Lab_04T

36-290 – Statistical Research Methodology

Week 4 Tuesday – Fall 2021

```
knitr::opts_chunk$set(error = TRUE)
```

Preliminaries

Goal

The goal of this lab is to work with principal components analysis, or PCA.

Data

We'll begin by importing the stellar data you've been working with for the past week:

```
rm(list=ls())
file.path = "https://raw.githubusercontent.com/pefreeman/36-290/master/EXAMPLE_DATASETS/DRACO/draco_photometry.Rdat
a"
load(url(file.path))
rm(file.path)
objects()
```

```
##  [1] "dec"          "log.g"        "mag.g"        "mag.i"        "mag.r"
##  [6] "mag.u"        "mag.z"        "metallicity"  "ra"           "signal.noise"
## [11] "temperature"  "velocity.los"
```

Today we are going to do things a little differently: we are simply going to concentrate on the five magnitude measurements.

```
df = data.frame(mag.u,mag.g,mag.r,mag.i,mag.z)
```

Questions

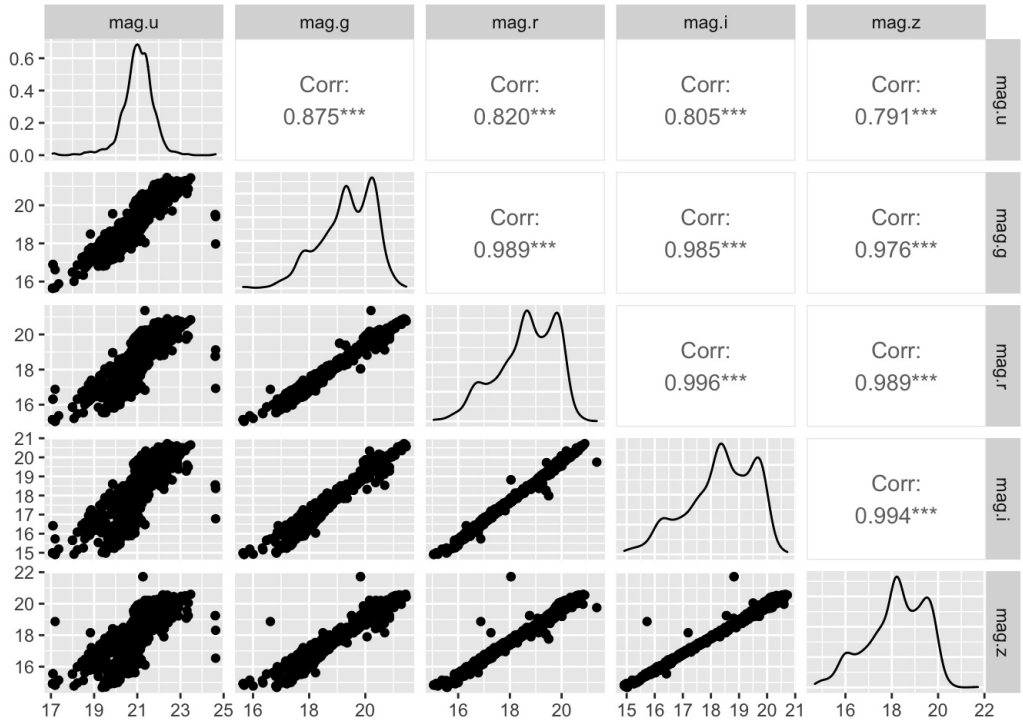
To answer the questions below, it will help you to refer to Sections 10.2 and 10.4 of ISLR; it might also help you to refer to your previous lab work (and, as always, to Google).

Question 1

Construct a pairs plot for the data frame `df`. Do the data appear to be correlated?

```
suppressMessages(library(GGally))

df %>% dplyr::select(.,mag.u,mag.g,mag.r,mag.i,mag.z) %>%   ggpairs(.,progress=FALSE,lower=list(combo=wrap("facethi
st", binwidth=0.8)))
```




```
Yes the data seems to be correlated.
```

Question 2

Perform PCA on these data. (Be sure to look at the documentation, as there is one particular argument to `prcomp()` that you'll want to set!) Show the matrix of loadings, and interpret the principal components. (For instance, is PC1 more strongly tied to any of the magnitudes in particular? How about PCs 2-5?)

```
pca.out = prcomp(df,scale=TRUE, retx = TRUE, center = TRUE, tol = NULL)


v = pca.out$sdev^2

round(cumsum(v/sum(v)),3)
```

```
## [1] 0.940 0.996 0.999 1.000 1.000
```

```
s <- summary(pca.out)

round(pca.out$rotation[,1:5],3)
```

```
##          PC1    PC2    PC3    PC4    PC5
## mag.u -0.407 -0.889 -0.171  0.123 -0.016
## mag.g -0.460  0.008  0.548 -0.699  0.009
## mag.r -0.457  0.213  0.352  0.587  0.526
## mag.i -0.456  0.265 -0.018  0.278 -0.802
## mag.z -0.453  0.307 -0.739 -0.274  0.281
```

```
PC1 is explained by 94% of the variance in the data.
PC1 doesn't seem that strongly tied to any of the magnitudes in particular.

PC 2 seems more closely tied to the u magnitude
PC 3 seems more closely tied to the z magnitude
PC 4 seems more closely tied to the r magnitude
PC 5 seems more closely tied to the i magnitude
```

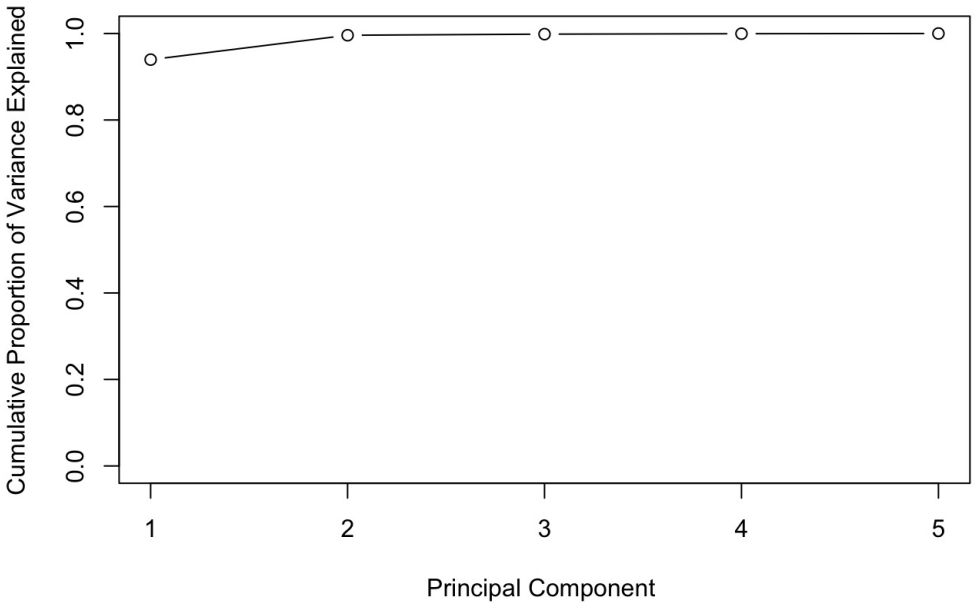
Question 3

Construct a scree plot showing proportion of variance explained. (See page 403 of ISLR to see how to do this. Use `ggplot()` rather than `plot()`, though. Just show the second plot, the one that involves `cumsum()`.) How many PCs would you retain, if you were to make a choice?

```
pve = v/sum(v)

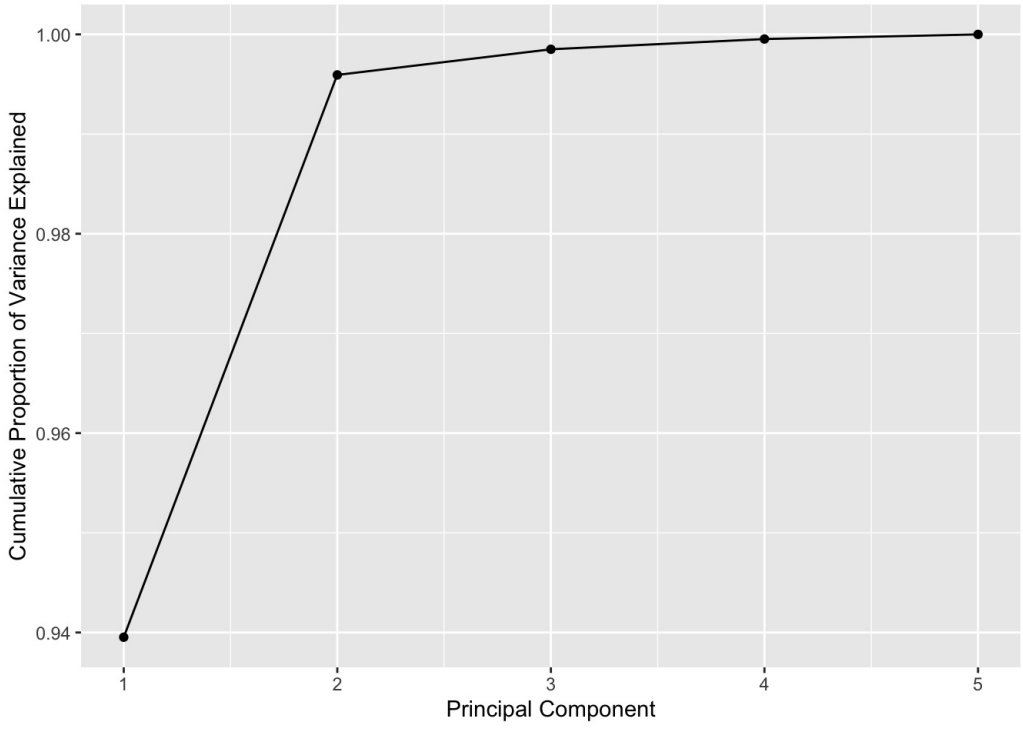

#plot(pve, xlab="Principal Component", ylab="Proportion of Variance Explained ", ylim=c(0,1), type='b')

plot(cumsum(pve), xlab="Principal Component ", ylab=" Cumulative Proportion of Variance Explained ", ylim=c(0,1), t
ype="b")
```




```
pr_var = data.frame(varExp = v)


ggplot(pr_var, aes(as.numeric(row.names(pr_var)), cumsum(pve))) +
  geom_point() +  geom_line() +
  xlab("Principal Component") +
  ylab("Cumulative Proportion of Variance Explained")
```




```
I would maintain 2 PCs
```

Question 4

Visualize the first two PCs. This information is kept in the first two columns of the `x` matrix output by `prcomp()`. For fun, color the data using the u-band magnitudes. (How? Remember that `mag.u` is in the first column of your original data frame. Set the argument `color` to this. Then add an additional function call on the end, e.g., `scale_color_gradientn(colors=rainbow(6))`. Feel free to play with the number. What you should see is that the colors change with PC2…which makes sense because PC2 is dominated by u-band magnitude. If you change the color to match other bands, then you should see PC1 dominate.)

```
ggplot(pca.out,aes(PC1, PC2, color=mag.u)) + geom_point() + scale_color_gradientn(colors=rainbow(9))
```

```
## Error: `data` must be a data frame, or other object coercible by `fortify()`, not an S3 object with class prcomp
.
```

Question 5

Show how retaining the first two PCs leads to an almost perfect reconstruction of the data. This is a bit complicated, so here are some pointers:

- First, you are dealing with scaled data. Scaling involves the (column-wise) computation \(Z = (X-\mu)/\sigma\), where \(X\) is the original data in a column, and \(\mu\) and \(\sigma\) are the column mean and standard deviation. To get \(\mu\) and \(\sigma\) for each column, do something like `s = scale(X)`, `mu = as.numeric(attr(s,"scaled:center"))`, and `sigma = as.numeric(attr(s,"scaled:scale"))`. Set these aside for later.
- To reconstruct data based on the first two PCs, one might do `Xhat = pca.out&dollar;x[,1:2] %*% t(pca.out&dollar;rotation[,1:2])`. This means: matrix multiply the first two columns of `x` with the transpose of the first two columns of `rotation`.
- To back out the effects of scaling, do something like `Xhat = t(t(Xhat)*sigma+mu)`. The transposing is necessary because of the rules of how matrices and vectors are multiplied on a row-by-row and column-by-column basis.

When you are done, display the first five rows of the difference between your original data frame and your reconstructed data frame. If you do things correctly, they should approximately match. For which wavelength band are the differences closest to zero?

```
s = scale(df)
mu = as.numeric(attr(s,"scaled:center"))
sigma = as.numeric(attr(s,"scaled:scale"))

Xhat = pca.out$x[,1:2] %*% t(pca.out$rotation[,1:2])

Xhat = t(t(Xhat)*sigma+mu)

diffe = Xhat - df


head(Xhat,5)
```

```
##         mag.u    mag.g    mag.r    mag.i    mag.z
## [1,] 21.20105 19.69791 19.07273 18.80942 18.68171
## [2,] 21.52679 20.05705 19.46296 19.21202 19.09093
## [3,] 21.72600 20.22481 19.62856 19.37804 19.25544
## [4,] 21.72600 20.22481 19.62856 19.37804 19.25544
## [5,] 21.41791 20.01229 19.43855 19.19385 19.07863
```

```
head(df,5)
```

```
##      mag.u    mag.g    mag.r    mag.i    mag.z
## 1 21.19948 19.70348 19.07734 18.81921 18.66146
## 2 21.51945 20.11101 19.43237 19.13829 19.14253
## 3 21.71561 20.26365 19.66915 19.40216 19.15022
## 4 21.71561 20.26365 19.66915 19.40216 19.15022
## 5 21.40875 20.05116 19.47914 19.16447 19.02752
```

```
head(diffe,5)
```

```
##         mag.u        mag.g        mag.r        mag.i       mag.z
## 1 0.001569731 -0.005571845 -0.004608319 -0.009787402  0.02025348
## 2 0.007338076 -0.053958273  0.030589821  0.073728998 -0.05159705
## 3 0.010381625 -0.038832251 -0.040580818 -0.024123419  0.10521626
## 4 0.010381625 -0.038832251 -0.040580818 -0.024123419  0.10521626
## 5 0.009164807 -0.038869327 -0.040589948  0.029376731  0.05111498
```

```
Wavelength band u
```

Question 6

Now, let's reintroduce the original dataset, but with colors instead of magnitudes:

```
df_color = data.frame("col.ug"= mag.u-mag.g,"col.gr"=mag.g-mag.r,"col.ri"=mag.r-mag.i,"col.iz"=mag.i-mag.z,ra,dec,l
og.g,metallicity,signal.noise,temperature,velocity.los)

df_color
```

```
##         col.ug      col.gr      col.ri        col.iz       ra      dec log.g
## 1    1.4960041  0.62614059  0.25812721  0.1577529907 260.0115 57.81589   3.7
## 2    1.4084473  0.67863464  0.29408264 -0.0042400360 259.8737 57.71628   3.1
## 3    1.4519672  0.59450150  0.26698685  0.2519397736 259.9352 57.79092   4.5
## 4    1.4519672  0.59450150  0.26698685  0.2519397736 259.9352 57.79092   2.1
## 5    1.3575878  0.57201767  0.31466866  0.1369590759 260.0805 57.85542   1.2
## 6    1.6174984  0.61961746  0.26855469  0.0747585297 260.0039 57.75311   3.7
## 7    1.6174984  0.61961746  0.26855469  0.0747585297 260.0039 57.75311   1.2
## 8    1.6174984  0.61961746  0.26855469  0.0747585297 260.0039 57.75311   3.2
## 9    1.7621536  0.80937195  0.37376595  0.2242412567 259.8828 57.55964   1.1
## 10   1.7621536  0.80937195  0.37376595  0.2242412567 259.8828 57.55964   1.1
## 11   1.7621536  0.80937195  0.37376595  0.2242412567 259.8828 57.55964   1.9
## 12   1.7621536  0.80937195  0.37376595  0.2242412567 259.8828 57.55964   1.3
## 13   1.7621536  0.80937195  0.37376595  0.2242412567 259.8828 57.55964   1.6
## 14   2.2839260  0.96387672  0.42143631  0.2248592377 260.0880 57.82422   2.6
## 15   2.2839260  0.96387672  0.42143631  0.2248592377 260.0880 57.82422   0.7
## 16   1.3797779  0.61110306  0.28328514  0.0318183899 260.1038 57.81189   2.0
## 17   1.3797779  0.61110306  0.28328514  0.0318183899 260.1038 57.81189   3.2
## 18   1.6377602  0.64290047  0.29775810  0.1413803101 260.0775 57.76697   2.0
## 19   1.6377602  0.64290047  0.29775810  0.1413803101 260.0775 57.76697   1.2
## 20   1.5919819  0.67703056  0.26595688  0.1466522217 260.0989 57.40069   5.0
## 21   1.2159214  0.46289444  0.18533134  0.0962696075 260.1214 57.41747   4.2
## 22   1.0992756  0.62359238  0.27491951  0.1982860565 259.9794 57.55006   3.0
## 23   1.0992756  0.62359238  0.27491951  0.1982860565 259.9794 57.55006   2.6
## 24   2.0910683  0.84983444  0.34782982  0.2061805725 260.2573 57.47744   1.7
## 25   1.8414249  0.78652000  0.36330795  0.1907253265 260.1319 57.84864   1.0
## 26   1.7263660  0.70061493  0.31844902  0.1617012024 260.2132 57.63728   1.4
## 27   1.1061382  0.48720551  0.21196365  0.0628261566 260.2839 57.46575   2.5
## 28   1.5593491  0.72564316  0.31992722  0.1438274384 260.1290 57.49975   5.0
## 29   1.5593491  0.72564316  0.31992722  0.1438274384 260.1290 57.49975   5.2
## 30   1.5593491  0.72564316  0.31992722  0.1438274384 260.1290 57.49975   5.4
## 31   1.5593491  0.72564316  0.31992722  0.1438274384 260.1290 57.49975   5.1
## 32   1.5168915  0.70239830  0.29327965  0.1912899017 260.2313 57.74289   1.6
## 33   1.5069771  0.64671707  0.30360222  0.1729717255 260.1729 57.79911   2.6
## 34   1.5069771  0.64671707  0.30360222  0.1729717255 260.1729 57.79911   1.2
## 35   1.4174137  0.57426262  0.27221870  0.1208267212 260.3970 57.59014   2.8
## 36   1.4174137  0.57426262  0.27221870  0.1208267212 260.3970 57.59014   2.2
## 37   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   3.3
## 38   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   2.0
## 39   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   3.0
## 40   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   2.1
## 41   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   2.1
## 42   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   2.8
## 43   1.3639851  0.60568810  0.31266022 -0.0169200897 260.2654 57.66506   1.8
## 44   1.7104168  0.72683525  0.31524849  0.1752681732 260.2507 57.77714   1.6
## 45   1.7104168  0.72683525  0.31524849  0.1752681732 260.2507 57.77714   1.4
## 46   1.6245384  0.65998459  0.26937866  0.1539134979 260.1754 57.82486   1.3
## 47   1.6245384  0.65998459  0.26937866  0.1539134979 260.1754 57.82486   1.1
## 48   1.6245384  0.65998459  0.26937866  0.1539134979 260.1754 57.82486   1.3
## 49   1.6245384  0.65998459  0.26937866  0.1539134979 260.1754 57.82486   1.5
## 50   1.2730331  0.60172272  0.26959038  0.1498985291 260.6283 57.59617   2.2
## 51   1.4586983  0.63233948  0.24799538  0.1754474640 260.5314 57.73108   4.8
## 52   2.0049076  0.84945488  0.39056396  0.1995429993 260.4140 57.77781   1.1
## 53   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.4
## 54   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.8
## 55   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.3
## 56   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.2
## 57   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.2
## 58   1.6978569  0.76242065  0.29623032  0.2232837677 260.5150 57.75200   1.0
## 59   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   3.4
## 60   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.6
## 61   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.1
## 62   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.6
## 63   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.9
## 64   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.3
## 65   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.9
## 66   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.3
## 67   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.2
```

```
## 68   1.6205444  0.68673515  0.29483795  0.1342182159 260.1807 57.84522   1.4
## 69   1.4374828  0.62323380  0.24116325  0.1484394073 260.8735 57.65533   2.7
## 70   1.4374828  0.62323380  0.24116325  0.1484394073 260.8735 57.65533   2.5
## 71   1.4317036  0.56002235  0.22481346  0.0886421204 260.7815 57.57419   4.4
## 72   1.4317036  0.56002235  0.22481346  0.0886421204 260.7815 57.57419   4.2
## 73   1.2684174  0.56448746  0.22020149  0.1645202637 260.7745 57.73142   2.9
## 74   2.2000847  0.93719101  0.43173409  0.2448768616 260.3762 57.83786   2.9
## 75   2.2000847  0.93719101  0.43173409  0.2448768616 260.3762 57.83786   1.3
## 76   2.4353409  1.00365067  0.42736816  0.2426853180 260.4182 57.79222   1.5
## 77   2.4353409  1.00365067  0.42736816  0.2426853180 260.4182 57.79222   0.8
## 78   2.4353409  1.00365067  0.42736816  0.2426853180 260.4182 57.79222   0.9
## 79   2.4353409  1.00365067  0.42736816  0.2426853180 260.4182 57.79222   0.8
## 80   1.4033241  0.56577492  0.21986008  0.0832233429 260.8644 57.86694   5.3
## 81   1.5542622  0.68200874  0.34345627  0.1311206818 260.2685 57.89661   1.1
## 82   1.8010292  0.69107246  0.24985695  0.1249465942 260.9295 57.93150   3.6
## 83   1.5998440  0.62369156  0.24320793  0.1508121490 260.8948 57.96297   2.7
## 84   1.8364887  0.74408150  0.28389740  0.1093292236 260.3975 57.91644   1.0
## 85   1.8364887  0.74408150  0.28389740  0.1093292236 260.3975 57.91644   1.6
## 86   1.8364887  0.74408150  0.28389740  0.1093292236 260.3975 57.91644   2.0
## 87   1.3927937  0.64132118  0.34874535  0.1485023499 260.5253 58.00328   1.3
## 88   1.3927937  0.64132118  0.34874535  0.1485023499 260.5253 58.00328   1.4
## 89   1.3927937  0.64132118  0.34874535  0.1485023499 260.5253 58.00328   2.0
## 90   1.3927937  0.64132118  0.34874535  0.1485023499 260.5253 58.00328   1.6
## 91   1.3927937  0.64132118  0.34874535  0.1485023499 260.5253 58.00328   1.4
## 92   1.6571140  0.65962029  0.33335876  0.0581645966 260.4242 57.93075   1.1
## 93   1.6571140  0.65962029  0.33335876  0.0581645966 260.4242 57.93075   1.2
## 94   1.5978336  0.70701408  0.33314896  0.1284999847 260.7778 58.17011   5.1
## 95   1.5978336  0.70701408  0.33314896  0.1284999847 260.7778 58.17011   4.5
## 96   1.5978336  0.70701408  0.33314896  0.1284999847 260.7778 58.17011   4.8
## 97   1.5978336  0.70701408  0.33314896  0.1284999847 260.7778 58.17011   5.2
## 98   1.5978336  0.70701408  0.33314896  0.1284999847 260.7778 58.17011   4.7
## 99   1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.4
## 100  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.1
## 101  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   3.2
## 102  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.6
## 103  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.6
## 104  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.2
## 105  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.2
## 106  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.7
## 107  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.3
## 108  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   3.7
## 109  1.6034889  0.65087891  0.31983376  0.2063465118 260.4074 58.01450   1.5
## 110  1.7834549  0.67800140  0.34913635  0.1633701324 260.1864 57.91650   1.0
## 111  1.7834549  0.67800140  0.34913635  0.1633701324 260.1864 57.91650   1.5
## 112  1.1967335  0.59618187  0.26110268  0.0333309174 260.3528 58.09669   1.7
## 113  1.1967335  0.59618187  0.26110268  0.0333309174 260.3528 58.09669   1.8
## 114  1.4125214  0.69382286  0.25196648  0.1718540192 260.3033 58.07806   1.3
## 115  1.4125214  0.69382286  0.25196648  0.1718540192 260.3033 58.07806   1.3
## 116  1.8284378  0.75049400  0.33977890  0.1997604370 260.2553 57.96206   1.4
## 117  1.5848484  0.67816162  0.34037399  0.1298751831 260.2357 58.04308   1.4
## 118  1.5848484  0.67816162  0.34037399  0.1298751831 260.2357 58.04308   1.2
## 119  1.3605671  0.65240097  0.26616859 -0.0786952972 260.2124 58.08033   4.0
## 120  1.3605671  0.65240097  0.26616859 -0.0786952972 260.2124 58.08033   1.4
## 121  1.3605671  0.65240097  0.26616859 -0.0786952972 260.2124 58.08033   2.8
## 122  1.4822369  0.62690926  0.30303574  0.1458740234 260.1513 57.92750   1.6
## 123  1.8928566  0.83368683  0.30956268  0.1986465454 260.1520 58.21247   5.5
## 124  1.8928566  0.83368683  0.30956268  0.1986465454 260.1520 58.21247   5.2
## 125  1.2633724  0.59506798  0.23877335  0.1600723267 260.1339 58.09442   2.7
## 126  1.8096771  0.76747322  0.38023376  0.1943187714 260.1201 57.89253   1.9
## 127  1.4547729  0.64848328  0.33205986  0.1885185242 260.1606 58.00681   1.5
## 128  1.4547729  0.64848328  0.33205986  0.1885185242 260.1606 58.00681   1.8
## 129  1.4547729  0.64848328  0.33205986  0.1885185242 260.1606 58.00681   1.8
## 130  1.2598534  0.62620735  0.33057404  0.0683727264 260.0436 58.04428   3.0
## 131  1.2598534  0.62620735  0.33057404  0.0683727264 260.0436 58.04428   1.2
## 132  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   1.1
## 133  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   1.3
## 134  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   1.0
## 135  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   1.6
## 136  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   0.8
## 137  1.8846130  0.79477501  0.39331818  0.2248554230 260.0673 58.06800   0.9
## 138  1.4892101  0.67266083  0.30711365  0.1453208923 260.0253 58.04725   2.5
## 139  1.4892101  0.67266083  0.30711365  0.1453208923 260.0253 58.04725   1.1
## 140  1.4892101  0.67266083  0.30711365  0.1453208923 260.0253 58.04725   1.2
## 141  1.8307877  0.77185440  0.35449791  0.2056751251 260.0605 58.21428   1.1
## 142  1.8307877  0.77185440  0.35449791  0.2056751251 260.0605 58.21428   2.1
## 143  1.8307877  0.77185440  0.35449791  0.2056751251 260.0605 58.21428   1.5
## 144  1.8307877  0.77185440  0.35449791  0.2056751251 260.0605 58.21428   0.9
## 145  1.8307877  0.77185440  0.35449791  0.2056751251 260.0605 58.21428   1.0
## 146  1.7441196  0.79516411  0.36142159  0.2006855011 259.9743 58.11225   1.4
```

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## 147  1.7441196  0.79516411  0.36142159  0.2006855011 259.9743 58.11225   0.9
## 148  1.7441196  0.79516411  0.36142159  0.2006855011 259.9743 58.11225   1.3
## 149  1.7441196  0.79516411  0.36142159  0.2006855011 259.9743 58.11225   1.8
## 150  1.7441196  0.79516411  0.36142159  0.2006855011 259.9743 58.11225   1.9
## 151  1.9172192  0.85223389  0.37253761  0.2071628571 259.8226 58.17783   0.9
## 152  1.2679100  0.67015457  0.32089233  0.1580791473 259.9909 58.01431   1.1
## 153  1.2679100  0.67015457  0.32089233  0.1580791473 259.9909 58.01431   3.3
## 154  1.2679100  0.67015457  0.32089233  0.1580791473 259.9909 58.01431   2.4
## 155  1.2679100  0.67015457  0.32089233  0.1580791473 259.9909 58.01431   1.8
## 156  1.4237709  0.57964325  0.32260704  0.0721874237 260.1006 57.89789   2.4
## 157  1.7051620  0.78502083  0.35390091  0.1375026703 259.9850 57.98778   1.2
## 158  1.7051620  0.78502083  0.35390091  0.1375026703 259.9850 57.98778   1.1
## 159  1.6536942  0.71885872  0.31179810  0.2401752472 259.8942 58.16856   5.1
## 160  1.5925560  0.69365501  0.29061317  0.1879177094 259.6910 58.12581   2.4
## 161  1.5925560  0.69365501  0.29061317  0.1879177094 259.6910 58.12581   2.5
## 162  1.5925560  0.69365501  0.29061317  0.1879177094 259.6910 58.12581   1.4
## 163  1.5925560  0.69365501  0.29061317  0.1879177094 259.6910 58.12581   1.9
## 164  1.5922108  0.71711349  0.30902290  0.0989131927 259.8570 58.01669   1.8
## 165  1.5922108  0.71711349  0.30902290  0.0989131927 259.8570 58.01669   1.5
## 166  1.5922108  0.71711349  0.30902290  0.0989131927 259.8570 58.01669   2.7
## 167  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.2
## 168  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.2
## 169  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.8
## 170  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.1
## 171  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.4
## 172  1.8995838  0.81982231  0.34882164  0.2227497101 259.4933 58.09978   1.1
## 173  1.8100567  0.78361702  0.36230850  0.2157573700 259.8270 57.99017   1.2
## 174  1.9911003  0.81878090  0.27869987  0.1261863708 259.4176 58.15392   4.8
## 175  1.9911003  0.81878090  0.27869987  0.1261863708 259.4176 58.15392   5.1
## 176  1.6217499 -0.41802216  1.51001358  0.2277202606 259.6487 58.01400   1.0
## 177  1.6217499 -0.41802216  1.51001358  0.2277202606 259.6487 58.01400   1.2
## 178  2.0856628  0.97565079  0.42773056  0.2140846252 259.4108 58.07753   0.9
## 179  1.6147079  0.67067528  0.33325386  0.1525764465 259.8121 57.94772   1.2
## 180  1.4681816  0.70814705  0.30191803  0.1470813751 259.7452 57.90594   1.7
## 181  1.2026367  0.65812111  0.28248024  0.1443462372 259.5743 57.93811   1.9
## 182  2.1977386  1.02595711  0.41595840  0.2462749481 259.9244 57.87200   0.7
## 183  2.1977386  1.02595711  0.41595840  0.2462749481 259.9244 57.87200   0.8
## 184  2.1753349  0.86960793  0.32014465  0.1832752228 259.2317 57.78800   2.4
## 185  1.5464573  0.73410606  0.32433128  0.1706447601 259.8867 57.83022   1.1
## 186  1.5464573  0.73410606  0.32433128  0.1706447601 259.8867 57.83022   1.3
## 187  1.5464573  0.73410606  0.32433128  0.1706447601 259.8867 57.83022   1.3
## 188  1.5464573  0.73410606  0.32433128  0.1706447601 259.8867 57.83022   1.9
## 189  1.4270935  0.50167274  0.16054535  0.0701961517 259.2693 57.68158   4.2
## 190  1.4270935  0.50167274  0.16054535  0.0701961517 259.2693 57.68158   4.4
## 191  1.4270935  0.50167274  0.16054535  0.0701961517 259.2693 57.68158   4.1
## 192  2.0868645  0.96249199  0.38521004  0.2288169861 259.7649 57.77844   0.8
## 193  2.0868645  0.96249199  0.38521004  0.2288169861 259.7649 57.77844   0.9
## 194  1.2295818  0.57760239  0.24916840  0.2209186554 259.4127 57.72144   2.0
## 195  1.4129181  0.63693237  0.29554176  0.1686916351 259.8945 57.80139   1.3
## 196  2.2090626  0.96922874  0.42019081  0.2235660553 259.7428 57.81600   0.8
## 197  2.2090626  0.96922874  0.42019081  0.2235660553 259.7428 57.81600   0.7
## 198  1.0994453  0.41514778  0.22108841 -0.0056438446 259.4698 57.59956   3.9
## 199  1.0994453  0.41514778  0.22108841 -0.0056438446 259.4698 57.59956   4.6
## 200  1.4033146  0.68342018  0.35063744  0.2041606903 259.7337 57.72925   3.4
## 201  1.4033146  0.68342018  0.35063744  0.2041606903 259.7337 57.72925   1.2
## 202  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   2.9
## 203  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   1.9
## 204  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   2.7
## 205  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   1.3
## 206  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   2.4
## 207  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   1.3
## 208  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   1.7
## 209  1.4475193  0.64774513  0.29898834  0.2013454437 259.7119 57.69372   2.2
## 210  1.4894371  0.69008446  0.31264114  0.1540489197 259.8932 57.76989   1.7
## 211  1.9059792  0.79253197  0.33104897  0.1677532196 260.1893 57.81669   2.3
## 212  2.0434837  0.82755470  0.35683632  0.1917533875 260.0485 57.82678   3.4
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## 214  1.3255177  0.49008369  0.23445511  0.0782947540 260.4410 57.82431   5.1
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## 216  1.8469219  0.79199219  0.38150978  0.1766071320 260.2122 57.85269   3.0
## 217  1.4048328  0.63456154  0.27474976  0.1975593567 260.1830 57.86258   2.3
## 218  1.4048328  0.63456154  0.27474976  0.1975593567 260.1830 57.86258   2.4
## 219  1.2897854  0.59533882  0.28391075  0.2227535248 260.3890 57.77447   1.7
## 220  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.4
## 221  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.7
## 222  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   2.6
## 223  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.6
## 224  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.5
## 225  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.2
```

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## 226  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.5
## 227  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.7
## 228  1.4629440  0.62971687  0.35889435  0.1645107269 260.6396 57.80106   1.5
## 229  1.5434513  0.66572571  0.27662849  0.1147823334 260.3218 57.79653   3.7
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## 231  1.7067127  0.60741806  0.27507973  0.0843868256 260.7551 57.78225   1.5
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## 236  1.1946049  0.50110626  0.18741989  0.0596523285 260.5110 57.71728   3.9
## 237  1.3131676  0.61184883  0.22381020  0.0983734131 260.8740 57.74583   3.6
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## 241  1.7467098  0.64494896  0.26148033  0.1471309662 261.4852 57.54122   5.0
## 242  1.3673534  0.53021812  0.20828629  0.1022586823 261.3536 57.50975   2.6
## 243  1.3247585  0.50841904  0.23783112  0.0837631226 261.5749 57.73744   3.6
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## 248  1.4577045  0.68560028  0.20579910  0.1666908264 260.9679 57.97544   1.9
## 249  1.8067455  0.77266884  0.34536552  0.1870784760 261.0149 58.01258   5.6
## 250  1.8067455  0.77266884  0.34536552  0.1870784760 261.0149 58.01258   5.6
## 251  1.0851536  0.38853836  0.14482880  0.0385265350 260.9305 58.24883   3.9
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## 253  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   1.3
## 254  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   1.1
## 255  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   1.0
## 256  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   2.1
## 257  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   1.6
## 258  1.6270275  0.77193260  0.34259987  0.1589565277 260.6343 58.29636   1.2
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## 261  1.6658745  0.77323914  0.33361053  0.1898689270 260.4273 58.24250   3.6
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## 266  1.3806686  0.58542442  0.20565414  0.0288677216 260.6283 58.10236   3.1
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## 276  1.5859280  0.66675568  0.30817223  0.2115020752 260.5221 58.02969   1.3
## 277  1.5859280  0.66675568  0.30817223  0.2115020752 260.5221 58.02969   1.3
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## 282  1.6449699  0.66039467  0.36691475  0.1417007446 260.6820 57.95853   1.5
## 283  1.6449699  0.66039467  0.36691475  0.1417007446 260.6820 57.95853   1.6
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## 285  1.5686722  0.57285881  0.31044960  0.1442012787 260.6520 58.05097   2.3
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## 294  2.1179771  0.87588501  0.41214752  0.2022800446 260.4873 57.99272   1.0
## 295  1.7219810  0.77202034  0.37130356  0.1957607269 260.5467 57.94253   1.8
## 296  1.7219810  0.77202034  0.37130356  0.1957607269 260.5467 57.94253   1.7
## 297  1.6235733  0.76146507  0.28060913  0.1384181976 260.3428 58.03764   1.3
## 298  1.6235733  0.76146507  0.28060913  0.1384181976 260.3428 58.03764   1.3
## 299  1.6235733  0.76146507  0.28060913  0.1384181976 260.3428 58.03764   1.3
## 300  1.6235733  0.76146507  0.28060913  0.1384181976 260.3428 58.03764   1.4
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## 305  2.1882057  0.80955887  0.37194824  0.2289237976 260.2634 57.93314   1.6
## 306  2.2348347  1.01665497  0.44452667  0.2480983734 260.2648 57.95228   1.5
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## 308  1.9396267  0.79371834  0.39380836  0.2074527740 260.1908 57.92811   4.4
## 309  1.7433167  0.77004433  0.36049271  0.1863098145 260.1421 57.97292   4.1
## 310  2.1233006  0.94838524  0.42973518  0.2393150330 260.5446 57.89928   1.5
## 311  2.1233006  0.94838524  0.42973518  0.2393150330 260.5446 57.89928   1.0
## 312  2.1233006  0.94838524  0.42973518  0.2393150330 260.5446 57.89928   1.0
## 313  2.1233006  0.94838524  0.42973518  0.2393150330 260.5446 57.89928   0.8
## 314  1.7514820  0.72179794  0.36255264  0.1758899689 260.0634 58.00972   3.2
## 315  2.2823372  0.95328522  0.42140388  0.2214698792 260.0563 57.86644   1.2
## 316  1.5276432  0.66842270  0.31089211  0.1704807281 259.8488 57.78967   3.1
## 317  1.5276432  0.66842270  0.31089211  0.1704807281 259.8488 57.78967   1.9
## 318  1.1507683  0.66142654  0.31783485  0.1355590820 259.8383 57.75828   2.9
## 319  1.1507683  0.66142654  0.31783485  0.1355590820 259.8383 57.75828   1.7
## 320  1.4528923  0.62735176  0.30803108  0.1264324188 259.7370 57.77458   1.7
## 321  1.4528923  0.62735176  0.30803108  0.1264324188 259.7370 57.77458   1.7
## 322  1.4528923  0.62735176  0.30803108  0.1264324188 259.7370 57.77458   1.9
## 323  1.9840469  0.78962517  0.33624268  0.1848869324 260.0222 57.83839   1.5
## 324  1.8569374  0.91941643  0.36170197  0.2170429230 259.6790 57.64714   0.8
## 325  1.8569374  0.91941643  0.36170197  0.2170429230 259.6790 57.64714   1.3
## 326  2.0773296  0.91461945  0.40106964  0.2054576874 260.0405 57.77483   1.1
## 327  2.0773296  0.91461945  0.40106964  0.2054576874 260.0405 57.77483   1.1
## 328  1.4988441  0.71872902  0.32018280  0.1907062531 260.0073 57.77961   2.3
## 329  1.4988441  0.71872902  0.32018280  0.1907062531 260.0073 57.77961   2.5
## 330  1.4988441  0.71872902  0.32018280  0.1907062531 260.0073 57.77961   1.6
## 331  1.2872181  0.50545692  0.17618942  0.0993251801 260.2743 57.41350   4.7
## 332  1.2872181  0.50545692  0.17618942  0.0993251801 260.2743 57.41350   4.8
## 333  1.1010818  0.43674088  0.08062172  0.1266765594 260.3496 57.42181   4.7
## 334  1.1010818  0.43674088  0.08062172  0.1266765594 260.3496 57.42181   4.0
## 335  1.7197762  0.76394081  0.32650757  0.1899433136 260.2525 57.82258   1.4
## 336  1.7197762  0.76394081  0.32650757  0.1899433136 260.2525 57.82258   1.7
## 337  1.3977661  0.62346268  0.24774361  0.1914596558 260.3372 57.87675   1.4
## 338  1.7227173  0.80035591  0.38510323  0.2367877960 260.4686 57.87689   1.5
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## 341  1.7227173  0.80035591  0.38510323  0.2367877960 260.4686 57.87689   1.3
## 342  1.3590469  0.55347252  0.23369026  0.0906419754 260.8942 57.76906   4.9
## 343  1.3590469  0.55347252  0.23369026  0.0906419754 260.8942 57.76906   4.9
## 344  1.4698524  0.73062706  0.32913017  0.1474456787 260.3106 57.90322   1.0
## 345  1.2967052  0.65659332  0.33173370  0.1441612244 260.4721 57.93328   2.4
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## 347  1.2967052  0.65659332  0.33173370  0.1441612244 260.4721 57.93328   1.5
## 348  1.5119686  0.67741203  0.31748009  0.2052173615 260.2610 57.87908   1.1
## 349  1.5119686  0.67741203  0.31748009  0.2052173615 260.2610 57.87908   1.4
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## 351  1.5119686  0.67741203  0.31748009  0.2052173615 260.2610 57.87908   2.3
## 352  1.5119686  0.67741203  0.31748009  0.2052173615 260.2610 57.87908   2.0
## 353  1.5554161  0.63335800  0.34818077  0.1166076660 260.5412 57.96550   2.7
## 354  1.4534340  0.72203255  0.35994148  0.1613368988 260.5188 57.95417   0.9
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## 357  1.4436054  0.52577400  0.26405525  0.1514644623 260.3612 57.92339   3.2
## 358  1.4927025  0.63055611  0.30821991  0.1545810699 260.2208 57.94103   1.2
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## 365  1.4927025  0.63055611  0.30821991  0.1545810699 260.2208 57.94103   1.8
## 366  1.4927025  0.63055611  0.30821991  0.1545810699 260.2208 57.94103   1.6
## 367  1.4927025  0.63055611  0.30821991  0.1545810699 260.2208 57.94103   1.6
## 368  1.4608479  0.57400703  0.26868248  0.2181205750 260.3229 57.99703   1.6
## 369  1.4608479  0.57400703  0.26868248  0.2181205750 260.3229 57.99703   2.0
## 370  1.3530502  0.54646492  0.25322151  0.1361236572 260.1664 57.89328   2.2
## 371  1.4191380  0.68523979  0.23547173  0.0949554443 260.1482 57.93553   1.1
## 372  1.4658356  0.64023209  0.27405739  0.1698379517 260.2344 58.00739   1.7
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## 374  1.4658356  0.64023209  0.27405739  0.1698379517 260.2344 58.00739   1.3
## 375  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   3.4
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## 377  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   2.2
## 378  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   1.4
## 379  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   3.9
## 380  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   2.3
## 381  1.2269783  0.63226128  0.27136612  0.1414928436 260.3399 58.10231   1.7
## 382  2.4295902  0.99771500  0.43732452  0.2382583618 260.1449 57.99911   0.9
## 383  1.2995529  0.64493752  0.29993439  0.1439590454 260.1440 57.97017   2.0
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## 386  1.7647877  0.75408936  0.37342072  0.2221813202 259.8205 58.26414   2.4
## 387  1.7647877  0.75408936  0.37342072  0.2221813202 259.8205 58.26414   1.3
## 388  1.2403564  0.63504791  0.30876160  0.1872367859 260.0499 57.94144   1.6
## 389  1.6620178  0.70879936  0.32893562  0.1200752258 260.0064 57.96650   2.0
## 390  1.3573475  0.56356239  0.28113174  0.0671939850 260.0585 57.90694   3.1
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## 393  1.4888401  0.72803116  0.35299492  0.1592864990 259.9774 57.95186   1.8
## 394  1.7591877  0.76180458  0.34614372  0.1421947479 259.5240 58.18958   1.9
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## 397  1.7591877  0.76180458  0.34614372  0.1421947479 259.5240 58.18958   2.0
## 398  1.7591877  0.76180458  0.34614372  0.1421947479 259.5240 58.18958   1.2
## 399  1.7591877  0.76180458  0.34614372  0.1421947479 259.5240 58.18958   1.4
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## 402  1.7591877  0.76180458  0.34614372  0.1421947479 259.5240 58.18958   1.3
## 403  1.4871902  0.63817024  0.32404137  0.1118621826 259.9575 58.00742   2.0
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## 407  1.4871902  0.63817024  0.32404137  0.1118621826 259.9575 58.00742   1.1
## 408  1.4871902  0.63817024  0.32404137  0.1118621826 259.9575 58.00742   1.6
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## 410  1.3059864  0.66644859  0.31198120  0.0652790070 259.9108 57.96700   2.4
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## 425  2.5958118  1.10619354  0.48713112  0.2608804703 259.7951 57.98814   0.9
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## 427  1.6861534  0.61842537  0.23960114  0.1357889175 259.3330 58.15119   3.9
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## 430  1.4076462  0.61191177  0.31828308  0.1162090302 260.0082 57.90619   1.7
## 431  1.4781914  0.68795204  0.32641792  0.1612873077 259.7228 57.97389   2.4
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## 445  1.4080467  0.77436256  0.29494858  0.1989517212 259.9092 57.89747   4.0
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## 472  1.7917824  0.83641624  0.37218094  0.2370319366 259.4423 57.70608   0.9
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## 474  1.1260967  0.54248810  0.20382309 -0.0649127960 258.7309 57.62222   4.6
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## 478  1.4543285  0.58187103  0.21559334  0.0971584320 258.8857 57.62700   5.2
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## 483  1.5118351  0.62322807  0.21191025  0.1223945618 258.9277 57.54614   4.7
## 484  1.5118351  0.62322807  0.21191025  0.1223945618 258.9277 57.54614   4.8
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## 491  1.4274845  0.57534027  0.21948814  0.1209106445 258.9423 57.58903   4.7
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## 500  1.5826721  0.57424927  0.16294479  0.0831527710 258.9591 57.53644   4.7
## 501  0.3047886  0.59676933  0.35510635  0.1987934113 259.1384 57.31642   4.6
## 502  0.3047886  0.59676933  0.35510635  0.1987934113 259.1384 57.31642   5.0
## 503  1.5086784  0.62890720  0.13830662  0.0851764679 259.1209 57.46453   4.7
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## 506  1.4679775  0.63599205  0.23431015  0.1722812653 259.2624 57.35667   2.9
## 507  1.4679775  0.63599205  0.23431015  0.1722812653 259.2624 57.35667   1.7
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## 509  1.1973209  0.61370850  0.28304863  0.1323947906 260.2688 57.84661   1.6
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## 511  1.1973209  0.61370850  0.28304863  0.1323947906 260.2688 57.84661   3.3
## 512  1.7440834  0.75825310  0.32711983  0.1645927429 260.3107 57.87053   1.0
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## 515  1.7440834  0.75825310  0.32711983  0.1645927429 260.3107 57.87053   1.7
## 516  1.3362026  0.63025284  0.32482338  0.1492023468 260.2574 57.83317   1.5
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## 518  1.3914719  0.58897018  0.25032234  0.0705814362 260.1551 57.85797   1.5
## 519  1.7786198  0.74739456  0.33288288  0.1549520493 260.2827 57.81175   1.6
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## 521  1.7936611  0.70726967  0.29137230  0.1580486298 260.1634 57.87633   1.5
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## 524  1.4562798  0.66589928  0.29356194  0.1660556793 259.9300 57.87631   1.5
## 525  1.4562798  0.66589928  0.29356194  0.1660556793 259.9300 57.87631   1.8
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## 532  1.4562798  0.66589928  0.29356194  0.1660556793 259.9300 57.87631   2.2
## 533  1.4822426  0.70577812  0.31727791  0.1683940887 260.1635 57.95742   1.6
## 534  1.4822426  0.70577812  0.31727791  0.1683940887 260.1635 57.95742   2.5
## 535  1.6728783  0.70849419  0.36137390  0.1617107391 260.2005 57.91569   1.3
## 536  1.6728783  0.70849419  0.36137390  0.1617107391 260.2005 57.91569   3.6
## 537  1.7370834  0.71508217  0.36018753  0.1602325439 260.0432 57.88681   1.2
## 538  1.7370834  0.71508217  0.36018753  0.1602325439 260.0432 57.88681   1.1
## 539  1.3838444  0.61033249  0.29049683  0.1205348969 259.9348 58.01619   1.6
## 540  1.3838444  0.61033249  0.29049683  0.1205348969 259.9348 58.01619   1.7
## 541  1.4225483  0.66015434  0.29979706  0.1054859161 259.7847 57.96406   1.4
```

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## 542  1.4225483  0.66015434  0.29979706  0.1054859161 259.7847 57.96406   1.6
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## 544  1.3263016  0.62765121  0.25020981  0.1510963440 259.7994 57.90778   1.2
## 545  1.3317833  0.54703140  0.20206261  0.1406898499 259.3310 57.90378   4.7
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## 547  1.7653694  0.71736908  0.32418633  0.1192016602 258.7193 58.02222   4.9
## 548  1.7653694  0.71736908  0.32418633  0.1192016602 258.7193 58.02222   4.3
## 549  1.3269100  0.63056946  0.31432533  0.0517196655 259.3902 57.68389   1.6
## 550  1.3269100  0.63056946  0.31432533  0.0517196655 259.3902 57.68389   1.9
## 551  1.3269100  0.63056946  0.31432533  0.0517196655 259.3902 57.68389   1.8
## 552  1.3269100  0.63056946  0.31432533  0.0517196655 259.3902 57.68389   2.4
## 553  1.1850758  0.45641136  0.15228653  0.0765972137 260.1292 57.13494   4.0
## 554  1.2294102  0.48006630  0.23765182  0.0243663788 260.2920 57.09183   4.0
## 555  1.5831566  0.70058823  0.29607010  0.1572961807 260.2833 57.34361   2.2
## 556  1.8623600  0.70281029  0.26780701  0.1211442947 260.6451 57.07367   4.0
## 557  1.8644123  0.69964409  0.27272415  0.1303730011 260.5370 57.15519   4.9
## 558  1.1865196  0.56041145  0.25732613  0.1179122925 260.6650 57.13719   1.5
## 559  1.3743095  0.54475594  0.32139969  0.1222133636 260.2437 57.85067   1.4
## 560  1.4089794  0.62258530  0.30206108  0.1794567108 260.2466 57.79481   1.0
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## 562  1.2833748  0.42939568  0.16246796  0.0733299255 260.2819 57.87169   2.2
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## 565  1.5943813  0.63245392  0.30830383  0.2090740204 260.0818 57.90061   2.3
## 566  1.5360661  0.62733459  0.33697128  0.1759586334 260.0539 57.90083   1.1
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## 568  1.5881958  0.62601089  0.31031418  0.0869827271 260.0452 57.88264   1.6
## 569  1.5881958  0.62601089  0.31031418  0.0869827271 260.0452 57.88264   3.0
## 570  1.7932701  0.67884254  0.32177162  0.2107067108 260.0236 57.88436   1.5
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## 573  2.0713463  0.93774223  0.40473557  0.2203464508 259.7400 57.90394   1.3
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## 575  1.4895096  0.68304634  0.24545670  0.1155052185 259.9298 57.88367   1.8
## 576  1.4826603  0.56194687  0.24268913  0.1718292236 259.0373 58.23594   4.2
## 577  2.0619926  0.85257149  0.37278748  0.2051620483 259.3427 58.12372   1.4
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## 584  2.0619926  0.85257149  0.37278748  0.2051620483 259.3427 58.12372   1.7
## 585  2.6660175  1.44934273  0.74876595  0.4184885025 259.4420 58.22303   5.2
## 586  1.4684429  0.62198830  0.30615044  0.0241260529 259.3088 58.18014   2.3
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## 591  1.4684429  0.62198830  0.30615044  0.0241260529 259.3088 58.18014   1.8
## 592  1.5405369  0.59816170  0.27443886  0.2023944855 259.7771 58.41464   2.9
## 593  1.4520874  0.68716621  0.29767799  0.1905326843 259.7493 58.10814   1.1
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## 595  1.4520874  0.68716621  0.29767799  0.1905326843 259.7493 58.10814   1.8
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## 598  2.4539490  1.07271004  0.45840263  0.2487239838 259.6760 57.98611   1.0
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## 605  1.5962696  0.66993141  0.29729462  0.1915912628 259.7923 58.13517   1.9
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## 610  1.5235863  0.73962975  0.33312607  0.1496982574 259.9045 58.08892   2.2
## 611  1.8235435  0.80222321  0.33128548  0.1945209503 259.8405 58.01125   1.0
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## 613  1.3774319  0.61819839  0.24216843  0.1551837921 260.2742 58.08192   1.4
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## 615  2.0185509  0.85757065  0.35140991  0.1955661774 260.2701 58.03364   1.0
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## 620  2.3865623  0.95225716  0.31541157  0.1556568146 260.4848 58.72172   5.1
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## 621  1.6855412  0.73808289  0.25218010  0.1073150635 260.3896 58.85006   5.2
## 622  1.6855412  0.73808289  0.25218010  0.1073150635 260.3896 58.85006   5.1
## 623  1.9315910  0.76785088  0.25975227  0.0981636047 260.3582 58.84372   4.9
## 624  1.4096375  0.53358459  0.19600868  0.0778560638 260.2246 58.87192   4.7
## 625  1.4573536  0.53523254  0.18326950  0.0485267639 260.2374 58.84886   4.7
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## 630  1.2758408  0.56004715  0.24069023  0.1675891876 259.6241 58.74625   4.4
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## 689  1.7019558  0.70851898  0.23807716  0.1732826233 258.9713 57.51736   5.3
## 690  0.9640923  0.41324425  0.11030388  0.1414661407 258.9010 57.58369   4.8
## 691  0.9640923  0.41324425  0.11030388  0.1414661407 258.9010 57.58369   2.1
## 692  1.4749231  0.50987911  0.17975903  0.0517425537 258.9129 57.59597   4.3
## 693  1.1697140  0.49547577  0.21287537  0.0937385559 258.9850 57.59717   3.6
## 694  1.8083248  0.70636368  0.27417374  0.1797523499 258.9390 57.58000   4.9
## 695  1.7925491  0.70466232  0.26584625  0.1525726318 258.7850 57.56514   4.9
## 696  1.2461033  0.59817314  0.28927040  0.1357307434 262.0855 58.05028   4.5
## 697  1.2461033  0.59817314  0.28927040  0.1357307434 262.0855 58.05028   4.9
## 698  1.8274784  0.82099915  0.36653709  0.2219409943 261.9098 58.26308   0.9
## 699  1.8274784  0.82099915  0.36653709  0.2219409943 261.9098 58.26308   1.2
```

```
## 700  1.8274784  0.82099915  0.36653709  0.2219409943 261.9098 58.26308   1.0
## 701  2.1655350  0.79164219  0.28977871  0.1331434250 261.9182 58.28853   4.9
## 702  1.5282764  0.67072868  0.23872948  0.1497764587 261.8919 58.41278   5.2
## 703  1.5282764  0.67072868  0.23872948  0.1497764587 261.8919 58.41278   4.8
## 704  1.2529869  0.46168709  0.16302299  0.0079784393 261.9478 58.70875   2.0
## 705  1.2877674  0.45348358  0.17262077  0.0876369476 261.7180 58.55928   4.0
## 706  1.6937656  0.65830803  0.32013321  0.1363906860 261.7112 58.47267   1.7
## 707  2.0585766  0.85129166  0.30500412  0.2043285370 261.8240 58.74328   5.2
## 708  1.4927425  0.62090492  0.26711655  0.1807670593 261.5848 58.45422   2.3
## 709  2.6117611  0.66291618  0.27684402  0.1823215485 261.4968 58.74478   5.4
## 710  1.2563572  0.56384087  0.23368835  0.0761108398 260.9928 58.23353   2.7
## 711  1.3293324  0.54819489  0.18142509  0.0906848907 261.9041 57.61508   4.5
## 712  1.5532017  1.12379074  0.44053459  0.3657302856 262.0496 57.62369   3.0
## 713  1.4354267  1.57764435  0.57907486  0.3790435791 262.0826 57.63928   3.2
## 714  2.2971535  1.01207733  0.40559387  0.2225914001 262.8084 57.36583   5.1
## 715  1.6171188  0.62696266  0.22830963  0.0670509338 263.0761 57.35167   4.9
## 716  1.6031494  0.71024513  0.27625275  0.1073474884 262.8259 57.56481   1.2
## 717  1.5417461  0.50329971  0.25783730  0.1372451782 262.9558 57.95386   3.8
## 718  1.7080154  0.72559166  0.24357796  0.1808032990 262.8508 58.02692   4.9
## 719  2.2239113  1.01482964  0.38074684  0.2331447601 262.8363 58.05939   4.8
## 720  1.2718563  1.22524834  0.37837219  0.4253673553 262.3057 57.77258   4.4
## 721  2.1703930  1.24529076  0.49509048  0.4260730743 262.2612 57.73631   3.5
## 722  1.9229565  1.06324577  0.44132614  0.3396644592 257.6145 58.28606   5.4
## 723  1.8706436  0.86764336  0.33189583  0.1900577545 257.1401 58.27417   2.0
## 724  2.0617561  0.79126358  0.29155827  0.1528930664 257.5338 58.09119   3.1
## 725  1.5796185  0.83481407  0.29100800  0.1978588104 258.4548 58.17942   1.6
## 726  1.7815018  0.75850487  0.30234909  0.2092933655 258.2557 58.34958   4.7
## 727  1.8656349  0.84255600  0.32985497  0.2223339081 258.1907 58.35264   4.6
## 728  1.8629055  0.87388039  0.33897591  0.2451534271 258.1387 58.44742   5.1
## 729  1.0754204  0.51320457  0.20977211  0.1292419434 258.0864 58.66203   4.5
## 730  1.8134441  0.72588921  0.24427605  0.1565790176 257.9237 58.67772   3.7
## 731  1.3651581  0.53285599  0.19289207  0.1051254272 257.6646 58.71617   4.4
## 732  2.0499763  0.81049728  0.31400108  0.2227344513 257.7569 58.69842   5.1
## 733  1.7979183  0.68690872  0.19572830  0.0965957642 257.7047 58.63714   4.8
## 734  1.1709576  0.53981781  0.26626205  0.1440620422 257.7757 58.48139   2.2
## 735  1.1952705  0.42269325  0.16328812  0.0871028900 257.5534 58.66969   4.6
## 736  2.4855556  1.08310699  0.48179054  0.2460756302 259.9954 57.95581   1.1
## 737  1.7697773  0.74643326  0.34269524  0.1902885437 259.3372 58.03258   1.7
## 738  1.7697773  0.74643326  0.34269524  0.1902885437 259.3372 58.03258   1.9
## 739  1.7697773  0.74643326  0.34269524  0.1902885437 259.3372 58.03258   1.5
## 740  1.6760120  0.74535942  0.31901741  0.2310180664 259.4220 58.01219   1.6
## 741  1.5612431  0.60192680  0.25720024  0.1666126251 259.3585 58.04086   3.8
## 742  1.6378098  0.74553680  0.34949684  0.2251815796 259.4108 57.98183   2.3
## 743  1.6378098  0.74553680  0.34949684  0.2251815796 259.4108 57.98183   1.9
## 744  1.6378098  0.74553680  0.34949684  0.2251815796 259.4108 57.98183   1.0
## 745  1.2267876  0.52561378  0.23605347  0.1173934937 259.2333 57.97672   3.0
## 746  1.4983807  0.58193398  0.32453728  0.0786952972 260.0297 57.88264   1.2
## 747  2.2445164  0.89254570  0.38696671  0.1593208313 257.4518 57.00311   4.5
## 748  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   5.3
## 749  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   5.2
## 750  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   3.7
## 751  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   4.3
## 752  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   4.9
## 753  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   5.0
## 754  1.4631290  0.62726593  0.25207901  0.2222385406 259.3576 57.68792   4.2
## 755  1.8962078  0.71447945  0.25691605  0.1763610840 259.4770 57.74714   5.2
## 756  1.8962078  0.71447945  0.25691605  0.1763610840 259.4770 57.74714   4.9
## 757  2.5039997  1.18723679  0.41103935  0.2492294312 259.9091 57.89342   5.4
## 758  1.5860367  0.62250328  0.22922707  0.0210990906 259.2277 57.68647   4.7
## 759  1.5860367  0.62250328  0.22922707  0.0210990906 259.2277 57.68647   5.1
## 760  1.5860367  0.62250328  0.22922707  0.0210990906 259.2277 57.68647   5.1
## 761  2.2646580  0.99764061  0.33458519  0.2185249329 259.6461 57.75356   5.3
## 762  2.2646580  0.99764061  0.33458519  0.2185249329 259.6461 57.75356   5.3
## 763  1.7178211  0.77812576  0.32898903  0.2026977539 259.8333 57.81803   1.6
## 764  1.9069366  0.87479019  0.33381462  0.2056102753 259.7382 57.78017   5.1
## 765  1.9069366  0.87479019  0.33381462  0.2056102753 259.7382 57.78017   4.2
## 766  2.5454674  1.20812225  0.45935631  0.2637023926 259.3594 57.58633   4.8
## 767  2.5454674  1.20812225  0.45935631  0.2637023926 259.3594 57.58633   5.2
## 768  2.3254223  1.00232315  0.31938744  0.1999092102 259.7736 57.77347   4.8
## 769  2.3254223  1.00232315  0.31938744  0.1999092102 259.7736 57.77347   4.9
## 770  1.5079403  0.53648376  0.27637863 -0.1121978760 259.5077 57.60078   5.0
## 771  1.5079403  0.53648376  0.27637863 -0.1121978760 259.5077 57.60078   5.2
## 772  1.5079403  0.53648376  0.27637863 -0.1121978760 259.5077 57.60078   4.1
## 773  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.4
## 774  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.2
## 775  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.2
## 776  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.3
## 777  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.4
## 778  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.1
```

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## 779  1.9708481  0.82757568  0.30472183  0.1362934113 259.3767 57.62069   5.1
## 780  1.6876183  0.74328423  0.33575439  0.1763954163 259.7138 57.70444   1.2
## 781  1.6876183  0.74328423  0.33575439  0.1763954163 259.7138 57.70444   1.6
## 782  2.4359150  1.04173660  0.33018875  0.2246608734 259.7794 57.65542   5.5
## 783  2.4359150  1.04173660  0.33018875  0.2246608734 259.7794 57.65542   5.4
## 784  2.9917183  1.17779922  0.34352684  0.3883609772 260.0029 57.89628   0.7
## 785  2.9917183  1.17779922  0.34352684  0.3883609772 260.0029 57.89628   0.7
## 786  1.9729137  0.79543304  0.28944397  0.2348423004 259.8624 57.77961   4.9
## 787  1.9729137  0.79543304  0.28944397  0.2348423004 259.8624 57.77961   5.3
## 788  1.3459244  0.63656425  0.28776169 -0.0069675446 259.7251 57.53158   4.7
## 789  1.3459244  0.63656425  0.28776169 -0.0069675446 259.7251 57.53158   4.8
## 790  2.5336246  1.09977531  0.46011353  0.2747097015 259.9488 57.81017   0.8
## 791  2.5336246  1.09977531  0.46011353  0.2747097015 259.9488 57.81017   0.8
## 792  1.8710766  0.66836166  0.42993736  0.0920753479 259.8745 57.80464   1.2
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## 794  1.8710766  0.66836166  0.42993736  0.0920753479 259.8745 57.80464   1.3
## 795  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.3
## 796  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.2
## 797  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.1
## 798  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.1
## 799  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.2
## 800  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.3
## 801  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.2
## 802  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.0
## 803  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.2
## 804  2.4971886  1.05151176  0.39369583  0.2072467804 259.8123 57.49233   5.2
## 805  1.7222137  0.41563606  0.64360809  0.0922565460 259.8918 57.61903   5.2
## 806  1.7222137  0.41563606  0.64360809  0.0922565460 259.8918 57.61903   5.3
## 807  1.3313313  1.26946259  0.28682327  0.4145240784 259.9903 57.83486   0.9
## 808  1.3313313  1.26946259  0.28682327  0.4145240784 259.9903 57.83486   0.8
## 809  1.1298809  0.52985191  0.22843170  0.0805892944 259.9404 57.67847   3.6
## 810  1.1298809  0.52985191  0.22843170  0.0805892944 259.9404 57.67847   4.8
## 811  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.4
## 812  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.2
## 813  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.2
## 814  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.0
## 815  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.1
## 816  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.2
## 817  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.3
## 818  2.3511906  1.01512909  0.37150383  0.2004966736 260.0901 57.44303   5.3
## 819  2.4484100  0.94398689  0.34568977  0.1785469055 260.0472 57.71658   5.3
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## 821  1.5187149  0.65589905  0.19984627  0.2385692596 260.0480 57.44325   5.2
## 822  1.5187149  0.65589905  0.19984627  0.2385692596 260.0480 57.44325   4.7
## 823  1.5187149  0.65589905  0.19984627  0.2385692596 260.0480 57.44325   4.9
## 824  1.5187149  0.65589905  0.19984627  0.2385692596 260.0480 57.44325   4.1
## 825  1.6750259  0.69892883  0.37666321  0.1877326965 260.0310 57.90908   1.4
## 826  2.2065086  1.00502968  0.44270706  0.1953353882 259.9838 57.44578   5.0
## 827  2.2065086  1.00502968  0.44270706  0.1953353882 259.9838 57.44578   5.2
## 828  2.0527248  0.91055298  0.33694649  0.1906356812 260.2206 57.52244   5.2
## 829  2.0527248  0.91055298  0.33694649  0.1906356812 260.2206 57.52244   5.3
## 830  1.9800282  0.43150902  0.23762894  0.2230415344 260.2209 57.57933   4.3
## 831  0.9388847  0.56062889  0.23902893  0.1988735199 260.1452 57.64656   4.8
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## 834  1.8981915  0.70546913  0.24290085  0.0688304901 260.1113 57.60686   4.3
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## 838  2.9320030  1.20415115  0.34327316  0.2602958679 260.1397 57.83878   0.8
## 839  2.9320030  1.20415115  0.34327316  0.2602958679 260.1397 57.83878   0.8
## 840  2.3001842  0.99071312  0.35864639  0.2119083405 260.3036 57.72386   5.3
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## 848  2.5951385  1.14856148  0.41951942  0.2201900482 260.5339 57.58044   5.1
## 849  2.5951385  1.14856148  0.41951942  0.2201900482 260.5339 57.58044   5.4
## 850  2.5951385  1.14856148  0.41951942  0.2201900482 260.5339 57.58044   5.4
## 851  2.5951385  1.14856148  0.41951942  0.2201900482 260.5339 57.58044   5.4
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## 854  1.9470291  0.75348091  0.26436043  0.1520309448 260.3700 57.74914   4.6
## 855  1.9470291  0.75348091  0.26436043  0.1520309448 260.3700 57.74914   4.6
## 856  1.9470291  0.75348091  0.26436043  0.1520309448 260.3700 57.74914   5.2
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```

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## 858  1.9837799  0.81424904  0.36982155  0.1672306061 260.1660 57.85425   1.1
## 859  1.9837799  0.81424904  0.36982155  0.1672306061 260.1660 57.85425   1.0
## 860  2.2693253  0.90903664  0.41003227  0.2514991760 260.5157 57.69128   1.3
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## 864  2.4816532  1.12113380  0.40272331  0.2246513367 260.6483 57.63353   5.4
## 865  2.4816532  1.12113380  0.40272331  0.2246513367 260.6483 57.63353   5.3
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## 867  2.9938068  1.28071213  0.54098606  0.2875900269 260.1368 57.86219   0.7
## 868  1.6020756  0.75781822  0.31859970  0.1090316772 260.6075 57.53889   4.3
## 869  1.6020756  0.75781822  0.31859970  0.1090316772 260.6075 57.53889   4.7
## 870  2.7074566  1.42141056  0.51383400  0.3690080643 260.6375 57.76158   5.3
## 871  1.9623032  0.58113098  0.26688004  0.1498527527 260.6843 57.74056   3.5
## 872  2.5156384  1.05431366  0.44012451  0.2518596649 260.1425 57.89219   0.9
## 873  2.5156384  1.05431366  0.44012451  0.2518596649 260.1425 57.89219   0.7
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## 876  2.5689011  1.31247616  0.62514496  0.3495817184 260.1869 57.89067   5.3
## 877  2.5689011  1.31247616  0.62514496  0.3495817184 260.1869 57.89067   5.3
## 878  1.5931740  0.55338097  0.34054565  0.1156330109 260.0655 57.90767   2.8
## 879  1.5509109  0.69007874  0.32097244  0.1957874298 260.1856 57.86100   2.1
## 880  1.5509109  0.69007874  0.32097244  0.1957874298 260.1856 57.86100   1.5
## 881  1.3699589  0.58229637  0.29008865  0.0980625153 260.3694 57.86731   2.1
## 882  1.6421013  0.69858360  0.27526474  0.0569343567 260.4256 57.77517   4.5
## 883  1.6421013  0.69858360  0.27526474  0.0569343567 260.4256 57.77517   5.0
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## 886  2.6189384  1.18690300  0.54845047  0.3301830292 260.3682 57.88589   5.2
## 887  2.5895367  1.25472641  0.49618912  0.2803688049 260.7291 57.79619   5.3
## 888  2.5895367  1.25472641  0.49618912  0.2803688049 260.7291 57.79619   5.4
## 889  1.6260452  0.68630409  0.36199379  0.1207180023 260.1026 57.92078   1.5
## 890  1.6260452  0.68630409  0.36199379  0.1207180023 260.1026 57.92078   1.2
## 891  1.6260452  0.68630409  0.36199379  0.1207180023 260.1026 57.92078   1.6
## 892  2.3104935  0.92693520  0.34626579  0.2071704865 260.8727 57.75914   4.9
## 893  2.3104935  0.92693520  0.34626579  0.2071704865 260.8727 57.75914   4.8
## 894  1.8076363  0.79345512  0.36337090  0.1919384003 260.4549 57.89364   1.4
## 895  1.8076363  0.79345512  0.36337090  0.1919384003 260.4549 57.89364   1.0
## 896  2.5626373  1.15469170  0.44679832  0.2454738617 260.4573 57.93325   5.3
## 897  2.5626373  1.15469170  0.44679832  0.2454738617 260.4573 57.93325   5.4
## 898  2.8513260  1.20451164  0.53052521  0.2871627808 260.2208 57.93272   0.8
## 899  2.8513260  1.20451164  0.53052521  0.2871627808 260.2208 57.93272   0.7
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## 901  1.4033165  0.63887215  0.33641624  0.1402988434 260.4110 57.92778   1.3
## 902  1.1220360  0.50538635  0.27250671 -0.1688785553 260.4564 57.95586   3.2
## 903  1.1220360  0.50538635  0.27250671 -0.1688785553 260.4564 57.95586   4.5
## 904  1.4741230  0.58320999  0.32003593  0.0552024841 260.1854 57.91989   2.7
## 905  1.4741230  0.58320999  0.32003593  0.0552024841 260.1854 57.91989   1.4
## 906  1.9530487  0.80827332  0.37705231  0.2354373932 260.1135 57.93667   1.1
## 907  2.6745300  1.30918884  0.58165073  0.2941226959 260.4617 57.99331   5.2
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## 909  2.3766479  1.05102539  0.38100624  0.1681175232 260.8043 58.02236   5.1
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## 931  1.3305340  0.68194199  0.30609131  0.2177639008 260.0842 57.94875   1.2
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## 936  2.5179157  1.05961609  0.47470284  0.2498931885 260.1991 57.99875   0.8
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## 1015 1.0819073  0.56457710  0.21496201  0.1601982117 259.5980 58.33522   3.4
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## 1016 1.0819073  0.56457710  0.21496201  0.1601982117 259.5980 58.33522   4.9
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## 1065 1.3851337  0.68356323  0.27622604  0.1653766632 259.6401 57.97689   1.4
## 1066 1.2810802  0.59211349  0.32613754  0.0824184418 259.8569 57.95156   1.8
## 1067 1.3143635  0.54042053  0.26074028  0.0579605103 259.2245 58.02128   4.9
## 1068 1.3143635  0.54042053  0.26074028  0.0579605103 259.2245 58.02128   4.3
## 1069 1.3143635  0.54042053  0.26074028  0.0579605103 259.2245 58.02128   4.6
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## 1071 1.4433956  0.62965202  0.30999184  0.1085529327 259.7911 57.95297   1.8
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## 1075 1.8487415  0.76823807  0.29469299  0.2023334503 259.4226 58.02700   3.0
## 1076 1.8487415  0.76823807  0.29469299  0.2023334503 259.4226 58.02700   4.9
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## 1078 1.8487415  0.76823807  0.29469299  0.2023334503 259.4226 58.02700   4.6
## 1079 1.8487415  0.76823807  0.29469299  0.2023334503 259.4226 58.02700   4.0
## 1080 1.7074089  0.78385162  0.19905472  0.1818599701 259.5206 57.97639   5.1
## 1081 1.7074089  0.78385162  0.19905472  0.1818599701 259.5206 57.97639   4.6
## 1082 1.5630474  0.62713432  0.33653069  0.1515121460 259.4853 57.90019   2.2
## 1083 1.5630474  0.62713432  0.33653069  0.1515121460 259.4853 57.90019   2.3
## 1084 1.2898769  0.70989037  0.29889870  0.2166843414 259.9595 57.92228   2.6
## 1085 1.2898769  0.70989037  0.29889870  0.2166843414 259.9595 57.92228   1.4
## 1086 1.7477722  0.78536606  0.33626938  0.2102279663 259.1685 57.91889   1.2
## 1087 1.7477722  0.78536606  0.33626938  0.2102279663 259.1685 57.91889   1.6
## 1088 2.2711296  0.95080376  0.31586075  0.2443199158 259.4349 57.93056   5.0
## 1089 2.2711296  0.95080376  0.31586075  0.2443199158 259.4349 57.93056   4.9
## 1090 2.0732059  0.88127136  0.36108971  0.2275104523 259.8233 57.90892   1.3
## 1091 1.8763275  0.83716583  0.24281883  0.0952129364 259.4973 57.93625   4.9
## 1092 1.8919353  0.85700798  0.32538414  0.1728782654 259.3918 57.84142   4.9
## 1093 1.8919353  0.85700798  0.32538414  0.1728782654 259.3918 57.84142   4.6
## 1094 2.1551456  0.91516876  0.35010529  0.2008972168 259.3186 57.81336   5.0
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## 1095 2.1551456  0.91516876  0.35010529  0.2008972168 259.3186 57.81336   5.0
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## 1097 1.3081856  0.70073509  0.31628609  0.0952243805 259.9242 57.91261   2.1
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## 1102 1.8401165  0.72084808  0.29804420  0.1849288940 259.2747 57.77606   5.3
## 1103 1.8401165  0.72084808  0.29804420  0.1849288940 259.2747 57.77606   5.1
## 1104 1.8401165  0.72084808  0.29804420  0.1849288940 259.2747 57.77606   4.9
## 1105 1.8401165  0.72084808  0.29804420  0.1849288940 259.2747 57.77606   4.9
## 1106 1.7569485  0.67370987  0.28306770  0.2094287872 265.0308 55.81606   4.9
## 1107 2.1670609  0.88879204  0.33847046  0.1776885986 264.8154 55.72333   5.4
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## 1109 1.9908371  0.80841827  0.25015068  0.1213302612 264.8811 55.73592   5.4
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## 1115 1.9487572  0.89435005  0.34824944  0.1703586578 265.0048 55.66386   5.3
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## 1127 2.5007210  1.11050224  0.41603088  0.2370071411 265.5092 55.90761   5.2
## 1128 2.2352867  0.91182899  0.29077721  0.2261466980 265.4900 55.67600   5.0
## 1129 2.2790451  0.87389374  0.27382469  0.1259136200 265.4638 55.71092   5.2
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## 1133 1.7898827  0.67493820  0.26145744  0.1023921967 265.7301 55.61292   4.8
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## 1135 2.0443020  0.77813530  0.26928139  0.2146530151 265.6262 55.64436   3.6
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## 1137 2.4114513  0.99681664  0.42430496  0.2399063110 265.8081 55.74636   5.2
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## 1144 0.9436054  1.08051872  0.22883797  0.1252441406 265.7920 55.86022   4.5
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## 1146 2.3555431  1.02448463  0.39900970  0.2286834717 265.7571 55.88331   5.0
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## 1168 2.1447926  0.75506592  0.24484253  0.1311817169 266.1095 56.22611   4.5
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## 1174 2.2519436  0.97095680  0.35647774  0.1893367767 265.7537 56.14744   5.0
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## 1211 1.8599644  0.80084419  0.33160210  0.2248134613 264.9524 56.14947   5.3
## 1212 2.3387756  0.92617226  0.35915565  0.2089805603 265.2584 56.07278   5.1
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## 1223 2.0345669  0.62588310  0.61768723  0.2490921021 265.0971 55.99358   5.4
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## 1238 1.2374630  0.61712456  0.26510811  0.1806983948 259.3584 57.73817   5.2
## 1239 1.2374630  0.61712456  0.26510811  0.1806983948 259.3584 57.73817   5.3
## 1240 1.2374630  0.61712456  0.26510811  0.1806983948 259.3584 57.73817   4.3
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## 1242 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   2.8
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## 1246 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   1.2
## 1247 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   2.0
## 1248 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   1.2
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## 1250 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   1.1
## 1251 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   2.1
## 1252 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   1.1
```

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## 1253 1.5155830  0.68043900  0.29622269  0.1174449921 259.8277 57.85097   1.1
## 1254 1.1660290  0.47398376  0.17304420  0.0882663727 259.6988 57.74883   5.0
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## 1450 1.7656918  0.75760269  0.30782890  0.2165451050 259.6273 57.86297   1.7
## 1451 1.7656918  0.75760269  0.30782890  0.2165451050 259.6273 57.86297   0.9
## 1452 1.6950111  0.45999146  0.33425331 -0.2560024261 259.3702 57.82206   2.2
## 1453 1.4811707  0.68578529  0.26319695  0.0641975403 259.9609 57.78364   3.4
## 1454 1.7997246  0.64913559  0.19483757  0.0497150421 260.0016 57.82461   5.2
## 1455 0.9413071  0.50441360  0.12914658  0.0731048584 259.8565 57.50606   4.1
## 1456 1.6696053  0.76252365  0.24334908  0.1641693115 259.7760 57.62222   4.7
## 1457 1.5940933  0.65641403  0.20085144  0.0897693634 259.9692 57.53014   4.1
## 1458 1.5940933  0.65641403  0.20085144  0.0897693634 259.9692 57.53014   5.1
## 1459 1.3954487  0.68000984  0.25345993  0.1133937836 259.9555 57.63786   4.0
## 1460 1.3954487  0.68000984  0.25345993  0.1133937836 259.9555 57.63786   4.8
## 1461 1.0376110  0.30888939  0.10193253 -0.0764408112 259.9852 57.51992   3.9
## 1462 1.0376110  0.30888939  0.10193253 -0.0764408112 259.9852 57.51992   4.0
## 1463 0.8878841  0.31791306  0.10465240  0.1521949768 259.9190 57.57825   4.3
## 1464 1.5769901  0.64952850  0.30388069  0.0729598999 260.0642 57.89175   2.0
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## 1466 1.3826084  0.59489441  0.23923492  0.0497188568 259.8598 57.44225   1.8
## 1467 1.3826084  0.59489441  0.23923492  0.0497188568 259.8598 57.44225   2.7
## 1468 1.3826084  0.59489441  0.23923492  0.0497188568 259.8598 57.44225   3.8
## 1469 1.3826084  0.59489441  0.23923492  0.0497188568 259.8598 57.44225   1.8
## 1470 1.3545570  0.63745880  0.28117180  0.1704158783 260.0687 57.81122   1.8
## 1471 1.4018478  0.63836288  0.26327133  0.0976562500 260.2459 57.80447   4.1
## 1472 1.5569782  0.75899506  0.23909950  0.1721401215 260.1655 57.84725   1.2
## 1473 1.7998943  0.49564743  0.24186897  0.0283279419 260.4981 57.68364   4.0
## 1474 1.7040253  0.69325066  0.24668884  0.1546649933 260.2258 57.86653   3.6
## 1475 2.0587807  0.88734055  0.35954475  0.2134513855 260.3112 57.86953   1.2
## 1476 1.1885185  0.59706497  0.24794960  0.0545158386 260.8801 57.74172   3.9
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## 1478 1.5869999  0.71434593  0.30902100  0.1835117340 260.3076 57.87939   1.3
## 1479 0.9236164  0.29856873  0.19350243 -0.0225048065 260.7335 57.86953   4.3
## 1480 0.9236164  0.29856873  0.19350243 -0.0225048065 260.7335 57.86953   4.8
## 1481 0.9236164  0.29856873  0.19350243 -0.0225048065 260.7335 57.86953   3.1
## 1482 2.3716755  1.02998734  0.38421631  0.2049312592 260.5505 57.87789   5.3
## 1483 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.4
## 1484 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.4
## 1485 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.3
## 1486 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.2
## 1487 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.4
## 1488 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.5
## 1489 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.0
```

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## 1490 1.6470947  0.68084526  0.31323624  0.1677665710 260.1004 57.92094   1.6
## 1491 2.5987206  1.20635128  0.51295185  0.2783012390 260.8675 58.00397   5.4
## 1492 0.9947071  0.37700844  0.14198303 -0.0756244659 260.7913 58.01172   4.4
## 1493 1.2219296  0.46810341  0.21817970  0.0769882202 260.9479 57.96686   4.6
## 1494 1.2219296  0.46810341  0.21817970  0.0769882202 260.9479 57.96686   3.6
## 1495 2.6539688  1.21673584  0.46955967  0.2587013245 260.8594 58.08961   5.2
## 1496 2.6539688  1.21673584  0.46955967  0.2587013245 260.8594 58.08961   5.3
## 1497 2.6539688  1.21673584  0.46955967  0.2587013245 260.8594 58.08961   5.2
## 1498 1.4121265  0.67881966  0.27362442  0.1342105865 260.9041 58.09267   5.0
## 1499 1.4121265  0.67881966  0.27362442  0.1342105865 260.9041 58.09267   3.8
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## 1501 1.6449242  0.69291687  0.35286331  0.1765270233 260.1008 57.94053   1.4
## 1502 1.9391670  0.72463036  0.28191757  0.1709346771 260.3168 58.00906   5.0
## 1503 1.9391670  0.72463036  0.28191757  0.1709346771 260.3168 58.00906   5.3
## 1504 1.9391670  0.72463036  0.28191757  0.1709346771 260.3168 58.00906   5.1
## 1505 1.4045811  0.65781403  0.32453346  0.1294555664 260.1267 57.96817   1.1
## 1506 1.5286884  0.65468979  0.23509979  0.2372016907 260.4446 58.21619   5.1
## 1507 1.5286884  0.65468979  0.23509979  0.2372016907 260.4446 58.21619   4.0
## 1508 1.0526600  0.26459503  0.05171585  0.2101764679 260.4432 58.12575   4.3
## 1509 2.5698071  1.11493492  0.41106033  0.2029876709 260.4015 58.35228   5.2
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## 1511 2.5698071  1.11493492  0.41106033  0.2029876709 260.4015 58.35228   5.1
## 1512 1.4112186  0.70276833  0.13344383  0.3382778168 260.2583 58.21939   3.7
## 1513 0.7152290  0.28815079  0.18460846  0.1745777130 260.4334 58.37517   2.8
## 1514 1.3974819  0.62628174  0.26019287  0.1724948883 260.2817 58.28281   4.6
## 1515 1.3974819  0.62628174  0.26019287  0.1724948883 260.2817 58.28281   5.4
## 1516 1.1791935  0.19587135  0.08532524  0.1113166809 260.2467 58.08964   3.4
## 1517 2.5219746  1.19627285  0.43890953  0.2523078918 260.1914 58.37792   5.5
## 1518 2.5219746  1.19627285  0.43890953  0.2523078918 260.1914 58.37792   5.4
## 1519 1.6019287  0.69013023  0.31249237  0.1645202637 260.0988 58.09006   1.4
## 1520 1.6019287  0.69013023  0.31249237  0.1645202637 260.0988 58.09006   0.9
## 1521 1.2302723  0.24480057  0.05775642  0.0826282501 260.2166 58.25044   1.6
## 1522 1.7508202  0.77676010  0.36155319  0.2103767395 260.0437 57.97244   1.0
## 1523 1.4406242  0.62662315  0.24788094  0.2181262970 260.0053 58.31150   1.6
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## 1527 1.2008915  0.45859528  0.22583199  0.1132678986 260.0389 58.13117   2.5
## 1528 0.9705429  0.30802536  0.16005135  0.2856559753 259.7163 58.36133   1.9
## 1529 0.9705429  0.30802536  0.16005135  0.2856559753 259.7163 58.36133   4.4
## 1530 0.9705429  0.30802536  0.16005135  0.2856559753 259.7163 58.36133   4.2
## 1531 0.9705429  0.30802536  0.16005135  0.2856559753 259.7163 58.36133   4.4
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## 1533 0.9231434  0.39721298  0.22693443  0.1276760101 259.8314 58.31986   4.1
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## 1537 1.7218113  0.73313904  0.30711555  0.1333560944 259.9725 57.99836   5.0
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## 1539 1.1738853  0.65280533  0.30008888  0.1439342499 259.8380 58.13106   3.8
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## 1542 2.0373192  0.88887405  0.32793236  0.1574020386 259.3947 58.24106   5.1
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## 1544 2.0373192  0.88887405  0.32793236  0.1574020386 259.3947 58.24106   5.5
## 1545 2.0373192  0.88887405  0.32793236  0.1574020386 259.3947 58.24106   5.3
## 1546 2.0373192  0.88887405  0.32793236  0.1574020386 259.3947 58.24106   5.1
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## 1550 1.3160381  0.56468582  0.31917572  0.0682430267 260.0280 57.93103   1.7
## 1551 1.2399445  0.63303757  0.29171371  0.1663589478 259.6530 58.04522   3.2
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## 1557 1.0666275  0.40353203  0.18432426  0.1424503326 259.5033 57.85661   2.5
## 1558 1.5776997  0.67902565  0.30389023  0.1787338257 259.7212 57.92208   1.8
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## 1562 1.1894932  0.46362877  0.31681824  0.2045669556 259.4859 57.80714   3.9
## 1563 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   3.0
## 1564 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   2.2
## 1565 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   1.4
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## 1567 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   1.5
## 1568 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   1.6
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## 1569 1.6099262  0.67094612  0.32512474  0.1905097961 259.8078 57.86528   2.3
## 1570 1.5199051  0.70445061  0.23017311  0.1201744080 259.5448 57.84194   2.1
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## 1577 1.7264843  0.77323532  0.35245705  0.1701297760 259.5542 57.71294   2.0
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## 1579 1.7264843  0.77323532  0.35245705  0.1701297760 259.5542 57.71294   1.0
## 1580 1.7264843  0.77323532  0.35245705  0.1701297760 259.5542 57.71294   1.2
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## 1584 1.7176609  0.70261383  0.36455154  0.1539344788 260.0023 57.88239   2.5
## 1585 1.7176609  0.70261383  0.36455154  0.1539344788 260.0023 57.88239   2.4
## 1586 1.7176609  0.70261383  0.36455154  0.1539344788 260.0023 57.88239   2.5
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## 1601 2.1998749  0.93083000  0.32413483  0.2127323151 258.5875 57.77761   5.3
## 1602 2.0517025  0.78185463  0.23897171  0.1012172699 258.6671 57.81908   3.1
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## 1608 1.9472046  0.82199860  0.23352242  0.2004718781 258.7572 57.84539   4.9
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## 1612 2.0515251  0.77092171  0.25201797  0.1398983002 258.5217 57.57514   4.6
## 1613 2.0515251  0.77092171  0.25201797  0.1398983002 258.5217 57.57514   4.6
## 1614 2.2416821  1.02376175  0.37205696  0.1830577850 258.7717 57.71122   5.1
## 1615 2.2416821  1.02376175  0.37205696  0.1830577850 258.7717 57.71122   5.0
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## 1617 1.5364780  0.65715599  0.27784348  0.1311779022 258.7225 57.73500   4.1
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## 1625 1.8138561  0.69720840  0.28334045  0.1437072754 259.0911 57.58353   5.0
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## 1629 1.8675404  0.73317146  0.24433327  0.1656017303 258.8137 57.94028   5.0
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## 1638 1.7127018  0.75871658  0.32153130  0.1524848938 259.1351 57.71281   5.4
## 1639 1.7127018  0.75871658  0.32153130  0.1524848938 259.1351 57.71281   5.3
## 1640 1.7127018  0.75871658  0.32153130  0.1524848938 259.1351 57.71281   5.4
## 1641 2.6777039  1.12220955  0.47173691  0.2718944550 259.1158 57.80239   1.1
## 1642 2.1823597  0.89400673  0.33233833  0.1781425476 259.3154 57.78692   4.5
## 1643 2.1823597  0.89400673  0.33233833  0.1781425476 259.3154 57.78692   5.0
## 1644 2.1823597  0.89400673  0.33233833  0.1781425476 259.3154 57.78692   5.0
## 1645 1.3019447  0.59583473  0.23233986  0.0508136749 259.2532 57.85619   4.5
## 1646 1.3019447  0.59583473  0.23233986  0.0508136749 259.2532 57.85619   4.8
## 1647 1.3041840  0.37009048  0.15006828  0.0830516815 259.5665 57.80322   3.0
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## 1648 1.3041840  0.37009048  0.15006828  0.0830516815 259.5665 57.80322   4.7
## 1649 2.5077343  1.12893677  0.46115494  0.2584323883 259.5433 57.86917   1.3
## 1650 2.5077343  1.12893677  0.46115494  0.2584323883 259.5433 57.86917   0.7
## 1651 0.5746670 -0.25685120  1.14950562 -3.1411972046 259.4928 57.95181   2.8
## 1652 1.6004105  0.66475105  0.34161758  0.1517333984 259.6898 58.08231   4.2
## 1653 1.6004105  0.66475105  0.34161758  0.1517333984 259.6898 58.08231   1.5
## 1654 1.6004105  0.66475105  0.34161758  0.1517333984 259.6898 58.08231   1.2
## 1655 1.6004105  0.66475105  0.34161758  0.1517333984 259.6898 58.08231   1.5
## 1656 1.4977875  0.68592644  0.31751060  0.1684913635 259.0066 57.98864   1.1
## 1657 1.9357510  0.79471779  0.33427811  0.1678867340 258.9026 58.09486   4.6
## 1658 1.7221107  0.75367928  0.30123901  0.1740608215 258.9107 58.41686   4.4
## 1659 2.5574436  1.21694469  0.46210289  0.2492256165 258.8918 58.12594   5.4
## 1660 2.5386333  1.18495369  0.43219280  0.2502193451 258.5865 58.33750   5.0
## 1661 1.8691463  0.71930122  0.28779984  0.1630992889 258.6771 58.31758   4.6
## 1662 2.1300449  0.79247093  0.27350235  0.1726589203 258.7080 58.12417   5.1
## 1663 2.1300449  0.79247093  0.27350235  0.1726589203 258.7080 58.12417   5.0
## 1664 1.5521431  0.66689110  0.17736435  0.1797409058 258.5351 58.32286   4.0
## 1665 2.1610718  0.92065430  0.31832886  0.1734256744 258.7153 58.33067   4.8
## 1666 1.9235439  0.75996590  0.28497124  0.1560821533 258.7380 58.01575   4.3
## 1667 2.4695683  1.20686913  0.45931339  0.2602329254 258.5793 58.06153   5.0
## 1668 2.4695683  1.20686913  0.45931339  0.2602329254 258.5793 58.06153   5.4
## 1669 2.4695683  1.20686913  0.45931339  0.2602329254 258.5793 58.06153   5.4
## 1670 2.3163090  1.04866028  0.36038208  0.2066783905 258.4586 58.10967   5.1
## 1671 2.3163090  1.04866028  0.36038208  0.2066783905 258.4586 58.10967   5.1
## 1672 1.4542618  0.67267990  0.27219582  0.1609268188 258.3918 58.06614   5.2
## 1673 2.5548782  1.16529274  0.46118832  0.2632265091 258.3078 58.14328   5.4
## 1674 1.6791363  0.67884445  0.29276848  0.0737419128 258.1575 57.98939   4.6
## 1675 1.6791363  0.67884445  0.29276848  0.0737419128 258.1575 57.98939   4.8
## 1676 0.9538078  0.46386337  0.38745308 -0.5454406738 258.5245 57.99161   3.8
## 1677 1.4333153  1.78815079 -0.78062248 -2.8946743011 257.9853 57.97017   4.8
## 1678 1.4333153  1.78815079 -0.78062248 -2.8946743011 257.9853 57.97017   3.7
## 1679 1.5555115  1.01461983  0.21665573  0.1289615631 258.2269 57.85833   4.7
## 1680 1.5555115  1.01461983  0.21665573  0.1289615631 258.2269 57.85833   5.3
## 1681 0.8503017  0.40787506  0.18536949 -0.0092334747 258.3322 57.87475   3.3
## 1682 1.4518566  0.55631638  0.26530075 -0.0298957825 258.0678 57.67786   4.0
## 1683 2.0291157  0.76441383  0.28653336  0.2317199707 258.1021 57.76094   4.6
## 1684 2.5161953  1.12487793  0.43090439  0.2247314453 261.3605 57.54450   4.9
## 1685 2.3081188  0.95947647  0.33889961  0.1861858368 261.3410 57.56075   5.2
## 1686 1.7929115  0.69999313  0.25704956  0.0847320557 261.3579 57.44256   4.5
## 1687 1.8815441  0.73220444  0.27043915  0.1422500610 261.3317 57.71497   4.7
## 1688 1.2199879  0.55213928  0.22043991  0.0034294128 261.3470 57.70936   5.1
## 1689 1.5150089  0.69192123  0.26210976  0.1815528870 261.4569 57.48314   5.1
## 1690 1.6298866  0.64239502  0.29567719  0.1753368378 261.3035 57.42456   4.6
## 1691 1.5251007  0.59863281  0.19431686 -0.0066490173 261.3516 57.77067   4.0
## 1692 1.8211670  0.57200813  0.25313377  0.1873035431 261.5106 57.44872   3.4
## 1693 2.1534195  0.75480652  0.27867126  0.1588745117 261.5500 57.68300   4.8
## 1694 2.1142063  0.74669266  0.29320717  0.1671581268 261.7724 57.49225   4.5
## 1695 1.9005508  0.77359390  0.29621124  0.1370639801 261.4439 57.76064   5.2
## 1696 2.1758995  0.91892624  0.35146904  0.1822738647 261.7382 57.67367   5.3
## 1697 1.5837212  0.70169067  0.23957062  0.1429920197 261.7632 57.63444   4.4
## 1698 1.4023819  0.43663597  0.18159676  0.1650505066 261.8648 57.57108   3.6
## 1699 1.3765965  0.63774300  0.23839760  0.0749607086 261.6070 57.81056   4.3
## 1700 2.5988331  1.16448021  0.43685150  0.2333936691 261.3782 57.84789   5.1
## 1701 1.5749550  0.69024277  0.18619156  0.1320381165 262.0376 57.68611   4.4
## 1702 2.2717438  0.69500542  0.21712494 -0.0126075745 261.9267 57.75667   3.9
## 1703 2.0429802  0.77804565  0.32800293  0.1562137604 261.7121 57.76281   4.4
## 1704 1.5532951  0.69512939  0.26415253  0.1570148468 262.0138 57.74681   5.2
## 1705 1.5003910  0.65468979  0.29010010  0.0283908844 261.5368 57.79961   4.7
## 1706 1.5003910  0.65468979  0.29010010  0.0283908844 261.5368 57.79961   4.7
## 1707 1.0014057  0.64982224  0.26944733  0.0800857544 261.7186 57.74378   4.6
## 1708 2.3928070  0.94792366  0.30618095  0.1747970581 261.6692 57.86992   5.2
## 1709 1.5475655  0.58572578  0.28371239  0.2344627380 262.0647 57.93886   3.4
## 1710 2.5593510  1.23666382  0.43306923  0.2344570160 262.0006 57.89372   5.3
## 1711 1.8450909  0.80168343  0.29224205  0.1787319183 262.0479 58.02081   4.9
## 1712 1.7371235  0.62823105  0.25490379  0.0735225677 262.0409 58.00647   4.8
## 1713 2.4265900  1.14973259  0.42803574  0.2553043365 261.6882 57.95811   5.4
## 1714 1.5614395  0.64114189  0.28052330  0.1189861298 261.9750 57.97975   4.6
## 1715 2.6068478  1.18292999  0.49560833  0.2849369049 261.5599 57.94994   5.0
## 1716 1.5155201  0.57211685  0.24394417  0.0591030121 261.8898 57.96119   4.7
## 1717 1.8286247  0.75085831  0.29508400  0.1751842499 261.4475 57.93956   5.5
## 1718 1.8286247  0.75085831  0.29508400  0.1751842499 261.4475 57.93956   5.3
## 1719 1.5870647  0.68550110  0.21725845  0.1011009216 261.8835 58.09731   4.8
## 1720 2.1988068  0.96013260  0.34229469  0.2198638916 261.9739 58.20056   5.3
## 1721 2.4622440  1.08645058  0.41297340  0.2235298157 261.7088 58.10181   5.5
## 1722 1.4453468  0.61023903  0.24086571  0.0646591187 262.0185 58.11225   4.5
## 1723 1.7106457  0.62891197  0.25383568 -0.0437679291 261.5000 57.98714   4.7
## 1724 1.9108601  0.81019974  0.27545738  0.0975437164 261.6178 58.09706   4.7
## 1725 1.7199783  0.73702240  0.23810768  0.1096229553 261.5983 58.10092   5.4
## 1726 1.7199783  0.73702240  0.23810768  0.1096229553 261.5983 58.10092   5.0
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## 1727 2.3188725  1.07903290  0.41508484  0.2195816040 261.9323 58.22078   5.0
## 1728 0.8660393  0.31047440  0.09817505  0.1361904144 261.7355 58.22667   3.1
## 1729 2.1980057  0.85967064  0.30302238  0.1608123779 261.4442 58.10264   4.9
## 1730 2.1980057  0.85967064  0.30302238  0.1608123779 261.4442 58.10264   4.9
## 1731 2.1980057  0.85967064  0.30302238  0.1608123779 261.4442 58.10264   5.1
## 1732 2.1156178  0.93451881  0.38057327  0.2280597687 261.5075 58.15772   5.0
## 1733 1.0376911  0.37801933  0.19719887 -0.0229091644 261.2838 57.92397   4.4
## 1734 1.0376911  0.37801933  0.19719887 -0.0229091644 261.2838 57.92397   3.0
## 1735 2.6288452  1.20643044  0.40261841  0.2468967438 261.4944 58.23758   5.0
## 1736 1.4175758  0.42830467  0.21959686  0.1820678711 261.5455 58.18492   3.1
## 1737 2.0685768  0.76579857  0.22985840  0.1894054413 261.5570 58.34794   5.0
## 1738 0.8472614  0.24505806  0.20922470  0.0148944855 261.3678 57.94356   2.1
## 1739 0.8472614  0.24505806  0.20922470  0.0148944855 261.3678 57.94356   4.4
## 1740 1.8819275  0.70154381  0.26660156  0.1140346527 261.4185 58.28828   4.4
## 1741 1.8819275  0.70154381  0.26660156  0.1140346527 261.4185 58.28828   4.3
## 1742 1.4373322  0.63416862  0.21440315  0.0567493439 261.4821 58.35433   5.1
## 1743 0.7745914  0.39737892  0.19390678  0.1048755646 261.3912 58.11586   2.9
## 1744 1.3875885  0.63430786  0.19918823  0.2436542511 261.5142 58.34883   4.2
## 1745 1.3875885  0.63430786  0.19918823  0.2436542511 261.5142 58.34883   4.5
## 1746 1.3875885  0.63430786  0.19918823  0.2436542511 261.5142 58.34883   4.0
## 1747 1.5741234  0.67101097  0.28913307  0.2138633728 261.2232 58.29106   1.3
## 1748 1.5741234  0.67101097  0.28913307  0.2138633728 261.2232 58.29106   2.0
## 1749 1.5741234  0.67101097  0.28913307  0.2138633728 261.2232 58.29106   3.3
## 1750 1.1005192  0.32207489  0.10123825  0.0634593964 261.1710 58.23497   4.5
## 1751 1.1005192  0.32207489  0.10123825  0.0634593964 261.1710 58.23497   4.6
## 1752 1.6695805  0.71998405  0.27022743  0.1242885590 261.1855 58.15556   4.7
## 1753 1.6695805  0.71998405  0.27022743  0.1242885590 261.1855 58.15556   5.0
## 1754 1.6695805  0.71998405  0.27022743  0.1242885590 261.1855 58.15556   5.3
## 1755 1.2968407  0.45449066  0.18280602  0.1353149414 261.2829 58.11222   4.3
## 1756 1.4014988  0.65819550  0.18331909  0.0513172150 261.0172 58.29111   4.4
## 1757 1.4014988  0.65819550  0.18331909  0.0513172150 261.0172 58.29111   4.0
## 1758 1.4014988  0.65819550  0.18331909  0.0513172150 261.0172 58.29111   4.9
## 1759 2.3710613  0.95509720  0.31354332  0.1994838715 261.1218 58.12697   5.1
## 1760 2.4452610  0.98687553  0.33525276  0.1483459473 261.0027 58.23639   5.2
## 1761 2.4452610  0.98687553  0.33525276  0.1483459473 261.0027 58.23639   4.9
## 1762 2.3788509  1.08056259  0.44191742  0.2532854080 261.0823 58.21669   5.2
## 1763 2.3788509  1.08056259  0.44191742  0.2532854080 261.0823 58.21669   5.4
## 1764 2.3788509  1.08056259  0.44191742  0.2532854080 261.0823 58.21669   5.1
## 1765 2.3788509  1.08056259  0.44191742  0.2532854080 261.0823 58.21669   5.4
## 1766 2.3213310  1.00836945  0.34524918  0.1600856781 260.9930 58.22372   5.0
## 1767 2.3213310  1.00836945  0.34524918  0.1600856781 260.9930 58.22372   5.1
## 1768 2.3213310  1.00836945  0.34524918  0.1600856781 260.9930 58.22372   5.0
## 1769 2.3213310  1.00836945  0.34524918  0.1600856781 260.9930 58.22372   5.0
## 1770 2.3213310  1.00836945  0.34524918  0.1600856781 260.9930 58.22372   5.2
## 1771 1.1860123  0.45175743  0.11723709  0.0344905853 261.0794 58.28886   1.9
## 1772 1.1860123  0.45175743  0.11723709  0.0344905853 261.0794 58.28886   5.0
## 1773 1.1860123  0.45175743  0.11723709  0.0344905853 261.0794 58.28886   4.0
## 1774 1.9236622  0.76086807  0.29102516  0.1030235291 260.9772 58.05264   5.0
## 1775 1.9236622  0.76086807  0.29102516  0.1030235291 260.9772 58.05264   5.0
## 1776 2.0092621  0.78673172  0.27509117  0.1799411774 261.2497 57.92000   4.7
## 1777 1.5268555  0.57054138  0.28345299  0.0660877228 260.6806 58.15156   4.8
## 1778 1.5268555  0.57054138  0.28345299  0.0660877228 260.6806 58.15156   4.5
## 1779 1.5268555  0.57054138  0.28345299  0.0660877228 260.6806 58.15156   4.2
## 1780 1.5268555  0.57054138  0.28345299  0.0660877228 260.6806 58.15156   3.2
## 1781 0.7920303  0.28682137  0.09980011  0.0190658569 261.1889 57.91392   4.2
## 1782 0.7920303  0.28682137  0.09980011  0.0190658569 261.1889 57.91392   4.3
## 1783 0.7903728  0.31887054  0.17645264 -0.1455574036 260.8148 58.05347   3.3
## 1784 0.9170189  0.39598274  0.19725609  0.0397605896 260.4501 57.95903   5.0
## 1785 1.3796597  0.64906311  0.30994797  0.1791629791 260.5272 57.93617   1.2
## 1786 1.3397083  0.46607399  0.16215897 -0.0254821777 260.6501 57.62258   4.4
## 1787 1.3397083  0.46607399  0.16215897 -0.0254821777 260.6501 57.62258   3.9
## 1788 1.9936695  0.83572578  0.30718040  0.1542778015 261.0115 57.76806   5.1
## 1789 1.9936695  0.83572578  0.30718040  0.1542778015 261.0115 57.76806   5.1
## 1790 0.6515007  0.35669136  0.25418663 -0.0586223602 260.9803 57.69239   4.3
## 1791 1.1580200  0.30264854  0.12710953  0.1057357788 260.7033 57.52231   4.4
## 1792 1.1580200  0.30264854  0.12710953  0.1057357788 260.7033 57.52231   2.1
## 1793 1.1102085  0.40157700  0.23290443 -0.0213317871 260.6995 57.49989   3.4
## 1794 1.1121578  0.43437004  0.19656372 -0.0179576874 260.8860 57.64889   5.0
## 1795 0.9286480  0.38800812  0.20333862  0.2157382965 260.7906 57.60217   2.5
## 1796 2.2608433  0.94910240  0.33842468  0.1695747375 261.0473 57.71581   4.8
## 1797 1.5900917  0.72760582  0.25123596  0.0808258057 260.9931 57.72306   4.8
## 1798 1.3868771  0.66035843  0.29383850  0.0394535065 261.1376 57.75797   5.3
## 1799 1.2649364  0.65255928  0.22254372  0.0678806305 261.0565 57.59506   4.5
## 1800 2.4942970  1.03262901  0.39684486  0.1793670654 261.0326 57.61903   4.8
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## 1802 1.6453495  0.63334274  0.31414223  0.0417156219 260.8759 57.48278   5.2
## 1803 2.1219788  0.88900375  0.29197121  0.1304721832 261.1656 57.48856   5.2
## 1804 1.5596504  0.71701431  0.21643639  0.0994644165 261.1151 57.46961   5.2
## 1805 1.3722382  0.51620674  0.29040718  0.0458431244 261.2095 57.70514   4.4
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## 1806 1.7353058  0.66266060  0.29461479  0.0532321930 261.1037 57.51997   4.3
## 1807 2.4467583  1.18121910  0.43211651  0.2288684845 261.2328 57.57867   5.4
## 1808 1.3381729  0.57993126  0.33145714  0.0399303436 260.0660 57.91744   1.9
## 1809 1.4935513  0.55691528  0.29848099 -0.0425815582 260.0519 57.91453   1.2
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## 1812 1.0543842  0.55888176  0.27929115  0.1636505127 260.5075 58.06383   2.1
## 1813 1.0216236  0.42072868  0.19230843  0.0502357483 260.2218 58.30689   3.1
## 1814 0.9170094  0.26869011  0.11308861  0.1506786346 260.1187 58.40417   4.2
## 1815 0.9170094  0.26869011  0.11308861  0.1506786346 260.1187 58.40417   3.2
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## 1817 2.2102070  1.04827118  0.43824959  0.2298793793 260.6045 58.27983   5.5
## 1818 2.2102070  1.04827118  0.43824959  0.2298793793 260.6045 58.27983   5.2
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## 1820 1.4433517  0.64689827  0.26033211  0.1104736328 260.2964 58.37392   4.7
## 1821 1.4433517  0.64689827  0.26033211  0.1104736328 260.2964 58.37392   4.8
## 1822 1.7113876  0.68844604  0.22794724  0.0628757477 260.6524 58.33642   4.4
## 1823 1.7113876  0.68844604  0.22794724  0.0628757477 260.6524 58.33642   4.7
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## 1825 2.3830624  1.04011345  0.41299820  0.2088050842 260.7693 58.40478   5.1
## 1826 2.3830624  1.04011345  0.41299820  0.2088050842 260.7693 58.40478   5.1
## 1827 1.5350342  0.59177017  0.23582649  0.1436500549 260.4696 58.41592   5.2
## 1828 1.5350342  0.59177017  0.23582649  0.1436500549 260.4696 58.41592   4.9
## 1829 0.6430569  0.34402084  0.10863304  0.1308460236 260.8550 58.43894   3.4
## 1830 0.6430569  0.34402084  0.10863304  0.1308460236 260.8550 58.43894   2.1
## 1831 2.2645721  0.96248436  0.36346245  0.1637763977 260.7462 58.36550   5.3
## 1832 2.2645721  0.96248436  0.36346245  0.1637763977 260.7462 58.36550   5.3
## 1833 2.5005684  1.03509521  0.38292503  0.2069034576 260.4044 58.44075   5.2
## 1834 2.5005684  1.03509521  0.38292503  0.2069034576 260.4044 58.44075   5.1
## 1835 1.2009869  0.46489525  0.14599800  0.1458148956 260.3887 58.43306   2.7
## 1836 1.2009869  0.46489525  0.14599800  0.1458148956 260.3887 58.43306   3.8
## 1837 2.9162521  0.62951851  0.25970840 -0.2636299133 260.6809 58.43722   3.8
## 1838 1.6971092  0.56711197  0.22460365  0.0751819611 260.4743 58.46903   4.9
## 1839 1.4609299  0.60227585  0.15699196  0.3665370941 260.7178 58.59144   4.7
## 1840 0.9123554  0.27344704  0.14746094  0.0080986023 260.5293 58.51625   2.5
## 1841 0.9123554  0.27344704  0.14746094  0.0080986023 260.5293 58.51625   2.1
## 1842 2.5781975  1.26633072  0.54876137  0.2900304794 260.5283 58.55386   5.0
## 1843 2.5781975  1.26633072  0.54876137  0.2900304794 260.5283 58.55386   5.2
## 1844 1.6776142  0.71222878  0.31960106  0.1034793854 260.7646 58.64544   5.1
## 1845 1.6776142  0.71222878  0.31960106  0.1034793854 260.7646 58.64544   5.0
## 1846 1.6776142  0.71222878  0.31960106  0.1034793854 260.7646 58.64544   4.7
## 1847 1.2929077  0.47060585  0.28755188 -0.1899299622 260.2617 58.43133   4.3
## 1848 1.2947464  0.65602875  0.18502808  0.1322841644 260.5555 58.62425   5.1
## 1849 1.2947464  0.65602875  0.18502808  0.1322841644 260.5555 58.62425   3.5
## 1850 1.7652073  0.72473526  0.26172256  0.1948356628 260.3019 58.49644   5.1
## 1851 1.7652073  0.72473526  0.26172256  0.1948356628 260.3019 58.49644   5.1
## 1852 1.2221203  0.62955093  0.20075035  0.0897712708 260.5638 58.59597   4.8
## 1853 2.3452473  0.98485756  0.34494972  0.1394195557 260.6511 58.70753   5.2
## 1854 0.9162941  0.44277763  0.13812637  0.0547790527 260.3367 58.62514   2.8
## 1855 0.9162941  0.44277763  0.13812637  0.0547790527 260.3367 58.62514   3.7
## 1856 2.3568192  0.97700882  0.36380577  0.2137832642 260.3376 58.57853   5.0
## 1857 2.3568192  0.97700882  0.36380577  0.2137832642 260.3376 58.57853   5.1
## 1858 2.3568192  0.97700882  0.36380577  0.2137832642 260.3376 58.57853   4.9
## 1859 1.7079067  0.59352112  0.23921776  0.1224575043 260.2693 58.60617   4.6
## 1860 1.7079067  0.59352112  0.23921776  0.1224575043 260.2693 58.60617   5.2
## 1861 1.7079067  0.59352112  0.23921776  0.1224575043 260.2693 58.60617   5.3
## 1862 1.6789284  0.68644333  0.24198341  0.1247959137 260.2879 58.52733   4.5
## 1863 1.6789284  0.68644333  0.24198341  0.1247959137 260.2879 58.52733   4.9
## 1864 1.6789284  0.68644333  0.24198341  0.1247959137 260.2879 58.52733   4.8
## 1865 2.3747025  1.13073921  0.41889381  0.2574205399 260.2794 58.73050   5.3
## 1866 1.8949814  0.72097206  0.26196861  0.1323165894 260.1669 58.56917   4.6
## 1867 1.8949814  0.72097206  0.26196861  0.1323165894 260.1669 58.56917   4.9
## 1868 1.8837318  0.70092010  0.22097397  0.1465187073 260.4609 58.82844   4.6
## 1869 1.5280743  0.67516899  0.23079681  0.2072238922 260.0841 58.60806   4.1
## 1870 1.5280743  0.67516899  0.23079681  0.2072238922 260.0841 58.60806   4.8
## 1871 1.9964581  0.78544044  0.28308678  0.1722393036 260.1165 58.75844   4.4
## 1872 1.9964581  0.78544044  0.28308678  0.1722393036 260.1165 58.75844   4.8
## 1873 1.9964581  0.78544044  0.28308678  0.1722393036 260.1165 58.75844   5.1
## 1874 2.0924149  0.53147888  0.15790367  0.5317707062 260.0618 58.64842   3.9
## 1875 2.0114784  0.92497444  0.32196617  0.2010974884 260.0490 58.86808   5.1
## 1876 2.0114784  0.92497444  0.32196617  0.2010974884 260.0490 58.86808   5.0
## 1877 0.8037930  0.50150681  0.20546150  0.1608428955 260.1395 58.62581   4.4
## 1878 2.0609207  0.84754372  0.29033661  0.1729965210 260.0478 58.59547   5.2
## 1879 2.0609207  0.84754372  0.29033661  0.1729965210 260.0478 58.59547   5.2
## 1880 0.9100780  0.41137886  0.19032288 -0.0260047913 259.9170 58.87492   3.4
## 1881 1.6845894  0.72116280  0.28192711  0.2209358215 260.0158 58.59808   4.7
## 1882 1.6845894  0.72116280  0.28192711  0.2209358215 260.0158 58.59808   4.7
## 1883 1.6845894  0.72116280  0.28192711  0.2209358215 260.0158 58.59808   5.2
## 1884 2.4120255  0.88612175  0.34458733  0.1629543304 259.9364 58.78794   5.0
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## 1885 1.2349472  0.46348381  0.14536095  0.0624256134 259.9482 58.88353   4.5
## 1886 2.1411419  0.88238907  0.30920410  0.1750793457 259.9787 58.65867   5.2
## 1887 2.1411419  0.88238907  0.30920410  0.1750793457 259.9787 58.65867   5.2
## 1888 2.1411419  0.88238907  0.30920410  0.1750793457 259.9787 58.65867   5.2
## 1889 0.6916809  0.72953415  0.18256378 -0.0197162628 260.0305 58.62839   3.5
## 1890 0.6916809  0.72953415  0.18256378 -0.0197162628 260.0305 58.62839   4.7
## 1891 1.0676250  0.35101509  0.08898926 -0.2208843231 260.0055 58.56297   4.5
## 1892 1.9205837  0.82341003  0.28413200  0.1693458557 260.0110 58.85425   5.2
## 1893 1.9205837  0.82341003  0.28413200  0.1693458557 260.0110 58.85425   5.4
## 1894 1.9205837  0.82341003  0.28413200  0.1693458557 260.0110 58.85425   4.9
## 1895 1.1070919  0.43998909  0.13446426  0.1385612488 259.8565 58.63283   3.9
## 1896 1.9624710  0.81937981  0.34796715  0.1940078735 259.7012 58.80772   4.9
## 1897 1.7329330  0.75166893  0.23719978  0.1275978088 259.7301 58.71492   4.1
## 1898 1.7329330  0.75166893  0.23719978  0.1275978088 259.7301 58.71492   4.4
## 1899 2.5335464  1.13245201  0.39481735  0.2288837433 259.8643 58.65375   5.3
## 1900 2.5335464  1.13245201  0.39481735  0.2288837433 259.8643 58.65375   5.2
## 1901 1.9093609  0.81389427  0.26852417  0.1819305420 260.0550 58.45697   5.0
## 1902 1.9093609  0.81389427  0.26852417  0.1819305420 260.0550 58.45697   4.9
## 1903 1.9093609  0.81389427  0.26852417  0.1819305420 260.0550 58.45697   4.3
## 1904 1.5552406  0.68894196  0.24029541  0.1049251556 259.5463 58.73486   4.0
## 1905 2.5270576  1.17089653  0.45672226  0.2545146942 259.8503 58.54964   5.3
## 1906 2.5270576  1.17089653  0.45672226  0.2545146942 259.8503 58.54964   5.3
## 1907 2.5270576  1.17089653  0.45672226  0.2545146942 259.8503 58.54964   5.5
## 1908 2.0310173  0.84290886  0.32151413  0.1516323090 259.3034 58.67228   4.6
## 1909 2.7028599  1.28966045  0.56351566  0.2761659622 259.9505 58.44781   5.5
## 1910 1.3307552  0.67738342  0.25964546  0.0297050476 259.3440 58.61581   4.9
## 1911 1.6992188  0.73150253  0.30108643  0.1493072510 260.0774 58.42925   5.1
## 1912 1.0061359  0.57157135  0.23225594  0.0461540222 259.5267 58.51378   4.9
## 1913 1.9034386  0.78367805  0.28789902  0.1742763519 259.3808 58.49186   5.2
## 1914 1.9034386  0.78367805  0.28789902  0.1742763519 259.3808 58.49186   5.2
## 1915 2.3788834  1.11432266  0.45625305  0.2253684998 259.3599 58.58139   5.3
## 1916 2.3788834  1.11432266  0.45625305  0.2253684998 259.3599 58.58139   5.5
## 1917 1.4161396  0.58693695  0.29259300  0.0984020233 259.8599 58.41478   4.8
## 1918 2.0454540  0.86770439  0.27850533  0.1531581879 259.6056 58.42717   5.1
## 1919 2.0454540  0.86770439  0.27850533  0.1531581879 259.6056 58.42717   5.1
## 1920 2.0454540  0.86770439  0.27850533  0.1531581879 259.6056 58.42717   4.6
## 1921 1.5569611  0.60804558  0.25262833  0.0682182312 259.3843 58.32397   4.8
## 1922 1.5569611  0.60804558  0.25262833  0.0682182312 259.3843 58.32397   4.5
## 1923 1.5569611  0.60804558  0.25262833  0.0682182312 259.3843 58.32397   5.1
## 1924 2.6327515  1.13107681  0.45424938  0.2504110336 259.6006 58.34239   5.4
## 1925 1.7833366  0.68891144  0.28697395  0.2080116272 259.2118 58.28358   4.5
## 1926 1.7833366  0.68891144  0.28697395  0.2080116272 259.2118 58.28358   5.2
## 1927 0.9118290  0.27920341  0.10469627 -0.0868415833 259.6799 58.27842   2.8
## 1928 0.9118290  0.27920341  0.10469627 -0.0868415833 259.6799 58.27842   3.9
## 1929 0.9118290  0.27920341  0.10469627 -0.0868415833 259.6799 58.27842   2.3
## 1930 0.9118290  0.27920341  0.10469627 -0.0868415833 259.6799 58.27842   2.1
## 1931 1.3179531  0.65008354  0.17045784 -0.2200031281 259.5210 58.16606   4.0
## 1932 1.1976223  0.32727432  0.07814789  0.0970535278 259.4585 58.15000   2.6
## 1933 1.1976223  0.32727432  0.07814789  0.0970535278 259.4585 58.15000   3.6
## 1934 1.0830746  0.32727623  0.14416504 -0.0710315704 259.9035 58.23400   1.7
## 1935 1.0830746  0.32727623  0.14416504 -0.0710315704 259.9035 58.23400   2.3
## 1936 1.0779667  0.43884659  0.12522125  0.1531829834 259.8153 58.02825   2.2
## 1937 1.4415264  0.60573196  0.22727013  0.1765213013 259.7164 57.95692   4.8
## 1938 2.1687851  0.84405327  0.27204323  0.1642360687 260.2260 57.00983   4.7
## 1939 2.1687851  0.84405327  0.27204323  0.1642360687 260.2260 57.00983   5.0
## 1940 2.1687851  0.84405327  0.27204323  0.1642360687 260.2260 57.00983   5.1
## 1941 2.1706867  0.99027252  0.36648941  0.1957015991 260.1694 57.14047   5.0
## 1942 1.7098541  0.59990120  0.25642014  0.0813331604 260.1527 57.18911   5.1
## 1943 2.4121437  1.02706146  0.36460114  0.2125091553 260.1330 57.11200   4.8
## 1944 2.0697575  0.86132240  0.30215645  0.2035503387 260.2904 57.04503   5.1
## 1945 1.0885468  0.65766907  0.15899086  0.1462745667 260.2613 57.16267   5.1
## 1946 1.9598846  0.73623085  0.25566864  0.1089763641 260.3695 57.02833   4.3
## 1947 1.6204529  0.68658066  0.33238792  0.1860580444 260.3640 57.00350   5.0
## 1948 2.2876968  0.94889069  0.35592270  0.1920661926 260.1643 57.33939   5.3
## 1949 2.2876968  0.94889069  0.35592270  0.1920661926 260.1643 57.33939   5.1
## 1950 2.2876968  0.94889069  0.35592270  0.1920661926 260.1643 57.33939   5.1
## 1951 1.0967731  0.35417747  0.15482330 -0.1520099640 260.3955 57.19064   3.7
## 1952 2.4728756  1.17781639  0.45721054  0.2586889267 260.6425 57.10608   5.3
## 1953 2.6074963  1.17674255  0.43179893  0.2350540161 260.2778 57.25414   4.8
## 1954 2.6074963  1.17674255  0.43179893  0.2350540161 260.2778 57.25414   5.0
## 1955 1.6975555  0.71298790  0.26865196  0.1259765625 260.6150 57.03511   4.6
## 1956 0.7005177  0.43201637  0.20475197 -0.1457614899 260.2971 57.29936   2.1
## 1957 1.7060947  0.70082664  0.22346306  0.1381397247 260.4812 57.25622   4.9
## 1958 1.7060947  0.70082664  0.22346306  0.1381397247 260.4812 57.25622   4.9
## 1959 1.9590111  0.81167221  0.27166176  0.1427288055 260.5700 57.24083   5.5
## 1960 0.8550053  0.32938766  0.16976929 -0.1685752869 260.7610 57.17919   3.6
## 1961 2.0525150  0.56509590  0.18888855  0.0463809967 260.3682 57.27581   4.7
## 1962 1.5348663  0.65909195  0.27959824  0.1383056641 260.9052 57.27564   4.2
## 1963 1.5348663  0.65909195  0.27959824  0.1383056641 260.9052 57.27564   5.2
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## 1964 1.7594414  0.78756905  0.30996323  0.1438560486 260.6149 57.31253   5.0
## 1965 1.7594414  0.78756905  0.30996323  0.1438560486 260.6149 57.31253   4.7
## 1966 1.7594414  0.78756905  0.30996323  0.1438560486 260.6149 57.31253   5.0
## 1967 1.5787621  0.68300438  0.24195862  0.1615276337 260.6682 57.32025   4.5
## 1968 1.5787621  0.68300438  0.24195862  0.1615276337 260.6682 57.32025   5.1
## 1969 1.5787621  0.68300438  0.24195862  0.1615276337 260.6682 57.32025   5.1
## 1970 2.4317932  1.01654625  0.37383461  0.2109928131 260.7093 57.32231   5.2
## 1971 1.1439247  0.55395317  0.27408028  0.0767765045 260.3691 57.33319   3.9
## 1972 1.1439247  0.55395317  0.27408028  0.0767765045 260.3691 57.33319   3.5
## 1973 1.7342606  0.72112274  0.24577522  0.1005210876 260.6790 57.26636   4.9
## 1974 1.7342606  0.72112274  0.24577522  0.1005210876 260.6790 57.26636   5.1
## 1975 2.5200367  1.06227112  0.36113739  0.1626968384 260.8517 57.38867   4.9
## 1976 1.7288952  0.60851860  0.25009346  0.2208271027 260.4975 57.38383   1.3
## 1977 1.7288952  0.60851860  0.25009346  0.2208271027 260.4975 57.38383   1.9
## 1978 1.7288952  0.60851860  0.25009346  0.2208271027 260.4975 57.38383   1.8
## 1979 2.5320110  1.06036758  0.38150597  0.1869754791 260.5785 57.41775   5.1
## 1980 2.5320110  1.06036758  0.38150597  0.1869754791 260.5785 57.41775   5.2
## 1981 1.7865200  0.64446449  0.24703026  0.1023616791 260.8610 57.34156   5.3
## 1982 1.4445820  0.67435646  0.22110367  0.1639137268 260.6877 57.34681   4.5
## 1983 1.4445820  0.67435646  0.22110367  0.1639137268 260.6877 57.34681   5.2
## 1984 1.0060978  0.23467827  0.17725182  0.2798748016 260.5654 57.48831   4.2
## 1985 2.4801025  1.15097427  0.41107368  0.2362565994 260.8417 57.50372   5.2
## 1986 1.5673542  0.76032257  0.24268723  0.0620899200 260.2298 57.51919   4.8
## 1987 1.5673542  0.76032257  0.24268723  0.0620899200 260.2298 57.51919   4.7
## 1988 1.5673542  0.76032257  0.24268723  0.0620899200 260.2298 57.51919   4.8
## 1989 2.0512466  0.79207420  0.28670311  0.1602306366 260.3426 57.64728   5.4
## 1990 2.0512466  0.79207420  0.28670311  0.1602306366 260.3426 57.64728   5.1
## 1991 1.2062454  0.52461243  0.13565063  0.2178134918 260.3465 57.61842   4.2
## 1992 1.2062454  0.52461243  0.13565063  0.2178134918 260.3465 57.61842   4.3
## 1993 1.2062454  0.52461243  0.13565063  0.2178134918 260.3465 57.61842   4.8
## 1994 1.2068691  0.59104919  0.24678040  0.1085338593 260.3208 57.85831   4.7
## 1995 1.2747498  0.60839844  0.29500771  0.1764087677 260.2582 57.88056   1.4
## 1996 0.9304295  0.42682457  0.12015915 -0.0081005096 260.2351 57.65772   2.9
## 1997 0.9304295  0.42682457  0.12015915 -0.0081005096 260.2351 57.65772   4.0
## 1998 0.9304295  0.42682457  0.12015915 -0.0081005096 260.2351 57.65772   4.7
## 1999 0.9304295  0.42682457  0.12015915 -0.0081005096 260.2351 57.65772   4.6
## 2000 0.9304295  0.42682457  0.12015915 -0.0081005096 260.2351 57.65772   3.3
## 2001 1.4037838  0.51238823  0.28207397  0.0662670135 260.1551 57.79089   1.7
## 2002 2.1863861  0.83531189  0.38803101  0.2115802765 260.0288 57.87697   1.0
## 2003 1.1699867  0.64473534  0.18689346  0.2219448090 259.8980 57.90311   3.4
## 2004 1.0081158  0.36959267  0.15101433  0.1264381409 259.4620 57.77578   2.5
## 2005 1.0081158  0.36959267  0.15101433  0.1264381409 259.4620 57.77578   4.6
## 2006 2.0131931  0.73155212  0.24760056  0.1547183990 259.5158 57.78289   5.2
## 2007 2.0131931  0.73155212  0.24760056  0.1547183990 259.5158 57.78289   5.3
## 2008 1.2693901  0.57158661  0.29011917  0.1654109955 259.3305 57.71600   1.7
## 2009 1.4691658  0.57219696  0.30733871  0.2679843903 259.5539 57.55647   3.5
## 2010 1.4691658  0.57219696  0.30733871  0.2679843903 259.5539 57.55647   4.6
## 2011 1.4691658  0.57219696  0.30733871  0.2679843903 259.5539 57.55647   4.7
## 2012 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   2.2
## 2013 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   3.2
## 2014 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   3.3
## 2015 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   3.4
## 2016 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   5.3
## 2017 0.8621349  0.39716148  0.17839050  0.1325187683 259.6489 57.58833   4.6
## 2018 1.2487984  0.50144005  0.15545845  0.1300354004 259.4208 57.51675   4.3
## 2019 1.2487984  0.50144005  0.15545845  0.1300354004 259.4208 57.51675   4.6
## 2020 0.8495216  0.32331657  0.07570267  0.1579113007 259.3185 57.50997   3.6
## 2021 0.8495216  0.32331657  0.07570267  0.1579113007 259.3185 57.50997   2.8
## 2022 2.4675865  0.94034195  0.22973061  0.3173370361 259.4869 57.47750   4.9
## 2023 2.4675865  0.94034195  0.22973061  0.3173370361 259.4869 57.47750   5.0
## 2024 1.7343216  0.72736740  0.25340843  0.1295375824 259.8668 57.41219   4.9
## 2025 1.7343216  0.72736740  0.25340843  0.1295375824 259.8668 57.41219   4.8
## 2026 1.7343216  0.72736740  0.25340843  0.1295375824 259.8668 57.41219   4.8
## 2027 2.1483955  0.85889626  0.28816986  0.1814594269 259.2158 57.43042   5.4
## 2028 2.1483955  0.85889626  0.28816986  0.1814594269 259.2158 57.43042   5.2
## 2029 1.3974247  0.66620827  0.24187469  0.0582046509 259.2966 57.42242   4.6
## 2030 1.1724529  0.53791809  0.26216125  0.0464057922 259.5107 57.44872   4.2
## 2031 1.1724529  0.53791809  0.26216125  0.0464057922 259.5107 57.44872   4.6
## 2032 1.0255585  0.36022568  0.15639305  0.1436958313 259.3772 57.46981   3.1
## 2033 1.0255585  0.36022568  0.15639305  0.1436958313 259.3772 57.46981   3.3
## 2034 0.9768295  0.60700226  0.14530945  0.1143703461 259.1659 57.29861   3.9
## 2035 0.9768295  0.60700226  0.14530945  0.1143703461 259.1659 57.29861   2.8
## 2036 1.2365360  0.41134453  0.01573181 -0.0522651672 259.1983 57.32761   4.2
## 2037 2.2088547  1.01097488  0.40816689  0.2464694977 259.5518 57.36811   5.0
## 2038 1.7974014  0.73882294  0.28536224  0.2250347137 259.3835 57.23925   5.0
## 2039 1.7731991  0.70789909  0.27209663  0.1829280853 259.6525 57.30542   5.2
## 2040 1.7731991  0.70789909  0.27209663  0.1829280853 259.6525 57.30542   4.9
## 2041 1.7731991  0.70789909  0.27209663  0.1829280853 259.6525 57.30542   4.1
## 2042 1.9403820  0.77195930  0.25591278  0.2047309875 259.7248 57.33150   4.8
```

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## 2043 1.9403820  0.77195930  0.25591278  0.2047309875 259.7248 57.33150   4.6
## 2044 1.6635170  0.63657951  0.26400566  0.2351531982 259.4828 57.23903   4.8
## 2045 1.6635170  0.63657951  0.26400566  0.2351531982 259.4828 57.23903   4.4
## 2046 1.6635170  0.63657951  0.26400566  0.2351531982 259.4828 57.23903   4.9
## 2047 1.3654499  0.59889412  0.27323914  0.2569828033 259.5035 57.10686   5.2
## 2048 1.3654499  0.59889412  0.27323914  0.2569828033 259.5035 57.10686   4.5
## 2049 1.9405518  0.87109184  0.28520775  0.2204322815 259.5314 57.17850   5.4
## 2050 0.9787636  0.39676666  0.20845032  0.0974006653 259.7024 57.21461   4.6
## 2051 0.9787636  0.39676666  0.20845032  0.0974006653 259.7024 57.21461   3.8
## 2052 2.1614189  0.95780563  0.37386322  0.1772270203 259.9199 57.36314   5.4
## 2053 2.1614189  0.95780563  0.37386322  0.1772270203 259.9199 57.36314   5.4
## 2054 1.3089085  0.65652466  0.25141335  0.1887607574 259.5411 57.00942   5.1
## 2055 1.3089085  0.65652466  0.25141335  0.1887607574 259.5411 57.00942   4.9
## 2056 1.8374043  0.75367165  0.27628326  0.1472434998 259.6050 57.03903   5.3
## 2057 1.7754841  0.74385834  0.30154610  0.1946716309 259.7152 57.19267   5.4
## 2058 1.7754841  0.74385834  0.30154610  0.1946716309 259.7152 57.19267   5.0
## 2059 2.2386093  0.94638824  0.33070946  0.2181682587 259.7519 57.14056   5.0
## 2060 2.2386093  0.94638824  0.33070946  0.2181682587 259.7519 57.14056   5.1
## 2061 1.1861095  0.29359627  0.07704926 -0.0107994080 259.7330 57.08486   4.6
## 2062 0.9093189  0.27631187  0.12251854 -0.0642452240 260.0152 57.33306   4.6
## 2063 0.9093189  0.27631187  0.12251854 -0.0642452240 260.0152 57.33306   2.2
## 2064 0.9093189  0.27631187  0.12251854 -0.0642452240 260.0152 57.33306   4.4
## 2065 1.8026867  0.74822998  0.25902367  0.1802730560 259.8004 57.06511   5.1
## 2066 1.8026867  0.74822998  0.25902367  0.1802730560 259.8004 57.06511   5.0
## 2067 1.5775604  0.68444443  0.18419456  0.2151985168 259.9905 57.19275   4.7
## 2068 1.5270519  0.60481262  0.19618797  0.0706653595 259.9370 57.01217   4.3
## 2069 2.4744473  1.18661690  0.46864033  0.2884874344 260.0677 57.00917   5.1
## 2070 2.4744473  1.18661690  0.46864033  0.2884874344 260.0677 57.00917   5.2
## 2071 2.3099251  1.08524895  0.41588402  0.2336368561 259.9792 57.20922   5.3
## 2072 2.3099251  1.08524895  0.41588402  0.2336368561 259.9792 57.20922   5.2
## 2073 2.3099251  1.08524895  0.41588402  0.2336368561 259.9792 57.20922   5.0
## 2074 1.2170048  0.41400146  0.17473412  0.2003574371 259.8066 57.89994   2.2
## 2075 1.1362724  0.54067993  0.25383568 -0.0035114288 259.2096 57.81058   3.3
## 2076 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   1.5
## 2077 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   1.4
## 2078 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   1.3
## 2079 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   1.1
## 2080 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   0.9
## 2081 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   3.8
## 2082 1.6027412  0.70243073  0.29490471  0.2249526978 259.7928 57.91042   1.1
## 2083 1.3611069  0.66754532  0.23920250  0.1300563812 259.6687 57.91092   2.4
## 2084 1.3611069  0.66754532  0.23920250  0.1300563812 259.6687 57.91092   1.2
## 2085 1.4872570  0.59272957  0.25916672  0.1909446716 259.7271 57.83486   2.0
## 2086 1.4872570  0.59272957  0.25916672  0.1909446716 259.7271 57.83486   1.8
## 2087 1.1460114  0.38560677  0.13603210  0.1728572845 259.7531 57.84806   4.8
## 2088 1.3261700  0.62891006  0.32492828  0.1890525818 259.9737 57.89419   2.2
## 2089 1.2391567  0.27634811  0.16134071  0.0688648224 259.7912 57.70417   1.6
## 2090 1.1832695  0.38419151  0.18757820  0.0622005463 259.9207 57.80094   3.6
## 2091 0.7713318  0.28702736  0.09173584  0.1048450470 259.9981 57.61608   4.9
## 2092 1.2603340  0.57129860  0.27518272  0.0073890686 260.0683 57.71772   3.7
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## 2095 1.2603340  0.57129860  0.27518272  0.0073890686 260.0683 57.71772   5.0
## 2096 0.9025021  0.42783546  0.13730431  0.1462516785 260.2432 57.67222   1.7
## 2097 0.9025021  0.42783546  0.13730431  0.1462516785 260.2432 57.67222   4.4
## 2098 1.7731705  0.73490715  0.30588913  0.1485443115 260.3059 57.70011   4.7
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## 2102 1.2926579  0.60174751  0.27832413  0.1037750244 260.2248 57.79981   1.7
## 2103 1.7406616  0.78612709  0.32612038  0.1754436493 260.2933 57.79814   1.2
## 2104 1.7406616  0.78612709  0.32612038  0.1754436493 260.2933 57.79814   1.3
## 2105 1.0045662  0.35596848  0.17537498  0.1944370270 260.2978 57.74103   1.6
## 2106 1.0045662  0.35596848  0.17537498  0.1944370270 260.2978 57.74103   2.6
## 2107 1.1711998  0.35443687  0.20000648  0.1044178009 260.1100 57.90286   1.2
## 2108 1.1711998  0.35443687  0.20000648  0.1044178009 260.1100 57.90286   1.5
## 2109 1.0084686  0.33215332  0.10786247  0.1303043365 260.4259 57.79275   2.5
## 2110 0.9310226  0.41489601  0.18414879  0.0942611694 260.3795 57.88081   2.1
## 2111 1.2008095  0.54207802  0.30227852 -0.2319259644 260.5975 57.97425   4.2
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## 2116 1.5234089  0.61325836  0.28640556  0.1134471893 260.5095 58.02147   2.0
## 2117 1.0399933  0.51056290  0.16119957  0.0762195587 260.6120 58.09272   3.6
## 2118 1.0399933  0.51056290  0.16119957  0.0762195587 260.6120 58.09272   4.6
## 2119 1.5786800  0.69469070  0.33794022  0.1436328888 260.1711 57.97378   2.0
## 2120 1.5786800  0.69469070  0.33794022  0.1436328888 260.1711 57.97378   1.1
## 2121 1.3402252  0.56522942  0.31495667  0.0926036835 260.0844 57.93589   2.8
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## 2123 0.7910328  0.37483025  0.17300987  0.2098064423 260.1335 58.01767   2.5
## 2124 1.1800861  0.54262352  0.25244141 -0.0255489349 260.2139 58.09458   1.9
## 2125 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   2.0
## 2126 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   1.2
## 2127 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   1.2
## 2128 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   1.7
## 2129 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   1.9
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## 2131 1.4762611 -0.10404587  1.12239647  0.1978530884 260.0830 57.98817   2.6
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## 2159 1.4942741  0.59368706  0.34624100  0.0604648590 260.4801 57.94981   2.1
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## 2184 1.4227448  0.62083054  0.29404068  0.0568027496 260.2239 57.82503   1.7
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## 2195 1.1853352  0.55478287  0.25774574  0.1784400940 260.4581 57.97142   2.5
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## 2218 1.2844601  0.66430855  0.25372314  0.1338138580 259.8515 57.92164   2.4
## 2219 0.9572792  0.48513222  0.16385841  0.0121097565 259.9212 57.90936   2.4
## 2220 1.2936707  0.63691711  0.25628853  0.1399536133 260.0267 57.92619   2.2
## 2221 1.0137882  0.38228989  0.13451576  0.0663089752 259.7843 57.88011   2.8
## 2222 1.3843174  0.65562820  0.28994751  0.0851860046 259.9089 57.82425   4.7
## 2223 1.2758541  0.59696198  0.26942635  0.1543006897 259.9830 57.85681   3.0
## 2224 1.2758541  0.59696198  0.26942635  0.1543006897 259.9830 57.85681   1.3
## 2225 1.2758541  0.59696198  0.26942635  0.1543006897 259.9830 57.85681   2.0
## 2226 1.2758541  0.59696198  0.26942635  0.1543006897 259.9830 57.85681   1.6
## 2227 0.9911919  0.45102692  0.05237579  0.1417827606 259.9891 57.84919   1.6
## 2228 1.3540249  0.63111877  0.19229507  0.2872238159 260.1185 57.94686   1.6
## 2229 1.3540249  0.63111877  0.19229507  0.2872238159 260.1185 57.94686   2.2
## 2230 0.9624271  0.29879761  0.10931015  0.0281906128 260.2403 57.75231   4.0
## 2231 1.0701694  0.61648941  0.26922989  0.1470451355 260.1619 57.78356   2.6
## 2232 1.4404984  0.57334137  0.23367119  0.1475467682 260.1191 57.86044   2.1
## 2233 1.3207493  0.57575798  0.35272598  0.0608882904 260.2188 57.91961   1.9
## 2234 1.3207493  0.57575798  0.35272598  0.0608882904 260.2188 57.91961   2.2
## 2235 1.3207493  0.57575798  0.35272598  0.0608882904 260.2188 57.91961   3.3
## 2236 1.0974827  0.35070610  0.11173630  0.0863037109 260.3526 57.88153   2.3
## 2237 1.2452297  0.50252533  0.30117798  0.0221672058 260.1633 57.93264   1.8
## 2238 1.3814659  0.60785294  0.29214287  0.1059265137 260.1597 57.92564   1.5
## 2239 1.4669037  0.54673195  0.31341171 -0.0012245178 260.4126 57.96533   1.1
## 2240 1.0702953  0.25314522  0.08857918  0.0200939178 260.2243 57.96183   2.6
## 2241 1.0388012  0.38500214  0.15085793 -0.0205936432 260.7650 58.12217   4.8
## 2242 1.0388012  0.38500214  0.15085793 -0.0205936432 260.7650 58.12217   3.6
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## 2244 1.4203682  0.57438850  0.25391769  0.2661514282 260.2821 58.00583   2.4
## 2245 1.0834961  0.40599251  0.16079140 -0.0986576080 260.1103 57.99369   4.0
## 2246 1.0805912  0.43230438  0.21142197  0.0531730652 260.1153 58.01653   2.4
## 2247 1.2783413  0.58058357  0.28410721  0.2057609558 260.0748 57.99661   2.2
## 2248 2.0805874  0.63084030  0.25372314  0.2361869812 260.0217 57.95622   2.1
## 2249 1.0289478  0.37366867  0.15577126  0.1330947876 260.0239 57.93597   2.0
## 2250 1.4089375  0.67380714  0.29069328  0.0742111206 259.5131 57.94331   1.8
## 2251 1.4089375  0.67380714  0.29069328  0.0742111206 259.5131 57.94331   1.0
## 2252 1.9032288  0.62027168  0.21966934  0.2037220001 259.6423 57.92403   2.2
## 2253 1.7798080  0.81442451  0.35430908  0.2007217407 259.6855 57.91061   2.0
## 2254 1.5515671  0.45336342  0.22746086  0.6397724152 259.3911 57.90664   4.0
## 2255 1.3862686  0.62768936  0.29724693  0.1455554962 259.9807 57.91650   1.3
## 2256 1.2126293  0.56783676  0.25516129  0.1532211304 259.9764 57.85622   2.7
## 2257 1.3355255  0.53702164  0.36382675 -0.0071926117 260.0332 57.89794   1.4
## 2258 1.0263329  0.68092346  0.08615875  0.4112796783 259.9356 57.81419   4.1
## 2259 1.3896217  0.63592911  0.29500961  0.1536560059 260.2258 57.92219   1.7
## 2260 1.9836311  0.86620140  0.39246368  0.2017936707 260.2238 57.97017   1.3
## 2261 1.1648846  0.24750900  0.10113335 -0.1862545013 259.9674 57.98586   2.7
## 2262 1.8328056  0.84214973  0.34986115  0.2161216736 259.8409 58.03117   0.9
## 2263 1.8328056  0.84214973  0.34986115  0.2161216736 259.8409 58.03117   1.4
## 2264 1.6516438  0.55300713  0.27350426  0.0693168640 259.8191 57.98894   1.3
## 2265 1.1955776  0.23566437  0.13267136  0.1006832123 259.7285 57.92064   2.9
## 2266 2.3883553  1.02680397  0.35788536  0.1822376251 259.1080 57.87428   4.8
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## 2270 1.2505512  0.30833054  0.10630798  0.0607223511 259.8522 57.89336   3.3
## 2271 0.7351170  0.30444527  0.11064529 -0.0548934937 259.9540 57.82961   3.6
## 2272 1.4677372  0.53311348  0.33549309  0.1917819977 260.0405 57.91383   2.6
## 2273 1.3027420  0.42195129  0.20590782  0.1727447510 260.1237 57.87275   2.1
## 2274 1.7790661  0.69148064  0.27349663  0.0837860107 260.1997 57.86058   2.3
## 2275 1.0509243  0.39308357  0.16311264  0.1540584564 260.3222 57.77581   3.8
## 2276 1.6214390  0.69179344  0.24299049  0.1477966309 260.9951 57.57631   4.4
## 2277 2.3366013  0.54279137  0.23355103  0.1338863373 260.9776 57.56542   5.0
## 2278 1.7507553  0.40586472  0.34173965 -0.2169113159 261.0561 57.83564   4.0
## 2279 1.4592190  0.55866051  0.17373466  0.2833347321 261.3758 57.68950   3.1
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## 2280 1.2990685  0.64194679  0.21808434  0.1527309418 261.1719 57.84783   4.9
## 2281 1.6516552  0.66406059  0.28878784  0.1414260864 261.4422 58.07442   5.3
## 2282 1.6516552  0.66406059  0.28878784  0.1414260864 261.4422 58.07442   4.6
## 2283 1.6516552  0.66406059  0.28878784  0.1414260864 261.4422 58.07442   5.2
## 2284 1.2132797  0.61611748  0.15935135  0.1816654205 261.5993 58.09453   4.5
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## 2286 2.2211113  0.86276817  0.27584076  0.1469135284 261.1212 58.13694   5.1
## 2287 1.4197388  0.58983994  0.16581535 -0.0015888214 261.1615 58.20194   4.6
## 2288 2.0996876  0.99950409  0.37110519  0.2194919586 261.4663 58.35061   5.2
## 2289 2.0681534  0.75638199  0.27945518  0.3321609497 261.3020 58.34708   4.9
## 2290 1.0989666  0.43242836  0.23691368  0.1609287262 261.2902 58.30489   4.6
## 2291 1.4963531  0.60468864  0.19378662  0.1843929291 261.1030 58.42886   4.7
## 2292 1.5198269  0.62016678  0.27701950  0.0314979553 260.8403 58.20083   5.0
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## 2298 1.0637531  0.28084373  0.05775070  0.0013923645 260.9440 58.38806   3.4
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## 2301 1.0784092  0.56824875  0.13473129  0.0051860809 260.6123 58.43783   4.8
## 2302 0.9435005  0.43686676  0.13402176  0.0492057800 260.7468 58.36106   3.8
## 2303 1.0112019  0.48251915  0.17665672  0.1717128754 260.3083 58.42139   4.8
## 2304 1.2156525  0.32332611  0.22837639 -0.0564250946 259.9591 58.15167   4.9
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## 2308 1.2225800  0.64923096  0.28376770  0.0027618408 259.9152 57.93081   1.9
## 2309 0.9941330  0.60677910  0.34574318  0.0206756592 259.9970 57.95050   2.5
## 2310 1.6096096  0.72467613  0.29159927  0.1517276764 259.5144 57.54914   4.5
## 2311 1.8328667  0.69372749  0.27460098  0.1541976929 259.5652 57.41894   4.8
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## 2314 1.0168781  0.45602036  0.12701416  0.1374816895 259.7048 57.75819   3.4
## 2315 1.4416142  0.64742279  0.30416489  0.1033039093 260.0998 57.92681   1.7
## 2316 1.2065125  0.63536835  0.25561523  0.1692066193 259.8809 57.91767   2.0
## 2317 1.6720085  0.56780434  0.34091568  0.1096153259 260.1594 57.91342   1.6
## 2318 1.6720085  0.56780434  0.34091568  0.1096153259 260.1594 57.91342   1.6
## 2319 1.0326920  0.40620995  0.09693146  0.1108341217 259.8107 57.92294   2.1
## 2320 1.5770473  0.22575569  0.17029572  0.0259552002 259.9639 57.88908   4.6
## 2321 1.4159431  0.47586632  0.38547897  0.0240039825 259.9699 57.98158   1.5
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## 2323 2.3945084  1.01479721  0.44245529  0.2558021545 259.8011 58.04939   0.9
## 2324 2.3945084  1.01479721  0.44245529  0.2558021545 259.8011 58.04939   0.9
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## 2327 1.7179871  0.77624893  0.36446762  0.2275867462 259.4807 57.93308   1.1
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## 2330 1.3988876  0.56394768  0.32387543  0.2140655518 259.4311 57.95431   2.4
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## 2338 1.6841507  0.65020370  0.23495674  0.2482414246 258.9608 58.07489   5.1
## 2339 1.4927464  0.43120384  0.17740822  0.1009330750 258.9002 58.08733   4.4
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## 2344 2.0430260  0.74637222  0.28107643  0.1467342377 259.0265 57.95761   5.1
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## 2352 2.1427097  0.87949944  0.29653549  0.1769733429 258.6019 57.78717   5.2
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## 2357 1.1836205  0.60663223  0.26401520  0.1953182220 258.9248 57.61819   2.8
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## 2359 0.9373608  0.32975769  0.16876030  0.0130767822 259.1599 57.71267   3.8
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## 2383 0.9887104  0.32211304  0.15736771  0.0188236237 260.9660 57.12292   3.7
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## 2402 1.3976231  0.58415413  0.21805954  0.3187007904 259.6468 57.24508   3.3
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## 2406 2.4451084  1.07760429  0.41724586  0.2038726807 259.6152 56.96994   5.1
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## 2408 1.7248878  0.72858429  0.27793503  0.1290836334 260.0830 57.19650   5.4
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## 2410 1.7210655  0.59721565  0.27913475  0.1375179291 259.9203 56.82558   5.0
## 2411 1.7481632  0.84318542  0.23261452  0.1912174225 260.0892 57.13831   5.0
## 2412 1.4548569  0.59798241  0.29902840  0.1326084137 259.8843 56.83700   5.3
## 2413 2.0984192  0.91928291  0.36805153  0.2514553070 260.0935 57.02147   5.0
## 2414 2.0984192  0.91928291  0.36805153  0.2514553070 260.0935 57.02147   5.1
## 2415 1.1632805  0.39595604  0.10971069  0.0679931641 260.0735 56.95850   3.8
## 2416 1.9589558  0.86392593  0.31535912  0.1503124237 260.1748 56.93022   5.3
## 2417 1.1616039  0.52111053  0.25564003  0.1171855927 260.1780 57.09836   5.2
## 2418 2.3740559  0.91470528  0.37845230  0.2024955750 260.1152 56.85789   5.0
## 2419 2.2570419  1.02958870  0.37986946  0.2352104187 260.4464 56.81606   5.5
## 2420 2.2335033  1.02050591  0.37265015  0.1980819702 260.3097 56.83331   5.1
## 2421 2.1480103  0.91364288  0.30394173  0.1839580536 260.4593 56.82653   4.8
## 2422 1.3542328  0.33727837  0.19704628 -0.0554828644 260.1042 57.74194   3.7
## 2423 1.3542328  0.33727837  0.19704628 -0.0554828644 260.1042 57.74194   2.8
## 2424 1.0752163  0.38417435  0.20376587 -0.0746555328 260.2686 57.78828   2.3
## 2425 1.2212372  0.13426971  0.02471924 -0.0806255341 260.3275 57.79547   3.7
## 2426 1.2212372  0.13426971  0.02471924 -0.0806255341 260.3275 57.79547   4.0
## 2427 1.2578526  0.44603539  0.14810753  0.1987743378 260.1872 57.84294   2.0
## 2428 1.2578526  0.44603539  0.14810753  0.1987743378 260.1872 57.84294   1.2
## 2429 1.2401981 -0.03148460 -0.15444946  0.1154117584 260.7812 57.89872   2.2
## 2430 1.0824413  0.71808624 -0.30500221  0.5243129730 260.3992 57.91831   1.7
## 2431 1.0824413  0.71808624 -0.30500221  0.5243129730 260.3992 57.91831   2.9
## 2432 1.2947598  0.08450699  0.05980492  0.1057624817 260.1970 57.92300   2.1
## 2433 1.2947598  0.08450699  0.05980492  0.1057624817 260.1970 57.92300   2.0
## 2434 0.1963234  0.58428574 -0.10397720  0.8666782379 260.4717 58.15069   3.4
## 2435 0.1963234  0.58428574 -0.10397720  0.8666782379 260.4717 58.15069   3.4
## 2436 1.1337185  0.21219635 -0.08361053  0.2551670074 260.3849 58.16272   2.3
## 2437 1.1337185  0.21219635 -0.08361053  0.2551670074 260.3849 58.16272   2.2
```

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## 2438 1.0689507  0.35376549  0.25533867 -0.0131759644 260.1718 58.01047   2.0
## 2439 1.2422867  0.05682755  0.46294594  0.3555393219 260.0845 57.97750   2.2
## 2440 1.2422867  0.05682755  0.46294594  0.3555393219 260.0845 57.97750   1.9
## 2441 0.9801388  0.19952583  0.10103989 -0.1446208954 260.0900 57.90853   2.0
## 2442 0.8428459  0.26471519  0.05537605  0.1191768646 259.6420 58.22236   2.8
## 2443 1.2264233  0.14979172  0.11343002  0.1269245148 259.8727 57.97372   4.8
## 2444 1.1436214  0.18426895  0.12249756  0.0767421722 259.7707 58.05833   5.0
## 2445 0.9516239  0.20358849  0.13452339 -0.1181488037 259.5430 58.02989   4.6
## 2446 1.0641403  0.37978363  0.15625381  0.0130081177 259.9274 57.91375   2.4
## 2447 1.1141033  0.23659706  0.01949692 -0.0749816895 259.8454 57.90322   3.2
## 2448 0.8643303  0.35231209  0.11792946  0.1606979370 259.1813 57.85706   4.8
## 2449 0.8643303  0.35231209  0.11792946  0.1606979370 259.1813 57.85706   4.0
## 2450 0.8521614  0.35431480  0.07201958  0.2096652985 259.4548 57.76236   4.4
## 2451 0.8521614  0.35431480  0.07201958  0.2096652985 259.4548 57.76236   4.7
## 2452 1.3170853  0.47097969  0.12531281  0.0912094116 259.3082 57.76144   5.2
## 2453 1.3170853  0.47097969  0.12531281  0.0912094116 259.3082 57.76144   3.9
## 2454 1.7845383  0.84398651  0.26204491  0.1810779572 259.9487 58.44792   5.0
## 2455 1.7845383  0.84398651  0.26204491  0.1810779572 259.9487 58.44792   5.0
## 2456 2.1022854  0.55294991  0.23345757 -0.0461559296 260.0044 58.48697   4.9
## 2457 1.4899502  0.73624802  0.24445724  0.1076831818 260.4987 58.26258   4.8
## 2458 1.1924953  0.49376297  0.17031479 -0.0149364471 260.6078 58.43836   3.3
## 2459 1.1924953  0.49376297  0.17031479 -0.0149364471 260.6078 58.43836   4.4
## 2460 1.8787251  0.77515221  0.26339912  0.1169471741 260.8686 58.54467   4.8
## 2461 1.8787251  0.77515221  0.26339912  0.1169471741 260.8686 58.54467   5.1
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## 2464 0.9245358  0.35536575  0.05666924 -0.0358352661 260.3567 58.66172   1.4
## 2465 2.0940380  0.82285118  0.28890038  0.1332683563 260.8717 58.82622   5.3
## 2466 1.0859356  0.26104355  0.16226578  0.1403408051 260.7032 58.80800   2.8
## 2467 0.8207092  0.31889915  0.11069870  0.2032184601 260.6431 58.80189   2.0
## 2468 2.1695881  0.82282448  0.32077217  0.1789379120 260.6247 58.75181   5.0
## 2469 1.1386890  0.26534653  0.15023804  0.0078468323 260.6126 58.72850   2.9
## 2470 1.9406528  0.79377937  0.26574135  0.1248931885 260.6224 58.86361   4.9
## 2471 0.8212070  0.37892532  0.11360168  0.0668354034 260.6358 58.85192   2.9
## 2472 0.9716301  0.53024101  0.14868164 -0.0295906067 260.2581 58.71456   4.2
## 2473 5.1015606  0.74769592  0.20946884 -0.6879692078 260.2632 58.73894   1.7
## 2474 5.1015606  0.74769592  0.20946884 -0.6879692078 260.2632 58.73894   4.9
## 2475 1.3423843  0.58243561  0.25873375  0.1334857941 260.7681 58.87508   5.2
## 2476 1.9361172  0.79191017  0.28060913  0.1366043091 260.1769 58.72156   5.1
## 2477 1.0326195  0.58489418  0.25191689 -0.0756626129 260.3961 58.90850   4.8
## 2478 2.3049431  0.92534065  0.32543755  0.1611938477 260.4448 58.90217   5.1
## 2479 2.3049431  0.92534065  0.32543755  0.1611938477 260.4448 58.90217   5.1
## 2480 0.8909969  0.23088646  0.15402794 -0.0677623749 260.4970 59.04719   4.3
## 2481 1.2504272  0.61677933  0.25036430  0.1102390289 260.2772 58.97464   5.3
## 2482 1.7505150  0.54442978  0.25841904 -0.0782089233 260.3322 58.99811   4.5
## 2483 6.6559620  1.04571533  0.14714432  0.2428722382 260.2599 59.03853   5.4
## 2484 1.3647423  0.66073227  0.30815506  0.1806545258 260.0837 59.08978   4.9
## 2485 2.0537529  0.74429321  0.25543594  0.0707836151 260.0847 59.05214   5.2
## 2486 1.6810341  0.70664406  0.25094414  0.1275272369 260.0397 58.86397   4.9
## 2487 1.6810341  0.70664406  0.25094414  0.1275272369 260.0397 58.86397   4.9
## 2488 0.8479824  0.37014389  0.14453888  0.0824584961 260.0360 58.76894   4.8
## 2489 0.9497108  0.29947472  0.05037308 -0.0253162384 260.0434 58.73417   3.2
## 2490 2.5690746  1.04291534  0.36306953  0.2020187378 259.9958 59.09319   4.9
## 2491 1.2923012  0.58390427  0.21405983  0.0711364746 259.9765 58.68158   5.3
## 2492 1.2923012  0.58390427  0.21405983  0.0711364746 259.9765 58.68158   4.4
## 2493 0.8911419  0.39268494  0.12450218 -0.1335163116 259.9541 59.09117   4.8
## 2494 0.6367836  0.36922646  0.14573669  0.2361202240 259.8745 58.91147   4.7
## 2495 0.8865700  0.58654976  0.22848129  0.1157550812 259.8598 58.91150   4.7
## 2496 2.5245686  1.27544785  0.55088902  0.3428010941 259.6376 59.00622   5.4
## 2497 1.0771027  0.44983292  0.33148003 -0.0714664459 259.8453 58.72089   4.6
## 2498 0.9178429  0.50637627  0.20856094  0.1392688751 259.5028 58.98844   3.2
## 2499 0.9879837  0.26750755  0.16476631 -0.0041179657 259.5552 59.00986   4.4
## 2500 2.3776398  1.00681877  0.34193611  0.1874465942 259.4369 58.85144   5.0
## 2501 2.5847321  1.20386314  0.44472790  0.2578630447 259.4273 58.87283   5.1
## 2502 1.2542667  0.53694344  0.14317131  0.2966785431 259.6201 58.80414   3.8
## 2503 2.5346622  1.22957611  0.46394444  0.2669324875 259.5013 58.86042   5.5
## 2504 0.8855495  0.28100395  0.11619949  0.0921840668 259.1410 58.78075   3.8
## 2505 2.4785728  1.18987465  0.46595383  0.2790527344 259.1824 58.83267   5.4
## 2506 1.6309013  0.69717979  0.28372383  0.0617427826 259.3717 58.73283   4.9
## 2507 1.1243992  0.37711716  0.07922935 -0.0940647125 259.3880 58.79025   2.7
## 2508 1.4076996  0.68393898  0.31630325  0.0690612793 259.1908 58.85728   4.8
## 2509 0.9891167  0.31690216  0.01022339 -0.0240898132 259.1339 58.67178   2.6
## 2510 1.4166565  0.60953522  0.20331573  0.1176223755 259.2118 58.63856   5.2
## 2511 1.0284748  0.39992714  0.21359634  0.0292034149 259.3137 58.67531   2.8
## 2512 1.3964024  0.66275597  0.25877762  0.0275974274 259.1689 58.70806   4.9
## 2513 1.5246048  0.65761375  0.30991554  0.1844692230 259.0728 58.57769   5.2
## 2514 1.2011299  0.26419067  0.10185242  0.2185459137 259.0692 58.53722   3.7
## 2515 0.8774033  0.42507935  0.10541344  0.1812229156 259.1500 58.59417   4.7
## 2516 0.9364510  0.37096024  0.19851685 -0.1756210327 259.1931 58.60147   4.3
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## 2517 1.1281700  0.46578407  0.27298546 -0.1885147095 259.4759 58.49194   4.0
## 2518 2.2569141  0.87777519  0.30825806  0.1940841675 259.2098 58.47119   5.0
## 2519 2.2178249  1.01807213  0.37617302  0.2130699158 259.5512 58.41172   5.0
## 2520 2.4092846  1.05853653  0.36520386  0.2033710480 259.4889 58.47389   5.2
## 2521 1.6305504  0.70438957  0.15517616  0.2809085846 259.6347 58.41083   4.9
## 2522 1.6305504  0.70438957  0.15517616  0.2809085846 259.6347 58.41083   4.3
## 2523 1.0119762  0.45788765  0.09116936  0.2204360962 260.1585 57.96267   2.0
## 2524 1.3286915  0.59844589  0.26576042  0.1504306793 260.1289 57.96492   2.3
## 2525 1.3286915  0.59844589  0.26576042  0.1504306793 260.1289 57.96492   2.6
## 2526 1.3926678  0.70018578  0.33297539  0.1714763641 260.0617 57.94042   1.6
## 2527 1.3926678  0.70018578  0.33297539  0.1714763641 260.0617 57.94042   1.2
## 2528 1.3624344  0.62122917  0.23801422  0.1451835632 260.1198 58.06639   2.3
## 2529 1.3624344  0.62122917  0.23801422  0.1451835632 260.1198 58.06639   1.7
## 2530 1.2238560  0.55934715  0.23203278  0.1451568604 260.0260 57.93836   1.5
## 2531 1.3669510  0.59129333  0.29318619  0.0384311676 259.8539 58.04147   1.9
## 2532 1.3669510  0.59129333  0.29318619  0.0384311676 259.8539 58.04147   2.3
## 2533 1.2299919  0.52045250  0.31942177  0.2075862885 259.9758 57.96239   3.4
## 2534 1.0524273  0.56167984  0.17427254 -0.0305824280 259.9162 57.92372   3.2
## 2535 1.3556366  0.43910980  0.23629189 -0.0446414948 260.0029 57.90850   3.1
## 2536 1.1988239  0.51138306  0.34735680  0.1428642273 260.0442 57.89656   3.6
## 2537 1.2735958  0.55453491  0.32967949  0.3330650330 260.0715 57.91272   3.1
## 2538 1.4275112  0.59227943  0.28591347  0.1600723267 260.1480 57.88722   2.4
## 2539 1.4275112  0.59227943  0.28591347  0.1600723267 260.1480 57.88722   2.3
## 2540 1.6796112  0.62764931  0.29909515  0.1138896942 260.1991 57.89006   2.2
## 2541 1.6796112  0.62764931  0.29909515  0.1138896942 260.1991 57.89006   2.4
## 2542 1.4034500  0.55864525  0.29206085 -0.0138530731 260.0589 57.88039   2.8
## 2543 1.6057663  0.58540154  0.29883194  0.1131401062 260.1135 57.91564   1.6
## 2544 1.5016098  0.59562302  0.26181030  0.2133502960 260.3576 57.97186   1.4
## 2545 1.7928963  0.69054222  0.31860924  0.1935882568 260.0063 58.02594   1.3
## 2546 1.1943207  0.56952667  0.26376534  0.0667285919 259.2860 57.99742   4.6
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## 2552 0.9039745  0.36327553  0.17669487  0.1889114380 258.9733 57.40439   3.4
## 2553 0.9039745  0.36327553  0.17669487  0.1889114380 258.9733 57.40439   4.9
## 2554 2.5372505  1.20314026  0.43906593  0.2737445831 258.8811 57.34856   5.3
## 2555 2.5372505  1.20314026  0.43906593  0.2737445831 258.8811 57.34856   5.1
## 2556 1.9535389  0.82241821  0.28781128  0.2384109497 258.9890 57.38414   5.2
## 2557 1.9535389  0.82241821  0.28781128  0.2384109497 258.9890 57.38414   5.3
## 2558 2.6253567  1.12271881  0.39632607  0.2279195786 259.6153 57.35742   5.2
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## 2562 2.0352936  0.99173546  0.45892715  0.2711162567 259.2429 57.16000   5.0
## 2563 2.3155403  0.95075226  0.34037399  0.1972751617 259.1322 57.10358   5.5
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## 2566 1.4153709  0.72578049  0.25544357  0.0972728729 259.2777 57.12828   5.2
## 2567 1.5522804  0.64528465  0.27446175  0.1347160339 259.3540 56.94989   5.2
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## 2573 1.3506222  0.66333389  0.23338509  0.0671825409 261.1815 58.49556   5.2
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## 2576 2.0603256  0.81959724  0.31060219  0.1722640991 261.2558 58.44875   5.0
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## 2582 1.3421440  0.65226936  0.24259758  0.1649818420 260.9264 58.76744   4.4
## 2583 1.5347404  0.59705162  0.24353981  0.1453971863 260.9188 58.88644   4.4
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## 2586 1.4657211  0.73685837  0.23432922  0.1939773560 260.6211 58.85236   5.1
## 2587 1.8969631  0.71439362  0.27982903  0.1186141968 260.6937 58.94547   4.7
## 2588 1.7793560  0.67967224  0.26132202  0.1272621155 260.6178 58.73067   5.0
## 2589 1.6478043  0.65728951  0.29904175  0.1338615417 260.5456 58.78364   5.3
## 2590 1.1741753  0.56403160  0.19711876  0.1618232727 260.4257 58.01736   3.8
## 2591 1.3034115  0.56866455  0.31271935  0.0983314514 260.4824 58.03522   2.6
## 2592 1.0925941  0.44890022  0.11002159  0.0714626312 261.6599 58.32167   3.2
## 2593 1.0925941  0.44890022  0.11002159  0.0714626312 261.6599 58.32167   4.7
## 2594 0.9894218  0.40634727  0.18881416  0.0957527161 261.6582 58.35489   4.6
## 2595 2.3932972  1.02510834  0.50924873  0.0474452972 261.8299 58.03639   4.9
```

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## 2596 2.3932972  1.02510834  0.50924873  0.0474452972 261.8299 58.03639   5.4
## 2597 1.5445156  0.58952332  0.19574928  0.1067218781 261.7917 58.12636   4.4
## 2598 1.5445156  0.58952332  0.19574928  0.1067218781 261.7917 58.12636   4.4
## 2599 2.2018623  0.95441246  0.38597870  0.2018527985 262.0843 58.11306   5.6
## 2600 2.2018623  0.95441246  0.38597870  0.2018527985 262.0843 58.11306   5.6
## 2601 1.0347500  0.31381607  0.09363174  0.2983398438 261.9575 58.24189   4.0
## 2602 1.9956970  0.86451912  0.33379936  0.1696681976 261.9151 58.28150   5.3
## 2603 1.9956970  0.86451912  0.33379936  0.1696681976 261.9151 58.28150   4.9
## 2604 1.8719330  0.64727020  0.25936127  0.1504631042 261.7806 58.45236   5.3
## 2605 1.8719330  0.64727020  0.25936127  0.1504631042 261.7806 58.45236   5.0
## 2606 2.6070824  1.26527977  0.51223946  0.2626295090 262.1003 58.28706   5.5
## 2607 2.6070824  1.26527977  0.51223946  0.2626295090 262.1003 58.28706   5.1
## 2608 1.3444767  0.61952591  0.23589706  0.1795101166 262.0034 58.26083   5.2
## 2609 1.3444767  0.61952591  0.23589706  0.1795101166 262.0034 58.26083   5.0
## 2610 1.7763081  0.69690132  0.28946304  0.1949520111 261.9394 58.41567   5.3
## 2611 1.7763081  0.69690132  0.28946304  0.1949520111 261.9394 58.41567   4.6
## 2612 1.1398087  0.60265732  0.29080391  0.0247573853 262.0058 58.41808   5.2
## 2613 1.1398087  0.60265732  0.29080391  0.0247573853 262.0058 58.41808   4.2
## 2614 1.0270042  0.53980064  0.15103149  0.1695747375 262.3442 58.32833   4.2
## 2615 1.3749390  0.72805977  0.25577927  0.1254158020 262.3019 58.47683   5.2
## 2616 1.3749390  0.72805977  0.25577927  0.1254158020 262.3019 58.47683   5.2
## 2617 2.5657063  1.14909363  0.41931152  0.2618303299 262.4318 58.44028   5.2
## 2618 2.5657063  1.14909363  0.41931152  0.2618303299 262.4318 58.44028   5.0
## 2619 0.8518295  0.39592934  0.17236137  0.0958881378 262.0228 58.48556   3.9
## 2620 1.5179844  0.69636917  0.20091248  0.1201553345 262.2543 58.49175   3.2
## 2621 2.2104416  0.88681412  0.30476761  0.2423057556 262.3652 58.42081   5.0
## 2622 2.2104416  0.88681412  0.30476761  0.2423057556 262.3652 58.42081   4.5
## 2623 1.7509956  0.62384987  0.19943237  0.1883106232 262.2806 58.52153   4.8
## 2624 1.7509956  0.62384987  0.19943237  0.1883106232 262.2806 58.52153   4.7
## 2625 2.3156567  1.08248138  0.12753868  0.3578090668 262.2140 58.53842   5.3
## 2626 2.3156567  1.08248138  0.12753868  0.3578090668 262.2140 58.53842   5.1
## 2627 1.5838890  0.64532089  0.26670265  0.0419082642 262.2115 58.54578   3.3
## 2628 1.5838890  0.64532089  0.26670265  0.0419082642 262.2115 58.54578   4.8
## 2629 1.0382023  0.34220505  0.11764717  0.1144943237 262.0818 58.49261   2.3
## 2630 1.0382023  0.34220505  0.11764717  0.1144943237 262.0818 58.49261   3.1
## 2631 2.3228321  0.99869728  0.37192726  0.1992340088 262.1403 58.58978   5.3
## 2632 2.3228321  0.99869728  0.37192726  0.1992340088 262.1403 58.58978   5.1
## 2633 2.3838596  1.14963913  0.48966694  0.2832870483 262.2543 58.61028   5.1
## 2634 2.3838596  1.14963913  0.48966694  0.2832870483 262.2543 58.61028   4.9
## 2635 1.9918690  0.82156563  0.32067299  0.1594791412 261.7350 58.48258   5.3
## 2636 1.9918690  0.82156563  0.32067299  0.1594791412 261.7350 58.48258   5.2
## 2637 0.9358349  0.38584137  0.18359756  0.0810565948 261.9105 58.57186   3.9
## 2638 0.9358349  0.38584137  0.18359756  0.0810565948 261.9105 58.57186   1.8
## 2639 1.8706818  0.77480125  0.24937248  0.1461086273 262.1958 58.69536   5.4
## 2640 1.8706818  0.77480125  0.24937248  0.1461086273 262.1958 58.69536   5.1
## 2641 2.1976604  0.96046066  0.35694885  0.2234325409 261.9976 58.59731   5.3
## 2642 2.1976604  0.96046066  0.35694885  0.2234325409 261.9976 58.59731   5.1
## 2643 1.0765152  0.37052155  0.15015221  0.0658435822 262.1653 58.65050   4.7
## 2644 1.0765152  0.37052155  0.15015221  0.0658435822 262.1653 58.65050   2.8
## 2645 2.3944778  0.99541473  0.36129761  0.2157726288 262.3954 58.79519   5.3
## 2646 2.3944778  0.99541473  0.36129761  0.2157726288 262.3954 58.79519   5.2
## 2647 2.0474892  0.69379997  0.16202164  0.2343101501 262.3202 58.69492   4.8
## 2648 2.0474892  0.69379997  0.16202164  0.2343101501 262.3202 58.69492   4.4
## 2649 1.4155903  0.56920052  0.21069145  0.1396942139 262.3879 58.69281   5.1
## 2650 1.4155903  0.56920052  0.21069145  0.1396942139 262.3879 58.69281   3.9
## 2651 1.2465057  0.39987183  0.17729759  0.1006374359 261.8064 58.55531   4.5
## 2652 1.2465057  0.39987183  0.17729759  0.1006374359 261.8064 58.55531   4.3
## 2653 2.5974121  1.26353455  0.50610065  0.2509031296 262.0019 58.72372   5.4
## 2654 2.5974121  1.26353455  0.50610065  0.2509031296 262.0019 58.72372   5.5
## 2655 1.5832462  0.63734055  0.23559380 -0.0058517456 262.1940 58.77956   5.3
## 2656 1.5832462  0.63734055  0.23559380 -0.0058517456 262.1940 58.77956   4.2
## 2657 1.0119267  0.37911606  0.14225006  0.1513195038 262.0535 58.78742   2.0
## 2658 1.1457500  0.44244194  0.14430618 -0.0829620361 261.8461 58.65550   3.9
## 2659 0.9924126  0.40287590  0.13957214  0.0312080383 262.0333 58.88564   3.1
## 2660 0.9924126  0.40287590  0.13957214  0.0312080383 262.0333 58.88564   3.7
## 2661 1.1680756  0.70212173  0.19963264  0.2332744598 262.0381 58.85814   5.2
## 2662 2.0450821  0.87142754  0.29552841  0.1430110931 261.9977 58.80133   5.3
## 2663 2.0450821  0.87142754  0.29552841  0.1430110931 261.9977 58.80133   5.1
## 2664 1.5822697  0.67753220  0.24377823  0.1175498962 262.0158 58.94942   5.4
## 2665 1.5822697  0.67753220  0.24377823  0.1175498962 262.0158 58.94942   4.8
## 2666 1.3581429  0.64838409  0.17056274  0.1893253326 262.0166 58.80361   5.0
## 2667 1.3581429  0.64838409  0.17056274  0.1893253326 262.0166 58.80361   4.4
## 2668 1.6877728  0.71392250  0.26549339  0.2112789154 261.8420 58.69517   4.7
## 2669 1.6877728  0.71392250  0.26549339  0.2112789154 261.8420 58.69517   5.3
## 2670 1.7841492  0.66965294  0.25501442  0.2105350494 261.8356 58.91728   4.0
## 2671 1.7841492  0.66965294  0.25501442  0.2105350494 261.8356 58.91728   5.2
## 2672 1.2826157  0.49355125  0.26226997  0.1935806274 261.7869 58.60097   3.4
## 2673 1.5250072  0.58797264  0.28777122  0.1707572937 261.7276 58.79981   4.3
## 2674 1.5250072  0.58797264  0.28777122  0.1707572937 261.7276 58.79981   4.7
```

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## 2675 1.2129536  0.58162689  0.26121712  0.1316890717 261.6565 58.74633   4.2
## 2676 1.2129536  0.58162689  0.26121712  0.1316890717 261.6565 58.74633   4.0
## 2677 2.4399319  1.01155853  0.37602997  0.1904220581 261.5797 58.91050   5.4
## 2678 2.4399319  1.01155853  0.37602997  0.1904220581 261.5797 58.91050   5.2
## 2679 1.9902859  0.91202736  0.33748436  0.1991329193 261.6865 58.94922   4.9
## 2680 1.9902859  0.91202736  0.33748436  0.1991329193 261.6865 58.94922   5.1
## 2681 1.7729931  0.74230385  0.27257729  0.1506557465 261.3213 58.90136   5.1
## 2682 1.7729931  0.74230385  0.27257729  0.1506557465 261.3213 58.90136   5.0
## 2683 1.5390396  0.69819069  0.29021454  0.1761779785 261.4269 58.84983   5.4
## 2684 1.5390396  0.69819069  0.29021454  0.1761779785 261.4269 58.84983   5.4
## 2685 2.4263592  1.09126282  0.37739754  0.2020473480 261.5937 58.60597   5.1
## 2686 2.4263592  1.09126282  0.37739754  0.2020473480 261.5937 58.60597   5.1
## 2687 2.2612038  0.95417023  0.32643127  0.1602954865 261.5888 58.65286   5.2
## 2688 2.2612038  0.95417023  0.32643127  0.1602954865 261.5888 58.65286   5.3
## 2689 2.5793819  1.16689491  0.41824532  0.2275943756 261.2785 58.87444   5.2
## 2690 2.5793819  1.16689491  0.41824532  0.2275943756 261.2785 58.87444   5.1
## 2691 2.3906498  1.08860397  0.38993645  0.2175045013 261.5088 58.79186   5.1
## 2692 2.3906498  1.08860397  0.38993645  0.2175045013 261.5088 58.79186   4.9
## 2693 1.0691509  0.35200691  0.02413177  0.0945816040 261.2489 58.79769   2.1
## 2694 2.5836029  1.14378548  0.39544487  0.2432966232 261.3012 58.74261   5.2
## 2695 2.5836029  1.14378548  0.39544487  0.2432966232 261.3012 58.74261   5.2
## 2696 1.4243412  0.61014557  0.07543373  0.2255725861 261.3068 58.81358   2.1
## 2697 1.8114510  0.72290802  0.29723549  0.1102886200 261.3505 58.80208   4.6
## 2698 1.8114510  0.72290802  0.29723549  0.1102886200 261.3505 58.80208   4.8
## 2699 2.5831852  1.25970936  0.52896690  0.2630882263 261.1001 58.73203   5.5
## 2700 2.5831852  1.25970936  0.52896690  0.2630882263 261.1001 58.73203   5.5
## 2701 1.5237999  0.68488121  0.23797417  0.2696876526 261.2362 58.62061   5.2
## 2702 1.5237999  0.68488121  0.23797417  0.2696876526 261.2362 58.62061   4.5
## 2703 1.7878952  0.76451492  0.26983070  0.1685695648 261.0025 58.65386   4.8
## 2704 1.7878952  0.76451492  0.26983070  0.1685695648 261.0025 58.65386   4.2
## 2705 2.1148624  0.90962601  0.35022926  0.2353591919 261.3611 58.58497   5.1
## 2706 2.1148624  0.90962601  0.35022926  0.2353591919 261.3611 58.58497   5.0
## 2707 1.6433449  0.69484901  0.19765282  0.1767807007 261.5805 58.52575   5.0
## 2708 1.6433449  0.69484901  0.19765282  0.1767807007 261.5805 58.52575   4.8
## 2709 1.9254322  0.72736740  0.25263023  0.1083621979 261.1622 58.57672   5.2
## 2710 1.9254322  0.72736740  0.25263023  0.1083621979 261.1622 58.57672   4.8
## 2711 1.9078388  0.72280502  0.22918320  0.1412849426 261.5370 58.50172   4.9
## 2712 2.3811302  0.91656113  0.32194901  0.2064094543 261.0924 58.53103   5.1
## 2713 2.3811302  0.91656113  0.32194901  0.2064094543 261.0924 58.53103   5.3
## 2714 1.7775974  0.64811707  0.23630142  0.2096996307 261.5601 58.45803   5.1
## 2715 1.4764633  0.62084579  0.18155670  0.0967388153 261.4405 58.41656   5.1
## 2716 1.4764633  0.62084579  0.18155670  0.0967388153 261.4405 58.41656   4.8
## 2717 2.0472946  0.72784042  0.31624413  0.1230850220 261.5314 58.44697   4.9
## 2718 2.0472946  0.72784042  0.31624413  0.1230850220 261.5314 58.44697   5.0
## 2719 1.1536884  0.56845856  0.24068069  0.1554470062 261.5108 58.37542   4.8
## 2720 1.7326050  0.66078568  0.23569298  0.1038131714 261.2421 58.08408   5.2
## 2721 1.7326050  0.66078568  0.23569298  0.1038131714 261.2421 58.08408   4.3
## 2722 1.3504677  0.65147591  0.24575806  0.1467742920 261.5755 58.37083   3.3
## 2723 1.3504677  0.65147591  0.24575806  0.1467742920 261.5755 58.37083   2.6
## 2724 2.5263119  1.14410782  0.42266464  0.2488021851 258.5902 57.36964   5.2
## 2725 1.4551563  0.59616661  0.22793579  0.0845222473 258.6155 57.19422   4.6
## 2726 1.6574287  0.66660118  0.21576500  0.2569503784 258.5842 57.34108   4.4
## 2727 2.1693420  0.95236397  0.33770752  0.1977691650 258.5734 57.38478   5.3
## 2728 1.7512932  0.67535973  0.24453735  0.1093502045 258.5668 57.29389   5.3
## 2729 1.3566475  0.65340996  0.25830650  0.1945343018 258.7928 57.27197   3.6
## 2730 1.7961712  0.70934486  0.25727272  0.1560134888 258.7572 57.30158   4.6
## 2731 1.9710159  0.70092773  0.20038223  0.1667938232 258.7625 57.34103   4.8
## 2732 1.5520325  0.70243073  0.24748993  0.1077423096 258.7010 57.45425   4.5
## 2733 1.0062943  0.40581131  0.17876244  0.0396404266 258.7258 57.52358   4.5
## 2734 1.7359886  0.66857338  0.24487305  0.1037464142 259.1410 57.33361   4.5
## 2735 1.5936317  0.63561440  0.28804970  0.1765346527 258.9408 57.68728   4.5
## 2736 1.1030178  0.47579956  0.16398430  0.1546344757 258.6635 57.66906   4.7
## 2737 1.5003986  0.60552788  0.27838516  0.1284713745 259.0558 57.75422   2.2
## 2738 1.2862759  0.46984863  0.18715668  0.0944557190 259.1663 57.76600   4.9
## 2739 1.3509235  0.56382751  0.25949669  0.3373851776 258.9083 57.75117   1.7
## 2740 1.0819893  0.43459702  0.17978668  0.2124805450 259.0976 57.83408   4.7
## 2741 2.0397911  0.79821587  0.28244209  0.1784496307 258.8435 57.83561   5.0
## 2742 0.9285622  0.38322258  0.12814331  0.1359882355 258.8890 57.84939   3.0
## 2743 1.0215225  0.41729164  0.15120506  0.2155933380 258.7113 57.89875   3.5
## 2744 1.9673615  0.72737885  0.32182693  0.1108322144 258.8149 58.10069   5.1
## 2745 1.6686764  0.67769051  0.23859787  0.0996761322 258.4725 58.11231   4.5
## 2746 2.1297913  0.81356430  0.30238533  0.1591033936 258.3182 58.15475   5.0
## 2747 1.6532059  0.59847832  0.22249413  0.1223926544 258.0782 58.03872   4.8
## 2748 2.3770580  0.97276306  0.34215927  0.2145423889 258.1045 58.08183   4.9
## 2749 1.5734615  0.56550980  0.22734070 -0.0614032745 257.9506 58.02567   2.4
## 2750 1.1165657  0.42546082  0.15242577  0.0224380493 257.8924 57.83317   4.1
## 2751 1.5142784  0.53612709  0.20234871  0.0956611633 257.8673 57.81861   1.7
## 2752 2.3946266  1.05547905  0.39979553  0.2364292145 258.1797 57.74750   5.3
## 2753 1.2183552  0.51648521  0.31920433  0.0953426361 257.7619 57.78469   3.5
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## 2754 2.0246983  0.83739090  0.30543137  0.1299037933 257.6528 57.76175   5.3
## 2755 0.7835255  0.31269455  0.06527138  0.0812358856 258.1405 57.71411   3.0
## 2756 1.7429047  0.79066277  0.27029228  0.1333789825 257.9854 57.71258   5.3
## 2757 2.6027966  1.19882011  0.47623253  0.2238225937 258.0238 57.63558   5.2
## 2758 1.5909138  0.59279251  0.23281860 -0.2897071838 258.0464 57.66703   4.3
## 2759 1.9381027  0.80580711  0.25016403  0.1859664917 257.8386 57.67092   5.1
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## 2761 2.5412292  1.23444176  0.47558498  0.2569780350 257.7925 57.52992   5.4
## 2762 2.1381321  0.95286942  0.38613319  0.2334194183 257.8193 57.40428   5.3
## 2763 1.6937351  0.73613358  0.25343323  0.1212005615 258.0961 57.52181   4.3
## 2764 1.8791142  0.55861664  0.22989464  0.0503005981 257.9301 57.39953   4.3
## 2765 2.0465069  0.87153053  0.37498283  0.1915302277 258.1730 57.42300   5.1
## 2766 2.4360943  1.08768272  0.38519096  0.2266864777 257.9228 57.38725   5.0
## 2767 1.6618195  0.68278313  0.20853424  0.1313781738 258.2053 57.25958   5.1
## 2768 1.5041828  0.66228485  0.28516006 -0.0300540924 258.2545 57.36775   5.1
## 2769 1.0305138  0.43831444  0.19605446  0.1387691498 258.1961 57.22989   5.1
## 2770 1.2487411  0.63130951  0.23886871  0.2724685669 258.2622 57.28728   4.9
## 2771 1.1864338  0.43073463  0.19822502  0.1860980988 258.1173 57.26142   4.0
## 2772 1.4805775  0.72850800  0.26813126  0.2204017639 258.5030 57.60417   5.2
## 2773 1.0750046  0.54616737  0.09524345  0.2237854004 258.1565 57.31981   4.7
## 2774 2.4698544  1.19306374  0.47892857  0.2732334137 258.4260 57.33472   4.8
## 2775 1.3087845  0.69657516  0.25149727  0.1732025146 258.3240 57.20350   5.0
## 2776 1.7809944  0.68768311  0.26273918  0.0603160858 258.4013 57.22133   5.0
## 2777 1.9361324  0.79148674  0.31381035  0.2061729431 258.4480 57.33406   5.3
## 2778 1.5603638  0.66910362  0.25905800  0.1386623383 261.4207 58.49400   3.9
##      metallicity signal.noise temperature velocity.los
## 1          -1.30          3.0        5923       -294.1
## 2          -1.73          4.1        4935       -205.1
## 3          -1.13          3.5        6503       -282.1
## 4          -2.20          3.2        4873       -283.7
## 5          -1.89          2.9        4886       -277.5
## 6          -1.02          4.9        5994       -298.2
## 7          -1.96          3.1        4522       -297.3
## 8           0.04          0.8        4741       -299.1
## 9          -3.28         12.2        4748       -309.1
## 10         -3.16         14.7        4789       -310.5
## 11         -3.18         13.7        4648       -309.1
## 12         -3.29         10.2        4543       -310.4
## 13         -3.29         13.0        4554       -310.7
## 14         -1.99         11.9        5285       -293.6
## 15         -1.70         14.1        4609       -295.5
## 16         -1.69          1.4        4626       -312.2
## 17         -1.69          2.6        5120       -309.6
## 18         -1.71          4.4        4971       -303.2
## 19         -2.02          7.2        4759       -302.7
## 20         -1.25          4.8        5070        -63.0
## 21         -0.67         12.8        5694       -187.9
## 22         -2.40          5.0        6454       -277.8
## 23         -1.91          4.4        6600       -275.4
## 24         -1.04         25.2        4789       -156.6
## 25         -1.96          8.5        4554       -290.1
## 26         -2.29          6.4        4658       -301.4
## 27         -1.98          5.5        4905       -107.1
## 28         -1.11          6.5        5199       -166.3
## 29         -0.61          4.6        5127       -164.8
## 30         -0.51          8.2        5285       -164.9
## 31         -0.28          6.1        5258       -164.5
## 32         -2.28          4.3        4922       -302.1
## 33         -1.58          5.3        5443       -288.2
## 34         -2.55          9.1        4881       -288.0
## 35         -1.83         13.6        5252       -116.4
## 36         -1.55         14.4        5004       -117.7
## 37         -1.90          2.9        5536       -292.3
## 38         -1.30          1.4        5196       -292.8
## 39         -2.30          4.4        5140       -290.3
## 40         -2.38          3.8        4771       -288.1
## 41         -2.22          3.7        4918       -291.0
## 42         -1.64          2.7        5035       -289.6
## 43         -1.11          2.7        5699       -290.6
## 44         -2.37          5.4        4487       -304.9
## 45         -2.19          6.2        4679       -304.5
## 46         -1.82          3.8        4801       -305.5
## 47         -1.79          5.5        4851       -305.6
## 48         -1.75          2.8        4719       -305.4
## 49         -1.86          6.0        5072       -306.2
## 50         -2.50          2.8        4796       -304.4
## 51         -0.74          2.7        5066        -19.7
## 52         -2.04         10.1        4600       -307.1
## 53         -1.75          5.0        4870       -286.5
```

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## 54         -2.09          4.3        4676       -286.4
## 55         -2.10          6.3        4668       -287.1
## 56         -2.13          8.2        4673       -286.5
## 57         -1.92          8.1        4887       -286.6
## 58         -1.78          7.2        4805       -286.9
## 59         -1.79          7.8        6865       -296.8
## 60         -0.10          0.8        4856       -299.9
## 61         -1.72          4.6        4817       -299.1
## 62         -1.75          8.8        4904       -298.0
## 63         -1.54          9.1        5082       -298.3
## 64         -1.63          7.3        5016       -298.4
## 65         -1.39          9.1        5149       -298.2
## 66         -1.49          5.8        5059       -298.6
## 67         -1.78          6.1        4725       -298.8
## 68         -1.63          6.4        4958       -298.7
## 69         -1.27          9.5        5302       -201.8
## 70         -1.22         17.6        5062       -193.8
## 71         -0.74          4.7        5463        -69.0
## 72         -0.07          6.6        5329        -60.3
## 73         -1.53          3.5        5775       -278.4
## 74         -2.27         11.7        5348       -300.5
## 75         -2.15          9.2        4736       -302.2
## 76         -2.97         12.3        4535       -288.3
## 77         -2.07         13.2        4456       -282.0
## 78         -2.09         22.0        4522       -279.1
## 79         -2.04         21.2        4556       -279.9
## 80         -0.80         13.2        5816        -44.3
## 81         -1.94          6.3        4776       -294.6
## 82         -0.52          6.1        5266       -235.3
## 83         -1.16          0.8        4589       -119.6
## 84         -1.19          2.9        5233       -308.8
## 85         -1.22          3.9        5547       -307.9
## 86         -1.99          7.1        5114       -303.2
## 87         -2.18          3.8        5063       -287.0
## 88         -2.35          4.3        4848       -284.4
## 89         -2.69          5.7        4999       -284.4
## 90         -2.71          5.7        4662       -287.2
## 91         -2.41          5.1        4975       -285.6
## 92         -2.20          3.5        4561       -294.4
## 93         -2.02          5.1        4751       -295.5
## 94         -2.49          2.2        4776       -314.6
## 95         -2.70          6.2        4668       -315.2
## 96         -1.75          5.8        4998       -315.3
## 97         -1.73          5.8        4990       -316.1
## 98         -2.18          4.6        4648       -314.6
## 99         -2.38          2.5        4745       -277.8
## 100        -2.31          4.2        4717       -277.2
## 101        -1.61          5.4        6485       -277.2
## 102        -2.46          6.1        4698       -278.1
## 103        -2.50          5.9        4661       -277.7
## 104        -2.20          5.8        4933       -276.2
## 105        -2.65          7.6        4588       -278.0
## 106        -2.50          4.6        4666       -278.1
## 107        -2.16          5.4        4839       -279.2
## 108        -1.81          4.2        5411       -278.3
## 109        -2.58          3.9        4511       -278.8
## 110        -1.29          2.3        4672       -285.3
## 111        -1.47          5.1        4948       -291.2
## 112        -2.33          2.5        5013       -295.6
## 113        -2.35          2.2        4687       -297.8
## 114        -0.89          1.0        4769       -290.4
## 115        -2.29          4.0        4664       -289.5
## 116        -1.63          5.0        4745       -295.0
## 117        -1.67          2.1        4651       -283.6
## 118        -1.75          4.2        5112       -282.2
## 119         0.34          0.5        5008       -294.4
## 120        -2.25          2.5        4667       -294.3
## 121        -2.13          4.1        5051       -291.5
## 122        -0.92          1.5        5520       -293.5
## 123        -0.43         11.2        5354        -27.7
## 124        -0.45         17.6        5318        -48.0
## 125        -1.71          2.3        4871       -287.6
## 126        -1.47          7.4        4989       -280.9
## 127        -1.44          1.9        4783       -299.7
## 128        -2.25          3.4        4709       -298.9
## 129        -2.19          5.3        4775       -298.3
## 130        -1.67          1.2        4629       -306.2
## 131        -1.46          2.2        4957       -307.3
## 132        -1.80          5.5        4691       -297.8
```

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## 133        -1.73          6.6        4557       -297.6
## 134        -1.46          7.1        4877       -298.2
## 135        -1.63          5.0        4761       -298.9
## 136        -1.72          9.0        4621       -298.0
## 137        -1.83          6.6        4603       -298.8
## 138        -2.11          5.1        5165       -293.0
## 139        -2.09          5.7        4742       -292.5
## 140        -2.05          3.8        4733       -293.0
## 141        -1.98          7.3        4620       -301.0
## 142        -2.00          5.4        5105       -302.0
## 143        -1.84         12.3        4918       -301.1
## 144        -1.82          7.5        4764       -301.4
## 145        -1.97          7.6        4736       -301.8
## 146        -2.05          5.6        4786       -279.6
## 147        -2.16         10.4        4604       -280.2
## 148        -1.95         11.2        4800       -280.2
## 149        -2.00          9.5        4774       -280.5
## 150        -2.12         12.7        4881       -279.6
## 151        -2.32         21.6        4699       -307.3
## 152        -1.96          2.2        4920       -279.4
## 153        -2.28          2.5        5197       -278.4
## 154        -1.75          2.3        5109       -277.7
## 155        -1.67          2.4        5189       -277.3
## 156        -1.96          5.2        5128       -293.0
## 157        -1.91          6.6        4793       -288.4
## 158        -2.13          6.3        4525       -288.7
## 159        -1.71          2.8        4817       -170.0
## 160        -2.27          4.8        4868       -275.5
## 161        -1.54          4.4        5245       -276.4
## 162        -1.94          4.2        4673       -277.2
## 163        -1.40          5.4        5154       -276.2
## 164        -2.34          5.2        4839       -285.1
## 165        -2.09          4.1        4730       -286.6
## 166        -1.80          8.3        5344       -286.3
## 167        -2.12          9.1        4637       -298.1
## 168        -2.20          5.3        4695       -298.8
## 169        -1.93          8.5        4917       -297.1
## 170        -2.09         10.3        4716       -298.0
## 171        -1.91          8.4        4802       -297.8
## 172        -2.14         13.6        4688       -298.7
## 173        -1.97         10.3        4632       -290.4
## 174        -0.05         12.3        5052        -44.4
## 175        -0.44          5.4        5232        -46.5
## 176        -2.00          5.9        4855       -288.9
## 177        -1.77          7.4        4792       -290.4
## 178        -3.03         20.9        4370       -265.6
## 179        -2.67          5.0        4693       -282.5
## 180        -2.54          4.9        4692       -297.2
## 181        -2.13          3.9        4978       -297.2
## 182        -2.57         17.4        4382       -294.8
## 183        -2.40         22.4        4476       -294.7
## 184        -3.07          7.3        4862       -306.9
## 185        -2.20          5.9        4905       -285.7
## 186        -2.05          5.3        4679       -287.6
## 187        -1.89          5.4        4877       -288.0
## 188        -1.78          6.8        5256       -287.2
## 189        -0.06         46.7        5529         -3.5
## 190         0.06         56.5        5625         -3.6
## 191        -0.24         26.7        5560         -2.8
## 192        -1.37          8.7        4694       -289.2
## 193        -1.73          9.9        4593       -289.8
## 194        -2.67          4.5        5089       -278.3
## 195        -2.05          6.8        4846       -289.1
## 196        -2.28         14.8        4597       -300.9
## 197        -2.04         14.7        4516       -300.5
## 198        -1.24          2.6        5698       -259.7
## 199        -1.61          2.7        5423       -262.5
## 200        -2.33          6.9        5347       -283.2
## 201        -2.66          6.9        4725       -285.2
## 202        -1.61          3.7        5815       -276.7
## 203        -2.42          3.2        4962       -280.5
## 204        -2.49          7.8        5574       -280.9
## 205        -2.52          4.2        4965       -280.3
## 206        -2.17          6.3        5208       -282.6
## 207        -2.31          4.2        4801       -281.3
## 208        -1.95          3.0        5300       -282.0
## 209        -2.51          3.2        4766       -279.2
## 210        -2.45          7.7        4873       -289.7
## 211        -2.64          6.7        5052       -290.3
```

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## 212        -2.10          9.0        6169       -290.4
## 213        -2.07          4.2        4525       -292.2
## 214        -1.50          8.1        6093        -42.4
## 215        -0.24          6.5        5478        -44.0
## 216        -2.39          9.9        5770       -282.1
## 217        -1.93          3.5        4929       -291.0
## 218        -1.62          6.7        5109       -291.7
## 219        -2.12          1.9        4705       -290.5
## 220        -1.14          2.7        5271       -277.4
## 221        -1.57          3.3        4995       -277.3
## 222        -2.27          4.2        4656       -276.3
## 223        -1.39          3.4        5234       -278.0
## 224        -2.51          6.8        4595       -277.6
## 225        -2.40          6.3        4622       -276.2
## 226        -2.18          6.7        4826       -277.4
## 227        -2.12          5.4        4896       -276.8
## 228        -2.23          4.3        4793       -276.8
## 229        -0.44          2.2        6257       -276.3
## 230        -2.64          3.4        4629       -279.1
## 231        -1.93          2.2        4673       -292.7
## 232        -1.71          2.4        5205       -296.7
## 233        -2.32          4.2        4852       -292.2
## 234        -1.90          4.5        5135       -292.0
## 235        -1.73          2.6        5602       -292.1
## 236        -1.90          4.4        5481       -152.7
## 237        -0.88          2.2        5344        -87.1
## 238        -2.38          4.6        5145       -289.9
## 239        -2.32          6.8        4598       -291.5
## 240        -2.12          7.0        4804       -291.2
## 241         0.05         12.5        5548        -53.8
## 242         0.14          0.8        5128         -6.4
## 243        -0.73          2.9        5290        -33.2
## 244        -1.79          4.8        5185       -176.1
## 245        -1.87          3.4        4830       -188.6
## 246        -1.05          3.1        4842       -184.5
## 247        -0.83          2.1        5362       -153.7
## 248        -1.32          2.5        6078       -271.3
## 249        -1.40         10.1        5292          9.2
## 250        -1.73         19.8        5059         -0.7
## 251        -1.15          7.9        5699        -66.8
## 252        -1.51          4.9        6375       -279.9
## 253        -2.26          7.7        4780       -281.5
## 254        -2.21          6.7        4803       -282.1
## 255        -2.01          6.3        4832       -283.3
## 256        -2.23          3.4        4687       -282.7
## 257        -2.40          9.3        4784       -282.7
## 258        -2.41          9.2        4639       -282.3
## 259        -1.70          5.2        5109       -283.1
## 260        -2.18          5.4        4803       -282.5
## 261        -1.74          5.1        6207       -287.2
## 262        -2.01          5.8        4520       -288.2
## 263        -1.99          5.6        4770       -288.2
## 264        -1.92          8.3        4726       -288.5
## 265        -1.90         10.0        4840       -287.9
## 266        -0.15          2.0        5141        -43.7
## 267        -2.04          2.2        4896       -306.4
## 268        -1.64          2.3        4895       -307.0
## 269        -1.42          2.7        5438       -307.0
## 270        -1.71          3.5        5407       -308.6
## 271        -1.60          1.4        4640       -290.7
## 272        -1.18          1.1        4937       -283.7
## 273        -1.13          2.1        5708       -284.0
## 274        -1.46          1.6        5834       -280.3
## 275        -1.40          2.0        5926       -289.2
## 276        -1.53          2.6        4940       -303.8
## 277        -1.36          2.2        4845       -301.2
## 278        -1.46          3.7        5535       -302.5
## 279        -1.54          3.8        5353       -303.8
## 280        -1.72          5.0        4962       -282.2
## 281        -1.83          4.5        4692       -281.9
## 282        -1.69          3.9        4795       -281.6
## 283        -1.67          8.0        5007       -282.2
## 284        -1.84          5.7        4694       -281.7
## 285        -2.11          2.3        4927       -302.3
## 286        -1.85          1.9        4746       -301.3
## 287        -2.45          2.7        4899       -301.7
## 288        -2.03          4.6        5167       -301.0
## 289        -2.30          2.8        5049       -301.5
## 290        -1.84          2.2        5076       -300.9
```

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## 291        -1.79          2.5        5029       -292.9
## 292        -1.75          6.3        5465       -297.7
## 293        -1.58          5.8        4704       -299.2
## 294        -1.68          8.9        4639       -300.2
## 295        -2.36          4.3        5358       -305.0
## 296        -2.20          4.5        4698       -307.8
## 297        -1.59          3.3        4902       -303.2
## 298        -1.99          5.8        4810       -303.6
## 299        -2.01          5.9        4745       -302.9
## 300        -2.12          5.1        4705       -303.7
## 301        -2.12          4.5        4539       -302.7
## 302        -2.12          6.6        4587       -295.1
## 303        -0.98          6.5        7013       -289.4
## 304        -2.06          8.0        4545       -291.0
## 305        -1.71          8.2        4819       -291.0
## 306        -2.55         10.2        4633       -290.3
## 307        -2.09         15.1        4491       -289.6
## 308        -1.76          5.8        6021       -280.6
## 309        -1.42          5.6        6688       -293.1
## 310        -2.94          9.7        4572       -321.5
## 311        -2.57         13.5        4511       -321.4
## 312        -2.63         18.6        4520       -323.5
## 313        -2.68         18.9        4405       -323.1
## 314        -2.07          6.4        6452       -289.3
## 315        -1.91         10.8        4690       -292.9
## 316        -1.67          4.4        5802       -295.8
## 317        -2.11          3.2        4777       -293.9
## 318        -1.35          2.8        5303       -309.0
## 319        -0.91          1.4        5627       -308.1
## 320        -1.64          1.6        4641       -293.4
## 321        -2.30          4.0        5078       -295.5
## 322        -2.31          3.1        4856       -292.9
## 323        -2.02          6.9        4757       -290.9
## 324        -2.19          9.1        4520       -301.5
## 325        -2.01          8.0        4606       -301.0
## 326        -1.85          9.3        4627       -292.9
## 327        -1.80         14.4        4612       -287.7
## 328        -1.89          5.3        5334       -296.0
## 329        -2.06          6.1        5070       -296.3
## 330        -2.02          7.6        4876       -296.9
## 331        -0.51          7.3        5479       -113.5
## 332        -0.44         13.4        5571       -113.1
## 333        -0.55          4.4        5572       -137.1
## 334        -0.77          7.9        5432       -136.4
## 335        -1.84          3.7        4668       -293.9
## 336        -1.91          6.2        4825       -292.7
## 337        -1.59          1.5        4741       -309.0
## 338        -1.74          5.0        4920       -316.7
## 339        -2.00          6.5        4905       -316.3
## 340        -2.36         12.5        4765       -281.6
## 341        -2.28          8.9        4739       -285.9
## 342        -0.27         21.4        5567        -27.9
## 343        -0.29         24.7        5605        -27.7
## 344        -1.52          1.5        4548       -291.6
## 345        -1.99          3.7        5601       -298.6
## 346        -2.24          4.9        5241       -296.3
## 347        -2.02          3.0        4856       -299.8
## 348        -1.48          1.4        4636       -296.1
## 349        -1.66          2.8        5065       -296.3
## 350        -1.89          4.0        5084       -295.3
## 351        -1.28          1.9        4914       -296.2
## 352        -2.18          5.7        4810       -295.6
## 353        -2.03          2.7        5212       -289.5
## 354        -1.62          2.8        4574       -306.2
## 355        -2.17          5.7        4661       -305.8
## 356        -2.10          7.4        4689       -306.1
## 357        -1.97          2.9        5035       -289.2
## 358        -1.86          1.9        4545       -287.1
## 359        -1.41          3.7        5155       -283.9
## 360        -1.92          4.1        4904       -283.8
## 361        -2.27          3.9        4607       -285.5
## 362        -1.77          3.5        4912       -284.5
## 363        -2.12          5.7        4701       -284.8
## 364        -1.99          6.3        4789       -284.2
## 365        -1.75          6.5        5045       -283.3
## 366        -1.95          5.5        4868       -283.7
## 367        -1.83          5.9        4917       -283.9
## 368        -1.28          1.6        5013       -291.7
## 369        -1.10          2.4        5461       -290.8
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## 370        -0.78          2.2        6448       -296.4
## 371        -2.61          4.0        4506       -287.1
## 372        -2.02          3.3        4836       -292.2
## 373        -1.35          3.1        6009       -292.4
## 374        -2.05          2.2        4822       -292.8
## 375        -1.39          2.0        5406       -306.1
## 376        -1.44          2.4        4997       -300.4
## 377        -1.68          2.9        5198       -302.5
## 378        -1.91          2.2        4580       -302.6
## 379        -1.25          5.3        6204       -302.5
## 380        -1.44          2.5        5199       -302.1
## 381        -1.38          2.2        5200       -305.9
## 382        -1.56          9.7        4505       -298.0
## 383        -2.02          4.3        5057       -288.0
## 384        -0.78          2.2        5974       -302.8
## 385        -2.53          6.3        4917       -298.1
## 386        -2.49          9.0        4957       -296.2
## 387        -2.75          3.6        4465       -297.1
## 388        -1.53          3.8        5288       -290.1
## 389        -2.54          4.3        5103       -289.3
## 390        -1.76          2.5        5372       -310.1
## 391        -2.52          4.9        4901       -299.2
## 392        -2.20          3.3        4907       -300.2
## 393        -2.18          7.1        4873       -300.6
## 394        -2.10          5.9        5008       -288.0
## 395        -2.35          6.3        4533       -288.9
## 396        -2.35         10.5        4805       -289.4
## 397        -2.02          9.7        4925       -290.1
## 398        -2.13          7.4        4724       -289.7
## 399        -2.09          9.2        4696       -289.2
## 400        -2.10         11.2        4718       -289.5
## 401        -2.19          7.7        4660       -289.2
## 402        -2.25          5.6        4689       -289.2
## 403        -2.56          3.3        4946       -280.0
## 404        -2.04          2.7        4609       -280.5
## 405        -2.47          5.2        4781       -280.6
## 406        -2.35          2.3        4557       -279.1
## 407        -2.27          3.8        4638       -282.4
## 408        -2.18          5.1        5218       -278.8
## 409        -2.28          6.2        4790       -281.3
## 410        -3.25          4.5        4830       -271.9
## 411        -2.65          4.6        5206       -267.8
## 412        -2.36          6.8        5472       -267.2
## 413        -2.38          5.6        5989       -279.5
## 414        -2.45          5.5        5571       -266.4
## 415        -2.85          6.2        4906       -266.6
## 416        -2.78          7.9        5025       -268.5
## 417        -2.82          7.7        4832       -267.4
## 418        -3.04          6.3        4603       -266.3
## 419        -1.71          6.5        6112       -268.7
## 420        -3.14          3.7        4927       -269.2
## 421        -1.79          4.3        5209       -294.1
## 422        -1.23          3.4        5176       -294.8
## 423        -1.79          6.1        4875       -292.6
## 424        -1.81          6.9        4897       -294.4
## 425        -2.04         12.6        4394       -299.3
## 426        -1.81         16.0        4451       -298.6
## 427        -0.40         21.8        5254        -34.7
## 428        -0.46         33.1        5173        -34.0
## 429        -0.64         13.5        5283        -34.5
## 430        -2.58          4.2        4919       -278.7
## 431        -1.67          5.9        5576       -291.2
## 432        -2.24          6.1        4719       -291.9
## 433        -2.23          7.5        4811       -290.8
## 434        -1.24          5.9        5963       -299.2
## 435        -1.61          5.6        5172       -299.0
## 436        -1.50          6.2        5250       -298.7
## 437        -1.74          9.0        5280       -298.8
## 438        -1.67          5.9        5545       -303.8
## 439        -1.89          5.3        4835       -304.2
## 440        -2.18          5.2        4713       -303.4
## 441        -1.73          6.5        4894       -304.8
## 442        -1.32          1.9        5100       -289.0
## 443        -1.87          2.6        5053       -292.9
## 444        -2.66          5.2        4632       -296.4
## 445        -1.51          5.0        5975       -292.9
## 446        -2.37          6.9        6151       -290.7
## 447        -2.13          4.6        4994       -287.4
## 448        -0.29         12.4        5569         -1.3
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## 449        -0.41        12.9        5523         -1.4
## 450        -0.35        20.8        5531         -1.4
## 451        -1.19        11.4        5679         -1.0
## 452        -1.91         4.4        5711       -275.6
## 453        -3.14         8.0        5525       -276.5
## 454        -2.53         4.5        4811       -274.6
## 455        -2.54         4.7        5129       -273.8
## 456        -1.88         2.3        4729       -283.7
## 457        -1.96         3.2        4964       -285.7
## 458        -3.03         4.6        5118       -300.3
## 459        -2.90         4.9        5213       -298.1
## 460        -2.00         3.3        5154       -301.3
## 461        -2.27         2.3        5215       -303.2
## 462        -1.41         4.2        6401       -298.8
## 463        -2.43         5.5        4866       -292.9
## 464        -1.26         5.8        6823       -297.0
## 465        -1.57         2.7        4531       -295.3
## 466        -2.22         4.3        4736       -294.9
## 467        -2.69         9.3        4624       -300.0
## 468        -2.26         5.1        4517       -298.3
## 469        -2.50        12.0        4670       -298.8
## 470        -2.33         8.5        4591       -299.5
## 471        -1.57         1.6        4663       -298.2
## 472        -2.45        10.6        4604       -299.6
## 473        -2.62        15.6        4549       -299.2
## 474        -1.22         2.6        5285       -180.6
## 475        -0.85         7.0        5465        -83.6
## 476        -0.30         2.2        5974        -85.4
## 477        -0.59         5.6        5289        -83.9
## 478        -0.68         6.4        5526        -99.3
## 479         0.17         2.9        5650        -99.7
## 480        -0.14         7.2        5352       -100.0
## 481         0.14        15.0        5473        -64.7
## 482         0.15        12.2        5420        -64.5
## 483        -0.60        24.7        5265        -83.4
## 484        -0.49        18.5        5304        -83.6
## 485        -0.39        38.8        5393        -83.6
## 486        -0.05        23.2        5303          0.0
## 487        -0.01        18.9        5299         -0.3
## 488        -0.60         3.7        6038       -111.4
## 489        -0.07         1.7        5795       -112.5
## 490        -0.66         7.9        5310        -85.1
## 491        -0.35         5.0        5436        -85.2
## 492        -0.90         8.0        4966        -89.6
## 493        -0.16         5.5        5028        -89.0
## 494        -1.66         7.1        5409       -214.8
## 495        -1.49         6.4        5346       -215.6
## 496        -1.57         2.5        5136       -238.4
## 497        -0.46         3.6        5590       -241.2
## 498         0.05        14.5        5482        -61.9
## 499         0.23         9.3        5471        -62.2
## 500         0.22        20.1        5589        -62.8
## 501        -1.80         2.6        4466       -302.1
## 502         0.43         0.9        4530       -302.3
## 503         0.02        48.4        5513          3.4
## 504         0.09        40.2        5592          2.4
## 505         0.09        56.6        5587          2.6
## 506        -0.93         8.7        5070       -198.8
## 507        -0.61         3.8        4899       -199.1
## 508        -0.55         8.1        5221       -199.3
## 509        -0.02         0.8        5374       -299.0
## 510        -1.09         2.5        6151       -290.5
## 511        -1.17         2.9        5757       -301.0
## 512        -1.80         3.4        4565       -287.9
## 513        -1.67         3.6        4854       -286.0
## 514        -1.89         6.7        4770       -286.6
## 515        -1.81         8.2        4828       -286.7
## 516        -0.19         1.0        5091       -285.2
## 517        -2.22         3.2        4613       -288.5
## 518        -0.98         2.3        5565       -306.3
## 519        -1.55        18.0        4832       -200.7
## 520        -1.55        18.7        4853       -200.4
## 521        -2.07         2.9        4547       -292.3
## 522        -1.52         2.1        4949       -294.1
## 523        -1.90         7.5        4953       -293.1
## 524        -2.73         4.0        4823       -274.8
## 525        -2.33         3.6        5222       -284.2
## 526        -2.16         5.8        5507       -289.9
## 527        -2.31         6.2        5039       -290.2
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## 528        -2.24         9.6        5541       -285.3
## 529        -2.00         7.2        5202       -285.1
## 530        -2.36         5.9        4771       -285.3
## 531        -1.89         4.9        5213       -284.5
## 532        -1.87         4.7        5346       -288.4
## 533        -2.72         5.0        5187       -276.7
## 534        -2.54         4.5        4952       -274.8
## 535        -2.50         5.5        4565       -289.7
## 536        -0.82         3.4        6414       -289.9
## 537        -2.12         4.1        4645       -299.4
## 538        -1.70         4.1        4995       -300.9
## 539        -1.22         1.2        4817       -287.0
## 540        -1.46         2.0        5305       -286.9
## 541        -2.32         6.5        5070       -294.0
## 542        -2.72         7.5        4807       -293.5
## 543        -2.08         5.1        4855       -296.9
## 544        -2.32         6.8        4893       -296.2
## 545        -1.13         5.2        5198        -71.7
## 546        -1.22         8.2        5461        -71.9
## 547        -1.58         2.9        5296       -172.7
## 548        -2.47         5.5        5078       -174.5
## 549        -2.45         5.3        5548       -295.6
## 550        -1.91         2.7        5131       -298.1
## 551        -2.17         6.5        5481       -296.1
## 552        -1.92         4.3        6297       -298.6
## 553        -0.50        10.8        5704       -133.6
## 554        -0.33         1.6        5191        -84.6
## 555        -1.22        23.9        4971       -240.3
## 556         0.00        27.9        5167        -78.7
## 557         0.15        23.4        5294        -23.7
## 558        -2.27         3.6        4649       -214.1
## 559        -1.22         1.2        4897       -281.9
## 560        -2.31         3.3        4653       -296.2
## 561        -2.59         3.2        4528       -296.0
## 562        -0.94         0.8        5189       -293.0
## 563        -2.12         3.2        5131       -293.3
## 564        -1.56         2.2        5415       -296.4
## 565        -1.77         2.2        4493       -297.3
## 566        -1.62         2.4        4656       -286.7
## 567        -1.73         3.9        4878       -290.2
## 568        -1.53         3.0        5045       -278.9
## 569        -1.33         2.5        5561       -281.5
## 570        -1.53         3.2        4755       -292.2
## 571        -1.74         3.6        4773       -292.8
## 572        -0.78         4.2        5471       -292.9
## 573        -2.22        12.4        4549       -278.3
## 574        -2.05         3.1        4449       -280.1
## 575        -1.89         1.9        4609       -289.3
## 576        -0.80        13.7        5275        -42.0
## 577        -2.47        13.5        4673       -285.0
## 578        -2.21         7.1        4895       -286.4
## 579        -2.34        13.3        4640       -285.8
## 580        -2.25        13.3        4681       -285.6
## 581        -2.33        15.0        4595       -286.2
## 582        -2.23        11.9        4666       -285.3
## 583        -2.41        11.7        4648       -285.7
## 584        -2.20         7.2        4646       -286.3
## 585        -1.35        17.3        4325         20.3
## 586        -2.53         5.0        5103       -282.5
## 587        -1.42         1.8        5417       -282.7
## 588        -1.41         2.7        5652       -282.4
## 589        -2.01         3.7        4756       -284.9
## 590        -1.60         2.4        4816       -283.2
## 591        -2.04         3.6        4773       -284.8
## 592        -1.32        10.4        5128       -203.9
## 593        -3.09         6.1        4510       -286.7
## 594        -1.71         2.8        5499       -289.5
## 595        -2.52         3.9        4810       -286.7
## 596        -2.54         4.2        4838       -287.4
## 597        -2.41         5.9        4742       -286.8
## 598        -2.11        19.4        4450       -289.2
## 599        -2.21        15.8        4397       -287.6
## 600        -2.04        12.4        4511       -288.1
## 601        -2.11        21.4        4442       -290.4
## 602        -2.02        20.7        4482       -290.5
## 603        -2.01        16.2        4504       -290.9
## 604        -2.09        12.8        4377       -290.8
## 605        -2.42         5.1        4777       -294.9
## 606        -1.83         2.3        4522       -297.5
```

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## 607        -1.70          4.2        4809       -297.3
## 608        -1.83          5.6        4948       -295.9
## 609        -2.10          3.5        4725       -297.1
## 610        -1.83          4.6        5156       -283.8
## 611        -1.97          8.9        4766       -271.8
## 612        -1.54          9.6        4435       -296.8
## 613        -2.67          3.8        4766       -293.4
## 614         0.83          0.4        4690        -84.8
## 615        -1.75          7.8        4609       -294.7
## 616        -1.92          9.5        4669       -294.9
## 617        -1.77         11.5        4691       -295.2
## 618        -1.79         11.8        4687       -294.9
## 619        -1.92         12.3        4657       -295.5
## 620         0.47         21.2        4964        -25.9
## 621        -0.61          7.7        5097       -143.8
## 622        -0.56          4.4        5114       -144.1
## 623         0.08         11.8        5051        -61.8
## 624        -0.08         21.9        5645          2.0
## 625         0.08          9.9        5583        -17.2
## 626        -0.02         13.1        5604         22.2
## 627        -0.05          5.8        5464        -39.0
## 628        -0.25         19.4        4992       -100.8
## 629        -1.46         10.9        5127       -151.6
## 630        -1.66          1.5        4761       -284.8
## 631        -0.85          1.1        5139       -285.6
## 632        -1.82          3.3        5168       -287.9
## 633        -0.80         21.1        5224        -74.9
## 634         0.01         34.1        5221        -27.6
## 635        -1.79         21.1        5026       -392.4
## 636        -2.85          7.6        5038       -218.3
## 637        -2.49          5.8        5158       -292.3
## 638        -2.14          6.2        4972          7.9
## 639        -1.34          2.6        4851        -67.9
## 640        -1.90          4.0        4982        -68.6
## 641         0.89          0.5        4725       -174.4
## 642        -0.85          3.2        5083       -175.2
## 643        -0.06          7.8        5502        -39.3
## 644        -0.74          1.7        5097       -294.6
## 645        -1.57          4.8        4996       -294.3
## 646        -1.38          3.7        5914       -289.3
## 647        -1.65          2.0        4701       -105.0
## 648        -1.44          5.2        6013       -233.7
## 649        -1.25         15.6        5085       -287.1
## 650        -1.67          1.9        5320       -144.5
## 651         0.17         10.0        4994        -83.6
## 652        -0.03          9.0        5061        -84.6
## 653         0.01          1.6        5070       -175.6
## 654         0.24          5.9        5220       -127.8
## 655         1.25          1.0        4464        -55.6
## 656         0.05         10.4        5127        -52.7
## 657        -0.96          4.8        4981       -258.8
## 658         0.13         20.8        5106        -47.9
## 659         0.33          0.4        4426         14.5
## 660         0.48          8.9        5075        -99.0
## 661         0.69          8.7        4960         -4.8
## 662        -0.21          3.0        5020        -81.3
## 663        -1.52         11.9        5222       -133.4
## 664         0.26          8.4        5138        -78.7
## 665        -0.70          4.2        5050       -313.5
## 666         0.23          0.8        5048       -226.0
## 667        -1.38          2.4        5057        -64.3
## 668        -0.13         11.3        5012        -50.7
## 669        -0.45          2.6        5222        -56.6
## 670        -0.22          1.0        4575       -252.7
## 671        -0.87          1.2        5105          2.5
## 672        -1.03          2.3        6152       -264.3
## 673        -1.53         18.0        5244       -301.5
## 674        -0.52          5.4        5421          6.5
## 675        -2.04          3.3        4738       -301.2
## 676        -1.69          3.4        5004       -290.2
## 677        -1.68          4.2        4996       -288.2
## 678        -1.66          4.5        4992       -288.9
## 679        -2.12          6.6        4723       -288.3
## 680        -1.90          7.3        4916       -288.6
## 681        -2.03          7.4        4986       -289.3
## 682        -2.27          5.3        4660       -289.1
## 683        -1.59          5.6        5177       -290.2
## 684         0.77          0.8        4941        -54.7
## 685        -0.65          6.1        5114        -54.1
```

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## 686        -0.55          6.1        5292        -54.5
## 687        -0.59          5.7        5247        -55.7
## 688         0.43         12.1        5211        -57.7
## 689        -0.16          9.5        5241        -53.5
## 690        -0.99          3.7        5946       -210.9
## 691        -1.98          3.0        5070       -214.9
## 692         0.12         55.7        5630        -44.8
## 693        -1.11         12.7        5403       -153.4
## 694         0.24          8.8        5241         -8.9
## 695         0.30         10.4        5256        -51.3
## 696        -1.79          6.3        5134        -62.7
## 697        -2.12          9.6        5207        -57.6
## 698        -1.72          7.8        4812       -288.7
## 699        -1.82          8.9        5016       -287.8
## 700        -2.09          6.0        4656       -287.7
## 701         0.51         37.7        5204        -84.5
## 702         0.06          2.6        5365       -180.1
## 703        -0.70          2.9        5155       -180.1
## 704         0.82          0.6        4605       -170.2
## 705        -0.46          5.4        5480        -93.6
## 706        -1.66          5.2        4745         -3.7
## 707         0.10          1.2        4979       -152.7
## 708        -1.38         18.1        5020       -128.1
## 709        -0.40          2.9        4965       -174.0
## 710        -1.88         12.2        5132       -230.5
## 711        -0.88         15.8        5371        -40.0
## 712        -1.37          3.7        5627          6.6
## 713        -1.96          3.2        4799          5.7
## 714         0.53         10.1        4907        -81.5
## 715         0.38          9.7        5556        -24.9
## 716        -0.86          2.7        4501       -400.4
## 717         0.90          0.6        4805       -100.4
## 718         0.75          1.6        5262        -79.8
## 719        -0.19          4.4        4681        -71.7
## 720        -0.62          3.6        7053          9.1
## 721        -1.45          4.0        6071          7.5
## 722        -3.56          7.0        4686        474.8
## 723        -1.88         13.7        4831       -234.4
## 724        -0.55         27.6        4974       -153.2
## 725        -1.23          9.6        4861        -27.8
## 726         0.39          6.6        5239          8.2
## 727         0.01          5.0        4830        -55.1
## 728        -0.10          0.8        4495       -180.1
## 729        -1.57          5.8        5265       -216.2
## 730        -0.12         10.9        5189       -173.4
## 731        -0.78         12.6        5560         -9.2
## 732        -0.86          2.6        5471        -38.4
## 733        -1.59          3.5        6226        -59.0
## 734        -3.41         10.9        5190       -417.3
## 735        -1.11          8.5        6322        -86.1
## 736        -2.28          9.1        4335       -271.2
## 737        -2.89          5.9        4862       -277.7
## 738        -1.83          9.0        4947       -275.3
## 739        -1.82          9.3        4775       -276.6
## 740        -2.90          5.2        4704       -297.6
## 741        -1.20          8.3        5772       -167.4
## 742        -2.51          5.7        5505       -288.7
## 743        -1.49          1.8        5408       -292.5
## 744        -2.82         11.0        4562       -290.8
## 745        -2.08         15.3        5483       -274.0
## 746        -2.25          3.5        4725       -282.4
## 747        -1.00          2.1        4849       -212.5
## 748        -0.69          3.5        5703       -251.4
## 749        -1.49          4.0        5053       -250.4
## 750         0.06          1.4        4757       -250.7
## 751        -0.75          2.1        4849       -250.8
## 752        -0.93          3.7        5135       -249.1
## 753        -0.83          3.6        5750       -247.3
## 754        -1.15          4.7        5354       -251.1
## 755        -0.29          5.2        5268        -52.2
## 756        -0.38          6.7        5213        -52.6
## 757        -0.18         20.0        4770         -4.2
## 758        -0.43          4.4        5328       -185.3
## 759        -0.40          3.8        5388       -185.2
## 760        -1.13          2.2        5098       -188.2
## 761         0.06          7.1        4963        -20.6
## 762         0.02         11.6        4903        -20.6
## 763        -1.72          6.3        4908       -294.9
## 764        -0.57          5.7        4932          2.0
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## 765        -0.54          4.5        4421          2.8
## 766        -0.31         14.6        4632        -37.4
## 767        -0.31         16.5        4704        -37.9
## 768         0.30         16.0        4871        -32.7
## 769         0.30         19.3        4907        -32.3
## 770        -0.53          2.3        6008        -78.5
## 771        -1.41          3.2        5533        -76.8
## 772        -0.03          1.0        5149        -64.7
## 773        -0.49          6.1        5087         -4.8
## 774        -0.50          9.8        4949         -4.8
## 775        -0.30          6.9        4975         -5.6
## 776        -0.29          8.7        5028         -4.9
## 777        -0.30          5.5        4999         -5.5
## 778        -0.59          8.2        4954         -5.2
## 779        -0.20          6.0        5002         -5.0
## 780        -1.99          5.0        4627       -288.2
## 781        -2.00          7.1        4759       -288.1
## 782        -0.07          8.9        4942          1.1
## 783        -0.05         11.8        4873          1.4
## 784        -2.09         16.1        4574       -301.4
## 785        -2.03         22.2        4590       -301.4
## 786        -0.03          3.5        5083        -60.0
## 787         0.05          5.6        5104        -60.8
## 788        -0.85          1.5        4952       -216.4
## 789        -1.19          1.9        5072       -212.1
## 790        -1.90         17.5        4421       -281.6
## 791        -1.78         19.4        4499       -281.4
## 792        -2.13          6.4        4827       -281.2
## 793        -2.15          4.2        4631       -281.9
## 794        -2.07          7.2        4763       -281.4
## 795         0.05         16.3        4846        -18.6
## 796         0.06         17.7        4806        -18.3
## 797        -0.30         11.4        4848        -19.0
## 798         0.13         12.8        4760        -18.8
## 799         0.02         20.3        4865        -19.1
## 800         0.00         18.1        4848        -18.8
## 801         0.07         14.8        4809        -18.7
## 802        -0.07         16.6        4805        -19.1
## 803         0.10         15.5        4827        -19.0
## 804        -0.07         13.0        4875        -19.1
## 805        -0.51          4.7        5307       -178.2
## 806        -0.37          4.6        5124       -177.3
## 807        -2.44         20.6        4530       -294.2
## 808        -2.44         27.6        4501       -294.9
## 809        -1.62          1.9        4972       -318.8
## 810        -2.45          2.6        4783       -314.4
## 811        -0.08         13.7        4879          3.0
## 812        -0.09         13.3        4887          2.5
## 813         0.01         12.6        4871          2.2
## 814        -0.34         16.2        4875          2.8
## 815        -0.11         16.3        4864          2.2
## 816        -0.25         14.3        4891          2.2
## 817         0.01         15.0        4879          2.4
## 818        -0.24         13.2        4908          2.0
## 819        -0.06          8.7        4878        -10.0
## 820         0.01         11.0        4859         -9.4
## 821        -0.02          2.2        5220        -90.6
## 822         0.55          1.8        5211        -91.7
## 823        -0.71          3.3        5396        -91.3
## 824        -0.78          2.4        5096        -91.3
## 825        -1.91          5.7        4743       -304.9
## 826        -0.49         11.8        4702        -65.4
## 827        -0.42         11.8        4694        -65.6
## 828        -0.19          9.2        5013         -7.1
## 829        -0.21          9.4        5002         -7.1
## 830        -0.26          1.1        5183       -255.7
## 831        -0.58          1.3        6132       -296.7
## 832        -0.21          3.8        4844        -90.8
## 833         0.03          3.8        4816        -90.5
## 834         0.46          0.8        5050       -148.9
## 835        -0.48          1.2        4904       -148.1
## 836        -0.05          9.5        4844        -84.6
## 837         0.13         10.9        4892        -83.7
## 838        -2.11         14.7        4651       -276.5
## 839        -2.24         17.7        4613       -276.3
## 840         0.07          9.3        4875        -22.7
## 841         0.07         12.7        4889        -22.5
## 842        -2.77         11.9        4645       -296.9
## 843        -2.91         16.8        4398       -296.6
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## 844         0.07         16.9         4768         -45.9
## 845         0.14         14.6         4741         -45.4
## 846         0.11          9.4         4730         -46.1
## 847        -0.05         14.9         4739         -45.6
## 848         0.08         13.8         4748         -46.3
## 849         0.01         18.5         4808         -46.3
## 850         0.09         20.4         4804         -46.1
## 851         0.08         12.0         4798         -46.2
## 852         0.13         14.3         4781         -46.2
## 853        -0.46          6.3         4961         -30.2
## 854         0.01          5.6         4907         -30.2
## 855        -0.27          4.7         4882         -29.9
## 856        -0.38          5.0         5000         -30.4
## 857        -0.26          5.0         4932         -29.8
## 858        -1.87          8.3         4663        -282.9
## 859        -1.91         11.0         4636        -283.1
## 860        -1.89         14.4         4659        -292.3
## 861        -2.00         14.6         4561        -291.9
## 862        -2.05         11.2         4600        -291.8
## 863        -0.02         19.2         4752         -16.1
## 864        -0.04         19.5         4756         -16.2
## 865        -0.03         15.9         4755         -17.0
## 866        -1.57         16.5         4322        -300.2
## 867        -1.60         21.6         4322        -301.3
## 868        -0.61          2.8         4828        -149.3
## 869        -0.44          2.0         4733        -148.6
## 870        -0.76         23.7         4401         -37.6
## 871        -0.67          1.4         4747        -273.5
## 872        -1.52         13.4         4536        -287.2
## 873        -1.53         16.2         4500        -286.7
## 874        -1.45          2.7         4721         -94.8
## 875        -0.66          1.9         4534         -96.2
## 876        -0.70         26.0         4378          -3.2
## 877        -0.72         28.7         4360          -3.2
## 878        -2.34          2.6         5070        -287.2
## 879        -2.42          4.1         4830        -288.4
## 880        -2.07          6.4         5097        -287.9
## 881        -0.04          1.4         6136        -300.7
## 882         0.12          0.9         4949        -248.4
## 883        -0.18          1.5         5048        -246.4
## 884        -1.99          3.7         5074        -292.9
## 885         0.06         18.2         4755         -36.7
## 886         0.11         18.8         4762         -37.2
## 887        -0.35         15.7         4612         -50.6
## 888        -0.29         15.3         4571         -50.6
## 889        -1.50          4.7         4870        -300.4
## 890        -1.42          4.9         4818        -299.8
## 891        -1.82          8.1         4803        -300.1
## 892        -0.18          8.9         4774         -86.4
## 893        -0.14          7.7         4730         -85.9
## 894        -1.72          6.8         4791        -293.6
## 895        -1.50          7.8         4703        -293.6
## 896         0.00         14.6         4776         -36.0
## 897        -0.06         17.3         4739         -35.9
## 898        -1.32         17.3         4415        -295.7
## 899        -1.32         19.7         4380        -296.2
## 900        -1.72          4.9         5259        -274.1
## 901        -2.46          4.2         4557        -276.2
## 902        -0.53          0.8         4808        -104.4
## 903        -0.45          1.1         5145        -107.7
## 904        -1.05          2.1         5902        -295.7
## 905        -1.68          2.5         5151        -294.4
## 906        -1.88          7.8         4629        -288.1
## 907        -0.21         24.4         4594         -59.7
## 908        -0.23         32.2         4573         -59.6
## 909         0.28         15.0         4869          -2.7
## 910         0.23         18.1         4860          -2.2
## 911         0.25         14.4         4834          -2.8
## 912         0.25         21.1         4877          -3.2
## 913        -0.23          4.5         5091         -57.9
## 914        -0.22          6.5         5124         -56.5
## 915        -0.90         14.2         4773         -17.4
## 916        -0.06         15.4         4866          13.1
## 917        -1.97          2.7         5786        -140.6
## 918        -0.73          9.9         4827         -49.2
## 919        -0.69         13.5         4842         -18.4
## 920        -1.69         24.9         4343        -298.6
## 921         0.15          5.4         4890         -12.9
## 922        -0.01          9.6         4975         -12.4
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## 923         0.01          7.0        4967        -12.2
## 924         0.03         10.0        5011        -12.2
## 925        -0.20          7.9        4952        -12.3
## 926         0.00          4.5        5013       -132.8
## 927        -0.08          7.0        5064       -131.8
## 928         0.76          1.2        4601       -133.0
## 929        -0.11          6.2        5040       -131.9
## 930        -0.08          6.3        5167       -132.7
## 931        -1.41          3.6        4910       -297.4
## 932        -1.51          4.2        4676       -296.3
## 933        -1.59          7.1        4724       -294.1
## 934        -1.51         10.4        4736       -293.3
## 935        -1.65          9.5        4674       -295.2
## 936        -1.65         12.5        4527       -297.5
## 937        -1.67         20.5        4480       -296.9
## 938         0.33          1.0        4702        -58.8
## 939        -0.16          4.5        5086        -58.4
## 940        -0.04          3.5        5056        -60.2
## 941        -2.23          9.3        4353       -301.6
## 942        -2.06         24.9        4320       -301.4
## 943        -2.05         17.9        4337       -304.7
## 944        -2.21         15.7        4359       -278.8
## 945        -2.21         23.4        4358       -278.6
## 946        -0.06          4.5        5145        -67.9
## 947         0.07          5.3        5276        -68.7
## 948        -1.29          3.9        5584        -66.8
## 949         0.18          1.7        5167        -69.2
## 950         0.04          3.6        5104        -68.6
## 951         0.10          3.2        5097        -67.8
## 952        -0.36          1.4        4816        -78.0
## 953         0.37          2.6        4982        -47.8
## 954         0.08          4.5        5093        -48.0
## 955         1.12          0.5        4532        -46.5
## 956        -0.04          2.8        4998        -47.2
## 957         0.07          6.4        5075        -47.0
## 958        -0.11          5.2        5071        -47.1
## 959        -0.93          1.3        4702       -122.9
## 960         0.01         16.4        4713          9.3
## 961         0.01         22.3        4733          9.2
## 962         0.26         15.7        4841        -45.3
## 963         0.26         18.7        4824        -45.2
## 964         0.35          6.4        4809        -44.8
## 965         0.36         21.3        4822        -45.2
## 966         0.25         17.4        4823        -44.8
## 967        -1.71          2.9        4705       -298.1
## 968        -1.66          4.7        4765       -296.8
## 969        -1.36          4.0        4916       -297.4
## 970        -1.69          5.0        4949       -288.5
## 971        -1.83          9.0        4898       -288.3
## 972        -1.76          6.2        4839       -289.8
## 973        -1.77          5.5        4833       -288.6
## 974        -1.69          8.6        4604       -307.5
## 975        -1.70         14.4        4637       -307.5
## 976         0.23         10.9        4961        -15.2
## 977         0.27         14.0        4957        -15.1
## 978        -1.91         17.1        4551       -276.8
## 979        -1.93         20.7        4458       -276.5
## 980        -1.91         19.4        4488       -276.2
## 981        -1.98         25.8        4489       -276.6
## 982        -2.06          2.0        4928       -300.0
## 983        -0.60         13.1        4733        -33.9
## 984        -0.62         16.2        4726        -33.3
## 985        -0.59         18.6        4768        -33.6
## 986        -0.58         15.5        4718        -33.6
## 987        -0.65         16.6        4688        -33.6
## 988        -0.16         10.6        4528        -56.6
## 989        -0.21         19.0        4588        -59.1
## 990         0.08         10.7        4783        -11.6
## 991         0.07         12.1        4771        -11.7
## 992        -2.24          2.2        4582       -302.4
## 993        -1.94          2.3        5217       -305.7
## 994        -0.23          3.1        5317        -60.9
## 995        -0.32          4.0        5165        -55.2
## 996        -0.17          5.8        5288        -55.1
## 997        -0.14          4.0        4869       -107.8
## 998        -0.16          5.7        4923       -108.1
## 999        -1.02          0.9        4757       -291.8
## 1000       -2.01          1.4        4900       -267.2
## 1001       -0.12         10.0        4894        -25.0
```

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## 1002        0.03         9.6        4829        -24.7
## 1003       -0.18        12.9        4824        -24.7
## 1004       -0.19        14.8        4839        -25.0
## 1005       -0.12         9.4        4876        -25.0
## 1006       -0.03         7.4        4821        -24.8
## 1007       -1.78         2.6        5553       -304.7
## 1008       -2.20         3.3        5379       -302.8
## 1009       -1.36         2.4        5949       -305.0
## 1010       -1.97         2.0        4997       -305.6
## 1011       -2.15         2.9        4456       -301.8
## 1012       -1.86         3.5        4834       -303.8
## 1013       -1.23         1.4        5243       -257.8
## 1014       -1.11         1.5        4812       -259.8
## 1015        0.83         1.1        5493       -259.4
## 1016       -1.31         4.5        5676       -263.7
## 1017       -1.79         8.6        4656       -296.4
## 1018       -2.44        18.3        4504       -296.3
## 1019       -2.42        20.3        4447       -296.1
## 1020       -0.28         6.1        4821        -98.6
## 1021        0.00         6.5        4829        -98.4
## 1022       -1.57        19.3        4529       -293.1
## 1023       -1.59        18.8        4485       -293.0
## 1024       -1.06         2.6        4943         -6.1
## 1025       -0.21         3.2        5166         -4.1
## 1026       -1.08         2.8        5230         -9.8
## 1027        0.03         2.0        4896        -10.5
## 1028       -0.93         4.0        5041        -11.5
## 1029       -0.05         3.0        5238         -9.1
## 1030       -0.58         2.1        5187         -9.4
## 1031       -0.78         7.8        4981       -104.1
## 1032       -0.88         8.9        4860       -103.3
## 1033       -0.57         6.3        5113       -103.5
## 1034       -0.64         5.5        4979       -104.1
## 1035       -0.65         6.9        4952       -103.5
## 1036       -0.81         9.8        5024       -103.6
## 1037       -0.54         6.0        4964       -104.9
## 1038       -0.67         9.4        5006        -73.1
## 1039       -0.61         9.9        4958        -74.1
## 1040       -2.35         4.9        4879       -288.4
## 1041       -2.61         5.8        4495       -289.2
## 1042       -1.88         9.8        4704       -274.4
## 1043       -0.03         5.8        5047        -13.6
## 1044        0.08         7.7        5057        -14.3
## 1045       -0.22         4.4        5083        -14.4
## 1046        0.02         7.9        5128        -14.2
## 1047       -0.11         7.1        5020        -15.3
## 1048       -0.12         8.3        5020        -14.5
## 1049        0.14         5.6        5033        -14.5
## 1050        0.07         4.1        4942        -14.5
## 1051       -2.75         4.2        4833       -285.2
## 1052       -1.35         3.0        5494       -283.9
## 1053       -0.49         4.8        5139        -95.8
## 1054       -0.13         3.7        4860        -96.2
## 1055       -2.21        17.8        4435       -309.4
## 1056       -2.15        20.2        4472       -308.9
## 1057       -2.12        21.5        4534       -309.3
## 1058       -2.02        10.4        4867       -307.1
## 1059       -2.08        10.7        4699       -307.7
## 1060       -1.38         1.7        5213       -290.7
## 1061       -1.32         1.6        5251       -292.9
## 1062       -1.32         1.4        5286       -292.0
## 1063       -2.09         2.2        4745       -293.1
## 1064       -2.34         4.8        4713       -292.9
## 1065       -2.33         5.2        4702       -293.4
## 1066       -3.04         4.6        4599       -308.5
## 1067       -1.40         2.7        5381        -63.9
## 1068       -0.71         1.7        5178        -65.1
## 1069       -0.94         1.6        5501        -62.4
## 1070       -0.25         1.7        5906        -59.5
## 1071       -2.22         4.8        5350       -288.5
## 1072       -1.83         5.3        5377       -289.3
## 1073       -0.67         7.9        5179        -14.2
## 1074       -0.06         7.3        5152        -15.3
## 1075        1.11         0.7        4555         -4.4
## 1076       -0.17         7.6        5057        -15.7
## 1077       -0.29         7.8        5066        -15.3
## 1078       -0.11         3.8        4860        -17.3
## 1079       -0.08         2.8        4819        -15.7
## 1080       -0.64         3.8        5244         12.9
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## 1081        0.38          2.3        5117         10.8
## 1082       -2.21          5.2        5083       -287.7
## 1083       -2.54          5.3        4798       -287.5
## 1084       -1.76          6.0        5621       -296.0
## 1085       -2.15          5.4        4753       -296.8
## 1086       -2.66         10.0        4691       -276.3
## 1087       -2.71         11.7        4677       -275.6
## 1088        0.01         16.3        4819        -62.0
## 1089       -0.05         19.0        4815        -61.5
## 1090       -1.89         12.1        4672       -290.5
## 1091       -0.58          5.6        4949        -93.5
## 1092       -0.27          5.3        4912        -81.9
## 1093       -0.24          7.5        4827        -82.0
## 1094       -0.38         14.9        4853        -39.8
## 1095       -0.41         19.2        4820        -39.7
## 1096       -2.66          4.3        4591       -275.3
## 1097       -2.44          5.9        4845       -274.6
## 1098       -2.26         13.9        4648       -285.2
## 1099       -2.19         13.7        4680       -286.3
## 1100       -0.56          5.8        5027        -39.1
## 1101       -0.41          8.2        5123        -38.6
## 1102       -0.01          4.7        5163        -34.1
## 1103       -0.72          7.5        5137        -33.8
## 1104       -0.08          4.0        5078        -34.9
## 1105       -0.02          4.2        5026        -34.6
## 1106       -1.02          4.3        5055        -43.7
## 1107       -0.21          7.1        5024        -16.3
## 1108        0.26          9.5        4899        -45.3
## 1109       -0.45          6.0        5253        -21.6
## 1110       -1.04          3.3        5150        -81.2
## 1111       -0.20          8.4        4989         -8.2
## 1112        0.12          9.4        4964        -38.2
## 1113       -0.23         12.2        4742        -38.0
## 1114       -0.59          3.6        4971        -81.2
## 1115       -0.15          7.2        5118        -43.4
## 1116       -1.55          6.8        4762        -74.0
## 1117       -1.22          2.7        5115       -153.0
## 1118       -2.00          2.7        4742       -160.6
## 1119        0.10          8.9        4929        -48.1
## 1120       -0.15         10.3        4756        -54.9
## 1121        0.23          2.1        4867        -95.8
## 1122       -0.11          6.6        4918        -53.9
## 1123       -0.60          2.7        5213        -85.6
## 1124       -0.25          2.9        5075        -66.5
## 1125       -0.06          4.5        4981        -55.5
## 1126        0.16          6.3        4798        -61.1
## 1127        0.02         14.3        4754        -55.7
## 1128       -0.01          4.3        4862        -29.8
## 1129        0.83          3.9        5201        -75.6
## 1130       -0.57          1.9        4613         -0.4
## 1131        0.25          1.1        4620        -13.8
## 1132        0.67          0.8        5221        -48.0
## 1133       -0.04          2.2        5156        -13.8
## 1134        0.34          1.2        4599        -37.0
## 1135       -0.27          1.6        4672       -102.7
## 1136       -0.08          4.5        4752        -39.7
## 1137       -0.36          7.2        4781        -25.8
## 1138        0.62          2.2        4781        -63.2
## 1139       -0.02         10.3        4668        -50.5
## 1140       -0.22          4.3        4975       -195.8
## 1141       -0.03          6.9        5032        -64.3
## 1142        0.19          4.3        4625       -153.4
## 1143        0.07         10.1        4660        -11.2
## 1144       -0.08          3.0        5392         -5.3
## 1145       -0.29          5.4        4758        -71.1
## 1146       -0.11          6.6        4706       -151.9
## 1147        0.09          2.9        4939         -8.0
## 1148       -0.50          1.1        4802        -53.0
## 1149        0.13          3.3        4720        -46.4
## 1150       -0.65         12.9        4519         -3.8
## 1151       -0.58         11.1        4718        -30.4
## 1152       -0.78          3.7        4929          1.2
## 1153        0.19         10.6        4826        -51.1
## 1154       -0.20          3.1        4930        -71.4
## 1155       -0.58          1.8        4509        -60.3
## 1156       -0.60          3.5        4807        -76.6
## 1157        0.31          7.8        4652        -11.6
## 1158        0.53          1.8        4789         -9.9
## 1159        0.17          3.4        4698        -29.1
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## 1160       -0.72         10.5        4483        -89.5
## 1161       -0.67          3.1        4551       -102.2
## 1162       -1.61          3.4        4616       -366.3
## 1163       -0.51         13.9        4624        -14.2
## 1164       -0.44          0.6        4643        -96.3
## 1165       -0.39         12.0        4624        -75.3
## 1166       -0.18         19.7        4639        -22.9
## 1167        0.11          4.5        4711         -5.8
## 1168        0.12          1.5        4905        -88.2
## 1169       -0.10          9.6        4850        -76.0
## 1170        0.06          7.5        4754          5.2
## 1171        0.18          3.0        4802         -4.5
## 1172        1.11          0.5        4770        -65.1
## 1173        0.20          5.3        4796        -69.9
## 1174       -0.24          7.1        4870        -24.4
## 1175       -0.10         11.1        4998        -78.4
## 1176       -0.11         17.3        4892        -32.9
## 1177       -0.75          1.4        4666          3.4
## 1178        0.01          6.6        4698       -145.1
## 1179       -0.21          9.0        4863        -48.6
## 1180        0.24          1.7        4696          5.1
## 1181        0.12          3.0        4936        -56.1
## 1182        0.89          0.9        4938       -122.8
## 1183       -0.03         10.5        4664         -4.8
## 1184        0.87          0.6        5495        -37.9
## 1185       -0.07          4.4        4836        -65.5
## 1186       -0.11         13.3        4605        -20.4
## 1187        0.59          1.6        5263        -69.3
## 1188       -0.07          6.0        4801        -90.0
## 1189       -0.08          1.6        5013       -118.4
## 1190        0.09          2.4        5015       -102.7
## 1191        0.38          7.9        4957        -56.1
## 1192       -0.32         11.3        4514        -45.2
## 1193        0.11          4.4        5136        -69.6
## 1194        0.81          0.8        4721        -31.3
## 1195        0.31          6.5        5003        -30.1
## 1196       -0.16          9.9        4739         31.9
## 1197        0.16          9.9        4915        -29.1
## 1198        0.21          8.6        4693         14.2
## 1199       -0.75          1.4        4693       -172.4
## 1200        0.09          6.9        5152        -19.7
## 1201        0.16          9.1        4692          8.8
## 1202       -0.38          7.5        4563        -53.2
## 1203        0.61          1.1        6126       -202.8
## 1204       -0.13          3.6        5258        -45.2
## 1205        0.04          5.0        5041         -4.6
## 1206       -0.43          0.8        4521       -117.2
## 1207       -0.01         10.2        4954        -20.9
## 1208       -1.18          2.5        5745       -218.7
## 1209       -0.93          1.2        4558        -69.8
## 1210       -0.17         18.5        4666         18.4
## 1211       -1.25          4.5        4896       -213.9
## 1212       -0.21          7.7        4945        -17.6
## 1213       -2.71         10.1        4535        -41.1
## 1214       -0.23          6.9        4872        -25.5
## 1215       -0.14          1.9        5063          2.9
## 1216       -0.55          4.4        5296        -55.5
## 1217       -0.75          1.6        5436       -132.6
## 1218       -0.15         13.0        4931         -6.5
## 1219       -0.21         11.0        4912        -88.2
## 1220       -0.76         19.4        4567        -37.6
## 1221       -1.99          2.7        4575       -258.2
## 1222       -0.11         10.5        5111         34.3
## 1223       -0.29          9.4        5172          0.0
## 1224       -0.34          5.7        4930        -68.4
## 1225       -0.04          4.1        5205          2.2
## 1226       -0.29          2.7        5459       -173.6
## 1227       -0.82          3.6        5310        -56.9
## 1228       -0.38          5.3        5184       -136.7
## 1229       -1.33          5.8        5016        -77.9
## 1230       -0.42          7.7        5216         -4.0
## 1231        0.44         10.2        5038         -4.5
## 1232       -0.25          6.0        5021        -95.5
## 1233        0.02          0.7        5868       -303.0
## 1234        0.04          0.6        5489       -170.5
## 1235        0.48          6.8        5055        -40.3
## 1236       -2.21          3.9        5206       -278.2
## 1237       -2.43          3.7        4818       -320.1
## 1238       -0.46          2.5        5537       -308.7
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## 1239       -1.49          6.2        5595       -355.8
## 1240       -1.30          2.6        5256       -320.7
## 1241       -0.83          2.2        5322       -360.4
## 1242       -1.56          5.3        6182       -299.8
## 1243       -2.55          5.9        4588       -297.6
## 1244       -1.82          5.1        4927       -297.6
## 1245       -1.97          5.7        5013       -297.5
## 1246       -2.11          7.2        4698       -297.3
## 1247       -1.73          7.0        5052       -296.1
## 1248       -2.10          5.1        4729       -296.0
## 1249       -1.96          7.9        4846       -297.0
## 1250       -2.08          4.2        4617       -296.2
## 1251       -2.17          7.3        5069       -297.0
## 1252       -1.88          5.2        4851       -296.2
## 1253       -1.93          4.3        4847       -298.2
## 1254       -1.46          4.0        5451       -190.6
## 1255       -1.94          3.4        5222       -293.0
## 1256       -2.17          5.3        4774       -294.6
## 1257       -1.79          8.3        5038       -294.3
## 1258       -1.71          6.3        4859       -294.7
## 1259       -1.96          5.2        4796       -294.0
## 1260       -1.91          7.5        4788       -294.9
## 1261       -1.58          3.7        4931       -294.7
## 1262       -2.22          6.7        4667       -294.6
## 1263       -1.87          4.9        4579       -295.1
## 1264       -2.02          4.1        4622       -294.0
## 1265       -1.78          5.3        5010       -296.2
## 1266       -0.95          2.6        5740        -99.8
## 1267       -1.14          4.2        5818        -97.3
## 1268       -1.12          3.0        5814        -97.6
## 1269       -2.14          2.7        5095        -99.6
## 1270       -3.13          4.9        4755       -290.2
## 1271       -2.28          6.0        4877       -289.3
## 1272       -1.99          4.0        5005       -289.7
## 1273       -2.05          5.4        5082       -289.3
## 1274       -2.28          3.5        4687       -308.0
## 1275       -2.02          9.2        5054       -309.6
## 1276       -2.17          6.0        4809       -312.2
## 1277       -2.11          4.3        4533       -309.4
## 1278       -2.08          6.4        4922       -309.2
## 1279       -2.17          4.3        4871       -312.8
## 1280       -0.44         16.7        4715        -10.0
## 1281       -2.17          2.5        4912       -306.8
## 1282       -2.18          3.7        5177       -303.8
## 1283       -2.64          4.2        4894       -306.6
## 1284       -2.35          3.4        4696       -305.0
## 1285       -0.24         13.2        4881        -27.0
## 1286       -0.09         19.3        4828        -26.9
## 1287       -0.05         24.9        4823        -27.9
## 1288        0.03         21.7        4825        -27.6
## 1289        0.02         16.6        4833        -27.0
## 1290       -0.07         15.4        4859        -26.9
## 1291       -0.90          3.3        5031       -114.4
## 1292       -0.60          5.7        5062       -113.5
## 1293       -0.30          4.8        5199       -114.4
## 1294       -0.49          4.9        5077       -113.5
## 1295       -0.75          9.3        5286       -113.6
## 1296       -0.31          3.6        5167       -114.1
## 1297       -0.89          5.9        4938       -113.7
## 1298       -0.40          4.1        5314       -113.4
## 1299       -1.71          2.1        5108       -299.2
## 1300       -0.59          1.6        4959       -290.9
## 1301       -1.52          4.9        4690       -292.4
## 1302       -1.58          3.2        5779       -201.0
## 1303       -1.28          2.6        5854       -196.5
## 1304       -1.32          1.7        5280       -200.3
## 1305       -1.56          1.5        5394       -203.9
## 1306        0.08          3.1        5016         -5.7
## 1307       -0.37          5.4        5054         -5.9
## 1308       -0.09          6.5        5184         -6.5
## 1309       -0.05          4.1        5070         -6.1
## 1310       -0.53          8.5        5202         -6.6
## 1311       -0.39          7.1        5088         -6.2
## 1312       -0.38          8.4        5284         -5.1
## 1313       -0.27          7.3        5224         -6.7
## 1314       -0.19          7.9        5171         -6.1
## 1315        0.01          7.6        5256         -6.5
## 1316       -0.36          5.3        5231         -6.6
## 1317        0.04          5.4        5229         -6.2
```

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## 1318       -0.25         5.8        5250         -5.9
## 1319       -1.89        15.1        4373       -284.1
## 1320       -1.66         1.8        4484       -298.4
## 1321        0.02         5.9        4830        -45.8
## 1322       -1.92         7.0        4727       -296.3
## 1323        0.35         4.6        4943        -80.8
## 1324       -0.05        11.1        4935        -81.3
## 1325        0.17        10.9        5034        -81.4
## 1326        0.05         7.8        4969        -81.2
## 1327       -0.02         6.6        4686        -54.7
## 1328       -0.22        10.1        4927        -54.5
## 1329       -0.34        14.5        4862        -54.7
## 1330       -0.29        14.8        4846        -54.5
## 1331        0.29         3.0        4968        -66.6
## 1332       -2.16         2.3        4676       -279.7
## 1333       -2.04         4.1        4852       -279.2
## 1334       -2.42         6.8        4745       -281.8
## 1335       -2.30         7.9        5078       -280.2
## 1336       -2.10         6.6        4920       -278.5
## 1337       -2.52         7.2        4699       -280.8
## 1338       -2.49         5.2        4520       -280.0
## 1339       -2.51         5.6        4443       -278.8
## 1340       -2.09         5.0        5033       -280.0
## 1341       -2.43         1.8        5093       -280.9
## 1342       -0.44        15.6        4603        -72.3
## 1343       -0.82         1.8        4887       -292.9
## 1344       -1.56         4.0        4998       -293.7
## 1345       -1.62         5.0        4855       -293.5
## 1346       -1.76         3.8        4755       -291.9
## 1347       -1.85         6.5        4768       -292.2
## 1348       -1.80         6.8        4896       -292.6
## 1349       -1.74         6.7        4857       -292.6
## 1350       -1.64         5.3        5000       -291.3
## 1351       -1.73         4.6        4815       -293.1
## 1352       -1.76         4.9        4835       -293.6
## 1353       -1.63         3.1        4806       -293.4
## 1354       -1.94         4.4        4613       -292.0
## 1355        1.01         1.6        4779        -37.3
## 1356        0.43         7.6        5089        -34.5
## 1357        0.11        11.5        5124        -34.4
## 1358        0.25         6.7        5008        -33.9
## 1359       -2.23         8.6        4620       -294.5
## 1360       -0.03         2.6        4918        -18.7
## 1361       -0.25         6.6        4885        -17.1
## 1362       -0.31         6.8        4842        -17.1
## 1363        0.08         5.4        5332        -50.6
## 1364       -0.25         6.2        5320        -50.0
## 1365        0.04         3.0        5009        -50.2
## 1366        0.19         3.2        5143        -50.8
## 1367        0.90         0.9        4939       -131.6
## 1368       -0.51         9.3        5101       -132.5
## 1369        0.17         4.1        4744         -7.8
## 1370       -0.03         2.8        4959         -6.6
## 1371       -0.25        10.5        5173         -7.2
## 1372       -0.30         7.3        5088         -6.8
## 1373       -0.23         7.3        5150         -7.2
## 1374       -0.94         0.9        4683       -293.9
## 1375       -1.63         4.0        4931       -295.6
## 1376       -2.16         6.3        4961       -294.0
## 1377       -0.03         1.2        4701       -297.8
## 1378       -0.71         8.4        5127       -294.2
## 1379       -0.51         3.4        4950       -293.7
## 1380        0.17         1.4        4827        -77.8
## 1381       -0.21         3.0        4855        -76.6
## 1382       -2.09         2.1        5036       -301.9
## 1383       -1.42         2.0        5815       -298.1
## 1384       -1.46         2.8        4710       -266.4
## 1385       -0.78         3.8        4996       -266.9
## 1386       -1.13         6.8        4814       -266.6
## 1387       -1.20        10.3        4931       -266.6
## 1388       -0.78         4.3        4929       -266.5
## 1389        0.40         1.1        5116       -132.7
## 1390       -0.31         2.0        5100        -56.8
## 1391       -0.63         3.3        5212        -58.5
## 1392       -0.32         1.0        5288       -204.1
## 1393        1.00         1.3        5151       -201.4
## 1394       -0.63         3.4        5438       -201.5
## 1395        0.29         1.3        4726       -195.5
## 1396       -0.83         1.0        4527       -294.7
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## 1397       -1.16          2.0        6295       -306.9
## 1398       -1.06          2.7        5571       -290.6
## 1399       -1.82          2.8        5693       -280.2
## 1400       -2.02          2.1        5400       -191.3
## 1401       -2.55          3.7        5188       -187.7
## 1402       -2.61          4.8        5172       -269.9
## 1403       -2.40          4.2        4828       -269.0
## 1404       -1.87          5.1        5505       -270.7
## 1405       -1.93          4.1        5153       -271.0
## 1406       -2.04          4.1        4762       -271.2
## 1407       -1.95          4.6        4976       -273.1
## 1408       -2.37          5.6        4595       -270.9
## 1409       -2.29          6.5        4860       -272.2
## 1410       -1.91          6.1        4893       -271.5
## 1411       -2.21          4.9        4744       -271.8
## 1412       -2.36          4.2        4635       -270.3
## 1413       -1.72          3.6        5345       -274.8
## 1414       -1.53          2.5        5870       -284.6
## 1415       -1.39          4.2        5990       -297.2
## 1416       -2.54          4.3        4945       -287.9
## 1417       -1.91          4.6        4912       -291.3
## 1418       -1.72          4.9        5160       -291.1
## 1419       -1.98          6.2        4821       -289.8
## 1420       -1.60          5.2        4993       -290.5
## 1421       -1.70          5.6        5013       -290.5
## 1422       -2.05          7.4        4847       -290.1
## 1423       -1.77          4.2        4859       -290.3
## 1424       -1.71          5.3        4976       -290.6
## 1425       -1.67          3.4        4966       -291.2
## 1426       -2.15          5.3        4830       -277.3
## 1427       -0.79          4.4        5105        -24.1
## 1428       -0.46          7.4        5198        -24.9
## 1429       -0.21          6.4        5194        -25.3
## 1430       -0.11          5.4        5031        -25.6
## 1431       -0.42          5.3        4961        -24.8
## 1432       -2.18          3.6        5122       -263.1
## 1433       -1.09          4.2        5731       -262.0
## 1434       -1.56          4.4        5416       -262.9
## 1435       -2.15          6.9        5217       -286.8
## 1436       -1.68          5.5        5071       -286.6
## 1437       -1.60          4.7        5317       -288.4
## 1438       -1.96          6.8        4830       -286.4
## 1439       -1.98          4.2        4847       -290.4
## 1440       -2.14          6.4        4984       -289.2
## 1441       -1.41          3.1        5298       -291.5
## 1442       -0.60          2.6        5255        -55.2
## 1443       -2.33          2.1        4766       -288.1
## 1444       -0.91          4.0        4980        -87.2
## 1445       -0.54          8.2        4950        -87.0
## 1446       -0.17         12.6        4777        -64.5
## 1447        0.16         23.6        4725        -64.9
## 1448        0.18         21.7        4735        -64.5
## 1449        0.15         18.8        4740        -64.5
## 1450       -2.11          5.8        4991       -286.9
## 1451       -2.10          7.0        4768       -287.1
## 1452       -1.81          2.2        5190       -283.8
## 1453       -1.20          3.7        4920         -7.2
## 1454       -0.58          3.3        5505       -214.7
## 1455       -0.25          1.8        5268       -146.0
## 1456       -0.91          6.6        5034       -111.4
## 1457       -1.46          2.5        4946       -118.1
## 1458       -0.13          2.1        5326       -113.8
## 1459       -0.93          3.6        4931        -74.1
## 1460       -0.53          5.1        5171        -74.6
## 1461       -1.18          7.3        6767       -290.9
## 1462       -1.57          5.4        6247       -292.6
## 1463       -1.57          6.4        6426       -139.5
## 1464       -1.99          5.4        5010       -292.0
## 1465       -1.06          1.3        5191       -249.3
## 1466       -1.84          3.8        5279       -249.4
## 1467       -1.44          2.5        4941       -248.8
## 1468       -1.59          1.6        5004       -249.7
## 1469       -1.36          1.4        4795       -250.0
## 1470       -2.16          3.0        5009       -294.5
## 1471       -0.23          2.7        6620       -295.9
## 1472       -2.20          6.4        5034       -293.1
## 1473        0.73          0.6        5581       -211.3
## 1474       -1.60          2.6        5354       -280.3
## 1475       -2.39          7.8        4590       -286.9
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## 1476       -1.75          2.0        5158       -306.7
## 1477       -2.04          3.9        4595       -287.4
## 1478       -2.03          7.3        4748       -288.4
## 1479       -1.09          2.9        5556       -114.1
## 1480       -0.29          4.2        6727       -112.9
## 1481       -1.86          2.9        5053       -114.6
## 1482        0.10         14.6        4843        -11.3
## 1483       -1.70          2.9        4610       -295.6
## 1484       -1.65          3.7        4929       -294.3
## 1485       -2.08          5.3        4640       -294.2
## 1486       -1.96          7.0        4799       -293.4
## 1487       -2.16          6.7        4792       -294.5
## 1488       -2.24          5.8        4804       -293.9
## 1489       -2.05          5.6        4656       -293.4
## 1490       -2.40          4.1        4716       -296.6
## 1491       -0.18         22.6        4708        -21.0
## 1492       -1.13          1.1        4928       -319.8
## 1493       -1.92          1.6        5022       -126.5
## 1494       -0.69          1.8        5284       -127.2
## 1495        0.14         21.5        4718        -15.2
## 1496        0.08         29.1        4716        -15.9
## 1497        0.08         23.0        4677        -14.9
## 1498       -0.52          2.9        5023        -80.6
## 1499       -0.28          2.0        4716        -80.3
## 1500       -0.91          5.2        4917        -82.1
## 1501       -1.37          5.4        5072       -298.5
## 1502        0.27          2.6        5051        -41.6
## 1503       -0.04          3.6        5204        -40.9
## 1504       -0.12          2.9        5122        -40.6
## 1505       -2.05          2.8        4463       -298.7
## 1506        0.26          1.0        5163       -113.4
## 1507       -0.48          1.7        4866       -115.7
## 1508       -2.98          2.5        4604       -315.4
## 1509        0.10         16.4        4768         -3.5
## 1510        0.14         21.9        4765         -2.7
## 1511        0.10         23.5        4764         -3.1
## 1512        1.18          0.5        4626       -101.4
## 1513       -2.11          2.1        5374       -354.4
## 1514        0.73          0.9        5383       -260.3
## 1515       -0.76          3.0        5231       -258.3
## 1516       -1.92          5.1        7268       -339.2
## 1517       -0.04         22.7        4743         -3.7
## 1518       -0.05         31.6        4716         -3.3
## 1519       -1.56          5.4        5186       -305.2
## 1520       -2.10          7.3        4660       -305.3
## 1521       -1.50          4.9        7461       -308.7
## 1522       -1.82          4.4        4548       -287.5
## 1523        1.07          0.6        4732       -160.9
## 1524        0.36          0.9        5279       -160.1
## 1525        0.47          1.0        5012       -159.7
## 1526        0.45          1.1        5247       -159.6
## 1527       -1.78          3.0        5686       -295.1
## 1528       -1.07          1.6        5067       -236.7
## 1529        0.06          3.4        7464       -237.4
## 1530       -0.46          1.4        6093       -236.3
## 1531       -0.49          1.5        6018       -237.4
## 1532       -0.75          1.2        5165       -388.2
## 1533        0.75          1.6        5820       -388.6
## 1534       -1.34          2.8        4974       -391.2
## 1535       -0.73          2.0        5444       -391.5
## 1536       -0.46          1.1        5195       -387.9
## 1537       -0.18          3.5        5038        -48.6
## 1538       -1.71          3.0        5732       -292.2
## 1539       -1.09          1.5        5099       -303.9
## 1540       -0.18          8.3        4917         -2.3
## 1541        0.22          2.2        4594         -2.6
## 1542       -0.37          9.7        4946         -1.7
## 1543       -0.60          9.0        4971         -2.6
## 1544       -0.18          8.7        4974         -2.4
## 1545       -0.03          6.8        4977         -2.8
## 1546       -0.28          9.3        4968         -2.3
## 1547       -0.09          6.5        4983         -2.1
## 1548       -1.77          2.1        4993       -305.4
## 1549       -1.83          2.2        5000       -295.5
## 1550       -1.86          3.3        5240       -295.0
## 1551       -1.97          2.2        4939       -291.0
## 1552       -1.63          2.7        5355       -298.4
## 1553       -2.40          4.7        5320       -279.7
## 1554       -2.75          5.8        4647       -282.0
```

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## 1555       -2.90          6.0        4534       -281.4
## 1556       -1.84          3.2        5200       -295.7
## 1557       -1.98          3.9        5982       -292.7
## 1558       -2.71          6.0        4658       -276.6
## 1559       -0.50          6.2        5119        -94.1
## 1560       -0.36          9.5        4969        -95.3
## 1561       -0.78          1.4        5025       -210.6
## 1562       -0.95          3.0        5258       -207.6
## 1563       -1.15          5.7        6245       -298.4
## 1564       -2.45          4.4        4512       -299.1
## 1565       -2.33          5.5        4644       -300.1
## 1566       -2.56          5.3        4538       -297.8
## 1567       -1.83          3.2        4930       -300.4
## 1568       -2.25          6.7        4952       -298.9
## 1569       -1.78          3.5        5436       -299.7
## 1570       -2.54          4.2        4930       -298.2
## 1571       -1.76          5.0        5278       -299.0
## 1572       -2.28          2.6        4654       -296.4
## 1573       -2.71          5.6        5537       -313.2
## 1574       -1.95          2.2        5184       -314.6
## 1575       -2.18          5.7        5843       -312.2
## 1576       -1.10          1.1        5122       -310.5
## 1577       -2.59          9.1        4942       -283.3
## 1578       -2.20         13.0        4999       -283.2
## 1579       -2.52          7.6        4602       -282.9
## 1580       -2.58          6.2        4604       -284.8
## 1581       -1.74          5.1        5241       -303.0
## 1582       -1.48          5.5        6652       -283.5
## 1583       -1.42          4.2        6532       -282.8
## 1584       -2.01          6.1        4968       -294.8
## 1585       -1.35          4.7        5446       -290.4
## 1586       -1.89          9.2        5273       -292.3
## 1587       -1.78          8.7        5466       -291.6
## 1588       -1.58          6.6        5159       -290.9
## 1589       -1.90          4.0        4788       -290.8
## 1590       -1.52          4.5        5187       -294.5
## 1591       -0.61          8.7        4870         -1.9
## 1592       -0.30          8.4        4913         -1.9
## 1593       -0.20          9.4        4943         -1.8
## 1594       -0.23          7.4        4902         -1.9
## 1595       -0.21          7.6        4871         -2.6
## 1596       -0.41          7.2        5003         -2.2
## 1597       -1.87          3.4        4590       -296.2
## 1598       -0.81          1.5        5079       -101.7
## 1599       -0.50          3.5        4969       -127.3
## 1600       -0.39         13.7        4856       -125.5
## 1601       -0.33         12.8        4903       -125.7
## 1602       -0.95          1.6        4631        -81.1
## 1603        0.01          4.8        5084        -79.8
## 1604       -0.84          2.7        4996       -268.7
## 1605        0.18          4.2        4808         14.0
## 1606       -0.54          9.6        4635        -21.0
## 1607       -0.49          2.2        5193        -17.5
## 1608        0.18          8.1        5084        -18.5
## 1609       -1.07          1.4        4774        -32.1
## 1610       -0.05          5.2        5076        -33.4
## 1611       -2.11          2.3        5133       -247.2
## 1612       -0.07          1.1        4981        -36.6
## 1613       -0.49          6.4        4994        -36.9
## 1614       -0.22          4.5        4810        -24.6
## 1615        0.08         16.1        4864        -24.8
## 1616        0.82          1.4        5549       -272.1
## 1617       -0.68          2.6        4930        -62.3
## 1618        0.28          1.7        4773        -42.7
## 1619       -0.04          0.9        4502        -75.6
## 1620       -1.94          4.2        5719       -193.2
## 1621        0.03          2.3        4822          7.1
## 1622        0.08          1.5        5132       -233.2
## 1623       -1.96          3.4        5073       -287.1
## 1624       -1.49          2.2        4957       -289.2
## 1625        0.17          3.5        5238         28.6
## 1626        0.14          4.3        5126         29.1
## 1627       -0.13          1.1        4843       -194.8
## 1628       -0.33          5.8        5000       -195.0
## 1629        0.72          1.0        5054        -53.9
## 1630        0.18          8.0        5216        -53.6
## 1631        1.04          0.5        4487        -54.9
## 1632       -0.37          7.3        5237        -55.2
## 1633       -0.34          5.9        5213        -55.2
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## 1634       -0.22          5.6        4900       -330.6
## 1635       -0.48          9.8        5099       -329.5
## 1636        0.02          5.0        5058       -331.2
## 1637       -0.11          5.3        5042       -330.7
## 1638       -0.89          9.7        5145       -225.8
## 1639       -0.77          5.2        5098       -225.7
## 1640       -0.61          5.1        5088       -226.1
## 1641       -2.20          4.6        4385       -283.6
## 1642        0.38          1.6        4517        -58.6
## 1643       -0.09          9.0        4881        -57.2
## 1644        0.00          6.6        4840        -57.4
## 1645        0.86          0.8        4864       -384.9
## 1646       -0.44          1.5        4996       -384.2
## 1647       -2.47          5.7        5650       -303.8
## 1648       -0.79          3.8        7174       -304.0
## 1649       -2.18          5.6        4486       -309.2
## 1650       -2.20         24.3        4457       -308.6
## 1651       -0.89          2.8        5569          7.0
## 1652       -2.33          4.2        5299       -301.1
## 1653       -2.78          6.2        4635       -299.3
## 1654       -2.51          5.4        4792       -301.6
## 1655       -2.55          5.2        4718       -299.7
## 1656       -2.53          6.3        4617       -282.9
## 1657        0.53          1.2        4766        -37.2
## 1658        0.51          1.3        4699        -82.0
## 1659       -0.22          7.7        4609        -15.8
## 1660        0.13          5.7        4669        -13.2
## 1661        0.85          0.6        4595       -130.3
## 1662        0.66          0.7        4842        -17.3
## 1663        0.14          6.9        5091        -19.6
## 1664        0.78          0.5        4920       -110.5
## 1665        0.06          2.4        4611        -93.5
## 1666        0.25          1.2        4535        -71.3
## 1667       -0.52          7.1        4593         38.1
## 1668       -0.46         27.9        4682         38.7
## 1669       -0.60         26.6        4633         38.5
## 1670        0.34          3.8        4842        -47.9
## 1671        0.22         16.0        4890        -48.1
## 1672        0.46          1.4        5645       -119.3
## 1673       -0.02          6.9        4853        -33.5
## 1674       -0.69          2.6        5960        -59.0
## 1675       -0.54          5.7        5084        -67.5
## 1676       -1.53          3.3        5094       -283.7
## 1677       -1.21          4.3        6516        -14.3
## 1678       -0.94          5.9        5654        -13.8
## 1679       -0.44          3.1        5179        -56.8
## 1680       -0.24          8.8        5284        -57.4
## 1681       -0.40          1.7        5542       -187.4
## 1682       -0.67          1.7        4934        -93.4
## 1683       -0.16          1.3        5035       -135.2
## 1684       -0.12         14.9        4757        -32.6
## 1685        0.00          9.8        4961        -74.1
## 1686       -0.75          5.8        5010        -18.8
## 1687       -0.08          6.4        5209        -31.2
## 1688       -1.70          2.3        5121       -203.2
## 1689       -0.96          3.2        5088       -129.7
## 1690       -0.78          4.3        5024        -77.6
## 1691       -0.72          2.4        5304        -32.2
## 1692       -1.07          2.9        4964       -109.8
## 1693       -0.11          3.9        5054        -37.3
## 1694        0.15          3.9        5065        -99.9
## 1695       -0.16          4.9        5095        -47.3
## 1696       -0.09          7.3        4967         11.7
## 1697       -0.17          3.4        4983       -118.7
## 1698        0.34          1.7        6129       -226.1
## 1699       -0.91          1.5        4919       -112.6
## 1700        0.08         15.5        4742        -53.4
## 1701        0.06          2.1        5167        -68.4
## 1702        0.60          1.2        5230        -28.6
## 1703       -0.24          6.5        4985        -60.4
## 1704       -0.07          2.6        5296        -73.1
## 1705        0.11          2.0        5046        -60.0
## 1706       -0.01          2.8        5051        -60.0
## 1707       -0.63          1.1        4757       -323.7
## 1708        0.51          7.7        5026         -2.2
## 1709       -0.89          1.3        4756       -136.3
## 1710        0.15         20.5        4753         -3.7
## 1711       -0.19          4.6        4935        -29.0
## 1712        0.27          2.5        5219        -11.7
```

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## 1713       -0.17         14.5        4734        -47.1
## 1714        0.57          1.1        5200       -109.8
## 1715        0.32         19.3        4739        -33.0
## 1716       -0.14          1.4        5502       -178.6
## 1717       -0.41          5.8        5150          4.8
## 1718       -0.45          8.9        5136          5.0
## 1719       -0.13          4.7        5302        -76.4
## 1720       -0.11          7.5        4898          4.0
## 1721       -0.22         14.9        4813          1.1
## 1722        0.13          0.9        5006       -102.9
## 1723       -0.03          1.8        5137       -180.6
## 1724        0.17          4.3        4966        -95.9
## 1725        0.11          4.6        5293        -33.8
## 1726        0.09          7.1        5214        -34.7
## 1727       -0.31         14.9        4685        -49.3
## 1728       -1.71          3.2        5402       -262.6
## 1729        0.40          7.6        5053        -20.0
## 1730        0.13          8.2        5050        -19.5
## 1731        0.29          5.9        5077        -19.6
## 1732        0.00          9.4        5009        -24.0
## 1733       -1.12          1.1        5000       -296.2
## 1734       -1.68          2.2        4981       -296.8
## 1735        0.31         17.1        4745        -46.9
## 1736        0.89          1.4        7262       -255.5
## 1737        0.17          3.3        5083       -104.2
## 1738       -1.55          1.3        4708       -399.9
## 1739       -2.28          2.5        4951       -401.9
## 1740        0.40          1.8        4870       -192.7
## 1741       -0.09          3.3        4953       -192.0
## 1742       -0.25          2.7        6193        -44.1
## 1743       -2.21          2.7        5185       -254.7
## 1744        0.54          1.4        5202        -99.1
## 1745       -0.99          2.6        5197        -98.9
## 1746        0.18          0.7        4758       -103.0
## 1747       -2.17          2.8        4772       -298.7
## 1748       -2.63          4.3        4986       -299.9
## 1749       -2.49          3.3        4639       -296.6
## 1750       -0.80          3.1        6181        -60.5
## 1751       -1.24          3.5        6342        -61.5
## 1752       -0.04          3.1        4906         -6.3
## 1753       -0.50          4.0        5170         -7.1
## 1754        0.11          2.1        5156         -6.8
## 1755       -0.81          1.8        5169       -172.4
## 1756        0.15          2.1        5155       -147.9
## 1757       -0.40          2.2        5083       -148.1
## 1758        0.40          1.1        5488       -147.2
## 1759        0.29          8.8        4963        -31.7
## 1760        0.00         11.7        4948        -63.7
## 1761       -0.06         10.7        4835        -63.4
## 1762       -0.37         16.9        4738         21.8
## 1763       -0.42         21.9        4775          6.3
## 1764       -0.47         15.2        4725         11.9
## 1765       -0.20          7.3        4744         12.1
## 1766        0.32         10.5        4882        -56.9
## 1767        0.27         14.2        4893        -56.3
## 1768       -0.01         11.9        4888        -57.0
## 1769        0.06         10.3        4900        -56.2
## 1770        0.32          6.9        4871        -56.4
## 1771       -1.88          1.7        4614       -111.9
## 1772       -1.79          3.0        5583       -113.2
## 1773       -2.06          2.1        4876       -116.4
## 1774        0.10          3.6        5104        -56.4
## 1775       -0.19          7.3        5088        -57.5
## 1776        0.26          4.7        4978        -60.4
## 1777        0.69          1.2        5259       -164.4
## 1778       -0.93          2.8        5045       -165.4
## 1779       -0.42          1.7        4742       -167.4
## 1780       -0.76          1.8        4786       -166.4
## 1781        0.09          1.4        6149       -299.7
## 1782       -1.39          3.1        5817       -287.0
## 1783       -2.10          3.0        5183       -202.7
## 1784       -0.06          1.2        5847       -153.1
## 1785       -2.26          2.4        4534       -304.6
## 1786       -0.14          2.6        5772       -212.7
## 1787       -0.46          2.6        5333       -213.2
## 1788       -0.34          7.6        5068        -71.7
## 1789       -0.12         11.3        5054        -71.9
## 1790       -0.88          2.0        5537       -190.6
## 1791       -0.54          1.5        5888       -304.1
```

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## 1792       -1.35          1.8        5235       -305.4
## 1793        0.23          1.1        5454       -331.0
## 1794       -0.58          2.3        5486       -144.1
## 1795       -2.04          2.0        4882        -75.1
## 1796       -0.22          8.0        4848        -50.0
## 1797       -1.12          4.6        4929        -10.4
## 1798       -1.41          3.6        5142        -91.3
## 1799       -1.19          3.1        5260        -47.4
## 1800        0.26         10.8        4840        -45.7
## 1801        0.39         13.8        4821        -71.7
## 1802       -1.03          2.7        5071       -229.3
## 1803        0.25          7.9        5125        -48.2
## 1804       -0.38          3.1        5329        -89.4
## 1805       -0.25          1.1        5367       -165.3
## 1806       -0.29          3.3        4962        -51.1
## 1807       -0.24         15.5        4696         15.5
## 1808       -2.46          3.0        4692       -291.7
## 1809       -1.40          1.4        4717       -296.4
## 1810       -1.16          5.5        5697       -309.5
## 1811       -2.55          4.1        4910       -301.4
## 1812       -1.57          1.3        5089       -285.4
## 1813       -2.10          2.7        5227       -133.9
## 1814       -1.70          3.1        5317       -208.9
## 1815       -1.51          3.8        5577       -209.1
## 1816       -0.51         14.7        4920        -29.1
## 1817       -0.41         19.9        4931        -21.2
## 1818       -0.75         14.9        4760        -13.1
## 1819        0.19          1.9        5238       -166.2
## 1820       -0.24          3.9        5119       -167.5
## 1821       -0.74          5.0        5188       -166.5
## 1822       -0.09          4.2        5049        -54.7
## 1823        0.03          6.1        5248        -54.7
## 1824       -0.23          5.1        5295        -55.9
## 1825        0.09         14.6        4839          5.0
## 1826       -0.05         14.4        4873          4.4
## 1827        0.37          1.9        5321       -196.2
## 1828       -0.18          3.2        5220       -197.3
## 1829       -1.68          2.4        5459       -268.2
## 1830       -0.88          2.0        6575       -267.4
## 1831       -0.10         10.5        4932        -47.0
## 1832       -0.25         12.0        4897        -46.5
## 1833        0.23         11.7        4816        -63.2
## 1834        0.14         19.4        4807        -62.9
## 1835        0.47          0.8        4730       -157.6
## 1836       -1.14          2.5        5219       -153.1
## 1837       -0.08          2.4        5529        -17.2
## 1838       -0.70          1.7        5235       -202.6
## 1839        1.09          0.8        5247       -109.5
## 1840       -0.72          1.8        6659       -167.0
## 1841       -0.70          1.5        6214       -166.0
## 1842       -0.19         21.4        4573        -76.8
## 1843       -0.16         24.4        4536        -76.5
## 1844       -0.83          4.2        5102       -237.1
## 1845       -0.66          6.7        5124       -237.7
## 1846       -0.53          3.9        5098       -237.3
## 1847       -0.54          1.9        5681       -112.6
## 1848        0.42          1.3        5263        -99.6
## 1849        0.05          1.7        5047       -100.8
## 1850       -0.02          5.6        5223         21.9
## 1851       -0.30         10.1        5207         18.2
## 1852       -0.04          2.5        5336       -153.8
## 1853        0.30         10.3        4963        -39.8
## 1854       -1.15          1.3        4652       -242.9
## 1855       -0.32          1.7        5439       -239.9
## 1856        0.29          8.6        4938        -40.6
## 1857        0.20         14.2        4923        -40.8
## 1858        0.28         11.2        4889        -40.6
## 1859        0.01          1.9        5190       -123.9
## 1860       -0.49          4.0        5512       -123.8
## 1861        0.03          2.7        5511       -124.5
## 1862        0.71          1.8        5188        -51.2
## 1863       -0.02          4.3        5175        -50.4
## 1864       -0.03          2.9        5091        -51.2
## 1865       -0.36         15.7        4679        -70.3
## 1866       -0.12          2.4        4909       -104.8
## 1867       -0.19          4.7        5123       -104.4
## 1868        0.25          2.5        5018       -201.2
## 1869       -0.38          2.0        4979        -55.4
## 1870       -0.26          4.8        5242        -55.7
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## 1871        0.21          3.0        4750        -40.1
## 1872       -0.01          8.1        4964        -39.7
## 1873       -0.03          4.9        5028        -39.2
## 1874        0.20          1.3        4741       -107.8
## 1875       -0.21          6.2        4779        -78.5
## 1876       -0.20          6.2        4789        -78.5
## 1877       -0.43          1.7        5632       -155.6
## 1878       -0.05          5.2        5001        -16.7
## 1879       -0.34         13.2        4991        -16.1
## 1880       -1.20          2.1        5937       -201.8
## 1881       -0.27          3.7        5026        -69.7
## 1882       -0.74          7.8        5146        -69.9
## 1883       -0.10          4.1        5214        -69.4
## 1884       -0.23          5.5        4872          6.4
## 1885       -0.64          3.7        5625       -229.1
## 1886       -0.37          8.4        5029        -81.6
## 1887       -0.24         10.5        4957        -81.8
## 1888       -0.11          6.8        4933        -81.7
## 1889       -1.71          2.5        4984       -385.8
## 1890       -0.83          3.0        6038       -385.9
## 1891       -1.03          4.1        6630       -200.7
## 1892       -0.14          5.0        5053        -49.9
## 1893       -0.19          9.6        5072        -50.8
## 1894        0.03          5.8        4942        -50.3
## 1895       -1.09          1.5        4979        -35.1
## 1896        0.09          5.2        4949        -11.6
## 1897        0.00          2.5        4985        -61.8
## 1898        0.13          3.6        5031        -60.3
## 1899        0.31          8.9        4781        -47.1
## 1900        0.30         12.2        4806        -47.2
## 1901       -0.16          4.4        4999        -36.4
## 1902       -0.24          9.6        4993        -36.0
## 1903        0.20          2.9        4661        -35.5
## 1904        0.53          1.2        4834        -29.3
## 1905       -0.13          9.2        4646         -2.4
## 1906       -0.29         25.2        4685         -1.6
## 1907       -0.25         12.0        4676         -1.9
## 1908       -0.05          3.2        4710        -83.9
## 1909       -0.15         20.1        4600        -15.2
## 1910       -0.29          1.5        5014       -166.1
## 1911       -0.23          2.7        4999        -88.7
## 1912       -1.15          3.5        5704       -297.4
## 1913       -0.45          5.2        5103        -81.2
## 1914       -0.47         12.5        5074        -80.6
## 1915       -0.23         13.2        4776        -18.6
## 1916       -0.22         22.9        4812        -18.7
## 1917        0.04          2.0        5574       -240.5
## 1918       -0.02          6.5        4984        -96.7
## 1919       -0.10         11.8        5077        -95.8
## 1920        0.25          5.0        4895        -96.8
## 1921       -0.65          2.6        5285       -136.8
## 1922       -0.60          4.1        5057       -139.4
## 1923       -1.28          6.5        5222       -138.4
## 1924       -0.25         15.9        4747        -14.8
## 1925       -0.32          3.3        4951        -48.1
## 1926       -0.29          7.4        5196        -48.5
## 1927       -0.96          3.3        6748       -131.9
## 1928       -1.23          3.7        6335       -133.0
## 1929       -2.31          4.2        5544       -133.6
## 1930       -0.73          2.2        6540       -137.5
## 1931       -1.29          1.8        5220       -127.4
## 1932       -0.60          1.5        6358       -295.1
## 1933       -2.46          3.1        5501       -294.2
## 1934       -1.38          1.8        5867       -284.9
## 1935       -2.41          4.1        4986       -289.8
## 1936       -2.23          3.7        5610       -311.3
## 1937       -0.73          1.9        5377       -166.0
## 1938        0.18          8.3        5076        -58.4
## 1939        0.19         10.0        5047        -58.4
## 1940       -0.02          8.7        5034        -58.3
## 1941       -0.16         11.5        4841        -19.8
## 1942       -0.67          4.8        5383       -185.9
## 1943        0.34         13.9        4895        -51.9
## 1944       -0.45          7.7        4966       -116.7
## 1945       -0.82          2.4        5645       -131.3
## 1946       -0.28          5.3        5096        -48.1
## 1947       -0.73          4.2        5199        -66.2
## 1948       -0.02         11.4        4966        -61.8
## 1949        0.26         13.5        4922        -62.5
```

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## 1950        0.11         11.7         4891         -62.4
## 1951       -1.39          2.7         5786        -151.2
## 1952       -0.35         18.3         4702         -18.0
## 1953        0.26         18.2         4680          -9.8
## 1954        0.34         17.7         4750         -10.6
## 1955       -0.92          5.1         5033        -105.9
## 1956       -1.77          2.7         5024        -116.8
## 1957       -0.91          5.0         5096         -50.8
## 1958       -0.62          5.1         5117         -48.0
## 1959       -0.26          7.4         5160          -7.4
## 1960       -0.91          3.0         6514         -33.1
## 1961       -0.04          1.6         5370        -108.1
## 1962       -0.65          2.5         4991         -69.8
## 1963       -0.06          3.2         5299         -69.8
## 1964       -0.39          7.1         5189         -84.8
## 1965       -0.26          8.6         5124         -91.8
## 1966       -0.27          6.8         5167         -91.4
## 1967       -0.70          5.6         4983         -74.7
## 1968       -0.43          6.2         5219         -74.2
## 1969       -0.33          5.1         5236         -75.1
## 1970       -0.03         14.7         4859          16.8
## 1971       -0.90          1.5         4905        -245.8
## 1972       -0.64          1.5         4756        -238.8
## 1973       -0.44          6.2         5113        -109.5
## 1974       -0.48          7.7         5131        -108.8
## 1975        0.39         13.3         4828         -75.2
## 1976       -1.73          3.1         4510        -172.5
## 1977       -1.04          3.3         4968        -173.4
## 1978       -1.10          2.8         4998        -173.0
## 1979        0.36         13.4         4817          32.3
## 1980        0.36         16.0         4854          32.1
## 1981       -0.21          2.7         5378         -26.3
## 1982       -0.20          1.8         5046        -292.7
## 1983       -0.17          2.1         5422        -293.3
## 1984       -0.20          1.4         6188        -325.4
## 1985        0.15         16.2         4805         -58.8
## 1986       -0.02          3.8         5174        -145.0
## 1987       -0.55          6.4         5220        -145.2
## 1988        0.19          3.2         5147        -144.3
## 1989       -0.23          8.3         5130         -41.0
## 1990       -0.34         10.5         5090         -40.1
## 1991       -0.21          2.1         5232         -68.2
## 1992       -1.41          3.3         5040         -69.8
## 1993        0.60          2.6         6114         -67.6
## 1994       -0.50          1.9         5443        -267.0
## 1995       -2.49          2.9         4665        -287.0
## 1996       -0.96          2.7         5814        -284.0
## 1997       -1.34          5.4         5641        -283.7
## 1998       -2.19          4.0         5478        -281.4
## 1999       -1.13          3.9         6222        -286.1
## 2000       -1.53          2.7         5598        -281.3
## 2001       -1.93          2.8         5125        -297.4
## 2002       -1.93         10.3         4600        -288.5
## 2003       -1.99          2.2         5310        -279.6
## 2004       -1.02          1.3         5066        -188.0
## 2005       -1.67          3.2         5496        -189.1
## 2006       -0.23          2.5         5004         -77.0
## 2007       -0.41          4.5         5240         -77.0
## 2008       -1.78          1.4         4504        -284.0
## 2009       -0.96          1.6         4929        -114.7
## 2010       -1.75          1.5         4720        -115.0
## 2011       -1.79          3.0         4997        -116.3
## 2012       -1.21          1.8         5851        -158.2
## 2013       -2.32          3.8         5052        -156.2
## 2014       -2.13          1.8         4938        -158.4
## 2015       -2.16          3.2         5055        -153.6
## 2016       -1.86          5.5         5609        -155.8
## 2017       -2.49          4.0         4970        -156.0
## 2018        0.11          2.3         5414        -139.4
## 2019        0.15          2.6         5609        -139.7
## 2020       -1.19          2.1         5885         -64.5
## 2021       -1.02          1.9         6211         -67.6
## 2022       -0.16          9.3         4759         -80.1
## 2023       -0.11         10.7         4800         -80.2
## 2024        0.00          6.1         5167         -19.9
## 2025       -0.05          5.8         5056         -20.0
## 2026       -0.14          5.8         5198         -20.5
## 2027       -0.14          8.6         5020         -49.5
## 2028       -0.24         11.6         5062         -49.1
```

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## 2029       -0.23          2.6        5097        -61.9
## 2030       -0.15          0.8        4831       -348.8
## 2031       -0.99          1.0        4777       -350.5
## 2032       -2.08          2.6        4921       -105.8
## 2033       -2.06          2.9        5046       -105.1
## 2034       -0.52          1.0        4751       -228.6
## 2035       -0.61          1.0        4780       -230.2
## 2036       -0.21          1.2        5247       -315.1
## 2037       -0.59         12.5        4744        -53.7
## 2038       -0.29          5.4        5109       -101.7
## 2039       -0.30          3.6        5235        -19.1
## 2040        0.10          4.2        5233        -19.1
## 2041       -0.21          3.4        4855        -20.3
## 2042       -0.32          6.8        5046        -13.4
## 2043       -0.32          7.3        5033        -13.3
## 2044       -0.30          3.3        5166       -147.6
## 2045       -0.36          4.9        5034       -147.7
## 2046       -0.64          4.5        5316       -148.2
## 2047       -0.94          3.1        5530       -121.6
## 2048       -1.07          2.5        5089       -120.0
## 2049       -0.45          7.4        5076        -91.0
## 2050       -0.61          2.4        5587       -273.9
## 2051       -1.13          2.9        5588       -270.2
## 2052       -0.30         12.6        4934        -40.6
## 2053       -0.07         11.3        4960        -41.2
## 2054       -1.15          1.8        5337       -250.4
## 2055       -1.55          2.7        5031       -266.9
## 2056       -0.08          5.0        5292        -31.4
## 2057       -1.24          7.9        5311         22.7
## 2058       -0.45          7.0        5132        -17.8
## 2059        0.11         10.8        4937        -73.1
## 2060        0.20         12.6        4935        -73.4
## 2061       -1.11          3.1        6256       -289.6
## 2062       -1.05          2.8        6041        -79.7
## 2063       -1.25          1.8        5648        -81.0
## 2064       -1.03          2.1        5628        -83.9
## 2065       -0.36          4.3        5091        -34.9
## 2066       -0.37          5.4        5063        -35.0
## 2067       -0.77          2.2        5306       -169.0
## 2068       -0.73          2.0        5532        -68.0
## 2069       -0.11         22.5        4688        -31.1
## 2070       -0.18         27.7        4735        -42.6
## 2071       -0.55         17.5        4683        -27.9
## 2072       -0.51         22.4        4670        -27.8
## 2073       -0.63         15.6        4648        -28.0
## 2074        0.46          1.4        6962       -294.4
## 2075       -0.01          0.9        5098       -101.9
## 2076       -2.24          5.1        4870       -297.0
## 2077       -2.53          7.9        4633       -299.5
## 2078       -2.06          5.6        4704       -298.9
## 2079       -2.53          5.3        4492       -297.9
## 2080       -2.11          3.2        4550       -299.1
## 2081       -1.13          6.4        6084       -297.2
## 2082       -1.79          4.0        4885       -298.0
## 2083       -1.92          2.7        5168       -290.3
## 2084       -1.93          2.7        4987       -288.0
## 2085       -0.37          1.8        6086       -283.8
## 2086       -1.09          1.1        4920       -284.8
## 2087       -2.70          5.1        5456       -289.9
## 2088       -1.62          1.9        4806       -283.1
## 2089       -1.74          2.3        5539       -278.2
## 2090       -1.13          2.6        6673       -285.4
## 2091       -2.78          3.3        5251       -292.9
## 2092       -0.66          1.4        4714       -293.1
## 2093       -1.56          4.3        5460       -291.7
## 2094       -1.22          3.4        5088       -293.3
## 2095        0.19          1.7        5231       -290.4
## 2096        0.71          0.6        5442       -242.9
## 2097       -0.66          2.8        6689       -241.6
## 2098        0.14          2.9        4950        -51.6
## 2099       -0.43          6.3        5145        -52.9
## 2100       -0.29          5.4        5100        -52.0
## 2101       -0.98          1.3        5348       -298.8
## 2102       -1.72          2.8        5355       -301.4
## 2103       -1.52          6.5        4831       -305.9
## 2104       -1.73          8.5        4859       -306.1
## 2105       -2.44          5.7        5376       -280.7
## 2106       -1.86          3.9        5884       -279.3
## 2107       -1.75          3.4        5781       -304.9
```

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## 2108       -2.16          2.6        5255       -302.7
## 2109       -1.48          1.8        5697       -172.8
## 2110        0.22          1.4        7183       -290.5
## 2111       -0.83          0.9        4739       -309.9
## 2112       -0.51          1.5        5214       -349.0
## 2113       -1.27          2.4        5323       -345.8
## 2114       -0.87          1.5        5110       -347.1
## 2115       -2.32          1.8        4694       -292.5
## 2116       -2.31          2.4        5096       -300.0
## 2117       -2.01          3.0        5160       -153.4
## 2118       -1.43          2.9        5934       -151.4
## 2119       -1.75          1.8        4838       -294.1
## 2120       -1.70          6.5        4887       -293.7
## 2121       -1.53          3.5        5350       -293.8
## 2122       -0.44          1.7        5495         51.8
## 2123       -1.01          2.2        6330       -298.0
## 2124       -0.57          1.4        6006       -293.9
## 2125       -1.93          2.2        4820       -308.1
## 2126       -2.25          7.2        4792       -307.3
## 2127       -2.59          7.1        4682       -308.2
## 2128       -2.15          5.6        4713       -306.5
## 2129       -2.19          7.3        4951       -307.2
## 2130       -1.78          4.5        5079       -308.4
## 2131       -2.17          7.9        5219       -308.2
## 2132       -2.26          4.1        4646       -308.1
## 2133       -0.18          1.2        5605       -201.8
## 2134       -0.33          2.3        5560       -202.0
## 2135       -0.88          2.5        5018       -203.3
## 2136        0.44          1.6        5895       -201.0
## 2137       -0.30          1.9        5849       -200.0
## 2138       -1.04          4.8        4373       -237.6
## 2139       -1.81          1.7        4855       -299.1
## 2140       -1.37          2.3        5268       -294.0
## 2141       -2.14          1.9        4959       -283.2
## 2142       -1.54          2.2        5096       -234.8
## 2143       -1.19          3.0        5655       -297.3
## 2144       -1.57          3.3        4730       -296.9
## 2145       -1.05          1.9        6789       -311.0
## 2146       -1.66          1.7        5446       -290.3
## 2147       -1.63          2.3        5578       -220.6
## 2148       -1.56          1.1        5020       -220.2
## 2149       -2.20          8.5        6083       -289.1
## 2150       -0.85          2.2        5569       -134.7
## 2151       -2.27          2.5        4974       -301.5
## 2152       -1.07          1.7        5422       -303.3
## 2153       -1.41          2.2        5107        -19.7
## 2154       -1.54          2.3        5046       -134.4
## 2155       -0.64          1.6        5188       -137.8
## 2156       -2.35          4.9        4829       -295.6
## 2157       -2.37          4.1        4658       -299.8
## 2158       -2.05          4.6        5322       -294.3
## 2159       -2.40          2.9        4895       -304.0
## 2160       -2.04          3.5        5347       -303.2
## 2161       -1.95          3.5        5102       -307.4
## 2162       -0.89          1.1        5128       -311.7
## 2163       -1.48          1.3        4689       -311.4
## 2164       -1.85          2.9        5314       -299.2
## 2165       -2.47          2.4        4988       -295.9
## 2166       -2.32          1.9        4973        -45.5
## 2167       -0.59          1.2        5566        -46.7
## 2168       -0.79          1.9        7031       -290.3
## 2169       -1.55          2.3        5421       -287.1
## 2170       -2.28          2.8        5205       -302.2
## 2171       -2.09          4.9        5512       -291.0
## 2172       -1.01          4.1        6362       -171.9
## 2173       -1.87          2.7        5106       -169.7
## 2174       -0.20          2.2        6127       -170.3
## 2175       -0.93          4.9        5951       -172.9
## 2176       -1.14          3.4        5759       -171.2
## 2177       -1.61          5.2        4969        -71.7
## 2178       -1.18          3.0        5201       -226.1
## 2179       -1.85          3.9        4996       -223.9
## 2180       -0.89          2.7        5178       -221.9
## 2181       -1.07          3.2        6097       -294.4
## 2182       -2.51          3.8        5056       -293.4
## 2183       -1.48          4.5        6631       -296.9
## 2184       -2.65          4.4        4986       -296.4
## 2185       -2.32          3.7        4881       -297.1
## 2186       -3.04          3.9        4813       -286.3
```

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## 2187       -1.97          2.7        5666       -282.6
## 2188       -1.42          3.5        6474       -278.3
## 2189       -2.16          2.2        5005       -289.9
## 2190       -1.06          2.7        5763        -29.7
## 2191       -0.74          1.5        4953        -31.0
## 2192       -1.82          3.1        5157       -287.8
## 2193       -1.86          3.4        4947       -290.1
## 2194       -1.58          2.3        5097       -293.1
## 2195       -1.13          1.5        5376       -310.8
## 2196       -1.22          1.4        4897       -294.9
## 2197       -0.74          1.1        5457       -296.6
## 2198       -1.65          2.4        5454       -294.3
## 2199       -1.69          4.8        5623       -293.5
## 2200       -1.40          3.5        5987       -295.5
## 2201       -0.53          1.9        6264       -245.0
## 2202       -1.69          2.6        5182       -294.1
## 2203       -1.75          2.1        5430       -297.3
## 2204       -1.92          2.5        5026       -282.4
## 2205       -1.63          2.3        5644       -292.2
## 2206       -0.44          2.4        6831       -291.9
## 2207       -2.16          1.5        4906       -295.9
## 2208       -1.45          1.5        5316       -287.8
## 2209        0.36          1.4        5021       -298.7
## 2210       -2.50          2.5        4578       -283.8
## 2211       -1.61          2.2        5132       -315.4
## 2212       -1.94          1.7        5167       -289.7
## 2213       -1.57          1.8        5689       -289.5
## 2214       -1.28          1.8        5175       -289.6
## 2215       -1.69          2.1        6074       -310.2
## 2216       -2.82          3.0        4848       -279.4
## 2217       -1.28          2.6        6527       -274.3
## 2218       -2.13          4.4        5155       -298.2
## 2219       -1.43          2.8        5974       -297.8
## 2220       -2.47          3.1        4534       -316.7
## 2221       -1.16          1.7        5629       -295.5
## 2222       -1.23          5.5        5377       -176.3
## 2223       -1.87          5.0        5441       -289.8
## 2224       -1.84          3.5        4754       -290.0
## 2225       -1.53          1.8        5040       -290.0
## 2226       -2.06          2.8        4726       -289.7
## 2227       -1.83          3.6        5623       -287.2
## 2228       -1.43          2.1        5021       -311.9
## 2229       -2.48          2.5        4696       -310.8
## 2230       -2.19          4.4        5535         91.0
## 2231       -1.96          4.1        5451       -288.5
## 2232       -2.51          4.2        4927       -287.1
## 2233       -2.29          3.1        4889       -286.9
## 2234       -2.71          2.9        4731       -288.3
## 2235       -2.16          2.0        5103       -283.6
## 2236       -1.56          2.0        5694       -288.2
## 2237       -1.52          1.2        4773       -291.7
## 2238       -1.65          3.4        4919       -288.3
## 2239       -1.45          1.2        4581       -298.6
## 2240       -1.84          1.7        4821       -283.3
## 2241        0.45          0.7        5491       -343.0
## 2242        0.21          1.2        5643       -345.5
## 2243       -1.00          1.5        4726       -343.7
## 2244        0.37          0.9        5370       -287.7
## 2245       -1.08          2.9        5617       -317.4
## 2246       -1.66          2.4        5817       -296.2
## 2247       -2.00          4.2        5722       -281.9
## 2248       -1.06          2.2        5322       -292.7
## 2249       -0.10          0.8        5411       -296.0
## 2250       -1.97          3.0        4556       -289.5
## 2251       -1.94          3.8        4867       -290.0
## 2252       -1.02          2.0        5205       -289.0
## 2253       -2.06          8.8        4757       -285.1
## 2254       -0.22          1.2        5311        -68.3
## 2255       -2.34          2.9        4532       -285.5
## 2256       -1.75          2.7        5285       -297.9
## 2257       -2.16          3.6        4633       -308.9
## 2258       -0.57          3.5        7124       -293.3
## 2259       -2.29          3.5        4715       -292.7
## 2260       -1.70         12.3        4686       -284.6
## 2261       -0.93          1.9        6288       -315.6
## 2262       -1.97         10.4        4628       -297.1
## 2263       -1.93         11.4        4750       -296.3
## 2264       -0.96          1.4        5130       -292.8
## 2265       -1.90          2.3        5580       -301.6
```

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## 2266        0.29        10.1        4743        -21.6
## 2267        0.26        14.4        4790        -22.2
## 2268        0.15        12.7        4844        -21.8
## 2269       -0.47         2.4        5177       -295.3
## 2270       -3.04         3.2        4852       -306.1
## 2271       -1.66         3.0        5426       -455.4
## 2272       -1.73         2.4        5197       -285.9
## 2273       -1.89         3.5        5808       -295.3
## 2274       -1.64         4.5        4952       -295.8
## 2275       -1.36         3.0        5516       -289.1
## 2276       -0.28         4.7        5008        -39.1
## 2277       -0.01         1.9        5114        -53.1
## 2278        0.73         0.7        4910       -177.7
## 2279        0.84         0.5        4737       -289.7
## 2280       -0.87         2.3        5107       -163.1
## 2281        0.05         3.9        5248        -25.0
## 2282       -0.61         3.4        5054        -24.0
## 2283        0.03         2.4        5431        -24.6
## 2284        0.02         2.1        5086       -116.9
## 2285       -0.09         1.5        5395       -140.9
## 2286        0.20         9.9        5042        -68.8
## 2287       -0.79         1.6        4967       -333.8
## 2288       -0.65        15.5        4752        -34.8
## 2289       -0.49         5.2        5009       -102.3
## 2290       -0.68         2.3        5608        -75.4
## 2291        0.23         1.5        5273       -248.0
## 2292        0.58         1.1        5249       -201.3
## 2293        0.21         0.4        4531       -238.9
## 2294       -0.17         2.0        4931        -37.6
## 2295       -1.47         2.4        4730        -37.7
## 2296        0.16         1.3        5152        -36.3
## 2297        0.91         0.5        4716        -39.4
## 2298       -1.19         1.6        5317       -265.8
## 2299       -1.78         2.4        5212       -245.5
## 2300       -1.23         2.8        6398       -295.1
## 2301       -1.29         1.4        4516       -249.7
## 2302       -1.36         2.5        5832       -374.9
## 2303       -1.24         1.2        4873       -323.2
## 2304       -2.37         3.3        5061       -276.4
## 2305       -2.50         3.5        5005       -125.2
## 2306       -1.17         4.0        5632       -123.1
## 2307       -2.18         3.2        4941       -123.4
## 2308       -2.10         3.4        4746       -294.0
## 2309       -2.68         4.0        4642       -303.4
## 2310       -0.60         7.8        5138        -91.2
## 2311       -0.50         7.2        5124       -171.6
## 2312       -0.24         5.6        5154       -172.2
## 2313       -0.28         3.9        4947       -171.9
## 2314       -1.39         3.0        5687       -292.6
## 2315       -2.01         4.0        4683       -295.0
## 2316       -1.42         2.3        5044       -285.4
## 2317       -1.90         4.6        4944       -294.1
## 2318       -1.75         3.0        4806       -291.4
## 2319       -1.90         2.7        5154       -294.7
## 2320       -0.91         2.3        6259       -275.4
## 2321       -2.25         2.4        4487       -295.1
## 2322       -1.68         2.2        5261       -294.1
## 2323       -1.90        20.4        4552       -281.7
## 2324       -1.98        15.2        4492       -281.7
## 2325       -1.94        13.7        4535       -282.2
## 2326       -1.93         2.3        5272       -283.7
## 2327       -2.28        14.3        4718       -289.7
## 2328       -2.40         8.2        4510       -289.9
## 2329       -2.30         6.6        4663       -289.6
## 2330       -2.03         2.6        5164       -290.8
## 2331       -1.94         2.5        4790       -251.1
## 2332       -1.84         2.4        5386       -184.1
## 2333       -0.22         4.6        5080        -57.7
## 2334       -0.36         2.8        5585       -109.5
## 2335       -1.11         2.1        5637       -218.2
## 2336       -1.92         2.0        4969       -216.1
## 2337       -2.12         2.5        5529       -236.3
## 2338       -0.45         4.5        5180       -150.2
## 2339        0.26         2.6        5592        -95.1
## 2340       -0.01         1.6        5182       -149.4
## 2341       -1.32         2.2        5729       -146.5
## 2342       -1.26         1.0        4775       -496.7
## 2343       -0.36         7.3        5069        -32.8
## 2344       -0.04         6.0        5029        -32.3
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## 2345       -1.43          3.2        5449       -252.8
## 2346       -0.61          2.7        5652       -254.5
## 2347       -0.03          4.0        5336        -78.1
## 2348       -0.25          3.8        5260        -91.9
## 2349       -0.91          2.6        5510       -121.7
## 2350       -0.42          1.0        5174       -119.5
## 2351       -0.11         12.2        5063        -36.6
## 2352       -0.01         10.9        5044        -36.6
## 2353       -0.19          6.8        5331        -85.8
## 2354       -0.02          4.1        5139        -85.0
## 2355       -0.74          5.2        5257       -121.5
## 2356       -0.26          2.6        5217       -123.0
## 2357       -1.90          6.3        6388       -299.5
## 2358       -1.98          3.2        5205       -299.0
## 2359       -2.02          3.5        5437       -119.3
## 2360       -0.58          1.6        6085       -204.4
## 2361       -1.74          2.2        4884       -205.6
## 2362       -1.91          3.5        5495       -277.9
## 2363       -0.89          4.0        5873       -190.8
## 2364       -0.08         17.5        4896          0.0
## 2365        0.11         10.9        4846         -0.8
## 2366        0.04         11.8        4925         -1.1
## 2367       -0.05          9.8        5088        -38.2
## 2368       -0.15         18.8        4852        -18.8
## 2369       -1.36          4.3        6455        -88.1
## 2370        0.25         23.6        4726        -29.6
## 2371       -0.03         21.0        4687        -41.4
## 2372       -1.45          2.9        5389        -84.9
## 2373       -1.35          2.1        4959       -245.2
## 2374       -1.70          3.2        5421       -143.9
## 2375       -0.91          5.8        5103       -112.0
## 2376       -0.37          3.5        5742        -24.2
## 2377       -1.72          4.2        5662        -81.4
## 2378       -0.25          4.0        5106        -43.5
## 2379       -0.89          2.5        5818       -184.4
## 2380       -0.91          3.0        5243        -38.2
## 2381       -0.82          3.1        5393       -324.6
## 2382       -1.04          5.9        4983       -257.3
## 2383       -1.54          2.3        5561        -82.3
## 2384       -0.84          2.6        5891       -270.3
## 2385        0.23          0.8        5278       -389.5
## 2386       -0.80          2.3        6041       -316.9
## 2387       -0.27          2.4        5350        -16.6
## 2388       -0.11         23.6        4718        -60.4
## 2389       -0.08         19.2        4685        -61.0
## 2390       -2.73          2.9        4817       -393.5
## 2391       -1.55          2.1        5353       -392.3
## 2392        0.23          1.3        5402       -181.0
## 2393       -0.13          4.0        5345       -135.8
## 2394       -0.18          3.1        5279       -135.4
## 2395       -0.82          1.9        5273       -108.3
## 2396       -1.66          1.9        4868       -105.7
## 2397        0.11          3.4        5138       -103.5
## 2398       -0.10          2.4        5005       -105.2
## 2399       -0.44          1.2        4901       -213.8
## 2400       -0.32          2.5        5902       -218.4
## 2401       -1.34          1.8        4727       -105.1
## 2402       -0.91          3.3        5692       -106.4
## 2403       -0.11          7.8        5041       -110.6
## 2404       -1.75          2.3        5651       -154.0
## 2405        0.16         22.7        4869        -42.5
## 2406       -0.01         16.5        4869        -42.6
## 2407       -0.27          8.8        5159        -45.5
## 2408       -0.66          5.5        5223       -168.5
## 2409       -0.55          4.1        5076       -167.7
## 2410       -0.57          3.2        5442       -143.0
## 2411       -0.61          9.8        5043       -106.3
## 2412       -1.35          5.2        5375       -267.1
## 2413       -0.25         14.3        4928        -62.1
## 2414       -0.41         12.1        4920        -62.7
## 2415       -1.57          3.9        5784       -122.2
## 2416       -0.67          9.6        4985        -70.4
## 2417       -1.20          2.6        5629       -116.4
## 2418        0.02         15.5        4930          0.7
## 2419       -0.58         21.1        4873        -15.5
## 2420       -0.33         19.0        4753        -90.6
## 2421       -0.12         13.9        4864        -24.1
## 2422       -0.97          3.7        6449       -298.1
## 2423       -1.80          2.9        5297       -294.8
```

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## 2424       -2.68          4.2        4997       -304.4
## 2425       -1.79          3.4        6442       -272.5
## 2426       -1.60          2.9        6166       -297.4
## 2427       -1.56          3.4        5064       -283.4
## 2428       -1.53          2.4        5114       -283.5
## 2429       -1.16          3.4        7328       -323.0
## 2430       -2.07          6.4        4845       -301.3
## 2431       -1.18          4.8        5682       -302.2
## 2432       -2.33          3.1        4975       -309.5
## 2433       -1.85          2.2        5278       -297.7
## 2434        0.04          2.1        6119         11.8
## 2435       -0.33          1.5        5401         11.7
## 2436       -2.70          4.3        5600       -302.2
## 2437       -2.54          2.8        5060       -305.0
## 2438       -1.97          4.8        5439       -289.6
## 2439       -2.32          7.3        5623       -286.4
## 2440       -2.83          5.8        4987       -288.3
## 2441       -2.02          4.4        6781       -300.6
## 2442       -1.87          4.2        7153       -208.2
## 2443       -1.74          3.2        6005       -268.1
## 2444       -1.18          3.4        6482       -318.5
## 2445       -1.73          3.3        6188       -290.1
## 2446       -0.82          3.7        6511       -299.5
## 2447       -1.87          2.3        5811       -278.9
## 2448       -1.21          4.1        6531       -193.1
## 2449       -2.51          2.7        4926       -190.2
## 2450       -1.91          5.8        5776       -173.0
## 2451       -0.97          4.0        6344       -169.9
## 2452       -0.16          7.0        6126        -79.7
## 2453       -1.01          4.4        5206        -77.8
## 2454       -0.69         10.8        5021        -16.8
## 2455       -0.28          4.7        4917        -17.0
## 2456       -1.62          3.1        5050       -208.1
## 2457       -0.29          6.1        5130        -85.1
## 2458       -0.87          3.0        4956       -200.8
## 2459       -0.58          2.3        5595       -199.9
## 2460       -0.02          8.2        5052        -19.6
## 2461       -0.11          6.5        5130        -19.4
## 2462        0.28          3.5        4944        -18.6
## 2463        0.13          2.8        4779        -19.1
## 2464       -2.30          2.2        4579        -93.8
## 2465        0.02         11.8        5104        -61.9
## 2466       -1.60          3.0        6185        -19.2
## 2467       -1.40          2.7        5134       -299.7
## 2468        0.06         10.6        4987        -45.9
## 2469       -1.20          2.9        6161        -33.5
## 2470       -0.40          9.6        4939       -196.8
## 2471       -1.93          3.9        5450       -126.7
## 2472       -0.97          1.3        5722       -114.4
## 2473        1.06          0.4        4828        -20.9
## 2474        1.19          1.2        6023        -21.9
## 2475       -0.74          3.9        5231       -210.8
## 2476        0.12          8.7        5199         -9.4
## 2477        0.35          2.5        5458       -174.4
## 2478        0.45         15.5        4990        -33.4
## 2479        0.49          9.6        5000        -33.2
## 2480       -1.12          3.2        5829       -376.9
## 2481       -0.60          3.1        5457       -217.0
## 2482       -0.15          1.7        5081       -156.4
## 2483       -0.57         17.3        4664         -4.1
## 2484       -0.95          7.4        5000       -127.8
## 2485        0.53          7.7        5273        -52.0
## 2486       -0.36          8.4        5037       -253.3
## 2487       -0.13          5.5        5082       -252.5
## 2488       -1.67          3.0        5650       -167.8
## 2489       -2.43          3.3        4872        -66.9
## 2490        0.51         14.9        4841        -50.5
## 2491       -0.29          3.7        5635       -161.3
## 2492        0.77          1.1        4950       -159.4
## 2493       -1.25          3.4        6424        -42.3
## 2494       -1.77          2.0        5045       -290.6
## 2495       -0.60          3.6        5229       -290.0
## 2496       -0.76         38.6        4393        -10.3
## 2497       -0.38          1.8        5787       -304.4
## 2498       -0.26          1.6        4978       -191.8
## 2499       -1.06          2.8        6110       -309.3
## 2500        0.23         14.3        4884         10.0
## 2501        0.11         25.6        4711        -59.1
## 2502       -0.41          1.1        4860       -193.7
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## 2503       -0.19         20.3        4660         -13.5
## 2504       -1.83          3.3        5493       -227.3
## 2505       -0.46         25.7        4591         -54.6
## 2506       -0.15          5.9        5120         -84.6
## 2507       -1.27          3.3        6781       -137.7
## 2508       -0.61          3.5        5354       -144.1
## 2509       -1.58          2.6        5459       -354.5
## 2510       -0.74          2.9        5316       -124.7
## 2511       -1.80          2.4        4830       -121.8
## 2512       -0.17          3.7        5403       -322.1
## 2513       -1.64          4.9        5148          43.8
## 2514       -1.15          3.5        5761       -121.1
## 2515       -1.46          4.1        6006         -95.1
## 2516       -1.88          3.0        5097       -220.4
## 2517       -1.72          1.5        4762       -283.6
## 2518        0.09         15.6        5077         -43.7
## 2519       -0.33         19.0        4794         -76.2
## 2520        0.18         18.6        4919         -20.9
## 2521       -0.80          5.9        5320         -33.6
## 2522        0.03          1.5        4932         -34.9
## 2523       -0.47          1.1        5887       -302.8
## 2524       -1.54          2.6        5497       -292.5
## 2525       -1.06          2.0        5781       -290.7
## 2526       -2.59          4.2        4602       -280.3
## 2527       -2.56          4.1        4577       -283.2
## 2528       -1.07          1.7        5688       -303.6
## 2529       -1.95          1.8        5060       -305.9
## 2530       -1.41          1.2        4839       -281.7
## 2531       -2.26          2.7        4794       -285.1
## 2532       -1.73          2.4        5531       -287.8
## 2533        0.11          1.2        6523       -296.8
## 2534       -0.52          1.5        5549       -285.3
## 2535        0.71          0.8        5400       -293.9
## 2536       -0.78          1.7        5530       -276.9
## 2537       -1.06          2.3        5615       -278.3
## 2538       -1.38          1.8        5061       -302.9
## 2539       -0.93          2.1        5613       -302.9
## 2540       -1.72          2.3        4951       -291.1
## 2541       -1.14          2.3        5493       -291.6
## 2542       -1.33          2.5        5818       -303.0
## 2543       -1.54          1.6        4622       -296.2
## 2544       -2.19          2.8        4893       -288.7
## 2545       -1.88          3.9        4706       -280.1
## 2546       -2.60          3.4        5125       -289.0
## 2547       -1.71          2.9        5788       -309.9
## 2548       -1.54          3.6        5572         -92.5
## 2549       -1.22          5.2        4607         -87.8
## 2550        0.17          1.4        5173         -46.1
## 2551       -0.66          1.2        5303       -107.1
## 2552       -0.45          1.6        5232       -205.2
## 2553       -0.60          2.2        5589       -205.7
## 2554       -0.04         17.4        4683         -29.0
## 2555       -0.08         18.6        4717         -28.6
## 2556       -0.46          7.6        4998       -110.0
## 2557       -0.54          7.7        5012       -111.0
## 2558        0.18         17.7        4827         -23.6
## 2559       -0.01          6.3        4820         -72.7
## 2560        0.39          8.0        5083          -0.9
## 2561       -0.29          3.0        5103       -116.7
## 2562       -0.62          9.6        4820         -44.0
## 2563       -0.37          9.7        5086       -105.3
## 2564        0.01         14.2        4874         -23.1
## 2565       -1.42          2.7        5496       -246.4
## 2566       -1.19          4.7        5084       -310.9
## 2567       -0.41          3.7        5481         -76.1
## 2568       -0.82          2.9        5191         -68.4
## 2569       -0.52          9.6        4755         -12.6
## 2570       -0.33          9.3        4903         -26.7
## 2571       -0.60          4.5        5085       -240.6
## 2572       -1.07          2.1        4902       -104.0
## 2573       -0.27          3.1        5321       -134.7
## 2574       -0.10          2.2        4995       -135.2
## 2575        0.53          0.7        4623       -138.7
## 2576       -0.12          8.6        5043         -40.8
## 2577       -0.39          2.3        5148         -86.7
## 2578       -0.13         15.2        4873         -12.9
## 2579        0.54          0.8        5224       -246.4
## 2580        0.22          6.5        4944         -36.9
## 2581       -0.41          3.3        5021         -82.3
```

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## 2582       -0.35          1.1        5034        -71.5
## 2583       -1.68          2.1        4734        -95.2
## 2584        0.05          3.3        5205         15.0
## 2585       -0.10          0.9        4936        -93.3
## 2586       -0.40          3.2        5108       -147.8
## 2587       -0.01          4.5        5073        -36.6
## 2588       -0.26          4.2        5222          0.4
## 2589       -0.40          5.6        5188        -35.2
## 2590       -0.14          0.9        5137       -386.1
## 2591       -1.99          2.1        4893       -303.0
## 2592       -1.26          3.0        5646       -326.9
## 2593       -0.25          2.1        6048       -326.8
## 2594       -1.44          2.7        5719         43.0
## 2595       -0.12         15.7        4876         -9.0
## 2596        0.03         11.1        4937         -8.9
## 2597       -1.16          2.2        5566       -150.3
## 2598       -1.04          2.4        5692       -150.4
## 2599       -0.84         11.6        4986         39.0
## 2600       -0.60          8.8        4957         37.3
## 2601       -1.47          2.3        5497       -221.9
## 2602       -0.51          7.7        4908        -57.0
## 2603       -0.80          5.1        4718        -56.5
## 2604       -0.12          3.8        5398       -118.1
## 2605       -0.58          3.7        5192       -119.8
## 2606       -0.22         29.1        4618        -21.8
## 2607       -0.33         19.7        4578        -22.0
## 2608       -0.27          1.8        5554       -126.7
## 2609       -1.03          1.6        5210       -130.9
## 2610       -0.18          2.8        5078        -34.8
## 2611       -1.08          2.6        5204        -34.4
## 2612        0.23          1.5        5392       -317.8
## 2613       -1.30          2.0        4952       -317.1
## 2614       -1.48          1.2        4863       -133.0
## 2615       -0.50          2.6        5186       -121.8
## 2616       -1.16          2.9        4971       -121.9
## 2617       -0.18         15.4        4741        -20.2
## 2618       -0.11         15.8        4658        -19.9
## 2619        0.55          0.8        6034       -131.3
## 2620        0.06          0.6        4655       -349.5
## 2621       -0.37          6.3        4839       -109.8
## 2622       -0.42          6.0        4734       -109.9
## 2623        0.78          1.2        5200        -18.8
## 2624       -0.11          1.8        5213        -21.5
## 2625       -0.22          9.7        4748        -35.7
## 2626       -0.30          8.1        4720        -36.0
## 2627        1.13          0.9        4814        -24.9
## 2628       -0.57          1.4        4819        -21.5
## 2629        0.03          0.8        5152       -237.1
## 2630       -0.19          1.6        6047       -241.8
## 2631        0.22         13.2        4928        -21.2
## 2632        0.19         10.2        4851        -20.3
## 2633       -0.42         16.7        4612        -58.4
## 2634       -0.39         13.5        4561        -58.2
## 2635        0.23          6.5        5066        -43.9
## 2636        0.18          5.0        5040        -43.6
## 2637       -0.87          2.0        5926        -55.3
## 2638       -0.69          1.0        5307        -55.1
## 2639        0.10          6.7        5208        -44.4
## 2640        0.11          4.9        5125        -44.7
## 2641       -0.25         12.2        4820        -86.8
## 2642       -0.24          9.6        4775        -87.1
## 2643       -0.77          1.5        5635       -123.0
## 2644       -0.99          1.5        5248       -116.7
## 2645        0.29         12.7        4941        -26.5
## 2646        0.29          9.5        4901        -26.7
## 2647        0.14          1.5        5198       -117.3
## 2648       -1.03          1.2        4857       -116.8
## 2649        0.07          1.3        5197        -96.4
## 2650        0.47          1.2        5229        -93.9
## 2651       -0.21          1.9        5535        -84.6
## 2652       -0.63          1.0        5194        -85.5
## 2653       -0.07         27.3        4683        -11.4
## 2654       -0.10         19.9        4647        -11.1
## 2655       -0.03          3.0        5334        -73.2
## 2656        0.13          1.9        5015        -73.8
## 2657       -1.72          1.8        5103         -9.9
## 2658       -0.74          1.8        5895       -101.3
## 2659       -1.38          2.0        5100       -292.7
## 2660       -1.80          1.2        4901       -291.9
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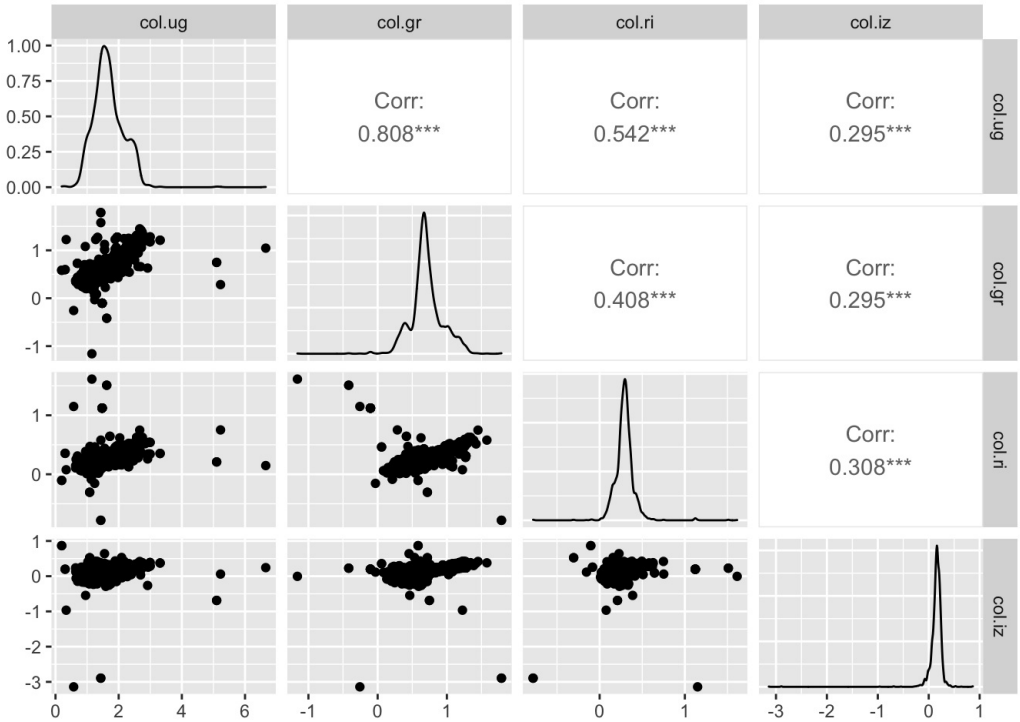
## 2661       -0.03         1.6        5359       -219.5
## 2662        0.12         7.7        5030        -12.0
## 2663        0.25         5.2        4971        -12.0
## 2664       -0.13         4.9        5319       -207.8
## 2665       -0.14         2.8        5020       -208.3
## 2666       -0.51         1.6        5319       -171.6
## 2667        0.35         0.6        4664       -172.5
## 2668        0.35         3.2        5103        -91.0
## 2669        0.48         2.0        5220        -89.8
## 2670       -0.66         2.7        4717       -133.9
## 2671       -0.55         2.8        5138       -135.2
## 2672        1.03         0.5        4645       -238.0
## 2673       -0.14         1.7        5066       -173.3
## 2674       -0.25         1.4        5131       -172.8
## 2675       -2.12         2.6        5180        -41.3
## 2676       -1.70         2.1        5312        -41.3
## 2677       -0.23        15.9        4938         13.1
## 2678        0.05         9.1        4844         13.8
## 2679       -0.34         9.5        4793       -107.2
## 2680       -0.21         8.9        4868       -106.9
## 2681       -0.16         4.2        5021        -10.4
## 2682       -0.04         4.6        5105         -9.3
## 2683       -1.63         1.7        4644         12.9
## 2684       -1.52         2.4        5080        -12.7
## 2685        0.17        15.1        4807        -36.7
## 2686        0.19        15.1        4796        -36.6
## 2687        0.17        10.7        5039         -7.3
## 2688        0.19        10.1        5040         -7.1
## 2689        0.29        13.1        4763        -46.5
## 2690        0.26        13.9        4766        -46.4
## 2691        0.00        11.7        4774        -65.8
## 2692        0.06        12.2        4760        -66.0
## 2693       -1.61         1.9        5843       -342.7
## 2694        0.16        14.6        4776          4.5
## 2695        0.16        14.6        4776          4.2
## 2696        0.58         0.5        4677       -101.0
## 2697        0.02         4.3        4899        -42.0
## 2698        0.02         4.7        5061        -40.6
## 2699       -0.09        25.1        4695        -28.6
## 2700       -0.11        22.7        4707        -29.3
## 2701       -0.12         2.2        5298       -107.9
## 2702       -0.12         1.7        4846       -105.5
## 2703        0.07         2.8        4967       -172.0
## 2704        0.31         2.2        4964       -170.4
## 2705       -0.39         9.5        4827         -5.1
## 2706       -0.41         8.2        4845         -5.1
## 2707        0.09         2.3        5253       -147.8
## 2708        0.33         1.0        5028       -146.4
## 2709       -0.01         4.6        5262        -63.7
## 2710        0.54         2.0        5141        -63.9
## 2711       -0.47         1.9        4657        -17.3
## 2712       -0.14        10.1        4851          9.2
## 2713        0.09         5.0        4944          9.7
## 2714       -0.80         2.0        5131       -263.3
## 2715       -0.77         2.8        5390       -215.9
## 2716        0.24         1.4        5526       -215.8
## 2717       -0.43         5.3        5117          5.6
## 2718        0.18         2.3        5024          3.6
## 2719       -0.80         2.8        6264       -301.4
## 2720       -0.37         3.6        5283        -56.6
## 2721        0.10         2.7        5167        -57.8
## 2722       -1.33         5.5        5673       -262.3
## 2723       -1.39         1.9        4705       -264.0
## 2724       -0.31        17.8        4724         13.7
## 2725       -1.34         2.3        5113       -154.8
## 2726       -0.97         3.0        4913       -128.2
## 2727       -0.63        11.3        4836        -40.8
## 2728       -0.64         5.4        5334        -63.0
## 2729       -2.13         5.7        5845       -290.3
## 2730       -0.78         5.3        4992        -64.9
## 2731        0.13         2.3        5184       -186.1
## 2732       -0.52         4.8        5110        -66.9
## 2733       -1.78         3.2        5483       -193.1
## 2734        0.04         4.9        5186        -75.8
## 2735       -0.23         2.5        5230        -60.0
## 2736       -0.90         2.7        5334       -173.0
## 2737       -0.97         2.0        5689       -286.0
## 2738        0.30         1.5        5533       -118.7
## 2739       -2.32         2.3        4997       -285.1
```

```
## 2740       -1.94          1.9        5211       -259.4
## 2741       -0.12          9.1        5043        -14.3
## 2742       -1.57          2.6        4998       -143.3
## 2743       -1.69          2.6        5198       -152.3
## 2744        0.12          7.0        5136        -66.8
## 2745       -0.28          3.9        5146         -2.2
## 2746       -0.04          8.0        4972        -13.0
## 2747       -0.32          1.5        5055        -84.2
## 2748       -0.07          8.5        4777        -60.7
## 2749       -0.34          0.7        4592       -105.0
## 2750       -0.18          1.4        5857       -115.1
## 2751       -0.24          1.1        4752       -151.3
## 2752        0.10         15.3        4836        -51.8
## 2753       -0.37          0.9        4672       -333.6
## 2754       -0.12          7.6        5053        -60.1
## 2755       -1.21          1.6        5531       -192.4
## 2756       -0.54          6.1        5105        -48.0
## 2757       -0.04         23.5        4731         -1.3
## 2758        0.54          0.5        4885       -211.1
## 2759        0.38          8.1        5250        -48.1
## 2760       -1.18          1.8        4716       -119.3
## 2761       -0.02         31.8        4748        -14.8
## 2762       -0.52         14.7        4863          8.6
## 2763       -0.37          3.6        4983        -32.8
## 2764       -0.45          1.6        5706        -48.3
## 2765       -0.38         12.6        4964        -72.0
## 2766       -0.06         21.1        4757        -75.5
## 2767       -0.78          4.1        5094       -101.8
## 2768       -1.76          4.5        5259       -141.3
## 2769       -0.80          3.0        5773       -154.0
## 2770       -1.50          2.5        5125       -107.1
## 2771       -2.03          2.9        5006       -324.2
## 2772       -0.58          3.9        5071       -121.1
## 2773       -1.01          3.2        6134       -140.9
## 2774       -0.42         18.4        4628         -5.3
## 2775       -1.34          3.5        5119       -204.4
## 2776       -0.89          3.3        5179          3.4
## 2777       -0.82          8.9        5086        -75.5
## 2778        1.08          0.5        4598       -148.0
```

Perform a PCA analysis of these data, following the steps that you undertook above. Act as through you are making a presentation to a client, i.e., show a plot or two, and explain the reason(s) that you come to the conclusions that you come to. Also, be sure to interpret the PCs that you retain! (Not all of them…just the ones you choose to retain.) By interpret, I really mean, indicate which variables contribute the most to the PCs…you cannot really say *why* these variables contribute to the PCs, because to do that you'd need to be a domain scientist.

```
df_color %>% dplyr::select(.,col.ug,col.gr,col.ri,col.iz) %>%   ggpairs(.,progress=FALSE,lower=list(combo=wrap("fac
ethist", binwidth=0.8)))
```




```
This pairs plot for the data frame df shows that there appears to be some correlation present in the data.
```

```
pca.out2 = prcomp(df_color,scale=TRUE, retx = TRUE, center = TRUE, tol = NULL)
pca.out2
```

```
## Standard deviations (1, .., p=11):
##  [1] 1.9263229 1.5375947 1.1775140 0.9067492 0.8361303 0.7506122 0.6990551
##  [8] 0.6060113 0.4928786 0.4524367 0.3876345
##
## Rotation (n x k) = (11 x 11):
##                      PC1         PC2         PC3          PC4          PC5
## col.ug        0.4531181 -0.14098433  0.05625613 -0.129956882  0.049685701
## col.gr        0.4355419 -0.15186748  0.08063706 -0.149588311  0.026482666
## col.ri        0.2745237 -0.34915129 -0.05741076 -0.011111789  0.006061297
## col.iz        0.1957359 -0.21914290 -0.04731150  0.936949213 -0.101146125
## ra            0.1708929  0.12807739 -0.65473034  0.008490086  0.203383593
## dec          -0.1218525 -0.07236608  0.67857249  0.122602199  0.427565710
## log.g         0.2582220  0.49317978  0.10990224  0.101460667 -0.015237739
## metallicity   0.2875560  0.45065278  0.09500436  0.095741002  0.191685435
## signal.noise  0.3331365 -0.17104691  0.24084023 -0.173458391 -0.636505513
## temperature  -0.2474225  0.38514059  0.06551804  0.133507402 -0.562127216
## velocity.los  0.3545337  0.37627681  0.11074804 -0.016162298  0.065449442
##                      PC6         PC7         PC8           PC9         PC10
## col.ug       -0.004847616  0.10484398 -0.47267774 -0.0496077873 -0.322466795
## col.gr       -0.359594968  0.14076101 -0.34612560 -0.3332496574  0.249669904
## col.ri        0.850674570 -0.15149763 -0.00756039 -0.0555039251  0.073520398
## col.iz       -0.142361336 -0.02525567  0.01435928 -0.0005790558 -0.046688258
## ra            0.070331305  0.64908153  0.23376607 -0.0503567038  0.018155336
## dec           0.145521420  0.52009560  0.14295613 -0.0962656722 -0.002841766
## log.g         0.106705499 -0.17367868  0.14736971 -0.3840421109  0.584148285
## metallicity   0.090869498  0.01269297 -0.25572632  0.7341807800  0.106346273
## signal.noise -0.080707476  0.25942405  0.43747818  0.2940866475  0.098476834
## temperature   0.272896730  0.34135104 -0.41143248 -0.2112984163 -0.170946700
## velocity.los -0.001165539 -0.19912727  0.36558010 -0.2322845183 -0.659013021
##                     PC11
## col.ug       -0.641404269
## col.gr        0.561554649
## col.ri        0.210076299
## col.iz       -0.005493956
## ra           -0.022753222
## dec          -0.014940886
## log.g        -0.339859405
## metallicity   0.187464341
## signal.noise -0.071732715
## temperature   0.134927168
## velocity.los  0.233142765
```

```
round(pca.out2$rotation[,1:5],3)
```

```
##                PC1    PC2    PC3    PC4    PC5
## col.ug        0.453 -0.141  0.056 -0.130  0.050
## col.gr        0.436 -0.152  0.081 -0.150  0.026
## col.ri        0.275 -0.349 -0.057 -0.011  0.006
## col.iz        0.196 -0.219 -0.047  0.937 -0.101
## ra            0.171  0.128 -0.655  0.008  0.203
## dec          -0.122 -0.072  0.679  0.123  0.428
## log.g         0.258  0.493  0.110  0.101 -0.015
## metallicity   0.288  0.451  0.095  0.096  0.192
## signal.noise  0.333 -0.171  0.241 -0.173 -0.637
## temperature  -0.247  0.385  0.066  0.134 -0.562
## velocity.los  0.355  0.376  0.111 -0.016  0.065
```

```
After performing PCA on the data above it seems that PC1 most closely tied to col.ug and col.gr in particular.
```

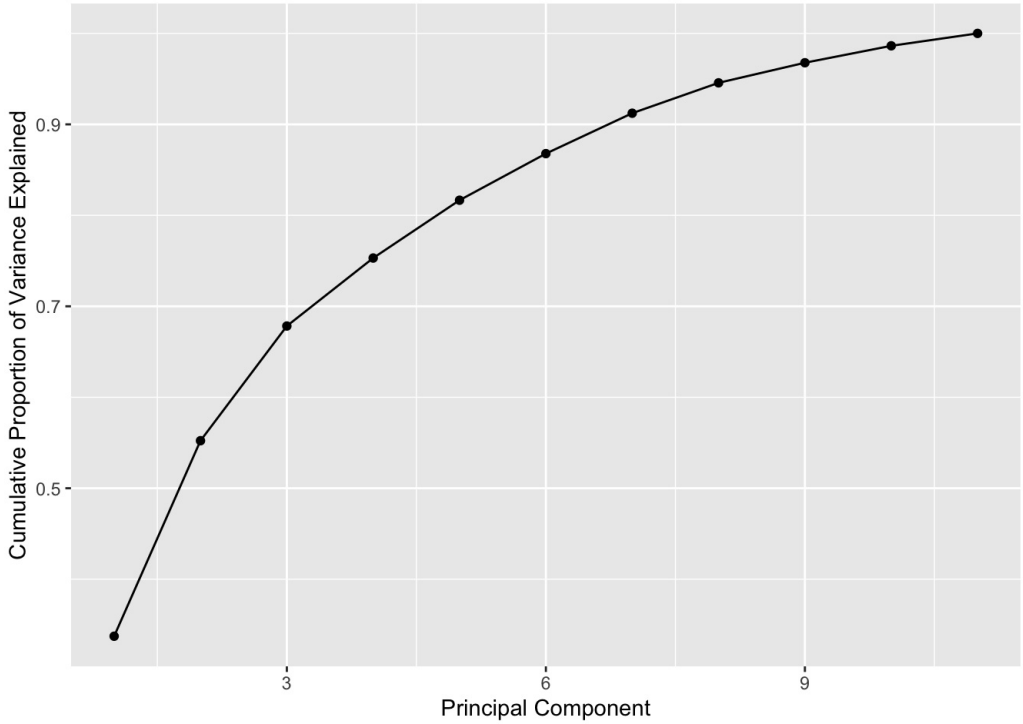
```
vh = pca.out2$sdev^2

pvef = vh/sum(vh)

#plot(cumsum(pvef), xlab="Principal Component ", ylab=" Cumulative Proportion of Variance Explained ", ylim=c(0,1),
type="b")


pr_varn = data.frame(varExp = vh)


ggplot(pr_varn, aes(as.numeric(row.names(pr_varn)), cumsum(pvef))) +
  geom_point() +  geom_line() +
  xlab("Principal Component") +
  ylab("Cumulative Proportion of Variance Explained")
```




```
The scree plot shows tge proportion of variance explained.I would retain around 3 PCs, if I were to make a choice h
ere.
```

```
ggplot(pca.out2,aes(PC1,PC2, color=col.ug)) + geom_point() + scale_color_gradientn(colors=rainbow(2))
```

```
## Error: `data` must be a data frame, or other object coercible by `fortify()`, not an S3 object with class prcomp
.
```