 -13.03025982 -1.040868e+01 -14.4218836
2
## 162 -7.213689362 -7.011611814 -12.53937675 -6.961285844 -8.19136994 -11.85311836 -1.003482e+01 -11.7320475
3
## 163 -4.066225283 -3.079498637 -12.32311893 -8.692633530 -11.17768585 -16.94245842 -1.072599e+01 -11.7448245
6
## 164 -2.089816542 -1.101265391 -3.00252993 -5.828465529 -2.44252673 -7.03355417 -7.908166e+00 -5.6763512
4
## 165 -2.921146447 -7.187438848 -10.10299795 -7.270334917 -10.80424158 -12.51683477 -1.075117e+01 -12.6250653
3
## 166 -7.313622650 -6.651084617 -11.28602217 -7.158067618 -6.95964756 -12.18332655 -9.664936e+00 -8.9034881
6

```

```

## 167 -3.648772082 -5.003615907 -9.28624005 -9.343611047 -5.65509889 -11.36221339 -7.146172e+00 -5.74978075
## 168 -0.487499066 -3.396264206 -7.61889553 -0.899285860 -3.55837537 -7.29778006 -3.212130e+00 -5.17187956
## 169 -3.206726582 -6.964680804 -12.34456192 -10.662837081 -8.91827162 -13.57008389 -9.483468e+00 -10.94015213
## 170 -3.148960788 -4.306333044 -7.54234245 -4.220515051 -4.71705205 -9.89294256 -7.949689e+00 -8.03618469
## 171 2.264192605 0.788283216 -2.75051264 0.304026123 -1.77978669 -3.66900231 -1.370257e+00 -0.03230063
## 172 -6.737607201 -8.580437223 -14.74291791 -9.547976102 -11.49480692 -16.06143742 -1.368544e+01 -14.50148001
## 173 2.830722636 -1.338327402 -3.90735352 -1.025083796 -2.37168716 -5.88488262 -4.729895e+00 -5.52085641
## 174 -3.531022871 -3.774790903 -10.74715495 -5.602182723 -9.47696370 -12.56406554 -7.434221e+00 -9.60494534
## 175 -1.115249841 -2.549528452 -7.33985098 -5.470526905 -3.90917571 -11.04347411 -5.631224e+00 -7.84871855
## 176 1.892841501 -1.224319347 -5.58773404 -2.690821168 -4.62024460 -9.96735770 -7.903687e+00 -9.18271639
## 177 10.542182237 13.545344140 11.57768215 12.555791246 8.43345017 4.02175247 4.811947e+00 5.65427158
## 178 13.808356024 12.345548691 -3.48459390 -1.243514931 -3.79345259 -0.86450451 -1.097910e+00 0.53942788
## 179 17.654702005 16.915944606 11.18431796 11.801308040 11.67762500 10.44339146 1.151497e+01 12.73675992
## 180 17.415948781 14.483979883 6.32193201 5.741770270 3.27560531 1.19886651 5.143377e+00 6.50412808
## 181 12.984304557 13.479724651 12.22731885 5.168886930 1.16743633 -0.04295824 6.061574e+00 7.21576648
## 182 14.451604217 14.217447734 10.42272586 5.843237950 2.83232793 2.75708315 5.646938e+00 6.99462318
## 183 11.046705140 10.702434099 6.07030371 6.193496525 5.61928648 6.77217324 7.501511e+00 6.77850526
## 184 8.161579710 6.586601241 1.43077236 3.006302228 -0.13576798 -0.32278471 4.030408e-01 1.28727068
## 185 9.160910352 8.993908789 2.45565015 3.010299935 3.45903410 0.21809011 3.914596e+00 3.16415209
## 186 2.439455979 4.665230123 0.10134830 1.010898676 0.67810011 0.81816920 -1.201821e+00 0.99314875

```



## 207	7.108467993	11.576650847	4.94383823	0.785439775	-2.39485195	0.50755375	3.409290e+00	6.4120213
## 208	6.536698981	11.488641565	7.30292293	7.166525795	6.60103918	-3.39563489	6.946711e-02	6.4042722
## 209	14.364545573	16.168578838	10.11426989	6.790417661	11.60751672	7.13714043	7.426166e+00	9.6100853
## 210	5.851809533	9.504896408	5.56973909	1.392647637	0.65342950	-2.56534745	2.184022e+00	3.0106640
## 211	1.158542659	0.082448487	-5.29696745	-7.296434421	-7.03291441	-6.15695624	-4.581241e+00	-6.7484505
## 212	-6.088232260	-7.849319799	-6.86826975	-8.003941053	-7.82795488	-12.51396910	-9.589611e+00	-9.2777310
## 213	-3.591080447	-2.596064098	-3.95167611	-7.977574952	-6.79007871	-7.89035750	-7.893299e+00	-6.3318144
## 214	5.461300346	9.093637044	6.72805062	8.900273301	13.73883324	12.56763154	1.460819e+01	15.6005793
## 215	1.003870528	3.606345113	1.98650324	-1.993282906	-8.25156418	-9.44844191	-2.442707e+00	-1.2343153
## 216	-1.469556600	1.689150678	0.39600654	-3.052667991	-5.34304046	-9.23695925	-4.092498e+00	-4.9954315
## 217	-1.175702634	0.633005312	0.93343349	-3.194267122	-5.40538361	-11.08313523	-6.315562e+00	-1.7778267
## 218	-1.480327166	-0.018073378	2.63097334	-3.233363718	-3.14801782	-4.11904014	-7.269942e+00	-4.3825579
## 219	-1.261056482	2.308287547	0.64775307	-1.270599236	-8.17600096	-13.23878686	-7.397754e+00	-5.5973830
## 220	2.858085213	2.369514052	-3.39077275	3.698752797	1.31930743	-1.11754057	-2.250956e+00	-0.6693497
## 221	-0.227515019	1.493051603	-3.75970944	-5.254153454	-6.66333614	-12.68826763	-7.708622e+00	-4.4911611
## 222	16.098873335	13.792451984	8.08670470	7.578056249	7.06458969	5.20440863	8.506306e+00	7.4346453
## 223	2.470520369	3.010549478	1.82141966	0.238188455	-0.86159723	-6.60168740	-4.236996e+00	-2.1129777
## 224	4.867865074	3.229655134	0.46775590	5.120204920	-0.61208305	-1.25658716	-3.886176e+00	-4.0891814
## 225	4.888812836	6.584401258	3.83900423	1.335590737	-0.84905842	-9.98943559	-2.532924e+00	-0.6731220
## 226	4.226272459	0.194218407	-3.38458938	2.179635889	-5.13100858	-7.07349214	-3.729247e+00	-1.1694767

```

## 227 -3.012246091 -4.140372781 -4.88815050 -7.114192238 -9.27220324 -12.94099526 -8.040042e+00 -8.3102769
0
## 228 5.407374842 3.065045480 -2.69202221 -3.035478479 -3.81779131 -4.03841150 -2.753579e+00 -3.4039489
7
## 229 7.389554763 8.817385136 5.39099307 3.601965524 -3.53492032 -8.23180259 -1.136499e+00 2.3259681
6
## 230 -0.930561876 0.772464070 -1.44276603 -8.101320096 -12.59616298 -18.45962033 -1.276792e+01 -9.5670023
0
## 231 12.248300660 13.886808326 9.04888300 4.926275556 2.19194465 -0.31749018 7.714413e+00 9.9851922
8
## 232 3.327214281 3.894904962 -0.91877937 -8.338285756 -9.07357604 -11.63705952 -4.466966e+00 -4.2890899
3
## 233 7.136746907 6.190764677 4.81921021 4.334128177 1.45155783 -0.63659063 3.048324e+00 0.9185548
5
## 234 4.900009649 6.166954649 3.72918661 1.466164635 -2.53078462 -5.64257150 -1.311878e+00 1.1625591
9
## 235 21.076325425 17.869201754 14.20846907 8.541667515 10.11343227 11.54243756 8.343518e+00 9.6557716
6
## 236 18.627121109 17.947813993 21.07936659 15.129374290 16.85089207 13.50921975 1.064214e+01 10.9249196
6
## 237 14.585553482 11.682313489 7.47838218 7.020006958 5.37541876 1.83606608 3.119932e+00 5.0058024
6
## 238 17.085893959 15.263575548 16.56000725 12.458057545 10.11729633 12.82488573 8.218765e+00 8.8586839
4
## 239 14.355630808 12.349997209 14.10931561 12.141184157 6.67912660 10.88391318 4.958634e+00 3.8952020
8
## 240 0.266986609 -4.606696894 -7.91724611 -6.766859603 -4.83000649 -4.85280053 -7.000025e+00 -6.3449558
2
## 241 22.233112789 20.771550750 21.61909796 20.278136226 20.58648911 20.09115849 1.543660e+01 16.1969658
2
## 242 5.257600105 2.054618849 -1.91731950 -3.080648725 -4.01520178 -2.99253050 -6.075537e+00 -0.9040179
7
## 243 7.827378320 8.449723851 2.92767644 1.629424883 1.76584681 -1.60879982 -4.086498e+00 -0.0258087
2
## 244 10.940623099 9.816240097 11.18865833 6.914750750 5.06186412 4.49768770 -7.299153e-04 1.4874269
5
## 245 4.280260518 3.277074335 0.32962768 -1.836471059 -2.90996102 -0.12774114 -2.933520e+00 -1.3080781
3
## 246 5.584609670 3.113729890 -1.91348097 -1.728757338 -1.33906834 -1.95676788 -1.154483e+00 0.8030877
8

```

## 247	16.995208540	12.573126165	9.91087717	6.561766140	5.33589122	5.38481547	2.511647e+00	4.8356514
## 248	7.881595653	7.281070411	4.19930195	0.613820037	1.39966056	4.18424250	-1.747620e+00	1.2785791
## 249	9.214417345	7.161562928	8.45766878	3.636063211	3.20378535	3.31687922	2.253170e+00	1.5080223
## 250	11.221712614	12.425724028	14.39676487	7.581004048	4.86321112	5.33828243	4.751005e-01	0.1903336
## 251	4.557137522	-0.400247875	-1.46081957	-8.923086579	-5.13936383	-2.27430047	-9.378536e+00	-6.4705748
## 252	5.942280313	8.131092164	6.31582061	5.035793694	2.52267878	2.93878766	1.435664e+00	-1.9036077
## 253	11.679039490	11.979745332	10.40118811	4.140172708	1.35001270	3.80119447	-1.035557e+00	-1.7170965
## 254	5.129402237	6.067280442	2.26476599	1.775308053	5.02351520	3.24958345	2.208298e-01	3.2650955
## 255	4.791750597	0.923252593	-2.12073500	-4.248094999	-4.19370509	-6.10155526	-5.738382e+00	-7.4892472
## 256	7.835540946	4.920767004	3.35838482	0.260401523	-1.24192953	0.63327059	-1.844708e+00	-2.0165005
## 257	11.122838260	8.971989153	10.49829260	5.640871475	1.89671275	1.46563690	-4.841697e-01	-1.2241767
## 258	12.406940602	7.806498739	8.35962284	7.333930340	3.16472742	5.39141087	3.809198e-01	0.9026633
## 259	10.923306970	8.452108493	10.84144753	8.782311562	3.50410478	4.95135023	-7.513734e-01	-0.9773437
## 260	1.624194408	0.390946467	-3.37723513	-4.979623257	-2.33962959	-0.01142899	-2.054802e+00	0.0730291
## 261	12.946772384	13.016933572	11.32572835	12.254011893	10.85701770	10.86246568	7.896975e+00	4.4594170
## 262	14.926648605	13.961723024	13.32724210	7.966180569	7.94616396	6.08199066	5.591667e+00	6.1372306
## 263	14.976846541	13.421782927	16.59018162	15.251761806	10.97938569	13.97957324	1.089591e+01	7.7599965
## 264	15.031893441	15.576218271	14.02893616	12.703726339	9.43400241	9.17775595	7.943005e+00	5.3428782
## 265	14.395806511	16.601666857	17.48545248	16.860013154	14.57529237	15.03465181	1.161194e+01	12.6119533
## 266	15.918798382	11.697487164	8.40417639	6.471477600	4.16636573	5.87669344	3.461501e+00	1.4494784

## 267	19.170945365 9	18.529790881	15.71595545	8.810715926	11.05704182	9.61572008	4.071146e+00	6.7151442
## 268	15.796344504 0	12.816871389	7.97866879	6.276988273	4.50344149	2.79530428	-3.747970e+00	0.3216451
## 269	15.749992718 6	13.253914221	5.94127038	4.004048049	4.76229739	5.32040740	1.055993e+00	4.9595885
## 270	6.199234710 0	3.430481563	-1.24382001	-4.846232419	-2.06845420	-1.96728987	-6.523469e+00	-5.8245062
## 271	-3.337698243 4	-5.290651947	-9.89938184	-11.473406081	-10.75635145	-10.02316669	-1.445017e+01	-9.4966919
## 272	2.646808568 0	3.369476223	0.86549375	-0.629162312	-2.69008306	-2.46662779	-7.910840e+00	-5.6352856
## 273	4.653202774 1	3.552575794	0.84800196	-0.444877147	-2.84569157	-1.07466788	-3.630123e+00	-4.4563809
## 274	4.339216333 6	1.707911093	-3.38378188	-6.483702667	-0.84324514	-0.54207204	-3.215152e+00	-2.6738335
## 275	6.930970056 6	8.245826577	8.19153351	6.400900366	2.39971268	4.24008317	1.831683e+00	1.1141162
## 276	10.025785835 6	10.301922201	10.47170726	4.343567108	5.73026119	5.82856334	1.181748e+00	3.2980683
## 277	12.710405480 7	7.905111801	5.34180941	3.806201377	0.90424384	3.20618672	-3.312755e+00	-0.0385439
## 278	6.310358109 5	6.762185896	0.27202251	-3.468867821	-6.23159306	-5.40150314	-7.748842e+00	-4.9595558
## 279	12.225814888 0	11.418994078	10.71233659	10.096922530	8.19874390	3.56212215	1.273037e+00	2.0574919
## 280	6.018009886 6	2.749942731	-1.65221192	-3.119910907	-5.76404676	-3.62522981	-7.466332e+00	-6.3001336
## 281	3.977993322 0	5.315901892	8.86687714	7.202447860	3.58952468	6.97074925	4.199312e+00	-0.7079743
## 282	6.838985521 6	9.120239577	8.00459011	5.859464689	3.59172590	4.37784188	-1.873689e+00	0.3930987
## 283	9.687050777 1	10.046176323	7.57996031	6.253538297	6.79168691	8.40970377	4.527681e+00	5.1199667
## 284	9.540435124 2	4.822364023	-2.72579691	-4.350917650	-1.15072680	-4.76887283	-4.179522e+00	-1.9482390
## 285	6.841932538 1	7.497563855	8.68837034	8.882569146	2.44326700	5.75749794	3.757921e+00	1.6096839
## 286	6.960726051 1	7.941603722	3.53968742	1.267895976	-3.06257395	-0.41976569	-3.808768e+00	-6.5689705







```

## 347 -11.794357320 -14.198127061 -15.78795580 -14.495831692 -15.38922671 -15.05537417 -1.582397e+01 -17.4335016
3
## 348 -2.181065576 -2.377667845 -1.33385340 -4.822098840 -0.55370736 -1.20991470 3.025360e-01 -0.1625829
7
## 349 6.325476057 5.510292403 6.78125148 4.313162867 5.31364284 5.86260569 5.134559e+00 6.2674226
7
## 350 -5.991514400 -6.760070552 -6.41645666 -8.112465448 -7.58178943 -6.17451242 -8.669240e+00 -4.9113094
9
## 351 12.068474027 9.739084750 13.10504916 10.072775069 9.26725556 12.05269075 1.067285e+01 11.7617351
8
## 352 -3.274638546 -4.915395691 -3.33167995 -4.905340775 -4.55176698 -4.30389614 -5.119755e+00 -5.5241837
6
## 353 9.567909879 5.531430343 6.31629466 5.507377248 4.67493678 5.39968590 4.078999e+00 3.0713811
2
## 354 4.911240884 0.510168557 1.24779724 1.509564565 -0.95691802 0.95183273 2.165838e-01 -0.7274027
4
## 355 3.969341944 3.401816048 -2.30662802 -3.500840193 -1.28398524 -0.61213013 -6.246884e-01 -3.2556721
7
## 356 21.094204919 17.378728132 17.71603426 18.263471759 16.86523409 14.30134318 1.403903e+01 17.1861707
3
## 357 19.396949649 18.308279831 17.90744524 12.875483197 12.53845955 12.89576091 1.161267e+01 15.0654343
4
## 358 23.292125031 21.050637975 19.88369384 18.843004953 17.53196143 14.22362045 1.258839e+01 13.9026883
6
## 359 22.056417372 26.471325274 24.86376567 23.897473058 21.44584050 18.60309855 1.875879e+01 17.8831472
1
## 360 19.467146861 18.350924923 20.75454965 21.687718815 18.85862977 17.68840341 1.951321e+01 13.9260344
5
## 361 14.034500798 11.018667741 8.62585256 7.549163874 7.27747876 6.53959574 5.373363e+00 4.0368906
4
## 362 17.126545917 22.564685547 18.44714736 17.719811050 18.69169088 16.32417695 1.127798e+01 10.5656737
3
## 363 20.692966634 22.681035054 21.07657612 20.932549672 20.99854134 20.18936201 1.550078e+01 15.3105218
3
## 364 23.019526494 24.071054859 22.93845661 19.765118987 19.10750155 17.85456046 1.632099e+01 11.6750381
5
## 365 21.028392397 18.441205899 15.30969123 17.123045434 12.17421645 10.42987361 8.617321e+00 7.8340922
0
## 366 20.517997552 20.724756620 19.82206914 16.107888111 15.36107968 13.71927841 9.577741e+00 12.5351709
2

```

## 367	14.983717570	17.946722732	18.76787299	15.398244680	14.44464138	13.20754371	1.209883e+01	8.90077372
## 368	15.830627668	16.226390128	14.93868670	13.089170288	12.04228651	14.20502040	8.082478e+00	7.79271630
## 369	14.530283601	19.948018606	12.83823866	11.082406387	9.91384739	10.46126401	5.121609e+00	8.85194346
## 370	21.196662105	17.944409592	16.54830801	12.636692041	10.36602078	10.38042800	7.068342e+00	8.31328310
## 371	23.836821309	25.656631495	24.46994224	22.221751149	23.19060450	20.82078208	1.909650e+01	19.04910816
## 372	17.059820144	15.337070637	10.85023433	9.602627716	4.71362739	7.69138211	5.312423e+00	3.66338091
## 373	20.140116262	16.280153048	13.78038778	9.875675690	7.34689324	7.92447293	5.040564e+00	0.87256334
## 374	15.592726106	16.750596500	16.89572709	16.478379231	15.80188392	11.62919625	5.525103e+00	9.45220623
## 375	15.121001597	15.113683896	13.34886207	9.477379641	11.16480615	10.14395270	6.506960e+00	4.89479750
## 376	8.494698118	8.809545441	6.88236078	5.399234715	5.15464799	1.23918503	3.512068e+00	0.76599401
## 377	4.373044114	3.753041009	2.47223376	0.786118079	-1.39964954	-2.63215048	-7.223375e+00	-6.37620117
## 378	14.511039142	11.207210426	8.83449179	7.259210431	8.03014614	8.95187199	4.245668e+00	4.27187070
## 379	15.855189532	20.021393975	17.43975279	14.867874343	13.01226916	12.00322737	8.925532e+00	10.00340832
## 380	15.677758556	20.203092651	20.42952642	17.791395970	20.69744421	17.88275905	1.503317e+01	15.43302780
## 381	21.445315052	18.781301302	20.21693937	18.468521135	19.87869881	19.04018684	1.771297e+01	18.86511097
## 382	17.795133925	16.309907780	16.84861076	14.329745866	11.87814671	11.17579793	9.000217e+00	9.18824481
## 383	14.817517398	14.668902322	13.25454223	12.334737397	11.94622802	10.55191129	1.035242e+01	10.70025107
## 384	28.723842512	28.840995124	30.67711763	27.736802969	24.62638852	26.42302290	2.312192e+01	23.22823309
## 385	17.234586716	18.211028101	17.43496492	13.264532486	13.49724929	10.18058943	1.197681e+01	14.14845733
## 386	13.422596010	12.693762470	12.82121798	11.767029168	13.76524187	7.09217898	5.532455e+00	2.95126652

## 387	31.017694294	31.276033318	30.77842464	33.162688976	31.68546125	29.15540583	2.997542e+01	28.7620880	
4	## 388	22.201342175	22.124274179	18.65396449	17.207631644	16.07132169	14.38910753	1.500954e+01	16.3684871
9	## 389	14.278687011	10.951741011	11.20708879	8.977050539	9.38786676	9.33781067	6.255236e+00	6.4531713
5	## 390	16.001351592	15.152017887	8.66702596	9.075630069	6.07444225	3.51455130	3.547657e+00	3.3406207
3	## 391	12.248365057	11.957143688	9.93666820	6.902113199	5.97352320	4.26185553	8.211450e-01	0.4355805
6	## 392	5.335423466	3.730653969	2.68476137	1.737169373	0.08285837	0.92887449	1.288286e-01	-0.2106160
1	## 393	16.087557501	14.798171526	14.52152289	15.990502359	15.94325703	13.08887012	1.272154e+01	12.0403533
8	## 394	16.184316516	16.002793455	16.03327742	16.846172342	14.72376123	13.28558474	1.328203e+01	11.2277119
3	## 395	8.514670222	6.337629690	7.46199938	5.149959075	4.24969160	2.80432638	1.707598e+00	-0.3934616
0	## 396	21.603117106	19.854575373	13.53762362	10.513900408	7.36433936	8.25969784	7.676317e+00	5.2629298
3	## 397	15.057369033	12.758091699	11.87847201	7.976723878	6.46331597	6.20544176	4.790330e+00	4.3646492
8	## 398	-5.004744894	-6.400323118	-9.14862207	-12.969208562	-11.19437810	-12.47432977	-1.354765e+01	-12.1357260
4	## 399	16.334790761	15.987361191	16.73309040	16.871011753	12.93453963	11.84975058	1.144106e+01	10.0384004
2	## 400	15.312427526	14.871247334	10.49370253	6.766378773	6.53059336	5.63440885	-1.334354e+00	2.8572103
6	## 401	18.268735452	14.829202447	15.00435906	8.746807594	8.97613120	8.52940505	5.504848e+00	5.8576794
4	## 402	16.700154118	15.970691569	11.64562773	10.698417896	11.20201246	11.21692528	1.077827e+01	10.2819588
7	## 403	26.272065219	27.604833218	23.82730999	20.541490068	21.07697360	19.40374437	1.448661e+01	14.9457376
0	## 404	7.090902181	2.219766141	-0.34962283	-1.768003738	-3.82225729	-6.11225139	-9.913135e+00	-7.8904479
7	## 405	12.383507895	10.990490935	7.92366239	4.035689656	2.21898592	1.57261804	-2.984119e+00	-1.4588091
7	## 406	17.609027141	14.987969185	14.18327998	11.214021850	10.16243395	11.00970619	7.528153e+00	7.2867365

## 407	28.099131860	26.104748616	27.40477243	27.239556988	24.49268070	22.05699274	2.207739e+01	20.1326795
## 408	30.754147275	28.735825581	27.11023472	23.364342796	21.53444828	20.72005472	1.731308e+01	17.5139344
## 409	21.806869040	26.256837863	25.34346350	26.037286393	24.68349648	23.46908765	2.074394e+01	18.1233917
## 410	9.352804069	9.710101791	11.33033793	7.357141543	8.09814195	7.49897394	6.952809e+00	6.4987902
## 411	21.395340039	21.512047757	19.11300745	21.337182861	21.59512768	19.29046220	1.310787e+01	15.2030755
## 412	11.861729114	14.205784112	13.87754290	13.551755031	13.71401459	12.38282311	8.405265e+00	7.2502293
## 413	22.269173601	22.763773722	16.02761096	18.449057912	21.92035076	22.70926009	2.036029e+01	17.1963017
## 414	20.484581387	21.705258360	21.49004131	21.170697445	17.78648101	20.94834698	1.954670e+01	21.9292085
## 415	19.271485842	20.022794053	22.02021001	20.084525331	17.08829625	14.93546631	1.174351e+01	7.3899178
## 416	22.023682838	19.700869328	22.74553491	18.948867777	19.99351346	19.12787178	1.976951e+01	11.5085266
## 417	17.844627245	18.045106449	18.30057939	14.083024967	11.78015106	10.82118817	1.281583e+01	12.7162608
## 418	20.082125929	23.660665185	26.68643564	21.318063855	17.39955522	16.78706688	1.873627e+01	15.9699688
## 419	18.363553775	17.564492617	13.49118435	10.593278905	8.66337975	12.21455182	9.362212e+00	6.0068181
## 420	19.908814554	18.636122429	16.17568480	11.603414921	8.92208916	4.62446487	5.742577e+00	3.5773677
## 421	19.680104710	16.395532269	15.88441008	13.941710928	8.43463453	5.49261099	7.033111e+00	8.2140046
## 422	20.217342944	19.736568348	16.54199921	14.639764027	10.35288664	8.36352544	8.229888e+00	10.3846200
## 423	16.708953761	15.949162324	12.82613547	9.585941662	9.74365358	7.44081902	7.855976e+00	9.6937469
## 424	28.020292986	24.954832534	21.79591036	14.069835309	14.61277681	13.74311832	1.152297e+01	4.6934338
## 425	20.919615706	13.827882185	11.84927396	7.321422737	3.36227658	7.04225222	6.717715e+00	0.8776365
## 426	7.239459537	4.229906434	2.61944885	5.176538988	0.24109426	-2.72783625	-1.491205e+00	-1.4653331

## 427	18.007614362	15.346303850	12.67812274	8.9984805385	4.26361899	3.91675929	4.889766e+00	4.3541438
## 428	18.856131821	11.464450119	8.67871650	4.296849886	7.65052381	4.80059201	3.561905e+00	0.6279385
## 429	18.093643531	16.623466982	16.39881697	15.235137894	9.94614984	7.55901409	1.097537e+01	9.8578500
## 430	16.902965934	13.118596904	13.87325206	6.296519695	5.34211417	4.30170049	4.800320e+00	-3.1514691
## 431	15.195966228	11.685344019	9.07710102	0.937208918	0.86577691	1.26205487	2.441010e+00	-5.0592804
## 432	15.051145619	14.648698952	18.24272721	10.578941816	9.01150524	4.38775464	5.632910e+00	2.4517333
## 433	13.067314018	9.573005381	10.65603827	8.984338325	4.41642839	4.25420411	3.870854e+00	6.5498323
## 434	14.760198831	14.244364837	13.37546311	10.059324580	6.79768865	1.52465986	3.522729e+00	-1.7473169
## 435	16.174619569	16.713990036	15.09676979	12.413545480	5.78114017	7.73243526	9.270269e+00	9.6769743
## 436	14.344498221	16.736429392	13.58692922	10.166510891	9.66130724	8.25318453	9.465940e+00	8.6376108
## 437	6.321425691	2.767971927	-3.50451610	-0.137518982	-1.75090864	1.05376989	-3.166767e+00	-0.4330270
## 438	21.794899631	24.713061607	25.68825306	20.429511352	15.44770569	14.34857488	1.478021e+01	12.4694531
## 439	10.801536165	12.229188900	16.08913811	10.183016771	10.01562886	8.55715641	8.227264e+00	10.2156669
## 440	14.861093148	13.591750184	14.45159681	10.067752469	5.24358776	8.09293224	9.741377e+00	9.0290523
## 441	19.859734410	16.695991652	20.58768091	17.137181341	14.23307172	16.35607021	1.417760e+01	9.0675538
## 442	20.487670069	18.101991348	21.95124876	18.544770136	19.15104526	17.29899143	1.540566e+01	11.2073276
## 443	19.769253494	19.095055143	18.36995057	12.781105913	14.21412484	9.81062439	1.017385e+01	7.5866664
## 444	23.730077114	22.045597707	20.36439012	17.426922136	15.66219122	17.78169350	1.679750e+01	11.4030543
## 445	24.422219558	30.285481807	32.95774117	17.290592183	15.36634071	15.90523328	1.558873e+01	10.2826145
## 446	24.558591330	21.885301804	21.65884153	18.125840319	21.93827666	20.70629712	2.000849e+01	13.9640615



## 467	13.563561930	12.613886636	12.56455089	12.165811013	8.84571419	7.75097051	1.004334e+01	8.6973215
## 468	22.989382068	24.313140843	23.99149393	23.685035538	24.31537872	20.39163401	1.674783e+01	16.3172004
## 469	13.741362083	13.534932918	12.73175036	8.365839759	5.19145526	4.48835226	2.789361e+00	1.8311939
## 470	20.596952026	19.224099044	15.92487521	12.605589872	12.51363213	11.53336031	8.395731e+00	5.4381231
## 471	14.430469086	13.486719520	12.82012242	10.057556318	9.54835526	9.74179625	8.883803e+00	7.8489534
## 472	21.746069728	22.169718467	21.74309526	19.476266983	18.43562980	14.98319501	1.314938e+01	9.7955446
## 473	18.993117525	16.040558416	15.39353634	15.273854325	15.99402592	18.93227298	1.919914e+01	17.7211185
## 474	17.523878386	12.422988154	14.48614445	14.444611713	16.90250026	17.93112567	1.749517e+01	17.8306550
## 475	20.187105049	19.704084374	19.85868825	16.049683090	16.10328630	17.20018435	1.816411e+01	16.3005063
## 476	19.702933017	19.766570779	19.35973625	19.679712623	22.21262212	22.51799659	2.081326e+01	11.6102488
## 477	18.701639056	20.433477415	19.46924069	13.510479691	11.95696169	11.35462258	1.217997e+01	16.5981184
## 478	18.618711250	19.723977892	18.95538918	16.342636371	16.76258192	18.19313625	1.750761e+01	16.9927518
## 479	17.830199468	16.961819517	17.15304574	14.518628950	11.64190221	11.56393773	1.486308e+01	14.8042799
## 480	16.089453085	14.880746757	14.83376803	14.365263929	12.40803751	12.40364309	1.208261e+01	10.7379242
## 481	10.603559665	12.272659388	15.69381451	15.194529843	14.05193043	12.96035706	1.225377e+01	11.1621033
## 482	18.804632018	15.069128602	16.44009059	15.336134745	16.28794701	15.68592913	1.378574e+01	14.7282734
## 483	16.912574823	15.143229120	15.89798905	11.836931969	12.69671866	13.89840533	1.344583e+01	10.9643496
## 484	21.510090570	18.196218942	19.03641598	15.062203695	12.26746851	13.03772732	1.617576e+01	15.9187448
## 485	19.344165308	16.366245164	17.11470708	14.659851483	12.68394025	12.57123582	1.295785e+01	11.3064266
## 486	9.561831853	8.394308453	9.06999844	10.230299256	12.87868272	11.41048973	1.250933e+01	9.5233339

## 487	12.032406617	11.826140074	12.91277902	14.433020778	11.80377874	12.50439739	1.161617e+01	11.2133592
## 488	17.100514273	16.930120287	16.67962011	16.343182707	14.52221145	11.53593780	1.058637e+01	14.5517295
## 489	7.557258226	6.374216106	8.66676668	7.972334055	6.12755712	4.02268097	3.644598e+00	1.9636324
## 490	14.820052980	15.418157173	17.04142282	13.739282503	13.72140907	12.57056821	1.491913e+01	12.4235617
## 491	17.571130396	18.717405203	17.70802383	15.796985909	17.12936144	17.38852409	1.517582e+01	14.5732268
## 492	12.369669331	12.446824221	13.60869760	11.874343565	10.07245902	8.13036438	1.183647e+01	10.6321738
## 493	13.075950024	13.568334152	11.63984236	11.758707239	11.47307125	11.47795996	9.855886e+00	6.0649832
## 494	15.344642494	12.977870639	15.05478081	12.934786458	12.82938924	11.00554260	1.180812e+01	7.7019092
## 495	14.253228053	13.692681524	13.60216874	13.956177697	11.76282014	9.81810998	1.027626e+01	7.4819036
## 496	10.559462382	8.361329493	11.26983253	7.834018562	10.41373154	11.28182389	1.277605e+01	11.3474721
## 497	18.008171034	14.981103817	14.82407679	12.286218059	14.16573117	13.47972007	1.183845e+01	9.9578706
## 498	18.869146285	16.187303679	18.68936899	15.121216943	16.86265863	15.47575486	1.370325e+01	10.1587030
## 499	16.088636219	14.171867262	16.17860624	13.395386183	14.61290476	15.02078869	1.680539e+01	15.7501728
## 500	13.904748734	14.219013056	15.92046118	14.266013827	14.07171845	15.14921393	1.493066e+01	12.4071435
## 501	19.739822245	17.198809885	18.89004625	17.300725038	18.37608842	16.86356404	1.488447e+01	12.4171832
## 502	17.536066555	18.765683584	17.96705780	17.758815771	19.38353022	15.59263027	1.448494e+01	15.1087020
## 503	14.944464149	12.721703631	13.11932648	16.989577977	17.14525794	10.75603693	1.303398e+01	13.1900645
## 504	21.096968260	20.296239306	23.32531828	18.515354392	12.26099125	12.04932967	1.266099e+01	12.7456246
## 505	18.347303763	16.047399238	21.20502921	16.340610506	13.75662063	7.69729361	1.129031e+01	14.8876851
## 506	20.938407127	20.045562377	19.72708433	16.717371547	15.86830659	21.00673316	2.322335e+01	23.6307668

##	507	15.010209369	15.110897699	15.84590846	14.171396664	7.01207400	5.39908713	1.403918e+01	16.5333972
##	508	17.105799276	18.346876730	16.90313155	15.463649093	15.68051651	13.09556984	1.276109e+01	14.1210245
##	509	7.525588534	2.162544973	4.16477252	5.609833955	3.87139213	1.52170352	-8.380973e-01	-0.7014273
##	510	12.465106407	10.572573921	11.52681847	10.393208555	10.50969269	8.51935549	8.367733e+00	6.8172131
##	511	13.495435126	15.290618083	15.42073840	8.073596536	14.02783359	18.54087909	2.092963e+01	19.5785019
##	512	11.558158358	12.311027040	13.58975714	13.658560201	10.78756832	9.18016290	1.338822e+01	14.0785078
##	513	9.984229995	7.550243324	8.71609285	7.429540122	8.24017308	10.32642656	9.659548e+00	5.7666022
##	514	9.746850943	7.457439973	9.38390135	7.610193838	7.83603378	9.22921675	1.098898e+01	8.3367503
##	515	10.722127798	9.521895384	14.76271424	10.882093857	4.48234048	8.03430350	1.160570e+01	13.0937244
##	516	12.231375653	12.062253127	9.27928078	11.418283498	12.89418859	12.96246009	1.213792e+01	11.0172482
##	517	13.879115188	15.739695264	17.29882091	12.323395204	13.14555932	15.26362824	1.799973e+01	15.6603520
##	518	6.412425602	6.853679820	9.73659876	5.893918134	5.33756865	3.28720423	6.500139e+00	4.8838422
##	519	18.134779209	17.458059016	15.85091872	15.483677638	15.13146830	14.57568834	1.453402e+01	11.5453703
##	520	10.972367056	11.000525140	8.10525104	11.875738802	12.38909198	10.63860815	7.501591e+00	10.5817256
##	521	10.823906596	11.248279954	13.80657005	11.870382605	10.85583820	11.79305183	1.241527e+01	15.0988882
##	522	10.458732256	5.217732095	11.16178898	9.762497553	10.53203699	7.40840669	7.004587e+00	5.1009424
##	523	9.322197650	9.935470082	11.34326181	9.111767825	6.33892890	10.00328538	1.345248e+01	12.7669535
##	524	8.451599633	5.525171822	4.52177679	8.423235520	7.52664460	4.58230633	5.894350e+00	3.0225389
##	525	13.507624536	11.639037729	11.95451246	9.592038624	11.34344365	10.86104911	7.588963e+00	8.1203854
##	526	17.983281889	16.089246909	19.30374322	19.603515136	21.81186586	20.04289548	1.962581e+01	16.2581461



## 547	17.075765679	16.425579762	16.28872531	12.611081739	14.96348542	12.05455662	1.256226e+01	10.4734482
## 548	14.369064002	15.121919628	11.64759417	10.960188067	11.35114990	10.66406791	7.017324e+00	7.3836212
## 549	9.265080883	7.723963334	5.46974614	6.032030451	10.46919062	9.11465972	5.866646e+00	11.1530246
## 550	4.915427507	6.140315816	4.37620826	1.965142553	2.30931325	6.43180905	6.866912e+00	5.1292492
## 551	15.133224256	13.134810991	13.12450084	13.087982171	10.71884854	9.20860786	6.188919e+00	2.4920223
## 552	12.452041590	8.704569914	6.60468731	10.150283605	7.99566843	8.06708438	6.578355e+00	6.6341702
## 553	17.472642613	16.651778552	15.56321382	17.070218762	12.41628769	9.63410746	6.840011e+00	8.6281272
## 554	10.403996574	7.264677272	5.22152093	5.958286355	5.29702316	4.45084802	8.838272e-01	1.4049317
## 555	22.165092974	19.997389248	19.53287611	15.913149351	17.99952720	13.17803575	1.537827e+01	13.8056428
## 556	18.139765113	12.886138110	10.12924365	8.948577925	8.35288058	5.57928709	8.798420e+00	10.8465750
## 557	16.498056441	12.031915235	9.42578088	13.366022620	18.63985811	15.62226138	1.532510e+01	17.1870737
## 558	17.611390607	15.417650330	15.26159155	15.446297831	11.89092059	9.38690704	4.283125e+00	9.2933214
## 559	20.383670335	20.062516083	19.53173726	18.961649287	22.29029743	15.48228892	1.913756e+01	17.3007990
## 560	26.497200862	27.539145170	24.13554825	21.667042113	19.36234123	20.72688563	1.595397e+01	17.7193289
## 561	15.519173150	9.938524583	9.11762347	11.346262429	11.66072154	5.97239541	6.968527e+00	8.5356542
## 562	12.980767304	11.268108579	13.72237084	12.889238645	13.33095428	15.22066214	1.330563e+01	10.9550093
## 563	16.748415381	16.188394257	20.80252867	20.739346560	22.22855202	23.65412524	1.991553e+01	16.4314239
## 564	23.707151748	23.195811111	17.78973568	14.981485645	14.57212772	16.07304935	1.185352e+01	16.2574219
## 565	15.742763776	17.826575490	18.15943766	14.640709908	14.25764480	12.69829476	1.394037e+01	14.8634496
## 566	8.885707986	8.047683502	7.85991325	4.943024305	6.02521936	3.84118559	2.888663e+00	3.2993974

##	567	11.778135174	11.639371458	8.14435514	5.718332261	5.87186007	5.93426853	6.377284e+00	7.1897710
##	568	13.045858654	11.997663289	10.09083966	8.388394179	8.93543459	7.16673453	6.353368e+00	4.8658665
##	569	16.106505474	13.473401966	11.88042953	10.647280850	10.58242946	9.38965433	7.134077e+00	6.1947778
##	570	21.349094380	19.513927771	21.24525901	18.527528849	21.24769216	17.61078712	1.853953e+01	17.2580629
##	571	22.175109901	26.619236503	23.50596499	21.349898450	23.76474373	22.74952899	2.071907e+01	20.0421847
##	572	11.685177878	8.309017240	2.81269103	5.585629920	7.58023460	7.27189916	7.241501e+00	6.5238953
##	573	10.161073055	10.528670536	9.70843297	11.822173346	12.47868330	9.00867746	8.227573e+00	7.6226913
##	574	16.011136679	14.491051257	15.39300089	14.105918864	16.03299929	13.70161794	1.123068e+01	10.3799907
##	575	11.575709558	6.690203598	7.50078535	8.651697340	8.19337866	8.50001773	7.065418e+00	10.3402580
##	576	14.530141396	13.297880632	11.39706635	13.025423170	13.08771463	12.68498153	1.357223e+01	9.2119042
##	577	7.061105735	9.601442484	11.40382103	8.083752894	7.76124135	5.34394709	6.507069e+00	4.1590676
##	578	10.646368368	11.968672055	9.96562626	12.030916651	8.74536034	9.04683007	9.396330e+00	9.6439736
##	579	5.023812118	3.127378391	5.55176580	6.959325114	7.30758903	7.82447967	6.547691e+00	5.4475658
##	580	25.385779744	24.629126591	20.80294443	19.843286997	19.06988860	19.36518143	1.766426e+01	16.1597904
##	581	8.960586237	9.435073372	10.09863236	9.792735958	10.53483617	6.05208101	7.421733e+00	5.9844337
##	582	10.929932858	7.962849998	8.44834853	6.849175693	7.28235272	6.77290890	4.065913e+00	5.4011436
##	583	13.439680808	11.223201052	9.12841846	9.788064161	9.63693139	7.73373864	5.131337e+00	6.1852464
##	584	29.124558322	26.614885166	23.04208224	25.257611396	24.97706531	24.64216820	2.057983e+01	22.9891164
##	585	15.460467334	13.282880557	13.78466483	11.979636173	11.70601666	12.55254899	9.706126e+00	7.6311479
##	586	25.074849503	26.548465947	25.51791738	26.006119048	24.54115711	20.83856400	1.735911e+01	17.1344640



##	607	17.777952144	11.151303454	5.70636066	11.276121766	9.28604856	8.76893703	7.481748e+00	7.0980557
##	608	7.372044866	3.315195332	10.19290615	14.812164402	8.22416256	3.93560488	6.691915e+00	10.7531933
##	609	11.151958725	8.473957448	-0.55290819	5.309603979	3.24339275	0.47614148	-6.589655e-02	0.9980306
##	610	15.232053557	11.987405098	7.21768474	8.746472003	11.27844397	10.39335641	9.748001e+00	2.3045901
##	611	11.257332387	12.814151953	5.39600455	6.962788495	9.92261535	4.12188763	2.479886e+00	4.2254283
##	612	19.449772481	18.487403304	9.50254053	12.220590406	15.24223264	12.09626852	1.009866e+01	12.2064447
##	613	12.910955055	14.967686161	10.85360694	10.477180649	14.23922369	11.66897001	1.009380e+01	5.5613513
##	614	13.660703131	10.581115559	5.66284056	3.052094621	7.91294965	8.97553907	8.105236e+00	3.2896162
##	615	15.115205450	11.933111140	6.94904226	11.632406022	12.36181257	11.92364055	9.236811e+00	4.9855274
##	616	14.099393002	9.332416337	15.83322770	16.252722738	9.19981227	6.64870863	9.947325e+00	15.6647001
##	617	14.853014088	15.519715298	3.57737784	12.582024382	12.93507017	8.72089972	5.854541e+00	8.4266308
##	618	20.073829396	20.331455463	11.68597764	14.513688336	15.64201138	14.32768764	6.243807e+00	11.2885707
##	619	14.716726607	13.174470261	7.08256280	9.983886180	10.13166893	12.93661617	8.451054e+00	2.4859017
##	620	20.825681754	13.860400034	16.49759057	22.177049115	19.74954505	13.99955085	1.073890e+01	18.6993540
##	621	21.954437612	22.427970553	15.05584918	22.157694948	18.68058920	19.46035817	1.426134e+01	11.6554440
##	622	23.304952496	13.368748058	21.78078256	22.418082282	15.77567084	12.95077265	1.567909e+01	19.4693758
##	623	13.684866786	8.090962030	19.83414060	17.558577783	10.93530966	5.30671780	1.172304e+01	15.2392526
##	624	26.508556865	22.880987402	22.49039203	25.686998085	25.11472061	19.26939479	1.846366e+01	20.4670195
##	625	19.557478090	14.760973943	9.13110703	13.138522380	9.11107540	5.13033462	2.815783e+00	3.1858630
##	626	9.230406791	12.454984724	15.10292188	11.229736504	7.52177070	11.29216455	1.202375e+01	10.6543299

##	627	15.118472809	12.534029716	2.34514635	9.406606526	6.43754922	4.43611642	2.114971e+00	5.8965589	
4	##	628	13.736442805	13.213388873	1.08049363	8.298215688	8.54943465	6.71295793	2.837909e+00	2.9298613
8	##	629	5.513996137	-4.453223040	4.18382680	2.477835853	-1.89551977	-8.31743932	-3.973484e+00	-1.3066341
9	##	630	10.621180593	8.658990462	0.36208118	1.784907954	3.33171297	3.72056574	2.142035e+00	-3.9042366
4	##	631	9.199445843	0.287621963	9.16823038	11.874802949	6.80634210	0.67228338	6.678677e+00	9.5868364
3	##	632	21.972308896	20.009005024	13.26881433	18.693717243	14.62056466	10.94485422	8.736457e+00	7.3413300
2	##	633	13.253585167	6.799582900	18.56304264	14.258150973	6.46477545	3.90894158	8.804391e+00	8.9300383
0	##	634	10.365689717	12.227843877	7.63381188	15.492981222	22.06636445	16.21043567	1.232369e+01	8.3841091
9	##	635	3.994281279	-1.041707360	5.58342913	7.402741438	1.79292836	-6.86763920	2.746897e+00	3.8367267
5	##	636	8.564084175	8.217748544	3.01331221	7.629247453	7.26416032	2.86089906	2.880679e+00	2.6388564
4	##	637	16.280622278	12.166535669	3.06395687	11.840976282	9.57471048	8.24446993	2.163250e-01	2.3440302
0	##	638	15.485484258	11.368188438	5.58519072	9.956107395	10.57266361	8.05203778	3.042426e+00	4.1955425
9	##	639	9.811887417	4.760373612	11.04130865	11.519982192	7.19571852	-0.87427274	6.972896e+00	7.1560762
2	##	640	19.030295421	22.236936436	16.41281780	13.313670128	19.42813016	18.69008512	1.442654e+01	10.3453998
1	##	641	3.686429190	1.208807629	9.00034351	8.935863293	2.55907699	0.29999398	8.090187e+00	10.5386894
6	##	642	11.985005759	5.184996673	10.34535614	9.800425361	6.14977009	7.61619511	6.543325e+00	4.8451951
9	##	643	6.818785593	3.037373637	4.70225931	6.737854464	4.76217965	2.66596250	-5.670858e+00	1.0164028
2	##	644	21.926028323	17.979466942	10.31197940	13.927395482	16.33252405	16.34792546	1.362971e+01	9.1802601
6	##	645	17.358951919	16.462218976	8.08209779	11.782415063	13.66194514	15.78250483	9.804546e+00	7.1546684
1	##	646	20.104711316	19.085845645	13.31085046	12.578755260	17.24427265	17.42761636	1.551334e+01	9.1511026

## 647	5.815664040	6.418921106	-0.18716749	-3.915245621	0.59185036	1.77735034	2.735767e+00	-6.5959462
## 648	16.286682558	10.135018543	9.55053873	15.585587944	14.97094845	8.99431262	4.286567e+00	9.8784139
## 649	9.480864437	6.231397472	4.60182024	9.063747289	11.33302999	4.69568414	-3.201859e+00	6.1226871
## 650	14.013654937	13.969039599	16.92755224	19.034637424	17.81282008	18.20242209	2.157701e+01	16.8417031
## 651	17.253761706	18.850681328	21.67425447	19.884826573	19.34563302	18.18038909	2.069329e+01	15.9671665
## 652	14.652086788	17.331282344	20.72672429	18.525461720	16.19280027	17.27165793	1.973778e+01	17.3706831
## 653	12.799907914	16.838991668	19.05526226	18.721154908	14.19014963	14.63992879	1.758702e+01	17.1582621
## 654	15.673634134	15.193238659	22.05332707	19.796797266	16.24035606	18.22476543	2.186984e+01	18.4887847
## 655	6.911927079	10.851418622	9.85215735	5.083796822	5.42854037	4.61671607	6.395136e+00	5.5330726
## 656	10.580585660	10.719827721	14.01383140	14.032224150	13.31511400	15.83403871	1.646054e+01	17.0699034
## 657	11.109390155	14.441878476	15.58891532	12.285905818	10.60946969	10.29660601	1.509183e+01	11.4439224
## 658	12.913369984	9.655193182	11.32677179	12.338065692	8.34921951	5.95122211	9.228057e+00	6.7674532
## 659	13.363507360	15.437069210	15.43070581	12.919785299	11.77996170	10.95421751	1.064074e+01	12.5751977
## 660	13.200782924	14.607079228	15.43996261	14.749808830	9.81716134	10.14834938	9.100155e+00	10.7462662
## 661	11.411949172	12.285248316	14.31284330	12.353451270	8.19102972	10.09083779	1.021160e+01	9.1091655
## 662	12.357727072	11.179296444	16.77638940	13.292635447	8.55052876	6.48445853	1.019041e+01	10.2442820
## 663	12.859655145	10.461599967	10.81261780	13.532371178	13.06754031	10.81477543	7.025051e+00	9.4634436
## 664	13.168075501	11.760743121	14.91850669	13.559273855	11.98788485	12.15839924	1.341474e+01	13.3609003
## 665	11.568955453	11.405302415	14.59143621	12.707202395	10.83710245	9.28186454	1.221285e+01	10.1980493
## 666	13.319290538	11.076034855	12.70069880	10.361769847	11.74028251	9.15659711	6.780985e+00	7.8253615

## 667	9.188373668	10.482814843	13.58184453	12.715358278	11.17065207	13.43184112	1.640819e+01	13.3179371
## 668	12.074606102	13.284462050	12.77058654	13.683318194	9.24825702	9.00649460	1.075437e+01	9.9904285
## 669	9.189208173	6.404094211	4.92142919	7.055590554	2.99605878	5.16375181	5.269218e+00	3.3609626
## 670	6.549488169	9.758989853	13.90007527	13.664389956	7.75652146	9.87904212	1.106132e+01	8.7686510
## 671	13.355735045	10.344865552	11.21500306	12.154107738	9.11935516	7.89043757	1.102464e+01	11.6841861
## 672	10.967082080	10.436511574	14.56364488	10.810659395	5.24254204	5.20395339	8.428215e+00	7.0520486
## 673	7.905841996	11.300353614	11.87314512	11.749206334	6.87894185	7.96030465	1.267487e+01	9.0197019
## 674	11.289145243	11.709647460	13.18645557	13.600135961	8.85761585	9.28949707	1.090038e+01	9.8148379
## 675	11.713173998	6.289858246	12.35933464	10.733078554	7.21959132	9.61205900	1.113934e+01	10.3227738
## 676	9.571507547	10.634918586	14.06930541	17.608816000	12.62572172	16.07084229	1.848397e+01	15.4488653
## 677	13.697499713	13.267773610	16.53367397	18.811518934	14.22370056	14.22099213	1.925153e+01	17.9708944
## 678	10.560270850	13.177704259	16.18333663	16.468512181	14.84913931	13.00811680	1.260228e+01	12.1223701
## 679	18.300040697	16.639886446	20.65740391	18.845170984	18.12346284	15.23957613	1.476016e+01	11.4764911
## 680	14.696850834	15.695429622	19.51543170	18.541866431	15.02797869	12.69207092	1.455201e+01	13.7341793
## 681	11.149978271	10.450620894	14.71459363	18.214600302	15.98286285	18.47271732	2.167647e+01	21.3701296
## 682	13.765269547	12.791492662	20.78789382	22.177192229	17.11815087	19.70283352	2.068620e+01	18.9343640
## 683	14.566066902	10.873218488	17.18179581	20.865623830	18.38249100	16.72562844	2.024526e+01	18.4994764
## 684	17.823600311	15.369270929	18.39565306	19.194697778	13.74861813	14.55717282	1.536017e+01	14.6522235
## 685	2.707942802	1.904106965	8.71997085	9.569760929	6.43080994	6.76365954	7.204527e+00	5.5522976
## 686	0.245576298	-1.304029897	1.70982693	-0.545867297	-3.17859970	-1.45002546	1.619250e+00	0.3452260



## 707	5.250368845	8.157041173	11.13164001	11.427469193	5.81824339	6.09290758	5.645150e+00	6.5191526
## 708	19.405326050	17.789680095	17.51401047	19.012845041	18.00188728	14.08412199	1.277381e+01	13.3505143
## 709	11.857775386	8.589262440	10.35605155	11.921807042	10.58000143	8.96851092	1.038528e+01	9.9958820
## 710	24.162460746	25.029388553	25.18977636	22.667818552	18.69278283	19.49731180	1.812076e+01	15.9088357
## 711	15.238950611	16.598833181	21.25709472	17.625750921	16.36733524	21.13852794	1.870815e+01	14.1599057
## 712	16.908152040	17.292811338	20.57716639	19.261799971	15.34065167	17.35446618	1.353874e+01	14.3221934
## 713	10.246151345	13.623292702	17.49103470	19.650833230	13.96179713	18.35905992	1.841067e+01	11.5927602
## 714	15.958568567	18.672965993	18.85444888	18.592821801	16.84533736	19.69345614	1.540945e+01	11.6142397
## 715	16.746911230	16.198768745	19.40665586	20.179220772	20.49826122	23.28205874	1.991570e+01	19.2126634
## 716	15.621143579	17.340651422	17.24717861	15.744973249	15.50088165	15.85465988	1.380877e+01	11.6017111
## 717	14.120443973	16.530250957	16.51784141	14.536107448	13.58024501	13.48152891	1.472794e+01	14.3312940
## 718	9.867764239	11.219414670	15.48696433	11.868200956	11.12272592	13.02925632	1.133394e+01	6.2365671
## 719	14.950951338	15.628187341	14.83529566	14.150636719	13.70048205	15.15151933	1.210789e+01	12.3096966
## 720	15.706355685	17.926773668	17.59810048	15.157632916	17.54653230	18.82332076	1.329439e+01	13.1316478
## 721	14.974863605	15.952090549	15.65621981	12.511666760	11.92414806	12.76018122	1.046935e+01	8.8355543
## 722	13.698905765	15.424592102	15.84444796	12.973810412	10.48360824	12.31559558	9.858847e+00	10.8692309
## 723	15.432489265	13.795647188	13.76483016	11.936088211	11.49514631	13.84554565	1.204644e+01	11.2327889
## 724	15.004935856	20.181848833	20.83190553	16.791645012	15.82877833	17.70840503	1.502399e+01	13.6247931
## 725	13.339382225	12.943572847	15.27293470	13.053829143	9.99895169	12.99975657	1.026870e+01	7.9938614
## 726	15.341105515	15.615072436	16.34654256	13.713549797	11.47162846	14.06298885	1.505762e+01	13.0014649

##	727	17.266029474	19.042672358	22.75829092	18.975641994	17.10155930	19.19119205	1.718833e+01	13.49231064
##	728	14.560669045	15.725400649	17.19992705	13.876500429	11.15100934	16.11273125	1.190160e+01	10.50734445
##	729	13.163234171	14.611614801	13.68818028	11.650038950	10.03605858	13.57809248	1.169316e+01	10.21277840
##	730	12.703677667	14.683326137	15.50824094	12.064216396	11.15418244	12.30376069	1.034388e+01	10.40077199
##	731	16.069587185	14.888074136	15.49165917	13.973754038	11.87321850	14.26980398	1.185526e+01	10.64654939
##	732	14.883585969	17.056844382	18.39458147	15.932914199	14.63116080	17.53865809	1.470931e+01	11.09011462
##	733	14.852169198	20.235343995	22.30844244	18.378427411	18.59212228	22.14369514	1.579054e+01	16.51623680
##	734	14.553016269	13.758513331	18.34245814	15.251515710	15.56716520	20.28149872	1.758012e+01	13.49075412
##	735	20.524787450	20.099426718	23.16424067	20.149076122	19.68806638	23.22471929	2.053409e+01	13.38132509
##	736	20.216051287	20.532697585	22.61057777	19.471523950	19.19544538	20.73302984	1.917823e+01	14.65037225
##	737	16.159855696	14.660820050	19.09485720	18.509371593	15.44891860	18.71066912	1.736670e+01	14.56367094
##	738	16.444830797	19.289871097	22.27696882	19.314481186	15.91907909	17.63991688	1.957960e+01	16.66287217
##	739	19.390087459	23.285925993	25.71004263	20.116943127	19.85464779	21.00831591	1.472056e+01	16.61432559
##	740	20.817005223	23.857715114	25.07032737	19.991932183	16.71168607	19.72119473	1.665904e+01	16.17194418
##	741	19.643144993	20.198504808	22.37184474	20.453298671	16.68713231	20.45939564	1.686743e+01	15.65110223
##	742	15.521191688	21.441194748	22.50736609	19.661850046	18.26931371	18.95573922	1.310433e+01	11.79258478
##	743	11.951311063	12.807477413	13.07070217	8.992284018	4.59611260	4.54847732	8.497201e-01	0.68461310
##	744	14.883054102	16.359048329	16.95149673	11.827985927	12.15185060	13.72623454	1.005078e+01	10.84400216
##	745	13.222582111	11.914586513	14.29440942	10.486189378	9.92986747	11.61222117	1.147702e+01	9.52438423
##	746	11.551665026	14.189770669	13.90157545	11.127107703	9.21443675	12.47441065	1.036384e+01	7.33598635





##	787	10.452026616	4.077604539	5.71180112	6.335390306	2.00997972	-1.70954265	-1.872202e+00	2.5045734
##	788	10.371726117	9.144749140	15.80858810	11.297271702	5.21879007	3.87422123	7.755688e+00	6.1782873
##	789	11.434229345	7.973873107	3.63140534	5.520420783	7.94287578	4.95269597	-2.908140e+00	5.4454900
##	790	10.724073151	3.324028843	1.02216404	5.266845378	6.82592664	2.04040222	-2.707673e+00	3.2608010
##	791	-2.088369607	-5.758928133	-9.83015240	-7.497911500	-6.32236197	-5.76713876	-1.233378e+01	-5.9006416
##	792	14.726093862	6.277917275	9.82670145	10.163988607	9.17809226	1.53270618	1.490008e+00	4.0041352
##	793	14.094213387	15.760588437	12.98555883	12.190394409	15.48838091	12.12990964	6.113169e+00	8.0448651
##	794	14.168251994	12.808728851	11.99636647	12.493234713	15.88122458	10.81217786	3.856909e+00	8.1406566
##	795	10.045567554	5.847185691	4.05382723	5.426199750	3.48026979	5.18144417	-5.114349e+00	0.9370439
##	796	7.159744327	4.185762420	1.22360164	2.401133191	3.11877498	1.13170473	-2.474700e+00	3.8816147
##	797	11.199108268	4.587196217	8.32159124	11.667368707	8.19972908	2.86525136	1.299982e+00	6.1232169
##	798	11.114466112	10.081530967	12.45171205	12.940670557	10.78342404	5.92125785	4.117450e+00	10.7350053
##	799	15.563629432	12.069248024	5.12166334	7.381974011	8.98140020	6.92254988	1.360135e+00	6.2383284
##	800	11.838464783	9.528022223	5.85987412	8.355741357	8.28369025	4.50677364	-1.563886e+00	5.6021936
##	801	18.594842505	14.888961635	11.42022571	14.128922673	15.64494183	12.57921487	3.169704e+00	9.3589341
##	802	-2.108099655	-6.142035101	-9.98716845	-11.776997150	-8.48655218	-3.49408675	-7.160586e+00	-9.0337762
##	803	1.733676067	-2.978253608	-4.51395013	-4.649940720	-4.69138725	-8.70649153	-1.516234e+01	-10.2121030
##	804	5.858436312	0.314333789	2.56375803	4.502279801	3.13308533	-0.16395016	-7.708273e+00	-1.1384437
##	805	-1.192525134	8.602449492	11.05950847	5.405826004	0.58706554	3.89379681	1.440259e+00	-3.0670837
##	806	-1.443763455	2.607348645	1.10260250	-4.505903284	-2.30413238	2.04742151	-1.446724e+00	-5.9631166

## 807	4.218512846	-3.586133176	-0.40029334	0.713366296	-1.02608416	-3.92816550	-8.059478e+00	-0.43565525
## 808	9.956159313	8.066003971	3.40317682	5.171207848	7.50693393	5.92907925	1.859013e+00	3.06726837
## 809	-0.417662086	-2.340029034	-4.56680533	-0.220635919	0.79852505	-1.39209556	-8.015797e+00	-4.14904146
## 810	-2.863413937	4.697394006	9.29725998	3.616802802	1.73524961	3.70282468	2.087860e-01	-7.35119801
## 811	-0.611538819	-4.182875219	-8.94428881	-6.422063211	-6.85356716	-7.66769645	-1.335467e+01	-8.80086214
## 812	-2.151594737	-6.502529225	-11.57574883	-13.078571257	-15.34719502	-14.20075929	-1.329770e+01	-3.66585956
## 813	0.769453265	-7.276760494	0.88245389	-0.550873374	-5.50604280	-9.77556620	-8.412263e+00	-7.37210584
## 814	4.895535006	1.322442268	8.98085164	7.145702423	5.26713415	1.23030430	3.303269e+00	3.63624546
## 815	-2.919998022	-8.962346560	-8.49623085	-5.418894122	-5.12255183	-9.47400146	-1.184454e+01	-9.66359884
## 816	1.868952510	-1.791725642	-4.41225411	-4.278247966	-1.94298869	-4.57307921	-1.181187e+01	-7.25392566
## 817	3.770170591	0.328379565	7.09655118	8.163876410	6.53664363	1.07092214	1.537789e+00	8.29373159
## 818	1.962242815	-2.179883962	-9.25250062	-5.428091835	-1.09499772	-1.65460659	-8.540796e+00	-1.77208183
## 819	2.343857253	-2.630272110	-1.06519342	2.299396545	3.03185991	-1.19292383	-9.230846e+00	-0.88443805
## 820	5.817632040	2.149065281	4.93880600	7.667218527	7.06852351	3.05018342	-2.323841e+00	4.11734058
## 821	19.127445542	11.722695277	17.08385020	16.444220397	12.56666690	6.58091317	9.046294e+00	12.02193992
## 822	5.111829039	0.768137130	-5.42314021	-0.773452495	0.44095474	-1.83789165	-7.854282e+00	-1.53421695
## 823	11.440283588	19.725274273	21.85203427	17.537843544	16.18746539	18.90889707	1.769800e+01	13.50522219
## 824	-4.171900222	3.317289284	3.70416364	-4.449247309	-2.16055379	1.88055281	-2.270484e+00	-5.60009121
## 825	8.363860557	16.376142168	18.50452525	11.787193905	11.13948493	11.52137119	7.887026e+00	3.81253165
## 826	-5.477846397	3.889252043	6.62394109	2.480755801	-3.22370469	1.19840275	1.950371e+00	-3.20909154

## 827	11.974808039	11.642801406	17.01480412	11.484239413	18.67167748	17.78947424	9.711691e+00	15.6900158	
7	## 828	18.892000866	22.182520357	21.48955165	12.164866129	24.30070440	15.71015550	1.900530e+01	19.7560635
2	## 829	20.884481906	17.733636854	21.42458171	17.930027409	18.43167152	16.54531715	1.688919e+01	14.9631233
1	## 830	20.439915994	17.523055349	18.73622860	19.781130848	12.52069656	18.93452013	1.777976e+01	13.1715634
9	## 831	11.282505250	10.112123907	10.84636885	8.362456913	8.75399311	17.97148576	1.299635e+01	11.6762912
0	## 832	19.871497712	17.333183257	20.39522070	16.901025957	18.24855986	22.03732576	1.600482e+01	17.4102611
2	## 833	12.161283697	16.634734068	18.44301785	10.842309810	16.62073027	13.01803307	1.246870e+01	13.2353798
3	## 834	13.632053609	9.817340720	15.27737490	9.971986847	14.13419093	16.19791055	1.006432e+01	12.7131500
0	## 835	7.063200342	3.520877815	8.34471785	4.231383762	7.82872523	8.97761929	1.614754e+00	4.3659102
1	## 836	13.588881765	6.522590329	12.35125014	12.752779877	10.07107577	14.57098644	8.484895e+00	8.2126490
5	## 837	13.828696805	14.703662828	15.53963567	9.153997567	14.91159919	12.19654671	1.534458e+01	16.3667793
6	## 838	12.149835427	6.788852037	15.10550724	6.879426096	7.95900799	8.60092402	9.263475e+00	9.0388412
7	## 839	8.305578319	15.625707827	14.64363846	7.394641760	14.90853560	11.94069292	1.316548e+01	11.0871573
2	## 840	9.658355590	9.640474789	13.85911384	5.261892907	8.76697177	8.12651853	8.980956e+00	8.6194981
1	## 841	2.294393818	-2.680442729	2.72964775	-0.581492937	6.97563155	7.00290188	8.875689e-01	6.8198998
6	## 842	7.230574248	8.680048299	5.43309906	7.733408544	6.15098032	12.53959760	8.364819e+00	8.1302660
7	## 843	8.743946903	4.390323616	8.58281386	6.687846584	6.34495027	11.58316836	7.661134e+00	4.6416141
5	## 844	3.331870647	11.194222521	13.20010521	3.815173483	12.19092353	6.90491589	1.049453e+01	8.3541635
1	## 845	6.771297670	3.655648878	7.85225638	2.474159305	7.92226969	9.20859204	5.585042e+00	6.6769212
0	## 846	10.301923176	8.733176217	14.77586078	5.702189843	8.21030083	7.84511462	7.651140e+00	8.8779263



## 867	9.777276327	6.641529970	10.82002614	7.119451079	7.51643438	11.75560134	5.060700e+00	3.3677599
## 868	1.532355635	-0.424242637	2.75637993	1.415887659	-0.05375203	5.21030329	-6.787238e-01	1.8918461
## 869	7.957472458	7.591140816	9.58718904	4.817772026	9.19648631	12.74321757	4.243086e+00	8.6596846
## 870	3.289780366	4.254072944	5.89105355	-2.046087419	3.98937393	1.93515394	3.933641e+00	5.9523652
## 871	13.074429789	9.141113077	14.44467109	6.915744199	11.87743524	10.10587941	1.103523e+01	10.9390057
## 872	18.118422237	12.889598249	19.94655227	16.859681581	14.99301245	16.20282631	1.352834e+01	16.4931220
## 873	14.447962294	14.200053239	17.39616823	9.994833940	16.50206029	13.66326575	1.232436e+01	15.4341959
## 874	0.114426397	-0.114873982	3.23272878	-4.118861341	1.70935427	0.15516594	1.281807e-01	2.5683085
## 875	14.331717872	9.727950934	15.27633296	11.518655204	10.98170886	12.30593184	9.874644e+00	14.3141495
## 876	3.769863282	2.577968545	7.47614290	2.779143255	9.16268421	8.37677516	1.112498e+00	8.2484587
## 877	2.626662352	1.516083753	7.10389931	2.024753159	4.69580299	6.70148783	7.524825e-01	3.8382639
## 878	5.687257983	2.072329022	6.22788158	2.964737523	4.65921742	9.03410277	1.290995e+00	5.0929619
## 879	18.554732719	17.692715019	22.24026547	12.039057816	20.23197336	17.43236198	1.424504e+01	19.5959305
## 880	8.043742616	5.708881368	10.37225333	2.198952239	9.04308675	9.49435167	1.937122e+00	6.3020883
## 881	17.954223368	14.719822811	17.81846579	17.652928019	10.63499966	17.97239690	1.527613e+01	16.0996403
## 882	13.294749769	6.188892887	12.00915955	10.237680076	4.50818459	12.06879322	6.807453e+00	6.3341863
## 883	15.367294396	10.384999393	16.02474200	11.754177589	12.89453532	14.20249625	1.008579e+01	12.4564516
## 884	17.826583001	18.934671932	17.92090067	18.652105463	18.40130672	14.06116183	1.371620e+01	18.1216571
## 885	12.207574449	11.115241934	7.37474036	5.764518592	2.80623581	3.86308142	6.576703e+00	7.0453506
## 886	19.229109034	16.648827552	16.56655292	13.359104876	14.19289400	12.46582584	1.494761e+01	11.8729991

## 887	17.055038131	15.767885311	12.17998018	10.770903267	9.28113522	8.79371877	9.677646e+00	9.5454601
## 888	16.260644621	17.096826089	16.95683864	13.846645269	9.95184702	11.06886351	1.104931e+01	12.3422841
## 889	15.994830751	14.955529101	7.83669491	10.777313355	7.61192160	6.33525227	6.894324e+00	7.3985387
## 890	11.125536553	11.314645199	9.15598439	7.902544023	4.60115446	3.62087608	5.375662e+00	7.2825113
## 891	16.892046433	17.961033608	17.34898831	11.729782900	12.56306442	10.43857749	7.841474e+00	10.5984989
## 892	12.596843268	10.961350211	7.51971280	8.472040664	5.99425966	1.37687101	5.121238e+00	6.1120322
## 893	15.144843053	12.898451653	10.88333923	8.742979176	7.45728416	6.38722373	6.241004e+00	5.5735665
## 894	15.059097385	17.577447670	14.87386854	12.653351876	10.98581345	9.58956320	5.781488e+00	7.9316236
## 895	17.227159260	13.573422318	14.45911668	12.429543083	10.29573735	6.37681148	9.019918e+00	10.4462040
## 896	15.222748530	15.182212671	11.65355546	9.471690539	9.40852899	7.65381214	4.153962e+00	6.5170284
## 897	14.732914591	14.641924766	13.07204526	8.715561112	7.42716923	8.68547550	6.804827e+00	6.5896574
## 898	17.020617512	17.374989631	14.61764645	14.525148471	15.46335491	11.62025260	1.419502e+01	16.9316180
## 899	17.055579744	14.845780362	13.47264970	13.193565799	11.83250645	8.51378059	1.048393e+01	10.5126205
## 900	15.104952560	12.099350063	10.88546469	8.550083117	10.86092615	7.93998619	8.413734e+00	13.8608013
## 901	15.833581053	17.199423590	16.94702198	13.733469878	14.51546747	13.35949216	1.399463e+01	17.3213641
## 902	9.971755519	13.040881078	13.85280901	10.823301777	6.56626295	11.34105707	1.043322e+01	6.8304122
## 903	7.438055945	5.777435652	7.04995097	4.291698766	-3.07369385	1.71057760	6.180797e+00	1.5766421
## 904	12.262105825	14.532369759	11.79408826	11.212451025	11.04117086	9.11470128	1.220535e+01	10.6158270
## 905	9.706227275	9.102895044	8.12708843	7.926759211	8.04608114	4.93339674	6.352682e+00	8.7305622
## 906	9.666309165	9.240749820	10.47551585	8.411811245	6.07669694	8.47724383	5.723600e+00	7.6037363

##	907	6.828266916	6.415310308	2.76306987	-0.054351695	1.77103922	2.14037427	-2.767273e-01	-0.9850367
5									
##	908	11.451034653	15.326852973	15.02145322	11.136012572	10.69617711	11.54837926	8.020485e+00	8.1498168
3									
##	909	4.501693575	6.682667509	7.01357975	4.408809908	1.64305275	4.36951436	3.240301e+00	1.3089043
2									
##	910	11.656807830	13.471249670	12.70967720	13.752916936	10.28131962	10.52386787	1.385462e+01	15.2579716
3									
##	911	9.821100298	11.652851479	11.22738291	5.859698655	8.19901844	7.31995824	6.042675e+00	7.3961408
9									
##	912	14.601382896	9.150358023	10.60985548	10.464135385	7.80830690	6.37537735	8.358358e+00	5.7700858
8									
##	913	21.018728807	22.183216948	22.94378347	21.084428852	20.16244771	18.96917005	1.576685e+01	18.9403472
3									
##	914	6.926011953	7.097519227	6.64002751	3.761031595	3.32589011	2.69823956	4.874993e+00	0.7527448
8									
##	915	17.999013336	15.087285657	15.48558155	11.029906477	9.29003657	9.43494386	9.266500e+00	6.3406275
7									
##	916	13.472055877	15.463151169	15.91149822	13.038329452	11.59160557	11.33848703	9.946995e+00	13.1507732
1									
##		bin36	bin37	bin38					
##	1	13.03519865	7.88621574	8.558480980					
##	2	9.39604389	7.85330252	6.932730551					
##	3	7.75278404	7.46454170	3.233896303					
##	4	-1.11268713	-1.67342357	-0.454286145					
##	5	5.90904226	0.45690551	2.696135074					
##	6	8.37568468	7.47745730	2.831430810					
##	7	-7.33686264	-8.03014073	-8.722365943					
##	8	1.58524200	-2.99178916	-1.229208939					
##	9	-9.56954085	-13.46474370	-10.841180757					
##	10	-7.44939783	-9.78418177	-10.255128154					
##	11	-12.83652264	-12.07489100	-13.762512548					
##	12	-5.20113530	-7.61628787	-6.975358323					
##	13	-5.76552367	-8.05945616	-9.830883566					
##	14	-4.53408236	-4.96335261	-4.902816224					
##	15	-12.72561027	-11.86122369	-10.043935517					
##	16	-6.06935325	-7.67570185	-8.615695102					
##	17	-10.01961424	-10.94260087	-8.909624073					
##	18	-9.35118904	-12.45115670	-12.433027995					
##	19	-6.19263874	-8.24697117	-9.117186913					

```

## 20 -1.00820158 -2.34166148 -4.614354405
## 21 -6.24965189 -6.10973884 -7.265631863
## 22 -3.28916176 -6.20743929 -5.999876756
## 23 -7.62398137 -8.45994013 -12.617147108
## 24 -9.61885628 -12.83331849 -13.725201017
## 25 5.76550169 4.32170192 0.752232893
## 26 1.29491287 2.91679187 0.462824238
## 27 -1.67449220 -0.32581947 -1.004983558
## 28 4.16766952 -0.07441141 -1.450353784
## 29 0.15642251 -0.66606019 -2.756390684
## 30 -6.05329306 -7.94030080 -9.091591600
## 31 7.33553367 4.35690183 3.379544479
## 32 -0.89976570 -3.53081445 -5.672530708
## 33 8.88859330 5.82237744 2.716313454
## 34 -1.49520416 -5.11855417 -7.502991899
## 35 -24.86487063 -24.73831483 -27.018156046
## 36 -19.14845465 -18.65885001 -19.581270878
## 37 -18.03837849 -21.06785082 -21.309939049
## 38 -13.38451081 -14.98730917 -16.914235998
## 39 -12.27765389 -13.27000887 -13.269052813
## 40 -10.62296481 -8.97242461 -12.199376021
## 41 -8.43262670 -9.81428055 -11.284574981
## 42 -1.68533787 -7.95353407 -6.662490008
## 43 -2.12758874 -2.38299383 -4.868156158
## 44 -2.30528888 -4.38984034 -8.988333819
## 45 -9.84051608 -10.90390487 -10.859563144
## 46 -1.40120759 -1.49183227 -3.715280443
## 47 -9.80589985 -10.38820141 -13.340444501
## 48 -3.71018027 -10.55723933 -10.613166340
## 49 -1.99092558 -2.80464963 -2.359763306
## 50 -6.25372616 -10.33319841 -10.837883300
## 51 -19.70499780 -17.33288487 -18.565553741
## 52 -6.33388341 -6.81939254 -6.715144274
## 53 0.75526292 0.62131847 0.634043383
## 54 -13.53077437 -15.58530897 -17.760971311
## 55 1.72277702 1.02781694 -0.299734752
## 56 -9.75763339 -11.45757153 -8.700272935
## 57 -8.24846796 -7.96984251 -10.061279658
## 58 -10.08749633 -8.54700849 -6.689581738
## 59 4.24349954 4.25214673 3.464422293

```

## 60	7.47355487	7.05522668	7.872101404
## 61	7.52906154	6.76738632	2.304225429
## 62	7.60266632	8.19450016	4.604147681
## 63	10.53163067	9.15069573	7.099999108
## 64	6.18040602	6.20585202	3.392681891
## 65	10.73786411	9.01992374	7.947492167
## 66	0.16207527	-0.20211312	-2.258948947
## 67	5.04099819	4.79895976	4.645020470
## 68	-0.22437226	1.49912118	-3.232206514
## 69	2.12844419	1.78410301	3.015405759
## 70	3.82958891	2.19962726	4.620508817
## 71	-1.40629529	-0.28174871	-1.821525331
## 72	5.85400997	4.41661107	2.094317894
## 73	6.64548205	3.12112256	5.286685949
## 74	5.82557294	5.39505671	4.189061129
## 75	1.36416965	0.07103215	-4.375413276
## 76	0.88960872	-3.05545958	-5.501299396
## 77	2.83716031	3.50273355	-3.326157314
## 78	0.94807784	0.36109782	-5.991972526
## 79	-13.70978378	-12.75318752	-13.740007475
## 80	2.74215329	-2.51281467	-1.997419895
## 81	3.92790625	1.87784467	-4.343269529
## 82	-6.50603500	-10.21134096	-8.161249529
## 83	0.01008118	0.20485910	-2.872546362
## 84	-1.76381127	-3.57827422	1.532546559
## 85	7.08486840	6.33866045	5.356408990
## 86	4.35359836	3.95591217	0.008110695
## 87	-2.73298533	-10.01489422	-6.070505758
## 88	-1.25450608	-5.84093108	-1.512289917
## 89	-6.96482424	-6.86775101	-7.625978356
## 90	-0.13601384	-3.65796379	-3.859883245
## 91	11.52528269	9.48374600	12.676860852
## 92	-0.22809509	-1.98287408	0.452540146
## 93	-7.37829669	-12.39016878	-10.448714690
## 94	-4.78966677	-6.67957421	-9.104543668
## 95	-6.86402779	-8.53759746	-11.230480653
## 96	0.12420383	-1.75117347	-2.702136783
## 97	-1.06765979	-3.87566043	-1.828729750
## 98	-1.45244655	-2.08420125	-3.101563089
## 99	-6.07102358	-5.72302921	-7.657596585

```

## 100 -3.61265388 -3.11543938 -4.772822755
## 101 -4.04386936 -3.04032275 -3.744341087
## 102 -2.19879261 -0.33034765 -3.333428830
## 103 -0.93350504 -3.37392124 -8.864314029
## 104 1.55326930 -1.90878364 1.309043490
## 105 -0.92631333 -3.35854490 -1.360527458
## 106 -3.58556507 -3.03134529 -6.437432878
## 107 -1.40641466 -2.53491133 -1.880888562
## 108 -7.18321145 -8.16012129 -5.281452749
## 109 -2.45927885 -3.87889681 -7.156525448
## 110 -7.78905703 -5.44697159 -5.894332887
## 111 4.76793109 2.57775997 2.995360706
## 112 -3.51148018 -2.69549721 -5.384344306
## 113 5.93868621 7.16698122 9.441696849
## 114 -1.01691761 1.37001854 -1.990973795
## 115 3.61454528 3.98763178 -1.024813713
## 116 3.06482445 3.12209258 -1.561611266
## 117 -4.00820692 -4.56621467 -0.358204292
## 118 -7.70420306 -2.56112851 -2.857053413
## 119 -2.81427686 2.48965817 3.047088195
## 120 -5.03966879 -4.52955966 -3.564798327
## 121 -3.34552231 0.46064447 1.428740317
## 122 -4.80089458 -1.08317974 -3.902016445
## 123 -4.70666291 -2.48519633 -2.942260663
## 124 -3.60814679 -1.93733609 -2.578715182
## 125 -8.50057257 -6.80682783 -8.678437672
## 126 -13.03844834 -12.07209415 -8.573787110
## 127 -3.18797144 -2.10757217 -2.452467526
## 128 -1.11416728 -0.90929507 -0.137822857
## 129 -8.07665968 -6.35049029 -5.874724536
## 130 -1.49437044 -1.13676308 -0.512325429
## 131 -10.14114339 -9.32787777 -8.529615615
## 132 -8.68755199 -9.38970719 -7.748883736
## 133 -9.41037180 -4.46520895 -7.199848100
## 134 -9.30587523 -7.58429054 -6.079758840
## 135 -7.67435556 -8.86184650 -6.511511939
## 136 -9.76759908 -7.20692835 -7.250849090
## 137 -15.00598300 -15.00576353 -12.446096596
## 138 -14.16204146 -15.54566206 -10.369039819
## 139 -7.58723728 -5.35237910 -5.963477864

```

```

## 140 -9.80756089 -6.96559939 -5.825704852
## 141 -6.82930765 -4.43437936 -8.347278145
## 142 -16.82520122 -14.72059554 -10.395856140
## 143 -7.39291859 -6.72595929 -7.594511496
## 144 -4.60937264 -3.74062248 -2.079139761
## 145 -9.63777855 -7.94303134 -8.355649887
## 146 -5.79904359 -2.54393300 -4.809760162
## 147 -2.20102677 -0.51218778 -2.706883565
## 148 -8.14995553 -2.64629616 -2.921724397
## 149 -7.12563150 -5.41013360 -4.210007389
## 150 -9.98083867 -6.80896056 -8.826022812
## 151 -2.02382878 -0.28233265 -2.410211519
## 152 -11.04351142 -8.90145796 -8.747545286
## 153 -9.86832175 -7.53226241 -8.795357162
## 154 -12.13527391 -9.07979891 -10.280594782
## 155 -14.61251553 -11.26592726 -11.294459484
## 156 -12.78622791 -9.63601966 -7.876141561
## 157 -6.77226231 -4.92118060 -5.713338358
## 158 -13.71874435 -16.42561043 -13.080238877
## 159 -10.73704560 -8.33241327 -7.883283728
## 160 -14.74012788 -12.06191382 -11.868729521
## 161 -13.87084179 -12.46364992 -13.708432269
## 162 -13.46749080 -11.29971845 -11.805143652
## 163 -13.83829804 -11.70057598 -11.055493023
## 164 -8.24749537 -8.66840671 -6.831354279
## 165 -12.12773698 -9.97378860 -10.712254811
## 166 -11.48767168 -8.74463647 -8.626016205
## 167 -9.44890241 -9.04011286 -7.331454188
## 168 -7.74814410 -6.04544471 -6.727499864
## 169 -11.41452160 -9.94492743 -8.893522363
## 170 -10.37874282 -5.81389802 -7.445553894
## 171 -3.69698761 0.01389434 -0.842463013
## 172 -15.48607241 -13.53458231 -13.851542475
## 173 -5.30385474 -2.93604131 -5.589767402
## 174 -13.56402642 -9.55598652 -10.799588919
## 175 -8.75704523 -8.46125473 -6.401837888
## 176 -11.24117433 -8.81197114 -9.906021674
## 177 7.30672703 10.78029044 12.138072816
## 178 4.21637623 5.94340584 3.253896510
## 179 11.24793713 12.34197343 9.906802952

```

## 180	5.93583891	9.27058883	9.454024322
## 181	6.13675024	9.23387876	8.590388826
## 182	7.32543593	11.40603023	9.624749186
## 183	4.72456486	4.07445273	4.063813236
## 184	0.80519505	2.35972721	1.269644425
## 185	0.73545097	3.03669280	-0.497138014
## 186	-0.56184067	0.22074107	-1.548563084
## 187	5.80908780	5.69675096	6.506685999
## 188	0.25291970	2.22634444	5.027263664
## 189	3.38499836	3.15407845	3.362302350
## 190	-5.08159385	-3.49020702	-6.278603691
## 191	1.05602457	2.79680804	0.676767411
## 192	-6.40182737	-8.19331531	-9.796994996
## 193	-7.15154321	-3.11135076	-6.040554403
## 194	2.69681345	-2.19324936	0.003708067
## 195	-11.75784164	-12.51192074	-10.987927940
## 196	-6.98270345	-5.96880080	-8.075298604
## 197	-2.66235248	-3.19437325	-2.581891439
## 198	-3.92994080	-2.06719158	-2.405615020
## 199	-0.65124012	0.09801197	-1.183564172
## 200	-1.55290396	0.50792723	-2.467011017
## 201	4.04484275	7.59879883	6.337575986
## 202	0.56543774	4.67781486	0.775600396
## 203	10.99864071	16.18657704	13.763706009
## 204	2.75119501	5.21272879	6.074767980
## 205	13.82421270	12.50255363	14.856121897
## 206	7.72156797	9.82086796	7.982639479
## 207	5.45680449	6.77321764	6.837862621
## 208	6.32750323	5.84859980	9.042501235
## 209	11.73466915	10.89336595	13.284455544
## 210	2.91483920	3.09472842	2.833724090
## 211	-9.03959503	-7.21169883	-8.109828790
## 212	-9.75178212	-9.77094866	-10.549800805
## 213	-7.45136915	-7.09913133	-7.589703476
## 214	8.98844371	4.28151829	6.532149426
## 215	-3.70166871	-2.44263479	-1.353267156
## 216	-6.01808046	-3.99152036	-2.411544474
## 217	-2.35754776	-0.50786958	-0.421615638
## 218	-3.46580542	-4.00339410	-1.922670036
## 219	-4.12484362	-1.95106892	-1.190206128

## 220	-0.18256383	3.92120122	2.774080017
## 221	-5.36442421	-4.25456502	-4.610412728
## 222	7.81696247	7.53147467	7.138722671
## 223	-3.19563156	-2.47827957	-1.155125886
## 224	-2.12250470	3.28889161	1.666382044
## 225	-3.39087026	-0.58445142	-2.872240990
## 226	0.33490999	-0.42946249	-2.128997358
## 227	-9.76717708	-10.02357031	-10.320455848
## 228	-6.16400194	-7.46855478	-5.971771194
## 229	0.31775590	1.75120538	3.446019753
## 230	-11.13496104	-8.18726549	-7.061000552
## 231	9.28187841	10.98428171	10.384454707
## 232	-3.44179934	-3.52964252	-1.828616052
## 233	-0.21298036	1.64164376	1.693286534
## 234	-0.22094902	1.16049116	-0.247268975
## 235	11.73960782	10.67885597	7.612002613
## 236	11.27660808	10.17318251	8.117521863
## 237	3.53363271	0.97765314	4.510043342
## 238	9.82234254	7.94489408	6.326129826
## 239	5.76880079	5.07845045	2.353054676
## 240	-1.66569655	-3.69074105	-0.164998843
## 241	16.01561770	14.61683438	9.265360998
## 242	0.51308320	-1.50149857	-3.009689194
## 243	1.44172530	-4.46196875	-2.345524401
## 244	1.17430542	-1.41865438	-2.139856972
## 245	1.89169061	-0.99500767	-4.038146772
## 246	-0.02373064	-2.87779663	-1.660863584
## 247	2.66927302	4.85945363	2.253223234
## 248	0.91652784	-2.83349119	-3.306042400
## 249	1.60576488	0.79472693	-4.991205083
## 250	1.93749997	2.85508867	-1.238233673
## 251	-4.28459276	-7.35993411	-7.960655269
## 252	0.90097793	1.67488116	-3.352770609
## 253	2.33058120	-0.55538232	-3.393515145
## 254	4.05938919	2.68386596	-0.512403376
## 255	-6.76349529	-10.00711085	-7.919284332
## 256	-2.32203994	-4.60391267	-3.362544506
## 257	-0.50976804	-1.14583419	-4.432026940
## 258	-0.46812899	-0.41859860	-1.037259559
## 259	-0.27226738	-2.18237411	-4.368331290

```

## 260 -1.01717239 -4.98913525 -3.894397012
## 261 6.42896435 5.83924218 1.222868693
## 262 4.68323997 4.30395953 2.077139837
## 263 10.11689984 9.44298588 3.354651491
## 264 5.40004086 4.36723007 2.554708587
## 265 10.83056248 8.55323992 7.301955884
## 266 3.70957542 1.66800957 -1.433035758
## 267 8.10348171 2.33373291 3.560147547
## 268 -2.68239274 -3.27283251 -3.527446884
## 269 5.16257090 2.15246858 1.183731630
## 270 -4.33692979 -6.44129624 -8.073236401
## 271 -9.29294661 -11.65356041 -12.668217811
## 272 -4.79241174 -5.84919700 -8.471327342
## 273 -2.63973505 -3.29400840 -6.149510035
## 274 -7.19732434 -7.61682214 -9.238279448
## 275 2.05749975 2.33908591 0.222504599
## 276 3.45489978 3.15279260 -0.482116018
## 277 0.54787210 -2.63762686 -3.472039853
## 278 -5.06316347 -8.80865679 -11.442411524
## 279 -0.72497261 -1.50596626 -1.577110872
## 280 -6.80678074 -9.11011161 -11.915433247
## 281 2.43541707 3.20804951 -0.933389174
## 282 0.85818085 -1.12261844 -5.356174790
## 283 5.12733922 2.30075580 0.321017983
## 284 -3.54882255 -6.33973293 -5.168402661
## 285 3.19781246 1.84665459 -0.004684009
## 286 -4.91707899 -5.02391222 -10.465267467
## 287 -2.34015431 -4.10551607 -4.512450570
## 288 -3.69835631 -6.32995835 -8.006582790
## 289 8.39256784 5.00483730 2.842630719
## 290 -0.32505858 -3.49941574 -3.125830290
## 291 9.87272877 9.46439339 2.843906493
## 292 -0.71567621 -1.38356824 -4.266314950
## 293 1.59090340 -0.89416866 -2.917969158
## 294 3.58555679 2.87707817 -0.144703217
## 295 9.44456653 9.70295526 9.797816018
## 296 14.78324249 13.54719337 12.872101683
## 297 5.52826683 8.51993323 6.595267121
## 298 12.36217750 13.50691498 13.712334988
## 299 2.96428542 3.75861192 2.840497428

```

## 300	3.34858028	2.15395435	2.783030642
## 301	5.99916835	7.83557076	9.046543436
## 302	3.90633382	4.92173755	5.253383520
## 303	3.98465127	5.25818759	4.812850073
## 304	2.59546972	2.60468919	0.964197615
## 305	3.21910030	1.90075586	-2.251770334
## 306	3.71824421	5.00787065	4.898405485
## 307	3.98956739	4.49565476	3.977832443
## 308	8.77565508	8.78337142	7.473693915
## 309	1.54487584	6.24495548	4.599471652
## 310	5.77545465	5.46066941	4.052689247
## 311	0.93959365	0.95689096	1.381278962
## 312	-4.93577956	-4.46845192	-5.033954657
## 313	-0.30422807	1.75919365	-0.430580438
## 314	-3.97701395	-2.68548524	-2.075615797
## 315	-1.95438310	-2.48382216	-2.354699881
## 316	-4.10694282	-5.00564952	-4.657970830
## 317	-1.66899518	-0.63888845	-1.283921804
## 318	-4.55828188	-2.91599203	-4.937538317
## 319	-8.87917968	-6.53795430	-8.137885065
## 320	0.14930984	2.18211208	1.269172228
## 321	8.25584860	7.46781556	7.467334806
## 322	1.20043855	1.62259509	0.699035543
## 323	5.92469378	7.00303433	5.771175484
## 324	7.01471575	7.69507735	7.337274432
## 325	5.69744158	5.24348169	7.019697874
## 326	7.16268682	7.38673710	8.684773567
## 327	3.57646204	2.05525575	4.340264976
## 328	2.96846564	3.16699833	2.439039895
## 329	7.75470436	8.87880862	9.502229470
## 330	-7.76159807	-8.60619728	-6.458591135
## 331	-8.12568541	-7.19752624	-6.683431013
## 332	-14.02404865	-12.47978159	-12.588873019
## 333	-6.71689830	-7.02209453	-7.523628748
## 334	-3.97855686	-1.94418600	-2.379404397
## 335	-0.95631853	-1.63400898	-0.150357502
## 336	-0.61691961	-2.83728974	-3.531293213
## 337	-1.06491727	-1.51031787	-2.887785989
## 338	-4.78659252	-2.04128588	-1.723420238
## 339	-8.59794744	-8.49726673	-7.534015265

## 340	1.99189479	2.41341568	1.475940384
## 341	-4.93778848	-4.50806771	-3.477807559
## 342	-4.58056857	-1.86476368	-3.842795665
## 343	-2.69167141	-3.34398036	-2.531786555
## 344	-1.41635670	0.06371175	-0.329427376
## 345	-1.23526980	0.16262417	-2.488800966
## 346	-3.72232786	-4.23604767	-3.463271470
## 347	-16.04348682	-17.04340780	-17.887553176
## 348	-0.19445130	-0.32721727	-0.561710578
## 349	5.39255901	6.17598115	6.859292806
## 350	-5.56116426	-6.26409519	-5.844627948
## 351	11.56553076	10.43907104	10.883342215
## 352	-4.87954760	-5.08756236	-6.263025343
## 353	3.65844499	3.78786234	3.283549137
## 354	0.73960113	-0.25635690	-1.650722892
## 355	-2.54827333	-2.43698328	-3.546493861
## 356	15.15557231	15.19311540	17.311045822
## 357	14.81413129	12.47438877	16.149929697
## 358	11.86146241	14.11046124	17.080931307
## 359	11.38730005	11.96504584	12.149725498
## 360	16.03240234	19.28441779	17.447402063
## 361	4.66776767	5.41458874	3.546910819
## 362	15.10806587	11.95257660	6.719148027
## 363	14.07259540	11.04277629	10.704037326
## 364	17.54918374	12.87940749	10.125816493
## 365	7.27759534	8.48286388	8.655480009
## 366	14.24192892	14.87848546	16.793540438
## 367	12.33266585	11.12915598	9.969550821
## 368	9.09043271	3.62318368	5.151811701
## 369	6.50705499	6.89735792	3.517177430
## 370	9.68201888	11.36617440	13.604017707
## 371	18.41547101	16.74328272	22.513070749
## 372	2.43396925	6.32250751	6.147937381
## 373	2.86139286	4.72025836	6.446935889
## 374	5.41450238	10.07911244	11.509203103
## 375	6.77080027	5.57569277	8.761159762
## 376	-2.92805757	1.77955522	0.744075396
## 377	-9.43390834	-10.11590426	-11.094961012
## 378	7.02471997	5.36520472	4.423211877
## 379	11.53944615	7.58113391	8.714688655

```

## 380 15.37945893 16.32977644 14.033793885
## 381 19.74334711 15.28045636 20.029022301
## 382 11.90746259 9.67829117 10.614899008
## 383 7.72822827 9.36303309 7.050615343
## 384 23.36622173 19.33501918 18.781679029
## 385 14.50925828 10.56661173 14.525057432
## 386 1.58141385 2.79658446 3.983022370
## 387 24.94691097 25.12854004 26.038674178
## 388 15.26368946 10.92778795 15.057789383
## 389 6.77694940 4.77887659 3.177525282
## 390 2.17434839 5.04371060 7.317645713
## 391 -0.94607780 -1.69620294 0.299179923
## 392 -2.71002310 -1.68345225 -3.344977693
## 393 7.38534629 9.03884348 10.695367217
## 394 8.32119400 9.32966586 7.524237737
## 395 1.39258093 2.69477718 0.797197288
## 396 9.52012033 6.84435232 9.578603848
## 397 4.61421089 0.32407747 -0.349338485
## 398 -13.97780123 -14.31227893 -10.691562642
## 399 8.26174643 10.08938408 9.928757998
## 400 1.89355443 -2.28363034 1.736921428
## 401 4.80100685 3.45653830 6.281533466
## 402 8.49859726 7.61760605 8.661349088
## 403 14.28626685 11.54236572 15.633167498
## 404 -7.19027209 -2.91951918 -0.917620688
## 405 2.08621062 0.65440890 5.953614151
## 406 10.11371566 6.37497610 4.292373752
## 407 16.95669648 18.78161944 19.528496954
## 408 15.80346395 10.89623102 13.425346797
## 409 14.07963742 14.39581592 16.351134231
## 410 4.72382356 4.10817925 4.707468734
## 411 11.95636517 10.94256435 14.759385053
## 412 8.53196825 5.28579487 6.569314909
## 413 28.27361692 26.29728953 17.504063158
## 414 18.03233556 18.39013219 14.461058118
## 415 4.89407521 9.38082358 11.522277241
## 416 12.45137669 3.94298389 7.539741783
## 417 8.82374596 10.35538563 12.315158170
## 418 12.90109160 13.52253124 10.089026198
## 419 9.49658423 8.80448013 7.873381089

```

## 420	6.54103737	3.85549351	5.657548106
## 421	6.41772095	5.31904599	1.944302640
## 422	6.78640274	5.65617684	4.393664182
## 423	6.20137247	4.77945721	5.206669107
## 424	8.49241936	9.25536697	8.862726434
## 425	1.82579142	3.51702626	4.514540955
## 426	0.37279245	-2.11145726	-4.155186762
## 427	2.40288798	2.79637428	1.134057465
## 428	2.72148036	0.31063171	0.810989730
## 429	6.50967829	8.48846615	6.675254645
## 430	0.73931590	0.95390566	1.884851712
## 431	-1.40341379	-3.18983457	0.902968534
## 432	3.18348141	-4.44989954	-1.105627906
## 433	2.53896275	3.42580672	0.412581287
## 434	-2.43604109	-6.44570660	-1.573791733
## 435	4.52376871	6.16930456	3.335054687
## 436	5.28564015	8.63576252	6.470822198
## 437	1.77299262	0.29417664	2.285330145
## 438	10.40168376	7.73643513	9.210593367
## 439	6.85602200	7.97353386	9.263531849
## 440	4.69680436	6.05640371	4.592129828
## 441	13.52148131	12.62549519	14.718126102
## 442	13.87411144	11.41486486	13.643511619
## 443	14.24788015	11.42676313	8.257112798
## 444	13.38971813	15.26092282	18.508076428
## 445	13.21208021	8.28692341	11.315969682
## 446	16.16881658	13.25792657	15.615730787
## 447	-6.19459411	-6.80090670	-5.631649067
## 448	-1.50660421	-2.64703914	0.256283019
## 449	-0.15562188	0.48526153	2.073143727
## 450	4.22174700	4.82334409	2.905583139
## 451	-2.37050549	-2.93350758	-2.016896530
## 452	6.15110703	6.43511715	3.397084371
## 453	11.78039541	8.43284143	11.710082506
## 454	1.07892754	4.27825113	3.189572783
## 455	6.78547546	6.87862910	5.468832178
## 456	8.33077143	7.11698557	6.095239513
## 457	12.90062798	12.20727007	12.448759664
## 458	5.64685561	6.77135294	8.299130087
## 459	8.25039346	4.70413087	5.703724262

## 460	11.67620641	11.95887039	13.293774812
## 461	0.04637886	1.95899897	2.887940438
## 462	8.84751686	10.20648419	9.237482026
## 463	0.71517577	-1.58987252	-0.184426381
## 464	1.83369287	3.46750575	3.214685771
## 465	5.23356408	5.13526444	6.486748980
## 466	14.44947837	12.68096488	9.200646888
## 467	8.04644252	6.38704705	1.811308284
## 468	18.27599257	19.08909055	20.344220071
## 469	6.31563113	4.30240007	5.526783982
## 470	7.08310419	3.42773476	4.141378899
## 471	4.00522331	6.51277407	3.865408892
## 472	12.40006641	12.78068122	15.197270539
## 473	18.30823368	17.04169639	13.134724117
## 474	19.96804178	15.70684645	14.640399444
## 475	14.45608031	9.47357992	9.450047326
## 476	10.22316990	10.62712311	13.230592330
## 477	15.81706986	11.16039098	12.959639040
## 478	18.45081431	15.84602921	16.829657932
## 479	13.78146328	13.41391800	13.265764603
## 480	6.32660837	8.14952885	4.844206521
## 481	11.55323033	5.92479664	8.928446817
## 482	15.18484085	12.27036665	12.954692507
## 483	11.08994518	9.33282955	7.255577491
## 484	15.07279161	14.05456747	14.445285819
## 485	11.17529148	9.56415999	12.992591131
## 486	9.13306064	5.75833922	5.358554592
## 487	10.23406300	8.89905703	7.348603664
## 488	15.45096543	13.46023216	10.811577351
## 489	1.26291799	0.43348585	-2.512633136
## 490	10.92482838	10.41841155	7.889446572
## 491	14.67376169	12.41127263	13.584277288
## 492	6.80473037	7.82050329	3.799823476
## 493	5.19202444	4.82615825	4.809168892
## 494	8.09802657	6.81071497	6.318561649
## 495	7.13003607	5.04474460	5.235941967
## 496	8.03831972	3.09774076	2.144984075
## 497	10.87073627	8.77992642	7.492738502
## 498	11.88515873	9.48865205	10.516418119
## 499	13.84737216	11.91155638	11.283869438

## 500	11.15865533	7.54428552	8.298927371
## 501	10.62934827	10.69029789	12.048211620
## 502	14.33704330	12.67842273	12.538249003
## 503	14.99966475	16.14507918	11.228749923
## 504	17.18118502	17.13813013	19.036946735
## 505	18.00280087	18.54406970	13.640093035
## 506	21.51787554	18.56301799	18.117992976
## 507	15.24214323	15.50017262	12.571977819
## 508	13.04819934	11.25842492	9.813839002
## 509	-2.37069887	-2.23070163	-6.167792519
## 510	5.31290937	2.56343051	1.643614993
## 511	16.78901844	14.22832936	13.255434046
## 512	12.12396417	11.24586909	8.033615026
## 513	6.83043793	5.30937765	5.781122816
## 514	7.77516600	5.27467450	4.682688870
## 515	13.47732679	11.47944357	9.337956196
## 516	6.98956319	10.44451762	12.798052141
## 517	17.54972134	13.48960850	13.070800294
## 518	7.24774281	3.30045005	2.901092434
## 519	10.31113352	10.48825769	8.653949759
## 520	12.37377863	9.10423831	10.353366183
## 521	14.37220144	14.48083409	15.284108946
## 522	8.29639033	6.80770133	5.644104972
## 523	10.75421848	9.62897079	8.637349579
## 524	4.22915038	2.53316062	0.108395102
## 525	9.34016290	7.52897019	7.185166965
## 526	15.04040042	12.60724749	13.120492520
## 527	8.70700881	4.74682582	2.466683670
## 528	20.93329810	18.21723976	16.158209382
## 529	7.58615668	6.41648303	6.399982120
## 530	9.79732751	8.33726111	5.966065024
## 531	1.74256706	8.45549576	9.306547016
## 532	14.73532348	12.57090801	11.774173733
## 533	17.45383864	17.00388730	14.469084174
## 534	19.00577125	17.12026960	16.992974551
## 535	14.57772972	14.93802563	14.388828625
## 536	16.41000653	18.45811074	18.102183335
## 537	13.00013314	12.24100947	10.321847618
## 538	13.44548476	12.17228886	10.956637535
## 539	9.48185621	10.05444377	9.155892251

## 540	5.03597576	5.53624240	7.355797756
## 541	10.40088598	10.31460995	10.195100594
## 542	7.56404994	6.84592058	8.027314661
## 543	7.57546856	8.63755340	9.721599241
## 544	15.26592086	15.38795395	13.084945557
## 545	15.12947395	15.08607239	13.163220844
## 546	17.49214073	17.90054731	17.363395415
## 547	7.80100531	8.48272780	6.928499338
## 548	6.01997993	6.29940499	8.535412511
## 549	8.22413559	9.48229328	6.669011137
## 550	4.58932785	4.65514773	3.073456372
## 551	2.67498876	4.48074819	5.943233577
## 552	3.99018155	0.53225230	2.412305143
## 553	8.78633431	6.80566971	5.098468461
## 554	0.75027169	0.87185376	1.105037253
## 555	14.48125289	11.36774519	12.110980491
## 556	11.91793149	15.10406820	12.114509937
## 557	21.64390823	19.75123597	15.740816980
## 558	9.20693886	8.79349116	10.924035901
## 559	14.97346675	16.65337951	15.955040478
## 560	15.53816236	16.81687417	17.564586434
## 561	10.03261667	15.57994806	15.216495642
## 562	11.93014323	11.99366269	11.758021309
## 563	19.44754027	18.20200269	17.283726291
## 564	19.94940752	20.67715122	16.470787586
## 565	13.17044963	13.81243614	14.817378427
## 566	1.28530045	3.05408944	3.888537680
## 567	5.55375061	3.04068420	3.741878139
## 568	7.28821734	7.87964348	8.151230992
## 569	4.55373607	5.36332202	5.656403833
## 570	16.04570333	15.04639466	13.140283714
## 571	19.95731024	19.34085615	18.321862937
## 572	9.22989014	8.72559991	11.065282046
## 573	5.76815888	6.91942540	9.734460012
## 574	12.39560759	13.56571282	13.517433418
## 575	11.65053860	13.44154369	13.164741927
## 576	9.22379699	9.07365682	8.375428853
## 577	1.52752491	0.87574500	-1.067464213
## 578	7.34310068	7.75905643	5.113074739
## 579	1.50373932	3.14143939	4.213293731

## 580	13.59891103	15.44277988	11.185189694
## 581	8.05490417	9.86976869	11.104349866
## 582	2.77487319	4.45857024	3.768338103
## 583	5.60579014	3.85560200	5.120422149
## 584	21.96551638	22.51901214	21.829945588
## 585	9.89562118	6.54667215	7.566443898
## 586	15.73009886	17.67062907	14.546281677
## 587	6.91398155	8.73487062	6.031800960
## 588	9.58306830	9.74263040	7.431532789
## 589	5.70971907	4.89496894	2.898432967
## 590	21.19797624	13.95258276	14.239941673
## 591	17.68486904	14.50113127	10.687722048
## 592	15.01541033	6.62443988	4.717616211
## 593	17.70413520	14.27075636	11.374441619
## 594	12.16514183	13.55269283	11.679650401
## 595	14.56087706	15.08994856	12.421894196
## 596	16.30315665	14.85173400	10.672099193
## 597	7.58590053	2.78140338	2.954285054
## 598	13.84559078	9.65032914	8.577305237
## 599	6.25032614	5.15191617	0.785506603
## 600	13.60003085	10.83936822	5.412188327
## 601	11.21556468	13.22224072	11.416357677
## 602	3.36763344	5.47927737	8.799947880
## 603	15.14974607	11.25326033	6.806438076
## 604	3.94324274	9.87075975	9.894146222
## 605	6.88010436	0.33965075	5.793417591
## 606	-1.60116083	-3.84773120	-4.447299220
## 607	5.87452374	0.37254322	-0.023278178
## 608	8.27331111	2.20452909	2.447177888
## 609	-1.51285306	-3.70313853	-3.843740186
## 610	2.47199290	6.95028056	10.410235307
## 611	4.06336965	-0.72121655	-5.894957800
## 612	9.71841332	8.19912346	4.363599486
## 613	6.85683714	8.83699686	8.774582481
## 614	1.32310183	3.43963318	4.718134306
## 615	9.89921837	12.01973205	9.230784101
## 616	10.90588198	2.13491761	5.366684831
## 617	6.50530007	2.53638337	0.033900587
## 618	11.51239772	8.95171585	3.032363276
## 619	6.55559536	8.75033641	8.436983865

## 620	20.52561805	15.64644068	7.818632573
## 621	15.19195780	16.08260652	12.613494738
## 622	16.82495263	8.69566663	7.023243104
## 623	10.77057317	1.75229216	4.852725610
## 624	19.03187752	14.67978596	13.497633304
## 625	2.03561999	0.79372710	-4.175824029
## 626	6.84520323	2.92033602	6.718593315
## 627	2.83888070	2.94686627	-1.643733912
## 628	1.69873181	-0.42813474	-0.865562878
## 629	-1.93099432	-11.34430970	-10.619028601
## 630	-0.58179470	0.42878857	2.005036791
## 631	6.80045648	-2.99701093	-1.164586068
## 632	6.05366315	3.81933983	1.352195610
## 633	5.14074126	-7.71952660	0.306073424
## 634	13.38111680	12.33217440	11.283064712
## 635	2.31861787	-7.93546209	-5.812798247
## 636	-2.47613348	-2.20673975	-5.338113667
## 637	6.61239163	6.97166516	0.653648501
## 638	4.54291537	2.98985925	0.087768235
## 639	4.64004589	-4.12831471	0.126215612
## 640	9.70063989	12.32235346	11.527951997
## 641	5.25817764	-7.63371950	-1.914460537
## 642	5.48429787	4.73759034	-0.138726439
## 643	4.36640362	-0.75763394	-9.182432450
## 644	11.77281560	13.57979115	11.983332631
## 645	13.95969624	12.66208790	14.808992876
## 646	8.44498258	11.04291436	13.201652646
## 647	-7.40587407	-4.54907361	-1.726783178
## 648	9.74561861	7.94071590	0.210182449
## 649	5.88783227	3.38496427	-2.939580457
## 650	14.21872911	11.27885364	8.449525481
## 651	15.11334382	10.67283651	8.850661566
## 652	14.35332131	10.16496880	9.124152846
## 653	11.45887244	7.36675553	6.901080252
## 654	16.60225883	11.15065317	9.087609422
## 655	2.16431520	-2.58054834	-1.131951932
## 656	12.32806426	9.55727608	8.012790937
## 657	9.56922628	4.52241558	4.224010732
## 658	6.21749142	0.99213402	0.310446715
## 659	7.69740920	2.51756302	1.043293099

## 660	6.68660962	3.95618303	-2.730110051
## 661	4.17066033	-0.40971919	4.303898867
## 662	8.18161346	5.75920983	0.782430340
## 663	9.26203250	7.83618632	4.083192242
## 664	9.11989188	1.01156970	3.405859552
## 665	4.61782143	1.54766325	-0.223133830
## 666	6.83640576	6.59689199	3.571241352
## 667	7.13785115	2.17424194	1.522244535
## 668	5.79259611	1.14580012	-0.783116069
## 669	1.74708347	-5.68185167	-5.667949145
## 670	5.89316738	1.73865819	-2.160877052
## 671	8.32661044	4.25407120	-0.643409311
## 672	4.08526607	-0.07900081	-1.440218356
## 673	4.69252023	0.13050743	-0.839562158
## 674	6.85676198	-0.11918528	-0.725960465
## 675	9.35878969	5.20741835	1.156568716
## 676	12.73575674	8.20758973	1.835153692
## 677	15.40659945	9.44174120	8.226304779
## 678	10.47664851	7.76680818	4.540248472
## 679	13.00772171	8.13560748	1.556867357
## 680	11.01952995	6.22188549	3.933068237
## 681	17.23665073	12.57640063	6.082553036
## 682	13.44529402	10.21245647	9.386176531
## 683	16.87390266	10.97201723	7.307818326
## 684	12.76641018	7.50707605	6.293380980
## 685	1.09813931	-1.20894778	-4.312637925
## 686	-1.52574584	-4.54794623	-8.096143275
## 687	-0.91757594	-4.32106513	-8.683096242
## 688	1.13340477	-2.16900121	-9.189508677
## 689	1.51132249	-3.70130901	-5.841598554
## 690	6.36954981	2.54560867	-1.881416596
## 691	8.60679289	2.99415987	-1.793618988
## 692	0.71767053	-5.09443478	-8.998094870
## 693	2.12367274	-1.62770253	-6.906843937
## 694	8.60956775	0.64106019	3.635557890
## 695	3.55591671	-2.02596130	-0.738621369
## 696	11.30824911	5.77303279	-0.409098583
## 697	7.91221661	4.50245287	-0.112543042
## 698	6.49118857	6.03480533	4.695454734
## 699	-1.52209426	-5.12065145	-1.992193670

## 700	7.58029584	-0.54463573	0.301763991
## 701	-2.26765111	-5.32765577	-4.441438669
## 702	-1.45753235	-2.93977045	-8.301533027
## 703	2.66933802	-2.95728128	-2.479295600
## 704	15.90138404	9.74204212	6.029387790
## 705	2.71614687	-1.50341300	-6.127354143
## 706	12.96543492	9.50593927	8.142302993
## 707	2.83314919	-2.19677923	-4.568269017
## 708	10.77790424	10.07242757	6.287273751
## 709	7.84281658	3.53926648	-0.399352458
## 710	15.53350273	12.59138306	9.474974114
## 711	15.06856929	14.57776028	11.791319379
## 712	13.67283108	13.19051302	10.010975313
## 713	17.57938713	16.12661846	11.122273755
## 714	14.14471988	12.77546649	10.551874054
## 715	20.12045987	18.96066378	15.125014140
## 716	16.60887379	13.42098963	11.699918400
## 717	14.91957326	14.02261442	13.334136518
## 718	10.16175710	11.63005880	7.106071055
## 719	13.56785731	13.25521832	11.914246946
## 720	15.40060581	17.65926991	15.166008961
## 721	9.46387245	14.36635087	11.745451004
## 722	12.56011973	12.06421890	12.088151475
## 723	11.68044647	11.95227141	9.708700858
## 724	16.84674455	16.20217915	14.593578181
## 725	9.41784800	10.17594356	10.325534681
## 726	12.98633888	12.79736163	12.181815421
## 727	15.56851743	16.14393395	14.500160792
## 728	11.34983605	10.41534257	8.981266287
## 729	10.94026684	13.22742042	10.363367152
## 730	12.25021094	11.90181495	10.347848553
## 731	12.87208160	13.22664188	9.299326805
## 732	13.34264687	12.30142032	8.410209777
## 733	17.43134756	16.31769686	14.529658589
## 734	16.89610998	17.72195143	13.256604550
## 735	15.38463406	16.10822165	14.906805025
## 736	16.72222287	17.06714230	14.792071140
## 737	15.43077467	14.41609425	11.909373423
## 738	17.89002438	18.74814569	14.298908737
## 739	17.69118516	12.06049342	9.169268309

## 740	17.78843531	14.88992902	10.828435907
## 741	14.48883606	14.17150358	11.408679638
## 742	13.68302782	14.44847792	8.192513095
## 743	0.24780080	3.28228412	5.933542156
## 744	11.28277807	9.66523871	7.344691462
## 745	10.00403278	11.33833950	10.058682420
## 746	8.75168258	9.41186270	9.194106485
## 747	11.06765201	14.13787778	14.117638815
## 748	9.25937981	12.07334953	10.131077497
## 749	12.08203764	13.88591969	10.097026041
## 750	4.98961705	3.85794081	6.515428683
## 751	5.06614502	6.22564640	7.645868274
## 752	8.83459178	3.22599126	0.998056490
## 753	9.79855693	6.26241108	11.168540814
## 754	12.34769304	13.43745716	13.030325298
## 755	13.41533405	12.95542292	10.050537813
## 756	9.49163941	9.43163180	3.299946489
## 757	7.04370434	4.49247676	4.921415821
## 758	16.46149031	17.84794088	13.254685229
## 759	1.79691454	4.74482682	5.703415903
## 760	13.13518846	17.92189123	16.772962243
## 761	8.51074042	7.34384147	8.165351592
## 762	15.20642471	18.31086677	13.868766015
## 763	15.08639620	15.59786626	12.187952447
## 764	18.89862066	17.46861441	13.858898504
## 765	12.48374822	10.72099356	7.027193217
## 766	12.75916786	11.98319448	11.043051879
## 767	10.87494412	11.87167880	8.029904147
## 768	3.18999327	-4.97117424	-0.637621759
## 769	7.47110951	1.58038192	4.112687033
## 770	6.74071550	10.36484701	9.309923717
## 771	13.30638815	5.71013471	4.815947077
## 772	7.77810505	-1.10477780	3.324430374
## 773	5.22715075	-4.66739300	3.280957159
## 774	12.19559550	5.97864626	8.906948461
## 775	6.03996186	-0.18088589	-2.180034475
## 776	3.48613194	7.98607921	9.642756626
## 777	10.70569440	0.97700864	4.034571931
## 778	4.28884633	-6.32563837	2.131713211
## 779	4.18444436	-6.37100532	-1.402593264

```

## 780  9.00719181  2.97218152 -0.530655778
## 781  2.35998871  2.24288891  6.820430033
## 782  6.64703009  0.26625581 -6.229999562
## 783  8.44942540  10.71434426  6.695499090
## 784  0.54562783 -2.22873740  1.632171647
## 785  7.42148212  3.40499772 -2.926726843
## 786 -3.34938770 -1.86882639  0.700878572
## 787  0.89260173 -5.85401397  0.603082022
## 788  2.50351362  2.70832910  5.360401287
## 789  6.81516815 -1.21430948 -3.472536186
## 790  4.97684297 -1.37171574 -5.528267455
## 791 -2.34743820 -6.50835019 -13.684223920
## 792  4.54959546 -4.35342537  2.494939309
## 793 11.16664520  8.59139835  0.897997152
## 794  9.88170703  3.80939115  0.231675671
## 795  3.18319274 -1.57329172 -5.464568229
## 796  4.58274805 -2.27407272 -5.272951157
## 797  3.13281795 -5.87398710  0.829515875
## 798 10.45368201  1.29549451  3.125305072
## 799  5.28153508 -0.36105441 -1.564446785
## 800  4.25816743  2.08134074 -4.427418701
## 801 12.69755776  5.77353414 -0.926385870
## 802 -2.23671557 -6.96558385 -14.879860254
## 803 -10.18866318 -14.61081060 -17.118211482
## 804 -0.90408058 -8.62138723 -6.206570649
## 805 -3.97978246 -2.19397721 -1.843703301
## 806 -3.68015915 -5.78503654 -4.247295728
## 807 -1.73355702 -7.53363374 -4.853023443
## 808  7.93172356  4.65182126 -4.215900907
## 809 -3.71375007 -10.08042025 -13.415658789
## 810 -3.73192060 -5.89997304 -10.312781728
## 811 -8.32549066 -12.38083108 -17.314488407
## 812 -3.15387285 -12.00323136 -15.039324220
## 813 -10.98697179 -15.55185066 -9.509476861
## 814 -0.61072877 -5.17625241  0.421008673
## 815 -8.36325633 -16.40469773 -16.359121647
## 816 -5.59747906 -12.96463820 -15.302261104
## 817  6.70512306 -4.63156174  1.925233120
## 818 -0.57949078 -6.20129128 -11.905570542
## 819 -0.42136821 -7.71452921 -11.484332006

```

## 820	2.27044837	-5.48285156	-3.241520943
## 821	9.88509961	0.42468268	8.811816159
## 822	-1.83625382	-8.58569207	-10.459089267
## 823	13.76230611	13.19313925	10.687894526
## 824	-2.09465686	-2.98636601	-7.159114435
## 825	6.37905431	6.79663730	4.590422792
## 826	-1.80136586	-0.21449606	-1.265418790
## 827	12.89657929	15.25575937	15.153193463
## 828	15.26442898	12.79447089	13.150874720
## 829	15.05848231	17.38178696	12.721347890
## 830	19.37098702	16.65991445	14.913017804
## 831	12.89971891	12.01550686	9.689127337
## 832	18.77492173	11.96636641	15.977798746
## 833	11.71144088	11.91543215	10.187533234
## 834	12.87586665	7.40674721	9.854709484
## 835	4.68259806	2.04856808	0.709977130
## 836	11.14514134	9.33104907	6.878531652
## 837	14.37241746	13.22257813	12.554058316
## 838	7.30465459	8.14926961	3.655257026
## 839	10.25885443	10.39674724	9.668338022
## 840	4.97176369	5.78633307	2.411053956
## 841	5.94961664	1.11875481	7.653017960
## 842	9.20257881	5.88793052	4.520081706
## 843	4.10535899	0.58330482	2.000688836
## 844	9.44290720	8.79223250	8.023986710
## 845	7.02889641	4.31287652	4.437201615
## 846	5.69687060	7.52809486	5.598071500
## 847	4.05574333	6.00944199	4.019974720
## 848	5.43890389	2.54685720	7.905518132
## 849	10.76148228	9.99855084	13.620058887
## 850	7.67645187	7.16786279	6.888312006
## 851	16.12956104	17.04842288	14.892160405
## 852	19.29899587	20.55972356	19.152049005
## 853	18.03054711	19.97905158	13.648651808
## 854	12.88800057	8.42252976	7.366485023
## 855	15.96946385	18.04474730	13.778432794
## 856	10.79238772	9.48001663	9.346124211
## 857	14.79561971	17.25740297	13.642537434
## 858	12.72785855	13.50557859	10.859066175
## 859	17.12543011	14.05919312	13.379733199

## 860	2.39495317	-0.39824871	-1.694541082
## 861	3.85924425	0.61892953	2.034731504
## 862	5.17921104	1.81014307	0.655926847
## 863	8.93425319	9.93925305	8.421763271
## 864	9.19657663	7.96052694	4.037146642
## 865	10.54865812	10.95400900	9.179928095
## 866	7.60963665	3.70088882	4.899289460
## 867	6.12836177	1.62751057	3.436981189
## 868	2.80593699	0.67979898	0.333610186
## 869	8.91999925	7.82455464	10.091395100
## 870	5.94322681	5.06140917	3.828077022
## 871	11.43824615	10.87673310	9.525893609
## 872	17.09025206	15.90971370	14.437890875
## 873	13.56470988	15.93640035	13.083512221
## 874	1.43338370	0.15022603	-0.842378204
## 875	11.42479586	11.05082185	10.825321208
## 876	7.48019399	1.76362743	4.572223666
## 877	3.65033664	0.06535341	0.421179319
## 878	6.03277293	1.90868834	5.402040934
## 879	16.25249459	15.77229110	16.074035414
## 880	7.59167033	4.69370163	3.131768401
## 881	16.93517940	16.38223434	13.227670733
## 882	8.04318600	6.59109375	4.770727251
## 883	10.99106684	12.07480725	8.997876361
## 884	18.09445996	12.63326755	14.923397119
## 885	6.08773468	4.38656575	4.186601731
## 886	12.27073847	9.14233869	13.772653316
## 887	7.76288975	8.61655349	7.897021417
## 888	12.94584222	7.43567562	7.417407865
## 889	6.36189484	3.57382513	5.274731581
## 890	4.97558224	5.07538607	6.829614892
## 891	9.38696980	6.90740610	6.763497552
## 892	5.67419865	4.41141601	6.391316193
## 893	6.85569142	6.90709568	2.139090991
## 894	8.90964966	8.01491789	5.287750292
## 895	6.04253448	5.37588483	6.197221907
## 896	6.91247601	3.14082436	1.688846526
## 897	8.55345241	7.70277240	1.869819699
## 898	16.70100331	10.76911132	14.725971238
## 899	8.45953051	8.95122581	6.982676054

```
## 900 15.07648514 12.38194564 14.203888389
## 901 15.98707532 12.74237704 12.838329688
## 902 9.84840003 7.41209132 4.899482561
## 903 1.28222503 0.54900267 -2.578897095
## 904 8.97586038 8.09290427 7.174229873
## 905 5.34627028 2.10891809 3.768483961
## 906 6.01781754 6.78400745 8.032396243
## 907 2.06813889 -1.20447887 -3.717429499
## 908 8.21068957 5.76356072 4.500393361
## 909 1.47320452 0.85445803 -1.892614279
## 910 12.75646724 9.90945419 12.199557158
## 911 8.59566242 5.42937352 3.740607249
## 912 6.11056801 5.45722614 5.144959983
## 913 20.37364573 17.06847985 15.098571874
## 914 5.13220146 4.25620640 0.668564236
## 915 8.64587204 8.29929164 7.671566121
## 916 12.48768041 7.91367260 8.784469208
```