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] 291
```

Count number of files in writing and non-writing subfolders

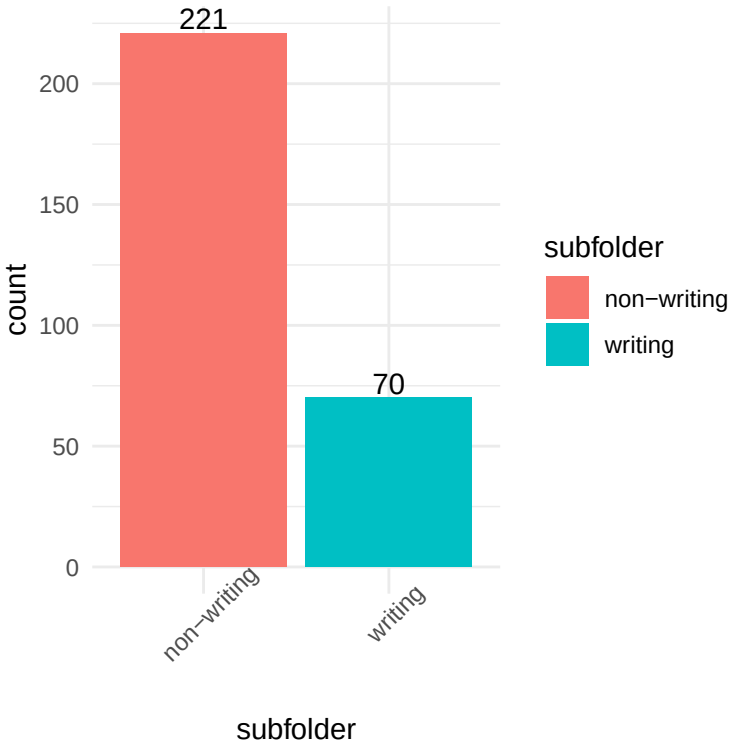
Count how many files are in each of the highest level subfolders of "data", and create a dataframe with counts.

```
#number of "animal" 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.

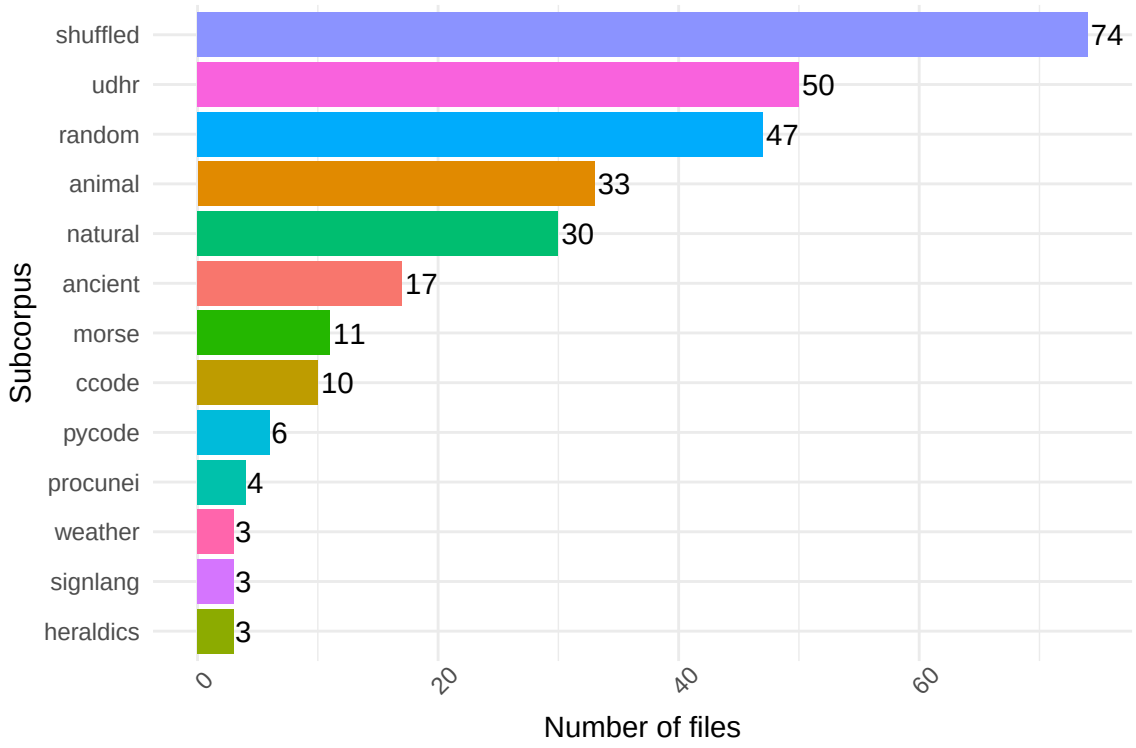
```
#number of "animal" files
animal.count <- length(file.list[grepl("animal", file.list)])
ancient.count <- length(file.list[grepl("ancient", file.list)])
ccode.count <- length(file.list[grepl("ccode", file.list)])
heraldics.count <- length(file.list[grepl("heraldics", file.list)])
morse.count <- length(file.list[grepl("morse", 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", "ccode", "heraldics",
                               "morse", "natural", "procunei", "pycode", "random",
                               "signlang", "shuffled", "udhr", "weather"),
                 count = c(animal.count, ancient.count, ccode.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      ccode_cpc_0001.txt     ccode         9       166
## 35      ccode_cpc_0002.txt     ccode        11       276
## 36      ccode_cpc_0003.txt     ccode        15       360
## 37      ccode_cpc_0004.txt     ccode        10       322
## 38      ccode_cpc_0005.txt     ccode        14       295
## 39      ccode_cpc_0006.txt     ccode        12       184
## 40      ccode_cpc_0007.txt     ccode        17       524
## 41      ccode_cpc_0008.txt     ccode        17       342
## 42      ccode_cpc_0009.txt     ccode        31       950
## 43      ccode_cpc_0010.txt     ccode        12       212
## 44  heraldics_bla_0001.txt heraldics       503     44198
## 45  heraldics_bla_0002.txt heraldics       107      7498
## 46  heraldics_bla_0003.txt heraldics       100      6434
## 47      morse_moc_0001.txt     morse         1      1291
## 48      morse_moc_0002.txt     morse         3      2257
## 49      morse_moc_0003.txt     morse         1       175
## 50      morse_moc_0004.txt     morse         1       292
## 51      morse_moc_0005.txt     morse         1       252
## 52      morse_moc_0006.txt     morse         1       247
## 53      morse_moc_0007.txt     morse         1       229
## 54      morse_moc_0008.txt     morse         1       219
## 55      morse_moc_0009.txt     morse         1       269
## 56      morse_moc_0010.txt     morse         1       404
## 57      morse_moc_0011.txt     morse         1       239
## 58    natural_dna_0001.txt   natural       157     10958
## 59    natural_dna_0002.txt   natural       209     14621
## 60    natural_dna_0003.txt   natural       713     49910
## 61    natural_dna_0004.txt   natural       713     49910
## 62    natural_dna_0005.txt   natural       713     49910
## 63    natural_dna_0006.txt   natural       713     49910
## 64    natural_dna_0007.txt   natural       713     49910
## 65    natural_dna_0008.txt   natural       713     49910
## 66    natural_dna_0009.txt   natural       713     49910
## 67    natural_dna_0010.txt   natural       713     49910
```

```
## 68    natural_dna_0011.txt   natural       713     49910
## 69    natural_dna_0012.txt   natural       713     49910
## 70    natural_dna_0013.txt   natural       713     49910
## 71    natural_dna_0014.txt   natural       713     49910
## 72    natural_dna_0015.txt   natural       713     49910
## 73    natural_dna_0016.txt   natural       713     49910
## 74    natural_dna_0017.txt   natural       713     49910
## 75    natural_dna_0018.txt   natural       713     49910
## 76    natural_dna_0019.txt   natural       713     49910
## 77    natural_dna_0020.txt   natural       713     49910
## 78    natural_dna_0021.txt   natural       713     49910
## 79    natural_dna_0022.txt   natural       713     49910
## 80    natural_dna_0023.txt   natural       713     49910
## 81    natural_dna_0024.txt   natural       713     49910
## 82    natural_dna_0025.txt   natural       713     49910
## 83    natural_dna_0026.txt   natural       713     49910
## 84    natural_dna_0027.txt   natural       713     49910
## 85    natural_dna_0028.txt   natural       713     49910
## 86    natural_dna_0029.txt   natural       713     49910
## 87    natural_dna_0030.txt   natural       713     49910
## 88   procunei_prc_0001.txt  procunei        46      1096
## 89   procunei_prc_0002.txt  procunei        24       478
## 90   procunei_prc_0003.txt  procunei        18       344
## 91   procunei_prc_0004.txt  procunei        16       243
## 92     pycode_pyc_0001.txt    pycode        83      2515
## 93     pycode_pyc_0002.txt    pycode        25       570
## 94     pycode_pyc_0003.txt    pycode         9       136
## 95     pycode_pyc_0004.txt    pycode        43      1064
## 96     pycode_pyc_0005.txt    pycode        67      1370
## 97     pycode_pyc_0006.txt    pycode        34       884
## 98           random_ran_10    random         1      1000
## 99           random_ran_11    random         1      1000
## 100          random_ran_12    random         1      1000
## 101          random_ran_13    random         1      1000
## 102          random_ran_14    random         1      1000
## 103          random_ran_15    random         1      1000
## 104          random_ran_16    random         1      1000
## 105          random_ran_17    random         1      1000
## 106          random_ran_18    random         1      1000
## 107          random_ran_19    random         1      1000
## 108           random_ran_2    random         1      1000
## 109          random_ran_20    random         1      1000
## 110          random_ran_21    random         1      1000
## 111          random_ran_22    random         1      1000
## 112          random_ran_23    random         1      1000
## 113          random_ran_24    random         1      1000
## 114          random_ran_25    random         1      1000
## 115          random_ran_26    random         1      1000
## 116          random_ran_27    random         1      1000
## 117          random_ran_28    random         1      1000
## 118          random_ran_29    random         1      1000
## 119           random_ran_3    random         1      1000
## 120          random_ran_30    random         1      1000
## 121          random_ran_31    random         1      1000
```

```
## 122          random_ran_32    random         1      1000
## 123          random_ran_33    random         1      1000
## 124          random_ran_34    random         1      1000
## 125          random_ran_35    random         1      1000
## 126          random_ran_36    random         1      1000
## 127          random_ran_37    random         1      1000
## 128          random_ran_38    random         1      1000
## 129          random_ran_39    random         1      1000
## 130           random_ran_4    random         1      1000
## 131          random_ran_40    random         1      1000
## 132          random_ran_41    random         1      1000
## 133          random_ran_42    random         1      1000
## 134          random_ran_43    random         1      1000
## 135          random_ran_44    random         1      1000
## 136          random_ran_45    random         1      1000
## 137          random_ran_46    random         1      1000
## 138          random_ran_47    random         1      1000
## 139          random_ran_48    random         1      1000
## 140           random_ran_5    random         1      1000
## 141           random_ran_6    random         1      1000
## 142           random_ran_7    random         1      1000
## 143           random_ran_8    random         1      1000
## 144           random_ran_9    random         1      1000
## 145      shuffled_aii_0001  shuffled         1      1000
## 146      shuffled_akk_0001  shuffled         1      1000
## 147      shuffled_akk_0002  shuffled         1      1000
## 148      shuffled_arb_0001  shuffled         1      1000
## 149      shuffled_azj_0001  shuffled         1      1000
## 150      shuffled_azj_0002  shuffled         1      1000
## 151      shuffled_ben_0001  shuffled         1      1000
## 152      shuffled_blt_0001  shuffled         1      1000
## 153      shuffled_bod_0001  shuffled         1      1000
## 154      shuffled_bos_0001  shuffled         1      1000
## 155      shuffled_bos_0002  shuffled         1      1000
## 156      shuffled_chr_0001  shuffled         1      1000
## 157      shuffled_cmn_0001  shuffled         1      1000
## 158      shuffled_cmn_0002  shuffled         1      1000
## 159      shuffled_cre_0001  shuffled         1       261
## 160      shuffled_cre_0002  shuffled         1      1000
## 161      shuffled_csw_0001  shuffled         1      1000
## 162      shuffled_div_0001  shuffled         1      1000
## 163      shuffled_ela_0001  shuffled         1       556
## 164      shuffled_ela_0002  shuffled         1       692
## 165      shuffled_ell_0001  shuffled         1      1000
## 166      shuffled_eng_0001  shuffled         1      1000
## 167      shuffled_epo_0001  shuffled         1      1000
## 168      shuffled_eus_0001  shuffled         1      1000
## 169      shuffled_gaz_0001  shuffled         1      1000
## 170      shuffled_guj_0001  shuffled         1      1000
## 171      shuffled_heb_0001  shuffled         1      1000
## 172      shuffled_hin_0001  shuffled         1      1000
## 173      shuffled_hye_0001  shuffled         1      1000
## 174      shuffled_ibb_0001  shuffled         1      1000
## 175      shuffled_iii_0001  shuffled         1      1000
```

```
## 176      shuffled_ike_0001  shuffled         1      1000
## 177      shuffled_jav_0001  shuffled         1      1000
## 178      shuffled_jav_0002  shuffled         1      1000
## 179      shuffled_jpn_0001  shuffled         1      1000
## 180      shuffled_kal_0001  shuffled         1      1000
## 181      shuffled_kan_0001  shuffled         1      1000
## 182      shuffled_kat_0001  shuffled         1      1000
## 183      shuffled_khm_0001  shuffled         1      1000
## 184      shuffled_kkh_0001  shuffled         1      1000
## 185      shuffled_kor_0001  shuffled         1      1000
## 186      shuffled_lao_0001  shuffled         1      1000
## 187      shuffled_lug_0001  shuffled         1      1000
## 188      shuffled_mal_0001  shuffled         1      1000
## 189      shuffled_mya_0001  shuffled         1      1000
## 190      shuffled_pan_0001  shuffled         1      1000
## 191      shuffled_pra_0001  shuffled         1      1000
## 192      shuffled_prc_0001  shuffled         1       716
## 193      shuffled_prc_0002  shuffled         1       394
## 194      shuffled_prc_0003  shuffled         1       182
## 195      shuffled_prc_0004  shuffled         1       191
## 196      shuffled_rus_0001  shuffled         1      1000
## 197      shuffled_sin_0001  shuffled         1      1000
## 198      shuffled_sum_0001  shuffled         1      1000
## 199      shuffled_sum_0002  shuffled         1       349
## 200      shuffled_sum_0003  shuffled         1       165
## 201      shuffled_sum_0004  shuffled         1       227
## 202      shuffled_sum_0005  shuffled         1       255
## 203      shuffled_sum_0006  shuffled         1       137
## 204      shuffled_sum_0007  shuffled         1       219
## 205      shuffled_sum_0008  shuffled         1       188
## 206      shuffled_sum_0009  shuffled         1       567
## 207      shuffled_sum_0010  shuffled         1       226
## 208      shuffled_tam_0001  shuffled         1      1000
## 209      shuffled_tel_0001  shuffled         1      1000
## 210      shuffled_tgl_0001  shuffled         1      1000
## 211      shuffled_tha_0001  shuffled         1      1000
## 212      shuffled_tir_0001  shuffled         1      1000
## 213      shuffled_tsl_0001  shuffled         1       451
## 214      shuffled_tsl_0002  shuffled         1       180
## 215      shuffled_tsl_0003  shuffled         1       227
## 216      shuffled_vai_0001  shuffled         1      1000
## 217      shuffled_zgh_0001  shuffled         1      1000
## 218      shuffled_zul_0001  shuffled         1      1000
## 219   weather_wsy_0001.txt   weather         8       111
## 220   weather_wsy_0002.txt   weather         8       112
## 221   weather_wsy_0003.txt   weather        10       141
## 222   ancient_akk_0001.txt   ancient        10      2698
## 223   ancient_akk_0002.txt   ancient         8      1603
## 224   ancient_cre_0001.txt   ancient        19       270
## 225   ancient_cre_0002.txt   ancient        48      1099
## 226   ancient_ela_0001.txt   ancient        30       578
## 227   ancient_ela_0002.txt   ancient        59       692
## 228   ancient_pra_0001.txt   ancient         4      1101
## 229   ancient_sum_0001.txt   ancient        70      1560
```

```
## 230   ancient_sum_0002.txt   ancient        30       361
## 231   ancient_sum_0003.txt   ancient         9       171
## 232   ancient_sum_0004.txt   ancient        18       237
## 233   ancient_sum_0005.txt   ancient         9       275
## 234   ancient_sum_0006.txt   ancient        11       137
## 235   ancient_sum_0007.txt   ancient        10       227
## 236   ancient_sum_0008.txt   ancient         9       192
## 237   ancient_sum_0009.txt   ancient        19       579
## 238   ancient_sum_0010.txt   ancient        10       228
## 239  signlang_tsl_0001.txt  signlang        14       479
## 240  signlang_tsl_0002.txt  signlang        11       198
## 241  signlang_tsl_0003.txt  signlang        12       255
## 242      udhr_aii_0001.txt      udhr        88      6471
## 243      udhr_arb_0001.txt      udhr        90      7629
## 244      udhr_azj_0001.txt      udhr        90     10749
## 245      udhr_azj_0002.txt      udhr        90     10745
## 246      udhr_ben_0001.txt      udhr        94      9718
## 247      udhr_blt_0001.txt      udhr        89      8804
## 248      udhr_bod_0001.txt      udhr        90     12649
## 249      udhr_bos_0001.txt      udhr        90      9694
## 250      udhr_bos_0002.txt      udhr        90      9871
## 251      udhr_chr_0001.txt      udhr        89      8985
## 252      udhr_cmn_0001.txt      udhr        89      2960
## 253      udhr_cmn_0002.txt      udhr        90      2789
## 254      udhr_csw_0001.txt      udhr        67      6513
## 255      udhr_div_0001.txt      udhr        88     18129
## 256      udhr_ell_0001.txt      udhr        90     12392
## 257      udhr_eng_0001.txt      udhr        91     10606
## 258      udhr_epo_0001.txt      udhr        91      9884
## 259      udhr_eus_0001.txt      udhr        93     10907
## 260      udhr_gaz_0001.txt      udhr        92     10473
## 261      udhr_guj_0001.txt      udhr        91      9959
## 262      udhr_heb_0001.txt      udhr        89      7261
## 263      udhr_hin_0001.txt      udhr        90     10497
## 264      udhr_hye_0001.txt      udhr        92     11119
## 265      udhr_ibb_0001.txt      udhr       100     13205
## 266      udhr_iii_0001.txt      udhr        88      3272
## 267      udhr_ike_0001.txt      udhr        67      8541
## 268      udhr_jav_0001.txt      udhr        92     10816
## 269      udhr_jav_0002.txt      udhr        92     13651
## 270      udhr_jpn_0001.txt      udhr        89      4157
## 271      udhr_kal_0001.txt      udhr        90     16786
## 272      udhr_kan_0001.txt      udhr        89     10534
## 273      udhr_kat_0001.txt      udhr        90     11828
## 274      udhr_khm_0001.txt      udhr        90     10652
## 275      udhr_kkh_0001.txt      udhr        82      9938
## 276      udhr_kor_0001.txt      udhr        91      4709
## 277      udhr_lao_0001.txt      udhr        90     10502
## 278      udhr_lug_0001.txt      udhr        87     10354
## 279      udhr_mal_0001.txt      udhr        82     10557
## 280      udhr_mya_0001.txt      udhr        89     15131
## 281      udhr_pan_0001.txt      udhr        90     10681
## 282      udhr_rus_0001.txt      udhr        90     11684
## 283      udhr_sin_0001.txt      udhr        90     10543
```

```
## 284      udhr_tam_0001.txt      udhr        89     13133
## 285      udhr_tel_0001.txt      udhr        89     11075
## 286      udhr_tgl_0001.txt      udhr        94     12246
## 287      udhr_tha_0001.txt      udhr        89      9278
## 288      udhr_tir_0001.txt      udhr        89      6640
## 289      udhr_vai_0001.txt      udhr        91      8556
## 290      udhr_zgh_0001.txt      udhr        89      7770
## 291      udhr_zul_0001.txt      udhr        91     10217
```

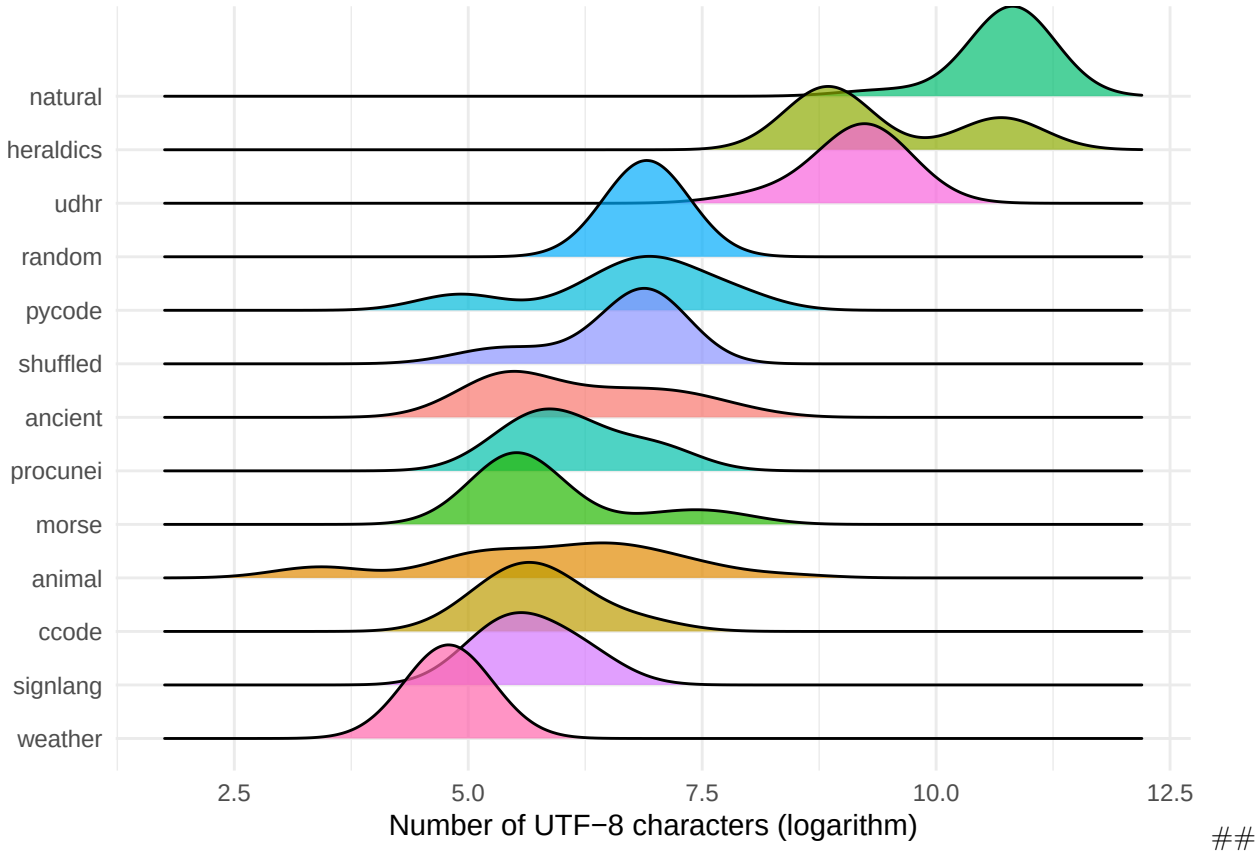
Density plot

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 0.46
```

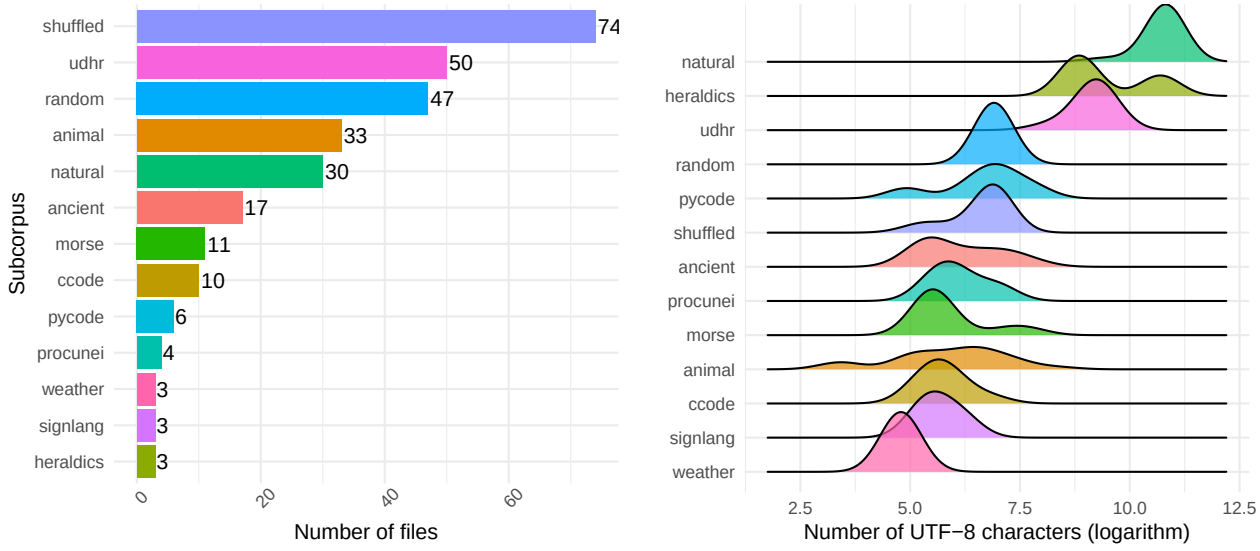


##

Combine figures

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

```
## Picking joint bandwidth of 0.46
```



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
```