Investment in health sector per person in Australia From 1997-98 to 2011-12

MATH2290 - Assignment 3

Interactive Storytelling

Student Details

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Story URL (An article related to the dataset and the visualisation)

- Goss, J. (2018). Health care is getting cheaper (unless you need a specialist, or a dentist). The Conversation. [online] Available at: https://theconversation.com/health-care-is-getting-cheaper-unless-you-need-a-specialist-or-a-dentist-103893.

Data Source

- The medical data is available on data.gov.au, the official data website for Australian Government and was collected by Australian Institute of Health and Welfare. The data is about expenditure by both government and private entities in various medical areas for each state from Financial year 1997-98 to 2011-12. Link to the data - https://data.gov.au/dataset/health-expenditure-in-australia/resource/88399d53-d55c-466c-8f4a-6cb965d24d6d

- The population data is available on abs.gov.au, an independent statistical agency for Australian Governmenta and provides statistics on a wide range of population, economic, environmental and social issues.The data is about population demographics in Australia, by state and gender, over the years 1981 to 2018. Link to the data - http://www.abs.gov.au/AUSSTATS/ABS@Archive.nsf/log?openagent&310104.xls&3101.0&Time%20Series%20Spreadsheet&BA105EFC25A56B70CA25830D0012C658&0&Mar%202018&20.09.2018&Latest

Visualisation URL

https://s3706588.shinyapps.io/funding/

Code

```
# Load libraries and prepare data

library(shiny)
library(tidyverse)
library(xlsx)
library(lubridate)
```

```
library(plotly)
health_expenditure <- read_csv("healthexpenditurebyareaandsource.csv")
health_expenditure$state <- as.factor(health_expenditure$state)
health_expenditure$financial_year <-
as.factor(health_expenditure$financial_year)
health_expenditure$broad_source_of_funding <-
as.factor(health_expenditure$broad_source_of_funding)
health_expenditure <- health_expenditure %>%
filter(is.na(health_expenditure$real_expenditure_millions) ==
FALSE,area_of_expenditure %in% c("Medical expense tax rebate")==FALSE)
health_expenditure$area_of_expenditure <-
as.factor(health_expenditure$area_of_expenditure)
health_expenditure <- health_expenditure %>%
group_by(financial_year,area_of_expenditure,state,broad_source_of_funding)
%>% summarise(expenditure_million = sum(real_expenditure_millions))
population <- read.xlsx("310101.xls",sheetIndex = 2,startRow = 11,header = T)
population <- population %>% select(1,20:27)
colnames(population) <-
c("Year","NSW","VIC","QLD","SA","WA","TAS","NT","ACT")
population <- population %>%
filter(month(population$Year)==3,year(population$Year)>1997,year(population$Y
ear)<2013)
population$financial_year <- paste0(year(population$Year)-1,"-
",str_sub(year(population$Year),start = 3))
population <- population %>% select(10,2:9)
population <- population %>% gather(c("NSW":"ACT"),key = "state",value =
"population")
population$financial_year <- as.factor(population$financial_year)
population$state <- as.factor(population$state)
health_expenditure <-
left_join(health_expenditure,population,by=c("financial_year","state"))
health_expenditure <- health_expenditure %>% mutate(expenditure_per_person =
expenditure_million/population*1000000)

# Define UI for application
ui <- fluidPage(

  # Application title
  titlePanel(h1("Investment in health sector per person in Australia from
1997-98 to 2011-12",align = "center"),windowTitle = "Medical investment"),


  sidebarLayout(position = "right",
    sidebarPanel(width = 3,br(),
      p("This app displays the medical investment in Australia per person
over the financial years 1997-98 to 2011-12 and the statewise
breakdown.",align = "center"),
      br(),
      h2("Options",align = "center"),
```

```
      h3("Funding Sector",align = "center"),
      selectInput("category", label = NULL,
                          choices =
levels(health_expenditure$area_of_expenditure),
                          selected = "Community health"),
      p("Choose a sector in the medical domain to look at its funding
trends",align = "center"),

      br(),
      h3("Funding Source",align = "center"),
      checkboxGroupInput("source", label = NULL,
                          choices =
levels(health_expenditure$broad_source_of_funding),
                          selected = "Government",inline = T),
      p("Select atleast one funding source",align = "center"),
      br()
    ),



    # Show a plot of the generated distribution
    mainPanel(width=9,
      plotlyOutput("line", height = "260px"),
      br(),
      plotlyOutput("bar", height = "260px")
      )
    )
  )


# Define server logic
server <- function(input, output) {


  output$line <- renderPlotly({

    health_expenditure_plot <- health_expenditure %>%
filter(area_of_expenditure == input$category,broad_source_of_funding %in%
input$source) %>% group_by(financial_year) %>% summarise(`expenditure per
person` = sum(expenditure_per_person))

   ggplotly(ggplot(data = health_expenditure_plot, aes(x = financial_year,
                          y = `expenditure per person`)) +
      geom_point(color = "#8da0cb") + geom_line(aes(group = 1),color =
"#8da0cb") + labs(x = "Financial Year", y = "Investment/person ($)")+
ggtitle("Funding per year per person across all states"))

    })
```

```
  output$bar <- renderPlotly({

    health_expenditure_bar <- health_expenditure %>%
filter(area_of_expenditure == input$category,broad_source_of_funding %in%
input$source) %>% group_by(state) %>% summarise(`expenditure per person` =
mean(expenditure_per_person))

    ggplotly(ggplot(data = health_expenditure_bar, aes(x = state,
                                                       y = `expenditure per person`))
+
      geom_bar(stat = "identity",fill = "#8da0cb") + labs(x = "State", y =
"Average investment/person ($)") +
geom_bar(data=subset(health_expenditure_bar, `expenditure per
person`==max(`expenditure per person`)), aes(state, `expenditure per
person`),

fill="#7fc97f", stat="identity")+ ggtitle("Average funding per person per
state"))

     })

}

# Run the application
shinyApp(ui = ui, server = server)
```