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title: "Birth trends and the realities of fertility"
subtitle: "Data Visualisation assignment 3 - Interactive storytelling"
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institute: "RMIT University"
date: "Last updated: `r format(Sys.time(), '%d %B %Y')`"
output:
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    highlight: haddock
    mathjax: "default"
    df_print: paged
    footer: "Copyright (c) 2017, C Charlesworth"
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# Data Visualisation assignment 3 - Interactive storytelling
- My chosen article from *The Conversation* website is [*"Slowing the biological clock won't solve family planning
dilemmas"*](https://theconversation.com/slowing-the-biological-clock-wont-solve-family-planning-dilemmas-6088)
- I have created two separate plots, relating to two separate sections of the article, being:
    * Birth trends
    * The realities of fertility


- Please note: although I spent many hours researching and modifying, I could not control the y-axis on
colorbar/legend on the final plot from moving as it currently does

```{r setup, include=FALSE}
# Load your packages
library(readr)
library(dplyr)
library(ggplot2)
library(plotly)
library(magrittr)
library(countrycode)
library(RColorBrewer)
```

```{r data birth trends, include=FALSE}
# Load your data and prepare for visualisation
Fertility_full <- read.csv("FERTILITY_AGE_STATE.csv")
Fertility_full <- Fertility_full[c(2,4,6,10,11)]
#View(Fertility_full)
Fertility <- Fertility_full %>% filter(Measure=="Fertility rate" & Region=="Australia")
Fertility <- Fertility %>% filter(Age != "15 - 19" & Age != "20 - 24" & Age != "25 - 29" &
                                  Age != "30 - 34" & Age != "35 - 39" & Age != "40 - 44" &
                                  Age != "45 - 49" & Age != "All ages")
Fertility$Age <- as.integer(as.character(Fertility$Age))
#Fertility$Value <- as.integer(Fertility$Value)
Fertility <- rename(Fertility, Year=Time)
#View(Fertility)
```

```{r visualise birth trends, include=FALSE}

m <- list(l = 50, r = 50, b = 220, t = 100, pad = 4)

p1 <- plot_ly(Fertility, x=~Year, y=~Value, frame=~Age,
              type="scatter", mode="lines", fill="tozeroy", showlegend=FALSE,
              fillcolor="#fe6ba3", opacity=.2,
              line=list(width=0)) %>%
    layout(title="Australian birth trends by age from 1975 to 2015",
           annotations=list(x=1, y=0, xanchor="right", xref="paper", yref="paper", yshift=-37,
                            text="Source: http://stat.data.abs.gov.au/Index.aspx?DataSetCode=FERTILITY_AGE_STATE",
                            showarrow=F,
                            font=list(size=8)),
           xaxis = list(nticks=9),
           yaxis = list(title="Births per 1,000 women"),
           margin=m)

```

Visualisation: *"Birth trends"*
```{r, echo=FALSE}
p1
```

```{r data, include=FALSE}
# Load your data and prepare for visualisation
Locations_full <- read.csv("age_specific_fertility_rates_locations.csv")
Locations_full$CODE <- countrycode(Locations_full$country_name, "country.name", "iso3c")
Locations <- Locations_full %>% filter(CODE!="NA" & year==2015)
Locations$U35 <- (Locations$fertility_rate_15_19 + Locations$fertility_rate_20_24 +
                    Locations$fertility_rate_25_29 + Locations$fertility_rate_30_34)/4
Locations$U50 <- (Locations$fertility_rate_35_39 + Locations$fertility_rate_40_44 +
                    Locations$fertility_rate_45_49)/3
```
```

```
#View(Locations)
```

```{r visualisation, include=FALSE}
# Visualise your data

# light grey boundaries
l <- list(color = toRGB("grey"), width = 0.5)

# specify map projection/options
g <- list(
  showframe = FALSE,
  showcoastlines = FALSE,
  projection = list(type = 'Mercator')
)

# Create menu options
updatemenus <- list(
  list(
    active=0,
    type = "buttons",
    buttons = list(

      list(
        label="Aged 34 and under",
        method = "update",
        args=list(list(visible=c(TRUE, FALSE)))
      ),

      list(
        label="Aged 35 and over",
        method = "update",
        args=list(list(visible=c(FALSE, TRUE)))
      )
    )
  )
)

p2 <- plot_geo(Locations) %>%

  add_trace(z=~U35, color=~U35, colors="RdYlBu", text=~country_name,
            locations=~CODE, marker=list(line=l), name="<35") %>%

  colorbar(title="Births per \n1,000 women",
           x=0, y=0,
           limits=c(0, max(Locations$U35)),
           which=1) %>%

  add_trace(z=~U50, color=~U50, colors="RdYlBu", text=~country_name,
            locations=~CODE, marker=list(line=l), name="35+", visible=FALSE) %>%

  colorbar(title="Births per \n1,000 women",
           x=0, y=0,
           limits=c(0, max(Locations$U35)),
           which=2) %>%

  layout(title="Fertility rate by country: under/over 35 years of age (2015 data)",
           annotations=list(x=0, y=0, xanchor="left",
                            text="Source: https://www.kaggle.com/census/international-data",
                            showarrow=F,
                            font=list(size=8)),
         updatemenus=updatemenus,
         geo=g)


```

Visualisation: *"The realities of fertility"*
```{r, echo=FALSE}
p2
```