# Simple Corpus Stats

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## Description

Code for simple statistics of the corpora and subcorpora used for the analyses (i.e. file counts, character counts per file, etc.). Data are loaded from NaLaFi/data. Note that this does not include the TeDDi files. These are sampled in the sampler.Rmd file.

## Load libraries

If the libraries are not installed yet, you need to install them using, for example, the command: install.packages("ggplot2").

```
library(stringr)
library(ggplot2)
library(ggridges)
library(gridExtra)
library(plyr)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.0     v readr     2.1.4
## v forcats   1.0.0     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::arrange()   masks plyr::arrange()
## x dplyr::combine()   masks gridExtra::combine()
## x purrr::compact()   masks plyr::compact()
## x dplyr::count()     masks plyr::count()
## x dplyr::desc()      masks plyr::desc()
## x dplyr::failwith()  masks plyr::failwith()
## x dplyr::filter()    masks stats::filter()
## x dplyr::id()        masks plyr::id()
## x dplyr::lag()       masks stats::lag()
## x dplyr::mutate()    masks plyr::mutate()
## x dplyr::rename()    masks plyr::rename()
## x dplyr::summarise() masks plyr::summarise()
## x dplyr::summarize() masks plyr::summarize()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

## List files

List all the files in the directory "corpus".

```
file.list <- list.files(path = "~/Github/NaLaFi/data/",
                        recursive = T, full.names = T)
#print(file.list)
length(file.list)
```

```
## [1] 277
```

## Count number of files in writing and non-writing subfolders

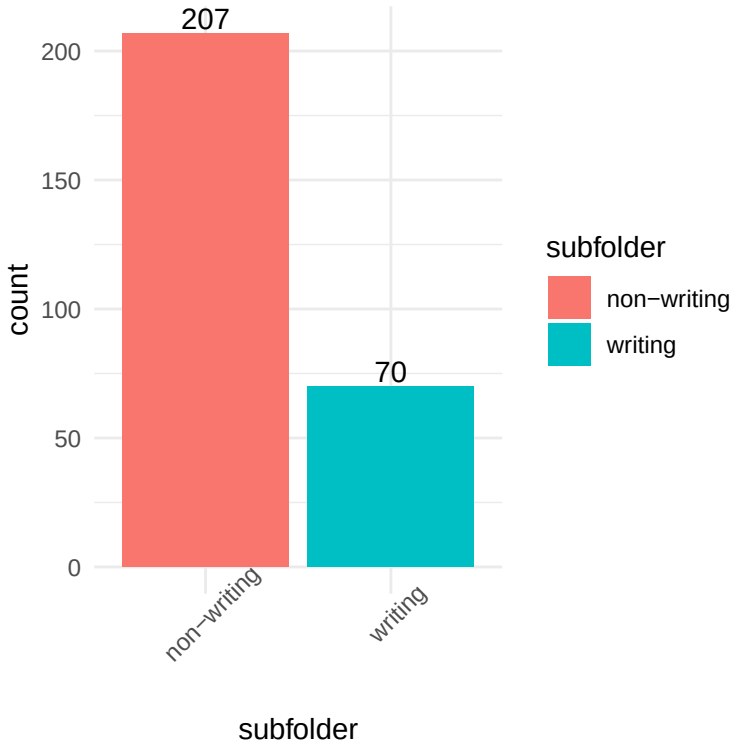
Count how many files are in each of the highest level subfolders of "data", and create a dataframe with counts.

```
#number of files
writing.count <- length(file.list[grepl("/writing", file.list)])
nonwriting.count <- length(file.list[grepl("non-writing", file.list)])

#create data frame
df <- data.frame(subfolder = c("writing", "non-writing"),
                 count = c(writing.count, nonwriting.count))
```

Create a bar plot with counts.

```
counts.plot <- ggplot(data = df, aes(x = subfolder, y = count, fill = subfolder)) +
  geom_bar(stat = "identity") +
  geom_text(aes(label = count), vjust = -0.2, color = "black", size = 4) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45))
counts.plot
```




## Safe figure to file

```
ggsave("~/Github/NaLaFi/figures/simpleStats_writing.pdf", counts.plot, dpi = 300,
       scale = 1, device = cairo_pdf)
```

```
## Saving 4 x 4 in image
```

## Count number of files in subfolders

Count how many files are in each of the highest level subfolders of "data", and create a dataframe with counts.

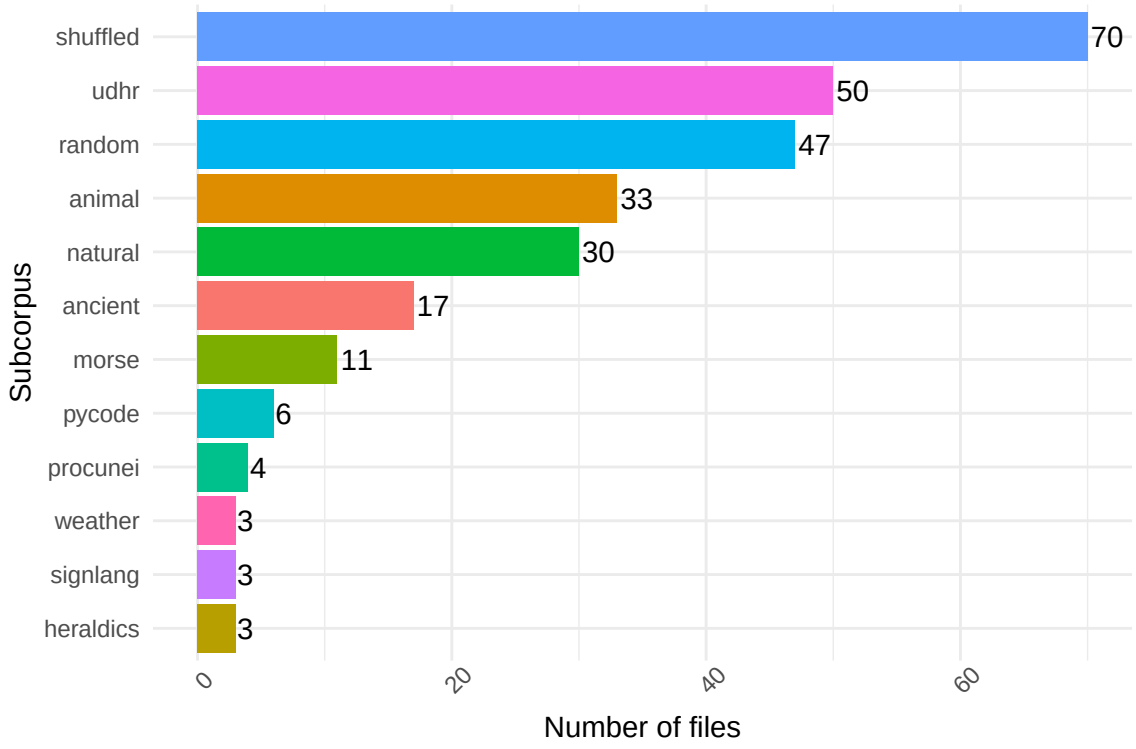
```
#number of "animal" files
animal.count <- length(file.list[grepl("animal", file.list)])
ancient.count <- length(file.list[grepl("ancient", file.list)])
heraldics.count <- length(file.list[grepl("heraldics", file.list)])
morse.count <- length(file.list[grepl("morse", file.list)])
natural.count <- length(file.list[grepl("natural", file.list)])
procunei.count <- length(file.list[grepl("proto-cuneiform", file.list)])
pycode.count <- length(file.list[grepl("pycode", file.list)])
random.count <- length(file.list[grepl("random", file.list)])
signlang.count <- length(file.list[grepl("signlang", file.list)])
shuffled.count <- length(file.list[grepl("shuffled", file.list)])
udhr.count <- length(file.list[grepl("udhr", file.list)])
weather.count <- length(file.list[grepl("weather", file.list)])

#create data frame
df <- data.frame(subfolder = c("animal", "ancient", "heraldics",
```

```
                                "morse", "natural", "procunei", "pycode", "random",
                                "signlang", "shuffled", "udhr", "weather"),
                    count = c(animal.count, ancient.count, heraldics.count,
                              morse.count, natural.count, procunei.count, pycode.count,
                              random.count, signlang.count, shuffled.count,
                              udhr.count, weather.count))
```

Create a bar plot with counts.

```
counts.plot <- ggplot(data = df, aes(x = count,
                        y = reorder(subfolder,(+count)), fill = subfolder)) +
  geom_bar(stat = "identity") +
  geom_text(aes(label = count), hjust = -0.1, color = "black", size = 4) +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 45)) +
  theme(legend.position = "none") +
  labs(y ="Subcorpus", x = "Number of files")
counts.plot
```




## Safe figure to file

```
#ggsave("~/Github/NaLaFi/figures/simpleStats_counts.pdf", counts.plot, dpi = 300,
#       scale = 1, device = cairo_pdf)
```

## Lengths of files in characters

### Read files and count characters

```
# set counter
counter = 0
# initialize dataframe to append results to
simpleStats.df <- data.frame(filename = character(0), subcorpus = character(0),
                             num.lines = numeric(0), num.chars = numeric(0))

for (file in file.list)
{
  # loading textfile
  textfile <- scan(file, what = "char", quote = "", comment.char = "",
                   encoding = "UTF-8", sep = "\n", skip = 7)
  textfile <- gsub("\t","",textfile) # remove tabs
  textfile <- gsub("<.*>","",textfile) # remove annotations marked by '<>'
  #print(head(textfile))
  # get filename
  filename <- basename(file)
  #print(filename) # for visual inspection
  # get subcorpus category
  subcorpus <- sub("_.*", "", filename)
  #print(subcorpus) # for visual inspection
  # count number of lines in text file
  num.lines <- length(textfile)
  # count the number of utf-8 characters in text file (note that this includes white
  # spaces)
  num.chars <- sum(nchar(textfile, type ="chars"))
  #print(num.chars) # for visual inspection
  # append results to dataframe
  local.df <- data.frame(filename, subcorpus, num.lines, num.chars)
  simpleStats.df <- rbind(simpleStats.df, local.df)
  # counter
  counter <- counter + 1
  #print(counter)
}
simpleStats.df
```

```
##                   filename subcorpus num.lines num.chars
## 1      animal_bhg_0001.txt    animal         1       765
## 2      animal_bhg_0002.txt    animal         1       272
## 3      animal_bhg_0003.txt    animal         1       734
## 4      animal_bhg_0004.txt    animal         1       341
## 5      animal_bhg_0005.txt    animal         1       182
## 6      animal_bhg_0006.txt    animal         1      1598
## 7      animal_bhg_0007.txt    animal         1      1118
## 8      animal_bhg_0008.txt    animal         1       995
## 9      animal_bhg_0009.txt    animal         1       213
## 10     animal_bhg_0010.txt    animal         1       426
## 11     animal_cad_0001.txt    animal         6        36
## 12     animal_cad_0002.txt    animal        17       151
## 13     animal_cav_0001.txt    animal         1       407
```

```
## 14     animal_cav_0002.txt    animal         1       636
## 15     animal_cav_0003.txt    animal         1       176
## 16     animal_cav_0004.txt    animal         1        23
## 17     animal_cav_0005.txt    animal         1       167
## 18     animal_cav_0006.txt    animal         1       116
## 19     animal_cav_0007.txt    animal         1        32
## 20     animal_cav_0008.txt    animal         1       161
## 21     animal_cav_0009.txt    animal         1       116
## 22     animal_cth_0001.txt    animal         1       287
## 23     animal_cth_0002.txt    animal         1       871
## 24     animal_cth_0003.txt    animal         1       391
## 25     animal_cth_0004.txt    animal         1       779
## 26     animal_cth_0005.txt    animal         1      1533
## 27     animal_cth_0006.txt    animal         1       608
## 28     animal_cth_0007.txt    animal         1       560
## 29     animal_cth_0008.txt    animal         1      2288
## 30     animal_cth_0009.txt    animal         1      1440
## 31     animal_cth_0010.txt    animal         1      4492
## 32     animal_cth_0011.txt    animal         1       604
## 33     animal_zfi_0001.txt    animal         3        31
## 34  heraldics_bla_0001.txt heraldics       503     44198
## 35  heraldics_bla_0002.txt heraldics       107      7498
## 36  heraldics_bla_0003.txt heraldics       100      6434
## 37      morse_moc_0001.txt     morse         1      1291
## 38      morse_moc_0002.txt     morse         3      2257
## 39      morse_moc_0003.txt     morse         1       175
## 40      morse_moc_0004.txt     morse         1       292
## 41      morse_moc_0005.txt     morse         1       252
## 42      morse_moc_0006.txt     morse         1       247
## 43      morse_moc_0007.txt     morse         1       229
## 44      morse_moc_0008.txt     morse         1       219
## 45      morse_moc_0009.txt     morse         1       269
## 46      morse_moc_0010.txt     morse         1       404
## 47      morse_moc_0011.txt     morse         1       239
## 48    natural_dna_0001.txt   natural       157     10958
## 49    natural_dna_0002.txt   natural       209     14621
## 50    natural_dna_0003.txt   natural       713     49910
## 51    natural_dna_0004.txt   natural       713     49910
## 52    natural_dna_0005.txt   natural       713     49910
## 53    natural_dna_0006.txt   natural       713     49910
## 54    natural_dna_0007.txt   natural       713     49910
## 55    natural_dna_0008.txt   natural       713     49910
## 56    natural_dna_0009.txt   natural       713     49910
## 57    natural_dna_0010.txt   natural       713     49910
## 58    natural_dna_0011.txt   natural       713     49910
## 59    natural_dna_0012.txt   natural       713     49910
## 60    natural_dna_0013.txt   natural       713     49910
## 61    natural_dna_0014.txt   natural       713     49910
## 62    natural_dna_0015.txt   natural       713     49910
## 63    natural_dna_0016.txt   natural       713     49910
## 64    natural_dna_0017.txt   natural       713     49910
## 65    natural_dna_0018.txt   natural       713     49910
## 66    natural_dna_0019.txt   natural       713     49910
## 67    natural_dna_0020.txt   natural       713     49910
```

```
## 68    natural_dna_0021.txt   natural       713     49910
## 69    natural_dna_0022.txt   natural       713     49910
## 70    natural_dna_0023.txt   natural       713     49910
## 71    natural_dna_0024.txt   natural       713     49910
## 72    natural_dna_0025.txt   natural       713     49910
## 73    natural_dna_0026.txt   natural       713     49910
## 74    natural_dna_0027.txt   natural       713     49910
## 75    natural_dna_0028.txt   natural       713     49910
## 76    natural_dna_0029.txt   natural       713     49910
## 77    natural_dna_0030.txt   natural       713     49910
## 78   procunei_prc_0001.txt  procunei        46      1096
## 79   procunei_prc_0002.txt  procunei        24       478
## 80   procunei_prc_0003.txt  procunei        18       344
## 81   procunei_prc_0004.txt  procunei        16       243
## 82     pycode_pyc_0001.txt    pycode        83      2515
## 83     pycode_pyc_0002.txt    pycode        25       570
## 84     pycode_pyc_0003.txt    pycode         9       136
## 85     pycode_pyc_0004.txt    pycode        43      1064
## 86     pycode_pyc_0005.txt    pycode        67      1370
## 87     pycode_pyc_0006.txt    pycode        34       884
## 88           random_ran_10    random         1      1000
## 89           random_ran_11    random         1      1000
## 90           random_ran_12    random         1      1000
## 91           random_ran_13    random         1      1000
## 92           random_ran_14    random         1      1000
## 93           random_ran_15    random         1      1000
## 94           random_ran_16    random         1      1000
## 95           random_ran_17    random         1      1000
## 96           random_ran_18    random         1      1000
## 97           random_ran_19    random         1      1000
## 98            random_ran_2    random         1      1000
## 99           random_ran_20    random         1      1000
## 100          random_ran_21    random         1      1000
## 101          random_ran_22    random         1      1000
## 102          random_ran_23    random         1      1000
## 103          random_ran_24    random         1      1000
## 104          random_ran_25    random         1      1000
## 105          random_ran_26    random         1      1000
## 106          random_ran_27    random         1      1000
## 107          random_ran_28    random         1      1000
## 108          random_ran_29    random         1      1000
## 109           random_ran_3    random         1      1000
## 110          random_ran_30    random         1      1000
## 111          random_ran_31    random         1      1000
## 112          random_ran_32    random         1      1000
## 113          random_ran_33    random         1      1000
## 114          random_ran_34    random         1      1000
## 115          random_ran_35    random         1      1000
## 116          random_ran_36    random         1      1000
## 117          random_ran_37    random         1      1000
## 118          random_ran_38    random         1      1000
## 119          random_ran_39    random         1      1000
## 120           random_ran_4    random         1      1000
## 121          random_ran_40    random         1      1000
```

```
## 122          random_ran_41    random         1      1000
## 123          random_ran_42    random         1      1000
## 124          random_ran_43    random         1      1000
## 125          random_ran_44    random         1      1000
## 126          random_ran_45    random         1      1000
## 127          random_ran_46    random         1      1000
## 128          random_ran_47    random         1      1000
## 129          random_ran_48    random         1      1000
## 130           random_ran_5    random         1      1000
## 131           random_ran_6    random         1      1000
## 132           random_ran_7    random         1      1000
## 133           random_ran_8    random         1      1000
## 134           random_ran_9    random         1      1000
## 135      shuffled_aii_0001  shuffled         1      1000
## 136      shuffled_akk_0001  shuffled         1      1000
## 137      shuffled_akk_0002  shuffled         1      1000
## 138      shuffled_arb_0001  shuffled         1      1000
## 139      shuffled_azj_0001  shuffled         1      1000
## 140      shuffled_azj_0002  shuffled         1      1000
## 141      shuffled_ben_0001  shuffled         1      1000
## 142      shuffled_blt_0001  shuffled         1      1000
## 143      shuffled_bod_0001  shuffled         1      1000
## 144      shuffled_bos_0001  shuffled         1      1000
## 145      shuffled_bos_0002  shuffled         1      1000
## 146      shuffled_chr_0001  shuffled         1      1000
## 147      shuffled_cmn_0001  shuffled         1      1000
## 148      shuffled_cmn_0002  shuffled         1      1000
## 149      shuffled_cre_0001  shuffled         1       261
## 150      shuffled_cre_0002  shuffled         1      1000
## 151      shuffled_csw_0001  shuffled         1      1000
## 152      shuffled_div_0001  shuffled         1      1000
## 153      shuffled_ela_0001  shuffled         1       556
## 154      shuffled_ela_0002  shuffled         1       692
## 155      shuffled_ell_0001  shuffled         1      1000
## 156      shuffled_eng_0001  shuffled         1      1000
## 157      shuffled_epo_0001  shuffled         1      1000
## 158      shuffled_eus_0001  shuffled         1      1000
## 159      shuffled_gaz_0001  shuffled         1      1000
## 160      shuffled_guj_0001  shuffled         1      1000
## 161      shuffled_heb_0001  shuffled         1      1000
## 162      shuffled_hin_0001  shuffled         1      1000
## 163      shuffled_hye_0001  shuffled         1      1000
## 164      shuffled_ibb_0001  shuffled         1      1000
## 165      shuffled_iii_0001  shuffled         1      1000
## 166      shuffled_ike_0001  shuffled         1      1000
## 167      shuffled_jav_0001  shuffled         1      1000
## 168      shuffled_jav_0002  shuffled         1      1000
## 169      shuffled_jpn_0001  shuffled         1      1000
## 170      shuffled_kal_0001  shuffled         1      1000
## 171      shuffled_kan_0001  shuffled         1      1000
## 172      shuffled_kat_0001  shuffled         1      1000
## 173      shuffled_khm_0001  shuffled         1      1000
## 174      shuffled_kkh_0001  shuffled         1      1000
## 175      shuffled_kor_0001  shuffled         1      1000
```

```
## 176      shuffled_lao_0001  shuffled         1      1000
## 177      shuffled_lug_0001  shuffled         1      1000
## 178      shuffled_mal_0001  shuffled         1      1000
## 179      shuffled_mya_0001  shuffled         1      1000
## 180      shuffled_pan_0001  shuffled         1      1000
## 181      shuffled_pra_0001  shuffled         1      1000
## 182      shuffled_rus_0001  shuffled         1      1000
## 183      shuffled_sin_0001  shuffled         1      1000
## 184      shuffled_sum_0001  shuffled         1      1000
## 185      shuffled_sum_0002  shuffled         1       349
## 186      shuffled_sum_0003  shuffled         1       165
## 187      shuffled_sum_0004  shuffled         1       227
## 188      shuffled_sum_0005  shuffled         1       255
## 189      shuffled_sum_0006  shuffled         1       137
## 190      shuffled_sum_0007  shuffled         1       219
## 191      shuffled_sum_0008  shuffled         1       188
## 192      shuffled_sum_0009  shuffled         1       567
## 193      shuffled_sum_0010  shuffled         1       226
## 194      shuffled_tam_0001  shuffled         1      1000
## 195      shuffled_tel_0001  shuffled         1      1000
## 196      shuffled_tgl_0001  shuffled         1      1000
## 197      shuffled_tha_0001  shuffled         1      1000
## 198      shuffled_tir_0001  shuffled         1      1000
## 199      shuffled_tsl_0001  shuffled         1       451
## 200      shuffled_tsl_0002  shuffled         1       180
## 201      shuffled_tsl_0003  shuffled         1       227
## 202      shuffled_vai_0001  shuffled         1      1000
## 203      shuffled_zgh_0001  shuffled         1      1000
## 204      shuffled_zul_0001  shuffled         1      1000
## 205   weather_wsy_0001.txt   weather         8       111
## 206   weather_wsy_0002.txt   weather         8       112
## 207   weather_wsy_0003.txt   weather        10       141
## 208   ancient_akk_0001.txt   ancient        10      2698
## 209   ancient_akk_0002.txt   ancient         8      1603
## 210   ancient_cre_0001.txt   ancient        19       270
## 211   ancient_cre_0002.txt   ancient        48      1099
## 212   ancient_ela_0001.txt   ancient        30       578
## 213   ancient_ela_0002.txt   ancient        59       692
## 214   ancient_pra_0001.txt   ancient         4      1101
## 215   ancient_sum_0001.txt   ancient        70      1560
## 216   ancient_sum_0002.txt   ancient        30       361
## 217   ancient_sum_0003.txt   ancient         9       171
## 218   ancient_sum_0004.txt   ancient        18       237
## 219   ancient_sum_0005.txt   ancient         9       275
## 220   ancient_sum_0006.txt   ancient        11       137
## 221   ancient_sum_0007.txt   ancient        10       227
## 222   ancient_sum_0008.txt   ancient         9       192
## 223   ancient_sum_0009.txt   ancient        19       579
## 224   ancient_sum_0010.txt   ancient        10       228
## 225  signlang_tsl_0001.txt  signlang        14       479
## 226  signlang_tsl_0002.txt  signlang        11       198
## 227  signlang_tsl_0003.txt  signlang        12       255
## 228      udhr_aii_0001.txt      udhr        88      6471
## 229      udhr_arb_0001.txt      udhr        90      7629
```

```
## 230      udhr_azj_0001.txt      udhr        90     10749
## 231      udhr_azj_0002.txt      udhr        90     10745
## 232      udhr_ben_0001.txt      udhr        94      9718
## 233      udhr_blt_0001.txt      udhr        89      8804
## 234      udhr_bod_0001.txt      udhr        90     12649
## 235      udhr_bos_0001.txt      udhr        90      9694
## 236      udhr_bos_0002.txt      udhr        90      9871
## 237      udhr_chr_0001.txt      udhr        89      8985
## 238      udhr_cmn_0001.txt      udhr        89      2960
## 239      udhr_cmn_0002.txt      udhr        90      2789
## 240      udhr_csw_0001.txt      udhr        67      6513
## 241      udhr_div_0001.txt      udhr        88     18129
## 242      udhr_ell_0001.txt      udhr        90     12392
## 243      udhr_eng_0001.txt      udhr        91     10606
## 244      udhr_epo_0001.txt      udhr        91      9884
## 245      udhr_eus_0001.txt      udhr        93     10907
## 246      udhr_gaz_0001.txt      udhr        92     10473
## 247      udhr_guj_0001.txt      udhr        91      9959
## 248      udhr_heb_0001.txt      udhr        89      7261
## 249      udhr_hin_0001.txt      udhr        90     10497
## 250      udhr_hye_0001.txt      udhr        92     11119
## 251      udhr_ibb_0001.txt      udhr       100     13205
## 252      udhr_iii_0001.txt      udhr        88      3272
## 253      udhr_ike_0001.txt      udhr        67      8541
## 254      udhr_jav_0001.txt      udhr        92     10816
## 255      udhr_jav_0002.txt      udhr        92     13651
## 256      udhr_jpn_0001.txt      udhr        89      4157
## 257      udhr_kal_0001.txt      udhr        90     16786
## 258      udhr_kan_0001.txt      udhr        89     10534
## 259      udhr_kat_0001.txt      udhr        90     11828
## 260      udhr_khm_0001.txt      udhr        90     10652
## 261      udhr_kkh_0001.txt      udhr        82      9938
## 262      udhr_kor_0001.txt      udhr        91      4709
## 263      udhr_lao_0001.txt      udhr        90     10502
## 264      udhr_lug_0001.txt      udhr        87     10354
## 265      udhr_mal_0001.txt      udhr        82     10557
## 266      udhr_mya_0001.txt      udhr        89     15131
## 267      udhr_pan_0001.txt      udhr        90     10681
## 268      udhr_rus_0001.txt      udhr        90     11684
## 269      udhr_sin_0001.txt      udhr        90     10543
## 270      udhr_tam_0001.txt      udhr        89     13133
## 271      udhr_tel_0001.txt      udhr        89     11075
## 272      udhr_tgl_0001.txt      udhr        94     12246
## 273      udhr_tha_0001.txt      udhr        89      9278
## 274      udhr_tir_0001.txt      udhr        89      6640
## 275      udhr_vai_0001.txt      udhr        91      8556
## 276      udhr_zgh_0001.txt      udhr        89      7770
## 277      udhr_zul_0001.txt      udhr        91     10217
```

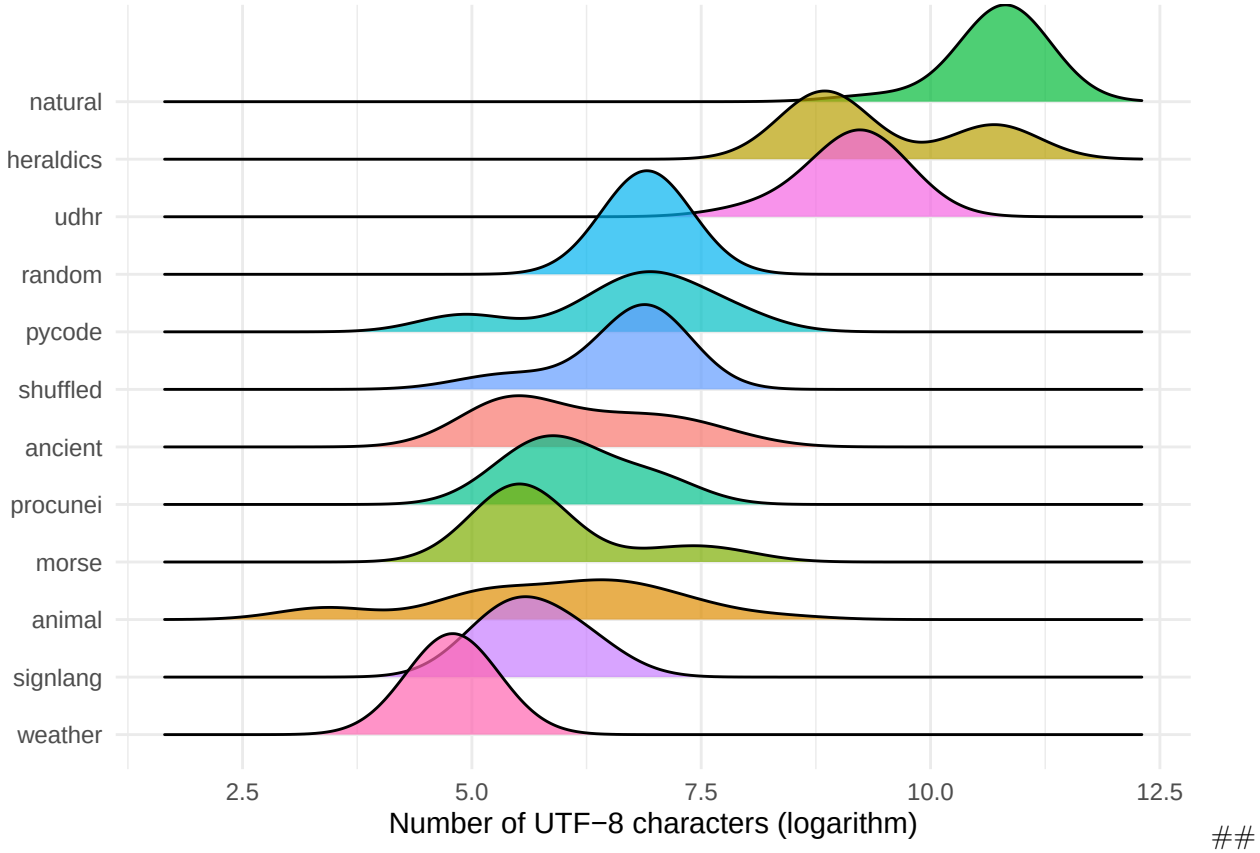
# Density plot

Density plot for numbers of characters per data file and subcorpus.

```
# select subcorpora (if applicable)
# selection <- c("writing", "shuffled")
# simpleStats.df <- simpleStats.df[simpleStats.df$subcorpus %in% selection, ]

# plot densities
density.plot <- ggplot(simpleStats.df, aes(x = log(num.chars),
                                           y = fct_reorder(subcorpus, log(num.chars), .fun = mean),
                                           fill = subcorpus)) +
  geom_density_ridges(alpha = 0.7) +
  #theme_ridges() +
  theme_minimal() +
  theme(legend.position = "none") +
  labs(x ="Number of UTF-8 characters (logarithm)",
       y = "")
print(density.plot)
```

```
## Picking joint bandwidth of 0.495
```

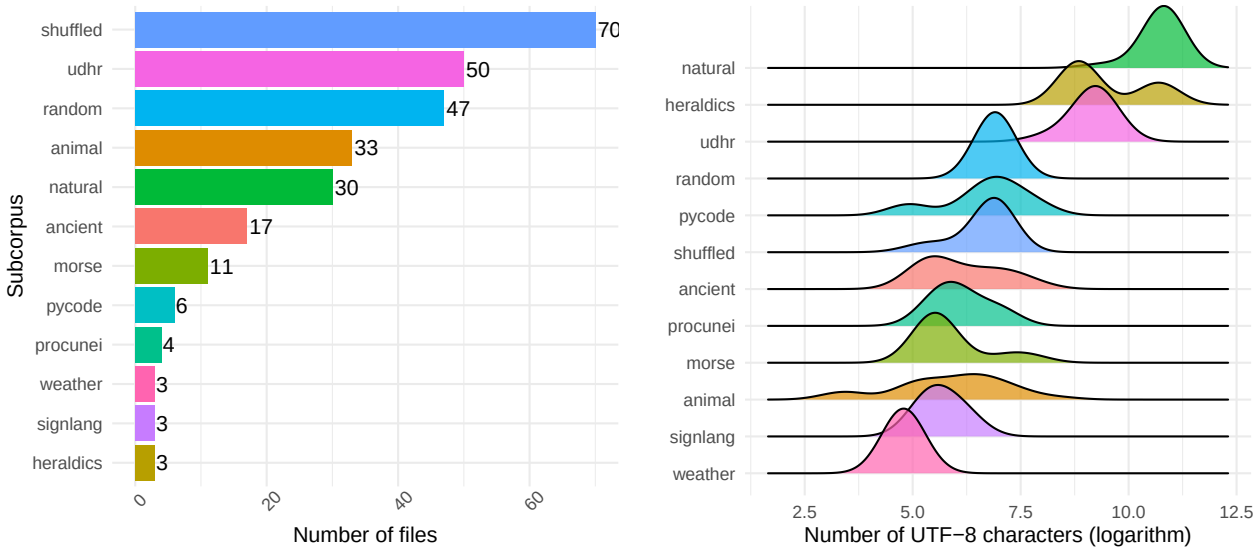



##

Combine figures

```
simpleStats.combined <- grid.arrange(counts.plot, density.plot, ncol = 2)
```

```
## Picking joint bandwidth of 0.495
```




## Safe figure to file

```
ggsave("~/Github/NaLaFi/figures/simpleStats_combined.pdf", simpleStats.combined, dpi = 300,
       scale = 1, device = cairo_pdf)
```

```
## Saving 9 x 4 in image
```