

Using NLP to Decode F·R·I·E·N·D·S

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I•N•T•R•O

Goal

- Episode Analysis – Common Themes
- Character Analysis

D•A•T•A

Gathering

- Scraped from [here](#).
- 25000+ lines of dialogue between primary characters

Pre-processing

- Removed words in parenthesis which indicates stage direction
- Remove punctuation, numerical, symbols
- No Stemming/Lemmatization

The One Where Monica Gets a New Roommate (The Pilot-The Uncut Version)

Written by: Marta Kauffman & David Crane

Transcribed by: [guineapig](#)

Additional transcribing by: [Eric Asen](#)

(Note: The previously unseen parts of this episode are shown in blue text.)

[Scene: Central Perk, Chandler, Joey, Phoebe, and Monica are there.]

Monica: There's nothing to tell! He's just some guy I work with!

Joey: C'mon, you're going out with the guy! There's gotta be something wrong with him!

Chandler: [All right Joey, be nice.](#) So does he have a hump? A hump and a hairpiece?

Phoebe: Wait, does he eat chalk?

(They all stare, bemused.)

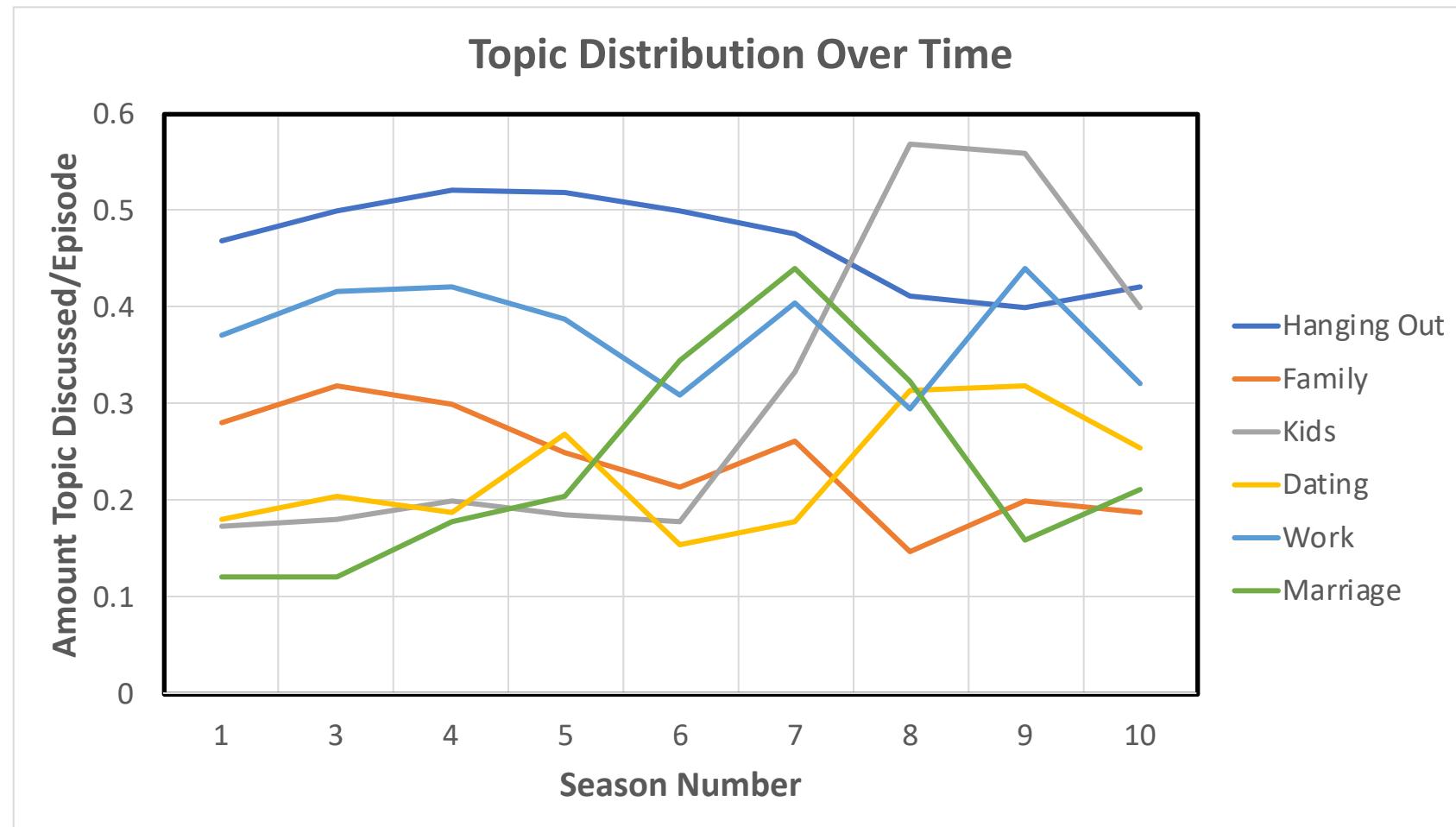
Phoebe: Just, 'cause, I don't want her to go through what I went through with Carl- oh!

Topic Modeling - E•P•I•S•O•D•E•S

Corex

Anchored the topics based on:

- Marriage, work, dating, kids, family, and hanging out

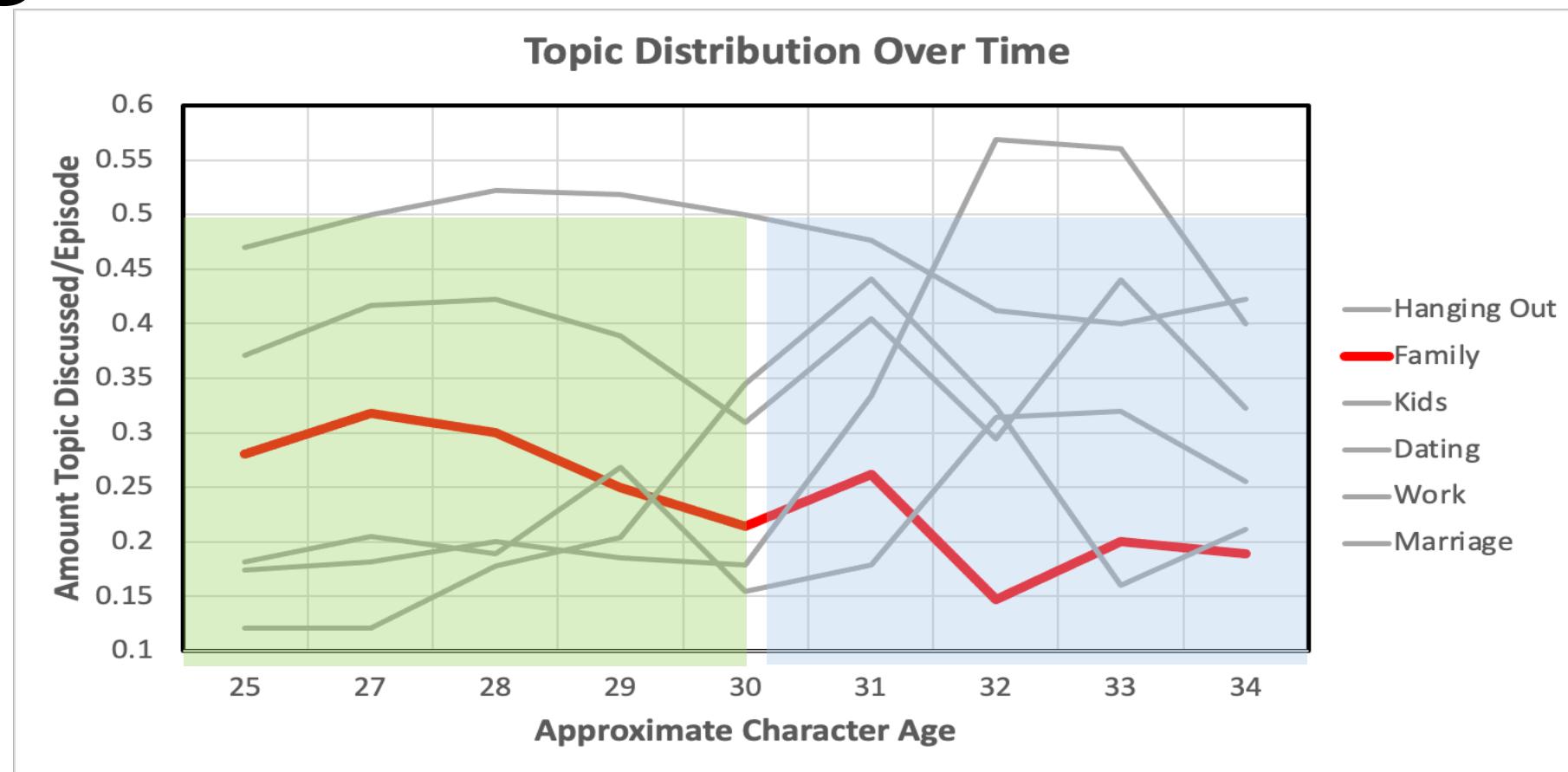


Topic Modeling - E•P•I•S•O•D•E•S

Observation

Family

- Moderate decline in topics about Family as people get older

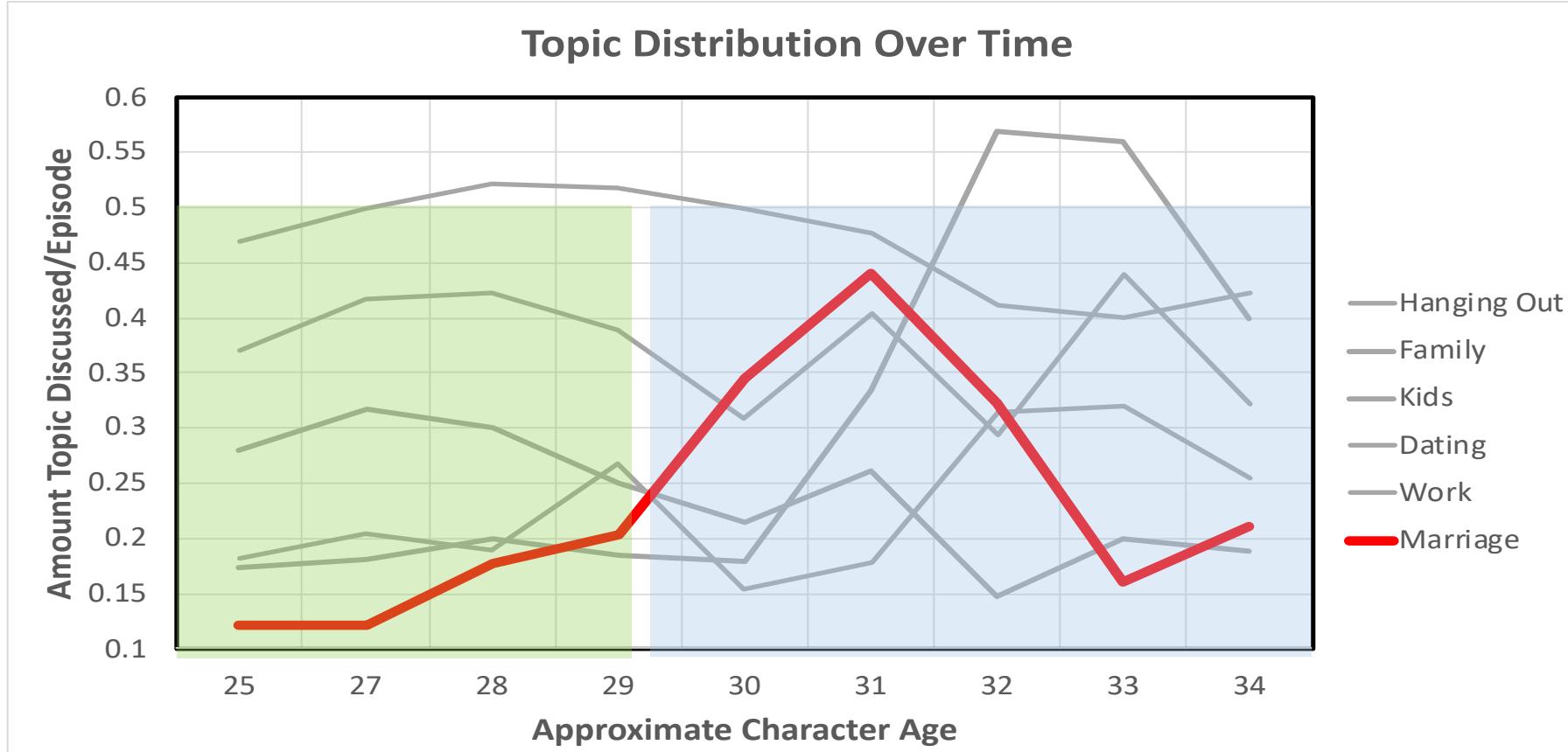


Topic Modeling - E•P•I•S•O•D•E•S

Observation

Marriage

- Tends to trend higher as people get older

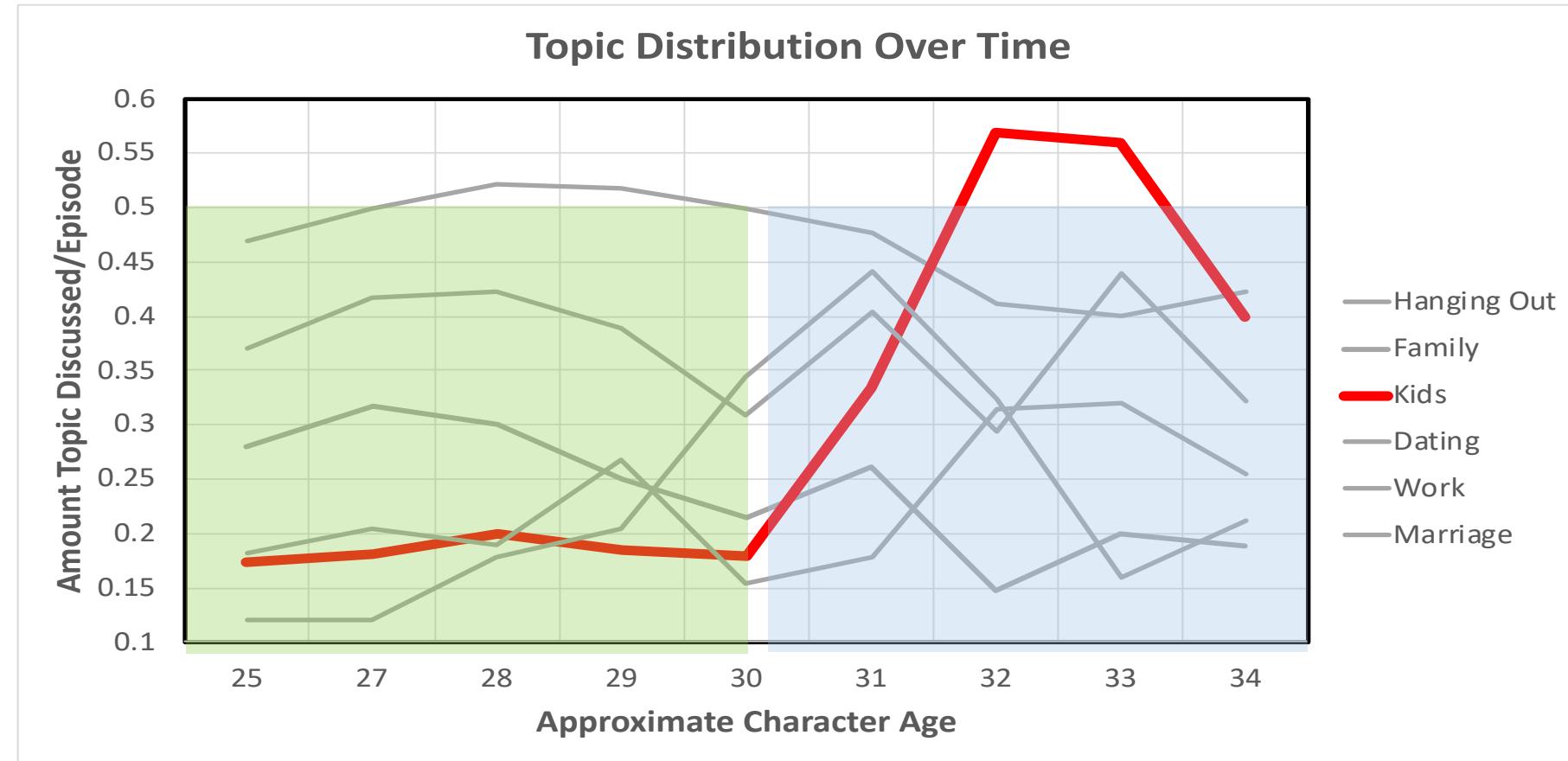


Topic Modeling - E•P•I•S•O•D•E•S

Observation

Kids

- Sharp increase in talk of kids after 30 years old



Topic Modeling - A·C·T·O·R·S



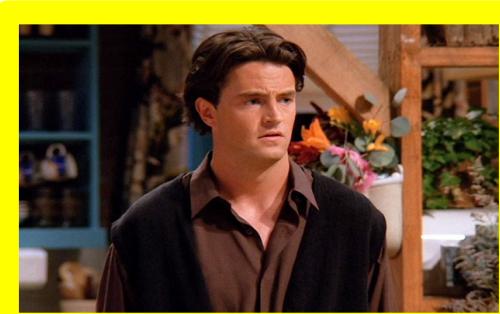
Ross: carol, emily, marcel, hanukkah, paleontology, professor, ex, museum, students, failed, lesbian



Joey: man, dude, audition, doin, agent, actor, uhh, scene, remoray, director, casting, buddy, drake, movie, huh, chick, auditions



Monica: sweetie, wedding, barca, competitive, adopt, lounger, turkey, kitchen, richard, potatoes, mmh, calamari, caesar, efficient



Chandler: umm, joe, janice, kathy, gym, babe, ring, spend, baby, marry, everyone, guys, even, because, our, merry, closet

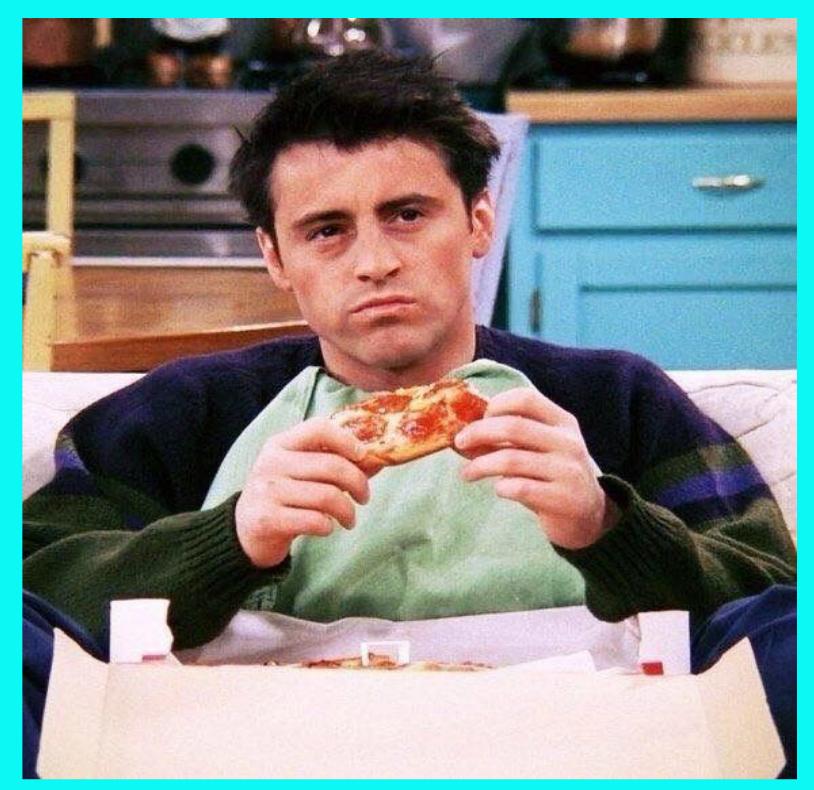


Rachel: oh, god, honey, barry, ugh, buyer, daddy, emma, me, father, assistant, please, dad



Phoebe: ursula, mike, yay, massage, philange, guitar, psychic, negative, clients, parents, song, triplets

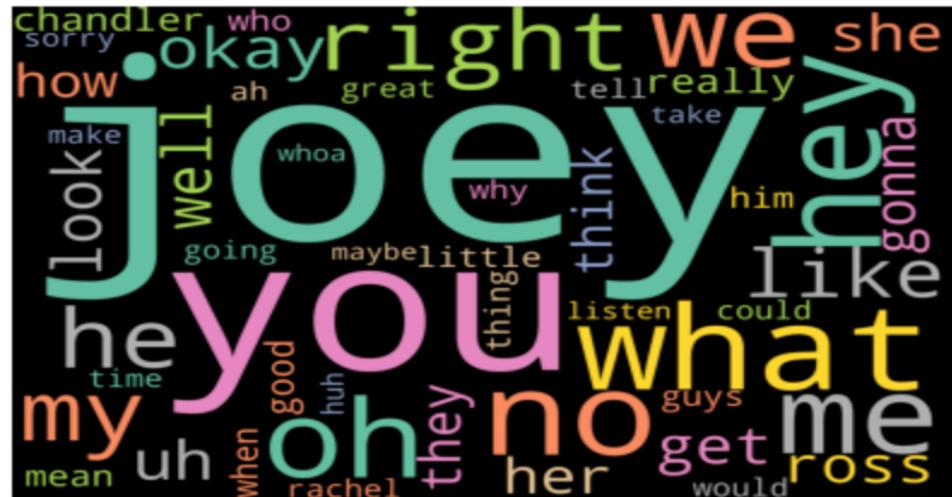
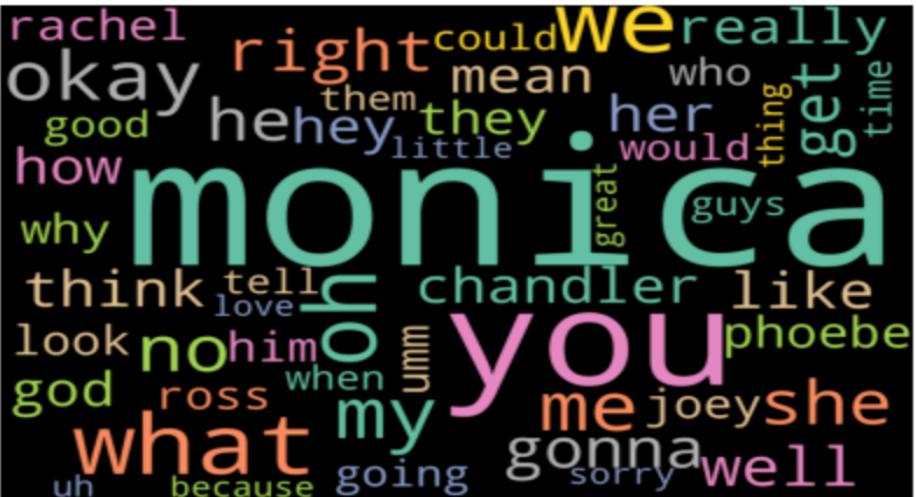
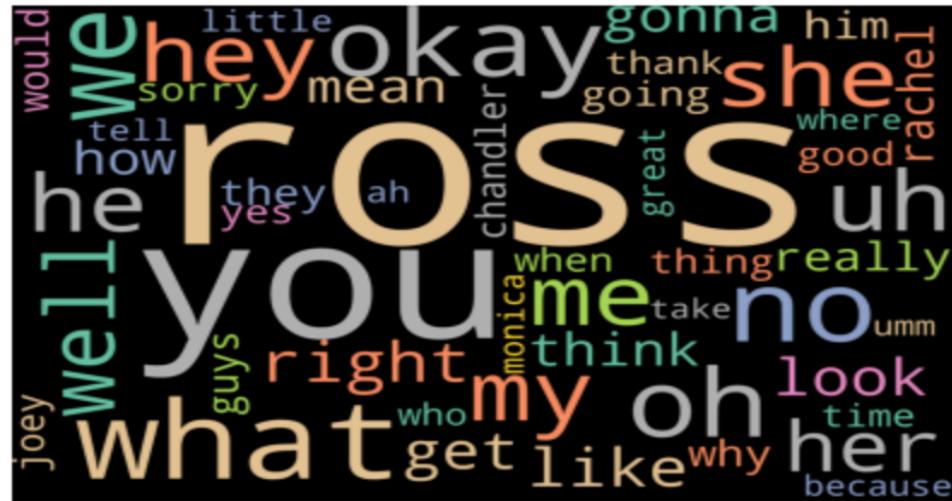
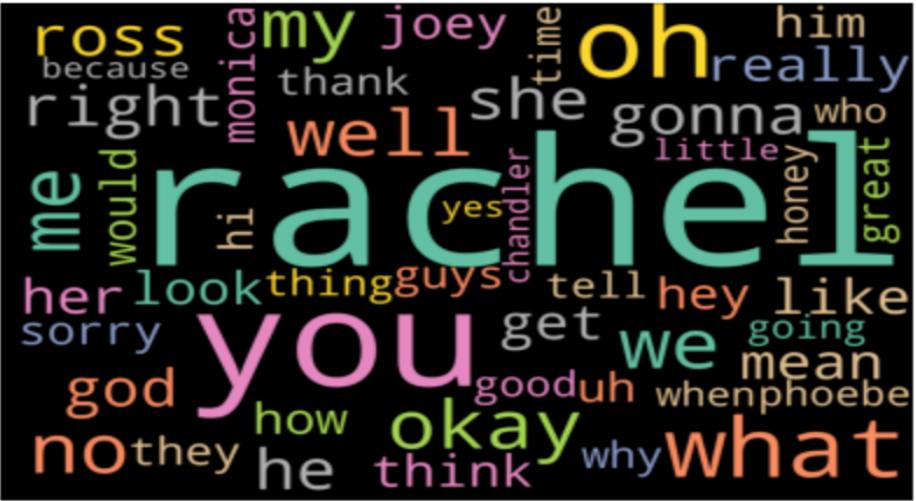
Topic Modeling - A•C•T•O•R•S



man, dude, audition,
doin, agent, actor,
uhh, scene, remoray,
director, casting,
buddy, drake, movie,
huh, chick

Word Cloud - A·C·T·O·R·S

What to make of this??



Speech Patterns - A•C•T•O•R•S

Discourse Words				
	Percentage Discourse Words	Percentage I words	Percentage you words	Total Percentage
Joey	4.1%	6.7%	4.5%	15.3%
Phoebe	4.8%	6.3%	5.1%	16.2%
Monica	3.6%	6.5%	5.2%	15.3%
Chandler	3.5%	6.7%	4.5%	14.7%
Ross	4.1%	6.9%	4.6%	15.6%
Rachel	4.6%	7.5%	4.8%	16.9%

Speech Patterns - A•C•T•O•R•S

I Words	
['i', 'me', 'my', 'mine']	
Percentage Discourse Words	Percentage I words
Joey	4.1%
Phoebe	4.8%
Monica	3.6%
Chandler	3.5%
Ross	4.1%
Rachel	4.6%

	Percentage you words	Total Percentage
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Monica	5.2%	15.3%
Chandler	4.5%	14.7%
Ross	4.6%	15.6%
Rachel	4.8%	16.9%

Speech Patterns - A•C•T•O•R•S

You Words

['you', "you're", "you've",
"you'll", "you'd", 'your',
'yours', 'yourself',
'yourselves']

	Percentage Discourse Words	Percentage I words	Percentage you words	Total Percentage
Joey	4.1%	6.7%	4.5%	15.3%
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Speech Patterns - A•C•T•O•R•S

15% of words used in speech consist of just 22 words!!

	<u>Discourse Words</u> ['uh', 'uhh', 'um', 'like', 'oh', 'ah', "y'know", 'right', 'so', 'anyway']	<u>I Words</u> ['i', 'me', 'my', 'mine']	<u>You Words</u> ['you', "you're", "you've", "you'll", "you'd", 'your', 'yours', 'yourself', 'yourselves']	
	<u>Percentage Discourse Words</u>	<u>Percentage I words</u>	<u>Percentage you words</u>	<u>Total Percentage</u>
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Chandler	3.5%	6.7%	4.5%	14.7%
Ross	4.1%	6.9%	4.6%	15.6%
Rachel	4.6%	7.5%	4.8%	16.9%

“Which Friend Are You?

Coming soon to your Facebook page...

Result: joey

How would you explain your career as a doctor on a date?

Umm, it's okay. I just saved this guy's life last week.
 Dude, it's such an awesome feeling to save someone's life.
 Oh my god, the best feeling ever was when I saved someone's life.
 I would say being a doctor has given me a great opportunity to save people's lives while also being a student forever because you keep learning.
 Yeah it's a cool job. Umm I just wish the benefits were better.

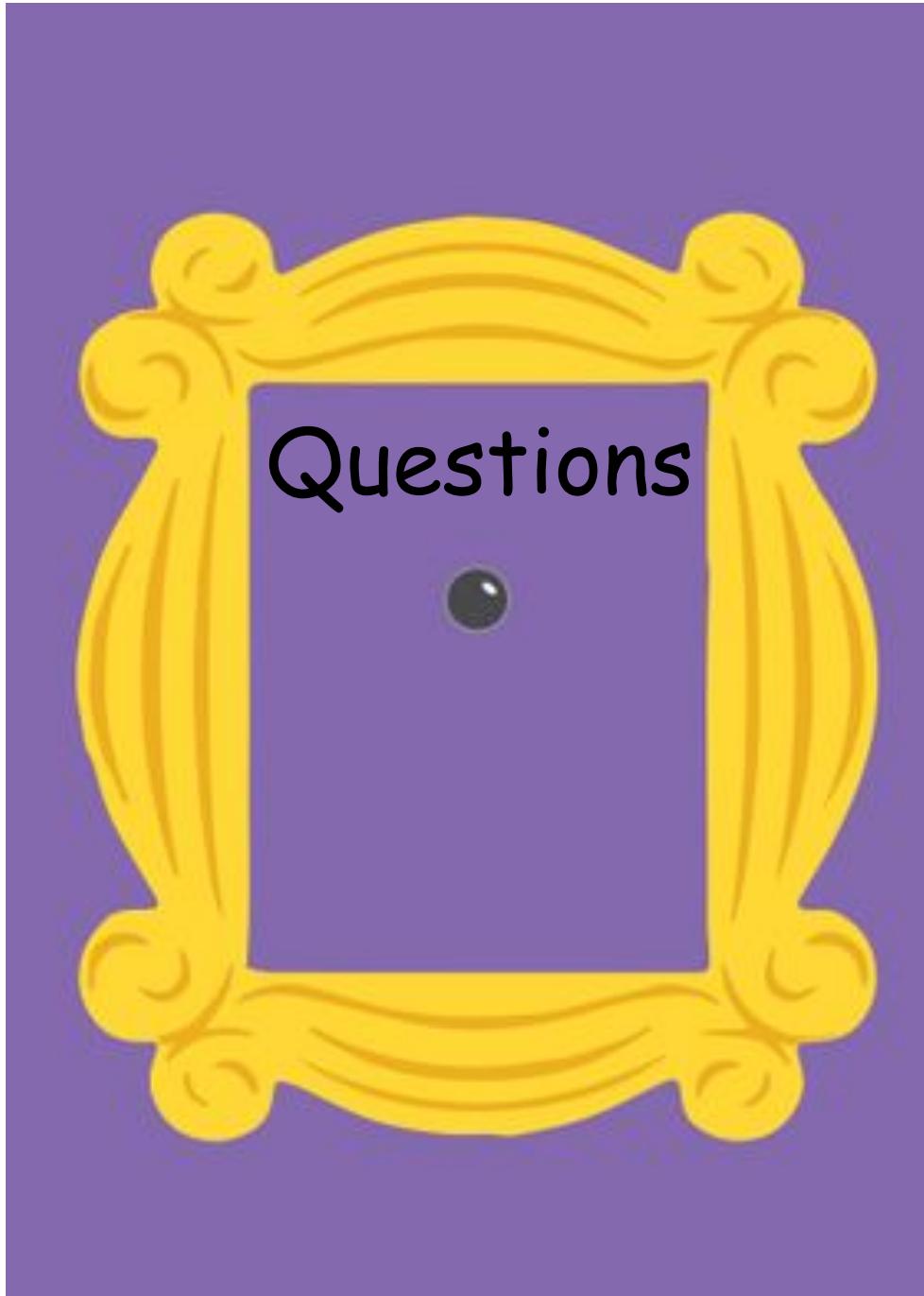
What's your favorite food?

Pizza baby!
 Umm kinda depends on the mood Im in
 What kind of question is that
 Interesting, I would have to say seafood
 Roasted potatoes with a side of fried calamari topped in marinara sauce!

How would you ask someone out?

Hey, would you like to grab a sandwich? I know a cool place
 Wow, that looks amazing. Wait, so umm would you like to grab a coffee
 Ugh, like I cannot stand it here. Honey, I actually know a cool place I really want to check out
 How you doin?
 Right, so how does a cold beer sound

Check Who



Appendix

Episode Topic Modeling – Dataframe Used

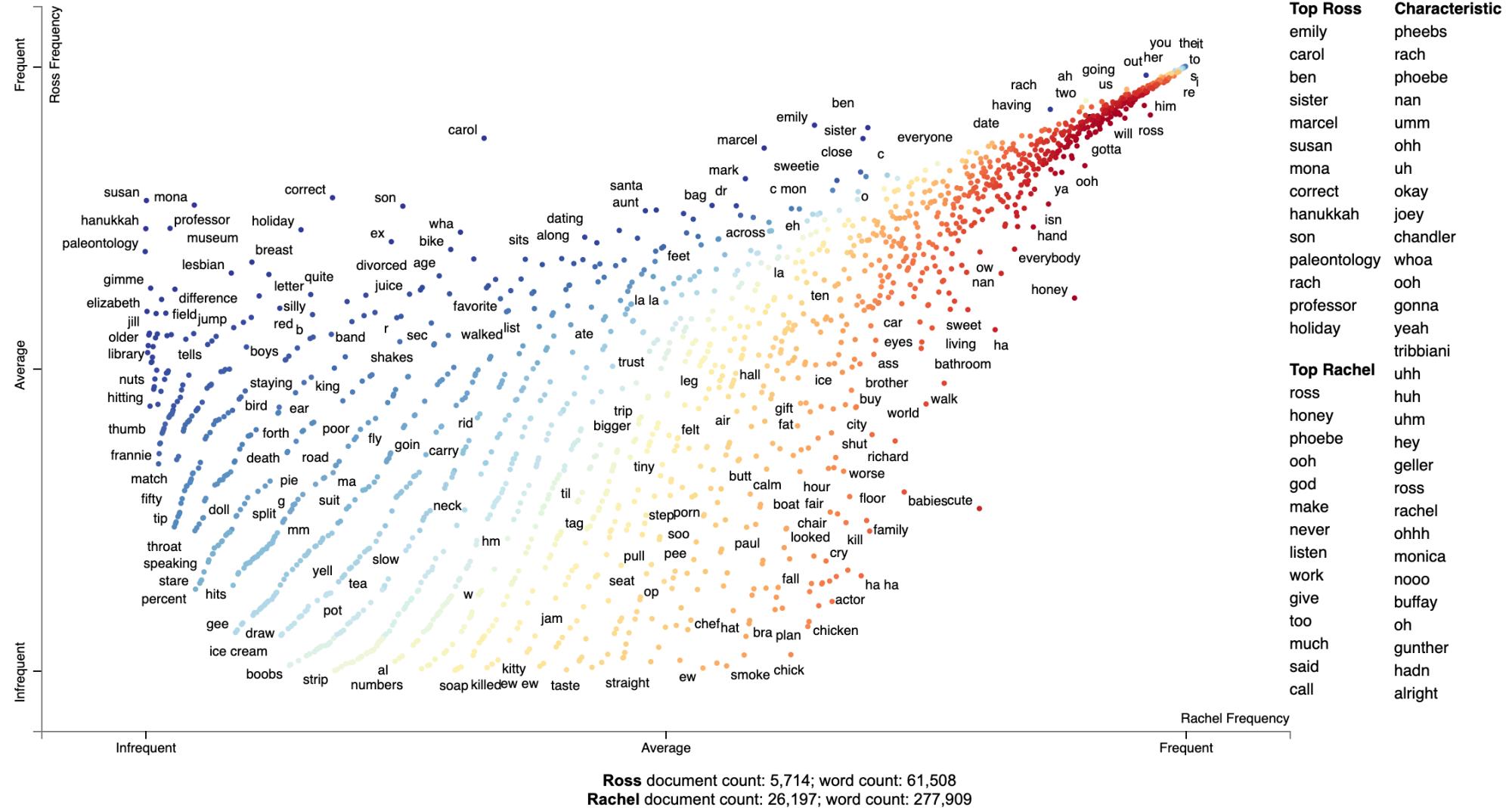
season_number	episode_number	speaker		dial_clean	marriage	work	dating	kids	family	hanging out
0	1	1	Chandler	sounds like a date to me alright so i m b...	0.000001	0.999999	0.999999	0.999999	0.000001	0.999999
1	1	1	Joey	c mon you re going out with the guy there s...	0.999999	0.999999	0.000001	0.000001	0.000001	0.999999
2	1	1	Monica	okay everybody relax this is not even a\\nda...	0.999999	0.000001	0.999999	0.000001	0.999999	0.999999
3	1	1	Phoebe	wait does he eat chalk just cause i do...	0.000001	0.999999	0.000001	0.000001	0.999999	0.000001
4	1	1	Rachel	oh god hi thank god i just went to\\nyour bu...	0.999999	0.999999	0.000001	0.000001	0.000001	0.999999
5	1	1	Ross	hi i just feel like someone reached down ...	0.999999	0.999999	0.000001	0.000001	0.999999	0.999999
6	1	2	Chandler	yeah i think for us kissing is pretty much ...	0.000001	0.999999	0.000001	0.000001	0.000001	0.000001
7	1	2	Joey	yeah right y serious are we s...	0.000001	0.000001	0.999999	0.000001	0.000001	0.000001
8	1	2	Monica	what you guys don t understand is for us \\nk...	0.000001	0.999999	0.000001	0.999999	0.999999	0.999999
9	1	2	Phoebe	oh yeah then i ve already seen this on...	0.000001	0.999999	0.000001	0.000001	0.000001	0.000001

Appendix

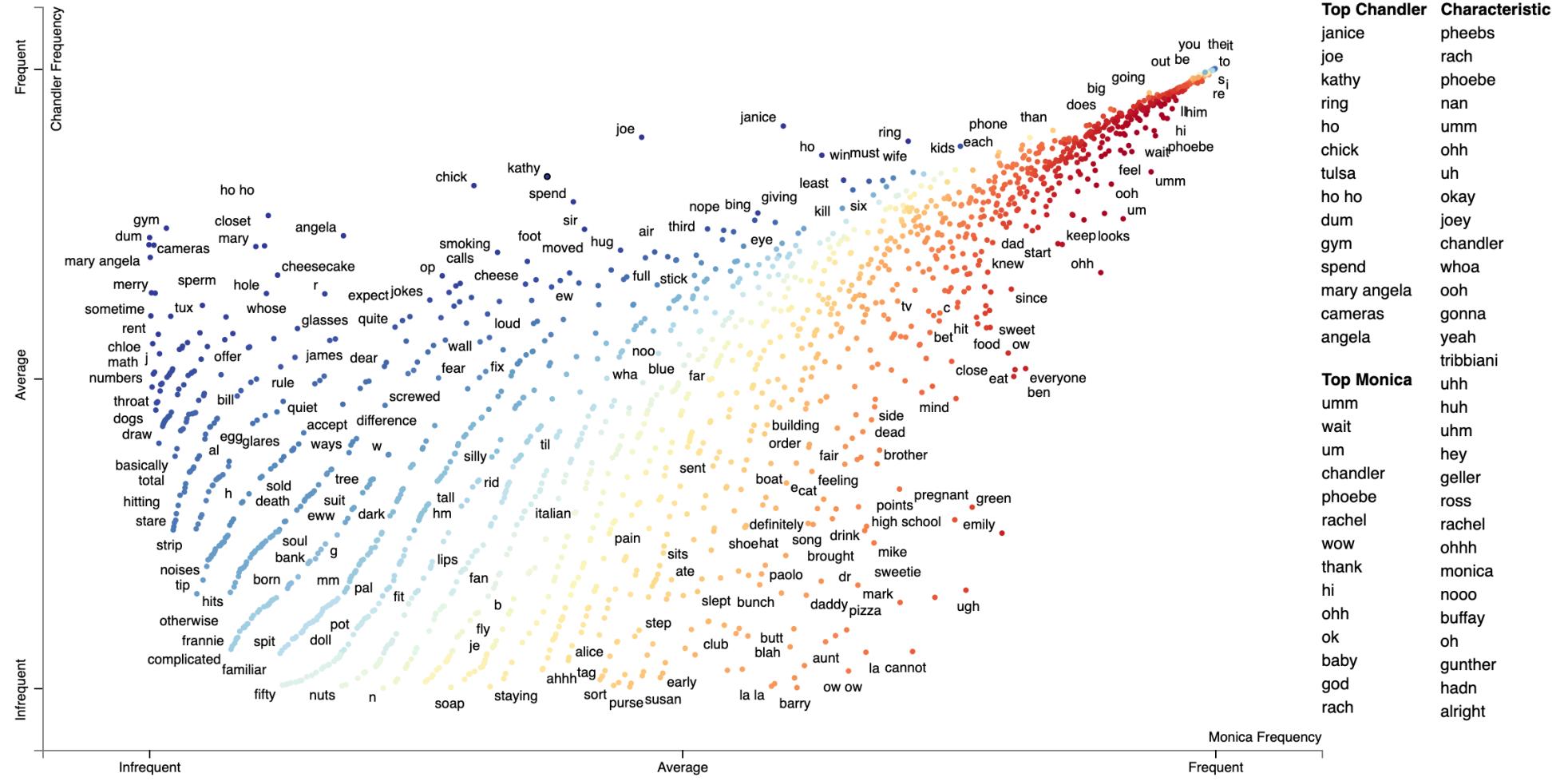
Character Topic Modeling – Dataframe Used

		episode	speaker	dialogue	writers	sentence_length	season_number	episode_number	dial_clean
127	The One Where Rachel Smokes	Joey	Joey	Oh this is great! I might actually get to pla...	Michael Curtis	12	5	18	Joey Oh this is great I might actually get t...
139	The One Where Rachel Quits	Chandler	Chandler	Eh, yeah, well ah, waitress at a coffee shop ...	Michael Curtis and Gregory S. Malins	19	3	10	Chandler Eh yeah well ah waitress at a cof...
105	The One Where Rachel Quits	Joey	Joey	If you ask me, as long as you got this job, y...	Michael Curtis and Gregory S. Malins	24	3	10	Joey If you ask me as long as you got this j...
175	The One With the Evil Orthodontist	Monica	Monica	Just like you told her you did! (Chandler gla...	Doty Abrams	17	1	20	Monica Just like you told her you did J...
242	Friends - 1003 - The One With Ross' Tan	Rachel	Rachel	Hmmm... Me too...	Brian Buckner	3	10	3	Rachel Hmmm Me too
225	The One Where Joey Dates Rachel	Ross	Ross	So is everybody here? I got here a little ear...	Sherry Bilsing-Graham & Ellen Plummer	76	8	12	Ross So is everybody here I got here a littl...
21	The One The Last Night	Chandler	Chandler	Well that would help the pride thing.	Scott Silveri	7	6	6	Chandler Well that would help the pride thing

Appendix



Appendix



Appendix

- Using this model, split it up between the 1st half (~24-29 years) and 2nd half (29-34 years) of the show and see if their topics change as they get older.

Character	Early Episodes (Age 24-29)	Later Episodes (Age 29-34)
Joey	Little Change	
Phoebe	Little Change	
Monica	She talked a lot more about other boyfriends. Also a lot more about specific foods	Family-related: Wedding, adoption, complaining about furniture and sink. Less about food
Chandler	Lot more mentions of other girlfriends, condoms, gym,	Wife, ring. Lot more terms of endearment like babe, universe, our, money
Ross	Lot more about past relationships, marriage, wife, (lesbian). Very little about work	Not so much about old girlfriends, but more about work (paleontology, professor, students, work, sediment)
Rachel	Mostly the same. Only difference is way more focused on her dad as she was more dependant	Much more talk about pregnancy (father, baby, emma)