

Communication with RMarkdown

Business Science

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RMarkdown

Is amazing.

What can RMarkdown be used for?

1. HTML Reports & PDF Reports
2. HTML Slide Decks & PowerPoint
3. Interactive Dashboards
4. Books with `bookdown`
5. Websites with `blogdown`

Key Resources

- RMarkdown Website with Gallery
- Key Reference: RMarkdown - The Definitive Guide
- PDF Printing Setup: tinytex

```
# PDF Knitting Setup: https://yihui.name/tinytex/  
# install.packages("tinytex")  
# tinytex::install_tinytex()
```

How Rmarkdown Works

Header 1

Header 2

Header 3

Working with Text

Free-form text.

Make text **bold**.

Make text *italics*.

Make text ***bold + italics***.

Talk about code - the `tidyverse` is awesome

Unordered List:

- Item 1
- Item 2

Ordered List:

1. First point
2. Second point
3. More points

Tabset

Tab 1

This is Tab 1



Figure 1: Business Science Logo



Figure 2: Business Science Logo

Tab 2

This is Tab 2

Images

Code

Read in data and print to HTML. Notice effect of `df_print: paged` option for HTML.

- Try changing to `df_print: default`, or `kable` or `tibble`. PDF prints normally.
- Try changing `results = "hide"`.

```
bike_orderlines_tbl <- read_rds(path = "../00_data/bike_sales/data_wrangled/bike_orderlines.rds")
```

```
bike_orderlines_tbl
```

```
## # A tibble: 15,644 x 13
```

##	order_date	order_id	order_line	quantity	price	total_price	model
##	<dtm>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<chr>
##	1 2011-01-07 00:00:00	1	1	1	6070	6070	Jeky~
##	2 2011-01-07 00:00:00	1	2	1	5970	5970	Trig~
##	3 2011-01-10 00:00:00	2	1	1	2770	2770	Beas~
##	4 2011-01-10 00:00:00	2	2	1	5970	5970	Trig~
##	5 2011-01-10 00:00:00	3	1	1	10660	10660	Sup~
##	6 2011-01-10 00:00:00	3	2	1	3200	3200	Jeky~
##	7 2011-01-10 00:00:00	3	3	1	12790	12790	Sup~
##	8 2011-01-10 00:00:00	3	4	1	5330	5330	Sup~
##	9 2011-01-10 00:00:00	3	5	1	1570	1570	Syna~

```
## 10 2011-01-11 00:00:00      4      1      1 4800      4800 Syna~
## # ... with 15,634 more rows, and 6 more variables: category_1 <chr>,
## #   category_2 <chr>, frame_material <chr>, bikeshop_name <chr>,
## #   city <chr>, state <chr>
```

We can do data manipulations too. Try changing the YAML `code_folding` option from `none` to `hide` to `show`.

```
revenue_by_category_tbl <- bike_orderlines_tbl %>%
  select(category_2, category_1, total_price) %>%

  group_by(category_2, category_1) %>%
  summarise(total_revenue = sum(total_price)) %>%
  ungroup() %>%

  arrange(desc(total_revenue)) %>%
  mutate(category_2 = as_factor(category_2) %>% fct_rev())
```

Plots

Plotting works as expected. Try changin:

- `out.height`, `out.width` and Knitting
- Potential gotcha - Interactive plots (e.g. `plotly`) will not display in PDF

Static Plots:

- Use `ggplot2`.

```
g <- revenue_by_category_tbl %>%
  ggplot(aes(category_2, total_revenue, fill = category_1)) +

  # Geoms
  geom_col() +
  coord_flip() +

  # Formatting
  scale_fill_tq() +
  scale_y_continuous(labels = scales::dollar_format(scale = 1e-6, suffix = "M")) +
  theme_tq() +
  labs(
    title = "Total Revenue by Category",
    x = "", y = "", fill = ""
  )

g
```

Interactive plots:

- Use `ggplotly()`.

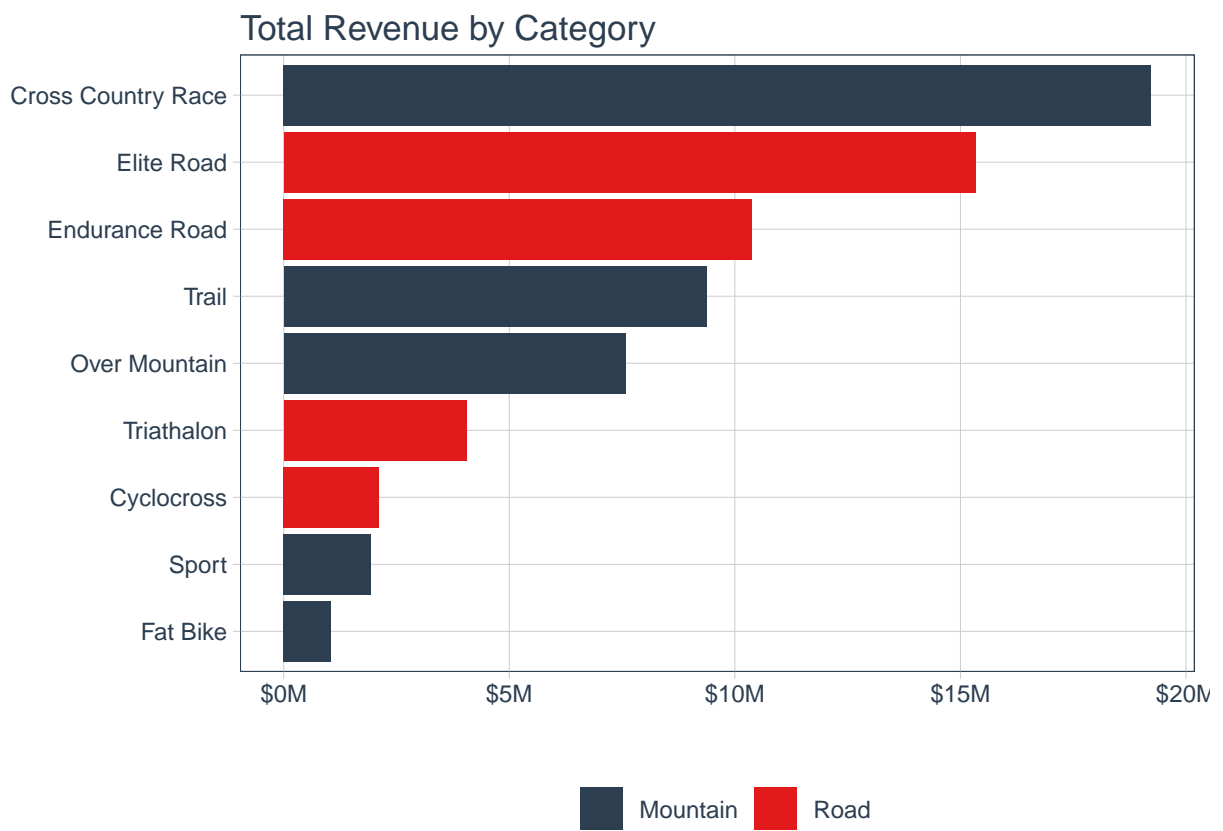


Figure 3: Revenue by Category

```
#ggplotly(g)
```

Tables

Static Tables:

- knitr package - `knitr::kable()` - Simple to use, great with PDF
- gt package - Not on CRAN yet, but really good for static tables

```
table_formatted_tbl <- revenue_by_category_tbl %>%  
  mutate(total_revenue = scales::dollar(total_revenue)) %>%  
  rename_all(.funs = ~ str_replace(., "_", " ") %>%  
    str_to_title())  
  
table_formatted_tbl %>% knitr::kable()
```

Category 2	Category 1	Total Revenue
Cross Country Race	Mountain	\$19,224,630
Elite Road	Road	\$15,334,665
Endurance Road	Road	\$10,381,060
Trail	Mountain	\$9,373,460
Over Mountain	Mountain	\$7,571,270
Triathlon	Road	\$4,053,750
Cyclocross	Road	\$2,108,120
Sport	Mountain	\$1,932,755
Fat Bike	Mountain	\$1,052,620

Dynamic Tables:

- Can print tables without additional formatting in HTML with the `df_print: paged` option in YAML
- Potential Gotcha: Note that this will not print with format in PDF

```
table_formatted_tbl  
  
## # A tibble: 9 x 3  
##   `Category 2`      `Category 1` `Total Revenue`  
##   <fct>          <chr>      <chr>  
## 1 Cross Country Race Mountain    $19,224,630  
## 2 Elite Road      Road       $15,334,665  
## 3 Endurance Road  Road       $10,381,060  
## 4 Trail           Mountain   $9,373,460  
## 5 Over Mountain   Mountain   $7,571,270  
## 6 Triathlon       Road       $4,053,750  
## 7 Cyclocross      Road       $2,108,120  
## 8 Sport           Mountain   $1,932,755  
## 9 Fat Bike        Mountain   $1,052,620
```

Footnotes

This is some text with a Footnote¹. This is a second Footnote².

¹Citation for Footnote 1

²Citatin for Footnote 2