

World Maps

Chris Bentz and Steven Moran

(03 April, 2024)

Session Info

Give the session info (reduced).

```
## [1] "R version 4.3.2 (2023-10-31)"
## [1] "aarch64-apple-darwin20"
```

Load Libraries

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

```
library(readr)
library(ggmap)
library(maps)
library(gridExtra)
library(ggrepel)
library(RCurl)
```

Give the package versions.

```
##      RCurl      ggrepel    gridExtra      maps      ggmap      ggplot2
## "1.98-1.14"    "0.9.5"      "2.3"      "3.4.2"      "4.0.0"      "3.5.0"
##      readr
##      "2.1.4"
```

Load the language info

Load language info file directly from the github repo.

```
languages <- as.data.frame(read_csv("../LangInfo/langInfo_TeDDi.csv"))
```

All languages of 100 WALS sample

Simple Stats

```
length(unique(languages$iso639_3)) # number of languages according to iso
```

```
## [1] 100
```

```
length(unique(languages$glottocode)) # number of languages according to glottolog
```

```
## [1] 100
length(unique(languages$top_level_family)) # number of top level language families according to glottol

## [1] 61
length(unique(languages$family_wals)) # number of language families according to wals

## [1] 68
unique(languages$macroarea_glottol) # number of macroareas according to glottolog (same as for WALS)

## [1] "Eurasia"          "Papunesia"         "South America" "Africa"
## [5] "North America" "Australia"
```

Pre-Processing

```
# add 360 to longitudes for languages with longitudes < -25
# (this is necessary to create a Pacific centered map)
languages$longitude_wals[languages$longitude_wals < -25] <-
  languages$longitude_wals[languages$longitude_wals < -25] + 360
# collapse status information into fewer factors
languages$status[languages$status %in% c("definitely endangered", "severely endangered", "critically endangered")]
```

World Map

World maps with endangerment status information from Glottolog.

```
# create world map
world <- map_data("world", wrap = c(-25, 335))
status.map <- ggplot() +
  geom_polygon(data = world, aes(x = long, y = lat, group = group),
    fill = "white", colour = "darkgrey") +
  geom_point(data = languages, aes(x = longitude_wals, y = latitude_wals,
    fill = status),
    alpha = 1, size = 3.5, pch = 21) +
  # select colours manually to be color blind safe
  scale_fill_manual(values = c("#E69F00", "#661100", "#009E73", "#F0E442")) +
  geom_text_repel(data = languages, aes(x = longitude_wals, y = latitude_wals,
    label = name_wals), size = 2.5,
    box.padding = unit(0.1, 'lines'), force = 0.5) +
  scale_y_continuous(limits = c(-65, 80)) +
  labs(x = "longitude", y = "latitude", fill = "Endangerment Status") +
  theme_bw() +
  theme(axis.title.x = element_text(size = 12),
    axis.title.y = element_text(size = 12),
    title = element_text(size = 12),
    legend.title = element_text(size = 12),
    legend.text = element_text(size = 12),
    legend.position = "bottom")
status.map
```



```
unique(languages.corpus$macroarea_glottol) # number of macroareas according to glottolog (same as for WA)

## [1] "Eurasia"          "Papunesia"        "South America" "Africa"
## [5] "North America" "Australia"
```

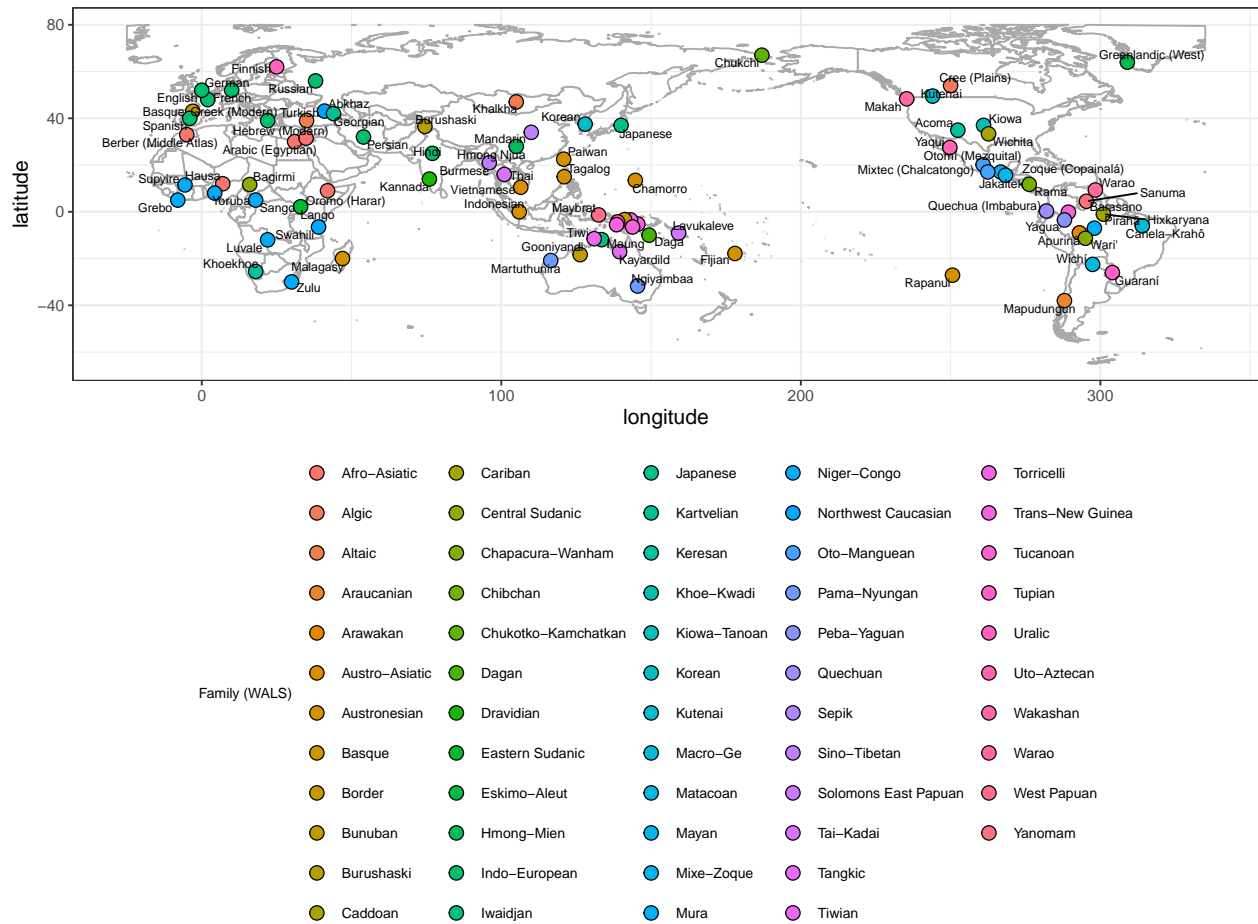
Pre-Processing

```
# add 360 to longitudes for languages with longitudes < -25
# (this is necessary to create a Pacific centered map)
languages.corpus$longitude_wals[languages.corpus$longitude_wals < -25] <-
  languages.corpus$longitude_wals[languages.corpus$longitude_wals < -25] + 360
```

World Map

World maps with family information.

```
# create world map
world <- map_data("world", wrap = c(-25, 335))
family.map <- ggplot() +
  geom_polygon(data = world, aes(x = long, y = lat, group = group),
    fill = "white", colour = "darkgrey") +
  geom_point(data = languages.corpus, aes(x = longitude_wals, y = latitude_wals,
    fill = family_wals),
    alpha = 1, size = 3.5, pch = 21) +
  # select colors manually to be color blind safe
  # scale_fill_manual(values = c("#E69F00", "#661100", "#009E73", "#F0E442")) +
  geom_text_repel(data = languages.corpus, aes(x = longitude_wals, y = latitude_wals,
    label = name_wals), size = 2.5,
    box.padding = unit(0.1, 'lines'), force = 0.5) +
  scale_y_continuous(limits = c(-65, 80)) +
  labs(x = "longitude", y = "latitude", fill = "Family (WALS)") +
  theme_bw() +
  theme(axis.title.x = element_text(size = 12),
    axis.title.y = element_text(size = 12),
    title = element_text(size = 8),
    legend.title = element_text(size = 8),
    legend.text = element_text(size = 8),
    legend.position = "bottom")
family.map
```



```
ggsave("worldMap_CurrentCorpus.pdf", family.map,
       dpi = 300, scale = 1, width = 10, height = 7.5, device = cairo_pdf)
```