final_project_part2_BezawadaSashidhar

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import and clean the data

```
fertility_df <- read.csv("fertility.csv")
#head(fertility_df)
```

```
fertility__rate_df <- read.csv("fertility_rate.csv")
#head(fertility__rate_df)
country_pop_df <- read.csv("country_population.csv")
#head(country_pop_df)
```

```
preg <- read.csv("2015_2017_FemPregData.csv")
#head(preg)
fem_resp <- read.csv("2015_2017_FemRespData.csv")
#head(fem_resp)
```

```
sapply(fertility_df, function(x) sum(is.na(x)))
```

```
##                            Season                                 Age
##                                 0                                   0
##                 Childish.diseases           Accident.or.serious.trauma
##                                 0                                   0
##             Surgical.intervention           High.fevers.in.the.last.year
##                                 0                                   0
##     Frequency.of.alcohol.consumption                       Smoking.habit
##                                 0                                   0
## Number.of.hours.spent.sitting.per.day                       Diagnosis
##                                 0                                   0
```

1st fertility dataset doesn't have any 'NA' Values in any of the the columns.

```
sapply(fertility__rate_df, function(x) sum(is.na(x)))
```

```
sapply(country_pop_df, function(x) sum(is.na(x)))
```

Removed Indicator.Name & Indicator.Code from both fertility_rate_df & country_pop_df as these columns have the same values for each row and don't give any extra information around the datasets and their specifications.

For the columns in fertility_rate_df that represent the years from 1960-2016, there are ~18-30 NAs in each of the columns. I think this dataset could be cleaned up depending on the number of years that I really wanted to investigate and analyze. 56 years of data is nice to have, but I think it is a bit excessive if we could rather try to find a yearly trend from a subset of the dataset.

The country_pop_df dataset does not have as many NA values in the year columns as the fertility_rate_df. However, if I subset the fertility_rate_df dataset than I will subset the population one by the same columns to keep it consistent and better for analyzing the same years among the countries.

Replaced the NAs in the rest of the year columns 1980-2016 with the median value for the year column. I chose median over mean, since I don't want the value to be affected by the extreme values and countries have highly varying population sizes so the fertility rates and population numbers will be quite different.

```
# exclude variables v1, v2, v3
cols1 <- names(fertility__rate_df) %in% c("Indicator.Name","Indicator.Code","X1960", "X1961", "X1962","
cols2 <- names(country_pop_df) %in% c("Indicator.Name","Indicator.Code","X1960", "X1961", "X1962","X196

fertility__rate_df<- fertility__rate_df[!cols1]

country_pop_df <- country_pop_df[!cols2]

fertility__rate_df[,5:41] <- impute(fertility__rate_df[,3:39], fun = median)

country_pop_df[,5:41] <- impute(country_pop_df[,3:39], fun = median)

colSums(is.na(preg))
preg[,colSums(is.na(preg)) >0]
```

148 of the 380 variables contained NA values. The NA counts range from a couple hundred to ~5500 which is basically the number of rows in the dataset as is row (numRows = 5554). Given that there are already a great amount of columns in this dataset, I decided to remove all of the columns with any NA values since I think the rest of the data is already representative of the females that were surveyed about their pregnancies.

```
preg <- preg[ , colSums(is.na(preg)) == 0]

colSums(is.na(fem_resp))
fem_resp[,colSums(is.na(fem_resp)) >0]
```

2,792 of the 3,024 total variables in the female resp dataset have NA values. The count of these NA values is mostly very high such as being around 5,554 which is the total number of rows in the dataset as is, which would mean that the entire column contains NAs. Given that this dataset already has many columns and many are not applicable to my problem/question, I am going to remove all columns with any NA values to make the dataset easier to consume, analyze and utilize.

```
fem_resp <- fem_resp[ , colSums(is.na(fem_resp)) == 0]
```

Merging of similar datasets I want to merge the fertility_rate_df & country_pop_df datasets on country code, given that both datasets provide data on the same countries over the 36 years from 1980 - 2016. I took out the year variables from 1960-1979 in order to subset the data and not have to handle as many NA values.For a future step, I would like the rename the year variables in the merged dataset, so it is more clear on which years pertain to which dataset, fertility rate or country population. I think it is apparent from the data values, but the column names are not very descriptive.

```r
# merge fertility_rate_df & country_pop_df by country code
rate_pop_merged <- merge(fertility__rate_df,country_pop_df,by="Country.Code")
#head(rate_pop_merged)
```

I also want to merge the preg & fem_resp dataframes on CASEID, since both datasets represent data for females surveyed on their pregnancies from 2015-2017. I chose these years, since the fertility rate & country population datasets go up until 2016, so the years from 2015-2017 will represent the more recent years for looking at women's fertility and pregnancy experiences. I want to get a more current idea of what is affecting women's ability to have children.

```r
# merge preg & fem_resp dataframes on ï..CASEID
preg_resp_merged <- merge(preg,fem_resp,by="ï..CASEID")
head(preg_resp_merged)
```

```
##    ï..CASEID  PREGORDR HOWPREG_N.x  HOWPREG_P.x MOSCURRP.x NOWPRGDK.x
## 1  71572130 323232112     3220001 1.120000e+02          5        915
## 2  74046523   2323235           1 2.000000e+12   15512010         12
## 3  74540523   2626265           1 2.000006e+06         50          5
## 4  74865134   3535345           1 4.121100e+12       1352  111119985
## 5  75215142   4242425           1 3.011001e+06        112          5
## 6  75542523   2323235           1 6.030026e+06         50          1
##        PREGEND1 PREGEND2      HOWENDDK     NBRNALIV MULTBRTH BORNALIV   DATPRGEN_Y
## 1         51994        5        211111 1.10000e+01        1        5 1.25000e+02
## 2             5        5 25551213121 2.00000e+00      135      125 5.50000e+01
## 3      13512007       12             5 5.00000e+00   255111       12 3.00000e+00
## 4  116256000000      335           135 2.15000e+02       21        2 2.20052e+21
## 5      16111992       12        122010 2.55111e+05       11        4 5.00000e+00
## 6      15512011       12             5 1.92555e+12        2      235 1.45000e+02
##    AGEATEND HPAGEEND GESTASUN_M  GESTASUN_W      WKSGEST MOSGEST      DK1GEST
## 1       215       21          2 2.20132e+21 5.50000e+01       5 5.10000e+01
## 2         5        0          0 0.00000e+00 5.00000e+00      55 5.00000e+00
## 3         5      125         55 5.00000e+00 0.00000e+00       0 0.00000e+00
## 4     11235        5         55 1.50000e+01 1.10000e+01    2005 2.51979e+16
## 5       125      315         31 2.00000e+00 2.20012e+21      55 5.00000e+00
## 6        55        5          0 0.00000e+00 0.00000e+00       5 5.50000e+01
##    DK2GEST   DK3GEST     BABYSEX1 BIRTHWGT_LB1 BIRTHWGT_OZ1 LOBTHWGT1     BABYSEX2
## 1     2002   2519765 2.11510e+04   1.5500e+02        20020    200255 0.00000e+00
## 2        5      2015 2.71988e+12   3.5000e+01           32         1 2.01551e+05
## 3        5        55 5.00000e+00   1.0000e+00            0        55 0.00000e+00
## 4      112  20119998 2.00512e+08   3.5198e+12            8    201511 1.00000e+00
## 5       11      1995 2.31972e+16   1.2000e+01        19950    199351 0.00000e+00
## 6        5         1 0.00000e+00   5.5000e+01            0     21211 1.42014e+11
##    BIRTHWGT_LB2 BIRTHWGT_OZ2 LOBTHWGT2     BABYSEX3 BIRTHWGT_LB3 BIRTHWGT_OZ3
## 1            1 3.200212e+10         1            7  1.00000e+00 1.020150e+13
## 2            0 2.200000e+01         1  12009130916  1.00000e+01 1.234568e+07
## 3       424551 0.000000e+00         0        55555  5.55550e+04 5.000000e+00
## 4        12002 2.219800e+16        11            1  1.61995e+11 9.000000e+00
## 5            1 1.019890e+11        10            5  4.00000e+00 1.519920e+13
## 6          595 1.000000e+00         5           11  6.00000e+00 1.000000e+00
##    LOBTHWGT3 BABYDOB_Y      KIDAGE HPAGELB BIRTHPLC PAYBIRTH1 PAYBIRTH2
## 1          1         0 1.00000e+00       1        1        10     55555
## 2          8        11 1.10000e+01     111      111         1         8
## 3        555         1 5.00000e+00       5        0         1         5
```

```
## 4          5          4 5.19971e+12        8        7        5        1
## 5          4          6 6.00000e+00        1        1       61    71386
## 6          6          5 1.00000e+00        6        5        5       41
##       PAYBIRTH3 CSECPRIM    CSECMED1 CSECMED2    CSECMED3 CSECMED4      CSECMED5
## 1 5.55555e+05      552       55555        1 1.00000e+00        5 5.11000e+02
## 2 1.00000e+00        8          11        8 5.00000e+00        4 5.20091e+12
## 3 5.50000e+01       95          15        3 1.00000e+00        1 1.36400e+03
## 4 1.00000e+00       71 81391112015        1 2.22300e+03        6 7.20031e+12
## 5 6.20150e+04        1        1920        6 9.19931e+12       10 1.00000e+00
## 6 7.20151e+12     3134          1        1 1.00000e+00        1 1.00000e+00
##       CSECMED6 CSECPLAN      KNEWPREG TRIMESTR LTRIMEST      PRIORSMK POSTSMKS
## 1 51555555555       95 1.500000e+01        4        1 1.000000e+00        6
## 2           6        3 1.000000e+00        1       31 8.139111e+10        1
## 3   820131364       24 1.345500e+234 13641391       27 3.000000e+00        3
## 4          10        1 5.550000e+02   155515  5522005 5.000000e+00  1515111
## 5         555   155515 5.522003e+06        5  1515142 1.011550e+12       12
## 6      131387        1 1.100000e+01    55555    55555 5.000000e+00      555
##       NPOSTSMK  GETPRENA    BGNPRENA      PNCTRIM      LPNCTRI LIVEHERE1
## 1 5.136900e+04 120141369 3.00000e+01 5.1345e+230    13691390        21
## 2 2.227000e+03         4 2.20151e+12 1.0000e+01       55555    555555
## 3 1.555556e+08         3 3.00000e+00 3.0000e+00           3         3
## 4 1.011510e+12        95 1.10000e+01 3.0000e+00           5         9
## 5 1.000000e+00      1295 1.50000e+01 4.0000e+00           1         1
## 6 1.000000e+00         5 5.00000e+00 0.0000e+00 11551555555        95
##   ALIVENOW1 WHENDIED_Y1 WHENLEFT_Y1    LASTAGE1 WHERENOW1 LEGAGREE1
## 1         4           4   555555555 4.0000e+00         4         4
## 2       552       55555           1 1.0000e+00         5        55
## 3         3           3           3 3.0000e+00         3         3
## 4         4           1           1 2.0000e+00     11150         4
## 5         2       11078           4 1.1345e+225  13451389     44995
## 6        15           3           1 1.0000e+00         1     11311
##       PARENEND1  ANYNURSE1 FEDSOLID1 FRSTEATD_N1 FRSTEATD_P1 FRSTEATD1
## 1 4.000000e+00          4         4           4           4         4
## 2 5.151116e+10         95        15           8           1         1
## 3 3.000000e+00          3         3           3           3         3
## 4 1.134600e+235  13451391        46          84        1261         6
## 5 9.199311e+08          6         6   555555555           6         6
## 6 4.000000e+00 3200913111        17           3           1         4
##   QUITNURS1 AGEQTNUR_N1 AGEQTNUR_P1   AGEQTNUR1 LIVEHERE2 ALIVENOW2
## 1 4.0000e+00          4           4           4         4         4
## 2 1.0000e+00      11287           8  3200712871        14         3
## 3 3.0000e+00          3           3           3         3         3
## 4 6.0000e+00  555555555           6           6         6         6
## 5 6.0000e+00          6           6           6         6         6
## 6 1.1346e+225  13451389          44           1         1 555555555
##   WHENDIED_Y2 WHENLEFT_Y2    LASTAGE2 WHERENOW2 LEGAGREE2      PARENEND2
## 1           4           4 4.0000e+00         4         4 4.0000e+00
## 2           1           8 1.1346e+235  13451391        46 3.6000e+01
## 3           3           3 3.0000e+00         3         3 1.3451e+187
## 4           6           6 6.0000e+00         6         6 6.0000e+00
## 5           6           6 6.0000e+00         6         6 6.0000e+00
## 6           1           1 1.0000e+00         1         1 1.0000e+00
##    ANYNURSE2 FEDSOLID2 FRSTEATD_N2 FRSTEATD_P2 FRSTEATD2 QUITNURS2
## 1 4.00000e+00 1.3451e+183 1.11111e+21           0     1e+20         1
```

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```
## 2 1.30900e+03  8.0000e+00 8.00000e+00   555515555   8e+00          8
## 3 1.11111e+27  0.0000e+00 1.00001e+26           2   3e+00          3
## 4 6.00000e+00  6.0000e+00 6.00000e+00           6   6e+00          6
## 5 6.00000e+00  6.0000e+00 6.00000e+00           6   6e+00          6
## 6 1.00000e+00  1.0000e+00 1.00000e+00           1   1e+00          1
##   AGEQTNUR_N2 AGEQTNUR_P2 AGEQTNUR2 LIVEHERE3 ALIVENOW3 WHENDIED_Y3 WHENLEFT_Y3
## 1           4           5         8         8         1           0           1
## 2           8           8         8         8         8           8           8
## 3          93           5        15  11155551        55           5          31
## 4           6           6         6         6         6           6           4
## 5           6           6         6         6         6           6           6
## 6           1           1         1         1         1           1           1
##      LASTAGE3 WHERENOW3 LEGAGREE3 PARENEND3 ANYNURSE3 FEDSOLID3 FRSTEATD_N3
## 1 5.55556e+11         5         9         0      2125         5           1
## 2 8.00000e+00         8         8         8         8         8           8
## 3 3.00000e+00         1        53         1         6         1           6
## 4 6.00000e+00         4         6         4         6         4           6
## 5 6.00000e+00         6         6         6         6         6           6
## 6 1.00000e+00         1         1         1         1         1           1
##   FRSTEATD_P3 FRSTEATD3 QUITNURS3 AGEQTNUR_N3 AGEQTNUR_P3 AGEQTNUR3 PRGOUTCOME
## 1        2125        11      5125       85555         252         5          5
## 2           8         8         8           8           8         8          8
## 3          15    991555         5           5          15         5 5515555555
## 4           4         6         4           6           4         6          4
## 5           6         6         6           6           6         6          6
## 6           1         4         7           1           1         1          1
##   OUTCOM_S DATEND     FMARITAL    RMARITAL HIEDUC METRO     DATEND_I  AGEPREG_I
## 1       45      1         2530    20072013     11     0  1.12889E+18          1
## 2        8      1            1           1      2    32            1 1.21323E+17
## 3        5  3E+23  42420000173   820002847
## 4        6      5          245   355121144 111144     5            1          1
## 5        6      1            5        1151     11     2        4E+23          3
## 6        1      5            0           0      5     1           23          1
##   DATECON_I FMARCON5_I RMARCON6_I LEARNPRG_I      LBW1_I  LIVCHILD_I
## 1         2         11         11         11           2         222
## 2         1         45          2          1           5          15
## 3
## 4         1 5.55556E+12        313        313 9.22222E+42           2
## 5         3     202227 1.9932E+11     202126         551         551
## 6     2E+23         22          0          0 1.11222E+18 1.51139E+11
##   OLDWANTR_I  OLDWANTP_I  WANTRESP_I WANTPART_I TOOSOON_I NEWWANTR_I AGER_I
## 1   41270000          93 610005968.1      75.64
## 2         11 2.11656E+11           3          3         1          1      1
## 3
## 4          0           2       20211   20022005      2224   20022004   2123
## 5         55          11      121995         22         5       1995   2211
## 6          4       1E+66 1.11114E+14          2         1          2      5
##   FMARITAL_I RMARITAL_I     EDUCAT_I    HIEDUC_I     RACE_I  HISPANIC_I
## 1
## 2          0         55     55555555           1          2 1.11112E+12
## 3
## 4         51         51           55          56 1120022234        4411
## 5          1          0 1.19932E+26 3.31139E+14          6       6E+72
## 6          1          2            5           1       1311           0
```

```
##   HISPRACE_I HISPRACE2_I RCURPREG_I   PREGNUM_I PARITY_I   CURR_INS_I PUBASSIS_I
## 1
## 2           1           3          1           5        5 5.55556E+30          2
## 3
## 4      102005        2011          1 2.43031E+13     4111            1          2
## 5   188888811           2          1           4        2      1078661        552
## 6           1     2000222         20   4.216E+20    66.84
##     POVERTY_I  LABORFOR_I RELIGION_I METRO_I WGT2015_2017      SECU SEST
## 1
## 2       2E+23           0          0       0            0        11    0
## 3
## 4 3.20022E+26 1.91139E+14          6   7E+69            1 188888811    2
## 5         552         661        662       0            8         8    2
## 6
##   CMINTVW      CMLSTYR    CMJAN3YR CMJAN4YR CMJAN5YR QUARTER PHASE INTVWYEAR  X
## 1                                                                          74
## 2       1 1.20152E+26 41139121123        9        4   3E+69    21 588888821
## 3                                                                           4
## 4       1           4           1        4        2  115022    32        32  0
## 5     222          22   3.231E+21    86.84
## 6
##     X.1   X.2 X.3         X.4      X.5 X.6 X.7    X.8  X.9 X.10       X.11
## 1     4 1E+67  11 3.21089E+11        2 117   2 119532   32   32         32
## 2
## 3 4E+69     1   1     2888811        2   1   3      4    1    3          4
## 4     0     0   1 1.21172E+18 1.3214E+11   0  10     54 7E+66   11 1.11221E+11
## 5
## 6
##   X.12     X.13 X.14 X.15 X.16    X.17    X.18        X.19        X.20  X.21
## 1   32   1E+132    8    8    1 1000222      22 11250000170 820002907.1 71.85
## 2
## 3    2 11822222 3222 3222 2222    4222  1E+132           2         222    20
## 4    2        1    2    1    2       1   13233           3           3     3
## 5
## 6
##                                                                                                                      X.22
## 1
## 2
## 3 0000000000000003227000015711100032023.7129952865336613901378134513331321171201513 0.67
## 4                                                                                                                       4
## 5
## 6
##    X.23 X.24 X.25 X.26 X.27    X.28      X.29 X.30        X.31  X.32 X.33 X.34
## 1
## 2
## 3
## 4 1E+132    8    8    8    1 1000222 2.213E+26   61 620004617.8 71.85
## 5
## 6
##   X.35 X.36 X.37 X.38 X.39 X.40 X.41 X.42 X.43 X.44 X.45 X.46 X.47 X.48 X.49
## 1
## 2
## 3
## 4
```

```
## 5
## 6
##   X.50 X.51 X.52 X.53 X.54 X.55 X.56 X.57 X.58 X.59 X.60 X.61 X.64 X.68 X.74
## 1
## 2
## 3
## 4
## 5
## 6
##   X.75 X.77 X.83 X.86 X.89 X.90 X.119   RSCRNINF RSCRAGE     RSCRHISP RSCRRACE
## 1                                      323232112 3220001 1.120000e+02        5
## 2                                        2323235       1 2.000000e+12 15512010
## 3                                        2626265       1 2.000006e+06       50
## 4                                        3535345       1 4.121100e+12     1352
## 5                                        4242425       1 3.011001e+06      112
## 6                                        2323235       1 6.030026e+06       50
##        AGE_A       AGE_R AGESCRN       HISP      HISPGRP PRIMLANG1 PRIMLANG2
## 1        915       51994       5     211111 1.10000e+01         1         5
## 2         12           5       5 25551213121 2.00000e+00       135       125
## 3          5    13512007      12          5 5.00000e+00    255111        12
## 4  111119985 116256000000     335        135 2.15000e+02        21         2
## 5          5    16111992      12     122010 2.55111e+05        11         4
## 6          1    15512011      12          5 1.92555e+12         2       235
##     PRIMLANG3 ROSCNT NUMCHILD HHKIDS18   DAUGHT918       SON918 NONBIOKIDS
## 1 1.25000e+02    215       21        2 2.20132e+21 5.50000e+01          5
## 2 5.50000e+01      5        0        0 0.00000e+00 5.00000e+00         55
## 3 3.00000e+00      5      125       55 5.00000e+00 0.00000e+00          0
## 4 2.20052e+21  11235        5       55 1.50000e+01 1.10000e+01       2005
## 5 5.00000e+00    125      315       31 2.00000e+00 2.20012e+21         55
## 6 1.45000e+02     55        5        0 0.00000e+00 0.00000e+00          5
##       MARSTAT FMARSTAT    FMARIT    EVRMARRY   HPLOCALE MANREL GOSCHOL
## 1 5.10000e+01     2002   2519765 2.11510e+04 1.5500e+02  20020  200255
## 2 5.00000e+00        5      2015 2.71988e+12 3.5000e+01     32       1
## 3 0.00000e+00        5        55 5.00000e+00 1.0000e+00      0      55
## 4 2.51979e+16      112  20119998 2.00512e+08 3.5198e+12      8  201511
## 5 5.00000e+00       11      1995 2.31972e+16 1.2000e+01  19950  199351
## 6 5.50000e+01        5         1 0.00000e+00 5.5000e+01      0   21211
##          VACA HIGRADE      COMPGRD DIPGED     EARNHS_Y     HISCHGRD     LSTGRADE
## 1 0.00000e+00       1 3.200212e+10      1            7 1.00000e+00 1.020150e+13
## 2 2.01551e+05       0 2.200000e+01      1  12009130916 1.00000e+01 1.234568e+07
## 3 0.00000e+00  424551 0.000000e+00      0        55555 5.55550e+04 5.000000e+00
## 4 1.00000e+00   12002 2.219800e+16     11            1 1.61995e+11 9.000000e+00
## 5 0.00000e+00       1 1.019890e+11     10            5 4.00000e+00 1.519920e+13
## 6 1.42014e+11     595 1.000000e+00      5           11 6.00000e+00 1.000000e+00
##   MYSCHOL_Y HAVEDEG      DEGREES EARNBA_Y EXPSCHL EXPGRADE WTHPARNW       ONOWN
## 1         1       0 1.00000e+00        1       1       10    55555 5.55555e+05
## 2         8      11 1.10000e+01      111     111        1        8 1.00000e+00
## 3       555       1 5.00000e+00        5       0        1        5 5.50000e+01
## 4         5       4 5.19971e+12        8       7        5        1 1.00000e+00
## 5         4       6 6.00000e+00        1       1       61    71386 6.20150e+04
## 6         6       5 1.00000e+00        6       5        5       41 7.20151e+12
##   ONOWN18   INTACT PARMARR   INTACT18 LVSIT14F      LVSIT14M     WOMRASDU
## 1     552    55555       1 1.00000e+00        5 5.11000e+02 51555555555
## 2       8       11       8 5.00000e+00        4 5.20091e+12           6
```

```
## 3     95          15          3 1.00000e+00         1 1.36400e+03     820131364
## 4     71 81391112015          1 2.22300e+03         6 7.20031e+12            10
## 5      1        1920          6 9.19931e+12        10 1.00000e+00           555
## 6   3134           1          1 1.00000e+00         1 1.00000e+00        131387
##    MOMDEGRE    MOMWORKD MOMFSTCH    MOM18    MANRASDU R_FOSTER     EVRFSTER
## 1        95 1.500000e+01        4        1 1.000000e+00       6 5.136900e+04
## 2         3 1.000000e+00        1       31 8.139111e+10       1 2.227000e+03
## 3        24 1.345500e+234 13641391       27 3.000000e+00       3 1.555556e+08
## 4         1 5.550000e+02   155515  5522005 5.000000e+00 1515111 1.011510e+12
## 5    155515 5.522003e+06        5  1515142 1.011550e+12      12 1.000000e+00
## 6         1 1.100000e+01    55555    55555 5.000000e+00     555 1.000000e+00
##     MNYFSTER    DURFSTER    MENARCHE    PREGNOWQ MAYBPREG NUMPREGS EVERPREG
## 1 120141369 3.00000e+01 5.1345e+230    13691390       21        4        4
## 2         4 2.20151e+12 1.0000e+01       55555   555555      552    55555
## 3         3 3.00000e+00 3.0000e+00           3        3        3        3
## 4        95 1.10000e+01 3.0000e+00           5        9        4        1
## 5      1295 1.50000e+01 4.0000e+00           1        1        2    11078
## 6         5 5.00000e+00 0.0000e+00 11551555555       95       15        3
##    CURRPREG HOWPREG_N.y HOWPREG_P.y NOWPRGDK.y   MOSCURRP.y      NPREGS_S
## 1 555555555  4.0000e+00           4          4 4.000000e+00           4
## 2         1  1.0000e+00           5         55 5.151116e+10          95
## 3         3  3.0000e+00           3          3 3.000000e+00           3
## 4         1  2.0000e+00       11150          4 1.134600e+235    13451391
## 5         4  1.1345e+225    13451389      44995 9.199311e+08           6
## 6         1  1.0000e+00           1      11311 4.000000e+00  3200913111
##    HASBABES  NUMBABES NBABES_S CMLASTLB    CMLSTPRG    CMFSTPRG CMPG1BEG
## 1        4         4        4        4 4.0000e+00           4        4
## 2       15         8        1        1 1.0000e+00       11287        8
## 3        3         3        3        3 3.0000e+00           3        3
## 4       46        84     1261        6 6.0000e+00  555555555        6
## 5        6 555555555        6        6 6.0000e+00           6        6
## 6       17         3        1        4 1.1346e+225    13451389       44
##      NPLACED NDIED    NADOPTV TOTPLACD OTHERKID    NOTHRKID SEXOTHKD RELOTHKD
## 1          4     4        4        4        4 4.0000e+00        4        4
## 2 3200712871    14        3        1        8 1.1346e+235 13451391       46
## 3          3     3        3        3        3 3.0000e+00        3        3
## 4          6     6        6        6        6 6.0000e+00        6        6
## 5          6     6        6        6        6 6.0000e+00        6        6
## 6          1     1 555555555        1        1 1.0000e+00        1        1
##      ADPTOTKD    TRYADOPT    TRYEITHR    STILHERE DATKDCAM_Y OTHKDFOS OKDDOB_Y
## 1  4.0000e+00 4.00000e+00 1.3451e+183 1.11111e+21          0    1e+20        1
## 2  3.6000e+01 1.30900e+03 8.0000e+00  8.00000e+00  555515555    8e+00        8
## 3 1.3451e+187 1.11111e+27 0.0000e+00  1.00001e+26          2    3e+00        3
## 4  6.0000e+00 6.00000e+00 6.0000e+00  6.00000e+00          6    6e+00        6
## 5  6.0000e+00 6.00000e+00 6.0000e+00  6.00000e+00          6    6e+00        6
## 6  1.0000e+00 1.00000e+00 1.0000e+00  1.00000e+00          1    1e+00        1
##    OKBORNUS OKDISABL1 OKDISABL2 SEXOTHKD2 RELOTHKD2 ADPTOTKD2 TRYADOPT2
## 1        4         5         8         8         1         0         1
## 2        8         8         8         8         8         8         8
## 3       93         5        15  11155551        55         5        31
## 4        6         6         6         6         6         6         4
## 5        6         6         6         6         6         6         6
## 6        1         1         1         1         1         1         1
##     TRYEITHR2 STILHERE2 DATKDCAM_Y2 OTHKDFOS2 OKDDOB_Y2 OKBORNUS2 OKDISABL5
```

```
## 1 5.55556e+11          5          9          0       2125          5          1
## 2 8.00000e+00          8          8          8          8          8          8
## 3 3.00000e+00          1         53          1          6          1          6
## 4 6.00000e+00          4          6          4          6          4          6
## 5 6.00000e+00          6          6          6          6          6          6
## 6 1.00000e+00          1          1          1          1          1          1
##   OKDISABL6 SEXOTHKD3 RELOTHKD3 ADPTOTKD3 TRYADOPT3 TRYEITHR3  STILHERE3
## 1      2125        11      5125     85555       252         5          5
## 2         8         8         8         8         8         8          8
## 3        15    991555         5         5        15         5 5515555555
## 4         4         6         4         6         4         6          4
## 5         6         6         6         6         6         6          6
## 6         1         4         7         1         1         1          1
##   DATKDCAM_Y3 SEXOTHKD7 OKDISABL30 SEXOTHKD9 ADPTOTKD9 TRYADOPT10  OKBORNUS10
## 1          45         1       2530  20072013        11          0 1.12889E+18
## 2           8         1          1         1         2         32           1
## 3           5     3E+23 42420000173 820002847
## 4           6         5        245 355121144    111144          5           1
## 5           6         1          5      1151        11          2       4E+23
## 6           1         5          0         0         5          1          23
##   OKDISABL37 OKDISABL38 TRYEITHR11 STILHERE11 DATKDCAM_Y11 OKBORNUS11
## 1          1          2         11         11           11          2
## 2 1.21323E+17          1         45          2            1          5
## 3
## 4          1          1 5.55556E+12        313          313 9.22222E+42
## 5          3          3     202227 1.9932E+11       202126        551
## 6          1      2E+23         22          0            0 1.11222E+18
##   OKDISABL41 SEXOTHKD12 RELOTHKD12  ADPTOTKD12 TRYADOPT12 TRYEITHR12
## 1        222   41270000         93 610005968.1      75.64
## 2         15         11 2.11656E+11           3          3          1
## 3
## 4          2          0          2       20211   20022005       2224
## 5        551         55         11      121995         22          5
## 6 1.51139E+11          4       1E+66 1.11114E+14          2          1
##   STILHERE12 DATKDCAM_Y12 OTHKDFOS12 OKDDOB_Y12  OKBORNUS12  OKDISABL45
## 1
## 2          1            1          0         55    55555555           1
## 3
## 4   20022004         2123         51         51          55          56
## 5       1995         2211          1          0 1.19932E+26 3.31139E+14
## 6          2            5          1          2           5           1
##   OKDISABL46  SEXOTHKD13 RELOTHKD13 ADPTOTKD13 TRYADOPT13  TRYEITHR13
## 1
## 2          2 1.11112E+12          1          3          1           5
## 3
## 4 1120022234        4411     102005       2011          1 2.43031E+13
## 5          6       6E+72  188888811          2          1           4
## 6       1311           0          1    2000222         20   4.216E+20
##   STILHERE13 DATKDCAM_Y13 OTHKDFOS13  OKDDOB_Y13  OKBORNUS13 OKDISABL49
## 1
## 2          5 5.55556E+30          2       2E+23           0          0
## 3
## 4       4111            1          2 3.20022E+26 1.91139E+14          6
## 5          2      1078661        552         552         661        662
```

```
## 6      66.84
##   OKDISABL50 SEXOTHKD14 RELOTHKD14 ADPTOTKD14 TRYADOPT14  TRYEITHR14
## 1
## 2          0          0         11          0          1 1.20152E+26
## 3
## 4       7E+69          1  188888811          2          1           4
## 5          0          8          8          2        222          22
## 6
##    STILHERE14 DATKDCAM_Y14 OTHKDFOS14 OKDDOB_Y14 OKBORNUS14 OKDISABL53
## 1
## 2 41139121123            9          4       3E+69         21  588888821
## 3
## 4           1            4          2      115022         32         32
## 5   3.231E+21        86.84
## 6
##   OKDISABL54 SEXOTHKD15 RELOTHKD15 ADPTOTKD15 TRYADOPT15 TRYEITHR15 STILHERE15
## 1
## 2          6          1          6          1          6          6       1287
## 3
## 4         22         42          0          8          8          2        222
## 5
## 6
##   DATKDCAM_Y15 OTHKDFOS15 OKDDOB_Y15 OKBORNUS15 OKDISABL57 OKDISABL58
## 1
## 2           11          1          1          1          1          1
## 3
## 4           21   1.221E+21      57.56
## 5
## 6
##   SEXOTHKD16 RELOTHKD16 ADPTOTKD16 TRYADOPT16 TRYEITHR16  STILHERE16
## 1
## 2   1.11E+21    1000222         23   43320000         86 520003520.4
## 3
## 4
## 5
## 6
##   DATKDCAM_Y16 OTHKDFOS16 OKDDOB_Y16 OKBORNUS16 OKDISABL61 OKDISABL62
## 1
## 2         56.2
## 3
## 4
## 5
## 6
##   SEXOTHKD17 RELOTHKD17 ADPTOTKD17 TRYADOPT17 TRYEITHR17 STILHERE17
## 1
## 2
## 3
## 4
## 5
## 6
##   DATKDCAM_Y17 OTHKDFOS17 OKDDOB_Y17 OKBORNUS17 OKDISABL65 OKDISABL66
## 1
## 2
## 3
```

```
## 4
## 5
## 6
##   SEXOTHKD18 RELOTHKD18 ADPTOTKD18 TRYADOPT18 TRYEITHR18 STILHERE18
## 1
## 2
## 3
## 4
## 5
## 6
##   DATKDCAM_Y18 OTHKDFOS18 OKDDOB_Y18 OKBORNUS18 OKDISABL69 OKDISABL70
## 1
## 2
## 3
## 4
## 5
## 6
##   SEXOTHKD19 RELOTHKD19 ADPTOTKD19 TRYADOPT19 TRYEITHR19 STILHERE19
## 1
## 2
## 3
## 4
## 5
## 6
##   DATKDCAM_Y19 OTHKDFOS19 OKDDOB_Y19 OKBORNUS19 OKDISABL73 OKDISABL74
## 1
## 2
## 3
## 4
## 5
## 6
##   SEXOTHKD20 TRYADOPT20 OTHKDFOS20 SEEKADPT CONTAGEM KNOWADPT APROCESS2
## 1
## 2
## 3
## 4
## 5
## 6
##   TIMESMAR AGEMARHX HXAGEMAR ENGAGHX2
## 1
## 2
## 3
## 4
## 5
## 6
```

What does the final data set look like?

```
dplyr::glimpse(fertility_df)
```

```
## Rows: 100
## Columns: 10
```

```
## $ Season                              <chr> "spring", "spring", "spring", "s~
## $ Age                                 <int> 30, 35, 27, 32, 30, 30, 30, 36, ~
## $ Childish.diseases                   <chr> "no", "yes", "yes", "no", "yes",~
## $ Accident.or.serious.trauma          <chr> "yes", "no", "no", "yes", "yes",~
## $ Surgical.intervention               <chr> "yes", "yes", "no", "yes", "no",~
## $ High.fevers.in.the.last.year        <chr> "more than 3 months ago", "more ~
## $ Frequency.of.alcohol.consumption    <chr> "once a week", "once a week", "h~
## $ Smoking.habit                       <chr> "occasional", "daily", "never", ~
## $ Number.of.hours.spent.sitting.per.day <int> 16, 6, 9, 7, 9, 9, 8, 7, 5, 5, 6~
## $ Diagnosis                           <chr> "Normal", "Altered", "Normal", "~
```

```
str(fertility_df)
```

```
## 'data.frame':    100 obs. of  10 variables:
##  $ Season                              : chr  "spring" "spring" "spring" "spring" ...
##  $ Age                                 : int  30 35 27 32 30 30 30 36 30 29 ...
##  $ Childish.diseases                   : chr  "no" "yes" "yes" "no" ...
##  $ Accident.or.serious.trauma          : chr  "yes" "no" "no" "yes" ...
##  $ Surgical.intervention               : chr  "yes" "yes" "no" "yes" ...
##  $ High.fevers.in.the.last.year        : chr  "more than 3 months ago" "more than 3 months ago" "mo
##  $ Frequency.of.alcohol.consumption    : chr  "once a week" "once a week" "hardly ever or never" "ha
##  $ Smoking.habit                       : chr  "occasional" "daily" "never" "never" ...
##  $ Number.of.hours.spent.sitting.per.day: int  16 6 9 7 9 9 8 7 5 5 ...
##  $ Diagnosis                           : chr  "Normal" "Altered" "Normal" "Normal" ...
```

```
dplyr::glimpse(rate_pop_merged)
```

```
## Rows: 264
## Columns: 81
## $ Country.Code      <chr> "ABW", "AFG", "AGO", "ALB", "AND", "ARB", "ARE", "AR~
## $ ï..Country.Name.x <chr> "Aruba", "Afghanistan", "Angola", "Albania", "Andorr~
## $ X1980.x           <dbl> 2.392000, 7.449000, 7.504000, 3.621000, NA, 6.335756~
## $ X1981.x           <dbl> 2.37700, 7.44900, 7.46900, 3.53000, NA, 6.26037, 5.4~
## $ X1982.x           <dbl> 2.392000, 7.449000, 7.504000, 3.621000, 2.914000, 6.~
## $ X1983.x           <dbl> 2.37700, 7.44900, 7.46900, 3.53000, 2.91400, 6.26037~
## $ X1984.x           <dbl> 2.364000, 7.450000, 7.438000, 3.452000, 2.914000, 6.~
## $ X1985.x           <dbl> 2.353000, 7.452000, 7.413000, 3.383000, 2.914000, 6.~
## $ X1986.x           <dbl> 2.34200, 7.45500, 7.39400, 3.32300, 2.91400, 5.99415~
## $ X1987.x           <dbl> 2.332000, 7.458000, 7.380000, 3.269000, 2.914000, 5.~
## $ X1988.x           <dbl> 2.320000, 7.460000, 7.366000, 3.217000, 2.914000, 5.~
## $ X1989.x           <dbl> 2.307000, 7.461000, 7.349000, 3.164000, 2.914000, 5.~
## $ X1990.x           <dbl> 2.291000, 7.461000, 7.324000, 3.108000, 2.914000, 5.~
## $ X1991.x           <dbl> 2.272000, 7.461000, 7.291000, 3.046000, 2.914000, 5.~
## $ X1992.x           <dbl> 2.249000, 7.466000, 7.247000, 2.978000, 2.914000, 5.~
## $ X1993.x           <dbl> 2.221000, 7.479000, 7.193000, 2.905000, 2.914000, 5.~
## $ X1994.x           <dbl> 2.187000, 7.502000, 7.130000, 2.829000, 2.914000, 4.~
## $ X1995.x           <dbl> 2.149000, 7.535000, 7.063000, 2.751000, 2.914000, 4.~
## $ X1996.x           <dbl> 2.108000, 7.572000, 6.992000, 2.672000, 2.914000, 4.~
## $ X1997.x           <dbl> 2.064000, 7.606000, 6.922000, 2.591000, 2.914000, 4.~
## $ X1998.x           <dbl> 2.021000, 7.630000, 6.854000, 2.507000, 2.914000, 4.~
## $ X1999.x           <dbl> 1.978000, 7.635000, 6.791000, 2.422000, 2.914000, 4.~
## $ X2000.x           <dbl> 1.939000, 7.616000, 6.734000, 2.334000, 2.914000, 4.~
## $ X2001.x           <dbl> 1.903000, 7.569000, 6.683000, 2.246000, 2.914000, 3.~
```

```
## $ X2002.x          <dbl> 1.872000, 7.494000, 6.639000, 2.157000, 2.914000, 3.~
## $ X2003.x          <dbl> 1.846000, 7.392000, 6.602000, 2.068000, 2.914000, 3.~
## $ X2004.x          <dbl> 1.823000, 7.271000, 6.568000, 1.981000, 2.914000, 3.~
## $ X2005.x          <dbl> 1.803000, 7.136000, 6.536000, 1.897000, 2.914000, 3.~
## $ X2006.x          <dbl> 1.78700, 6.98800, 6.50200, 1.82100, 2.91400, 3.55976~
## $ X2007.x          <dbl> 1.774000, 6.827000, 6.465000, 1.754000, 2.914000, 3.~
## $ X2008.x          <dbl> 1.766000, 6.651000, 6.420000, 1.703000, 1.240000, 3.~
## $ X2009.x          <dbl> 1.763000, 6.460000, 6.368000, 1.668000, 1.180000, 3.~
## $ X2010.x          <dbl> 1.764000, 6.254000, 6.307000, 1.650000, 1.250000, 3.~
## $ X2011.x          <dbl> 1.769000, 6.038000, 6.238000, 1.646000, 1.190000, 3.~
## $ X2012.x          <dbl> 1.776000, 5.816000, 6.162000, 1.653000, 1.270000, 3.~
## $ X2013.x          <dbl> 1.783000, 5.595000, 6.082000, 1.668000, 2.914000, 3.~
## $ X2014.x          <dbl> 1.791000, 5.380000, 6.000000, 1.685000, 2.914000, 3.~
## $ X2015.x          <dbl> 1.796000, 5.174000, 5.920000, 1.700000, 2.914000, 3.~
## $ X2016.x          <dbl> 1.800000, 4.981000, 5.841000, 1.710000, 2.914000, 3.~
## $ X2015.1.x        <dbl> 1.80100, 4.80200, 5.76600, 1.71400, 2.91400, 3.37384~
## $ X2016.1.x        <dbl> 1.800000, 4.635000, 5.694000, 1.713000, 2.914000, 3.~
## $ ï..Country.Name.y <chr> "Aruba", "Afghanistan", "Angola", "Albania", "Andorr~
## $ X1980.y          <dbl> 60096, 13248370, 8929900, 2671997, 36067, 165689490,~
## $ X1981.y          <dbl> 60567, 13053954, 9244507, 2726056, 37500, 171051950,~
## $ X1982.y          <dbl> 60096, 13248370, 8929900, 2671997, 36067, 165689490,~
## $ X1983.y          <dbl> 60567, 13053954, 9244507, 2726056, 37500, 171051950,~
## $ X1984.y          <dbl> 61345, 12749645, 9582156, 2784278, 39114, 176490084,~
## $ X1985.y          <dbl> 62201, 12389269, 9931562, 2843960, 40867, 182005827,~
## $ X1986.y          <dbl> 62836, 12047115, 10277321, 2904429, 42706, 187610756~
## $ X1987.y          <dbl> 63026, 11783050, 10609042, 2964762, 44600, 193310301~
## $ X1988.y          <dbl> 62644, 11601041, 10921037, 3022635, 46517, 199093767~
## $ X1989.y          <dbl> 61833, 11502761, 11218268, 3083605, 48455, 204942549~
## $ X1990.y          <dbl> 61079, 11540888, 11513968, 3142336, 50434, 210844771~
## $ X1991.y          <dbl> 61032, 11777609, 11827237, 3227943, 52448, 216787402~
## $ X1992.y          <dbl> 62149, 12249114, 12171441, 3286542, 54509, 224735446~
## $ X1993.y          <dbl> 64622, 12993657, 12553446, 3266790, 56671, 230829868~
## $ X1994.y          <dbl> 68235, 13981231, 12968345, 3247039, 58888, 235037179~
## $ X1995.y          <dbl> 72504, 15095099, 13403734, 3227287, 60971, 241286091~
## $ X1996.y          <dbl> 76700, 16172719, 13841301, 3207536, 62677, 247435930~
## $ X1997.y          <dbl> 80324, 17099541, 14268994, 3187784, 63850, 255029671~
## $ X1998.y          <dbl> 83200, 17822884, 14682284, 3168033, 64360, 260843462~
## $ X1999.y          <dbl> 85451, 18381605, 15088981, 3148281, 64327, 266575075~
## $ X2000.y          <dbl> 87277, 18863999, 15504318, 3128530, 64142, 272235146~
## $ X2001.y          <dbl> 89005, 19403676, 15949766, 3108778, 64370, 277962869~
## $ X2002.y          <dbl> 90853, 20093756, 16440924, 3089027, 65390, 283832016~
## $ X2003.y          <dbl> 92898, 20966463, 16983266, 3060173, 67341, 289850357~
## $ X2004.y          <dbl> 94992, 21979923, 17572649, 3051010, 70049, 296026575~
## $ X2005.y          <dbl> 97017, 23064851, 18203369, 3039616, 73182, 302434519~
## $ X2006.y          <dbl> 98737, 24118979, 18865716, 3026939, 76244, 309162029~
## $ X2007.y          <dbl> 100031, 25070798, 19552542, 3011487, 78867, 31626472~
## $ X2008.y          <dbl> 100832, 25893450, 20262399, 2992547, 80991, 32377326~
## $ X2009.y          <dbl> 101220, 26616792, 20997687, 2970017, 82683, 33165379~
## $ X2010.y          <dbl> 101353, 27294031, 21759420, 2947314, 83861, 33982548~
## $ X2011.y          <dbl> 101453, 28004331, 22549547, 2927519, 84462, 34814509~
## $ X2012.y          <dbl> 101669, 28803167, 23369131, 2913021, 84449, 35650890~
## $ X2013.y          <dbl> 102053, 29708599, 24218565, 2905195, 83751, 36489587~
## $ X2014.y          <dbl> 102577, 30696958, 25096150, 2900401, 82431, 37330699~
## $ X2015.y          <dbl> 103187, 31731688, 25998340, 2895092, 80788, 38170208~
```

```
## $ X2016.y        <dbl> 103795, 32758020, 26920466, 2889104, 79223, 39004302~
## $ X2015.1.y      <dbl> 104341, 33736494, 27859305, 2880703, 78014, 39830496~
## $ X2016.1.y      <dbl> 104822, 34656032, 28813463, 2876101, 77281, 40645269~
```

```
#str(rate_pop_merged)
```

```
dplyr::glimpse(preg_resp_merged)
```

```
## Rows: 5,554
## Columns: 463
## $ ï..CASEID    <dbl> 7.157213e+07, 7.404652e+07, 7.454052e+07, 7.486513e+07, 7~
## $ PREGORDR     <dbl> 323232112, 2323235, 2626265, 3535345, 4242425, 2323235, 3~
## $ HOWPREG_N.x  <dbl> 3.220001e+06, 1.000000e+00, 1.000000e+00, 1.000000e+00, 1~
## $ HOWPREG_P.x  <dbl> 1.120000e+02, 2.000000e+12, 2.000006e+06, 4.121100e+12, 3~
## $ MOSCURRP.x   <dbl> 5, 15512010, 50, 1352, 112, 50, 915, 50, 1, 50, 11115, 1,~
## $ NOWPRGDK.x   <dbl> 915, 12, 5, 111119985, 5, 1, 91994, 5, 16512011, 5, 18111~
## $ PREGEND1     <dbl> 51994, 5, 13512007, 116256000000, 16111992, 15512011, 112~
## $ PREGEND2     <dbl> 5.000000e+00, 5.000000e+00, 1.200000e+01, 3.350000e+02, 1~
## $ HOWENDDK     <dbl> 2.111110e+05, 2.555121e+10, 5.000000e+00, 1.350000e+02, 1~
## $ NBRNALIV     <dbl> 1.100000e+01, 2.000000e+00, 5.000000e+00, 2.150000e+02, 2~
## $ MULTBRTH     <dbl> 1, 135, 255111, 21, 11, 2, 145, 31, 3, 2, 3, 135, 4, 125,~
## $ BORNALIV     <dbl> 5, 125, 12, 2, 4, 235, 415, 1, 5, 135, 5, 125, 5, 55, 135~
## $ DATPRGEN_Y   <dbl> 1.25000e+02, 5.50000e+01, 3.00000e+00, 2.20052e+21, 5.000~
## $ AGEATEND     <dbl> 215, 5, 5, 11235, 125, 55, 2, 105, 55, 411201, 215, 5, 55~
## $ HPAGEEND     <dbl> 2.10000e+01, 0.00000e+00, 1.25000e+02, 5.00000e+00, 3.150~
## $ GESTASUN_M   <dbl> 2.00000e+00, 0.00000e+00, 5.50000e+01, 5.50000e+01, 3.100~
## $ GESTASUN_W   <dbl> 2.20132e+21, 0.00000e+00, 5.00000e+00, 1.50000e+01, 2.000~
## $ WKSGEST      <dbl> 5.500000e+01, 5.000000e+00, 0.000000e+00, 1.100000e+01, 2~
## $ MOSGEST      <dbl> 5.00000e+00, 5.50000e+01, 0.00000e+00, 2.00500e+03, 5.500~
## $ DK1GEST      <dbl> 5.100000e+01, 5.000000e+00, 0.000000e+00, 2.519790e+16, 5~
## $ DK2GEST      <dbl> 2002, 5, 5, 112, 11, 5, 199751, 55, 15, 1, 2719725, 22155~
## $ DK3GEST      <dbl> 2.519765e+06, 2.015000e+03, 5.500000e+01, 2.012000e+07, 1~
## $ BABYSEX1     <dbl> 2.115100e+04, 2.719880e+12, 5.000000e+00, 2.005120e+08, 2~
## $ BIRTHWGT_LB1 <dbl> 1.550000e+02, 3.500000e+01, 1.000000e+00, 3.519800e+12, 1~
## $ BIRTHWGT_OZ1 <dbl> 2.002000e+04, 3.200000e+01, 0.000000e+00, 8.000000e+00, 1~
## $ LOBTHWGT1    <dbl> 2.00255e+05, 1.00000e+00, 5.50000e+01, 2.01511e+05, 1.993~
## $ BABYSEX2     <dbl> 0, 201551, 0, 1, 0, 142014000000, 4, 42111, 21, 411, 7199~
## $ BIRTHWGT_LB2 <dbl> 1.000000e+00, 0.000000e+00, 4.245510e+05, 1.200200e+04, 1~
## $ BIRTHWGT_OZ2 <dbl> 3.200212e+10, 2.200000e+01, 0.000000e+00, 2.219800e+16, 1~
## $ LOBTHWGT2    <dbl> 1.00000e+00, 1.00000e+00, 0.00000e+00, 1.10000e+01, 1.000~
## $ BABYSEX3     <dbl> 7.000000e+00, 1.200913e+10, 5.555500e+04, 1.000000e+00, 5~
## $ BIRTHWGT_LB3 <dbl> 1.00000e+00, 1.00000e+01, 5.55550e+04, 1.61995e+11, 4.000~
## $ BIRTHWGT_OZ3 <dbl> 1.020150e+13, 1.234568e+07, 5.000000e+00, 9.000000e+00, 1~
## $ LOBTHWGT3    <dbl> 1.00000e+00, 8.00000e+00, 5.55000e+02, 5.00000e+00, 4.000~
## $ BABYDOB_Y    <dbl> 0.00000e+00, 1.10000e+01, 1.00000e+00, 4.00000e+00, 6.000~
## $ KIDAGE       <dbl> 1.000000e+00, 1.100000e+01, 5.000000e+00, 5.199710e+12, 6~
## $ HPAGELB      <dbl> 1, 111, 5, 8, 1, 6, 552, 1, 8, 9112, 71392122015, 0, 6, 0~
## $ BIRTHPLC     <dbl> 1, 111, 0, 7, 1, 5, 55555, 6, 5, 915, 1, 55555, 5, 55555,~
## $ PAYBIRTH1    <dbl> 1.00000e+01, 1.00000e+00, 1.00000e+00, 5.00000e+00, 6.100~
## $ PAYBIRTH2    <dbl> 55555, 8, 5, 1, 71386, 41, 1, 6, 6, 4, 4, 5, 1, 5, 31, 4,~
## $ PAYBIRTH3    <dbl> 5.55555e+05, 1.00000e+00, 5.50000e+01, 1.00000e+00, 6.201~
## $ CSECPRIM     <dbl> 552, 8, 95, 71, 1, 3134, 55, 6, 6, 1, 10, 1, 5, 1, 22016,~
## $ CSECMED1     <dbl> 55555, 11, 15, 81391112015, 1920, 1, 11555555155, 11, 11,~
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## $ CSECMED2    <dbl> 1.000000e+00, 8.000000e+00, 3.000000e+00, 1.000000e+00, 6~
## $ CSECMED3    <dbl> 1.00000e+00, 5.00000e+00, 1.00000e+00, 2.22300e+03, 9.199~
## $ CSECMED4    <dbl> 5.000000e+00, 4.000000e+00, 1.000000e+00, 6.000000e+00, 1~
## $ CSECMED5    <dbl> 5.110000e+02, 5.200910e+12, 1.364000e+03, 7.200310e+12, 1~
## $ CSECMED6    <dbl> 51555555555, 6, 820131364, 10, 555, 131387, 6, 3, 4, 2119~
## $ CSECPLAN    <dbl> 9.500000e+01, 3.000000e+00, 2.400000e+01, 1.000000e+00, 1~
## $ KNEWPREG    <dbl> 1.500000e+01, 1.000000e+00, 1.345500e+234, 5.550000e+02, ~
## $ TRIMESTR    <dbl> 4.000000e+00, 1.000000e+00, 1.364139e+07, 1.555150e+05, 5~
## $ LTRIMEST    <dbl> 1.000000e+00, 3.100000e+01, 2.700000e+01, 5.522005e+06, 1~
## $ PRIORSMK    <dbl> 1.000000e+00, 8.139111e+10, 3.000000e+00, 5.000000e+00, 1~
## $ POSTSMKS    <dbl> 6.000000e+00, 1.000000e+00, 3.000000e+00, 1.515111e+06, 1~
## $ NPOSTSMK    <dbl> 5.136900e+04, 2.227000e+03, 1.555556e+08, 1.011510e+12, 1~
## $ GETPRENA    <dbl> 1.201414e+08, 4.000000e+00, 3.000000e+00, 9.500000e+01, 1~
## $ BGNPRENA    <dbl> 3.000000e+01, 2.201510e+12, 3.000000e+00, 1.100000e+01, 1~
## $ PNCTRIM     <dbl> 5.134500e+230, 1.000000e+01, 3.000000e+00, 3.000000e+00, ~
## $ LPNCTRI     <dbl> 13691390, 55555, 3, 5, 1, 11551555555, 44995, 55555, 4, 0~
## $ LIVEHERE1   <dbl> 2.100000e+01, 5.555550e+05, 3.000000e+00, 9.000000e+00, 1~
## $ ALIVENOW1   <dbl> 4.000000e+00, 5.520000e+02, 3.000000e+00, 4.000000e+00, 2~
## $ WHENDIED_Y1 <dbl> 4.000000e+00, 5.555500e+04, 3.000000e+00, 1.000000e+00, 1~
## $ WHENLEFT_Y1 <dbl> 5.555556e+08, 1.000000e+00, 3.000000e+00, 1.000000e+00, 4~
## $ LASTAGE1    <dbl> 4.00000e+00, 1.00000e+00, 3.00000e+00, 2.00000e+00, 1.134~
## $ WHERENOW1   <dbl> 4, 5, 3, 11150, 13451389, 1, 4, 0, 55555, 515, 6, 3, 1116~
## $ LEGAGREE1   <dbl> 4.000000e+00, 5.500000e+01, 3.000000e+00, 4.000000e+00, 4~
## $ PARENEND1   <dbl> 4.000000e+00, 5.151116e+10, 3.000000e+00, 1.134600e+235, ~
## $ ANYNURSE1   <dbl> 4, 95, 3, 13451391, 6, 3200913111, 4, 15, 55555, 1, 6, 55~
## $ FEDSOLID1   <dbl> 4, 15, 3, 46, 6, 17, 4, 4, 1, 1, 6, 5, 37, 0, 3, 13201313~
## $ FRSTEATD_N1 <dbl> 4, 8, 3, 84, 555555555, 3, 4, 7, 1, 6, 6, 51323355, 24, 8~
## $ FRSTEATD_P1 <dbl> 4.0000e+00, 1.0000e+00, 3.0000e+00, 1.2610e+03, 6.0000e+0~
## $ FRSTEATD1   <dbl> 4.000000e+00, 1.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ QUITNURS1   <dbl> 4.000000e+00, 1.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ AGEQTNUR_N1 <dbl> 4, 11287, 3, 555555555, 6, 13451389, 4, 11331, 95, 3, 6, ~
## $ AGEQTNUR_P1 <dbl> 4.000000e+00, 8.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ AGEQTNUR1   <dbl> 4, 3200712871, 3, 6, 6, 1, 4, 7, 3, 13451389, 6, 1, 3, 55~
## $ LIVEHERE2   <dbl> 4.0000e+00, 1.4000e+01, 3.0000e+00, 6.0000e+00, 6.0000e+0~
## $ ALIVENOW2   <dbl> 4, 3, 3, 6, 6, 555555555, 4, 12, 1, 12, 6, 1, 3, 21, 1, 6~
## $ WHENDIED_Y2 <dbl> 4.0000e+00, 1.0000e+00, 3.0000e+00, 6.0000e+00, 6.0000e+0~
## $ WHENLEFT_Y2 <dbl> 4.000000e+00, 8.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ LASTAGE2    <dbl> 4.00000e+00, 1.13460e+235, 3.00000e+00, 6.00000e+00, 6.00~
## $ WHERENOW2   <dbl> 4, 13451391, 3, 6, 6, 1, 4, 3, 7, 555555555, 6, 725, 3, 3~
## $ LEGAGREE2   <dbl> 4, 46, 3, 6, 6, 1, 4, 3, 4200913121, 4, 6, 27, 3, 6, 1, 6~
## $ PARENEND2   <dbl> 4.0000e+00, 3.6000e+01, 1.3451e+187, 6.0000e+00, 6.0000e+~
## $ ANYNURSE2   <dbl> 4.000000e+00, 1.309000e+03, 1.111110e+27, 6.000000e+00, 6~
## $ FEDSOLID2   <dbl> 1.345100e+183, 8.000000e+00, 0.000000e+00, 6.000000e+00, ~
## $ FRSTEATD_N2 <dbl> 1.111110e+21, 8.000000e+00, 1.000010e+26, 6.000000e+00, 6~
## $ FRSTEATD_P2 <dbl> 0, 555515555, 2, 6, 6, 1, 4, 1, 7, 4, 6, 5, 3, 11155, 1, ~
## $ FRSTEATD2   <dbl> 1.00000e+20, 8.00000e+00, 3.00000e+00, 6.00000e+00, 6.000~
## $ QUITNURS2   <dbl> 1, 8, 3, 6, 6, 1, 4, 1, 13451391, 1, 6, 0, 3, 5, 1, 6, 5,~
## $ AGEQTNUR_N2 <dbl> 4, 8, 93, 6, 6, 1, 4, 1, 46, 1, 6, 0, 3, 5555555555, 1, 6~
## $ AGEQTNUR_P2 <dbl> 5, 8, 5, 6, 6, 1, 4, 1, 1995, 1, 6, 5555, 3, 5, 19, 6, 5,~
## $ AGEQTNUR2   <dbl> 8, 8, 15, 6, 6, 1, 4, 1, 420091312, 1, 6, 5, 3, 55223455,~
## $ LIVEHERE3   <dbl> 8, 8, 11155551, 6, 6, 1, 4, 4, 3, 1, 6, 21, 3, 3, 19, 6, ~
## $ ALIVENOW3   <dbl> 1.0000e+00, 8.0000e+00, 5.5000e+01, 6.0000e+00, 6.0000e+0~
## $ WHENDIED_Y3 <dbl> 0, 8, 5, 6, 6, 1, 4, 1, 3, 1, 6, 1111115, 3, 1, 19, 6, 5,~
## $ WHENLEFT_Y3 <dbl> 1, 8, 31, 4, 6, 1, 4, 1, 7, 1, 6, 55, 3, 2, 19, 6, 5, 6, ~
```

```
## $ LASTAGE3      <dbl> 555556000000, 8, 3, 6, 6, 1, 4, 4, 155555555, 1, 6, 5, 3,~
## $ WHERENOW3     <dbl> 5, 8, 1, 4, 6, 1, 4, 4, 3, 1, 6, 5, 3, 6, 19, 6, 5, 6, 55~
## $ LEGAGREE3     <dbl> 9, 8, 53, 6, 6, 1, 4, 1, 7, 1, 6, 55, 3, 8, 19, 6, 5, 6, ~
## $ PARENEND3     <dbl> 0.00000e+00, 8.00000e+00, 1.00000e+00, 4.00000e+00, 6.000~
## $ ANYNURSE3     <dbl> 2125, 8, 6, 6, 6, 1, 4, 1, 7, 1, 6, 1, 3, 3, 19, 6, 5, 6,~
## $ FEDSOLID3     <dbl> 5.000000e+00, 8.000000e+00, 1.000000e+00, 4.000000e+00, 6~
## $ FRSTEATD_N3   <dbl> 1.000000e+00, 8.000000e+00, 6.000000e+00, 6.000000e+00, 6~
## $ FRSTEATD_P3   <dbl> 2125, 8, 15, 4, 6, 1, 4, 1, 3, 1, 6, 1, 1, 1, 19, 6, 5, 6~
## $ FRSTEATD3     <dbl> 11, 8, 991555, 6, 6, 4, 4, 7, 7, 1, 6, 3, 1, 711, 19, 6, ~
## $ QUITNURS3     <dbl> 5125, 8, 5, 4, 6, 7, 4, 7, 3, 1, 6, 8, 4, 3, 19, 6, 5, 6,~
## $ AGEQTNUR_N3   <dbl> 8.5555e+04, 8.0000e+00, 5.0000e+00, 6.0000e+00, 6.0000e+0~
## $ AGEQTNUR_P3   <dbl> 2.52000e+02, 8.00000e+00, 1.50000e+01, 4.00000e+00, 6.000~
## $ AGEQTNUR3     <dbl> 5.000000e+00, 8.000000e+00, 5.000000e+00, 6.000000e+00, 6~
## $ PRGOUTCOME    <dbl> 5.000000e+00, 8.000000e+00, 5.515556e+09, 4.000000e+00, 6~
## $ OUTCOM_S      <dbl> 4.5e+01, 8.0e+00, 5.0e+00, 6.0e+00, 6.0e+00, 1.0e+00, 1.0~
## $ DATEND        <chr> "1", "1", "3E+23", "5", "1", "5", "12001", "1", "3", "5",~
## $ FMARITAL      <chr> "2530", "1", "42420000173", "245", "5", "0", "1", "19", "~
## $ RMARITAL      <chr> "20072013", "1", "820002847", "355121144", "1151", "0", "~
## $ HIEDUC        <chr> "11", "2", "", "111144", "11", "5", "55555555", "2", "1.1~
## $ METRO         <chr> "0", "32", "", "5", "2", "1", "4", "1", "1", "3", "3E+23"~
## $ DATEND_I      <chr> "1.12889E+18", "1", "", "1", "4E+23", "23", "19202325", "~
## $ AGEPREG_I     <chr> "1", "1.21323E+17", "", "1", "3", "1", "1.9972E+15", "8",~
## $ DATECON_I     <chr> "2", "1", "", "1", "3", "2E+23", "18202224", "910", "25",~
## $ FMARCON5_I    <chr> "11", "45", "", "5.55556E+12", "202227", "22", "1.99819E+~
## $ RMARCON6_I    <chr> "11", "2", "", "313", "1.9932E+11", "0", "1", "5", "1", "~
## $ LEARNPRG_I    <chr> "11", "1", "", "313", "202126", "0", "121998", "515", "0"~
## $ LBW1_I        <chr> "2", "5", "", "9.22222E+42", "551", "1.11222E+18", "1995"~
## $ LIVCHILD_I    <chr> "222", "15", "", "2", "551", "1.51139E+11", "1211", "735"~
## $ OLDWANTR_I    <chr> "41270000", "11", "", "0", "55", "4", "0", "11", "995", "~
## $ OLDWANTP_I    <chr> "93", "2.11656E+11", "", "2", "11", "1E+66", "1.19972E+42~
## $ WANTRESP_I    <chr> "610005968.1", "3", "", "20211", "121995", "1.11114E+14",~
## $ WANTPART_I    <chr> "75.64", "3", "", "20022005", "22", "2", "1E+69", "1", "1~
## $ TOOSOON_I     <chr> "", "1", "", "2224", "5", "1", "1.12889E+18", "0", "3", "~
## $ NEWWANTR_I    <chr> "", "1", "", "20022004", "1995", "2", "1", "0", "5", "2E+~
## $ AGER_I        <chr> "", "1", "", "2123", "2211", "5", "2", "5551", "5", "4", ~
## $ FMARITAL_I    <chr> "", "0", "", "51", "1", "1", "1", "65", "15", "3", "4", "~
## $ RMARITAL_I    <chr> "", "55", "", "51", "0", "2", "2", "45", "5", "0", "8E+69~
## $ EDUCAT_I      <chr> "", "55555555", "", "55", "1.19932E+26", "5", "1", "1", "~
## $ HIEDUC_I      <chr> "", "1", "", "56", "3.31139E+14", "1", "11732222", "1", "~
## $ RACE_I        <chr> "", "2", "", "1120022234", "6", "1311", "3222", "0", "551~
## $ HISPANIC_I    <chr> "", "1.11112E+12", "", "4411", "6E+72", "0", "3222", "211~
## $ HISPRACE_I    <chr> "", "1", "", "102005", "188888811", "1", "2222", "115135"~
## $ HISPRACE2_I   <chr> "", "3", "", "2011", "2", "2000222", "3222", "11", "6", "~
## $ RCURPREG_I    <chr> "", "1", "", "1", "1", "20", "22", "3120", "5", "555", "4~
## $ PREGNUM_I     <chr> "", "5", "", "2.43031E+13", "4", "4.216E+20", "4", "5", "~
## $ PARITY_I      <chr> "", "5", "", "4111", "2", "66.84", "4", "3", "1", "5555",~
## $ CURR_INS_I    <chr> "", "5.55556E+30", "", "1", "1078661", "", "4", "3", "111~
## $ PUBASSIS_I    <chr> "", "2", "", "2", "552", "", "4", "1", "15", "3.1201E+15"~
## $ POVERTY_I     <chr> "", "2E+23", "", "3.20022E+26", "552", "", "4", "1", "1",~
## $ LABORFOR_I    <chr> "", "0", "", "1.91139E+14", "661", "", "1", "1", "111", "~
## $ RELIGION_I    <chr> "", "0", "", "6", "662", "", "1000222", "1", "15", "4111"~
## $ METRO_I       <chr> "", "0", "", "7E+69", "0", "", "22", "51", "1595", "0", "~
## $ WGT2015_2017  <chr> "", "0", "", "1", "8", "", "4E+26", "2", "1", "1", "2", "~
## $ SECU          <chr> "", "11", "", "188888811", "8", "", "820005755.5811421221~
```

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## $ SEST       <chr> "", "0", "", "2", "2", "", "", "21", "17", "61138811123",~
## $ CMINTVW    <chr> "", "1", "", "1", "222", "", "", "5.51511E+12", "16", "29~
## $ CMLSTYR    <chr> "", "1.20152E+26", "", "4", "22", "", "", "1", "7512314",~
## $ CMJAN3YR   <chr> "", "41139121123", "", "1", "3.231E+21", "", "", "5", "11~
## $ CMJAN4YR   <chr> "", "9", "", "4", "86.84", "", "", "3995", "11115", "21",~
## $ CMJAN5YR   <chr> "", "4", "", "2", "", "", "", "5", "1", "1.30889E+18", ""~
## $ QUARTER    <chr> "", "3E+69", "", "115022", "", "", "", "5", "1.31112E+17"~
## $ PHASE      <chr> "", "21", "", "32", "", "", "", "5.15556E+25", "1", "2", ~
## $ INTVWYEAR  <chr> "", "588888821", "", "32", "", "", "", "11", "0", "6", ""~
## $ X          <chr> "74", "", "4", "0", "", "", "1", "9999", "", "", "4111", ~
## $ X.1        <chr> "4", "", "4E+69", "0", "", "", "2", "1.11556E+32", "", ""~
## $ X.2        <chr> "1E+67", "", "1", "0", "", "", "1", "1", "", "", "1", "",~
## $ X.3        <chr> "11", "", "1", "1", "", "", "1", "3E+23", "", "", "1.2012~
## $ X.4        <chr> "3.21089E+11", "", "2888811", "1.21172E+18", "", "", "1",~
## $ X.5        <chr> "2", "", "2", "1.3214E+11", "", "", "1", "2", "", "", "12~
## $ X.6        <chr> "117", "", "1", "0", "", "", "1", "2", "", "", "53", "", ~
## $ X.7        <chr> "2", "", "3", "10", "", "", "10843232225", "0", "", "", "~
## $ X.8        <chr> "119532", "", "4", "54", "", "", "5555235", "222", "", ""~
## $ X.9        <chr> "32", "", "1", "7E+66", "", "", "5555235", "20072014", ""~
## $ X.10       <chr> "32", "", "3", "11", "", "", "3232225", "2027", "", "", "~
## $ X.11       <chr> "32", "", "4", "1.11221E+11", "", "", "6666236", "2007201~
## $ X.12       <chr> "32", "", "2", "2", "", "", "0", "2027", "", "", "2", "",~
## $ X.13       <chr> "1E+132", "", "11822222", "1", "", "", "8", "55", "", "",~
## $ X.14       <chr> "8", "", "3222", "2", "", "", "8", "66", "", "", "2", "",~
## $ X.15       <chr> "8", "", "3222", "1", "", "", "8", "55", "", "", "130053"~
## $ X.16       <chr> "1", "", "2222", "2", "", "", "8", "66", "", "", "33", ""~
## $ X.17       <chr> "1000222", "", "4222", "1", "", "", "8", "2", "", "", "33~
## $ X.18       <chr> "22", "", "1E+132", "13233", "", "", "8", "6", "", "", "5~
## $ X.19       <chr> "11250000170", "", "2", "3", "", "", "8", "0", "", "", "4~
## $ X.20       <chr> "820002907.1", "", "222", "3", "", "", "2", "996", "", ""~
## $ X.21       <chr> "71.85", "", "20", "3", "", "", "222", "4", "", "", "8", ~
## $ X.22       <chr> "", "", "00000000000000322700001571110003202023.7129952865~
## $ X.23       <chr> "", "", "", "1E+132", "", "", "1.213E+21", "0", "", "", "~
## $ X.24       <chr> "", "", "", "8", "", "", "143.2", "1", "", "", "8", "", "~
## $ X.25       <chr> "", "", "", "8", "", "", "", "1.20152E+26", "", "", "8", ~
## $ X.26       <chr> "", "", "", "8", "", "", "", "5.41141E+11", "", "", "8", ~
## $ X.27       <chr> "", "", "", "1", "", "", "", "50", "", "", "1", "", "", "~
## $ X.28       <chr> "", "", "", "1000222", "", "", "", "7", "", "", "1000222"~
## $ X.29       <chr> "", "", "", "2.213E+26", "", "", "", "1E+70", "", "", "22~
## $ X.30       <chr> "", "", "", "61", "", "", "", "1", "", "", "22310000", ""~
## $ X.31       <chr> "", "", "", "620004617.8", "", "", "", "6.88889E+16", "",~
## $ X.32       <chr> "", "", "", "71.85", "", "", "", "1", "", "", "610007011.~
## $ X.33       <chr> "", "", "", "", "", "", "", "1", "", "", "103.8", "", ""~
## $ X.34       <chr> "", "", "", "", "", "", "", "1", "", "", "", "", "", "", ~
## $ X.35       <chr> "", "", "", "", "", "", "", "1", "", "", "", "", "", "", ~
## $ X.36       <chr> "", "", "", "", "", "", "", "2", "", "", "", "", "", "", ~
## $ X.37       <chr> "", "", "", "", "", "", "", "125052", "", "", "", "", ""~
## $ X.38       <chr> "", "", "", "", "", "", "", "33", "", "", "", "", "", ""~
## $ X.39       <chr> "", "", "", "", "", "", "", "33", "", "", "", "", "", ""~
## $ X.40       <chr> "", "", "", "", "", "", "", "52", "", "", "", "", "", ""~
## $ X.41       <chr> "", "", "", "", "", "", "", "44", "", "", "", "", "", ""~
## $ X.42       <chr> "", "", "", "", "", "", "", "1E+134", "", "", "", "", ""~
## $ X.43       <chr> "", "", "", "", "", "", "", "4", "", "", "", "", "", ""~
## $ X.44       <chr> "", "", "", "", "", "", "", "4", "", "", "", "", "", "", ~
```

```
## $ X.45        <chr> "", "", "", "", "", "", "", "4", "", "", "", "", "", "", ~
## $ X.46        <chr> "", "", "", "", "", "", "", "4", "", "", "", "", "", "", ~
## $ X.47        <chr> "", "", "", "", "", "", "", "4", "", "", "", "", "", "", ~
## $ X.48        <chr> "", "", "", "", "", "", "", "1", "", "", "", "", "", "", ~
## $ X.49        <chr> "", "", "", "", "", "", "", "2000222", "", "", "", "", ""~
## $ X.50        <chr> "", "", "", "", "", "", "", "23", "", "", "", "", "", "",~
## $ X.51        <chr> "", "", "", "", "", "", "", "21420000", "", "", "", "", "~
## $ X.52        <chr> "", "", "", "", "", "", "", "39", "", "", "", "", "", "",~
## $ X.53        <chr> "", "", "", "", "", "", "", "211106049.189770496554351141~
## $ X.54        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.55        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.56        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.57        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.58        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.59        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.60        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.61        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.64        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.68        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.74        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.75        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.77        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.83        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.86        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.89        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.90        <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ X.119       <chr> "", "", "", "", "", "", "", "", "", "", "", "", "", "", "~
## $ RSCRNINF    <dbl> 323232112, 2323235, 2626265, 3535345, 4242425, 2323235, 3~
## $ RSCRAGE     <dbl> 3.220001e+06, 1.000000e+00, 1.000000e+00, 1.000000e+00, 1~
## $ RSCRHISP    <dbl> 1.120000e+02, 2.000000e+12, 2.000006e+06, 4.121100e+12, 3~
## $ RSCRRACE    <dbl> 5, 15512010, 50, 1352, 112, 50, 915, 50, 1, 50, 11115, 1,~
## $ AGE_A       <dbl> 915, 12, 5, 111119985, 5, 1, 91994, 5, 16512011, 5, 18111~
## $ AGE_R       <dbl> 51994, 5, 13512007, 116256000000, 16111992, 15512011, 112~
## $ AGESCRN     <dbl> 5.000000e+00, 5.000000e+00, 1.200000e+01, 3.350000e+02, 1~
## $ HISP        <dbl> 2.111110e+05, 2.555121e+10, 5.000000e+00, 1.350000e+02, 1~
## $ HISPGRP     <dbl> 1.100000e+01, 2.000000e+00, 5.000000e+00, 2.150000e+02, 2~
## $ PRIMLANG1   <dbl> 1, 135, 255111, 21, 11, 2, 145, 31, 3, 2, 3, 135, 4, 125,~
## $ PRIMLANG2   <dbl> 5, 125, 12, 2, 4, 235, 415, 1, 5, 135, 5, 125, 5, 55, 135~
## $ PRIMLANG3   <dbl> 1.25000e+02, 5.50000e+01, 3.00000e+00, 2.20052e+21, 5.000~
## $ ROSCNT      <dbl> 215, 5, 5, 11235, 125, 55, 2, 105, 55, 411201, 215, 5, 55~
## $ NUMCHILD    <dbl> 2.10000e+01, 0.00000e+00, 1.25000e+02, 5.00000e+00, 3.150~
## $ HHKIDS18    <dbl> 2.00000e+00, 0.00000e+00, 5.50000e+01, 5.50000e+01, 3.100~
## $ DAUGHT918   <dbl> 2.20132e+21, 0.00000e+00, 5.00000e+00, 1.50000e+01, 2.000~
## $ SON918      <dbl> 5.500000e+01, 5.000000e+00, 0.000000e+00, 1.100000e+01, 2~
## $ NONBIOKIDS  <dbl> 5.00000e+00, 5.50000e+01, 0.00000e+00, 2.00500e+03, 5.500~
## $ MARSTAT     <dbl> 5.100000e+01, 5.000000e+00, 0.000000e+00, 2.519790e+16, 5~
## $ FMARSTAT    <dbl> 2002, 5, 5, 112, 11, 5, 199751, 55, 15, 1, 2719725, 22155~
## $ FMARIT      <dbl> 2.519765e+06, 2.015000e+03, 5.500000e+01, 2.012000e+07, 1~
## $ EVRMARRY    <dbl> 2.115100e+04, 2.719880e+12, 5.000000e+00, 2.005120e+08, 2~
## $ HPLOCALE    <dbl> 1.550000e+02, 3.500000e+01, 1.000000e+00, 3.519800e+12, 1~
## $ MANREL      <dbl> 2.002000e+04, 3.200000e+01, 0.000000e+00, 8.000000e+00, 1~
## $ GOSCHOL     <dbl> 2.00255e+05, 1.00000e+00, 5.50000e+01, 2.01511e+05, 1.993~
## $ VACA        <dbl> 0, 201551, 0, 1, 0, 142014000000, 4, 42111, 21, 411, 7199~
## $ HIGRADE     <dbl> 1.000000e+00, 0.000000e+00, 4.245510e+05, 1.200200e+04, 1~
```

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## $ COMPGRD     <dbl> 3.200212e+10, 2.200000e+01, 0.000000e+00, 2.219800e+16, 1~
## $ DIPGED      <dbl> 1.00000e+00, 1.00000e+00, 0.00000e+00, 1.10000e+01, 1.000~
## $ EARNHS_Y    <dbl> 7.000000e+00, 1.200913e+10, 5.555500e+04, 1.000000e+00, 5~
## $ HISCHGRD    <dbl> 1.00000e+00, 1.00000e+01, 5.55550e+04, 1.61995e+11, 4.000~
## $ LSTGRADE    <dbl> 1.020150e+13, 1.234568e+07, 5.000000e+00, 9.000000e+00, 1~
## $ MYSCHOL_Y   <dbl> 1.00000e+00, 8.00000e+00, 5.55000e+02, 5.00000e+00, 4.000~
## $ HAVEDEG     <dbl> 0.00000e+00, 1.10000e+01, 1.00000e+00, 4.00000e+00, 6.000~
## $ DEGREES     <dbl> 1.000000e+00, 1.100000e+01, 5.000000e+00, 5.199710e+12, 6~
## $ EARNBA_Y    <dbl> 1, 111, 5, 8, 1, 6, 552, 1, 8, 9112, 71392122015, 0, 6, 0~
## $ EXPSCHL     <dbl> 1, 111, 0, 7, 1, 5, 55555, 6, 5, 915, 1, 55555, 5, 55555,~
## $ EXPGRADE    <dbl> 1.00000e+01, 1.00000e+00, 1.00000e+00, 5.00000e+00, 6.100~
## $ WTHPARNW    <dbl> 55555, 8, 5, 1, 71386, 41, 1, 6, 6, 4, 4, 5, 1, 5, 31, 4,~
## $ ONOWN       <dbl> 5.55555e+05, 1.00000e+00, 5.50000e+01, 1.00000e+00, 6.201~
## $ ONOWN18     <dbl> 552, 8, 95, 71, 1, 3134, 55, 6, 6, 1, 10, 1, 5, 1, 22016,~
## $ INTACT      <dbl> 55555, 11, 15, 81391112015, 1920, 1, 11555555155, 11, 11,~
## $ PARMARR     <dbl> 1.000000e+00, 8.000000e+00, 3.000000e+00, 1.000000e+00, 6~
## $ INTACT18    <dbl> 1.00000e+00, 5.00000e+00, 1.00000e+00, 2.22300e+03, 9.199~
## $ LVSIT14F    <dbl> 5.000000e+00, 4.000000e+00, 1.000000e+00, 6.000000e+00, 1~
## $ LVSIT14M    <dbl> 5.110000e+02, 5.200910e+12, 1.364000e+03, 7.200310e+12, 1~
## $ WOMRASDU    <dbl> 51555555555, 6, 820131364, 10, 555, 131387, 6, 3, 4, 2119~
## $ MOMDEGRE    <dbl> 9.500000e+01, 3.000000e+00, 2.400000e+01, 1.000000e+00, 1~
## $ MOMWORKD    <dbl> 1.500000e+01, 1.000000e+00, 1.345500e+234, 5.550000e+02, ~
## $ MOMFSTCH    <dbl> 4.000000e+00, 1.000000e+00, 1.364139e+07, 1.555150e+05, 5~
## $ MOM18       <dbl> 1.000000e+00, 3.100000e+01, 2.700000e+01, 5.522005e+06, 1~
## $ MANRASDU    <dbl> 1.000000e+00, 8.139111e+10, 3.000000e+00, 5.000000e+00, 1~
## $ R_FOSTER    <dbl> 6.000000e+00, 1.000000e+00, 3.000000e+00, 1.515111e+06, 1~
## $ EVRFSTER    <dbl> 5.136900e+04, 2.227000e+03, 1.555556e+08, 1.011510e+12, 1~
## $ MNYFSTER    <dbl> 1.201414e+08, 4.000000e+00, 3.000000e+00, 9.500000e+01, 1~
## $ DURFSTER    <dbl> 3.000000e+01, 2.201510e+12, 3.000000e+00, 1.100000e+01, 1~
## $ MENARCHE    <dbl> 5.134500e+230, 1.000000e+01, 3.000000e+00, 3.000000e+00, ~
## $ PREGNOWQ    <dbl> 13691390, 55555, 3, 5, 1, 11551555555, 44995, 55555, 4, 0~
## $ MAYBPREG    <dbl> 2.100000e+01, 5.555550e+05, 3.000000e+00, 9.000000e+00, 1~
## $ NUMPREGS    <dbl> 4.000000e+00, 5.520000e+02, 3.000000e+00, 4.000000e+00, 2~
## $ EVERPREG    <dbl> 4.000000e+00, 5.555500e+04, 3.000000e+00, 1.000000e+00, 1~
## $ CURRPREG    <dbl> 5.555556e+08, 1.000000e+00, 3.000000e+00, 1.000000e+00, 4~
## $ HOWPREG_N.y <dbl> 4.00000e+00, 1.00000e+00, 3.00000e+00, 2.00000e+00, 1.134~
## $ HOWPREG_P.y <dbl> 4, 5, 3, 11150, 13451389, 1, 4, 0, 55555, 515, 6, 3, 1116~
## $ NOWPRGDK.y  <dbl> 4.000000e+00, 5.500000e+01, 3.000000e+00, 4.000000e+00, 4~
## $ MOSCURRP.y  <dbl> 4.000000e+00, 5.151116e+10, 3.000000e+00, 1.134600e+235, ~
## $ NPREGS_S    <dbl> 4, 95, 3, 13451391, 6, 3200913111, 4, 15, 55555, 1, 6, 55~
## $ HASBABES    <dbl> 4, 15, 3, 46, 6, 17, 4, 4, 1, 1, 6, 5, 37, 0, 3, 13201313~
## $ NUMBABES    <dbl> 4, 8, 3, 84, 555555555, 3, 4, 7, 1, 6, 6, 51323355, 24, 8~
## $ NBABES_S    <dbl> 4.0000e+00, 1.0000e+00, 3.0000e+00, 1.2610e+03, 6.0000e+0~
## $ CMLASTLB    <dbl> 4.000000e+00, 1.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ CMLSTPRG    <dbl> 4.000000e+00, 1.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ CMFSTPRG    <dbl> 4, 11287, 3, 555555555, 6, 13451389, 4, 11331, 95, 3, 6, ~
## $ CMPG1BEG    <dbl> 4.000000e+00, 8.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ NPLACED     <dbl> 4, 3200712871, 3, 6, 6, 1, 4, 7, 3, 13451389, 6, 1, 3, 55~
## $ NDIED       <dbl> 4.0000e+00, 1.4000e+01, 3.0000e+00, 6.0000e+00, 6.0000e+0~
## $ NADOPTV     <dbl> 4, 3, 3, 6, 6, 555555555, 4, 12, 1, 12, 6, 1, 3, 21, 1, 6~
## $ TOTPLACD    <dbl> 4.0000e+00, 1.0000e+00, 3.0000e+00, 6.0000e+00, 6.0000e+0~
## $ OTHERKID    <dbl> 4.000000e+00, 8.000000e+00, 3.000000e+00, 6.000000e+00, 6~
## $ NOTHRKID    <dbl> 4.00000e+00, 1.13460e+235, 3.00000e+00, 6.00000e+00, 6.00~
## $ SEXOTHKD    <dbl> 4, 13451391, 3, 6, 6, 1, 4, 3, 7, 555555555, 6, 725, 3, 3~
```

```
## $ RELOTHKD     <dbl> 4, 46, 3, 6, 6, 1, 4, 3, 4200913121, 4, 6, 27, 3, 6, 1, 6~
## $ ADPTOTKD     <dbl> 4.0000e+00, 3.6000e+01, 1.3451e+187, 6.0000e+00, 6.0000e+~
## $ TRYADOPT     <dbl> 4.000000e+00, 1.309000e+03, 1.111110e+27, 6.000000e+00, 6~
## $ TRYEITHR     <dbl> 1.345100e+183, 8.000000e+00, 0.000000e+00, 6.000000e+00, ~
## $ STILHERE     <dbl> 1.111110e+21, 8.000000e+00, 1.000010e+26, 6.000000e+00, 6~
## $ DATKDCAM_Y   <dbl> 0, 555515555, 2, 6, 6, 1, 4, 1, 7, 4, 6, 5, 3, 11155, 1, ~
## $ OTHKDFOS     <dbl> 1.00000e+20, 8.00000e+00, 3.00000e+00, 6.00000e+00, 6.000~
## $ OKDDOB_Y     <dbl> 1, 8, 3, 6, 6, 1, 4, 1, 13451391, 1, 6, 0, 3, 5, 1, 6, 5,~
## $ OKBORNUS     <dbl> 4, 8, 93, 6, 6, 1, 4, 1, 46, 1, 6, 0, 3, 5555555555, 1, 6~
## $ OKDISABL1    <dbl> 5, 8, 5, 6, 6, 1, 4, 1, 1995, 1, 6, 5555, 3, 5, 19, 6, 5,~
## $ OKDISABL2    <dbl> 8, 8, 15, 6, 6, 1, 4, 1, 420091312, 1, 6, 5, 3, 55223455,~
## $ SEXOTHKD2    <dbl> 8, 8, 11155551, 6, 6, 1, 4, 4, 3, 1, 6, 21, 3, 3, 19, 6, ~
## $ RELOTHKD2    <dbl> 1.0000e+00, 8.0000e+00, 5.5000e+01, 6.0000e+00, 6.0000e+0~
## $ ADPTOTKD2    <dbl> 0, 8, 5, 6, 6, 1, 4, 1, 3, 1, 6, 1111115, 3, 1, 19, 6, 5,~
## $ TRYADOPT2    <dbl> 1, 8, 31, 4, 6, 1, 4, 1, 7, 1, 6, 55, 3, 2, 19, 6, 5, 6, ~
## $ TRYEITHR2    <dbl> 555556000000, 8, 3, 6, 6, 1, 4, 4, 155555555, 1, 6, 5, 3,~
## $ STILHERE2    <dbl> 5, 8, 1, 4, 6, 1, 4, 4, 3, 1, 6, 5, 3, 6, 19, 6, 5, 6, 55~
## $ DATKDCAM_Y2  <dbl> 9, 8, 53, 6, 6, 1, 4, 1, 7, 1, 6, 55, 3, 8, 19, 6, 5, 6, ~
## $ OTHKDFOS2    <dbl> 0.00000e+00, 8.00000e+00, 1.00000e+00, 4.00000e+00, 6.000~
## $ OKDDOB_Y2    <dbl> 2125, 8, 6, 6, 6, 1, 4, 1, 7, 1, 6, 1, 3, 3, 19, 6, 5, 6,~
## $ OKBORNUS2    <dbl> 5.000000e+00, 8.000000e+00, 1.000000e+00, 4.000000e+00, 6~
## $ OKDISABL5    <dbl> 1.000000e+00, 8.000000e+00, 6.000000e+00, 6.000000e+00, 6~
## $ OKDISABL6    <dbl> 2125, 8, 15, 4, 6, 1, 4, 1, 3, 1, 6, 1, 1, 1, 19, 6, 5, 6~
## $ SEXOTHKD3    <dbl> 11, 8, 991555, 6, 6, 4, 4, 7, 7, 1, 6, 3, 1, 711, 19, 6, ~
## $ RELOTHKD3    <dbl> 5125, 8, 5, 4, 6, 7, 4, 7, 3, 1, 6, 8, 4, 3, 19, 6, 5, 6,~
## $ ADPTOTKD3    <dbl> 8.5555e+04, 8.0000e+00, 5.0000e+00, 6.0000e+00, 6.0000e+0~
## $ TRYADOPT3    <dbl> 2.52000e+02, 8.00000e+00, 1.50000e+01, 4.00000e+00, 6.000~
## $ TRYEITHR3    <dbl> 5.000000e+00, 8.000000e+00, 5.000000e+00, 6.000000e+00, 6~
## $ STILHERE3    <dbl> 5.000000e+00, 8.000000e+00, 5.515556e+09, 4.000000e+00, 6~
## $ DATKDCAM_Y3  <dbl> 4.5e+01, 8.0e+00, 5.0e+00, 6.0e+00, 6.0e+00, 1.0e+00, 1.0~
## $ SEXOTHKD7    <chr> "1", "1", "3E+23", "5", "1", "5", "12001", "1", "3", "5",~
## $ OKDISABL30   <chr> "2530", "1", "42420000173", "245", "5", "0", "1", "19", "~
## $ SEXOTHKD9    <chr> "20072013", "1", "820002847", "355121144", "1151", "0", "~
## $ ADPTOTKD9    <chr> "11", "2", "", "111144", "11", "5", "55555555", "2", "1.1~
## $ TRYADOPT10   <chr> "0", "32", "", "5", "2", "1", "4", "1", "1", "3", "3E+23"~
## $ OKBORNUS10   <chr> "1.12889E+18", "1", "", "1", "4E+23", "23", "19202325", "~
## $ OKDISABL37   <chr> "1", "1.21323E+17", "", "1", "3", "1", "1.9972E+15", "8",~
## $ OKDISABL38   <chr> "2", "1", "", "1", "3", "2E+23", "18202224", "910", "25",~
## $ TRYEITHR11   <chr> "11", "45", "", "5.55556E+12", "202227", "22", "1.99819E+~
## $ STILHERE11   <chr> "11", "2", "", "313", "1.9932E+11", "0", "1", "5", "1", "~
## $ DATKDCAM_Y11 <chr> "11", "1", "", "313", "202126", "0", "121998", "515", "0"~
## $ OKBORNUS11   <chr> "2", "5", "", "9.22222E+42", "551", "1.11222E+18", "1995"~
## $ OKDISABL41   <chr> "222", "15", "", "2", "551", "1.51139E+11", "1211", "735"~
## $ SEXOTHKD12   <chr> "41270000", "11", "", "0", "55", "4", "0", "11", "995", "~
## $ RELOTHKD12   <chr> "93", "2.11656E+11", "", "2", "11", "1E+66", "1.19972E+42~
## $ ADPTOTKD12   <chr> "610005968.1", "3", "", "20211", "121995", "1.11114E+14",~
## $ TRYADOPT12   <chr> "75.64", "3", "", "20022005", "22", "2", "1E+69", "1", "1~
## $ TRYEITHR12   <chr> "", "1", "", "2224", "5", "1", "1.12889E+18", "0", "3", "~
## $ STILHERE12   <chr> "", "1", "", "20022004", "1995", "2", "1", "0", "5", "2E+~
## $ DATKDCAM_Y12 <chr> "", "1", "", "2123", "2211", "5", "2", "5551", "5", "4", ~
## $ OTHKDFOS12   <chr> "", "0", "", "51", "1", "1", "1", "65", "15", "3", "4", "~
## $ OKDDOB_Y12   <chr> "", "55", "", "51", "0", "2", "2", "45", "5", "0", "8E+69~
## $ OKBORNUS12   <chr> "", "55555555", "", "55", "1.19932E+26", "5", "1", "1", "~
## $ OKDISABL45   <chr> "", "1", "", "56", "3.31139E+14", "1", "11732222", "1", "~
```

```
## $ OKDISABL46  <chr> "", "2", "", "1120022234", "6", "1311", "3222", "0", "551~
## $ SEXOTHKD13  <chr> "", "1.11112E+12", "", "4411", "6E+72", "0", "3222", "211~
## $ RELOTHKD13  <chr> "", "1", "", "102005", "188888811", "1", "2222", "115135"~
## $ ADPTOTKD13  <chr> "", "3", "", "2011", "2", "2000222", "3222", "11", "6", "~
## $ TRYADOPT13  <chr> "", "1", "", "1", "1", "20", "22", "3120", "5", "555", "4~
## $ TRYEITHR13  <chr> "", "5", "", "2.43031E+13", "4", "4.216E+20", "4", "5", "~
## $ STILHERE13  <chr> "", "5", "", "4111", "2", "66.84", "4", "3", "1", "5555",~
## $ DATKDCAM_Y13 <chr> "", "5.55556E+30", "", "1", "1078661", "", "4", "3", "111~
## $ OTHKDFOS13  <chr> "", "2", "", "2", "552", "", "4", "1", "15", "3.1201E+15"~
## $ OKDDOB_Y13  <chr> "", "2E+23", "", "3.20022E+26", "552", "", "4", "1", "1",~
## $ OKBORNUS13  <chr> "", "0", "", "1.91139E+14", "661", "", "1", "1", "111", "~
## $ OKDISABL49  <chr> "", "0", "", "6", "662", "", "1000222", "1", "15", "4111"~
## $ OKDISABL50  <chr> "", "0", "", "7E+69", "0", "", "22", "51", "1595", "0", "~
## $ SEXOTHKD14  <chr> "", "0", "", "1", "8", "", "4E+26", "2", "1", "1", "2", "~
## $ RELOTHKD14  <chr> "", "11", "", "188888811", "8", "", "820005755.5811421221~
## $ ADPTOTKD14  <chr> "", "0", "", "2", "2", "", "", "21", "17", "61138811123",~
## $ TRYADOPT14  <chr> "", "1", "", "1", "222", "", "", "5.51511E+12", "16", "29~
## $ TRYEITHR14  <chr> "", "1.20152E+26", "", "4", "22", "", "", "1", "7512314",~
## $ STILHERE14  <chr> "", "41139121123", "", "1", "3.231E+21", "", "", "5", "11~
## $ DATKDCAM_Y14 <chr> "", "9", "", "4", "86.84", "", "", "3995", "11115", "21",~
## $ OTHKDFOS14  <chr> "", "4", "", "2", "", "", "", "5", "1", "1.30889E+18", ""~
## $ OKDDOB_Y14  <chr> "", "3E+69", "", "115022", "", "", "", "5", "1.31112E+17"~
## $ OKBORNUS14  <chr> "", "21", "", "32", "", "", "", "5.15556E+25", "1", "2", ~
## $ OKDISABL53  <chr> "", "588888821", "", "32", "", "", "", "11", "0", "6", ""~
## $ OKDISABL54  <chr> "", "6", "", "22", "", "", "", "3", "0", "13095522", "", ~
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## $ STILHERE15  <chr> "", "1287", "", "222", "", "", "", "22", "1", "1", "", ""~
## $ DATKDCAM_Y15 <chr> "", "11", "", "21", "", "", "", "0", "5311111", "1", "", ~
## $ OTHKDFOS15  <chr> "", "1", "", "1.221E+21", "", "", "", "0", "5", "8", "", ~
## $ OKDDOB_Y15  <chr> "", "1", "", "57.56", "", "", "", "0", "115111511", "8", ~
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## $ TRYADOPT16  <chr> "", "43320000", "", "", "", "", "", "11", "2", "", "", ""~
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## $ STILHERE16  <chr> "", "520003520.4", "", "", "", "", "", "688888811", "1511~
## $ DATKDCAM_Y16 <chr> "", "56.2", "", "", "", "", "", "2", "555511", "", "", ""~
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## $ OKBORNUS16  <chr> "", "", "", "", "", "", "", "1", "2", "", "", "", "", ""~
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```

```
#str(preg_resp_merged)
```

Questions for future steps.

**What do you not know how to do right now that you need to learn to import and cleanup
your dataset?** I believe I know everything I need to know right know in order to import and cleanup my
dataset. I don't know how to merge all 5 of my datasets since they represent different forms of information
pertaining to women's fertility, but I'm not sure if that's needed since it might be nice and more beneficial
to deeper diver into each set of data depending on my problem questions.

What information is not self-evident?

Discuss how you plan to uncover new information in the data that is not self-evident. I think my next steps for each dataset (1 solo & 2 merged) is to analyze each of their variables and uncover how I can recode them and/or generate new columns based on existing ones to find new information. There are already many variables to investigate, but there is so much more we can learn by generating new variables that will build on already existing details & info.

I also want to look into the normality of the dataset variables, and also investigate the relationships between any of the variables to ensure there is no multicollinearity.

Below questions are answered in same section

1. What are different ways you could look at this data?
2. What are different ways you could look at this data to answer the questions you want to answer?
3. How could you summarize your data to answer key questions?

One way I want to look at the data is by building aggregations out of it, especially for the fertility rate and country population merged dataset. I want to look into it country-wise and year-wise. It will allow me to visualize any trends (or lack there of) over the 36 years of data, which spans from the 1980's to the 2010's. By looking at the data year-wise, I want to understand how fertility rate has changed with the massive population growth in the world. With more people existing in the world, there are going to be more people assessing their reproductive abilities and depending on the outcome, it can have an impact on the fertility rate of a country/year.

The fertility_df only has 100 rows of data so it is quite smaller than the other 2 datasets, but it includes some great information on a participant and their given symptoms/life habits in relation to a 'Normal' or 'Altered' diagnosis of fertility. I want to build logistic regression models on this data to uncover the variables which have the greatest effect on the diagnosis of a patient/study participant. I am trying to uncover the factors that play into one's fertility, and I think this dataset will be really useful for that information.

I have a few questions regarding non-traditional methods of conception, i.e. adoption, IVF, etc. The merged preg & resp dataset provides information regarding a participant's birth control & conception methods even if they are not pregnant, which could show that they are having trouble conceiving. Therefore, this dataset will be really great for looking into those questions in how non-traditional methods are included in fertility data and information. I want to look at the distributions of these variables and understand how the sample can be generalized to the population of women trying to get pregnant. I also want to subset the data by women using traditional vs. non-traditional methods and do data comparisons to dive into how their fertility cases differ or are similar.

Slicing & Dicing

Do you plan to slice and dice the data in different ways, create new variables, or join separate data frames to create new summary information? Explain. I answered other parts of this question in the paragraph above but in terms of joining sepeate data frames, I created 2 merged datasets:

- Combined fertility_rate_df & country_pop_df
- Combined preg & fem_resp dataframes

What types of plots and tables will help you to illustrate the findings to your questions?

1. What is the weight of women's reproductive health in influencing a couple's ability to have children?

- Frequency tables
- Pie charts

2. What is the current difference in birth rates from one country to another?

- Bar charts with country code on the x-axis
- Histogram of birth rates for each year represented in the merged dataset

3. What is the average age for women to try to start having children?

- Aggregation tables
- Summary statistics

4. How have non-traditional methods of having children influenced birth rate, such as adoption/IVF/etc?

- Regression models, residual plots
- Correlation plots

5. What resources are provided to people who are experiencing issues with infertility?

- Subset table focused on resources mentioned in the preg & resp merged dataset
- Count tables for number of people actually accessing and utilizing those resources
- Bar charts for showing ranking of resources in terms of actual usage and popularity

6. What role does proper sex education play in fertility and reproductive health?

- Regression models, residual plots
- Correlation plots

7. Does the current calculation of birth rate account for non-traditional methods of child delivery?

- Summary statistics
- Aggregation of birth rate by method of conception – querying

8. What are the key factors that play a role in one's fertility, men and women?

- Regression, residual plots
- Correlation plots

Do you plan on incorporating any machine learning techniques to answer your research questions? Explain.

K-Means Clustering would be interesting to use to cluster the various countries in the rate_pop_merged dataset by their fertility rates to understand which are more similar and also different from eachother. It will give a global perspective and allow for more understanding on how the similar countries' characteristics play into/affect their fertility rates. I have never given much thought to how a country itself can affect its citizens' fertility, and by visualizing/grouping countries based on their fertility rates, I would hopefully be able to understand this fact in more detail.

I could also potentially use the machine learning technique of K-Nearest Neighbors to classify new records into the groupings of either being fertile or infertile, in terms of ease of conception. I would have to deliberate on which variables to include for the groupings, but I think this would be very interesting for seeing how fertility can be precited for an individual baed on the values of the given prediction variables.

Questions for future steps.

1. How are machine learning techniques applied using R?
2. How do you create aggregation/summary tables effectively in R?
3. What is the best way to rearrange data? What ideas/thinking should go into arranging data in an usable and valuable manner?