

# Prediction of Cannabis Consumption from Demographics and Personality

HarvardX PH125.9x Data Science Capstone

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## Executive Summary

### + Introduction

Drug use is a behavior that constitutes an important factor linked to poor health, including early mortality, and which presents significant adverse consequences for the social fabric, notably with respect to criminality and family cohesion. Early detection of an individual's predisposition to drug consumption offers the opportunity to healthcare professionals to short-circuit the onset of addiction.

The present study is based on a dataset that includes demographic and psychological information related to the consumption of 18 legal and illegal drugs by 1885 participants. For the purpose of this study, we choose to focus the data analysis and modeling on the use of cannabis.

### + Goal of project

The goal of this project is to assess whether an individual's consumption of cannabis can be predicted from a combination of demographic and personality data.

To do so, we build and assess the effectiveness of six machine learning classifiers and confront the results obtained with the insights provided by data exploration.

## + Dataset description

The original dataset is found on the UCI machine learning repository. It is based the research paper by E. Fehrman, A. K. Muhammad, E. M. Mirkes, V. Egan and A. N. Gorban, “The Five Factor Model of personality and evaluation of drug consumption risk.,” arXiv, 2015. The data was collected from 1885 English-speaking participants over 18 years of age between March 2011 and March 2012.

In the original dataset, drug use is separated between ‘Never used’, ‘Used over a decade ago’, ‘Used over a decade ago’, ‘Used in last decade’, ‘Used in last year’, ‘Used in last month’, ‘Used in last week’ and ‘Used in last day’. For the purpose of this study, we separate the data in two groups: ‘Never Used’ (the original predictor) and ‘Used’ (the combination of the others).

The original dataset includes answers to questions related to the use of alcohol, amphetamines, amyl nitrite, benzodiazepines, cannabis, chocolate, cocaine, caffeine, crack, ecstasy, heroin, ketamine, legal highs, LSD, methadone, magic mushrooms, nicotine and volatile substance abuse (VSA)) and one fictitious drug (Semeron) which was introduced to identify over-claimers. In the present study, we restrict our scope to the analysis of cannabis consumption.

The data consists of two groups of pre-normalized and centered predictors:

1. Five demographic predictors : Age, Gender, Level of education, Ethnicity, and Country of origin.
2. The results from seven scored tests administered to assess personality, specifically:
  - Neuroticism (a long-term tendency to experience negative emotions such as nervousness, tension, anxiety and depression);
  - Extraversion (manifested in outgoing, warm, active, assertive, talkative, cheerful, and in search of stimulation characteristics);
  - Openness to experience (a general appreciation for art, unusual ideas, and imaginative, creative, unconventional, and wide interests);
  - Agreeableness (a dimension of interpersonal relations, characterized by altruism, trust, modesty, kindness, compassion and cooperativeness);
  - Conscientiousness (a tendency to be organized and dependable, strong-willed, persistent, reliable, and efficient);
  - Impulsiveness;
  - Sensation-seeking.

The working dataset in this study therefore consists of one Class (Cannabis consumption labeled ‘Used’) and twelve predictors (five demographic and seven personality-related).

## + Key steps

We extract a training subset (80% of data) from the dataset for the purpose of training our model, and use the remaining 20% of the data as a test set for the purpose of evaluation. This being a classification problem, we use accuracy as the metric to assess the goodness of fit.

This report consists of two main sections:

- In the first part, after performing minor data engineering, we explore, bin, and analyze the dataset.
- In the second part, we move on to the modeling phase:
  - After applying a Recursive feature elimination algorithm to seek and discard predictors that do not contribute significantly to the outcome, we build models based on the following methods:
  - Generalized linear model (glm)
  - Generalized linear model with penalized maximum likelihood (GLMnet)
  - Decision tree (rpart)

- Random forest (rf)
- Stochastic gradient boosting (gbm)
- Neural network (nnet)

We compare the modeling approaches, both in terms of accuracy and coherence with the data analysis.

# Analysis

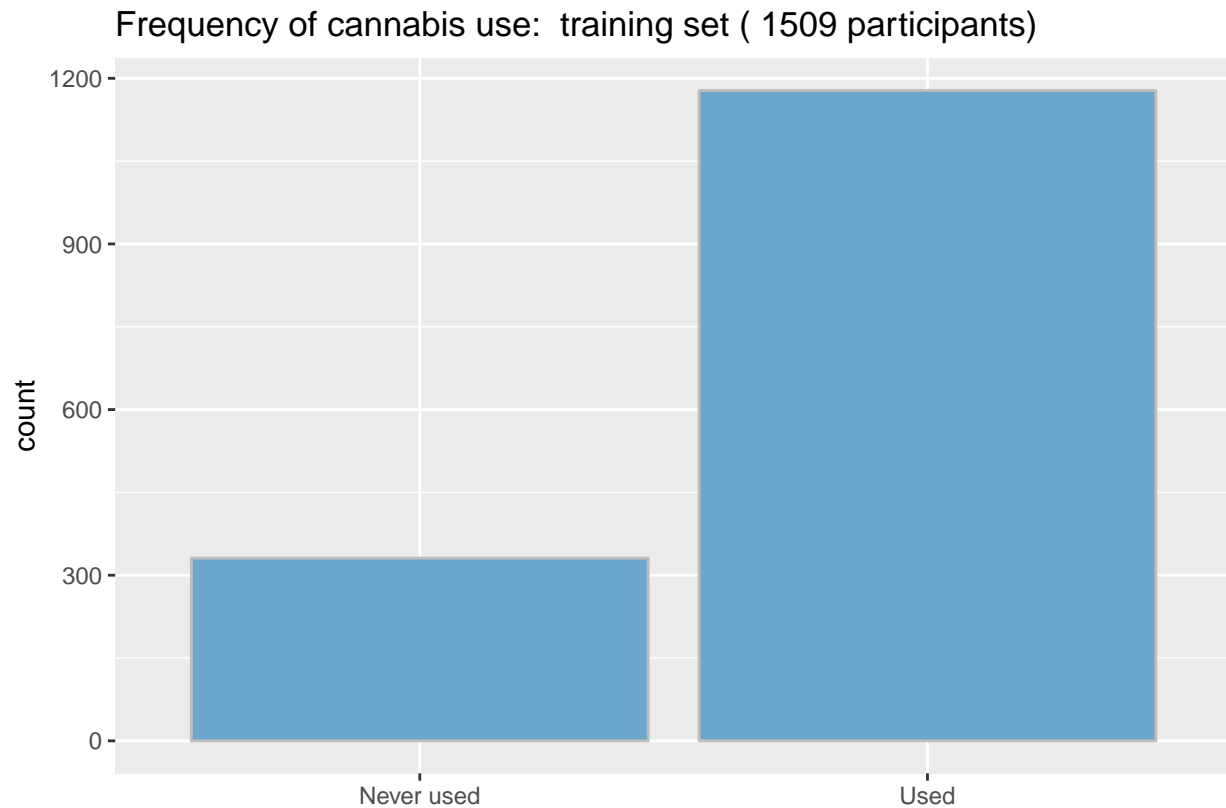
## A: Data engineering

- All predictors were already normalized and centered in the original dataset.
- We construct the ‘Used’ class to separate ‘Never used’ participants (0) from the others (1).
- We then partition the data between training (80% / df.train) and test sets (20% / df.test) preserving the distribution of the Cannabis class.

## B: Data exploration

- There are 0 NAs in the dataset.

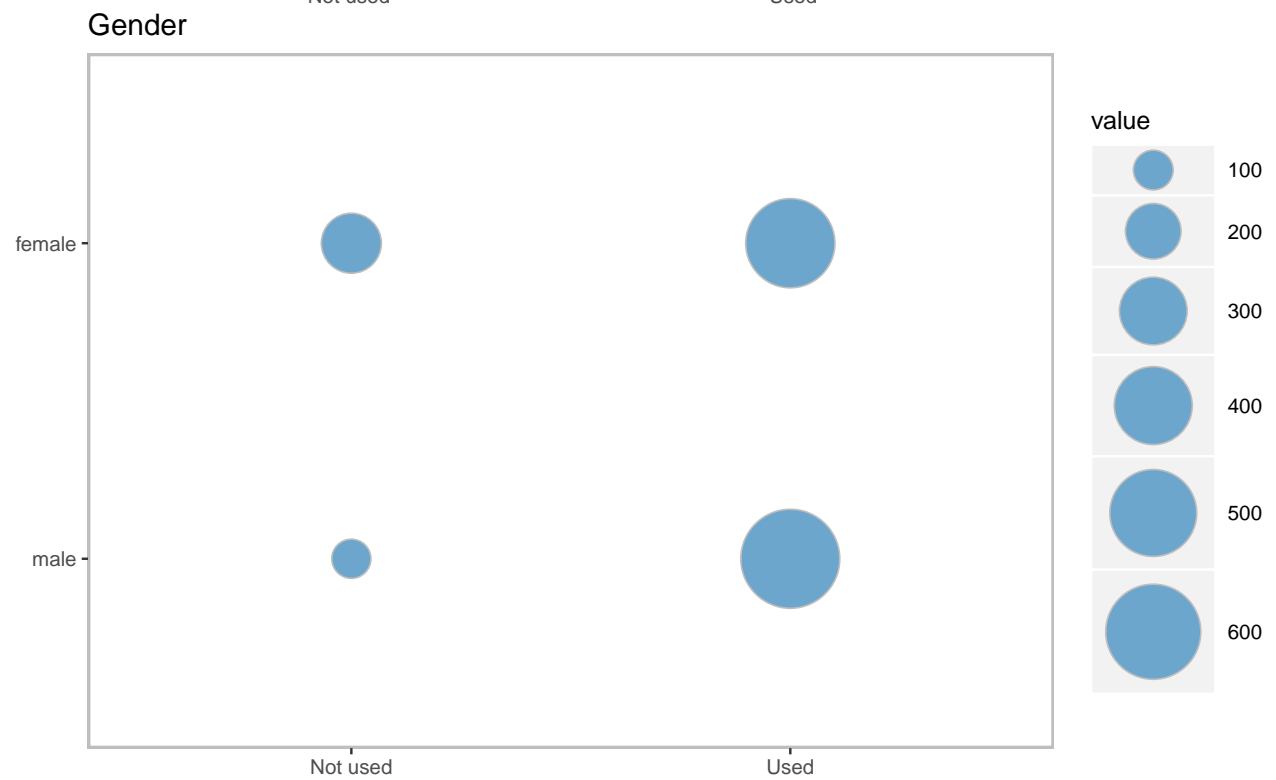
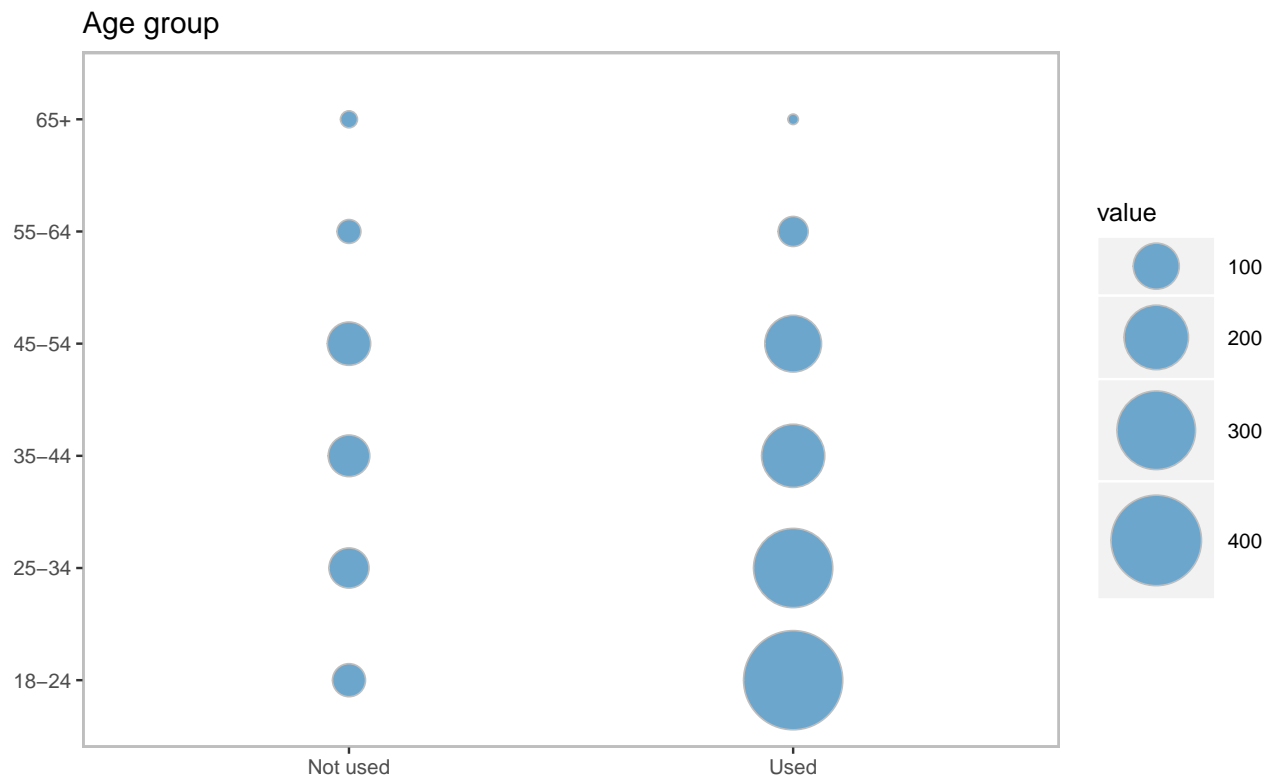
### Class distribution

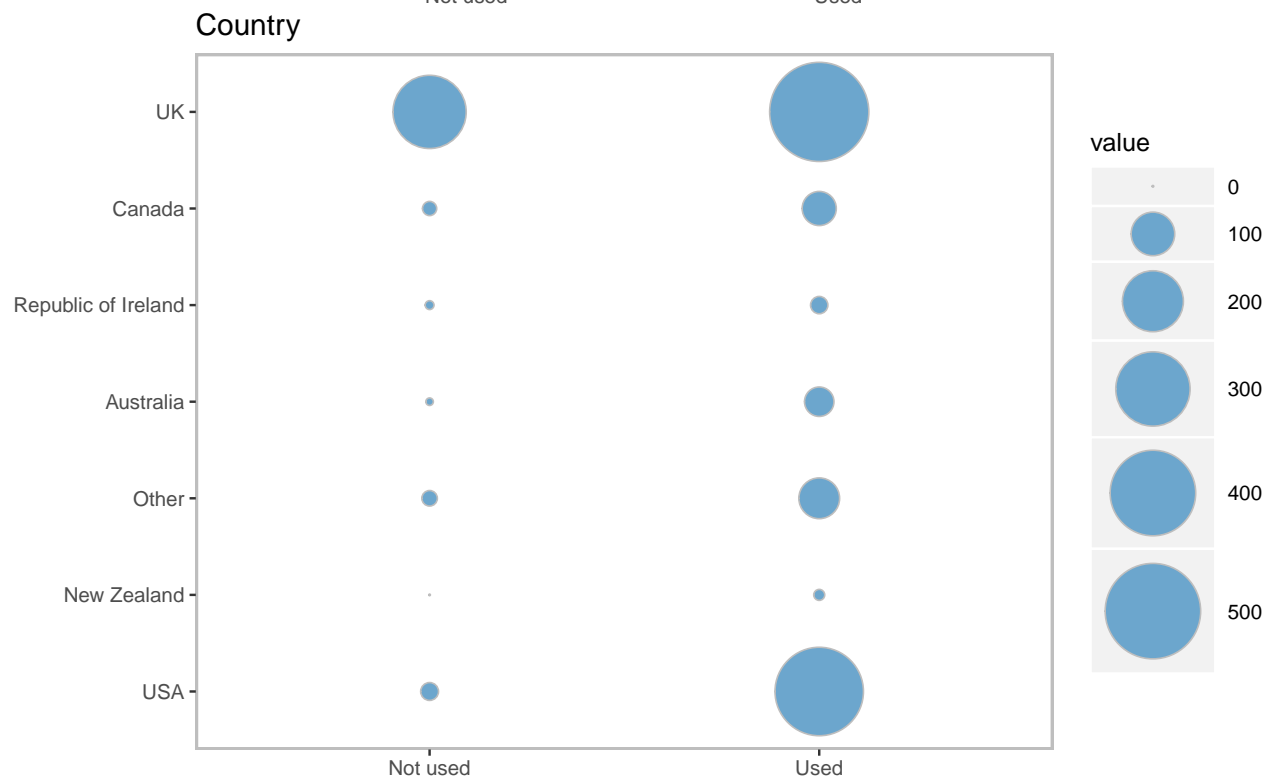
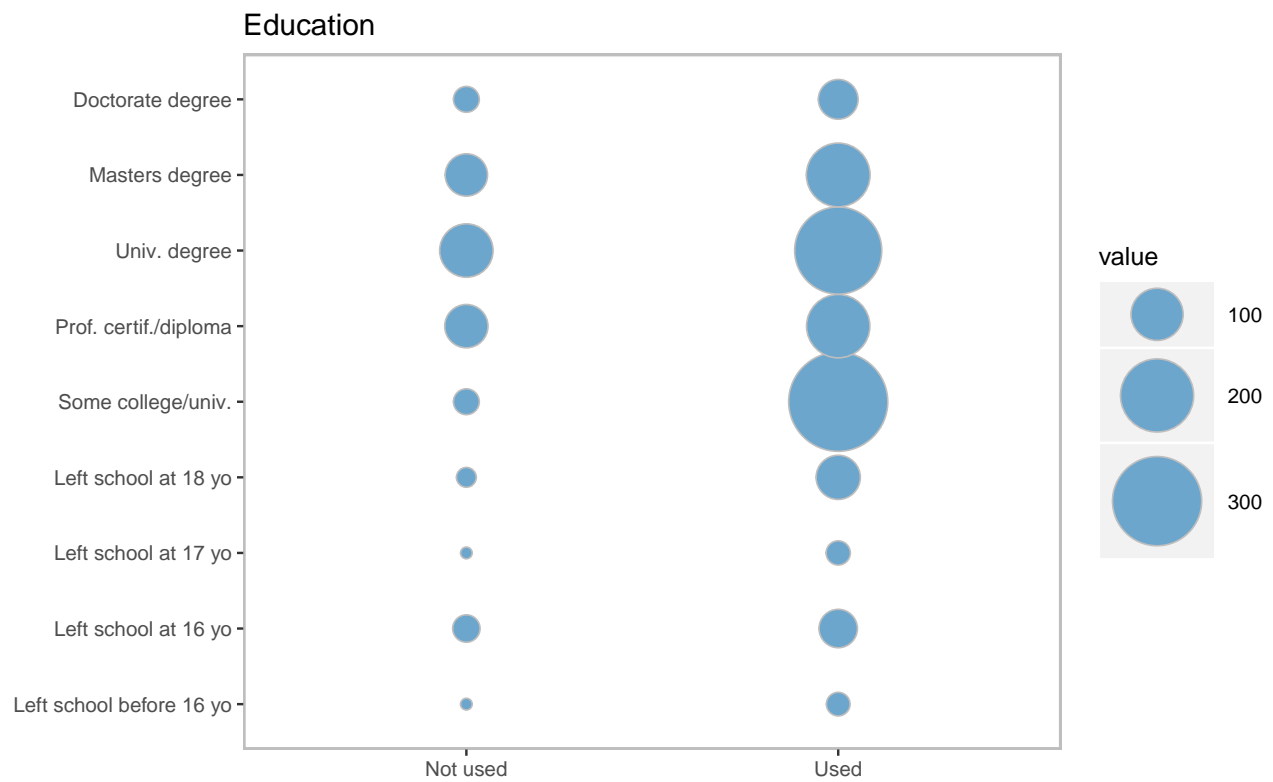


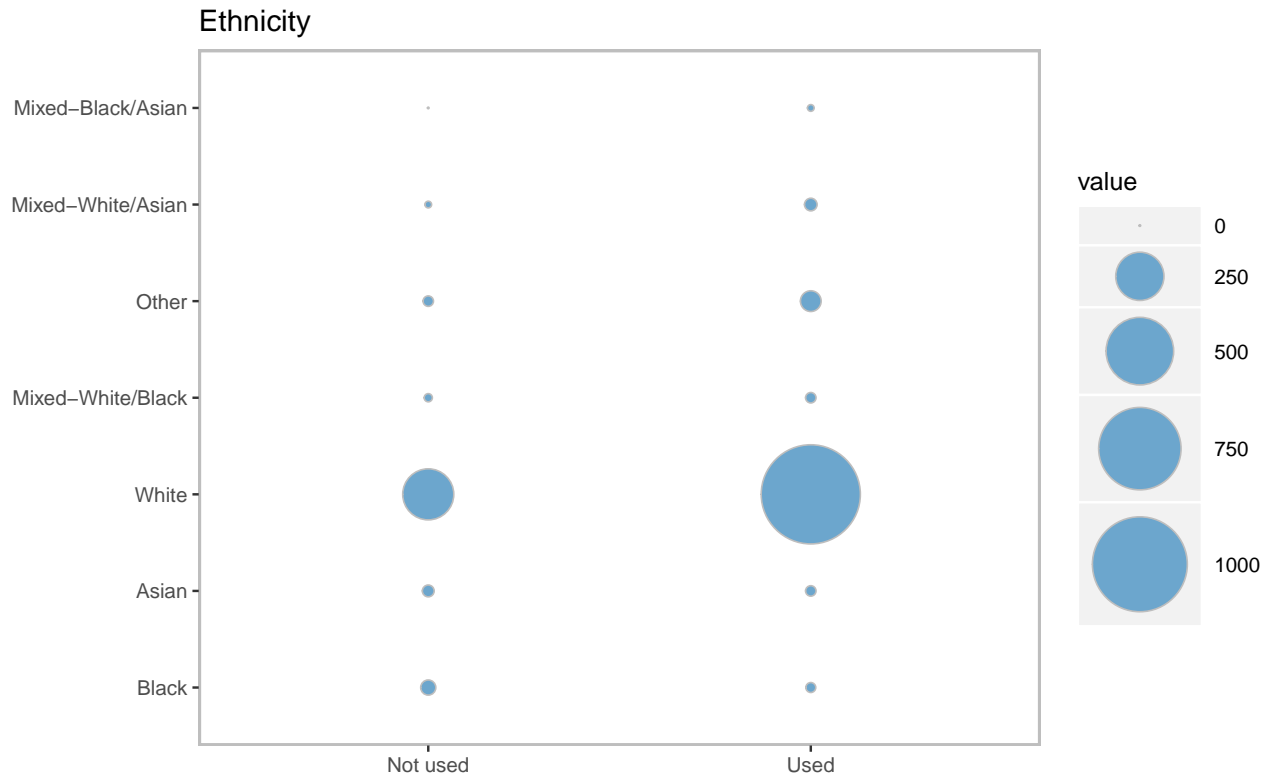
The training set consists of 1178 participants having used cannabis at some point in the past and 331 participants who haven't.

### Contingency plots (prior to binning)

#### Cannabis use by demographic group







The dataset of 1509 participants is dominated by young and educated white American and British participants of both sexes.

## Binning

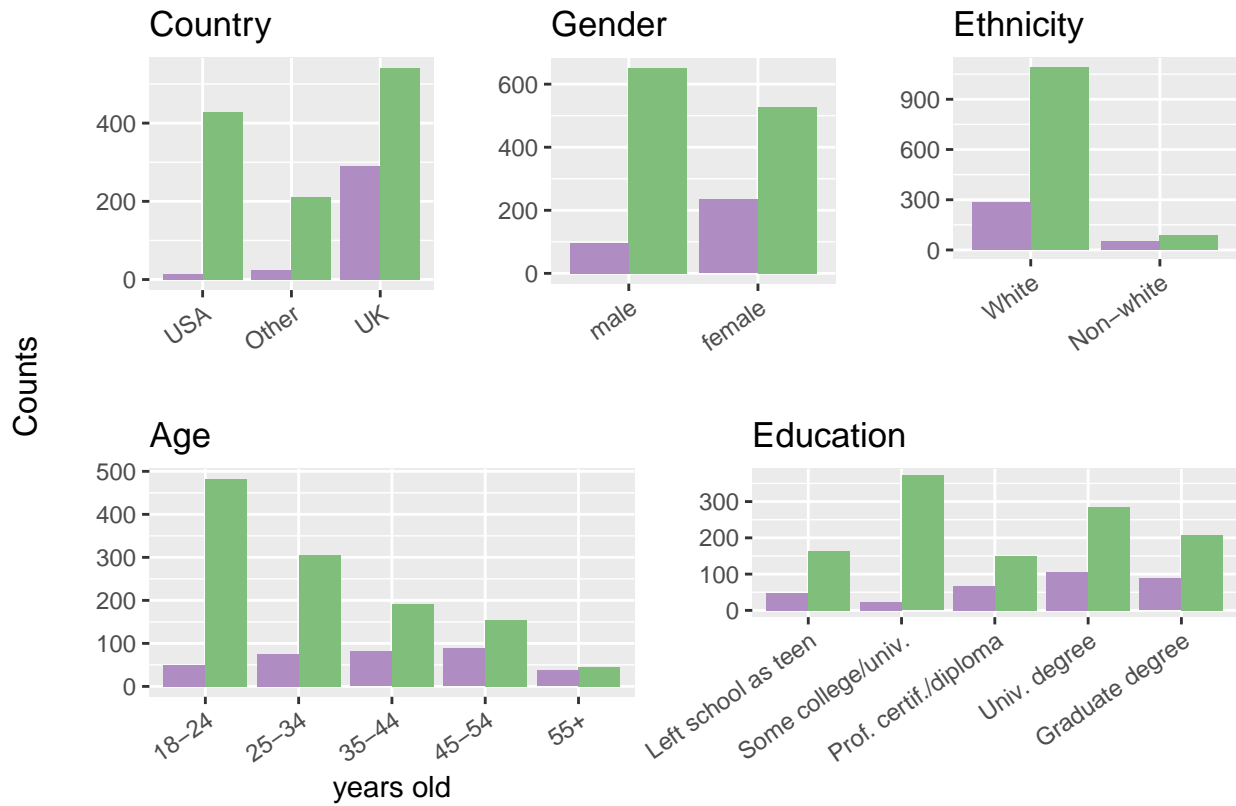
The small size of many demographic sub-groups add little valuable insight and will likely only serve to introduce variance in the analysis. At the risk of erasing behavioral differences among groups, the distribution of the dataset forces a more meaningful binning of the demographic information:

- 5 age groups: “18-24”, “25-34”, “35-44”, “45-54”, “55+”
- 5 groups for Education: “Left school as a teen”, “Some college”, “Professional certificate”, “University degree”, “Graduate degree”.
- 3 groups for Country: “USA”, “UK”, “Others”.
- 2 ethnic groups: “Whites”, “Non-whites”

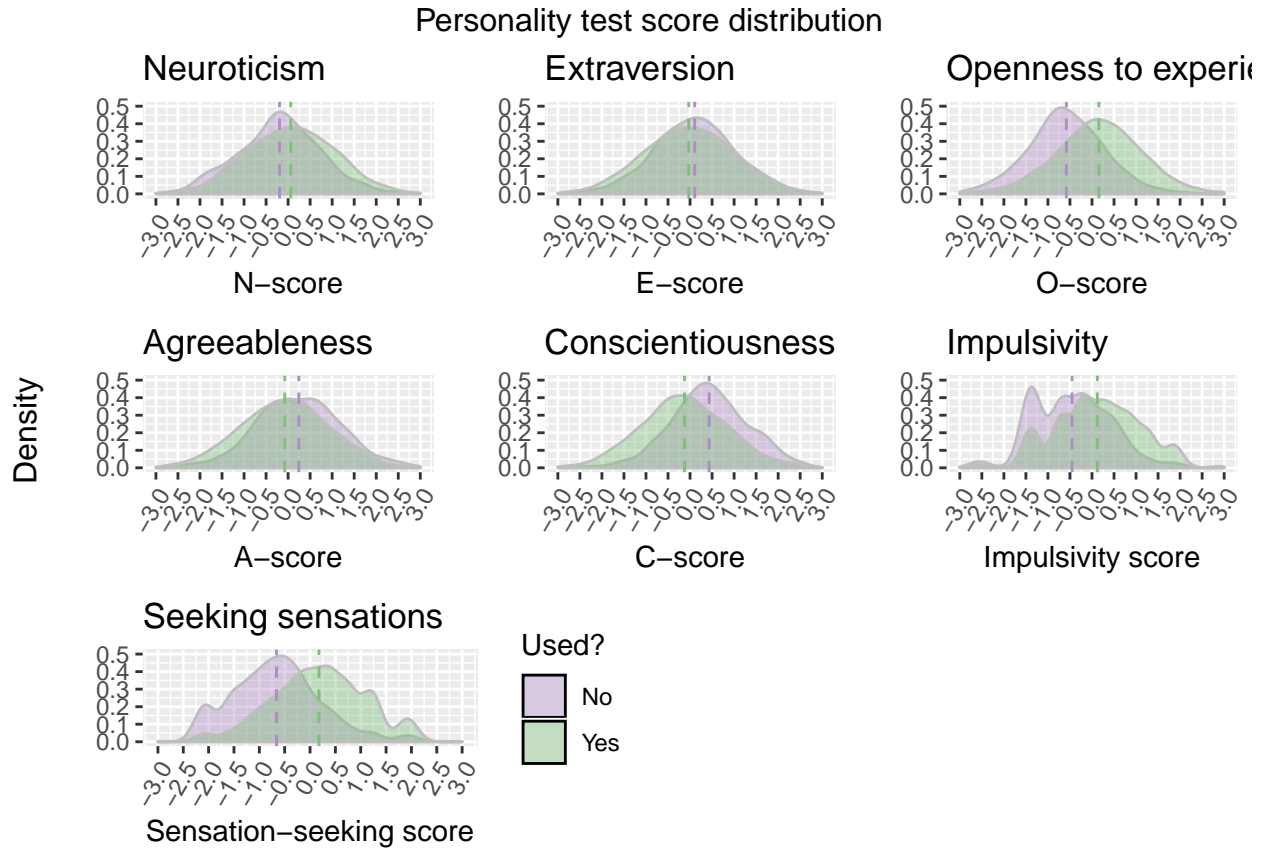


## Analysis of demographics

Use of cannabis in training set by:



## Personality analysis



The density plots show some measure of difference between users and non-users particularly as it relates to either openness to experience, agreeableness, conscientiousness, impulsivity, and sensation-seeking. Some implications are rather entertaining, notably the notion that nice (ie: agreeable) people may be less likely to smoke weed, or conversely that exposure to pot tends to might make people less nice.

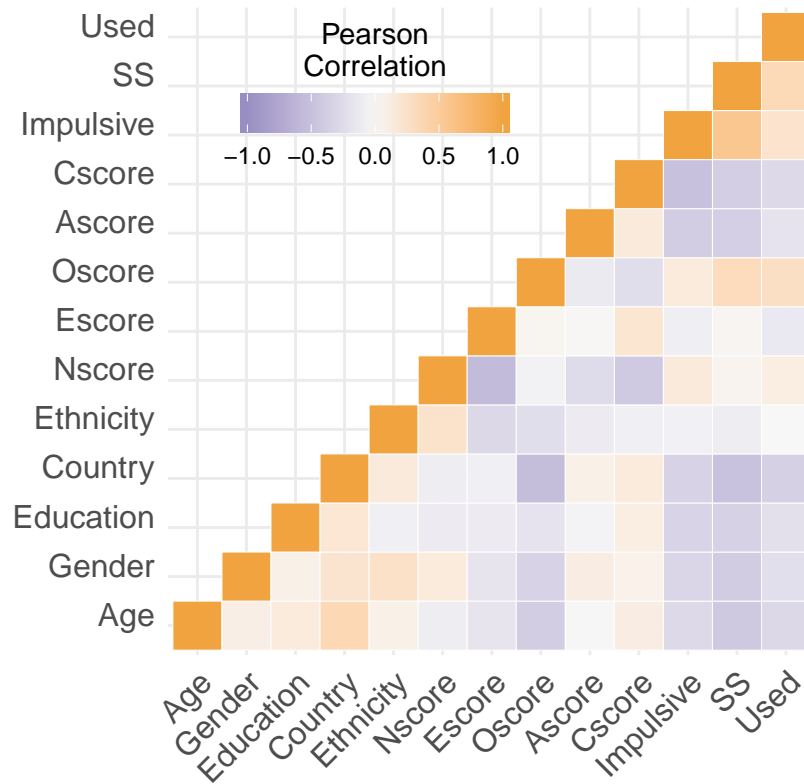
On the other hand, the distributions for users and non-users as they relate to neuroticism or extraversion are similar, suggesting that these personality traits may not impact cannabis consumption. We will examine in the modeling section below whether that is indeed the case.

Besides goodness of fit, the demographic and personality-related observations above will guide the assessment of the models we derive.

## Feature correlation

We examine redundancies among the 12 predictors and with the Used class:

## Feature correlation

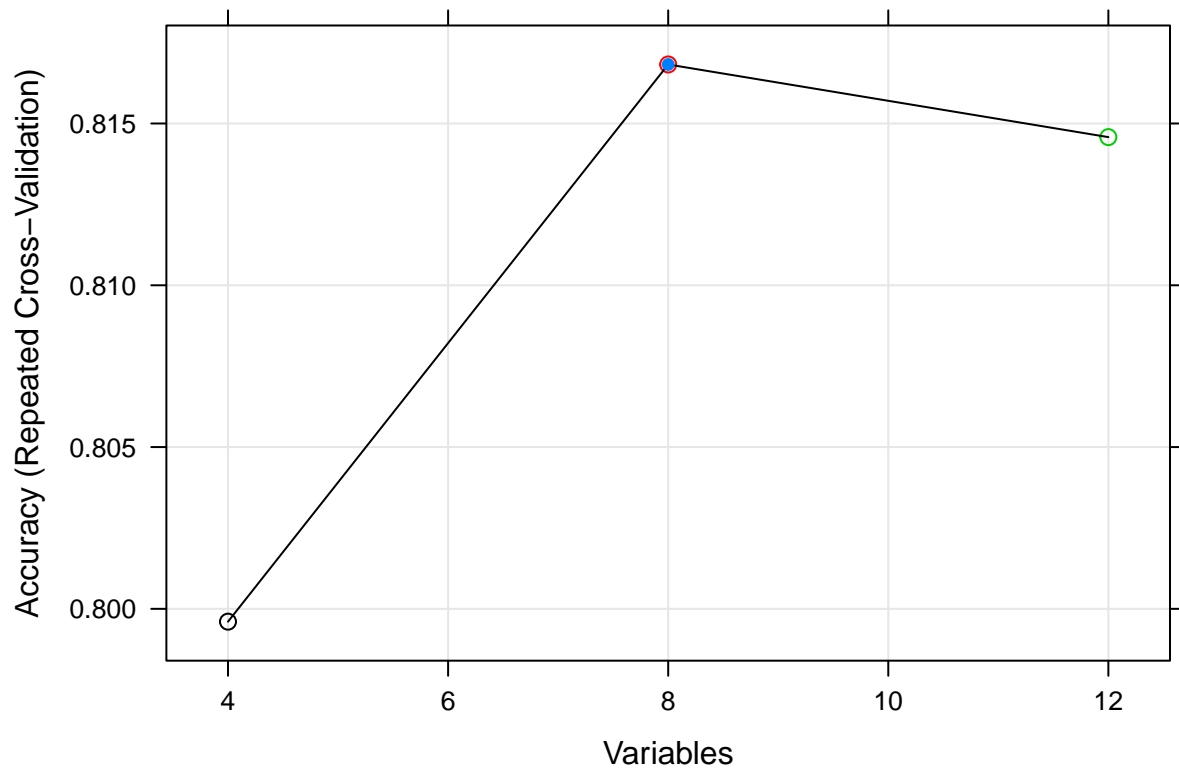


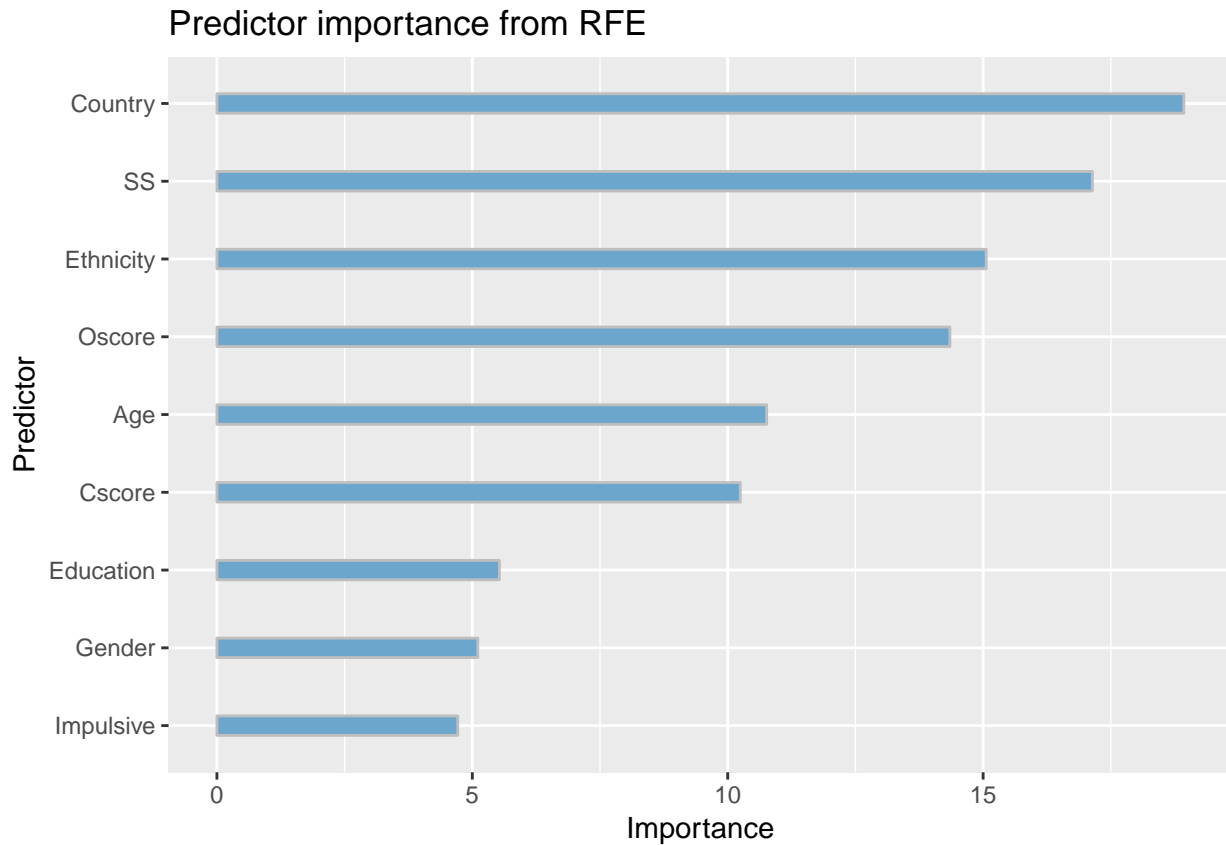
## C: Modeling

We seek a model which improves on the ratio of users to the population (78.10%). This constitutes the baseline above which predictive modeling becomes interesting.

### Recursive Feature elimination

For RFE as well as subsequent modeling, we use the k-fold cross validation method which involves splitting the dataset into k subsets. The algorithm holds aside one of the subsets while the model is trained on the others. This process is repeated a predetermined number of times and the overall accuracy estimate is provided.





The comparative analysis of the contribution of each factor agrees by and large with that of the density distribution plots: among the personality trait tests, N-score and E-score contribute the least while seeking sensation and O-score contribute the most. However, the impulsivity doesn't seem to be as strong a factor as one might have expected from the density plots.

## Generalized linear model

### Generalized linear model with penalized maximum likelihood

#### Decision trees

#### Random forest

#### Stochastic Gradient Boosting

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0225	nan	0.1000	0.0130
##	2	1.0007	nan	0.1000	0.0106
##	3	0.9825	nan	0.1000	0.0063
##	4	0.9666	nan	0.1000	0.0062
##	5	0.9505	nan	0.1000	0.0079
##	6	0.9380	nan	0.1000	0.0059
##	7	0.9249	nan	0.1000	0.0062
##	8	0.9140	nan	0.1000	0.0052
##	9	0.9052	nan	0.1000	0.0029
##	10	0.8964	nan	0.1000	0.0039

##	20	0.8346	nan	0.1000	0.0020
##	40	0.7698	nan	0.1000	0.0002
##	60	0.7378	nan	0.1000	0.0003
##	80	0.7205	nan	0.1000	-0.0003
##	100	0.7127	nan	0.1000	-0.0002
##	120	0.7070	nan	0.1000	-0.0002
##	140	0.7038	nan	0.1000	-0.0001
##	150	0.7017	nan	0.1000	-0.0000
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0221	nan	0.1000	0.0123
##	2	0.9889	nan	0.1000	0.0163
##	3	0.9604	nan	0.1000	0.0124
##	4	0.9355	nan	0.1000	0.0096
##	5	0.9166	nan	0.1000	0.0089
##	6	0.8969	nan	0.1000	0.0090
##	7	0.8827	nan	0.1000	0.0046
##	8	0.8663	nan	0.1000	0.0069
##	9	0.8525	nan	0.1000	0.0063
##	10	0.8401	nan	0.1000	0.0049
##	20	0.7654	nan	0.1000	0.0031
##	40	0.7011	nan	0.1000	-0.0010
##	60	0.6730	nan	0.1000	-0.0008
##	80	0.6528	nan	0.1000	-0.0001
##	100	0.6375	nan	0.1000	0.0002
##	120	0.6233	nan	0.1000	0.0000
##	140	0.6097	nan	0.1000	-0.0002
##	150	0.6038	nan	0.1000	-0.0006
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0017	nan	0.1000	0.0222
##	2	0.9665	nan	0.1000	0.0172
##	3	0.9353	nan	0.1000	0.0139
##	4	0.9084	nan	0.1000	0.0124
##	5	0.8863	nan	0.1000	0.0088
##	6	0.8686	nan	0.1000	0.0062
##	7	0.8523	nan	0.1000	0.0067
##	8	0.8357	nan	0.1000	0.0060
##	9	0.8202	nan	0.1000	0.0069
##	10	0.8086	nan	0.1000	0.0045
##	20	0.7260	nan	0.1000	0.0021
##	40	0.6646	nan	0.1000	0.0006
##	60	0.6277	nan	0.1000	-0.0003
##	80	0.6012	nan	0.1000	-0.0002
##	100	0.5837	nan	0.1000	-0.0002
##	120	0.5644	nan	0.1000	-0.0005
##	140	0.5411	nan	0.1000	-0.0003
##	150	0.5337	nan	0.1000	-0.0002
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0217	nan	0.1000	0.0090
##	2	1.0007	nan	0.1000	0.0109
##	3	0.9829	nan	0.1000	0.0081
##	4	0.9648	nan	0.1000	0.0085

##	5	0.9500	nan	0.1000	0.0069
##	6	0.9378	nan	0.1000	0.0060
##	7	0.9273	nan	0.1000	0.0049
##	8	0.9166	nan	0.1000	0.0045
##	9	0.9067	nan	0.1000	0.0034
##	10	0.8992	nan	0.1000	0.0023
##	20	0.8394	nan	0.1000	0.0009
##	40	0.7789	nan	0.1000	0.0006
##	60	0.7508	nan	0.1000	-0.0005
##	80	0.7342	nan	0.1000	-0.0003
##	100	0.7242	nan	0.1000	-0.0000
##	120	0.7195	nan	0.1000	0.0000
##	140	0.7143	nan	0.1000	-0.0000
##	150	0.7125	nan	0.1000	0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0127	nan	0.1000	0.0164
##	2	0.9879	nan	0.1000	0.0111
##	3	0.9609	nan	0.1000	0.0126
##	4	0.9394	nan	0.1000	0.0100
##	5	0.9254	nan	0.1000	0.0064
##	6	0.9116	nan	0.1000	0.0046
##	7	0.8928	nan	0.1000	0.0079
##	8	0.8839	nan	0.1000	0.0037
##	9	0.8729	nan	0.1000	0.0043
##	10	0.8631	nan	0.1000	0.0043
##	20	0.7909	nan	0.1000	0.0028
##	40	0.7259	nan	0.1000	0.0001
##	60	0.6973	nan	0.1000	-0.0004
##	80	0.6773	nan	0.1000	-0.0002
##	100	0.6624	nan	0.1000	-0.0010
##	120	0.6496	nan	0.1000	-0.0009
##	140	0.6400	nan	0.1000	-0.0001
##	150	0.6334	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9964	nan	0.1000	0.0170
##	2	0.9618	nan	0.1000	0.0137
##	3	0.9344	nan	0.1000	0.0097
##	4	0.9108	nan	0.1000	0.0093
##	5	0.8964	nan	0.1000	0.0061
##	6	0.8826	nan	0.1000	0.0060
##	7	0.8643	nan	0.1000	0.0078
##	8	0.8476	nan	0.1000	0.0086
##	9	0.8366	nan	0.1000	0.0029
##	10	0.8242	nan	0.1000	0.0059
##	20	0.7501	nan	0.1000	0.0023
##	40	0.6875	nan	0.1000	0.0000
##	60	0.6469	nan	0.1000	-0.0002
##	80	0.6206	nan	0.1000	-0.0007
##	100	0.5989	nan	0.1000	-0.0004
##	120	0.5766	nan	0.1000	-0.0001
##	140	0.5608	nan	0.1000	-0.0008
##	150	0.5530	nan	0.1000	-0.0006

```

##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0199           nan        0.1000     0.0114
##      2         1.0025           nan        0.1000     0.0088
##      3         0.9863           nan        0.1000     0.0068
##      4         0.9708           nan        0.1000     0.0067
##      5         0.9614           nan        0.1000     0.0052
##      6         0.9498           nan        0.1000     0.0047
##      7         0.9386           nan        0.1000     0.0048
##      8         0.9286           nan        0.1000     0.0041
##      9         0.9203           nan        0.1000     0.0028
##     10         0.9128           nan        0.1000     0.0030
##     20         0.8551           nan        0.1000     0.0011
##     40         0.7887           nan        0.1000     0.0009
##     60         0.7574           nan        0.1000     0.0001
##     80         0.7427           nan        0.1000    -0.0003
##    100         0.7336           nan        0.1000    -0.0002
##    120         0.7270           nan        0.1000    -0.0001
##    140         0.7227           nan        0.1000    -0.0002
##    150         0.7203           nan        0.1000    -0.0002
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0175           nan        0.1000     0.0128
##      2         0.9912           nan        0.1000     0.0119
##      3         0.9711           nan        0.1000     0.0090
##      4         0.9493           nan        0.1000     0.0079
##      5         0.9305           nan        0.1000     0.0082
##      6         0.9135           nan        0.1000     0.0074
##      7         0.9006           nan        0.1000     0.0049
##      8         0.8900           nan        0.1000     0.0047
##      9         0.8786           nan        0.1000     0.0049
##     10         0.8699           nan        0.1000     0.0038
##     20         0.7918           nan        0.1000     0.0026
##     40         0.7278           nan        0.1000     0.0004
##     60         0.6961           nan        0.1000    -0.0002
##     80         0.6785           nan        0.1000     0.0002
##    100         0.6640           nan        0.1000    -0.0004
##    120         0.6516           nan        0.1000    -0.0002
##    140         0.6394           nan        0.1000    -0.0008
##    150         0.6324           nan        0.1000    -0.0009
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0111           nan        0.1000     0.0126
##      2         0.9817           nan        0.1000     0.0139
##      3         0.9511           nan        0.1000     0.0127
##      4         0.9309           nan        0.1000     0.0087
##      5         0.9144           nan        0.1000     0.0074
##      6         0.8963           nan        0.1000     0.0080
##      7         0.8775           nan        0.1000     0.0073
##      8         0.8629           nan        0.1000     0.0058
##      9         0.8516           nan        0.1000     0.0034
##     10         0.8423           nan        0.1000     0.0032
##     20         0.7572           nan        0.1000     0.0016
##     40         0.6936           nan        0.1000    -0.0006

```



##	60	0.6587	nan	0.1000	-0.0002
##	80	0.6258	nan	0.1000	0.0007
##	100	0.6059	nan	0.1000	-0.0003
##	120	0.5857	nan	0.1000	-0.0003
##	140	0.5664	nan	0.1000	-0.0009
##	150	0.5575	nan	0.1000	-0.0008
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0737	nan	0.1000	0.0112
##	2	1.0513	nan	0.1000	0.0116
##	3	1.0355	nan	0.1000	0.0078
##	4	1.0162	nan	0.1000	0.0093
##	5	0.9993	nan	0.1000	0.0072
##	6	0.9883	nan	0.1000	0.0051
##	7	0.9762	nan	0.1000	0.0056
##	8	0.9642	nan	0.1000	0.0038
##	9	0.9527	nan	0.1000	0.0052
##	10	0.9447	nan	0.1000	0.0031
##	20	0.8817	nan	0.1000	0.0023
##	40	0.8103	nan	0.1000	0.0009
##	60	0.7724	nan	0.1000	0.0004
##	80	0.7562	nan	0.1000	0.0000
##	100	0.7463	nan	0.1000	-0.0002
##	120	0.7392	nan	0.1000	-0.0002
##	140	0.7332	nan	0.1000	-0.0002
##	150	0.7311	nan	0.1000	0.0000
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0578	nan	0.1000	0.0176
##	2	1.0269	nan	0.1000	0.0137
##	3	1.0027	nan	0.1000	0.0107
##	4	0.9803	nan	0.1000	0.0101
##	5	0.9613	nan	0.1000	0.0084
##	6	0.9436	nan	0.1000	0.0077
##	7	0.9305	nan	0.1000	0.0048
##	8	0.9165	nan	0.1000	0.0064
##	9	0.9057	nan	0.1000	0.0042
##	10	0.8955	nan	0.1000	0.0042
##	20	0.8137	nan	0.1000	0.0014
##	40	0.7398	nan	0.1000	-0.0011
##	60	0.7105	nan	0.1000	0.0001
##	80	0.6912	nan	0.1000	-0.0003
##	100	0.6755	nan	0.1000	0.0002
##	120	0.6626	nan	0.1000	-0.0005
##	140	0.6518	nan	0.1000	-0.0007
##	150	0.6462	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0568	nan	0.1000	0.0200
##	2	1.0223	nan	0.1000	0.0159
##	3	0.9954	nan	0.1000	0.0144
##	4	0.9677	nan	0.1000	0.0132
##	5	0.9473	nan	0.1000	0.0067
##	6	0.9306	nan	0.1000	0.0083

##	7	0.9147	nan	0.1000	0.0073
##	8	0.8996	nan	0.1000	0.0064
##	9	0.8857	nan	0.1000	0.0055
##	10	0.8680	nan	0.1000	0.0066
##	20	0.7790	nan	0.1000	0.0023
##	40	0.7105	nan	0.1000	-0.0001
##	60	0.6715	nan	0.1000	0.0004
##	80	0.6437	nan	0.1000	-0.0005
##	100	0.6226	nan	0.1000	-0.0006
##	120	0.6054	nan	0.1000	-0.0004
##	140	0.5856	nan	0.1000	-0.0006
##	150	0.5795	nan	0.1000	-0.0008

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0250	nan	0.1000	0.0126
##	2	1.0020	nan	0.1000	0.0103
##	3	0.9785	nan	0.1000	0.0105
##	4	0.9610	nan	0.1000	0.0070
##	5	0.9445	nan	0.1000	0.0081
##	6	0.9342	nan	0.1000	0.0042
##	7	0.9212	nan	0.1000	0.0066
##	8	0.9101	nan	0.1000	0.0055
##	9	0.9026	nan	0.1000	0.0029
##	10	0.8952	nan	0.1000	0.0029
##	20	0.8318	nan	0.1000	0.0011
##	40	0.7710	nan	0.1000	0.0009
##	60	0.7403	nan	0.1000	0.0007
##	80	0.7232	nan	0.1000	-0.0007
##	100	0.7126	nan	0.1000	-0.0002
##	120	0.7072	nan	0.1000	-0.0003
##	140	0.6994	nan	0.1000	-0.0005
##	150	0.6969	nan	0.1000	-0.0003

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0099	nan	0.1000	0.0195
##	2	0.9775	nan	0.1000	0.0154
##	3	0.9517	nan	0.1000	0.0106
##	4	0.9275	nan	0.1000	0.0119
##	5	0.9092	nan	0.1000	0.0077
##	6	0.8956	nan	0.1000	0.0058
##	7	0.8771	nan	0.1000	0.0084
##	8	0.8629	nan	0.1000	0.0049
##	9	0.8523	nan	0.1000	0.0046
##	10	0.8406	nan	0.1000	0.0048
##	20	0.7702	nan	0.1000	0.0017
##	40	0.7087	nan	0.1000	0.0004
##	60	0.6812	nan	0.1000	-0.0003
##	80	0.6588	nan	0.1000	-0.0004
##	100	0.6426	nan	0.1000	-0.0002
##	120	0.6279	nan	0.1000	0.0003
##	140	0.6174	nan	0.1000	-0.0001
##	150	0.6118	nan	0.1000	-0.0003

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
----	------	---------------	---------------	----------	---------

##	1	1.0065	nan	0.1000	0.0225
##	2	0.9661	nan	0.1000	0.0165
##	3	0.9357	nan	0.1000	0.0141
##	4	0.9133	nan	0.1000	0.0117
##	5	0.8932	nan	0.1000	0.0085
##	6	0.8786	nan	0.1000	0.0059
##	7	0.8603	nan	0.1000	0.0080
##	8	0.8441	nan	0.1000	0.0070
##	9	0.8311	nan	0.1000	0.0056
##	10	0.8196	nan	0.1000	0.0046
##	20	0.7428	nan	0.1000	0.0018
##	40	0.6748	nan	0.1000	0.0002
##	60	0.6459	nan	0.1000	-0.0000
##	80	0.6157	nan	0.1000	-0.0007
##	100	0.5939	nan	0.1000	-0.0004
##	120	0.5761	nan	0.1000	-0.0003
##	140	0.5578	nan	0.1000	-0.0002
##	150	0.5508	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0310	nan	0.1000	0.0116
##	2	1.0060	nan	0.1000	0.0104
##	3	0.9884	nan	0.1000	0.0086
##	4	0.9704	nan	0.1000	0.0082
##	5	0.9562	nan	0.1000	0.0066
##	6	0.9462	nan	0.1000	0.0039
##	7	0.9365	nan	0.1000	0.0041
##	8	0.9254	nan	0.1000	0.0043
##	9	0.9171	nan	0.1000	0.0035
##	10	0.9052	nan	0.1000	0.0054
##	20	0.8436	nan	0.1000	0.0021
##	40	0.7780	nan	0.1000	0.0008
##	60	0.7469	nan	0.1000	-0.0001
##	80	0.7318	nan	0.1000	0.0000
##	100	0.7236	nan	0.1000	-0.0002
##	120	0.7160	nan	0.1000	-0.0002
##	140	0.7094	nan	0.1000	-0.0010
##	150	0.7062	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0193	nan	0.1000	0.0163
##	2	0.9953	nan	0.1000	0.0079
##	3	0.9703	nan	0.1000	0.0125
##	4	0.9492	nan	0.1000	0.0095
##	5	0.9348	nan	0.1000	0.0060
##	6	0.9182	nan	0.1000	0.0074
##	7	0.9024	nan	0.1000	0.0068
##	8	0.8856	nan	0.1000	0.0072
##	9	0.8765	nan	0.1000	0.0039
##	10	0.8649	nan	0.1000	0.0041
##	20	0.7893	nan	0.1000	0.0016
##	40	0.7256	nan	0.1000	-0.0004
##	60	0.6978	nan	0.1000	-0.0003
##	80	0.6795	nan	0.1000	0.0000

##	100	0.6624	nan	0.1000	-0.0004
##	120	0.6510	nan	0.1000	-0.0001
##	140	0.6378	nan	0.1000	-0.0006
##	150	0.6336	nan	0.1000	-0.0009
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0130	nan	0.1000	0.0186
##	2	0.9776	nan	0.1000	0.0159
##	3	0.9539	nan	0.1000	0.0105
##	4	0.9329	nan	0.1000	0.0109
##	5	0.9096	nan	0.1000	0.0094
##	6	0.8929	nan	0.1000	0.0066
##	7	0.8780	nan	0.1000	0.0066
##	8	0.8659	nan	0.1000	0.0051
##	9	0.8544	nan	0.1000	0.0043
##	10	0.8413	nan	0.1000	0.0048
##	20	0.7608	nan	0.1000	0.0017
##	40	0.6952	nan	0.1000	-0.0005
##	60	0.6601	nan	0.1000	0.0001
##	80	0.6332	nan	0.1000	-0.0010
##	100	0.6100	nan	0.1000	-0.0002
##	120	0.5929	nan	0.1000	-0.0007
##	140	0.5724	nan	0.1000	-0.0004
##	150	0.5650	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0404	nan	0.1000	0.0128
##	2	1.0153	nan	0.1000	0.0115
##	3	0.9969	nan	0.1000	0.0092
##	4	0.9815	nan	0.1000	0.0071
##	5	0.9647	nan	0.1000	0.0087
##	6	0.9518	nan	0.1000	0.0058
##	7	0.9412	nan	0.1000	0.0052
##	8	0.9293	nan	0.1000	0.0052
##	9	0.9168	nan	0.1000	0.0052
##	10	0.9062	nan	0.1000	0.0055
##	20	0.8376	nan	0.1000	0.0021
##	40	0.7658	nan	0.1000	0.0003
##	60	0.7330	nan	0.1000	0.0001
##	80	0.7120	nan	0.1000	-0.0000
##	100	0.6997	nan	0.1000	0.0000
##	120	0.6928	nan	0.1000	-0.0004
##	140	0.6865	nan	0.1000	-0.0004
##	150	0.6829	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0291	nan	0.1000	0.0183
##	2	1.0018	nan	0.1000	0.0136
##	3	0.9725	nan	0.1000	0.0142
##	4	0.9501	nan	0.1000	0.0102
##	5	0.9356	nan	0.1000	0.0056
##	6	0.9183	nan	0.1000	0.0083
##	7	0.9020	nan	0.1000	0.0070
##	8	0.8865	nan	0.1000	0.0074

##	9	0.8689	nan	0.1000	0.0077
##	10	0.8565	nan	0.1000	0.0052
##	20	0.7775	nan	0.1000	0.0020
##	40	0.7063	nan	0.1000	0.0001
##	60	0.6694	nan	0.1000	0.0001
##	80	0.6471	nan	0.1000	-0.0005
##	100	0.6307	nan	0.1000	-0.0003
##	120	0.6167	nan	0.1000	-0.0003
##	140	0.6056	nan	0.1000	-0.0008
##	150	0.6004	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0195	nan	0.1000	0.0214
##	2	0.9862	nan	0.1000	0.0165
##	3	0.9574	nan	0.1000	0.0121
##	4	0.9305	nan	0.1000	0.0120
##	5	0.9087	nan	0.1000	0.0108
##	6	0.8867	nan	0.1000	0.0102
##	7	0.8685	nan	0.1000	0.0073
##	8	0.8551	nan	0.1000	0.0046
##	9	0.8404	nan	0.1000	0.0058
##	10	0.8286	nan	0.1000	0.0035
##	20	0.7350	nan	0.1000	0.0032
##	40	0.6656	nan	0.1000	0.0001
##	60	0.6242	nan	0.1000	0.0003
##	80	0.5959	nan	0.1000	-0.0006
##	100	0.5734	nan	0.1000	-0.0006
##	120	0.5559	nan	0.1000	0.0002
##	140	0.5359	nan	0.1000	-0.0005
##	150	0.5288	nan	0.1000	-0.0000
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0443	nan	0.1000	0.0128
##	2	1.0250	nan	0.1000	0.0104
##	3	1.0067	nan	0.1000	0.0091
##	4	0.9895	nan	0.1000	0.0085
##	5	0.9711	nan	0.1000	0.0082
##	6	0.9586	nan	0.1000	0.0051
##	7	0.9461	nan	0.1000	0.0054
##	8	0.9350	nan	0.1000	0.0058
##	9	0.9232	nan	0.1000	0.0052
##	10	0.9137	nan	0.1000	0.0035
##	20	0.8374	nan	0.1000	0.0024
##	40	0.7649	nan	0.1000	0.0010
##	60	0.7259	nan	0.1000	-0.0000
##	80	0.7043	nan	0.1000	0.0005
##	100	0.6932	nan	0.1000	-0.0002
##	120	0.6876	nan	0.1000	-0.0003
##	140	0.6834	nan	0.1000	-0.0005
##	150	0.6813	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0322	nan	0.1000	0.0168
##	2	0.9994	nan	0.1000	0.0163

##	3	0.9745	nan	0.1000	0.0109
##	4	0.9500	nan	0.1000	0.0120
##	5	0.9300	nan	0.1000	0.0101
##	6	0.9109	nan	0.1000	0.0065
##	7	0.8954	nan	0.1000	0.0059
##	8	0.8820	nan	0.1000	0.0063
##	9	0.8683	nan	0.1000	0.0063
##	10	0.8568	nan	0.1000	0.0045
##	20	0.7697	nan	0.1000	0.0005
##	40	0.6955	nan	0.1000	0.0001
##	60	0.6616	nan	0.1000	0.0000
##	80	0.6405	nan	0.1000	0.0005
##	100	0.6240	nan	0.1000	-0.0004
##	120	0.6101	nan	0.1000	0.0003
##	140	0.5971	nan	0.1000	-0.0003
##	150	0.5904	nan	0.1000	-0.0002
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0256	nan	0.1000	0.0197
##	2	0.9891	nan	0.1000	0.0172
##	3	0.9573	nan	0.1000	0.0146
##	4	0.9302	nan	0.1000	0.0118
##	5	0.9065	nan	0.1000	0.0107
##	6	0.8837	nan	0.1000	0.0103
##	7	0.8641	nan	0.1000	0.0087
##	8	0.8505	nan	0.1000	0.0058
##	9	0.8348	nan	0.1000	0.0055
##	10	0.8201	nan	0.1000	0.0060
##	20	0.7280	nan	0.1000	0.0024
##	40	0.6565	nan	0.1000	0.0009
##	60	0.6194	nan	0.1000	0.0001
##	80	0.5931	nan	0.1000	-0.0005
##	100	0.5714	nan	0.1000	-0.0005
##	120	0.5548	nan	0.1000	-0.0004
##	140	0.5351	nan	0.1000	0.0001
##	150	0.5284	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0121	nan	0.1000	0.0098
##	2	0.9927	nan	0.1000	0.0095
##	3	0.9738	nan	0.1000	0.0107
##	4	0.9583	nan	0.1000	0.0067
##	5	0.9388	nan	0.1000	0.0083
##	6	0.9242	nan	0.1000	0.0069
##	7	0.9142	nan	0.1000	0.0049
##	8	0.9024	nan	0.1000	0.0059
##	9	0.8916	nan	0.1000	0.0047
##	10	0.8875	nan	0.1000	0.0007
##	20	0.8232	nan	0.1000	0.0033
##	40	0.7545	nan	0.1000	0.0005
##	60	0.7189	nan	0.1000	-0.0001
##	80	0.6996	nan	0.1000	0.0000
##	100	0.6884	nan	0.1000	0.0000
##	120	0.6815	nan	0.1000	-0.0004

##	140	0.6777	nan	0.1000	-0.0004
##	150	0.6757	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9988	nan	0.1000	0.0181
##	2	0.9701	nan	0.1000	0.0149
##	3	0.9441	nan	0.1000	0.0105
##	4	0.9242	nan	0.1000	0.0097
##	5	0.9059	nan	0.1000	0.0076
##	6	0.8881	nan	0.1000	0.0076
##	7	0.8710	nan	0.1000	0.0068
##	8	0.8543	nan	0.1000	0.0073
##	9	0.8441	nan	0.1000	0.0032
##	10	0.8340	nan	0.1000	0.0037
##	20	0.7614	nan	0.1000	0.0014
##	40	0.6916	nan	0.1000	-0.0001
##	60	0.6590	nan	0.1000	-0.0001
##	80	0.6376	nan	0.1000	-0.0004
##	100	0.6248	nan	0.1000	-0.0002
##	120	0.6148	nan	0.1000	-0.0002
##	140	0.6057	nan	0.1000	-0.0002
##	150	0.6015	nan	0.1000	-0.0007
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9905	nan	0.1000	0.0201
##	2	0.9594	nan	0.1000	0.0159
##	3	0.9351	nan	0.1000	0.0113
##	4	0.9069	nan	0.1000	0.0108
##	5	0.8890	nan	0.1000	0.0062
##	6	0.8749	nan	0.1000	0.0051
##	7	0.8548	nan	0.1000	0.0095
##	8	0.8388	nan	0.1000	0.0056
##	9	0.8208	nan	0.1000	0.0072
##	10	0.8108	nan	0.1000	0.0030
##	20	0.7180	nan	0.1000	0.0012
##	40	0.6559	nan	0.1000	-0.0004
##	60	0.6183	nan	0.1000	-0.0001
##	80	0.5985	nan	0.1000	-0.0005
##	100	0.5740	nan	0.1000	-0.0003
##	120	0.5574	nan	0.1000	-0.0003
##	140	0.5382	nan	0.1000	-0.0006
##	150	0.5303	nan	0.1000	-0.0006
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0034	nan	0.1000	0.0095
##	2	0.9850	nan	0.1000	0.0066
##	3	0.9655	nan	0.1000	0.0093
##	4	0.9505	nan	0.1000	0.0077
##	5	0.9375	nan	0.1000	0.0064
##	6	0.9283	nan	0.1000	0.0042
##	7	0.9207	nan	0.1000	0.0034
##	8	0.9115	nan	0.1000	0.0047
##	9	0.9013	nan	0.1000	0.0044
##	10	0.8930	nan	0.1000	0.0037

##	20	0.8447	nan	0.1000	0.0021
##	40	0.7937	nan	0.1000	0.0003
##	60	0.7703	nan	0.1000	-0.0008
##	80	0.7580	nan	0.1000	-0.0005
##	100	0.7479	nan	0.1000	-0.0001
##	120	0.7430	nan	0.1000	-0.0002
##	140	0.7377	nan	0.1000	-0.0001
##	150	0.7350	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9964	nan	0.1000	0.0158
##	2	0.9720	nan	0.1000	0.0115
##	3	0.9488	nan	0.1000	0.0115
##	4	0.9314	nan	0.1000	0.0076
##	5	0.9152	nan	0.1000	0.0067
##	6	0.8980	nan	0.1000	0.0074
##	7	0.8870	nan	0.1000	0.0043
##	8	0.8761	nan	0.1000	0.0047
##	9	0.8631	nan	0.1000	0.0057
##	10	0.8569	nan	0.1000	0.0017
##	20	0.7935	nan	0.1000	0.0018
##	40	0.7431	nan	0.1000	-0.0002
##	60	0.7138	nan	0.1000	0.0001
##	80	0.6960	nan	0.1000	0.0001
##	100	0.6805	nan	0.1000	-0.0006
##	120	0.6680	nan	0.1000	-0.0003
##	140	0.6576	nan	0.1000	-0.0009
##	150	0.6540	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9885	nan	0.1000	0.0193
##	2	0.9594	nan	0.1000	0.0142
##	3	0.9316	nan	0.1000	0.0123
##	4	0.9097	nan	0.1000	0.0108
##	5	0.8900	nan	0.1000	0.0073
##	6	0.8764	nan	0.1000	0.0060
##	7	0.8624	nan	0.1000	0.0054
##	8	0.8503	nan	0.1000	0.0050
##	9	0.8378	nan	0.1000	0.0047
##	10	0.8266	nan	0.1000	0.0050
##	20	0.7642	nan	0.1000	0.0010
##	40	0.7031	nan	0.1000	0.0011
##	60	0.6717	nan	0.1000	-0.0007
##	80	0.6495	nan	0.1000	-0.0009
##	100	0.6293	nan	0.1000	-0.0004
##	120	0.6117	nan	0.1000	0.0001
##	140	0.5965	nan	0.1000	-0.0002
##	150	0.5866	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9466	nan	0.1000	0.0127
##	2	0.9307	nan	0.1000	0.0073
##	3	0.9113	nan	0.1000	0.0091
##	4	0.8975	nan	0.1000	0.0069



##	5	0.8839	nan	0.1000	0.0053
##	6	0.8712	nan	0.1000	0.0061
##	7	0.8627	nan	0.1000	0.0033
##	8	0.8532	nan	0.1000	0.0049
##	9	0.8432	nan	0.1000	0.0046
##	10	0.8360	nan	0.1000	0.0029
##	20	0.7783	nan	0.1000	0.0021
##	40	0.7264	nan	0.1000	0.0002
##	60	0.7011	nan	0.1000	-0.0001
##	80	0.6889	nan	0.1000	-0.0003
##	100	0.6800	nan	0.1000	-0.0001
##	120	0.6749	nan	0.1000	-0.0004
##	140	0.6712	nan	0.1000	-0.0004
##	150	0.6683	nan	0.1000	-0.0001

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9347	nan	0.1000	0.0172
##	2	0.9128	nan	0.1000	0.0068
##	3	0.8852	nan	0.1000	0.0111
##	4	0.8666	nan	0.1000	0.0091
##	5	0.8506	nan	0.1000	0.0069
##	6	0.8356	nan	0.1000	0.0071
##	7	0.8227	nan	0.1000	0.0055
##	8	0.8127	nan	0.1000	0.0042
##	9	0.8019	nan	0.1000	0.0044
##	10	0.7920	nan	0.1000	0.0032
##	20	0.7295	nan	0.1000	0.0018
##	40	0.6698	nan	0.1000	0.0005
##	60	0.6424	nan	0.1000	-0.0003
##	80	0.6254	nan	0.1000	-0.0007
##	100	0.6148	nan	0.1000	0.0001
##	120	0.6061	nan	0.1000	-0.0009
##	140	0.5961	nan	0.1000	-0.0001
##	150	0.5902	nan	0.1000	-0.0007

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9347	nan	0.1000	0.0178
##	2	0.9038	nan	0.1000	0.0138
##	3	0.8724	nan	0.1000	0.0131
##	4	0.8494	nan	0.1000	0.0090
##	5	0.8288	nan	0.1000	0.0089
##	6	0.8137	nan	0.1000	0.0064
##	7	0.7984	nan	0.1000	0.0063
##	8	0.7879	nan	0.1000	0.0047
##	9	0.7776	nan	0.1000	0.0043
##	10	0.7667	nan	0.1000	0.0043
##	20	0.7030	nan	0.1000	0.0010
##	40	0.6477	nan	0.1000	-0.0009
##	60	0.6166	nan	0.1000	-0.0002
##	80	0.5920	nan	0.1000	-0.0006
##	100	0.5688	nan	0.1000	-0.0004
##	120	0.5523	nan	0.1000	0.0001
##	140	0.5379	nan	0.1000	-0.0003
##	150	0.5293	nan	0.1000	-0.0007

```

##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0585             nan        0.1000     0.0108
##      2         1.0341             nan        0.1000     0.0120
##      3         1.0149             nan        0.1000     0.0097
##      4         0.9981             nan        0.1000     0.0079
##      5         0.9842             nan        0.1000     0.0052
##      6         0.9727             nan        0.1000     0.0053
##      7         0.9640             nan        0.1000     0.0033
##      8         0.9515             nan        0.1000     0.0057
##      9         0.9412             nan        0.1000     0.0055
##     10         0.9296             nan        0.1000     0.0054
##     20         0.8571             nan        0.1000     0.0022
##     40         0.7868             nan        0.1000     0.0004
##     60         0.7520             nan        0.1000    -0.0002
##     80         0.7366             nan        0.1000    -0.0001
##    100         0.7261             nan        0.1000    -0.0003
##    120         0.7214             nan        0.1000    -0.0003
##    140         0.7173             nan        0.1000     0.0001
##    150         0.7153             nan        0.1000    -0.0002
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0459             nan        0.1000     0.0173
##      2         1.0180             nan        0.1000     0.0149
##      3         0.9918             nan        0.1000     0.0117
##      4         0.9662             nan        0.1000     0.0104
##      5         0.9448             nan        0.1000     0.0094
##      6         0.9269             nan        0.1000     0.0081
##      7         0.9102             nan        0.1000     0.0069
##      8         0.8969             nan        0.1000     0.0065
##      9         0.8837             nan        0.1000     0.0051
##     10         0.8716             nan        0.1000     0.0045
##     20         0.7947             nan        0.1000     0.0025
##     40         0.7291             nan        0.1000     0.0001
##     60         0.7014             nan        0.1000    -0.0001
##     80         0.6827             nan        0.1000    -0.0008
##    100         0.6683             nan        0.1000    -0.0004
##    120         0.6580             nan        0.1000    -0.0004
##    140         0.6462             nan        0.1000    -0.0002
##    150         0.6400             nan        0.1000    -0.0005
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0421             nan        0.1000     0.0182
##      2         1.0060             nan        0.1000     0.0185
##      3         0.9744             nan        0.1000     0.0145
##      4         0.9496             nan        0.1000     0.0105
##      5         0.9265             nan        0.1000     0.0104
##      6         0.9069             nan        0.1000     0.0087
##      7         0.8875             nan        0.1000     0.0065
##      8         0.8713             nan        0.1000     0.0057
##      9         0.8619             nan        0.1000     0.0029
##     10         0.8516             nan        0.1000     0.0032
##     20         0.7633             nan        0.1000     0.0019
##     40         0.6960             nan        0.1000     0.0003

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##	60	0.6660	nan	0.1000	-0.0011
##	80	0.6393	nan	0.1000	-0.0002
##	100	0.6160	nan	0.1000	-0.0004
##	120	0.5996	nan	0.1000	-0.0009
##	140	0.5839	nan	0.1000	-0.0005
##	150	0.5761	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0169	nan	0.1000	0.0102
##	2	1.0003	nan	0.1000	0.0072
##	3	0.9804	nan	0.1000	0.0102
##	4	0.9638	nan	0.1000	0.0083
##	5	0.9491	nan	0.1000	0.0068
##	6	0.9367	nan	0.1000	0.0059
##	7	0.9262	nan	0.1000	0.0047
##	8	0.9163	nan	0.1000	0.0051
##	9	0.9062	nan	0.1000	0.0036
##	10	0.8983	nan	0.1000	0.0029
##	20	0.8421	nan	0.1000	0.0018
##	40	0.7726	nan	0.1000	0.0002
##	60	0.7392	nan	0.1000	-0.0001
##	80	0.7204	nan	0.1000	0.0000
##	100	0.7101	nan	0.1000	-0.0001
##	120	0.7013	nan	0.1000	-0.0002
##	140	0.6964	nan	0.1000	-0.0003
##	150	0.6936	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0083	nan	0.1000	0.0130
##	2	0.9812	nan	0.1000	0.0111
##	3	0.9547	nan	0.1000	0.0113
##	4	0.9324	nan	0.1000	0.0103
##	5	0.9165	nan	0.1000	0.0080
##	6	0.8972	nan	0.1000	0.0086
##	7	0.8844	nan	0.1000	0.0061
##	8	0.8727	nan	0.1000	0.0045
##	9	0.8593	nan	0.1000	0.0064
##	10	0.8470	nan	0.1000	0.0048
##	20	0.7671	nan	0.1000	0.0011
##	40	0.7010	nan	0.1000	0.0003
##	60	0.6665	nan	0.1000	-0.0007
##	80	0.6445	nan	0.1000	-0.0005
##	100	0.6249	nan	0.1000	-0.0003
##	120	0.6105	nan	0.1000	-0.0006
##	140	0.5948	nan	0.1000	-0.0007
##	150	0.5892	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0034	nan	0.1000	0.0158
##	2	0.9681	nan	0.1000	0.0164
##	3	0.9415	nan	0.1000	0.0112
##	4	0.9117	nan	0.1000	0.0123
##	5	0.8922	nan	0.1000	0.0090
##	6	0.8709	nan	0.1000	0.0097

##	7	0.8530	nan	0.1000	0.0078
##	8	0.8366	nan	0.1000	0.0068
##	9	0.8217	nan	0.1000	0.0059
##	10	0.8091	nan	0.1000	0.0055
##	20	0.7339	nan	0.1000	0.0030
##	40	0.6610	nan	0.1000	0.0001
##	60	0.6253	nan	0.1000	-0.0004
##	80	0.5994	nan	0.1000	-0.0002
##	100	0.5768	nan	0.1000	0.0000
##	120	0.5538	nan	0.1000	-0.0006
##	140	0.5400	nan	0.1000	-0.0003
##	150	0.5303	nan	0.1000	-0.0002

##

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0222	nan	0.1000	0.0100
##	2	1.0012	nan	0.1000	0.0102
##	3	0.9892	nan	0.1000	0.0044
##	4	0.9722	nan	0.1000	0.0082
##	5	0.9597	nan	0.1000	0.0044
##	6	0.9477	nan	0.1000	0.0063
##	7	0.9364	nan	0.1000	0.0043
##	8	0.9262	nan	0.1000	0.0051
##	9	0.9184	nan	0.1000	0.0037
##	10	0.9093	nan	0.1000	0.0037
##	20	0.8556	nan	0.1000	0.0020
##	40	0.8073	nan	0.1000	0.0007
##	60	0.7876	nan	0.1000	-0.0002
##	80	0.7754	nan	0.1000	-0.0005
##	100	0.7700	nan	0.1000	-0.0002
##	120	0.7655	nan	0.1000	-0.0002
##	140	0.7616	nan	0.1000	-0.0002
##	150	0.7606	nan	0.1000	-0.0005

##

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0141	nan	0.1000	0.0123
##	2	0.9912	nan	0.1000	0.0083
##	3	0.9693	nan	0.1000	0.0107
##	4	0.9536	nan	0.1000	0.0071
##	5	0.9346	nan	0.1000	0.0095
##	6	0.9195	nan	0.1000	0.0079
##	7	0.9078	nan	0.1000	0.0049
##	8	0.8981	nan	0.1000	0.0046
##	9	0.8891	nan	0.1000	0.0042
##	10	0.8803	nan	0.1000	0.0030
##	20	0.8179	nan	0.1000	0.0011
##	40	0.7585	nan	0.1000	-0.0003
##	60	0.7373	nan	0.1000	-0.0001
##	80	0.7205	nan	0.1000	-0.0003
##	100	0.7066	nan	0.1000	-0.0006
##	120	0.6911	nan	0.1000	-0.0008
##	140	0.6822	nan	0.1000	-0.0001
##	150	0.6759	nan	0.1000	-0.0002

##

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
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##	1	1.0098	nan	0.1000	0.0164
##	2	0.9810	nan	0.1000	0.0134
##	3	0.9550	nan	0.1000	0.0130
##	4	0.9337	nan	0.1000	0.0083
##	5	0.9177	nan	0.1000	0.0053
##	6	0.9036	nan	0.1000	0.0066
##	7	0.8884	nan	0.1000	0.0070
##	8	0.8741	nan	0.1000	0.0061
##	9	0.8626	nan	0.1000	0.0052
##	10	0.8536	nan	0.1000	0.0029
##	20	0.7835	nan	0.1000	0.0014
##	40	0.7244	nan	0.1000	-0.0006
##	60	0.6916	nan	0.1000	-0.0001
##	80	0.6638	nan	0.1000	-0.0001
##	100	0.6464	nan	0.1000	-0.0002
##	120	0.6280	nan	0.1000	-0.0004
##	140	0.6103	nan	0.1000	-0.0007
##	150	0.6010	nan	0.1000	-0.0003

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0195	nan	0.1000	0.0116
##	2	0.9972	nan	0.1000	0.0119
##	3	0.9824	nan	0.1000	0.0065
##	4	0.9629	nan	0.1000	0.0096
##	5	0.9487	nan	0.1000	0.0077
##	6	0.9348	nan	0.1000	0.0063
##	7	0.9209	nan	0.1000	0.0073
##	8	0.9083	nan	0.1000	0.0061
##	9	0.8974	nan	0.1000	0.0048
##	10	0.8895	nan	0.1000	0.0027
##	20	0.8240	nan	0.1000	0.0025
##	40	0.7644	nan	0.1000	0.0002
##	60	0.7346	nan	0.1000	0.0001
##	80	0.7180	nan	0.1000	-0.0002
##	100	0.7070	nan	0.1000	-0.0002
##	120	0.7031	nan	0.1000	-0.0003
##	140	0.6976	nan	0.1000	-0.0003
##	150	0.6967	nan	0.1000	-0.0003

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0043	nan	0.1000	0.0187
##	2	0.9775	nan	0.1000	0.0133
##	3	0.9558	nan	0.1000	0.0103
##	4	0.9300	nan	0.1000	0.0122
##	5	0.9150	nan	0.1000	0.0063
##	6	0.8937	nan	0.1000	0.0088
##	7	0.8778	nan	0.1000	0.0068
##	8	0.8631	nan	0.1000	0.0070
##	9	0.8507	nan	0.1000	0.0050
##	10	0.8396	nan	0.1000	0.0044
##	20	0.7730	nan	0.1000	0.0016
##	40	0.7085	nan	0.1000	0.0008
##	60	0.6812	nan	0.1000	0.0004
##	80	0.6596	nan	0.1000	-0.0005

##	100	0.6431	nan	0.1000	-0.0005
##	120	0.6314	nan	0.1000	-0.0002
##	140	0.6204	nan	0.1000	-0.0005
##	150	0.6133	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0064	nan	0.1000	0.0171
##	2	0.9738	nan	0.1000	0.0154
##	3	0.9408	nan	0.1000	0.0153
##	4	0.9139	nan	0.1000	0.0120
##	5	0.8889	nan	0.1000	0.0118
##	6	0.8729	nan	0.1000	0.0058
##	7	0.8539	nan	0.1000	0.0083
##	8	0.8359	nan	0.1000	0.0070
##	9	0.8234	nan	0.1000	0.0051
##	10	0.8113	nan	0.1000	0.0044
##	20	0.7333	nan	0.1000	0.0025
##	40	0.6706	nan	0.1000	0.0001
##	60	0.6318	nan	0.1000	-0.0003
##	80	0.6041	nan	0.1000	-0.0004
##	100	0.5840	nan	0.1000	-0.0004
##	120	0.5648	nan	0.1000	-0.0002
##	140	0.5457	nan	0.1000	-0.0001
##	150	0.5351	nan	0.1000	-0.0011
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0470	nan	0.1000	0.0101
##	2	1.0188	nan	0.1000	0.0126
##	3	0.9973	nan	0.1000	0.0094
##	4	0.9764	nan	0.1000	0.0101
##	5	0.9599	nan	0.1000	0.0083
##	6	0.9449	nan	0.1000	0.0073
##	7	0.9327	nan	0.1000	0.0055
##	8	0.9208	nan	0.1000	0.0051
##	9	0.9068	nan	0.1000	0.0051
##	10	0.8951	nan	0.1000	0.0059
##	20	0.8287	nan	0.1000	0.0027
##	40	0.7567	nan	0.1000	0.0001
##	60	0.7198	nan	0.1000	-0.0004
##	80	0.7024	nan	0.1000	-0.0001
##	100	0.6918	nan	0.1000	0.0001
##	120	0.6851	nan	0.1000	-0.0002
##	140	0.6788	nan	0.1000	0.0003
##	150	0.6775	nan	0.1000	0.0000
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0280	nan	0.1000	0.0191
##	2	0.9947	nan	0.1000	0.0153
##	3	0.9673	nan	0.1000	0.0118
##	4	0.9437	nan	0.1000	0.0113
##	5	0.9238	nan	0.1000	0.0096
##	6	0.9060	nan	0.1000	0.0079
##	7	0.8839	nan	0.1000	0.0106
##	8	0.8700	nan	0.1000	0.0054

##	9	0.8526	nan	0.1000	0.0079
##	10	0.8432	nan	0.1000	0.0039
##	20	0.7647	nan	0.1000	0.0021
##	40	0.6881	nan	0.1000	0.0010
##	60	0.6574	nan	0.1000	0.0001
##	80	0.6345	nan	0.1000	-0.0000
##	100	0.6223	nan	0.1000	-0.0009
##	120	0.6095	nan	0.1000	-0.0003
##	140	0.5990	nan	0.1000	-0.0006
##	150	0.5947	nan	0.1000	-0.0010
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0264	nan	0.1000	0.0252
##	2	0.9899	nan	0.1000	0.0172
##	3	0.9602	nan	0.1000	0.0140
##	4	0.9281	nan	0.1000	0.0164
##	5	0.9035	nan	0.1000	0.0109
##	6	0.8806	nan	0.1000	0.0095
##	7	0.8629	nan	0.1000	0.0085
##	8	0.8476	nan	0.1000	0.0051
##	9	0.8299	nan	0.1000	0.0066
##	10	0.8174	nan	0.1000	0.0055
##	20	0.7231	nan	0.1000	0.0013
##	40	0.6485	nan	0.1000	0.0003
##	60	0.6127	nan	0.1000	-0.0007
##	80	0.5844	nan	0.1000	-0.0004
##	100	0.5673	nan	0.1000	0.0002
##	120	0.5516	nan	0.1000	-0.0009
##	140	0.5381	nan	0.1000	-0.0000
##	150	0.5297	nan	0.1000	-0.0005
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0348	nan	0.1000	0.0120
##	2	1.0133	nan	0.1000	0.0084
##	3	0.9937	nan	0.1000	0.0098
##	4	0.9755	nan	0.1000	0.0087
##	5	0.9599	nan	0.1000	0.0078
##	6	0.9452	nan	0.1000	0.0065
##	7	0.9335	nan	0.1000	0.0051
##	8	0.9215	nan	0.1000	0.0059
##	9	0.9101	nan	0.1000	0.0047
##	10	0.9030	nan	0.1000	0.0019
##	20	0.8352	nan	0.1000	0.0020
##	40	0.7663	nan	0.1000	0.0006
##	60	0.7309	nan	0.1000	0.0005
##	80	0.7123	nan	0.1000	-0.0000
##	100	0.7009	nan	0.1000	-0.0003
##	120	0.6926	nan	0.1000	-0.0000
##	140	0.6877	nan	0.1000	-0.0003
##	150	0.6854	nan	0.1000	-0.0002
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0228	nan	0.1000	0.0171
##	2	0.9938	nan	0.1000	0.0124

##	3	0.9686	nan	0.1000	0.0124
##	4	0.9463	nan	0.1000	0.0103
##	5	0.9275	nan	0.1000	0.0078
##	6	0.9103	nan	0.1000	0.0076
##	7	0.8953	nan	0.1000	0.0063
##	8	0.8801	nan	0.1000	0.0056
##	9	0.8668	nan	0.1000	0.0059
##	10	0.8561	nan	0.1000	0.0044
##	20	0.7782	nan	0.1000	0.0021
##	40	0.7080	nan	0.1000	-0.0006
##	60	0.6751	nan	0.1000	0.0002
##	80	0.6554	nan	0.1000	-0.0002
##	100	0.6398	nan	0.1000	-0.0008
##	120	0.6271	nan	0.1000	-0.0002
##	140	0.6119	nan	0.1000	-0.0009
##	150	0.6070	nan	0.1000	-0.0002

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0244	nan	0.1000	0.0189
##	2	0.9878	nan	0.1000	0.0159
##	3	0.9579	nan	0.1000	0.0134
##	4	0.9304	nan	0.1000	0.0109
##	5	0.9059	nan	0.1000	0.0111
##	6	0.8890	nan	0.1000	0.0073
##	7	0.8671	nan	0.1000	0.0088
##	8	0.8522	nan	0.1000	0.0049
##	9	0.8392	nan	0.1000	0.0054
##	10	0.8280	nan	0.1000	0.0051
##	20	0.7419	nan	0.1000	0.0026
##	40	0.6712	nan	0.1000	0.0000
##	60	0.6370	nan	0.1000	-0.0000
##	80	0.6095	nan	0.1000	-0.0009
##	100	0.5929	nan	0.1000	-0.0002
##	120	0.5720	nan	0.1000	-0.0005
##	140	0.5540	nan	0.1000	-0.0001
##	150	0.5466	nan	0.1000	-0.0008

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0446	nan	0.1000	0.0135
##	2	1.0227	nan	0.1000	0.0108
##	3	1.0026	nan	0.1000	0.0095
##	4	0.9851	nan	0.1000	0.0081
##	5	0.9686	nan	0.1000	0.0070
##	6	0.9537	nan	0.1000	0.0078
##	7	0.9394	nan	0.1000	0.0064
##	8	0.9257	nan	0.1000	0.0050
##	9	0.9161	nan	0.1000	0.0043
##	10	0.9064	nan	0.1000	0.0043
##	20	0.8419	nan	0.1000	0.0004
##	40	0.7778	nan	0.1000	0.0003
##	60	0.7448	nan	0.1000	-0.0002
##	80	0.7300	nan	0.1000	-0.0001
##	100	0.7213	nan	0.1000	-0.0001
##	120	0.7136	nan	0.1000	-0.0002



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##      140      0.7083      nan      0.1000     -0.0003
##      150      0.7063      nan      0.1000     -0.0004
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      1.0306      nan      0.1000     0.0181
##      2      1.0006      nan      0.1000     0.0137
##      3      0.9762      nan      0.1000     0.0122
##      4      0.9543      nan      0.1000     0.0099
##      5      0.9360      nan      0.1000     0.0085
##      6      0.9126      nan      0.1000     0.0094
##      7      0.8933      nan      0.1000     0.0083
##      8      0.8793      nan      0.1000     0.0070
##      9      0.8675      nan      0.1000     0.0057
##     10      0.8561      nan      0.1000     0.0049
##     20      0.7796      nan      0.1000     0.0016
##     40      0.7176      nan      0.1000     0.0004
##     60      0.6907      nan      0.1000     0.0003
##     80      0.6730      nan      0.1000    -0.0007
##    100      0.6598      nan      0.1000    -0.0011
##    120      0.6489      nan      0.1000    -0.0007
##    140      0.6381      nan      0.1000    -0.0009
##    150      0.6346      nan      0.1000    -0.0001
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      1.0251      nan      0.1000     0.0219
##      2      0.9877      nan      0.1000     0.0178
##      3      0.9548      nan      0.1000     0.0148
##      4      0.9289      nan      0.1000     0.0119
##      5      0.9096      nan      0.1000     0.0075
##      6      0.8896      nan      0.1000     0.0086
##      7      0.8711      nan      0.1000     0.0077
##      8      0.8548      nan      0.1000     0.0077
##      9      0.8415      nan      0.1000     0.0058
##     10      0.8316      nan      0.1000     0.0043
##     20      0.7480      nan      0.1000     0.0014
##     40      0.6878      nan      0.1000    -0.0004
##     60      0.6560      nan      0.1000     0.0002
##     80      0.6291      nan      0.1000    -0.0012
##    100      0.6064      nan      0.1000    -0.0004
##    120      0.5843      nan      0.1000    -0.0003
##    140      0.5656      nan      0.1000    -0.0005
##    150      0.5596      nan      0.1000    -0.0007
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      1.0258      nan      0.1000     0.0115
##      2      1.0060      nan      0.1000     0.0095
##      3      0.9906      nan      0.1000     0.0077
##      4      0.9752      nan      0.1000     0.0050
##      5      0.9613      nan      0.1000     0.0059
##      6      0.9498      nan      0.1000     0.0045
##      7      0.9393      nan      0.1000     0.0049
##      8      0.9265      nan      0.1000     0.0059
##      9      0.9179      nan      0.1000     0.0038
##     10      0.9118      nan      0.1000     0.0011

```

##	20	0.8472	nan	0.1000	0.0018
##	40	0.7782	nan	0.1000	0.0004
##	60	0.7443	nan	0.1000	0.0007
##	80	0.7244	nan	0.1000	-0.0001
##	100	0.7128	nan	0.1000	0.0000
##	120	0.7030	nan	0.1000	-0.0001
##	140	0.6972	nan	0.1000	-0.0003
##	150	0.6950	nan	0.1000	-0.0001
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0167	nan	0.1000	0.0154
##	2	0.9854	nan	0.1000	0.0139
##	3	0.9628	nan	0.1000	0.0106
##	4	0.9409	nan	0.1000	0.0091
##	5	0.9199	nan	0.1000	0.0086
##	6	0.9011	nan	0.1000	0.0083
##	7	0.8875	nan	0.1000	0.0062
##	8	0.8734	nan	0.1000	0.0045
##	9	0.8608	nan	0.1000	0.0054
##	10	0.8519	nan	0.1000	0.0035
##	20	0.7829	nan	0.1000	0.0018
##	40	0.7146	nan	0.1000	0.0004
##	60	0.6805	nan	0.1000	0.0007
##	80	0.6598	nan	0.1000	-0.0003
##	100	0.6412	nan	0.1000	0.0001
##	120	0.6285	nan	0.1000	-0.0002
##	140	0.6187	nan	0.1000	-0.0005
##	150	0.6114	nan	0.1000	-0.0005
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0055	nan	0.1000	0.0187
##	2	0.9753	nan	0.1000	0.0129
##	3	0.9488	nan	0.1000	0.0111
##	4	0.9251	nan	0.1000	0.0112
##	5	0.9078	nan	0.1000	0.0062
##	6	0.8864	nan	0.1000	0.0101
##	7	0.8682	nan	0.1000	0.0082
##	8	0.8530	nan	0.1000	0.0069
##	9	0.8383	nan	0.1000	0.0060
##	10	0.8246	nan	0.1000	0.0046
##	20	0.7477	nan	0.1000	0.0009
##	40	0.6788	nan	0.1000	0.0008
##	60	0.6408	nan	0.1000	0.0002
##	80	0.6191	nan	0.1000	-0.0005
##	100	0.5924	nan	0.1000	0.0003
##	120	0.5747	nan	0.1000	-0.0009
##	140	0.5542	nan	0.1000	0.0001
##	150	0.5457	nan	0.1000	-0.0002
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0075	nan	0.1000	0.0124
##	2	0.9831	nan	0.1000	0.0109
##	3	0.9659	nan	0.1000	0.0077
##	4	0.9512	nan	0.1000	0.0051

##	5	0.9365	nan	0.1000	0.0057
##	6	0.9224	nan	0.1000	0.0066
##	7	0.9086	nan	0.1000	0.0078
##	8	0.8940	nan	0.1000	0.0064
##	9	0.8826	nan	0.1000	0.0039
##	10	0.8720	nan	0.1000	0.0050
##	20	0.8025	nan	0.1000	0.0015
##	40	0.7325	nan	0.1000	0.0007
##	60	0.6970	nan	0.1000	0.0002
##	80	0.6811	nan	0.1000	-0.0005
##	100	0.6708	nan	0.1000	-0.0002
##	120	0.6643	nan	0.1000	-0.0004
##	140	0.6587	nan	0.1000	-0.0002
##	150	0.6570	nan	0.1000	-0.0004

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9952	nan	0.1000	0.0171
##	2	0.9621	nan	0.1000	0.0138
##	3	0.9328	nan	0.1000	0.0130
##	4	0.9129	nan	0.1000	0.0087
##	5	0.8958	nan	0.1000	0.0077
##	6	0.8772	nan	0.1000	0.0080
##	7	0.8672	nan	0.1000	0.0031
##	8	0.8508	nan	0.1000	0.0065
##	9	0.8340	nan	0.1000	0.0073
##	10	0.8213	nan	0.1000	0.0047
##	20	0.7350	nan	0.1000	0.0016
##	40	0.6744	nan	0.1000	-0.0004
##	60	0.6420	nan	0.1000	0.0004
##	80	0.6212	nan	0.1000	-0.0002
##	100	0.6033	nan	0.1000	0.0001
##	120	0.5897	nan	0.1000	0.0002
##	140	0.5780	nan	0.1000	-0.0002
##	150	0.5727	nan	0.1000	-0.0000

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9932	nan	0.1000	0.0181
##	2	0.9536	nan	0.1000	0.0190
##	3	0.9232	nan	0.1000	0.0120
##	4	0.8985	nan	0.1000	0.0095
##	5	0.8733	nan	0.1000	0.0119
##	6	0.8509	nan	0.1000	0.0091
##	7	0.8346	nan	0.1000	0.0063
##	8	0.8171	nan	0.1000	0.0057
##	9	0.7997	nan	0.1000	0.0069
##	10	0.7852	nan	0.1000	0.0060
##	20	0.7022	nan	0.1000	0.0021
##	40	0.6321	nan	0.1000	0.0002
##	60	0.5946	nan	0.1000	-0.0002
##	80	0.5721	nan	0.1000	0.0002
##	100	0.5499	nan	0.1000	-0.0002
##	120	0.5338	nan	0.1000	-0.0004
##	140	0.5160	nan	0.1000	-0.0004
##	150	0.5079	nan	0.1000	-0.0003

```

##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0332           nan        0.1000     0.0130
##      2         1.0133           nan        0.1000     0.0107
##      3         0.9975           nan        0.1000     0.0064
##      4         0.9796           nan        0.1000     0.0085
##      5         0.9659           nan        0.1000     0.0063
##      6         0.9559           nan        0.1000     0.0042
##      7         0.9434           nan        0.1000     0.0049
##      8         0.9337           nan        0.1000     0.0041
##      9         0.9222           nan        0.1000     0.0043
##     10         0.9096           nan        0.1000     0.0054
##     20         0.8461           nan        0.1000     0.0013
##     40         0.7852           nan        0.1000     0.0002
##     60         0.7575           nan        0.1000    -0.0005
##     80         0.7407           nan        0.1000    -0.0002
##    100         0.7298           nan        0.1000    -0.0002
##    120         0.7239           nan        0.1000     0.0000
##    140         0.7182           nan        0.1000    -0.0002
##    150         0.7157           nan        0.1000    -0.0001
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0219           nan        0.1000     0.0180
##      2         0.9876           nan        0.1000     0.0142
##      3         0.9610           nan        0.1000     0.0116
##      4         0.9446           nan        0.1000     0.0075
##      5         0.9282           nan        0.1000     0.0078
##      6         0.9097           nan        0.1000     0.0084
##      7         0.8977           nan        0.1000     0.0053
##      8         0.8878           nan        0.1000     0.0036
##      9         0.8737           nan        0.1000     0.0048
##     10         0.8615           nan        0.1000     0.0053
##     20         0.7897           nan        0.1000     0.0015
##     40         0.7279           nan        0.1000     0.0003
##     60         0.6983           nan        0.1000    -0.0005
##     80         0.6818           nan        0.1000    -0.0012
##    100         0.6670           nan        0.1000     0.0002
##    120         0.6537           nan        0.1000    -0.0001
##    140         0.6435           nan        0.1000    -0.0004
##    150         0.6370           nan        0.1000    -0.0005
##
## Iter    TrainDeviance    ValidDeviance    StepSize    Improve
##      1         1.0147           nan        0.1000     0.0207
##      2         0.9764           nan        0.1000     0.0171
##      3         0.9505           nan        0.1000     0.0082
##      4         0.9324           nan        0.1000     0.0089
##      5         0.9165           nan        0.1000     0.0050
##      6         0.8928           nan        0.1000     0.0100
##      7         0.8751           nan        0.1000     0.0072
##      8         0.8642           nan        0.1000     0.0033
##      9         0.8473           nan        0.1000     0.0060
##     10         0.8341           nan        0.1000     0.0054
##     20         0.7635           nan        0.1000     0.0020
##     40         0.7015           nan        0.1000    -0.0007

```

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##      60      0.6640      nan      0.1000      0.0003
##      80      0.6382      nan      0.1000     -0.0003
##     100      0.6136      nan      0.1000     -0.0000
##     120      0.5924      nan      0.1000     -0.0004
##     140      0.5716      nan      0.1000     -0.0000
##     150      0.5649      nan      0.1000     -0.0007
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      0.9909      nan      0.1000      0.0106
##      2      0.9721      nan      0.1000      0.0078
##      3      0.9549      nan      0.1000      0.0083
##      4      0.9366      nan      0.1000      0.0080
##      5      0.9220      nan      0.1000      0.0064
##      6      0.9110      nan      0.1000      0.0033
##      7      0.8995      nan      0.1000      0.0052
##      8      0.8896      nan      0.1000      0.0042
##      9      0.8806      nan      0.1000      0.0039
##     10      0.8733      nan      0.1000      0.0026
##     20      0.8163      nan      0.1000      0.0018
##     40      0.7527      nan      0.1000      0.0009
##     60      0.7248      nan      0.1000     -0.0001
##     80      0.7103      nan      0.1000     -0.0006
##    100      0.7002      nan      0.1000     -0.0001
##    120      0.6921      nan      0.1000      0.0000
##    140      0.6884      nan      0.1000     -0.0006
##    150      0.6868      nan      0.1000     -0.0003
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      0.9850      nan      0.1000      0.0141
##      2      0.9663      nan      0.1000      0.0071
##      3      0.9393      nan      0.1000      0.0123
##      4      0.9165      nan      0.1000      0.0092
##      5      0.8931      nan      0.1000      0.0106
##      6      0.8795      nan      0.1000      0.0067
##      7      0.8627      nan      0.1000      0.0075
##      8      0.8521      nan      0.1000      0.0045
##      9      0.8418      nan      0.1000      0.0031
##     10      0.8304      nan      0.1000      0.0036
##     20      0.7613      nan      0.1000      0.0017
##     40      0.6947      nan      0.1000     -0.0003
##     60      0.6679      nan      0.1000      0.0004
##     80      0.6496      nan      0.1000     -0.0001
##    100      0.6373      nan      0.1000     -0.0003
##    120      0.6218      nan      0.1000     -0.0003
##    140      0.6114      nan      0.1000     -0.0001
##    150      0.6057      nan      0.1000     -0.0010
##
## Iter   TrainDeviance   ValidDeviance   StepSize   Improve
##      1      0.9815      nan      0.1000      0.0156
##      2      0.9443      nan      0.1000      0.0165
##      3      0.9143      nan      0.1000      0.0156
##      4      0.8945      nan      0.1000      0.0084
##      5      0.8723      nan      0.1000      0.0103
##      6      0.8562      nan      0.1000      0.0069

```

##	7	0.8422	nan	0.1000	0.0041
##	8	0.8322	nan	0.1000	0.0033
##	9	0.8152	nan	0.1000	0.0085
##	10	0.8015	nan	0.1000	0.0044
##	20	0.7297	nan	0.1000	0.0011
##	40	0.6625	nan	0.1000	0.0006
##	60	0.6279	nan	0.1000	-0.0002
##	80	0.6080	nan	0.1000	-0.0005
##	100	0.5900	nan	0.1000	-0.0005
##	120	0.5739	nan	0.1000	-0.0001
##	140	0.5579	nan	0.1000	-0.0009
##	150	0.5503	nan	0.1000	-0.0009

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9949	nan	0.1000	0.0094
##	2	0.9732	nan	0.1000	0.0104
##	3	0.9578	nan	0.1000	0.0075
##	4	0.9402	nan	0.1000	0.0076
##	5	0.9263	nan	0.1000	0.0063
##	6	0.9155	nan	0.1000	0.0051
##	7	0.9076	nan	0.1000	0.0030
##	8	0.8967	nan	0.1000	0.0047
##	9	0.8874	nan	0.1000	0.0043
##	10	0.8801	nan	0.1000	0.0034
##	20	0.8246	nan	0.1000	0.0012
##	40	0.7635	nan	0.1000	0.0003
##	60	0.7350	nan	0.1000	0.0006
##	80	0.7191	nan	0.1000	-0.0001
##	100	0.7089	nan	0.1000	-0.0003
##	120	0.7009	nan	0.1000	-0.0002
##	140	0.6972	nan	0.1000	-0.0006
##	150	0.6953	nan	0.1000	-0.0005

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	0.9820	nan	0.1000	0.0141
##	2	0.9515	nan	0.1000	0.0131
##	3	0.9326	nan	0.1000	0.0078
##	4	0.9139	nan	0.1000	0.0070
##	5	0.8946	nan	0.1000	0.0091
##	6	0.8784	nan	0.1000	0.0066
##	7	0.8631	nan	0.1000	0.0055
##	8	0.8487	nan	0.1000	0.0054
##	9	0.8403	nan	0.1000	0.0038
##	10	0.8320	nan	0.1000	0.0038
##	20	0.7639	nan	0.1000	0.0015
##	40	0.7036	nan	0.1000	-0.0005
##	60	0.6723	nan	0.1000	-0.0004
##	80	0.6525	nan	0.1000	-0.0007
##	100	0.6384	nan	0.1000	-0.0011
##	120	0.6261	nan	0.1000	-0.0004
##	140	0.6086	nan	0.1000	-0.0004
##	150	0.6042	nan	0.1000	-0.0005

##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
----	------	---------------	---------------	----------	---------

##	1	0.9772	nan	0.1000	0.0184
##	2	0.9464	nan	0.1000	0.0143
##	3	0.9211	nan	0.1000	0.0133
##	4	0.8994	nan	0.1000	0.0093
##	5	0.8750	nan	0.1000	0.0110
##	6	0.8591	nan	0.1000	0.0064
##	7	0.8436	nan	0.1000	0.0069
##	8	0.8305	nan	0.1000	0.0057
##	9	0.8162	nan	0.1000	0.0047
##	10	0.8056	nan	0.1000	0.0042
##	20	0.7301	nan	0.1000	0.0007
##	40	0.6690	nan	0.1000	-0.0003
##	60	0.6397	nan	0.1000	-0.0008
##	80	0.6160	nan	0.1000	-0.0003
##	100	0.5962	nan	0.1000	-0.0001
##	120	0.5790	nan	0.1000	-0.0006
##	140	0.5595	nan	0.1000	-0.0011
##	150	0.5518	nan	0.1000	-0.0007
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0625	nan	0.1000	0.0124
##	2	1.0410	nan	0.1000	0.0102
##	3	1.0222	nan	0.1000	0.0079
##	4	1.0064	nan	0.1000	0.0077
##	5	0.9938	nan	0.1000	0.0060
##	6	0.9805	nan	0.1000	0.0062
##	7	0.9702	nan	0.1000	0.0039
##	8	0.9578	nan	0.1000	0.0061
##	9	0.9484	nan	0.1000	0.0039
##	10	0.9404	nan	0.1000	0.0031
##	20	0.8729	nan	0.1000	0.0014
##	40	0.8055	nan	0.1000	-0.0003
##	60	0.7708	nan	0.1000	0.0006
##	80	0.7507	nan	0.1000	0.0001
##	100	0.7410	nan	0.1000	-0.0002
##	120	0.7350	nan	0.1000	-0.0003
##	140	0.7286	nan	0.1000	-0.0003
##	150	0.7254	nan	0.1000	-0.0003
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0559	nan	0.1000	0.0173
##	2	1.0300	nan	0.1000	0.0117
##	3	1.0042	nan	0.1000	0.0126
##	4	0.9821	nan	0.1000	0.0100
##	5	0.9639	nan	0.1000	0.0083
##	6	0.9427	nan	0.1000	0.0092
##	7	0.9300	nan	0.1000	0.0058
##	8	0.9139	nan	0.1000	0.0069
##	9	0.9021	nan	0.1000	0.0053
##	10	0.8927	nan	0.1000	0.0019
##	20	0.8163	nan	0.1000	0.0024
##	40	0.7465	nan	0.1000	0.0002
##	60	0.7170	nan	0.1000	-0.0003
##	80	0.6957	nan	0.1000	-0.0004

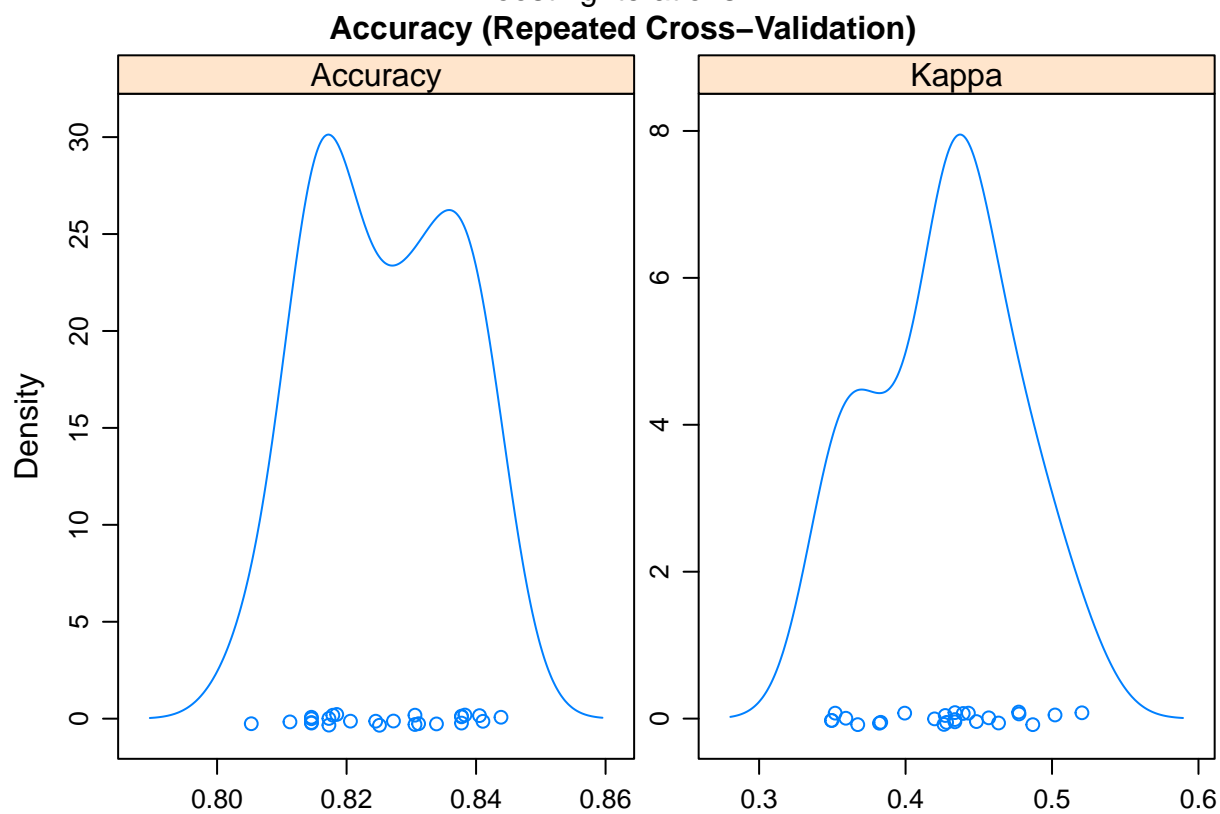
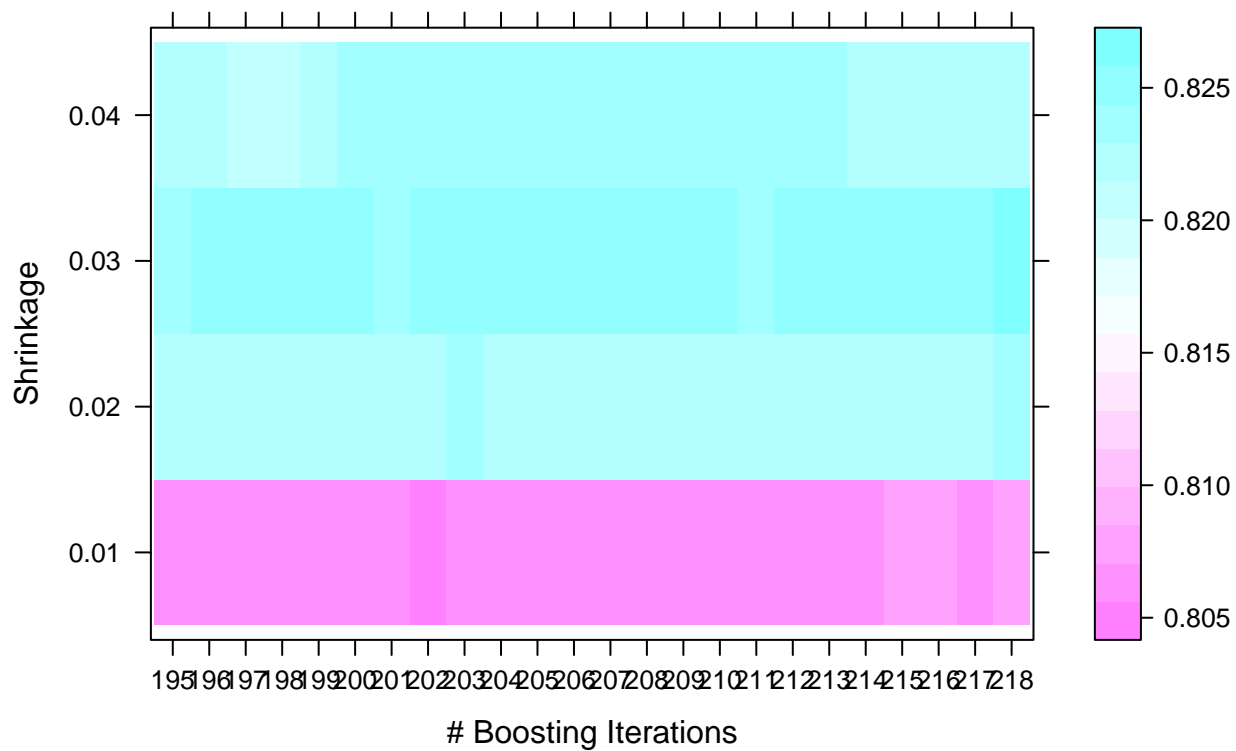
##	100	0.6775	nan	0.1000	-0.0007
##	120	0.6655	nan	0.1000	-0.0005
##	140	0.6549	nan	0.1000	-0.0011
##	150	0.6519	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0465	nan	0.1000	0.0211
##	2	1.0112	nan	0.1000	0.0185
##	3	0.9820	nan	0.1000	0.0146
##	4	0.9559	nan	0.1000	0.0115
##	5	0.9371	nan	0.1000	0.0076
##	6	0.9169	nan	0.1000	0.0092
##	7	0.8982	nan	0.1000	0.0087
##	8	0.8850	nan	0.1000	0.0054
##	9	0.8712	nan	0.1000	0.0059
##	10	0.8608	nan	0.1000	0.0041
##	20	0.7791	nan	0.1000	0.0011
##	40	0.7113	nan	0.1000	-0.0004
##	60	0.6765	nan	0.1000	-0.0006
##	80	0.6528	nan	0.1000	-0.0004
##	100	0.6357	nan	0.1000	-0.0005
##	120	0.6186	nan	0.1000	-0.0004
##	140	0.6043	nan	0.1000	-0.0011
##	150	0.5934	nan	0.1000	-0.0004
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0779	nan	0.1000	0.0096
##	2	1.0567	nan	0.1000	0.0079
##	3	1.0392	nan	0.1000	0.0089
##	4	1.0232	nan	0.1000	0.0070
##	5	1.0076	nan	0.1000	0.0064
##	6	0.9935	nan	0.1000	0.0065
##	7	0.9815	nan	0.1000	0.0050
##	8	0.9710	nan	0.1000	0.0045
##	9	0.9605	nan	0.1000	0.0046
##	10	0.9506	nan	0.1000	0.0042
##	20	0.8845	nan	0.1000	0.0026
##	40	0.8258	nan	0.1000	0.0002
##	60	0.7967	nan	0.1000	-0.0003
##	80	0.7805	nan	0.1000	0.0001
##	100	0.7688	nan	0.1000	0.0002
##	120	0.7614	nan	0.1000	-0.0002
##	140	0.7549	nan	0.1000	-0.0002
##	150	0.7530	nan	0.1000	-0.0002
##					
##	Iter	TrainDeviance	ValidDeviance	StepSize	Improve
##	1	1.0699	nan	0.1000	0.0123
##	2	1.0392	nan	0.1000	0.0145
##	3	1.0143	nan	0.1000	0.0123
##	4	0.9929	nan	0.1000	0.0104
##	5	0.9763	nan	0.1000	0.0065
##	6	0.9571	nan	0.1000	0.0088
##	7	0.9417	nan	0.1000	0.0065
##	8	0.9269	nan	0.1000	0.0065



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##      9      0.9170      nan      0.1000      0.0039
##     10      0.9053      nan      0.1000      0.0052
##     20      0.8302      nan      0.1000      0.0023
##     40      0.7660      nan      0.1000     -0.0000
##     60      0.7359      nan      0.1000      0.0005
##     80      0.7168      nan      0.1000     -0.0004
##    100      0.7001      nan      0.1000     -0.0001
##    120      0.6852      nan      0.1000     -0.0003
##    140      0.6759      nan      0.1000     -0.0004
##    150      0.6720      nan      0.1000     -0.0005
##
## Iter  TrainDeviance  ValidDeviance  StepSize  Improve
##      1      1.0599      nan      0.1000      0.0196
##      2      1.0263      nan      0.1000      0.0143
##      3      0.9979      nan      0.1000      0.0132
##      4      0.9743      nan      0.1000      0.0085
##      5      0.9529      nan      0.1000      0.0092
##      6      0.9343      nan      0.1000      0.0069
##      7      0.9192      nan      0.1000      0.0063
##      8      0.9047      nan      0.1000      0.0053
##      9      0.8894      nan      0.1000      0.0053
##     10      0.8785      nan      0.1000      0.0050
##     20      0.8025      nan      0.1000      0.0026
##     40      0.7257      nan      0.1000      0.0001
##     60      0.6884      nan      0.1000      0.0001
##     80      0.6654      nan      0.1000     -0.0004
##    100      0.6430      nan      0.1000      0.0003
##    120      0.6239      nan      0.1000      0.0001
##    140      0.6078      nan      0.1000     -0.0008
##    150      0.5985      nan      0.1000     -0.0002
##
## Iter  TrainDeviance  ValidDeviance  StepSize  Improve
##      1      1.0228      nan      0.1000      0.0138
##      2      0.9943      nan      0.1000      0.0135
##      3      0.9719      nan      0.1000      0.0097
##      4      0.9504      nan      0.1000      0.0095
##      5      0.9369      nan      0.1000      0.0053
##      6      0.9179      nan      0.1000      0.0085
##      7      0.9021      nan      0.1000      0.0065
##      8      0.8911      nan      0.1000      0.0046
##      9      0.8781      nan      0.1000      0.0040
##     10      0.8660      nan      0.1000      0.0061
##     20      0.8040      nan      0.1000      0.0018
##     40      0.7466      nan      0.1000     -0.0000
##     60      0.7240      nan      0.1000     -0.0003
##     80      0.7097      nan      0.1000     -0.0004
##    100      0.6986      nan      0.1000     -0.0008
## [1] "Running GBM"

```



Neural network

```
## # weights:  11
## initial  value 1003.270658
```

```

## iter 10 value 564.148528
## iter 20 value 534.023871
## iter 30 value 530.755375
## iter 40 value 530.498584
## final value 530.326344
## converged
## # weights: 31
## initial value 1077.241940
## iter 10 value 532.060207
## iter 20 value 510.179687
## iter 30 value 497.851390
## iter 40 value 494.391436
## iter 50 value 490.279048
## iter 60 value 486.983681
## iter 70 value 486.152279
## iter 80 value 485.113696
## iter 90 value 484.177718
## iter 100 value 483.684180
## final value 483.684180
## stopped after 100 iterations
## # weights: 51
## initial value 1349.809091
## iter 10 value 518.482926
## iter 20 value 476.835878
## iter 30 value 460.168605
## iter 40 value 450.255286
## iter 50 value 442.918680
## iter 60 value 433.453886
## iter 70 value 418.002808
## iter 80 value 410.898310
## iter 90 value 406.565995
## iter 100 value 405.956282
## final value 405.956282
## stopped after 100 iterations
## # weights: 11
## initial value 990.804818
## iter 10 value 556.499187
## iter 20 value 540.768308
## iter 30 value 537.002941
## iter 40 value 537.001837
## final value 537.001812
## converged
## # weights: 31
## initial value 1152.847690
## iter 10 value 538.721784
## iter 20 value 530.961904
## iter 30 value 523.578487
## iter 40 value 518.319026
## iter 50 value 514.621539
## iter 60 value 513.347090
## iter 70 value 513.157084
## iter 80 value 513.110021
## iter 90 value 513.104611
## final value 513.104602

```

```

## converged
## # weights:  51
## initial  value 875.271058
## iter   10 value 527.811491
## iter   20 value 507.867403
## iter   30 value 501.022686
## iter   40 value 496.585174
## iter   50 value 494.537716
## iter   60 value 493.416149
## iter   70 value 492.576437
## iter   80 value 491.976656
## iter   90 value 489.939994
## iter  100 value 488.178720
## final   value 488.178720
## stopped after 100 iterations
## # weights:  11
## initial  value 1055.032485
## iter   10 value 584.544124
## iter   20 value 549.629532
## iter   30 value 538.883839
## iter   40 value 531.513243
## iter   50 value 530.402001
## final   value 530.332716
## converged
## # weights:  31
## initial  value 1176.451486
## iter   10 value 549.609759
## iter   20 value 514.481977
## iter   30 value 499.554683
## iter   40 value 496.189634
## iter   50 value 493.675487
## iter   60 value 490.322344
## iter   70 value 488.873451
## iter   80 value 487.624235
## iter   90 value 486.405017
## iter  100 value 485.890228
## final   value 485.890228
## stopped after 100 iterations
## # weights:  51
## initial  value 1464.225828
## iter   10 value 536.982114
## iter   20 value 485.599987
## iter   30 value 469.854807
## iter   40 value 462.548480
## iter   50 value 450.714003
## iter   60 value 441.432268
## iter   70 value 428.642837
## iter   80 value 426.169320
## iter   90 value 425.816819
## iter  100 value 425.447997
## final   value 425.447997
## stopped after 100 iterations
## # weights:  11
## initial  value 858.856450

```

```

## iter 10 value 613.775817
## iter 20 value 601.753309
## iter 30 value 592.637524
## iter 40 value 579.236300
## iter 50 value 575.476870
## iter 60 value 574.553504
## iter 70 value 574.104167
## iter 80 value 574.072795
## iter 90 value 574.038069
## iter 100 value 574.034320
## final value 574.034320
## stopped after 100 iterations
## # weights: 31
## initial value 944.947214
## iter 10 value 587.674761
## iter 20 value 543.515524
## iter 30 value 538.047457
## iter 40 value 535.407867
## iter 50 value 533.262214
## iter 60 value 525.634685
## iter 70 value 517.056147
## iter 80 value 513.743026
## iter 90 value 512.743586
## iter 100 value 511.901261
## final value 511.901261
## stopped after 100 iterations
## # weights: 51
## initial value 1075.741283
## iter 10 value 555.836598
## iter 20 value 514.348652
## iter 30 value 487.305145
## iter 40 value 475.341575
## iter 50 value 462.714041
## iter 60 value 443.822998
## iter 70 value 434.114038
## iter 80 value 433.069006
## iter 90 value 433.063660
## final value 433.063450
## converged
## # weights: 11
## initial value 869.736568
## iter 10 value 624.295161
## iter 20 value 595.198468
## iter 30 value 582.417016
## iter 40 value 580.162710
## final value 580.156991
## converged
## # weights: 31
## initial value 979.533564
## iter 10 value 580.957881
## iter 20 value 558.548922
## iter 30 value 552.025584
## iter 40 value 547.958281
## iter 50 value 546.855821

```

```

## iter 60 value 544.699834
## iter 70 value 544.109307
## iter 80 value 543.180489
## iter 90 value 539.356482
## iter 100 value 538.676313
## final value 538.676313
## stopped after 100 iterations
## # weights: 51
## initial value 1114.942655
## iter 10 value 639.723853
## iter 20 value 601.257328
## iter 30 value 568.148234
## iter 40 value 549.766266
## iter 50 value 535.872027
## iter 60 value 532.297353
## iter 70 value 530.635011
## iter 80 value 530.480317
## iter 90 value 530.448785
## iter 100 value 530.444586
## final value 530.444586
## stopped after 100 iterations
## # weights: 11
## initial value 1485.040253
## iter 10 value 661.076896
## iter 20 value 633.523586
## iter 30 value 613.554231
## iter 40 value 582.054588
## iter 50 value 576.212909
## iter 60 value 574.607946
## iter 70 value 574.131670
## iter 80 value 574.106925
## iter 90 value 574.060514
## final value 574.056951
## converged
## # weights: 31
## initial value 1131.456970
## iter 10 value 629.026388
## iter 20 value 560.434331
## iter 30 value 545.775447
## iter 40 value 536.964010
## iter 50 value 530.618715
## iter 60 value 529.329122
## iter 70 value 529.268510
## iter 80 value 529.098436
## iter 90 value 528.980699
## iter 100 value 528.916004
## final value 528.916004
## stopped after 100 iterations
## # weights: 51
## initial value 1074.109919
## iter 10 value 583.950947
## iter 20 value 536.159130
## iter 30 value 508.739042
## iter 40 value 494.402036

```

```

## iter 50 value 479.411635
## iter 60 value 473.907746
## iter 70 value 472.566458
## iter 80 value 471.961456
## iter 90 value 471.464383
## iter 100 value 471.221745
## final value 471.221745
## stopped after 100 iterations
## # weights: 11
## initial value 1420.961864
## iter 10 value 589.150969
## iter 20 value 581.817304
## iter 30 value 575.578753
## iter 40 value 572.670244
## iter 50 value 571.612258
## iter 60 value 571.313240
## iter 70 value 570.953328
## iter 80 value 570.915860
## iter 90 value 570.784848
## iter 100 value 570.771525
## final value 570.771525
## stopped after 100 iterations
## # weights: 31
## initial value 1358.102975
## iter 10 value 564.875186
## iter 20 value 543.182940
## iter 30 value 527.391554
## iter 40 value 520.022346
## iter 50 value 517.693916
## iter 60 value 514.285781
## iter 70 value 513.704106
## iter 80 value 513.393197
## iter 90 value 512.380129
## iter 100 value 511.341453
## final value 511.341453
## stopped after 100 iterations
## # weights: 51
## initial value 854.329869
## iter 10 value 561.487463
## iter 20 value 518.380870
## iter 30 value 496.810763
## iter 40 value 479.430864
## iter 50 value 473.468331
## iter 60 value 468.288947
## iter 70 value 464.993782
## iter 80 value 460.593658
## iter 90 value 454.622633
## iter 100 value 446.125062
## final value 446.125062
## stopped after 100 iterations
## # weights: 11
## initial value 852.156342
## iter 10 value 586.651776
## iter 20 value 578.902015

```

```

## iter 30 value 578.893020
## final value 578.891737
## converged
## # weights: 31
## initial value 1386.279266
## iter 10 value 570.039669
## iter 20 value 549.374799
## iter 30 value 535.343376
## iter 40 value 530.920799
## iter 50 value 529.634619
## iter 60 value 527.252529
## iter 70 value 527.131935
## iter 80 value 527.092729
## iter 90 value 527.090334
## iter 90 value 527.090329
## iter 90 value 527.090329
## final value 527.090329
## converged
## # weights: 51
## initial value 962.291366
## iter 10 value 567.773018
## iter 20 value 539.625947
## iter 30 value 528.991334
## iter 40 value 523.709631
## iter 50 value 522.043060
## iter 60 value 516.473768
## iter 70 value 512.766499
## iter 80 value 512.113597
## iter 90 value 510.555238
## iter 100 value 505.593064
## final value 505.593064
## stopped after 100 iterations
## # weights: 11
## initial value 1165.652280
## iter 10 value 610.083379
## iter 20 value 608.171503
## iter 30 value 603.134291
## iter 40 value 586.245141
## iter 50 value 573.188753
## iter 60 value 572.447641
## iter 70 value 571.308852
## iter 80 value 571.114067
## iter 90 value 570.930277
## iter 100 value 570.864592
## final value 570.864592
## stopped after 100 iterations
## # weights: 31
## initial value 1549.545916
## iter 10 value 564.697325
## iter 20 value 525.913338
## iter 30 value 513.253703
## iter 40 value 497.017153
## iter 50 value 495.282845
## iter 60 value 495.155415

```



```

## iter 70 value 495.127956
## iter 80 value 495.027151
## iter 90 value 494.336959
## iter 100 value 494.170425
## final value 494.170425
## stopped after 100 iterations
## # weights: 51
## initial value 890.929036
## iter 10 value 599.982995
## iter 20 value 553.056364
## iter 30 value 515.456883
## iter 40 value 485.408007
## iter 50 value 477.295668
## iter 60 value 468.895224
## iter 70 value 456.035727
## iter 80 value 452.273282
## iter 90 value 451.733863
## iter 100 value 451.429792
## final value 451.429792
## stopped after 100 iterations
## # weights: 11
## initial value 1088.169486
## iter 10 value 565.846449
## iter 20 value 550.992869
## final value 550.990994
## converged
## # weights: 31
## initial value 1317.324614
## iter 10 value 567.147065
## iter 20 value 542.272741
## iter 30 value 529.482426
## iter 40 value 515.901468
## iter 50 value 510.232410
## iter 60 value 509.598769
## final value 509.595996
## converged
## # weights: 51
## initial value 1133.415756
## iter 10 value 554.324247
## iter 20 value 526.380042
## iter 30 value 489.966595
## iter 40 value 477.285637
## iter 50 value 464.011852
## iter 60 value 437.769951
## iter 70 value 427.509685
## iter 80 value 424.685791
## iter 90 value 424.372858
## iter 100 value 424.341457
## final value 424.341457
## stopped after 100 iterations
## # weights: 11
## initial value 1082.832256
## iter 10 value 569.973901
## iter 20 value 557.180769

```

```

## iter 30 value 555.653687
## iter 40 value 555.648737
## final value 555.648626
## converged
## # weights: 31
## initial value 1563.400728
## iter 10 value 569.915926
## iter 20 value 543.480350
## iter 30 value 538.067351
## iter 40 value 536.537756
## iter 50 value 533.583032
## iter 60 value 530.015263
## iter 70 value 529.709938
## iter 80 value 529.660301
## iter 90 value 529.643563
## final value 529.643438
## converged
## # weights: 51
## initial value 809.778048
## iter 10 value 559.818515
## iter 20 value 531.945369
## iter 30 value 517.117788
## iter 40 value 511.885415
## iter 50 value 511.188424
## iter 60 value 510.662749
## iter 70 value 510.530084
## iter 80 value 510.513343
## final value 510.511776
## converged
## # weights: 11
## initial value 829.234012
## iter 10 value 584.073575
## iter 20 value 554.831421
## iter 30 value 553.722636
## iter 40 value 547.664857
## iter 50 value 546.203226
## iter 60 value 546.187468
## final value 546.187333
## converged
## # weights: 31
## initial value 936.001350
## iter 10 value 555.037403
## iter 20 value 527.240502
## iter 30 value 513.094933
## iter 40 value 501.446000
## iter 50 value 496.805675
## iter 60 value 494.250927
## iter 70 value 493.722114
## iter 80 value 493.573990
## iter 90 value 492.953033
## iter 100 value 490.769346
## final value 490.769346
## stopped after 100 iterations
## # weights: 51

```

```

## initial value 819.772372
## iter 10 value 540.977197
## iter 20 value 517.643705
## iter 30 value 490.755368
## iter 40 value 480.186964
## iter 50 value 469.479257
## iter 60 value 461.386967
## iter 70 value 459.909602
## iter 80 value 459.439795
## iter 90 value 458.919167
## iter 100 value 457.923005
## final value 457.923005
## stopped after 100 iterations
## # weights: 11
## initial value 910.198866
## iter 10 value 564.781033
## iter 20 value 549.889130
## iter 30 value 549.719175
## iter 40 value 549.156442
## final value 549.114629
## converged
## # weights: 31
## initial value 1014.587027
## iter 10 value 587.034783
## iter 20 value 554.038864
## iter 30 value 539.667648
## iter 40 value 528.529734
## iter 50 value 522.420204
## iter 60 value 518.815183
## iter 70 value 515.489190
## iter 80 value 514.998478
## iter 90 value 514.930132
## iter 100 value 514.823423
## final value 514.823423
## stopped after 100 iterations
## # weights: 51
## initial value 1258.156395
## iter 10 value 533.330133
## iter 20 value 496.552715
## iter 30 value 476.043466
## iter 40 value 462.317725
## iter 50 value 442.048597
## iter 60 value 430.564341
## iter 70 value 427.454100
## iter 80 value 427.165552
## final value 427.165362
## converged
## # weights: 11
## initial value 978.726972
## iter 10 value 576.012448
## iter 20 value 561.106099
## iter 30 value 553.150915
## iter 40 value 552.981646
## final value 552.977516

```

```

## converged
## # weights: 31
## initial value 877.994465
## iter 10 value 558.033267
## iter 20 value 535.496302
## iter 30 value 527.533730
## iter 40 value 524.820892
## iter 50 value 522.604188
## iter 60 value 522.198501
## iter 70 value 522.179368
## iter 80 value 522.177959
## final value 522.177930
## converged
## # weights: 51
## initial value 1536.173642
## iter 10 value 547.523293
## iter 20 value 528.698388
## iter 30 value 512.296324
## iter 40 value 506.397595
## iter 50 value 505.972158
## iter 60 value 505.898820
## iter 70 value 505.736133
## iter 80 value 504.884173
## iter 90 value 504.511073
## iter 100 value 504.294062
## final value 504.294062
## stopped after 100 iterations
## # weights: 11
## initial value 863.976642
## iter 10 value 568.837831
## iter 20 value 563.665870
## iter 30 value 563.498337
## iter 40 value 554.214725
## iter 50 value 549.274356
## iter 60 value 549.131759
## final value 549.118801
## converged
## # weights: 31
## initial value 1803.925537
## iter 10 value 546.825824
## iter 20 value 532.124288
## iter 30 value 517.898314
## iter 40 value 503.979739
## iter 50 value 499.504128
## iter 60 value 496.028925
## iter 70 value 492.185790
## iter 80 value 489.711304
## iter 90 value 486.975210
## iter 100 value 484.236148
## final value 484.236148
## stopped after 100 iterations
## # weights: 51
## initial value 1373.384805
## iter 10 value 543.147302

```

```

## iter 20 value 512.325770
## iter 30 value 498.611548
## iter 40 value 475.726807
## iter 50 value 461.852887
## iter 60 value 453.589901
## iter 70 value 452.126539
## iter 80 value 451.944556
## iter 90 value 451.626701
## iter 100 value 451.337580
## final value 451.337580
## stopped after 100 iterations
## # weights: 11
## initial value 1321.226454
## iter 10 value 628.952462
## iter 20 value 603.951766
## iter 30 value 593.678310
## iter 40 value 587.958370
## iter 50 value 585.446437
## iter 60 value 585.380988
## iter 70 value 585.284086
## final value 585.283081
## converged
## # weights: 31
## initial value 1381.637418
## iter 10 value 584.987896
## iter 20 value 560.193862
## iter 30 value 544.045072
## iter 40 value 541.166700
## iter 50 value 536.397539
## iter 60 value 532.534384
## iter 70 value 529.633239
## iter 80 value 526.978753
## iter 90 value 525.024078
## iter 100 value 523.898653
## final value 523.898653
## stopped after 100 iterations
## # weights: 51
## initial value 1212.045565
## iter 10 value 580.893518
## iter 20 value 551.392061
## iter 30 value 528.792395
## iter 40 value 509.831946
## iter 50 value 490.270764
## iter 60 value 482.008686
## iter 70 value 472.678700
## iter 80 value 461.223673
## iter 90 value 456.991111
## iter 100 value 456.890975
## final value 456.890975
## stopped after 100 iterations
## # weights: 11
## initial value 1444.515709
## iter 10 value 661.400795
## iter 20 value 596.963351

```

```

## iter 30 value 592.635086
## final value 592.502788
## converged
## # weights: 31
## initial value 873.296463
## iter 10 value 612.655382
## iter 20 value 572.963371
## iter 30 value 564.273698
## iter 40 value 561.371289
## iter 50 value 559.497120
## iter 60 value 559.021720
## iter 70 value 558.390088
## iter 80 value 557.169070
## iter 90 value 556.689497
## final value 556.680334
## converged
## # weights: 51
## initial value 1384.627968
## iter 10 value 584.841876
## iter 20 value 555.836946
## iter 30 value 539.255330
## iter 40 value 532.394931
## iter 50 value 530.430998
## iter 60 value 529.980286
## iter 70 value 529.506084
## iter 80 value 529.046772
## iter 90 value 528.918015
## iter 100 value 528.915239
## final value 528.915239
## stopped after 100 iterations
## # weights: 11
## initial value 1266.935479
## iter 10 value 612.371507
## iter 20 value 594.607876
## iter 30 value 588.398213
## iter 40 value 585.861227
## iter 50 value 585.333357
## iter 60 value 585.312468
## final value 585.296799
## converged
## # weights: 31
## initial value 1334.638290
## iter 10 value 618.152985
## iter 20 value 574.445582
## iter 30 value 561.056074
## iter 40 value 552.114682
## iter 50 value 540.346817
## iter 60 value 533.319746
## iter 70 value 532.763289
## iter 80 value 532.636789
## iter 90 value 532.153017
## iter 100 value 531.790478
## final value 531.790478
## stopped after 100 iterations

```

```

## # weights: 51
## initial value 1368.943900
## iter 10 value 596.323432
## iter 20 value 562.055682
## iter 30 value 533.878794
## iter 40 value 514.440029
## iter 50 value 505.101972
## iter 60 value 500.428252
## iter 70 value 498.101902
## iter 80 value 496.128421
## iter 90 value 495.204539
## iter 100 value 494.689464
## final value 494.689464
## stopped after 100 iterations
## # weights: 11
## initial value 1017.716679
## iter 10 value 598.176348
## iter 20 value 586.983777
## iter 30 value 577.305014
## iter 40 value 576.551442
## final value 576.542163
## converged
## # weights: 31
## initial value 900.565714
## iter 10 value 578.252689
## iter 20 value 557.890626
## iter 30 value 538.117768
## iter 40 value 530.437452
## iter 50 value 522.529847
## iter 60 value 516.707138
## iter 70 value 514.669879
## iter 80 value 514.150734
## iter 90 value 513.752379
## iter 100 value 513.585502
## final value 513.585502
## stopped after 100 iterations
## # weights: 51
## initial value 1134.695021
## iter 10 value 561.883432
## iter 20 value 529.473966
## iter 30 value 505.198016
## iter 40 value 494.499177
## iter 50 value 474.370272
## iter 60 value 460.115096
## iter 70 value 458.351849
## iter 80 value 458.314667
## final value 458.314622
## converged
## # weights: 11
## initial value 889.207532
## iter 10 value 601.370461
## iter 20 value 580.487719
## final value 580.430113
## converged

```

```

## # weights: 31
## initial value 1347.092442
## iter 10 value 588.617364
## iter 20 value 559.103359
## iter 30 value 551.984033
## iter 40 value 550.789801
## iter 50 value 548.824827
## iter 60 value 547.039758
## iter 70 value 546.779392
## iter 80 value 546.602809
## iter 90 value 546.543325
## final value 546.540769
## converged
## # weights: 51
## initial value 1080.886383
## iter 10 value 571.960042
## iter 20 value 544.989271
## iter 30 value 530.319260
## iter 40 value 525.317647
## iter 50 value 523.217128
## iter 60 value 521.447090
## iter 70 value 520.254112
## iter 80 value 520.219585
## final value 520.219088
## converged
## # weights: 11
## initial value 1130.608537
## iter 10 value 594.263009
## iter 20 value 577.053913
## iter 30 value 576.551989
## final value 576.546218
## converged
## # weights: 31
## initial value 1176.148777
## iter 10 value 573.333600
## iter 20 value 546.176105
## iter 30 value 533.088340
## iter 40 value 526.056412
## iter 50 value 512.203967
## iter 60 value 510.332728
## iter 70 value 510.181935
## iter 80 value 509.297107
## iter 90 value 506.937821
## iter 100 value 506.859023
## final value 506.859023
## stopped after 100 iterations
## # weights: 51
## initial value 848.104721
## iter 10 value 574.348236
## iter 20 value 536.305034
## iter 30 value 516.893597
## iter 40 value 496.398878
## iter 50 value 479.035130
## iter 60 value 471.159057

```



```

## iter 70 value 469.254005
## iter 80 value 469.000517
## iter 90 value 468.889339
## iter 100 value 468.058269
## final value 468.058269
## stopped after 100 iterations
## # weights: 11
## initial value 1315.772261
## iter 10 value 605.745363
## iter 20 value 593.369346
## iter 30 value 589.978541
## iter 40 value 589.575795
## iter 40 value 589.575792
## iter 40 value 589.575792
## final value 589.575792
## converged
## # weights: 31
## initial value 1298.643697
## iter 10 value 632.888352
## iter 20 value 574.227233
## iter 30 value 562.632496
## iter 40 value 554.605816
## iter 50 value 549.206702
## iter 60 value 544.266546
## iter 70 value 542.811644
## iter 80 value 541.743027
## iter 90 value 540.601425
## iter 100 value 539.412964
## final value 539.412964
## stopped after 100 iterations
## # weights: 51
## initial value 899.747966
## iter 10 value 590.748250
## iter 20 value 548.858276
## iter 30 value 527.142346
## iter 40 value 505.179236
## iter 50 value 486.451187
## iter 60 value 478.530731
## iter 70 value 474.730593
## iter 80 value 474.530313
## iter 90 value 474.257596
## iter 100 value 474.251303
## final value 474.251303
## stopped after 100 iterations
## # weights: 11
## initial value 1313.263190
## iter 10 value 643.271012
## iter 20 value 597.694806
## iter 30 value 594.311493
## final value 594.123493
## converged
## # weights: 31
## initial value 876.335370
## iter 10 value 593.262446

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## iter 20 value 571.833865
## iter 30 value 566.135805
## iter 40 value 561.531031
## iter 50 value 559.074635
## iter 60 value 558.978092
## final value 558.976757
## converged
## # weights: 51
## initial value 1130.805792
## iter 10 value 598.325795
## iter 20 value 576.993633
## iter 30 value 567.209656
## iter 40 value 552.557993
## iter 50 value 541.277999
## iter 60 value 536.786385
## iter 70 value 534.837183
## iter 80 value 534.027596
## iter 90 value 533.933122
## iter 100 value 533.927001
## final value 533.927001
## stopped after 100 iterations
## # weights: 11
## initial value 819.496326
## iter 10 value 596.069858
## iter 20 value 589.950360
## iter 30 value 589.581424
## final value 589.581074
## converged
## # weights: 31
## initial value 881.655311
## iter 10 value 587.221462
## iter 20 value 557.107182
## iter 30 value 544.812011
## iter 40 value 535.187375
## iter 50 value 533.584996
## iter 60 value 533.291162
## iter 70 value 533.255497
## iter 80 value 533.204489
## iter 90 value 533.004215
## iter 100 value 532.900817
## final value 532.900817
## stopped after 100 iterations
## # weights: 51
## initial value 1990.573349
## iter 10 value 596.080147
## iter 20 value 554.775207
## iter 30 value 531.510793
## iter 40 value 521.336543
## iter 50 value 508.879323
## iter 60 value 497.068906
## iter 70 value 492.951290
## iter 80 value 491.942655
## iter 90 value 491.690697
## iter 100 value 491.297833

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## final value 491.297833
## stopped after 100 iterations
## # weights: 11
## initial value 1350.331343
## iter 10 value 583.637722
## iter 20 value 558.612435
## iter 30 value 556.234912
## iter 40 value 546.139708
## iter 50 value 543.402496
## iter 60 value 543.056155
## final value 543.048769
## converged
## # weights: 31
## initial value 1124.267010
## iter 10 value 565.900797
## iter 20 value 521.204945
## iter 30 value 508.951457
## iter 40 value 496.054366
## iter 50 value 494.423966
## iter 60 value 493.146729
## iter 70 value 488.815105
## iter 80 value 486.731030
## iter 90 value 486.234152
## iter 100 value 483.749262
## final value 483.749262
## stopped after 100 iterations
## # weights: 51
## initial value 790.460038
## iter 10 value 513.430649
## iter 20 value 486.228378
## iter 30 value 459.641952
## iter 40 value 440.922292
## iter 50 value 428.603527
## iter 60 value 419.881712
## iter 70 value 414.085356
## iter 80 value 412.961975
## iter 90 value 412.414689
## iter 100 value 412.362067
## final value 412.362067
## stopped after 100 iterations
## # weights: 11
## initial value 827.945441
## iter 10 value 617.523051
## iter 20 value 564.067155
## iter 30 value 550.293868
## iter 40 value 548.562070
## final value 548.562006
## converged
## # weights: 31
## initial value 1665.609185
## iter 10 value 612.342595
## iter 20 value 545.560227
## iter 30 value 520.444405
## iter 40 value 515.444117

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## iter 50 value 508.181508
## iter 60 value 507.327303
## iter 70 value 507.240393
## iter 80 value 507.182364
## iter 90 value 507.177665
## final value 507.177442
## converged
## # weights: 51
## initial value 1301.940382
## iter 10 value 553.571721
## iter 20 value 519.527059
## iter 30 value 499.181089
## iter 40 value 493.804349
## iter 50 value 493.194329
## iter 60 value 492.549961
## iter 70 value 492.065114
## iter 80 value 490.095129
## iter 90 value 487.648229
## iter 100 value 486.803096
## final value 486.803096
## stopped after 100 iterations
## # weights: 11
## initial value 948.023353
## iter 10 value 587.928670
## iter 20 value 551.861511
## iter 30 value 546.118916
## iter 40 value 543.156560
## final value 543.055484
## converged
## # weights: 31
## initial value 1193.976440
## iter 10 value 557.314327
## iter 20 value 519.739736
## iter 30 value 512.620538
## iter 40 value 510.138089
## iter 50 value 509.675107
## iter 60 value 508.687822
## iter 70 value 508.374038
## iter 80 value 507.730626
## iter 90 value 506.634130
## iter 100 value 506.486145
## final value 506.486145
## stopped after 100 iterations
## # weights: 51
## initial value 848.907880
## iter 10 value 532.950833
## iter 20 value 497.206754
## iter 30 value 475.426374
## iter 40 value 461.454935
## iter 50 value 450.033040
## iter 60 value 439.458071
## iter 70 value 436.822465
## iter 80 value 436.411059
## iter 90 value 436.222432

```

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## iter 100 value 435.601386
## final value 435.601386
## stopped after 100 iterations
## # weights: 11
## initial value 906.734019
## iter 10 value 565.460910
## iter 20 value 561.143318
## iter 30 value 561.134017
## final value 561.134010
## converged
## # weights: 31
## initial value 1035.038500
## iter 10 value 567.952827
## iter 20 value 533.402336
## iter 30 value 522.271277
## iter 40 value 518.617010
## iter 50 value 513.665690
## iter 60 value 506.598539
## iter 70 value 503.270472
## iter 80 value 502.258819
## iter 90 value 500.447418
## iter 100 value 499.868899
## final value 499.868899
## stopped after 100 iterations
## # weights: 51
## initial value 1480.953187
## iter 10 value 563.422111
## iter 20 value 527.879135
## iter 30 value 510.807367
## iter 40 value 488.488244
## iter 50 value 478.595716
## iter 60 value 463.044952
## iter 70 value 450.216092
## iter 80 value 442.848309
## iter 90 value 439.111531
## iter 100 value 438.458955
## final value 438.458955
## stopped after 100 iterations
## # weights: 11
## initial value 996.157232
## iter 10 value 639.101296
## iter 20 value 572.818698
## iter 30 value 566.209727
## final value 565.958250
## converged
## # weights: 31
## initial value 1010.638125
## iter 10 value 657.640321
## iter 20 value 607.422147
## iter 30 value 558.853724
## iter 40 value 547.933674
## iter 50 value 545.018285
## iter 60 value 542.153592
## iter 70 value 541.998686

```

```

## iter 80 value 541.691216
## iter 90 value 541.619750
## final value 541.619017
## converged
## # weights: 51
## initial value 1032.833214
## iter 10 value 569.489613
## iter 20 value 543.399148
## iter 30 value 527.770013
## iter 40 value 523.133495
## iter 50 value 516.523334
## iter 60 value 511.794760
## iter 70 value 509.924062
## iter 80 value 509.619309
## iter 90 value 509.599903
## final value 509.599697
## converged
## # weights: 11
## initial value 876.257320
## iter 10 value 616.486516
## iter 20 value 584.218850
## iter 30 value 581.315823
## iter 40 value 580.529892
## iter 50 value 577.305171
## iter 60 value 577.151993
## iter 70 value 577.027675
## iter 80 value 576.993479
## iter 90 value 576.983179
## iter 100 value 576.970024
## final value 576.970024
## stopped after 100 iterations
## # weights: 31
## initial value 872.710873
## iter 10 value 558.150159
## iter 20 value 542.794763
## iter 30 value 537.340093
## iter 40 value 527.565309
## iter 50 value 521.408965
## iter 60 value 521.122352
## iter 70 value 520.066664
## iter 80 value 519.150833
## iter 90 value 518.617372
## iter 100 value 518.485580
## final value 518.485580
## stopped after 100 iterations
## # weights: 51
## initial value 816.870085
## iter 10 value 554.294723
## iter 20 value 528.522336
## iter 30 value 505.302595
## iter 40 value 487.981657
## iter 50 value 478.217218
## iter 60 value 468.522265
## iter 70 value 458.512078

```

```

## iter 80 value 452.099871
## iter 90 value 450.397591
## iter 100 value 449.903667
## final value 449.903667
## stopped after 100 iterations
## # weights: 11
## initial value 1218.556013
## iter 10 value 659.483203
## iter 20 value 592.621325
## iter 30 value 570.079677
## iter 40 value 567.358185
## iter 50 value 566.229862
## final value 566.229487
## converged
## # weights: 31
## initial value 824.348446
## iter 10 value 598.776316
## iter 20 value 540.339753
## iter 30 value 524.759396
## iter 40 value 522.446481
## iter 50 value 520.550537
## iter 60 value 517.702835
## iter 70 value 516.736079
## iter 80 value 516.297262
## iter 90 value 513.724604
## iter 100 value 510.211896
## final value 510.211896
## stopped after 100 iterations
## # weights: 51
## initial value 826.227530
## iter 10 value 569.215501
## iter 20 value 526.274972
## iter 30 value 503.875647
## iter 40 value 491.137452
## iter 50 value 471.146656
## iter 60 value 455.451900
## iter 70 value 452.457614
## iter 80 value 452.094189
## iter 90 value 452.076738
## final value 452.076469
## converged
## # weights: 11
## initial value 1069.319422
## iter 10 value 616.333550
## iter 20 value 586.551159
## iter 30 value 573.405717
## iter 40 value 572.068514
## final value 572.068488
## converged
## # weights: 31
## initial value 967.340704
## iter 10 value 596.159400
## iter 20 value 549.084578
## iter 30 value 538.905990

```

```

## iter 40 value 536.009403
## iter 50 value 534.870849
## iter 60 value 534.626286
## iter 70 value 534.621601
## iter 80 value 534.619387
## final value 534.619262
## converged
## # weights: 51
## initial value 874.812258
## iter 10 value 571.520406
## iter 20 value 532.837623
## iter 30 value 518.759395
## iter 40 value 514.722717
## iter 50 value 513.560107
## iter 60 value 512.699909
## iter 70 value 508.180390
## iter 80 value 506.122736
## iter 90 value 505.222345
## iter 100 value 504.980005
## final value 504.980005
## stopped after 100 iterations
## # weights: 11
## initial value 1401.135453
## iter 10 value 621.715865
## iter 20 value 610.280583
## iter 30 value 586.012097
## iter 40 value 568.309384
## iter 50 value 566.553993
## iter 60 value 566.235550
## iter 60 value 566.235547
## iter 60 value 566.235546
## final value 566.235546
## converged
## # weights: 31
## initial value 994.336960
## iter 10 value 576.787245
## iter 20 value 541.575579
## iter 30 value 525.012477
## iter 40 value 514.746946
## iter 50 value 512.677695
## iter 60 value 505.251113
## iter 70 value 502.348976
## iter 80 value 501.755885
## iter 90 value 501.328268
## iter 100 value 499.269827
## final value 499.269827
## stopped after 100 iterations
## # weights: 51
## initial value 1197.583844
## iter 10 value 584.764602
## iter 20 value 531.038165
## iter 30 value 503.787195
## iter 40 value 482.366219
## iter 50 value 473.561238

```



```

## iter 60 value 463.818469
## iter 70 value 450.823919
## iter 80 value 448.218830
## iter 90 value 447.344037
## iter 100 value 446.960932
## final value 446.960932
## stopped after 100 iterations
## # weights: 11
## initial value 841.335379
## iter 10 value 560.620411
## iter 20 value 544.828472
## iter 30 value 538.557337
## iter 40 value 532.275286
## iter 50 value 531.787421
## final value 531.730204
## converged
## # weights: 31
## initial value 836.289063
## iter 10 value 536.044413
## iter 20 value 513.026549
## iter 30 value 495.541745
## iter 40 value 491.249503
## iter 50 value 482.325826
## iter 60 value 472.079703
## iter 70 value 469.181554
## iter 80 value 468.267562
## iter 90 value 467.421528
## iter 100 value 466.605300
## final value 466.605300
## stopped after 100 iterations
## # weights: 51
## initial value 891.398528
## iter 10 value 527.963636
## iter 20 value 490.714093
## iter 30 value 465.699310
## iter 40 value 453.655701
## iter 50 value 445.085751
## iter 60 value 430.481184
## iter 70 value 425.550477
## iter 80 value 422.125636
## iter 90 value 416.955370
## iter 100 value 413.965897
## final value 413.965897
## stopped after 100 iterations
## # weights: 11
## initial value 896.603420
## iter 10 value 557.355105
## iter 20 value 537.205696
## iter 30 value 536.101049
## final value 536.050910
## converged
## # weights: 31
## initial value 1388.045639
## iter 10 value 591.736761

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```

## iter 20 value 524.790022
## iter 30 value 509.630273
## iter 40 value 505.139704
## iter 50 value 504.935710
## iter 60 value 504.875798
## iter 70 value 504.867604
## iter 80 value 504.865169
## final value 504.865123
## converged
## # weights: 51
## initial value 727.221197
## iter 10 value 531.589147
## iter 20 value 508.429349
## iter 30 value 493.083957
## iter 40 value 486.816810
## iter 50 value 482.760247
## iter 60 value 479.590428
## iter 70 value 477.798408
## iter 80 value 477.717980
## iter 90 value 477.345877
## iter 100 value 476.888108
## final value 476.888108
## stopped after 100 iterations
## # weights: 11
## initial value 1411.182134
## iter 10 value 587.851975
## iter 20 value 556.795834
## iter 30 value 553.534555
## iter 40 value 552.767677
## iter 50 value 548.221962
## iter 60 value 541.753284
## iter 70 value 539.094087
## iter 80 value 532.543330
## iter 90 value 531.795173
## final value 531.736087
## converged
## # weights: 31
## initial value 1220.651735
## iter 10 value 537.466970
## iter 20 value 515.666811
## iter 30 value 504.049634
## iter 40 value 494.420531
## iter 50 value 489.655711
## iter 60 value 487.981690
## iter 70 value 487.172240
## iter 80 value 486.636153
## iter 90 value 485.974064
## iter 100 value 485.141542
## final value 485.141542
## stopped after 100 iterations
## # weights: 51
## initial value 968.852600
## iter 10 value 529.243555
## iter 20 value 491.522711

```

```

## iter 30 value 459.032277
## iter 40 value 443.879596
## iter 50 value 425.505615
## iter 60 value 418.100117
## iter 70 value 416.904522
## iter 80 value 416.683948
## iter 90 value 416.329071
## iter 100 value 416.249245
## final value 416.249245
## stopped after 100 iterations
## # weights: 11
## initial value 1019.546794
## iter 10 value 602.426774
## iter 20 value 531.873008
## iter 30 value 529.922846
## final value 529.874301
## converged
## # weights: 31
## initial value 1086.974854
## iter 10 value 523.547533
## iter 20 value 488.497504
## iter 30 value 480.217363
## iter 40 value 471.385565
## iter 50 value 462.429294
## iter 60 value 454.185300
## iter 70 value 452.628842
## iter 80 value 451.741760
## iter 90 value 451.428258
## iter 100 value 450.715928
## final value 450.715928
## stopped after 100 iterations
## # weights: 51
## initial value 1477.108229
## iter 10 value 522.759083
## iter 20 value 488.544080
## iter 30 value 478.354460
## iter 40 value 467.994884
## iter 50 value 436.276907
## iter 60 value 421.206274
## iter 70 value 420.284243
## iter 80 value 420.278652
## final value 420.278644
## converged
## # weights: 11
## initial value 1220.780876
## iter 10 value 556.534261
## iter 20 value 537.431714
## iter 30 value 534.885557
## final value 534.723452
## converged
## # weights: 31
## initial value 860.447011
## iter 10 value 554.356972
## iter 20 value 528.572822

```

```

## iter 30 value 521.109559
## iter 40 value 515.990883
## iter 50 value 510.306784
## iter 60 value 508.743294
## iter 70 value 508.687746
## final value 508.687654
## converged
## # weights: 51
## initial value 808.041251
## iter 10 value 529.907226
## iter 20 value 510.202427
## iter 30 value 499.344089
## iter 40 value 493.345936
## iter 50 value 491.841683
## iter 60 value 491.508739
## iter 70 value 491.097009
## iter 80 value 491.092485
## iter 80 value 491.092483
## iter 80 value 491.092483
## final value 491.092483
## converged
## # weights: 11
## initial value 860.843914
## iter 10 value 548.288101
## iter 20 value 530.355673
## iter 30 value 529.880334
## iter 40 value 529.879620
## iter 40 value 529.879620
## iter 40 value 529.879620
## final value 529.879620
## converged
## # weights: 31
## initial value 804.690932
## iter 10 value 536.782054
## iter 20 value 505.490237
## iter 30 value 488.660870
## iter 40 value 482.677418
## iter 50 value 473.613272
## iter 60 value 472.400158
## iter 70 value 471.232037
## iter 80 value 470.706887
## iter 90 value 469.816889
## iter 100 value 467.812564
## final value 467.812564
## stopped after 100 iterations
## # weights: 51
## initial value 843.258072
## iter 10 value 517.987525
## iter 20 value 494.711384
## iter 30 value 477.446012
## iter 40 value 460.188134
## iter 50 value 451.278664
## iter 60 value 442.004746
## iter 70 value 427.587545

```

```

## iter 80 value 423.580804
## iter 90 value 422.794519
## iter 100 value 422.558151
## final value 422.558151
## stopped after 100 iterations
## # weights: 11
## initial value 1520.950169
## iter 10 value 759.523203
## iter 20 value 638.655995
## iter 30 value 616.365293
## iter 40 value 608.526275
## iter 50 value 585.815752
## iter 60 value 584.210389
## final value 584.164214
## converged
## # weights: 31
## initial value 1123.070828
## iter 10 value 579.996688
## iter 20 value 560.213064
## iter 30 value 546.715042
## iter 40 value 524.365128
## iter 50 value 511.476873
## iter 60 value 509.826297
## iter 70 value 509.107324
## iter 80 value 508.535998
## iter 90 value 507.659169
## iter 100 value 507.519467
## final value 507.519467
## stopped after 100 iterations
## # weights: 51
## initial value 935.709623
## iter 10 value 576.114006
## iter 20 value 529.571993
## iter 30 value 504.887452
## iter 40 value 493.426548
## iter 50 value 468.426040
## iter 60 value 459.802941
## iter 70 value 458.279497
## iter 80 value 457.910062
## iter 90 value 457.826675
## iter 100 value 457.780963
## final value 457.780963
## stopped after 100 iterations
## # weights: 11
## initial value 955.089740
## iter 10 value 645.273612
## iter 20 value 599.826230
## iter 30 value 588.942580
## iter 40 value 588.204213
## final value 588.204194
## converged
## # weights: 31
## initial value 1029.967028
## iter 10 value 597.138554

```

```

## iter 20 value 570.160273
## iter 30 value 562.838109
## iter 40 value 560.674353
## iter 50 value 557.226452
## iter 60 value 548.783282
## iter 70 value 548.442747
## iter 80 value 548.385381
## final value 548.383299
## converged
## # weights: 51
## initial value 1429.365652
## iter 10 value 585.469430
## iter 20 value 551.827596
## iter 30 value 537.649490
## iter 40 value 530.602448
## iter 50 value 526.739050
## iter 60 value 525.891386
## iter 70 value 525.543790
## iter 80 value 525.308646
## iter 90 value 525.296353
## final value 525.296125
## converged
## # weights: 11
## initial value 887.032510
## iter 10 value 590.688849
## iter 20 value 584.185134
## final value 584.168599
## converged
## # weights: 31
## initial value 847.239496
## iter 10 value 621.138531
## iter 20 value 582.291793
## iter 30 value 572.114125
## iter 40 value 564.763337
## iter 50 value 558.777190
## iter 60 value 557.684560
## iter 70 value 556.875701
## iter 80 value 556.145785
## iter 90 value 555.620981
## iter 100 value 555.309013
## final value 555.309013
## stopped after 100 iterations
## # weights: 51
## initial value 873.263244
## iter 10 value 572.009628
## iter 20 value 527.542584
## iter 30 value 506.426039
## iter 40 value 496.274040
## iter 50 value 482.173981
## iter 60 value 469.776547
## iter 70 value 467.435530
## iter 80 value 466.908353
## iter 90 value 466.720009
## iter 100 value 466.562651

```

```

## final value 466.562651
## stopped after 100 iterations
## # weights: 11
## initial value 1058.562738
## iter 10 value 593.438759
## iter 20 value 576.654374
## iter 30 value 573.403673
## iter 40 value 573.205415
## final value 573.179827
## converged
## # weights: 31
## initial value 860.481341
## iter 10 value 571.226822
## iter 20 value 547.401554
## iter 30 value 527.529384
## iter 40 value 511.977232
## iter 50 value 503.618960
## iter 60 value 499.268449
## iter 70 value 496.251347
## iter 80 value 495.076834
## iter 90 value 494.781746
## iter 100 value 494.733085
## final value 494.733085
## stopped after 100 iterations
## # weights: 51
## initial value 1212.713637
## iter 10 value 571.835308
## iter 20 value 530.413940
## iter 30 value 510.567999
## iter 40 value 490.132787
## iter 50 value 472.484927
## iter 60 value 458.267923
## iter 70 value 456.215162
## iter 80 value 455.701875
## iter 90 value 455.573718
## final value 455.573419
## converged
## # weights: 11
## initial value 1223.105616
## iter 10 value 610.578032
## iter 20 value 601.022901
## iter 30 value 581.558273
## iter 40 value 577.897145
## iter 50 value 577.839296
## final value 577.836794
## converged
## # weights: 31
## initial value 1449.942195
## iter 10 value 581.429742
## iter 20 value 558.399346
## iter 30 value 551.337936
## iter 40 value 548.547719
## iter 50 value 548.372093
## final value 548.370620

```

```

## converged
## # weights:  51
## initial  value 1178.187606
## iter   10 value 579.961430
## iter   20 value 556.649800
## iter   30 value 541.530059
## iter   40 value 535.656776
## iter   50 value 532.818504
## iter   60 value 529.694413
## iter   70 value 528.023684
## iter   80 value 526.525948
## iter   90 value 515.211033
## iter  100 value 508.542339
## final   value 508.542339
## stopped after 100 iterations
## # weights:   11
## initial  value 1143.646203
## iter   10 value 580.788341
## iter   20 value 573.803166
## iter   30 value 573.393959
## iter   40 value 573.186042
## final   value 573.185614
## converged
## # weights:   31
## initial  value 874.750005
## iter   10 value 602.373771
## iter   20 value 565.114748
## iter   30 value 548.093492
## iter   40 value 538.683237
## iter   50 value 531.437518
## iter   60 value 520.668191
## iter   70 value 520.135620
## iter   80 value 519.883907
## iter   90 value 519.810595
## iter  100 value 519.728825
## final   value 519.728825
## stopped after 100 iterations
## # weights:   51
## initial  value 1120.865926
## iter   10 value 568.421695
## iter   20 value 529.724964
## iter   30 value 495.231830
## iter   40 value 477.403252
## iter   50 value 467.024784
## iter   60 value 457.176948
## iter   70 value 455.248586
## iter   80 value 454.218370
## iter   90 value 454.104999
## iter  100 value 453.968629
## final   value 453.968629
## stopped after 100 iterations
## # weights:   11
## initial  value 917.818366
## iter   10 value 583.209798

```



```

## iter 20 value 569.090416
## iter 30 value 568.035979
## iter 40 value 567.783610
## final value 567.783495
## converged
## # weights: 31
## initial value 838.093189
## iter 10 value 561.469231
## iter 20 value 541.499307
## iter 30 value 531.171395
## iter 40 value 520.269462
## iter 50 value 510.222769
## iter 60 value 506.688333
## iter 70 value 506.386045
## iter 80 value 505.883210
## iter 90 value 503.305527
## iter 100 value 502.783385
## final value 502.783385
## stopped after 100 iterations
## # weights: 51
## initial value 1004.085866
## iter 10 value 562.403139
## iter 20 value 521.698757
## iter 30 value 507.521999
## iter 40 value 496.143095
## iter 50 value 470.586682
## iter 60 value 451.853716
## iter 70 value 446.305672
## iter 80 value 445.800033
## iter 90 value 445.798727
## iter 90 value 445.798727
## final value 445.798727
## converged
## # weights: 11
## initial value 1368.498553
## iter 10 value 709.714614
## iter 20 value 606.088895
## iter 30 value 578.348254
## iter 40 value 573.278407
## iter 50 value 573.036768
## final value 573.036245
## converged
## # weights: 31
## initial value 1013.690151
## iter 10 value 585.642977
## iter 20 value 559.437318
## iter 30 value 551.051863
## iter 40 value 546.847139
## iter 50 value 545.504177
## iter 60 value 544.129782
## iter 70 value 542.632763
## iter 80 value 539.595261
## iter 90 value 536.063867
## iter 100 value 535.635663

```

```

## final value 535.635663
## stopped after 100 iterations
## # weights: 51
## initial value 1069.748556
## iter 10 value 562.643168
## iter 20 value 543.983642
## iter 30 value 527.066699
## iter 40 value 519.657938
## iter 50 value 516.971320
## iter 60 value 515.918637
## iter 70 value 515.590190
## iter 80 value 515.525732
## iter 90 value 515.507274
## iter 100 value 515.505773
## final value 515.505773
## stopped after 100 iterations
## # weights: 11
## initial value 1079.154100
## iter 10 value 579.923431
## iter 20 value 567.877195
## iter 30 value 567.796770
## final value 567.787609
## converged
## # weights: 31
## initial value 1149.497535
## iter 10 value 566.488361
## iter 20 value 535.428425
## iter 30 value 528.619493
## iter 40 value 524.607252
## iter 50 value 518.269838
## iter 60 value 512.764632
## iter 70 value 510.930162
## iter 80 value 508.220033
## iter 90 value 506.978815
## iter 100 value 504.100835
## final value 504.100835
## stopped after 100 iterations
## # weights: 51
## initial value 1418.084036
## iter 10 value 556.361250
## iter 20 value 518.426006
## iter 30 value 501.020422
## iter 40 value 492.023604
## iter 50 value 476.529303
## iter 60 value 467.284407
## iter 70 value 465.059074
## iter 80 value 464.849139
## iter 90 value 464.535799
## iter 100 value 463.610936
## final value 463.610936
## stopped after 100 iterations
## # weights: 11
## initial value 987.164002
## iter 10 value 574.148204

```

```

## iter 20 value 558.750242
## iter 30 value 556.598117
## iter 40 value 556.170508
## final value 556.170498
## converged
## # weights: 31
## initial value 795.788981
## iter 10 value 546.320703
## iter 20 value 528.400006
## iter 30 value 520.322327
## iter 40 value 512.144585
## iter 50 value 508.609212
## iter 60 value 500.675440
## iter 70 value 499.937133
## iter 80 value 499.107176
## iter 90 value 498.449379
## iter 100 value 498.129102
## final value 498.129102
## stopped after 100 iterations
## # weights: 51
## initial value 1046.053713
## iter 10 value 562.030633
## iter 20 value 517.808901
## iter 30 value 488.056049
## iter 40 value 475.017693
## iter 50 value 459.425623
## iter 60 value 441.000925
## iter 70 value 428.807443
## iter 80 value 423.765326
## iter 90 value 423.737162
## final value 423.736014
## converged
## # weights: 11
## initial value 946.835136
## iter 10 value 695.773177
## iter 20 value 574.757388
## iter 30 value 563.402159
## final value 561.842332
## converged
## # weights: 31
## initial value 896.835096
## iter 10 value 574.568747
## iter 20 value 542.294850
## iter 30 value 529.625741
## iter 40 value 527.977053
## iter 50 value 527.897867
## iter 60 value 527.650169
## iter 70 value 525.201552
## iter 80 value 523.997515
## iter 90 value 521.768495
## iter 100 value 519.943896
## final value 519.943896
## stopped after 100 iterations
## # weights: 51

```

```

## initial value 1254.393141
## iter 10 value 568.880253
## iter 20 value 540.685953
## iter 30 value 528.030150
## iter 40 value 519.696799
## iter 50 value 515.890456
## iter 60 value 514.382059
## iter 70 value 510.706453
## iter 80 value 498.131390
## iter 90 value 495.387217
## iter 100 value 494.388767
## final value 494.388767
## stopped after 100 iterations
## # weights: 11
## initial value 1083.125990
## iter 10 value 578.284069
## iter 20 value 556.572859
## iter 30 value 556.180065
## iter 40 value 556.176773
## iter 40 value 556.176769
## final value 556.176538
## converged
## # weights: 31
## initial value 1249.807794
## iter 10 value 554.221809
## iter 20 value 525.582592
## iter 30 value 510.476571
## iter 40 value 497.148387
## iter 50 value 493.888034
## iter 60 value 491.980189
## iter 70 value 491.497224
## iter 80 value 491.414827
## iter 90 value 491.262129
## iter 100 value 490.973416
## final value 490.973416
## stopped after 100 iterations
## # weights: 51
## initial value 1086.003484
## iter 10 value 541.680161
## iter 20 value 511.938768
## iter 30 value 492.978202
## iter 40 value 478.378543
## iter 50 value 471.447840
## iter 60 value 453.567228
## iter 70 value 448.704898
## iter 80 value 446.021927
## iter 90 value 444.923171
## iter 100 value 444.526502
## final value 444.526502
## stopped after 100 iterations
## # weights: 11
## initial value 1050.392134
## iter 10 value 595.831480
## iter 20 value 579.765116

```

```

## iter 30 value 579.153054
## iter 40 value 577.637641
## iter 50 value 577.077912
## iter 60 value 577.067197
## final value 577.067039
## converged
## # weights: 31
## initial value 1104.771111
## iter 10 value 581.048055
## iter 20 value 554.543240
## iter 30 value 538.312968
## iter 40 value 532.819783
## iter 50 value 523.950545
## iter 60 value 515.797125
## iter 70 value 515.160305
## iter 80 value 515.072204
## iter 90 value 515.040910
## iter 100 value 513.397433
## final value 513.397433
## stopped after 100 iterations
## # weights: 51
## initial value 925.768538
## iter 10 value 573.983372
## iter 20 value 537.604837
## iter 30 value 512.731763
## iter 40 value 495.136366
## iter 50 value 485.176037
## iter 60 value 474.887826
## iter 70 value 460.746581
## iter 80 value 458.879766
## iter 90 value 458.831099
## final value 458.830425
## converged
## # weights: 11
## initial value 1027.252527
## iter 10 value 588.521670
## iter 20 value 581.297706
## iter 30 value 581.138264
## final value 581.134671
## converged
## # weights: 31
## initial value 1392.974053
## iter 10 value 586.997645
## iter 20 value 569.860163
## iter 30 value 560.337933
## iter 40 value 558.329549
## iter 50 value 557.291768
## iter 60 value 557.235448
## final value 557.235302
## converged
## # weights: 51
## initial value 1249.907994
## iter 10 value 593.898008
## iter 20 value 561.690931

```

```

## iter 30 value 545.419122
## iter 40 value 535.091868
## iter 50 value 527.750390
## iter 60 value 525.123882
## iter 70 value 524.001814
## iter 80 value 523.574924
## iter 90 value 523.552186
## iter 100 value 523.551482
## final value 523.551482
## stopped after 100 iterations
## # weights: 11
## initial value 1360.904291
## iter 10 value 589.269674
## iter 20 value 577.281905
## iter 30 value 577.072335
## final value 577.072278
## converged
## # weights: 31
## initial value 866.340482
## iter 10 value 600.755869
## iter 20 value 545.070307
## iter 30 value 541.489140
## iter 40 value 537.228428
## iter 50 value 527.492294
## iter 60 value 524.062296
## iter 70 value 523.902964
## iter 80 value 523.581519
## iter 90 value 523.442751
## iter 100 value 523.211675
## final value 523.211675
## stopped after 100 iterations
## # weights: 51
## initial value 770.668605
## iter 10 value 560.115590
## iter 20 value 530.954949
## iter 30 value 512.553856
## iter 40 value 494.260589
## iter 50 value 482.834943
## iter 60 value 481.956578
## iter 70 value 481.784551
## iter 80 value 481.563795
## iter 90 value 481.414458
## iter 100 value 481.213597
## final value 481.213597
## stopped after 100 iterations
## # weights: 11
## initial value 840.665790
## iter 10 value 637.771767
## iter 20 value 618.900509
## iter 30 value 618.830633
## final value 618.828958
## converged
## # weights: 31
## initial value 1320.127964

```

```

## iter 10 value 608.724934
## iter 20 value 587.160389
## iter 30 value 579.112273
## iter 40 value 570.398799
## iter 50 value 556.630820
## iter 60 value 547.765836
## iter 70 value 545.920045
## iter 80 value 545.396978
## iter 90 value 543.880212
## iter 100 value 543.856597
## final value 543.856597
## stopped after 100 iterations
## # weights: 51
## initial value 1420.188660
## iter 10 value 608.706865
## iter 20 value 571.413158
## iter 30 value 540.812365
## iter 40 value 527.408859
## iter 50 value 507.846316
## iter 60 value 486.484971
## iter 70 value 479.832244
## iter 80 value 479.764902
## iter 90 value 479.757737
## iter 100 value 479.738069
## final value 479.738069
## stopped after 100 iterations
## # weights: 11
## initial value 1048.337689
## iter 10 value 706.450222
## iter 20 value 690.606171
## iter 30 value 636.998738
## iter 40 value 624.900154
## iter 50 value 624.782010
## final value 624.779435
## converged
## # weights: 31
## initial value 1061.298305
## iter 10 value 634.779665
## iter 20 value 592.292434
## iter 30 value 587.026837
## iter 40 value 584.903092
## iter 50 value 584.520395
## iter 60 value 583.601487
## iter 70 value 583.145195
## iter 80 value 582.991915
## iter 90 value 582.987258
## final value 582.987236
## converged
## # weights: 51
## initial value 1574.273830
## iter 10 value 608.343920
## iter 20 value 585.462769
## iter 30 value 562.671698
## iter 40 value 554.031520

```

```

## iter 50 value 547.311641
## iter 60 value 544.305896
## iter 70 value 542.770009
## iter 80 value 542.147837
## iter 90 value 541.011200
## iter 100 value 540.926650
## final value 540.926650
## stopped after 100 iterations
## # weights: 11
## initial value 1049.505672
## iter 10 value 659.734444
## iter 20 value 644.813921
## iter 30 value 623.870630
## iter 40 value 619.657307
## iter 50 value 618.837071
## iter 50 value 618.837065
## iter 50 value 618.837065
## final value 618.837065
## converged
## # weights: 31
## initial value 976.937560
## iter 10 value 640.199264
## iter 20 value 605.053856
## iter 30 value 588.672492
## iter 40 value 578.669693
## iter 50 value 574.080469
## iter 60 value 572.933666
## iter 70 value 571.967273
## iter 80 value 571.229700
## iter 90 value 569.944088
## iter 100 value 569.637995
## final value 569.637995
## stopped after 100 iterations
## # weights: 51
## initial value 1018.636413
## iter 10 value 597.171585
## iter 20 value 547.562153
## iter 30 value 528.305740
## iter 40 value 516.808108
## iter 50 value 500.589468
## iter 60 value 496.134861
## iter 70 value 495.143762
## iter 80 value 494.791563
## iter 90 value 494.753422
## iter 100 value 494.614915
## final value 494.614915
## stopped after 100 iterations
## # weights: 11
## initial value 1171.459688
## iter 10 value 629.239550
## iter 20 value 594.091836
## iter 30 value 580.862468
## iter 40 value 580.251144
## iter 40 value 580.251138

```



```

## iter 40 value 580.251138
## final value 580.251138
## converged
## # weights: 31
## initial value 1547.735722
## iter 10 value 579.171649
## iter 20 value 541.005753
## iter 30 value 527.305492
## iter 40 value 519.712484
## iter 50 value 515.813109
## iter 60 value 511.458840
## iter 70 value 507.442073
## iter 80 value 506.927456
## iter 90 value 506.817323
## iter 100 value 506.713600
## final value 506.713600
## stopped after 100 iterations
## # weights: 51
## initial value 1148.277365
## iter 10 value 570.998407
## iter 20 value 519.824468
## iter 30 value 496.605512
## iter 40 value 492.135853
## iter 50 value 487.552039
## iter 60 value 478.722617
## iter 70 value 460.487808
## iter 80 value 454.917551
## iter 90 value 453.859591
## iter 100 value 453.836028
## final value 453.836028
## stopped after 100 iterations
## # weights: 11
## initial value 969.553087
## iter 10 value 629.018174
## iter 20 value 586.688494
## iter 30 value 583.735999
## final value 583.613169
## converged
## # weights: 31
## initial value 790.468217
## iter 10 value 587.430143
## iter 20 value 560.124094
## iter 30 value 550.201591
## iter 40 value 547.101204
## iter 50 value 545.526589
## iter 60 value 545.344927
## iter 70 value 545.319828
## final value 545.319789
## converged
## # weights: 51
## initial value 1584.143243
## iter 10 value 569.692756
## iter 20 value 539.307895
## iter 30 value 527.886345

```

```

## iter 40 value 526.509048
## iter 50 value 524.898419
## iter 60 value 523.119657
## iter 70 value 522.666870
## iter 80 value 522.295995
## iter 90 value 521.996094
## iter 100 value 521.763891
## final value 521.763891
## stopped after 100 iterations
## # weights: 11
## initial value 1132.122100
## iter 10 value 591.277958
## iter 20 value 583.206687
## iter 30 value 580.711924
## iter 40 value 580.260912
## final value 580.254459
## converged
## # weights: 31
## initial value 831.708907
## iter 10 value 571.279537
## iter 20 value 550.916863
## iter 30 value 542.452472
## iter 40 value 531.987155
## iter 50 value 525.401156
## iter 60 value 516.946798
## iter 70 value 507.712102
## iter 80 value 505.382825
## iter 90 value 504.091975
## iter 100 value 503.532399
## final value 503.532399
## stopped after 100 iterations
## # weights: 51
## initial value 866.770623
## iter 10 value 582.992287
## iter 20 value 548.916162
## iter 30 value 530.702727
## iter 40 value 524.513225
## iter 50 value 519.055554
## iter 60 value 510.322718
## iter 70 value 503.102110
## iter 80 value 499.573675
## iter 90 value 497.842204
## iter 100 value 495.760145
## final value 495.760145
## stopped after 100 iterations
## # weights: 11
## initial value 1405.034404
## iter 10 value 629.705941
## iter 20 value 591.841981
## iter 30 value 587.149647
## iter 40 value 583.513143
## iter 50 value 582.775769
## iter 60 value 582.760842
## final value 582.760779

```

```

## converged
## # weights: 31
## initial value 869.742359
## iter 10 value 579.155622
## iter 20 value 545.937823
## iter 30 value 537.626459
## iter 40 value 519.764653
## iter 50 value 507.672269
## iter 60 value 503.736448
## final value 503.726638
## converged
## # weights: 51
## initial value 1115.208163
## iter 10 value 577.006086
## iter 20 value 533.811503
## iter 30 value 504.978888
## iter 40 value 493.174400
## iter 50 value 469.619568
## iter 60 value 458.547592
## iter 70 value 458.326833
## iter 80 value 458.287834
## iter 90 value 458.283758
## iter 90 value 458.283755
## iter 90 value 458.283755
## final value 458.283755
## converged
## # weights: 11
## initial value 854.950060
## iter 10 value 625.075508
## iter 20 value 589.389749
## iter 30 value 588.467785
## final value 588.395847
## converged
## # weights: 31
## initial value 1101.655161
## iter 10 value 601.724617
## iter 20 value 580.131955
## iter 30 value 564.909533
## iter 40 value 561.187222
## iter 50 value 560.118917
## iter 60 value 560.033684
## final value 560.032949
## converged
## # weights: 51
## initial value 1477.112234
## iter 10 value 592.232778
## iter 20 value 567.627636
## iter 30 value 540.859353
## iter 40 value 531.644685
## iter 50 value 529.114219
## iter 60 value 527.788800
## iter 70 value 527.083899
## iter 80 value 525.453777
## iter 90 value 523.581606

```

```

## iter 100 value 522.851020
## final value 522.851020
## stopped after 100 iterations
## # weights: 11
## initial value 1105.907481
## iter 10 value 604.497962
## iter 20 value 589.541584
## iter 30 value 583.259561
## iter 40 value 582.780866
## final value 582.765060
## converged
## # weights: 31
## initial value 1548.595806
## iter 10 value 587.362228
## iter 20 value 561.997159
## iter 30 value 548.095679
## iter 40 value 537.210983
## iter 50 value 522.602008
## iter 60 value 519.197079
## iter 70 value 518.708217
## iter 80 value 518.089723
## iter 90 value 517.237964
## iter 100 value 516.619300
## final value 516.619300
## stopped after 100 iterations
## # weights: 51
## initial value 1218.906544
## iter 10 value 593.001916
## iter 20 value 535.441543
## iter 30 value 492.588743
## iter 40 value 479.374579
## iter 50 value 470.541890
## iter 60 value 464.105090
## iter 70 value 463.452048
## iter 80 value 463.292242
## iter 90 value 463.180886
## iter 100 value 463.086596
## final value 463.086596
## stopped after 100 iterations
## # weights: 11
## initial value 840.910432
## iter 10 value 610.810563
## iter 20 value 594.207479
## iter 30 value 586.492902
## iter 40 value 576.448563
## iter 50 value 572.617084
## iter 60 value 569.217903
## iter 70 value 569.003622
## iter 80 value 568.706660
## iter 90 value 568.638837
## iter 100 value 568.627274
## final value 568.627274
## stopped after 100 iterations
## # weights: 31

```

```

## initial value 1444.044853
## iter 10 value 598.958719
## iter 20 value 562.849833
## iter 30 value 550.757606
## iter 40 value 543.248974
## iter 50 value 535.401667
## iter 60 value 532.477255
## iter 70 value 530.588532
## iter 80 value 530.079652
## iter 90 value 529.415551
## iter 100 value 527.186113
## final value 527.186113
## stopped after 100 iterations
## # weights: 51
## initial value 1012.657433
## iter 10 value 577.342798
## iter 20 value 547.283636
## iter 30 value 501.587011
## iter 40 value 468.957026
## iter 50 value 451.493340
## iter 60 value 444.434286
## iter 70 value 442.910845
## iter 80 value 442.836189
## final value 442.832175
## converged
## # weights: 11
## initial value 1286.325401
## iter 10 value 602.430880
## iter 20 value 576.016175
## iter 30 value 575.441705
## final value 575.373481
## converged
## # weights: 31
## initial value 804.246447
## iter 10 value 597.367364
## iter 20 value 568.248065
## iter 30 value 552.406741
## iter 40 value 547.494833
## iter 50 value 545.664497
## iter 60 value 545.358620
## iter 70 value 545.262783
## iter 80 value 545.239775
## final value 545.237478
## converged
## # weights: 51
## initial value 821.995855
## iter 10 value 581.018871
## iter 20 value 548.653242
## iter 30 value 534.776915
## iter 40 value 529.427251
## iter 50 value 526.653844
## iter 60 value 523.341497
## iter 70 value 522.258159
## iter 80 value 520.662955

```

```

## iter 90 value 520.063554
## iter 100 value 519.994886
## final value 519.994886
## stopped after 100 iterations
## # weights: 11
## initial value 1151.501124
## iter 10 value 600.805735
## iter 20 value 577.111860
## iter 30 value 574.566153
## iter 40 value 569.848033
## iter 50 value 568.987660
## iter 60 value 568.810927
## iter 70 value 568.644757
## iter 80 value 568.640297
## iter 90 value 568.626804
## iter 100 value 568.624104
## final value 568.624104
## stopped after 100 iterations
## # weights: 31
## initial value 1587.626100
## iter 10 value 584.844602
## iter 20 value 559.432009
## iter 30 value 541.446610
## iter 40 value 519.544677
## iter 50 value 508.785552
## iter 60 value 503.941784
## iter 70 value 502.641436
## iter 80 value 502.121636
## iter 90 value 501.784841
## iter 100 value 501.501939
## final value 501.501939
## stopped after 100 iterations
## # weights: 51
## initial value 861.857073
## iter 10 value 570.561589
## iter 20 value 534.863451
## iter 30 value 507.488488
## iter 40 value 484.896239
## iter 50 value 473.770389
## iter 60 value 468.807162
## iter 70 value 456.127416
## iter 80 value 446.123612
## iter 90 value 443.751364
## iter 100 value 443.024383
## final value 443.024383
## stopped after 100 iterations
## # weights: 11
## initial value 1078.659430
## iter 10 value 596.512787
## iter 20 value 582.092087
## iter 30 value 576.262620
## iter 40 value 575.222812
## final value 575.210231
## converged

```

```

## # weights: 31
## initial value 1041.869068
## iter 10 value 590.671945
## iter 20 value 564.653704
## iter 30 value 553.741897
## iter 40 value 550.027865
## iter 50 value 543.849556
## iter 60 value 541.201934
## iter 70 value 538.290625
## iter 80 value 537.787501
## iter 90 value 537.721563
## iter 100 value 537.700069
## final value 537.700069
## stopped after 100 iterations
## # weights: 51
## initial value 794.183714
## iter 10 value 586.826233
## iter 20 value 536.261793
## iter 30 value 513.099680
## iter 40 value 495.222708
## iter 50 value 476.374707
## iter 60 value 450.419577
## iter 70 value 445.542092
## iter 80 value 445.407079
## final value 445.406908
## converged
## # weights: 11
## initial value 863.391910
## iter 10 value 593.261844
## iter 20 value 580.930533
## iter 30 value 580.575941
## final value 580.575556
## converged
## # weights: 31
## initial value 1102.033098
## iter 10 value 579.761116
## iter 20 value 570.657190
## iter 30 value 560.873548
## iter 40 value 557.524384
## iter 50 value 557.006570
## iter 60 value 556.860671
## iter 70 value 556.535471
## iter 80 value 556.426800
## iter 90 value 556.415703
## iter 90 value 556.415698
## iter 90 value 556.415698
## final value 556.415698
## converged
## # weights: 51
## initial value 1151.256759
## iter 10 value 581.532758
## iter 20 value 554.472533
## iter 30 value 541.428045
## iter 40 value 538.790182

```

```

## iter 50 value 537.627397
## iter 60 value 536.378438
## iter 70 value 535.843576
## iter 80 value 535.830794
## iter 90 value 535.826852
## final value 535.826690
## converged
## # weights: 11
## initial value 1015.481915
## iter 10 value 609.816089
## iter 20 value 598.060336
## iter 30 value 589.261213
## iter 40 value 584.901161
## iter 50 value 579.335994
## iter 60 value 575.382322
## iter 70 value 575.216871
## iter 80 value 575.215212
## final value 575.214945
## converged
## # weights: 31
## initial value 1473.210386
## iter 10 value 585.835672
## iter 20 value 544.539375
## iter 30 value 522.183633
## iter 40 value 511.012251
## iter 50 value 505.170237
## iter 60 value 502.171853
## iter 70 value 500.161945
## iter 80 value 500.057540
## iter 90 value 499.954108
## iter 100 value 499.851791
## final value 499.851791
## stopped after 100 iterations
## # weights: 51
## initial value 900.415632
## iter 10 value 570.385381
## iter 20 value 536.128936
## iter 30 value 514.445344
## iter 40 value 499.630615
## iter 50 value 493.660932
## iter 60 value 487.795216
## iter 70 value 480.503739
## iter 80 value 477.542946
## iter 90 value 476.629112
## iter 100 value 475.521513
## final value 475.521513
## stopped after 100 iterations
## # weights: 11
## initial value 853.921157
## iter 10 value 582.855886
## iter 20 value 561.146235
## iter 30 value 559.152719
## final value 558.989715
## converged

```



```

## # weights: 31
## initial value 1236.282979
## iter 10 value 558.854477
## iter 20 value 535.441772
## iter 30 value 532.582056
## iter 40 value 528.082194
## iter 50 value 523.248542
## iter 60 value 520.160195
## iter 70 value 518.495473
## iter 80 value 517.790909
## iter 90 value 514.902390
## iter 100 value 510.599663
## final value 510.599663
## stopped after 100 iterations
## # weights: 51
## initial value 1324.547870
## iter 10 value 543.787480
## iter 20 value 505.325538
## iter 30 value 486.375765
## iter 40 value 478.302080
## iter 50 value 457.607403
## iter 60 value 435.172318
## iter 70 value 429.274740
## iter 80 value 429.157353
## final value 429.153254
## converged
## # weights: 11
## initial value 1104.103472
## iter 10 value 587.647471
## iter 20 value 565.455865
## iter 30 value 563.064083
## final value 562.986855
## converged
## # weights: 31
## initial value 1203.968929
## iter 10 value 562.216977
## iter 20 value 543.682632
## iter 30 value 535.917340
## iter 40 value 533.501393
## iter 50 value 532.448868
## iter 60 value 532.415249
## iter 60 value 532.415248
## iter 60 value 532.415248
## final value 532.415248
## converged
## # weights: 51
## initial value 1222.514890
## iter 10 value 536.192091
## iter 20 value 519.792627
## iter 30 value 508.225482
## iter 40 value 502.851105
## iter 50 value 501.801222
## iter 60 value 501.069521
## iter 70 value 500.691041

```

```

## iter 80 value 498.710740
## iter 90 value 496.017267
## iter 100 value 495.620503
## final value 495.620503
## stopped after 100 iterations
## # weights: 11
## initial value 946.433735
## iter 10 value 591.458721
## iter 20 value 580.550525
## iter 30 value 569.885290
## iter 40 value 559.666280
## iter 50 value 559.071953
## final value 558.993972
## converged
## # weights: 31
## initial value 868.384833
## iter 10 value 565.810410
## iter 20 value 537.600487
## iter 30 value 523.585356
## iter 40 value 519.892054
## iter 50 value 516.182081
## iter 60 value 515.125953
## iter 70 value 512.807242
## iter 80 value 511.982181
## iter 90 value 510.931329
## iter 100 value 508.152511
## final value 508.152511
## stopped after 100 iterations
## # weights: 51
## initial value 1089.635221
## iter 10 value 562.148709
## iter 20 value 505.553967
## iter 30 value 483.255998
## iter 40 value 463.062302
## iter 50 value 455.181796
## iter 60 value 454.142012
## iter 70 value 453.984002
## iter 80 value 453.767869
## iter 90 value 453.514629
## iter 100 value 452.994216
## final value 452.994216
## stopped after 100 iterations
## # weights: 11
## initial value 910.443988
## iter 10 value 566.308801
## iter 20 value 554.432595
## iter 30 value 552.011158
## iter 40 value 545.357975
## iter 50 value 542.799419
## iter 60 value 542.589828
## final value 542.585356
## converged
## # weights: 31
## initial value 1003.424346

```

```

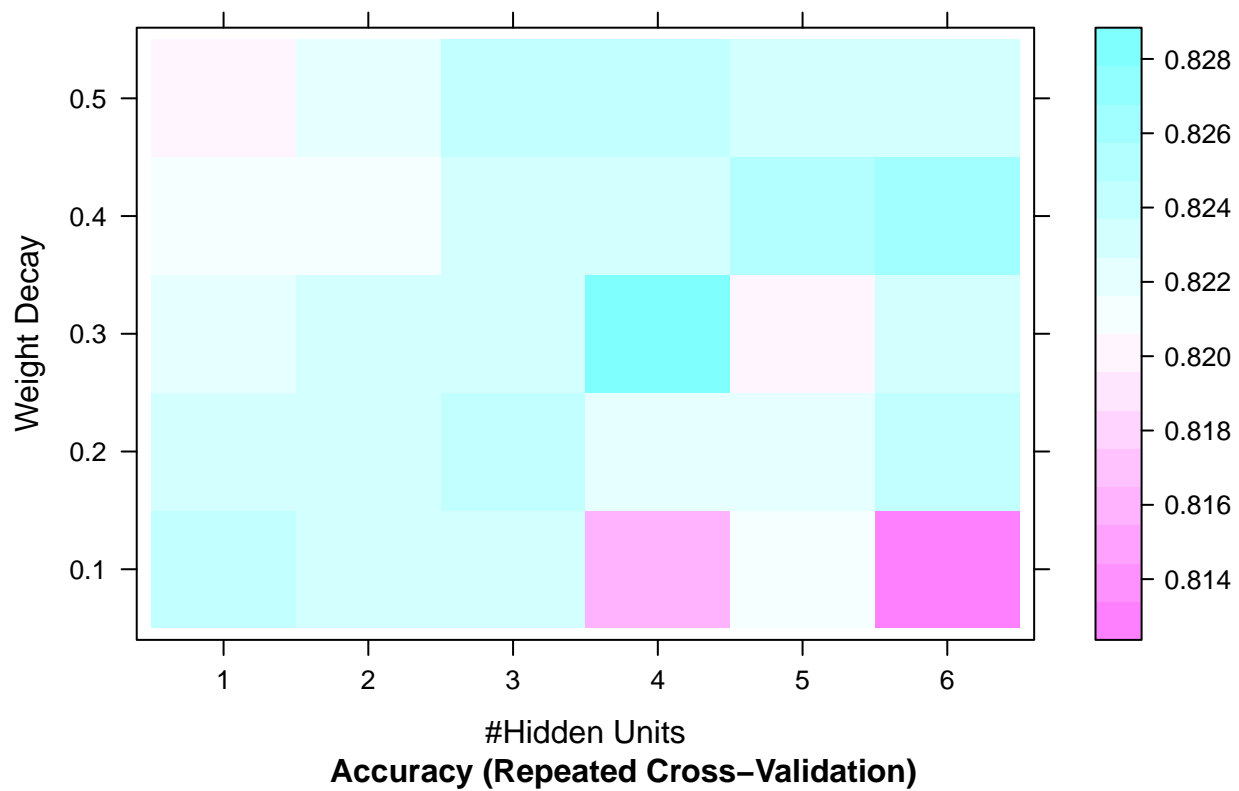
## iter 10 value 573.957361
## iter 20 value 530.216625
## iter 30 value 512.639281
## iter 40 value 507.941799
## iter 50 value 504.954318
## iter 60 value 499.023209
## iter 70 value 492.591275
## iter 80 value 484.847451
## iter 90 value 474.418114
## iter 100 value 470.223222
## final value 470.223222
## stopped after 100 iterations
## # weights: 51
## initial value 1048.411559
## iter 10 value 533.654786
## iter 20 value 502.144152
## iter 30 value 486.141726
## iter 40 value 473.376832
## iter 50 value 450.473372
## iter 60 value 437.044177
## iter 70 value 435.358544
## iter 80 value 435.329915
## final value 435.329452
## converged
## # weights: 11
## initial value 1090.457488
## iter 10 value 597.868914
## iter 20 value 559.474569
## iter 30 value 548.129913
## iter 40 value 546.789565
## final value 546.788969
## converged
## # weights: 31
## initial value 1138.083205
## iter 10 value 544.525220
## iter 20 value 534.457194
## iter 30 value 527.692643
## iter 40 value 526.056014
## iter 50 value 525.635607
## iter 60 value 525.595061
## final value 525.593938
## converged
## # weights: 51
## initial value 1079.997101
## iter 10 value 548.926728
## iter 20 value 531.690396
## iter 30 value 523.896572
## iter 40 value 513.181660
## iter 50 value 505.519652
## iter 60 value 502.869463
## iter 70 value 501.069689
## iter 80 value 500.201505
## iter 90 value 500.013737
## iter 100 value 499.966678

```

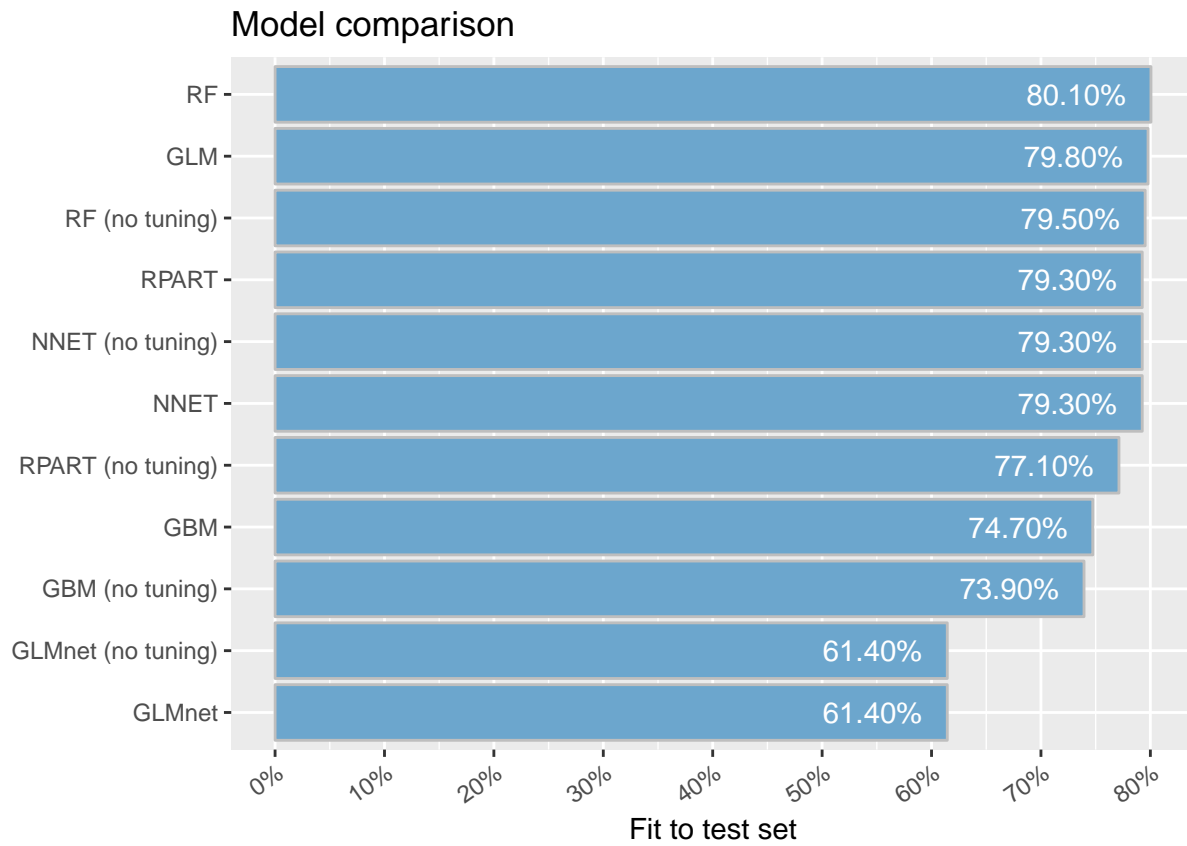
```

## final value 499.966678
## stopped after 100 iterations
## # weights: 11
## initial value 853.561184
## iter 10 value 578.431553
## iter 20 value 568.569731
## iter 30 value 555.093950
## iter 40 value 547.352831
## iter 50 value 542.974137
## iter 60 value 542.672992
## final value 542.589827
## converged
## # weights: 31
## initial value 1008.946984
## iter 10 value 550.525170
## iter 20 value 530.319703
## iter 30 value 523.168619
## iter 40 value 513.605877
## iter 50 value 510.351894
## iter 60 value 509.596103
## iter 70 value 509.241396
## iter 80 value 508.581141
## iter 90 value 508.558864
## iter 100 value 508.469775
## final value 508.469775
## stopped after 100 iterations
## # weights: 51
## initial value 1481.041078
## iter 10 value 538.335802
## iter 20 value 512.331007
## iter 30 value 504.360073
## iter 40 value 497.990409
## iter 50 value 489.980866
## iter 60 value 486.381917
## iter 70 value 484.093084
## iter 80 value 482.795732
## iter 90 value 482.341530
## iter 100 value 482.279969
## final value 482.279969
## stopped after 100 iterations
## # weights: 11
## initial value 1406.028489
## iter 10 value 669.778637
## iter 20 value 581.390615
## iter 30 value 564.468903
## iter 40 value 561.811110
## final value 561.735022
## converged

```



## Model comparisons



## Results

GBM: Little importance is given to the education variable.

## Conclusion

Noise introduced by the segmentation of data into very small groups.