Information about the `tidyverse`

Write your name here

Contents

1 Code to Create this Document

```
#This is where your code with the render function should appear.
#Remember that you don't want this code chunk to evaluate but
#you do want it to show up in your document.
```

2 R packages for data science

The tidyverse is an opinionated collection of R packages designed for data science. All packages share an underlying design philosophy, grammar, and data structures.

Install the complete tidyverse with:

```
install.packages("tidyverse")
```

3 Some Core Packages

The four *core* packages that we'll use the most are given below along with their purpose and a quick example of some functionality.

3.1 dplyr

dplyr is a grammar of data manipulation, providing a consistent set of verbs that help you solve the most common data manipulation challenges:

- mutate() adds new variables that are functions of existing variables
- select() picks variables based on their names.
- filter() picks cases based on their values.
- summarise() reduces multiple values down to a single summary.
- arrange() changes the ordering of the rows.

These all combine naturally with group_by() which allows you to perform any operation "by group". You can learn more about them in vignette("dplyr"). As well as these single-table verbs, dplyr also provides a variety of two-table verbs, which you can learn about in vignette("two-table").

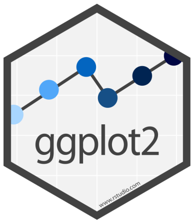
If you are new to dplyr, the best place to start is the data transformation chapter in R for data science.

```
library(dplyr)

starwars %>%
  filter(species == "Droid")
```

```
## # A tibble: 5 x 13
##   name  height  mass hair_color skin_color eye_color
##   <chr>  <int> <dbl> <chr>      <chr>      <chr>
## 1 C-3PO    167    75 <NA>       gold       yellow
## 2 R2-D2     96    32 <NA>       white, bl~ red
## 3 R5-D4     97    32 <NA>       white, red red
## 4 IG-88    200   140 none       metal      red
## 5 BB8       NA    NA none       none       black
## # ... with 7 more variables: birth_year <dbl>,
## #   gender <chr>, homeworld <chr>, species <chr>,
## #   films <list>, vehicles <list>, starships <list>
```

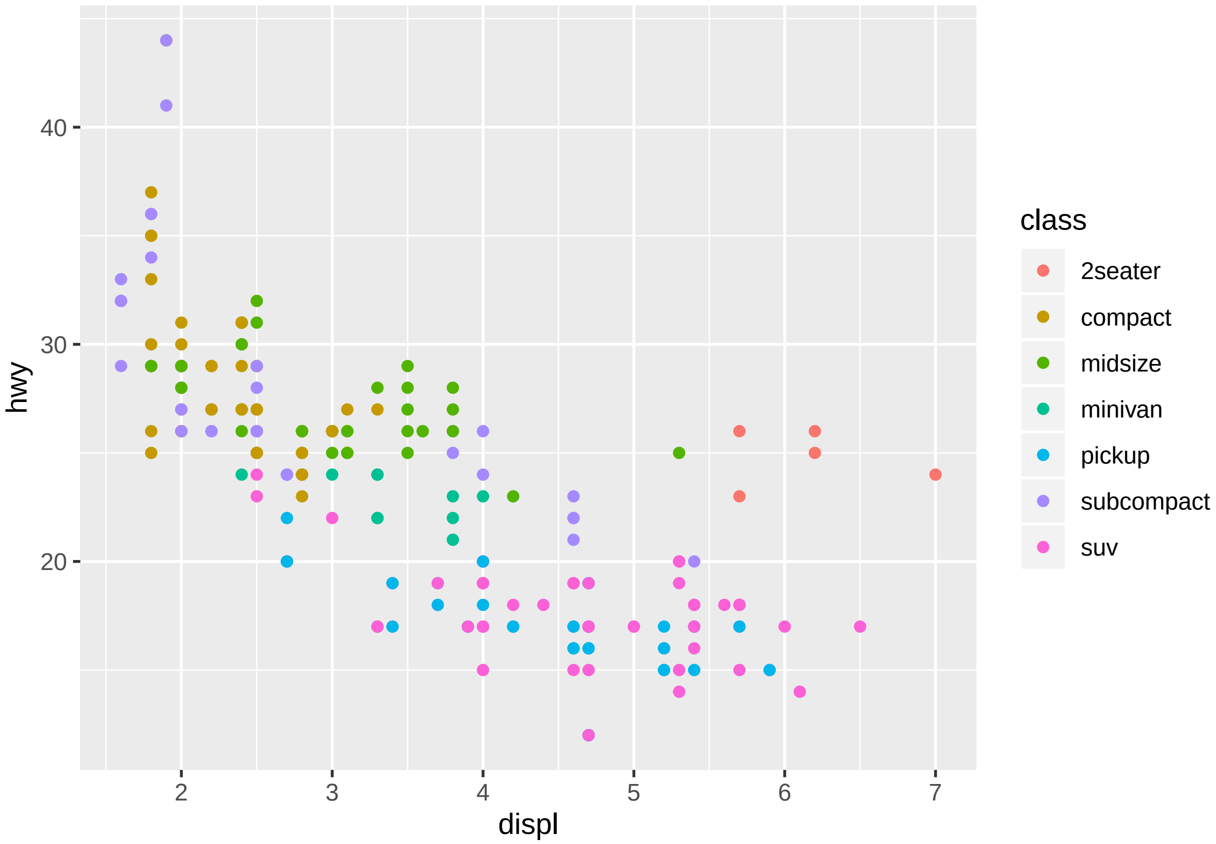
3.2 ggplot2



ggplot2 is a system for declaratively creating graphics, based on The Grammar of Graphics. You provide the data, tell ggplot2 how to map variables to aesthetics, what graphical primitives to use, and it takes care of the details.

```
library(ggplot2)

ggplot(mpg, aes(displ, hwy, colour = class)) +
  geom_point()
```



3.3 readr

The goal of `readr` is to provide a fast and friendly way to read rectangular data (like csv, tsv, and fwf). It is designed to flexibly parse many types of data found in the wild, while still cleanly failing when data unexpectedly changes. If you are new to readr, the best place to start is the data import chapter in R for data science.

3.4 tidyr

The goal of `tidyr` is to help you create tidy data. Tidy data is data where:

1. Every column is variable.

2. Every row is an observation.
3. Every cell is a single value.

Tidy data describes a standard way of storing data that is used wherever possible throughout the tidyverse. If you ensure that your data is tidy, you'll spend less time fighting with the tools and more time working on your analysis. Learn more about tidy data in `vignette("tidy-data")`.

```r
library(tidyr)

relig_income
```

```
## # A tibble: 18 x 11
##    religion `<$10k` `$10-20k` `$20-30k` `$30-40k`
##    <chr>      <dbl>     <dbl>     <dbl>     <dbl>
##  1 Agnostic      27        34        60        81
##  2 Atheist       12        27        37        52
##  3 Buddhist      27        21        30        34
##  4 Catholic     418       617       732       670
##  5 Don’t k~      15        14        15        11
##  6 Evangel~     575       869      1064       982
##  7 Hindu          1         9         7         9
##  8 Histori~     228       244       236       238
##  9 Jehovah~      20        27        24        24
## 10 Jewish        19        19        25        25
## 11 Mainlin~     289       495       619       655
## 12 Mormon        29        40        48        51
## 13 Muslim         6         7         9        10
## 14 Orthodox      13        17        23        32
## 15 Other C~       9         7        11        13
## 16 Other F~      20        33        40        46
## 17 Other W~       5         2         3         4
## 18 Unaffil~     217       299       374       365
## # ... with 6 more variables: `$40-50k` <dbl>,
## #   `$50-75k` <dbl>, `$75-100k` <dbl>,
## #   `$100-150k` <dbl>, `>150k` <dbl>, `Don't
## #   know/refused` <dbl>
```

```r
relig_income %>%
  pivot_longer(-religion, names_to = "income", values_to = "frequency")
```

```
## # A tibble: 180 x 3
##    religion income             frequency
##    <chr>    <chr>                  <dbl>
##  1 Agnostic <$10k                     27
##  2 Agnostic $10-20k                   34
##  3 Agnostic $20-30k                   60
##  4 Agnostic $30-40k                   81
##  5 Agnostic $40-50k                   76
##  6 Agnostic $50-75k                  137
##  7 Agnostic $75-100k                 122
##  8 Agnostic $100-150k                109
##  9 Agnostic >150k                     84
## 10 Agnostic Don't know/refused        96
## # ... with 170 more rows
```