

Maths Report Script (contd.)

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```
library(readxl)
data <- read_excel("NFHS_5_Factsheets_Data.xlsx")

total_data <- data[data$Area == 'Total',]
total_data <- subset(total_data, select=-c(Area))

library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

library(tidyr)
total_data %>%
  mutate_if(is.numeric, ~replace_na(., mean(., na.rm = TRUE)))

## # A tibble: 37 x 135
##   `States/UTs`  Numbe~1 Numbe~2 Numbe~3 Femal~4 Popul~5 Sex r~6 Sex r~7 Child~8
##   <chr>        <dbl>    <dbl>    <dbl>    <dbl>    <dbl>  <chr> <chr>
## 1 India        636699   724115   101839   71.8     26.5   1020. 929.16 89.08
## 2 Andaman & Ni~ 2624     2397     367      83.5     20.8   963.  913.91 97.39
## 3 Andhra Prade~ 11346    10975    1558     65.6     22.2   1045. 933.63 92.17
## 4 Arunachal Pr~ 18268    19765    2881     71.2     27.0   997.  978.73 87.69
## 5 Assam         30119    34979    4973     78.2     28.3   1012. 964.19 96.28
## 6 Bihar          35834    42483    4897     61.1     36.4   1090.  907.99 75.64
## 7 Chandigarh    761      746      104      86.7     23.3   917.  837.77 97.64
## 8 Chhattisgarh  24550    28468    4174     69.3     25.4   1015. 960.16 96.58
## 9 Dadra and Na~ 2676     2713     427      74.4     25.4   827.  817.27 98.09
## 10 Goa           1856     2030     313      89.0     19.1   1027. 838.11 100.0
## # ... with 27 more rows, 126 more variables:
## #   `Deaths in the last 3 years registered with the civil authority (%)` <chr>,
## #   `Population living in households with electricity (%)` <dbl>,
## #   `Population living in households with an improved drinking-water source1 (%)` <dbl>,
## #   `Population living in households that use an improved sanitation facility2 (%)` <dbl>,
## #   `Households using clean fuel for cooking3 (%)` <chr>,
## #   `Households using iodized salt (%)` <chr>, ...
```

```

delivery_care_data <- subset(total_data, select=c(1, 54:60))
delivery_care_data[c(2:8)] <- sapply(delivery_care_data[c(2:8)], as.numeric)

## Warning in lapply(X = X, FUN = FUN, ...): NAs introduced by coercion
delivery_care_data[c(2:8)] <- sapply(delivery_care_data[c(2:8)], abs)
india_delivery_care_data = delivery_care_data[delivery_care_data$`States/UTs` == 'India',]
delivery_care_data <- delivery_care_data[delivery_care_data$`States/UTs` != 'India',]

summary(delivery_care_data)

##   States/UTs      Institutional births (in the 5 years before the survey) (%)
## Length:36          Min.    :45.67
## Class :character  1st Qu.:85.31
## Mode  :character Median  :93.32
##                  Mean   :89.36
##                  3rd Qu.:96.61
##                  Max.   :99.76
##   Institutional births in public facility (in the 5 years before the survey) (%)
## Min.    :34.10
## 1st Qu.:56.08
## Median :66.08
## Mean   :65.55
## 3rd Qu.:76.67
## Max.   :94.70
##   Home births that were conducted by skilled health personnel (in the 5 years before the survey)10 (%)
## Min.    : 0.000
## 1st Qu.: 1.272
## Median : 2.120
## Mean   : 2.695
## 3rd Qu.: 3.430
## Max.   :10.370
##   Births attended by skilled health personnel (in the 5 years before the survey)10 (%)
## Min.    : 55.29
## 1st Qu.: 86.83
## Median : 93.69
## Mean   : 90.55
## 3rd Qu.: 96.59
## Max.   :100.00
##   Births delivered by caesarean section (in the 5 years before the survey) (%)
## Min.    : 5.22
## 1st Qu.:15.09
## Median :24.33
## Mean   :25.75
## 3rd Qu.:33.67
## Max.   :60.70
##   Births in a private health facility that were delivered by caesarean section (in the 5 years before
## Min.    : 0.00
## 1st Qu.:39.58
## Median :46.97
## Mean   :49.48
## 3rd Qu.:58.51
## Max.   :82.69

```

```
##  Births in a public health facility that were delivered by caesarean section (in the 5 years before 2014)
##  Min.    : 3.62
##  1st Qu.:11.23
##  Median  :17.98
##  Mean    :20.89
##  3rd Qu.:29.98
##  Max.    :44.49
```

Now, we load the map shapefile.

```
library(ggplot2)
library(maptools)
library(rgeos)
library(ggmap)

shp <- readShapeSpatial('India_State_Boundary.shp')
plot(shp)
```



```
shp$name
```

```
## [1] West Bengal
## [2] Andaman & Nicobar
## [3] Chandigarh
## [4] Daman and Diu and Dadra and Nagar Haveli
## [5] Delhi
## [6] Haryana
## [7] Jharkhand
## [8] Karnataka
## [9] Kerala
## [10] Lakshadweep
## [11] Madhya Pradesh
## [12] Maharashtra
## [13] Puducherry
## [14] Tamilnadu
## [15] Chhattishgarh
## [16] Telengana
## [17] Andhra Pradesh
## [18] Goa
## [19] Himachal Pradesh
## [20] Punjab
```

```

## [21] Rajasthan
## [22] Gujarat
## [23] Uttarakhand
## [24] Uttar Pradesh
## [25] Sikkim
## [26] Assam
## [27] Arunachal Pradesh
## [28] Nagaland
## [29] Manipur
## [30] Mizoram
## [31] Tripura
## [32] Meghalaya
## [33] Bihar
## [34] Ladakh
## [35] Jammu and Kashmir
## [36] Odisha
## 36 Levels: Andaman & Nicobar Andhra Pradesh Arunachal Pradesh Assam ... West Bengal
shp.f <- fortify(shp, region="Name")
delivery_care_data$id = delivery_care_data$`States/UTs`
delivery_care_data$id[delivery_care_data$id == 'Tamil Nadu'] <- 'Tamilnadu'
delivery_care_data$id[delivery_care_data$id == 'Maharastra'] <- 'Maharashtra'
delivery_care_data$id[delivery_care_data$id == 'Chhattisgarh'] <- 'Chhattishgarh'
delivery_care_data$id[delivery_care_data$id == 'Telangana'] <- 'Telengana'
delivery_care_data$id[delivery_care_data$id == 'Andaman & Nicobar Islands'] <- 'Andaman & Nicobar'

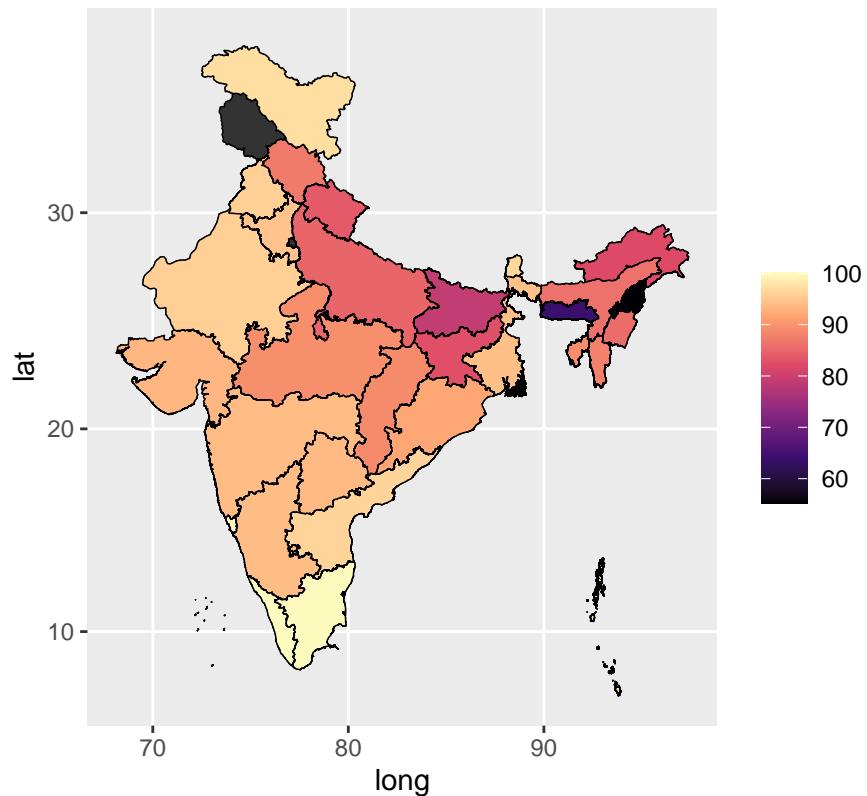
merge.shp.coef <- merge(shp.f, delivery_care_data, by="id")
d <- merge.shp.coef[order(merge.shp.coef$order), ]

library(pracma)
library(stringr)

ggplot() +
  geom_polygon(data = shp.f,
               aes(x = long, y = lat, group = group),
               color = "black", size = 0.25) +
  geom_polygon(data = d,
               aes(x = long, y = lat, group = group, fill = d[[names(delivery_care_data)[5]]]),
               color = "black", size = 0.25) +
  coord_map()+
  scale_fill_viridis_c(name='', option = "magma") +
  labs(title="Births Attended by Trained Medical Personnel")

```

Births Attended by Trained Medical Personnel



```
library(ggplot2)

delivery_care_data %>% arrange(desc(`Births attended by skilled health personnel (in the 5 years before the survey)`))

## # A tibble: 36 x 9
##   `States/UTs`    Insti~1 Insti~2 Home ~3 Birth~4 Birth~5 Birth~6 Birth~7 id
##   <chr>        <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl>  <dbl> <chr>
## 1 Andaman & Nico~ 99.0   87.3   0.22   97.3   29.9   79.2   23.6 Anda~
## 2 Andhra Pradesh  96.5   50.4   1.29   96.1   42.4   63.0   26.6 Andh~
## 3 Arunachal Prad~ 79.2   74.8   3.98   82.1   14.8   47.3   17.0 Arun~
## 4 Assam          84.1   74.4   2.58   86.1   18.1   70.6   15.2 Assam
## 5 Bihar           76.2   56.9   6.1    79.0   9.71   39.6   3.62 Bihar
## 6 Chandigarh     96.9   83.2   0.16   97.0   31.3   44.3   30.4 Chan~
## 7 Chhattisgarh   85.7   70.0   5.79   88.8   15.2   57.0   8.91 Chha~
## 8 Dadra and Naga~ 96.5   71.9   1.38   97.8   22.9   42.5   17.2 Dadr~
## 9 Goa            99.7   56.2   0       99.1   39.5   50     31.5 Goa
## 10 Gujarat        94.2   43.3   1.56   93.2   21.0   30.8   12.4 Guja~
## # ... with 26 more rows, and abbreviated variable names
## #   1: `Institutional births (in the 5 years before the survey) (%)` ,
## #   2: `Institutional births in public facility (in the 5 years before the survey) (%)` ,
## #   3: `Home births that were conducted by skilled health personnel (in the 5 years before the survey)` ,
## #   4: `Births attended by skilled health personnel (in the 5 years before the survey)10 (%)` ,
## #   5: `Births delivered by caesarean section (in the 5 years before the survey) (%)` ,
## #   6: `Births in a private health facility that were delivered by caesarean section (in the 5 years before the survey) (%)` 

ggplot(data=delivery_care_data, aes(x=.data$`Births attended by skilled health personnel (in the 5 years before the survey)`))
  geom_bar(stat="identity", width=0.5) + xlab('') + ylab('') + theme(legend.position = "none") +
  geom_text(aes(label=str_glue('{.data$`Births attended by skilled health personnel (in the 5 years before the survey)`}')))
```

```

hjust = 1, nudge_x = -1,
color = "black",
size = 2)

```

