

# W3 practice

2023-01-26

## 0. data step

```
## [1] "id"      "age"      "gender"    "race"      "married"    "religion"
## [7] "educ"     "insure"    "qwb100"    "depress"    "health"     "died"
## [13] "livewill" "longwell" "pref"      "fpref"

## [1] 2536  16

##      id      age      gender      race
## Min.   : 1.0   Min.   :65.00   Min.   :1.000   Min.   :1.000
## 1st Qu.: 634.8 1st Qu.:69.00   1st Qu.:1.000   1st Qu.:1.000
## Median :1268.5 Median :73.00   Median :1.000   Median :1.000
## Mean   :1268.5 Mean   :73.88   Mean   :1.386   Mean   :1.311
## 3rd Qu.:1902.2 3rd Qu.:78.00   3rd Qu.:2.000   3rd Qu.:2.000
## Max.   :2536.0 Max.   :99.00   Max.   :2.000   Max.   :2.000
##      NA's :9      NA's :12
##      married      religion      educ      insure
## Min.   :0.0000   Min.   :0.0000   Min.   :1.000   Min.   :0.0000
## 1st Qu.:0.0000   1st Qu.:1.0000   1st Qu.:1.000   1st Qu.:0.0000
## Median :1.0000   Median :1.0000   Median :2.000   Median :1.0000
## Mean   :0.5645   Mean   :0.8386   Mean   :1.977   Mean   :0.7222
## 3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:3.000   3rd Qu.:1.0000
## Max.   :1.0000   Max.   :1.0000   Max.   :3.000   Max.   :1.0000
## NA's   :1      NA's   :21      NA's   :16      NA's   :23
##      qwb100      depress      health      died
## Min.   : 0.00   Min.   : 0.000   Min.   :1.000   Min.   :0.00000
## 1st Qu.: 35.38   1st Qu.: 1.000   1st Qu.:2.000   1st Qu.:0.00000
## Median : 48.89   Median : 4.000   Median :3.000   Median :0.00000
## Mean   : 49.05   Mean   : 5.017   Mean   :2.916   Mean   :0.08162
## 3rd Qu.: 62.03   3rd Qu.: 7.000   3rd Qu.:4.000   3rd Qu.:0.00000
## Max.   :100.00   Max.   :30.000   Max.   :5.000   Max.   :1.00000
## NA's   :94      NA's   :56      NA's   :2
##      livewill      longwell      pref      fpref
## Min.   :0.0000   Min.   :0.000   Min.   :0.000   Min.   :0.000
## 1st Qu.:0.0000   1st Qu.:0.000   1st Qu.:0.000   1st Qu.:0.000
## Median :0.0000   Median :0.000   Median :1.000   Median :0.000
## Mean   :0.1571   Mean   :0.121   Mean   :1.684   Mean   :1.058
## 3rd Qu.:0.0000   3rd Qu.:0.000   3rd Qu.:3.000   3rd Qu.:2.000
## Max.   :1.0000   Max.   :1.000   Max.   :6.000   Max.   :6.000
## NA's   :21      NA's   :107      NA's   :464

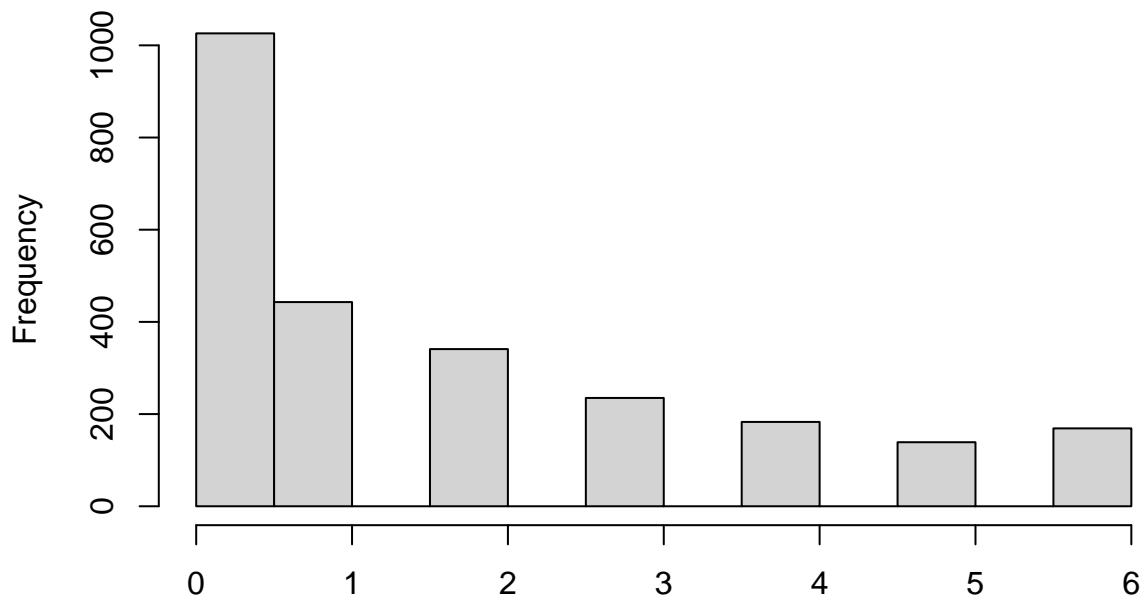
##      vars      n      mean      sd      median trimmed      mad      min      max      range      skew
## id      1 2536 1268.50 732.22 1268.50 1268.50 939.97 1 2536 2535 0.00
```

```
## age      2 2527   73.88   5.73   73.00   73.39   5.93   65   99   34   0.74
## gender   3 2536    1.39   0.49    1.00    1.36   0.00    1    2    1   0.47
## race     4 2524    1.31   0.46    1.00    1.26   0.00    1    2    1   0.81
## married  5 2535    0.56   0.50    1.00    0.58   0.00    0    1    1  -0.26
## religion  6 2515    0.84   0.37    1.00    0.92   0.00    0    1    1  -1.84
## educ     7 2520    1.98   0.80    2.00    1.97   1.48    1    3    2   0.04
## insure   8 2513    0.72   0.45    1.00    0.78   0.00    0    1    1  -0.99
## qwb100   9 2442   49.05  19.27   48.89   49.03  20.02    0  100  100   0.03
## depress 10 2480    5.02   4.73    4.00   4.34   4.45    0   30   30   1.28
## health  11 2534    2.92   1.20    3.00   2.90   1.48    1    5    4  -0.03
## died    12 2536    0.08   0.27    0.00   0.00   0.00    0    1    1   3.05
## livewill 13 2515    0.16   0.36    0.00   0.07   0.00    0    1    1   1.88
## longwell 14 2429    0.12   0.33    0.00   0.03   0.00    0    1    1   2.32
## pref    15 2536    1.68   1.91    1.00   1.40   1.48    0    6    6   0.93
## fpref   16 2072    1.06   1.60    0.00   0.73   0.00    0    6    6   1.45
##          kurtosis    se
## id        -1.20  14.54
## age         0.21   0.11
## gender     -1.78   0.01
## race       -1.34   0.01
## married    -1.93   0.01
## religion    1.38   0.01
## educ       -1.45   0.02
## insure     -1.02   0.01
## qwb100     -0.59   0.39
## depress     1.73   0.09
## health     -0.91   0.02
## died        7.33   0.01
## livewill    1.55   0.01
## longwell    3.39   0.01
## pref       -0.32   0.04
## fpref       1.03   0.04
```

## 1. Create a new variable (pref2cat)

```
dat$pref %>% hist
```

## Histogram of .



dat\$gender

```
## [1] 2 2 2 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 2 1 2 1 2 1 2 2 1 1 2
## [38] 1 1 1 2 2 1 1 2 1 1 1 2 2 2 1 2 1 1 2 1 1 1 2 2 2 1 2 2 1 2 1 2 2 2 1
## [75] 1 2 1 1 2 1 2 2 1 2 2 1 2 1 1 1 2 2 2 1 2 2 2 2 2 2 1 1 2 1 1 2 2 1 1
## [112] 2 2 1 2 2 1 1 1 2 1 1 1 1 1 2 1 2 2 1 1 2 2 1 2 1 2 1 1 2 2 1 2 2 2 2
## [149] 2 2 1 1 2 1 1 1 2 2 2 2 2 2 1 1 2 2 1 2 2 1 2 2 1 2 1 2 1 2 1 1 2 1 1
## [186] 2 2 2 1 2 1 1 2 1 2 2 1 2 1 1 1 1 2 2 1 2 2 1 1 1 2 1 1 2 2 1 2 2 2 2
## [223] 2 1 1 1 1 1 1 2 1 1 1 2 2 1 1 1 2 2 2 2 1 1 1 2 1 1 2 1 1 2 2 1 2 1 1 2
## [260] 2 1 1 1 1 1 2 1 1 2 1 1 1 1 2 1 2 1 1 2 1 2 2 1 2 1 2 2 1 2 1 2 2 1 1 1
## [297] 2 1 2 1 1 1 1 1 1 2 2 1 2 1 1 1 2 1 2 1 1 1 2 1 1 1 1 1 2 2 1 1 2 1 2 2 2
## [334] 1 1 1 1 1 2 1 1 1 1 2 1 1 2 2 1 2 1 1 1 2 2 1 2 1 2 1 1 2 2 1 2 1 2 1 1 1
## [371] 2 1 1 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 2 1 1 1 1 1 1 1 1 2 1 1 1 1 2
## [408] 1 1 2 1 2 1 2 2 1 2 1 1 1 2 1 1 1 2 1 2 1 1 2 1 1 2 1 1 2 2 1 1 2 2 1 2 1
## [445] 2 2 2 1 1 2 2 1 1 1 2 1 1 1 2 2 2 2 1 1 1 1 1 2 2 1 2 2 1 2 2 2 1 1 2 2 1
## [482] 2 1 1 1 2 1 1 1 2 1 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 1 1 1 2 1 1 1
## [519] 1 2 1 1 1 1 2 1 2 2 1 1 1 1 2 1 1 2 1 2 2 2 1 2 1 1 2 2 1 2 2 2 1 2 2 2 1 2
## [556] 1 1 2 1 1 1 1 2 1 2 1 1 1 1 1 1 2 1 2 2 1 2 2 1 2 1 1 2 2 2 1 2 1 2 1 1 1
## [593] 2 1 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 1 1
## [630] 1 2 1 2 1 2 1 2 1 2 1 1 2 2 1 1 2 1 1 1 1 2 1 1 1 2 1 1 1 1 2 1 1 1 1 2
## [667] 1 1 1 2 2 2 1 1 2 1 2 2 2 1 2 1 1 1 2 1 1 1 2 2 1 1 2 2 1 1 2 2 2 2 1 1 2
## [704] 2 2 1 1 2 1 1 1 2 1 2 2 1 1 1 2 2 1 1 1 2 2 2 2 1 1 1 1 2 2 1 1 2 2 1 2 2
## [741] 1 1 2 1 2 1 1 2 1 1 2 2 2 2 2 2 2 2 2 1 2 2 1 1 1 2 2 1 2 2 2 2 1 2 2 2 2
## [778] 2 1 1 1 1 2 1 1 2 1 1 1 1 1 1 2 1 1 2 1 1 1 2 1 1 1 1 1 2 2 1 1 1 1 2 2
## [815] 1 1 1 1 2 1 1 1 2 1 2 1 2 2 1 1 1 2 2 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1
## [852] 2 2 2 1 1 2 1 1 2 1 2 1 2 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 2 1 1 1 2 1 2 1 1
## [889] 2 2 1 2 2 2 1 1 2 2 1 1 1 1 2 2 1 1 2 1 1 2 1 1 1 1 1 2 2 1 2 2 1 2 2 2 1
## [926] 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 2 2 1 1 2 1 1 2 2 1 1 1 2 1 1 2 1
## [963] 2 1 2 2 2 2 1 1 1 2 2 1 2 1 2 1 1 1 2 1 2 2 1 2 1 1 2 1 1 2 2 1 1 1 2 1 1
```

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## [1000] 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1 1 2 2 1 2 1 1 1 1 1 1 2 1 2
## [1037] 2 1 1 2 1 1 1 2 1 2 1 2 2 2 2 1 1 2 2 2 1 2 1 1 1 2 1 1 2 2 2 1 1 1 1
## [1074] 1 1 2 1 1 1 1 1 1 1 1 2 2 1 2 1 2 1 1 1 2 1 1 1 1 2 1 2 1 1 1 1 1 2 2
## [1111] 1 1 1 1 1 2 2 2 1 2 2 1 2 1 2 2 2 1 2 2 1 1 1 1 1 2 2 1 2 2 2 2 2 2 2
## [1148] 1 2 1 1 1 1 2 2 1 1 1 2 1 2 2 2 1 1 2 2 1 2 2 1 2 2 1 1 2 1 2 1 2 1 2 2 1
## [1185] 2 2 2 1 2 1 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 2 1 1 1 2 1 2 1 2
## [1222] 1 1 2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 2 2 1 1 2 1 1 2 1 1 2 1 1 1 1 1
## [1259] 1 2 2 1 1 1 1 1 1 1 2 1 1 2 2 1 1 1 1 1 2 1 1 1 2 2 1 1 1 2 2 2 2 1 1 1
## [1296] 2 1 1 1 1 1 2 1 1 2 1 1 1 2 2 2 1 2 2 1 1 1 2 2 1 1 2 1 1 1 1 1 2 1 2 1 2
## [1333] 2 1 1 1 2 2 1 2 2 1 2 1 2 1 2 1 1 2 2 1 2 2 2 2 1 2 2 2 2 2 1 1 1 1 2 2 2
## [1370] 1 1 1 1 2 1 2 1 1 2 1 2 1 1 2 1 2 2 1 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 2 1
## [1407] 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1 2 1 1 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1
## [1444] 1 1 2 1 2 2 1 2 1 1 1 1 2 1 2 1 2 1 1 1 1 1 2 1 1 2 1 2 2 1 1 2 1 2 1 1
## [1481] 2 1 1 1 2 1 2 1 1 1 1 1 1 1 1 2 1 1 2 2 1 1 2 2 2 1 2 1 1 1 1 1 1 2 1 1 1
## [1518] 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 2
## [1555] 2 1 1 2 1 1 2 1 1 2 1 1 2 2 2 1 1 2 2 2 1 1 2 1 1 1 1 1 2 2 1 1 2 1 2 1 2
## [1592] 2 1 1 2 1 1 1 1 2 1 2 2 1 1 1 2 2 1 1 1 1 1 2 2 2 1 2 1 1 1 2 2 1 1 1 2
## [1629] 1 1 2 2 1 1 1 2 1 1 2 1 1 1 2 1 1 2 1 1 1 1 2 2 1 2 1 1 1 2 1 1 1 2 1 1
## [1666] 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 2 1 1 2 1 1 1 1
## [1703] 1 1 2 1 1 1 1 2 1 2 1 1 1 1 1 1 1 1 1 2 1 2 1 2 1 1 1 1 1 2 2 2 2 1 1 1 1
## [1740] 1 2 1 2 1 2 2 1 2 2 1 1 2 2 2 2 1 2 2 2 1 1 2 1 2 1 1 1 2 1 1 1 2 2 2 1 1
## [1777] 1 2 2 2 1 1 1 1 1 1 2 2 2 2 1 2 2 1 2 1 1 1 2 1 2 2 2 1 1 1 2 1 2 1 1 2 1
## [1814] 1 2 1 2 2 2 2 1 1 2 2 2 2 2 1 2 1 2 1 1 1 1 2 2 1 2 1 2 1 2 1 2 1 2 1 2
## [1851] 2 1 1 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
## [1888] 1 1 1 2 2 1 1 1 1 1 1 1 1 1 2 1 1 1 2 1 1 1 2 1 2 1 1 2 1 2 1 2 1 1 1 1 1
## [1925] 1 2 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 2 2 1 1 1 2 2 1 1 1 1 2 2 2 2 2 2 2 1
## [1962] 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 1 2 1 1 2 2 2 2 2 2 1 2 1 1 2 1 2 2 1 2 2
## [1999] 1 2 2 1 2 1 2 1 1 2 2 2 1 2 1 2 1 1 1 1 2 1 1 1 2 2 1 1 1 1 2 1 1 1 1 2
## [2036] 1 1 2 1 1 1 1 1 1 1 1 2 1 1 2 1 2 2 1 2 1 2 1 2 1 1 1 2 1 1 2 1 1 1 1 2 2
## [2073] 1 1 1 2 1 2 2 1 2 2 1 1 1 2 2 2 1 1 2 2 1 1 1 1 1 1 2 1 1 2 1 2 1 2 2 1 2
## [2110] 2 1 1 1 2 2 1 1 2 2 1 1 2 2 1 1 1 2 2 1 2 1 1 1 1 1 1 1 1 1 2 1 2 1 2 2 1 1
## [2147] 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1
## [2184] 1 2 2 2 1 1 1 2 1 1 1 2 2 1 1 1 2 1 1 2 1 2 1 1 2 1 2 1 1 2 2 2 2 1 1 2 2
## [2221] 1 1 1 1 1 1 2 2 1 2 1 2 2 2 2 2 1 2 2 1 1 2 1 2 1 2 2 1 2 2 1 1 1 2 1 1 2
## [2258] 2 1 1 1 2 2 2 1 2 1 2 2 2 1 2 2 2 1 2 1 2 1 1 2 1 2 1 2 1 2 1 1 2 2 1 2 1
## [2295] 1 2 1 1 1 1 2 2 1 1 1 2 2 2 2 2 1 1 2 1 2 1 1 2 1 1 2 1 2 2 2 2 2 1 1 1 2
## [2332] 1 1 2 1 1 2 1 1 1 1 2 1 1 2 1 2 2 2 2 2 2 1 2 2 1 1 2 2 2 2 1 1 2 2 1 2 2
## [2369] 1 2 1 2 2 1 2 1 2 1 1 1 2 2 2 2 2 1 2 2 2 2 1 1 2 2 1 1 1 1 1 2 2 2 1 2 1
## [2406] 1 1 2 1 1 2 1 1 1 2 2 1 1 1 1 2 2 1 1 2 2 2 1 2 1 2 2 1 1 1 2 1 1 1 2 1
## [2443] 1 2 1 1 2 2 2 1 1 1 2 2 1 1 2 2 1 2 2 1 2 2 1 1 1 1 2 2 1 1 1 2 2 1 1 1
## [2480] 1 2 2 1 1 2 1 2 1 1 2 1 2 1 1 1 1 1 2 1 2 2 2 2 2 1 1 1 1 1 1 2 2 2 2 1
## [2517] 1 2 1 1 2 1 1 1 1 1 1 2 1 2 2 2 1 2 1 1
## attr("label")
## [1] "Patient gender"
## attr("format.stata")
## [1] "%8.0g"

```

```

dat =
  dat %>%
  mutate(pref2cat = ifelse(pref >= 3, 1, 0),
         gender = ifelse(gender == 1, "F", "M"),
         race = ifelse(race == 1, "W", "B"))

```