Data Wrangling and Visualization 101 in R - Class 2

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1 Applying these methods to your own data

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1.2 Plotting your data

1.2.1 DeAngelis & Haefner group

1.2.1.1 Trial exclusions   Are there any criteria that would make you think that a trial should be excluded from further analysis?

```
##            conditionName apertureDegree probeEccentricity  relativeTilt
##   ControlCondition:263   0:234          0:488             Min.   :-96.5332
##   FullFlow1       :118   1:226          1:462             1st Qu.: -3.2852
##   GlobalFlow      :119   2:247                            Median :  2.6847
##   LocalFlow       :131   3:243                            Mean   :  0.8095
##   OppositeFlow    : 96                                    3rd Qu.: 15.0000
##   FullFlow2       :118                                    Max.   : 77.6791
##   SameFlow        :105
##    trialNumber      probeAngle    absoluteTilt     reactionTime      stimulusTime
##   Min.   :  1.00   -15:298     Min.   :-81.533   Min.   : 0.068   Min.   :2
##   1st Qu.: 19.00   0  :340     1st Qu.: -9.092   1st Qu.: 1.103   1st Qu.:2
##   Median : 43.00   15 :312     Median :  6.154   Median : 1.647   Median :2
##   Mean   : 48.99               Mean   :  1.031   Mean   : 2.726   Mean   :2
##   3rd Qu.: 75.00               3rd Qu.: 16.275   3rd Qu.: 2.989   3rd Qu.:2
```

```
## Max.    :142.00                 Max.    : 62.679   Max.    :361.686   Max.     :2
##
##     probeVelX              probeVelY        probeStartLocationX probeStartLocationY
## Min.    :-0.0776457   Min.    :-0.3000   Min.    :1.000     Min.     :0
## 1st Qu.:-0.0517638    1st Qu.:-0.2898    1st Qu.:1.000      1st Qu.:0
## Median : 0.0000000    Median :-0.2000    Median :1.000      Median :0
## Mean    :-0.0009263   Mean    :-0.2237   Mean    :1.149     Mean     :0
## 3rd Qu.: 0.0517638    3rd Qu.:-0.1932    3rd Qu.:1.500      3rd Qu.:0
## Max.    : 0.0776457   Max.    :-0.1932   Max.    :1.500     Max.     :0
##
## probeEndLocationX probeEndLocationY     sceneIndex
## Min.    :0.9224    Min.    :-0.30000   Min.    : 2.000
## 1st Qu.:1.0000     1st Qu.:-0.20000    1st Qu.: 4.000
## Median :1.0000     Median :-0.19319    Median : 6.000
## Mean    :1.1309    Mean    :-0.08535   Mean    : 5.924
## 3rd Qu.:1.4482     3rd Qu.: 0.20000    3rd Qu.: 8.000
## Max.    :1.5000    Max.    : 0.20000   Max.    :11.000
##
```

1.2.1.2 Relative tilt   Let's start with one subject in Experiment 1. Plot the relative tilt (your dependent variable) as a function of the probe's angle (probeAngle, 3 values), eccentricity (probeEccentricity, 2 values), apperature degree (aperatureDegree, 4 values) and the condition (conditionName).

```
## # A tibble: 950 x 16
##    conditionName apertureDegree probeEccentrici~ relativeTilt trialNumber
##    <fct>         <fct>          <fct>                   <dbl>       <dbl>
## 1 ControlCondi~ 0              1                          0           1
## 2 GlobalFlow    2              0                       13.5           2
## 3 FullFlow1     3              1                       21.3           3
## 4 LocalFlow     3              0                       18.1           4
## 5 ControlCondi~ 3              1                        5.08          5
## 6 FullFlow1     2              1                        5.19          6
## 7 ControlCondi~ 2              0                        2.74          7
## 8 GlobalFlow    0              1                        8.26          8
## 9 GlobalFlow    0              1                       24.3           9
## 10 GlobalFlow   0              1                       16.5          10
## # ... with 940 more rows, and 11 more variables: probeAngle <fct>,
## #   absoluteTilt <dbl>, reactionTime <dbl>, stimulusTime <dbl>,
## #   probeVelX <dbl>, probeVelY <dbl>, probeStartLocationX <dbl>,
## #   probeStartLocationY <dbl>, probeEndLocationX <dbl>,
## #   probeEndLocationY <dbl>, sceneIndex <dbl>
```

1.2.2 Jaeger group

1.2.2.1 Plotting all subjects' performance during exposure   Get the average reaction time (AdjustedRT) and accuracy (IsCorrect) of each subject and visualize the distribution of subjects with regard to these two variables.

```
## # A tibble: 87,020 x 16
##    Trial Response NumLDTrials Label NumAmbTrials Condition AudioType SpeakerSex
##    <dbl> <chr>          <dbl> <chr>        <dbl> <chr>     <chr>     <chr>
## 1     0 Non-word         100 S              10 10H       over-ear  woman
## 2     1 Word             100 S              10 10H       over-ear  woman
## 3     2 Non-word         100 S              10 10H       over-ear  woman
```

```
##  4       3 Non-word         100 S             10 10H         over-ear  woman
##  5       4 Word             100 S             10 10H         over-ear  woman
##  6       5 Word             100 S             10 10H         over-ear  woman
##  7       6 Non-word         100 S             10 10H         over-ear  woman
##  8       7 Word             100 S             10 10H         over-ear  woman
##  9       8 Non-word         100 S             10 10H         over-ear  woman
## 10       9 Non-word         100 S             10 10H         over-ear  woman
## # ... with 87,010 more rows, and 8 more variables: RightAnswer <chr>,
## #   Word <chr>, AdjustedRT <dbl>, ContainsFricative <lgl>,
## #   ContainsNormalFricative <lgl>, ContainsShiftedFricative <lgl>,
## #   IsCorrect <dbl>, Subject <dbl>
```

1.2.2.2 Plotting all subjects' performance during test

1.2.2.3 Relating subjects' performance during exposure and test Plott the boundary shift during test against the proportion of shifted words that were rated as words.

2 Session info

```
## - Session info ---------------------------------------------------------------
##  setting  value
##  version  R version 4.0.2 (2020-06-22)
##  os       macOS High Sierra 10.13.6
##  system   x86_64, darwin17.0
##  ui       X11
##  language (EN)
##  collate  en_US.UTF-8
##  ctype    en_US.UTF-8
##  tz       America/New_York
##  date     2020-11-03
##
## - Packages -------------------------------------------------------------------
##  package     * version  date       lib source
##  assertthat    0.2.1    2019-03-21 [1] CRAN (R 4.0.2)
##  backports     1.1.10   2020-09-15 [1] CRAN (R 4.0.2)
##  blob          1.2.1    2020-01-20 [1] CRAN (R 4.0.2)
##  broom         0.7.2    2020-10-20 [1] CRAN (R 4.0.2)
##  callr         3.5.1    2020-10-13 [1] CRAN (R 4.0.2)
##  cellranger    1.1.0    2016-07-27 [1] CRAN (R 4.0.2)
##  cli           2.1.0    2020-10-12 [1] CRAN (R 4.0.2)
##  colorspace    1.4-1    2019-03-18 [1] CRAN (R 4.0.2)
##  cowplot     * 1.1.0    2020-09-08 [1] CRAN (R 4.0.2)
##  crayon        1.3.4    2017-09-16 [1] CRAN (R 4.0.2)
##  data.table    1.13.2   2020-10-19 [1] CRAN (R 4.0.2)
##  DBI           1.1.0    2019-12-15 [1] CRAN (R 4.0.2)
##  dbplyr        1.4.4    2020-05-27 [1] CRAN (R 4.0.2)
##  desc          1.2.0    2018-05-01 [1] CRAN (R 4.0.2)
##  devtools      2.3.2    2020-09-18 [1] CRAN (R 4.0.2)
##  digest        0.6.27   2020-10-24 [1] CRAN (R 4.0.2)
##  dplyr       * 1.0.2    2020-08-18 [1] CRAN (R 4.0.2)
##  ellipsis      0.3.1    2020-05-15 [1] CRAN (R 4.0.2)
```

```
##   evaluate      0.14        2019-05-28 [1] CRAN (R 4.0.1)
##   fansi         0.4.1       2020-01-08 [1] CRAN (R 4.0.2)
##   forcats     * 0.5.0       2020-03-01 [1] CRAN (R 4.0.2)
##   fs            1.5.0       2020-07-31 [1] CRAN (R 4.0.2)
##   generics      0.1.0       2020-10-31 [1] CRAN (R 4.0.2)
##   ggplot2     * 3.3.2       2020-06-19 [1] CRAN (R 4.0.2)
##   glue          1.4.2       2020-08-27 [1] CRAN (R 4.0.2)
##   gtable        0.3.0       2019-03-25 [1] CRAN (R 4.0.2)
##   haven         2.3.1       2020-06-01 [1] CRAN (R 4.0.2)
##   hms           0.5.3       2020-01-08 [1] CRAN (R 4.0.2)
##   htmltools     0.5.0       2020-06-16 [1] CRAN (R 4.0.2)
##   htmlwidgets   1.5.2       2020-10-03 [1] CRAN (R 4.0.2)
##   httr          1.4.2       2020-07-20 [1] CRAN (R 4.0.2)
##   jsonlite      1.7.1       2020-09-07 [1] CRAN (R 4.0.2)
##   knitr         1.30        2020-09-22 [1] CRAN (R 4.0.2)
##   lazyeval      0.2.2       2019-03-15 [1] CRAN (R 4.0.2)
##   lifecycle     0.2.0       2020-03-06 [1] CRAN (R 4.0.2)
##   lubridate     1.7.9       2020-06-08 [1] CRAN (R 4.0.2)
##   magrittr    * 1.5         2014-11-22 [1] CRAN (R 4.0.2)
##   memoise       1.1.0       2017-04-21 [1] CRAN (R 4.0.2)
##   modelr        0.1.8       2020-05-19 [1] CRAN (R 4.0.2)
##   munsell       0.5.0       2018-06-12 [1] CRAN (R 4.0.2)
##   pillar        1.4.6       2020-07-10 [1] CRAN (R 4.0.2)
##   pkgbuild      1.1.0.9000  2020-08-06 [1] Github (r-lib/pkgbuild@3a87bd9)
##   pkgconfig     2.0.3       2019-09-22 [1] CRAN (R 4.0.2)
##   pkgload       1.1.0       2020-05-29 [1] CRAN (R 4.0.2)
##   plotly      * 4.9.2.1     2020-04-04 [1] CRAN (R 4.0.2)
##   prettyunits   1.1.1       2020-01-24 [1] CRAN (R 4.0.2)
##   processx      3.4.4       2020-09-03 [1] CRAN (R 4.0.2)
##   ps            1.4.0       2020-10-07 [1] CRAN (R 4.0.2)
##   purrr       * 0.3.4       2020-04-17 [1] CRAN (R 4.0.2)
##   R.matlab    * 3.6.2       2018-09-27 [1] CRAN (R 4.0.2)
##   R.methodsS3   1.8.1       2020-08-26 [1] CRAN (R 4.0.2)
##   R.oo          1.24.0      2020-08-26 [1] CRAN (R 4.0.2)
##   R.utils       2.10.1      2020-08-26 [1] CRAN (R 4.0.2)
##   R6            2.5.0       2020-10-28 [1] CRAN (R 4.0.2)
##   Rcpp          1.0.5       2020-07-06 [1] CRAN (R 4.0.2)
##   readr       * 1.4.0       2020-10-05 [1] CRAN (R 4.0.2)
##   readxl      * 1.3.1       2019-03-13 [1] CRAN (R 4.0.2)
##   remotes       2.2.0       2020-07-21 [1] CRAN (R 4.0.2)
##   reprex        0.3.0       2019-05-16 [1] CRAN (R 4.0.2)
##   rlang         0.4.8       2020-10-08 [1] CRAN (R 4.0.2)
##   rmarkdown     2.5         2020-10-21 [1] CRAN (R 4.0.2)
##   rprojroot     1.3-2       2018-01-03 [1] CRAN (R 4.0.2)
##   rstudioapi    0.11        2020-02-07 [1] CRAN (R 4.0.2)
##   rvest         0.3.6       2020-07-25 [1] CRAN (R 4.0.2)
##   scales        1.1.1       2020-05-11 [1] CRAN (R 4.0.2)
##   sessioninfo   1.1.1       2018-11-05 [1] CRAN (R 4.0.2)
##   stringi       1.5.3       2020-09-09 [1] CRAN (R 4.0.2)
##   stringr     * 1.4.0       2019-02-10 [1] CRAN (R 4.0.2)
##   testthat      3.0.0       2020-10-31 [1] CRAN (R 4.0.2)
##   tibble      * 3.0.4       2020-10-12 [1] CRAN (R 4.0.2)
##   tidyr       * 1.1.2       2020-08-27 [1] CRAN (R 4.0.2)
##   tidyselect    1.1.0       2020-05-11 [1] CRAN (R 4.0.2)
```

```
## tidyverse   * 1.3.0     2019-11-21 [1] CRAN (R 4.0.2)
## usethis       1.6.3     2020-09-17 [1] CRAN (R 4.0.2)
## utf8          1.1.4     2018-05-24 [1] CRAN (R 4.0.2)
## vctrs         0.3.4     2020-08-29 [1] CRAN (R 4.0.2)
## viridisLite   0.3.0     2018-02-01 [1] CRAN (R 4.0.1)
## withr         2.3.0     2020-09-22 [1] CRAN (R 4.0.2)
## xfun          0.19      2020-10-30 [1] CRAN (R 4.0.2)
## xml2          1.3.2     2020-04-23 [1] CRAN (R 4.0.2)
## yaml          2.2.1     2020-02-01 [1] CRAN (R 4.0.2)
##
## [1] /Library/Frameworks/R.framework/Versions/4.0/Resources/library
```