Formatting, Latex, plot and table samples

output: Rmarkdown PDF

Fabian Koch

```
library(tidyverse) # import/wrangle
library(ggplot2) # plot/maps
library(tmap) # Dataset/Maps
library(viridis) # palettes
```

```
data("World")

# Data mit geometry
WorldGeom <- World
# Data ohne
WorldData <- World %>%
  sf::st_drop_geometry()
```

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua.

vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

ggplot2

Themes

https://ggplot2.tidyverse.org/reference/theme.html

```
PAL_Gliederung_Colour <- c(SR = "blue", UBZTP = "orange")
PAL_Gebiet_fill <- c("yellow3", "black", "grey", "maroon3")
PAL_pal9GnPu <- c("#762a83", "#9970ab", "#c2a5cf", "#e7d4e8", "#f7f7f7", "#d9f0d3", "#a6dba0", "#5aae61
PAL_virpal <- viridisLite::viridis(6)
PAL_col6qual <- c("#66c2a5","#fc8d62","#8da0cb","#e78ac3","#a6d854","#ffd92f")


# Thema für Karten in ggplot
# default_font_family <- "sans" entfällt wegen Latex settings
default_font_color <- "black"
default_background_color <- "white"

theme_map <- function(...) {
  theme_minimal()
  theme(
    text = element_text(
      # family = default_font_family,
      color = default_font_color),
    # remove all axes
    axis.line = element_blank(),
    axis.text.x = element_blank(),
    axis.text.y = element_blank(),
    axis.ticks = element_blank(),
    # add a subtle grid
    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    # background colors
    plot.background = element_rect(fill = default_background_color,
                                   color = NA),
```

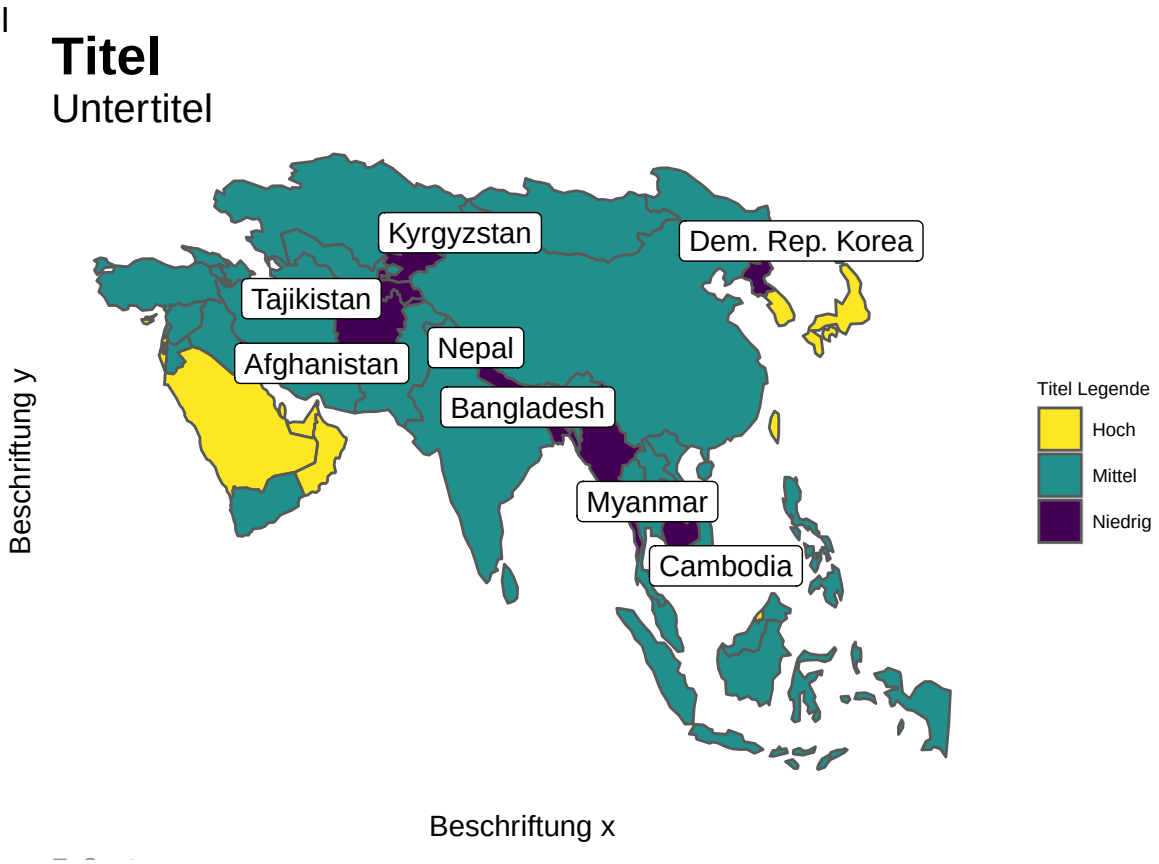
```
    panel.background = element_rect(fill = default_background_color,
                                    color = NA),
    legend.background = element_rect(fill = default_background_color,
                                     color = NA),
    # borders and margins
    plot.margin = unit(c(0.1, -0.2, -0.3, -0.3), "cm"),
    panel.border = element_blank(),
    panel.spacing = unit(c(0, 0, 0, 0), "cm"),
    # titles
    legend.title = element_text(size = 7),
    legend.text = element_text(size = 7, hjust = 0,
                               color = default_font_color),
    plot.title = element_text(size = 20,
                              color = default_font_color,
                              face = "bold"),
    plot.subtitle = element_text(size = 15,
                                 color = default_font_color,
                                 margin = margin(b = -0.1,
                                                 t = -0.1,
                                                 l = 2,
                                                 unit = "cm"),
                                 debug = F),
    # captions
    plot.caption = element_text(size = 10,
                                hjust = 0,
                                margin = margin(t = 0.2,
                                                b = 0,
                                                unit = "cm"),
                                color = "#939184"),
    ...
  )
}
```

```
    # labs(
    #   title = "Titel",
    #   subtitle = "Untertitel",
    #   caption = "Fußnote",
    #   tag = "label",
    #   fill = "Titel Legende") +
    # xlab("Beschriftung x") +
    # ylab("Beschriftung y") +
```

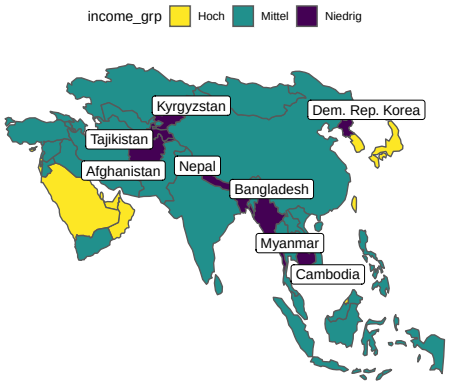
```r
mapData <- WorldGeom %>%
  select(
    name,
    continent,
    pop_est,
    income_grp,
    geometry) %>%
  filter(continent == "Asia") %>%
  mutate(
    # Vereinigung der 5 Kategorien zu 3
    income_grp = forcats::fct_collapse(income_grp,
      Hoch = c("1. High income: OECD", "2. High income: nonOECD"),
      Mittel = c("3. Upper middle income", "4. Lower middle income"),
      Niedrig = c("5. Low income")))

  ggplot() +
    # da das data.frame eine geometry Spalte besitzt, kommt geom_sf ohne x und y bzw. Rechts- und Hochw
    # data.frames mit Rechts- und Hochwerten können über sf::st_as_sf in dieses Format konvertiert werd
    # https://www.rdocumentation.org/packages/sf/versions/0.9-7/topics/st_as_sf
    # https://r-spatial.github.io/sf/reference/st_as_sf.html
    geom_sf(
      data = mapData,
      aes(fill = income_grp)) +
    # Externe Farbpalette, Beispiel viridis
    # https://www.rdocumentation.org/packages/viridis/versions/0.5.1/topics/scale_color_viridis
    viridis::scale_fill_viridis(
      # Diskrete Variable (Einkommensgruppen)
      discrete = TRUE,
      # Umkehr der Palette, damit dunkel = Niedrig
      direction = -1) +
    # ggrepel ist ein package, das Beschriftungen oder Labels so ausrichtet, dass es zu keinen Überlapp
    ggrepel::geom_label_repel(
      # man kann die ausgewählte Variable mit subset filtern
      data = subset(mapData, income_grp == "Niedrig"),
      # ohne stat = "sf_coordinates" kann ggrepel keine "geometry" Angaben verarbeiten
      stat = "sf_coordinates",
      aes(
        geometry = geometry,
        label = name)) +
    # siehe theme settings oben
    theme_map() +
    labs(
      title = "Titel",
      subtitle = "Untertitel",
      caption = "Fußnote",
      tag = "label",
      fill = "Titel Legende") +
    xlab("Beschriftung x") +
    ylab("Beschriftung y")
```

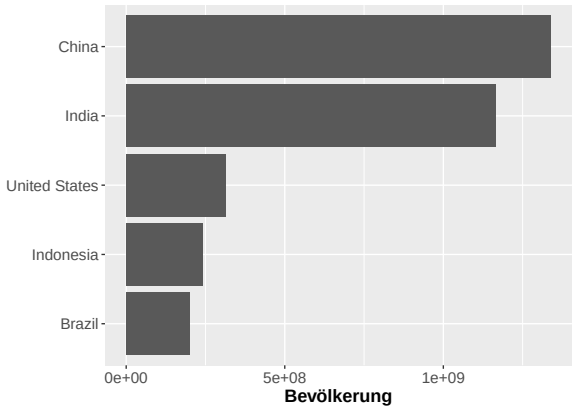
label



Gemischtes 1 und 2 Spalten Layout

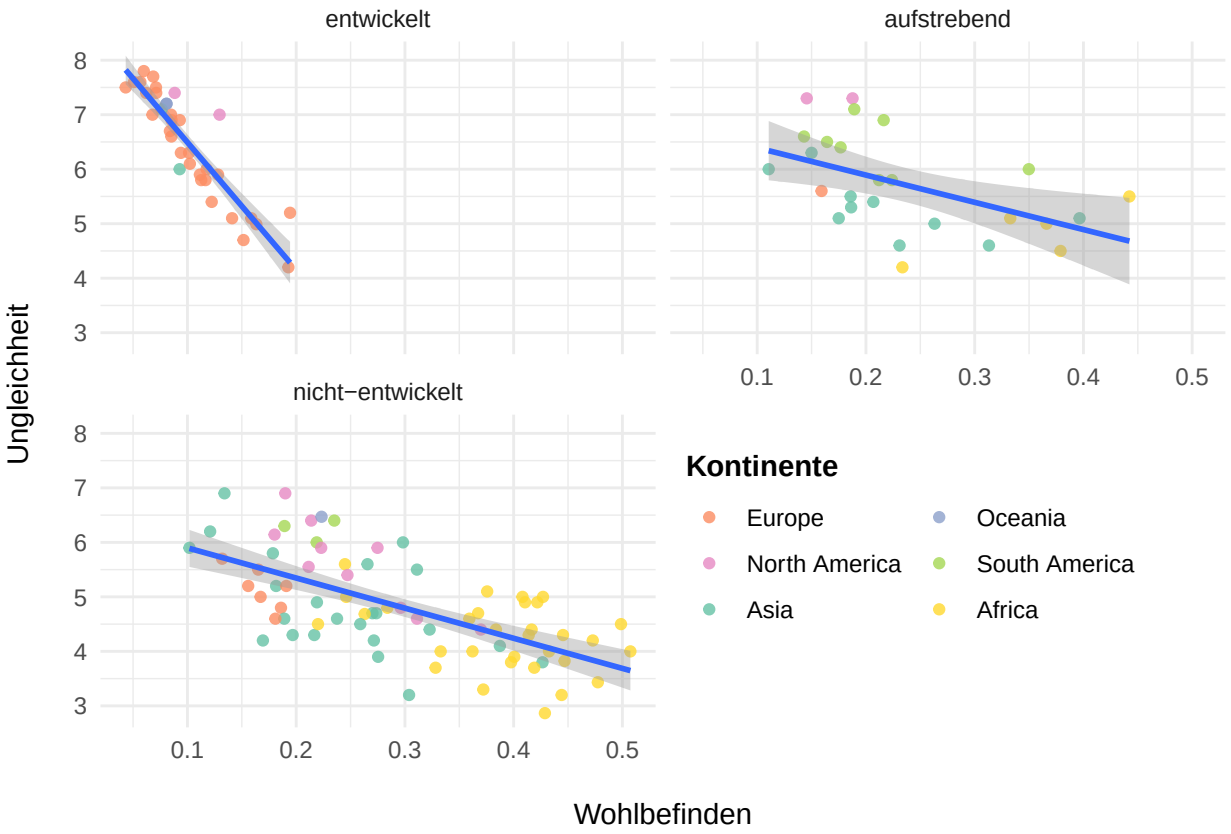


Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum.



Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum.

```
## `geom_smooth()` using formula 'y ~ x'
```


entwickelt
aufstrebend
nicht−entwickelt
Ungleichheit
Wohlbefinden
Kontinente
Europe
North America
Asia
Oceania
South America
Africa