# Creating reports with Rmarkdown

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# Applications



- Rendering scripts (knitr)
- Creating reports (pagedown-pdf)
- Websites (pagedown, pkgdown)
- Books (bookdown)
- Presentations (xaringan)
- CV (vitae, datadrivencv)
- Thesis (thesisdown)
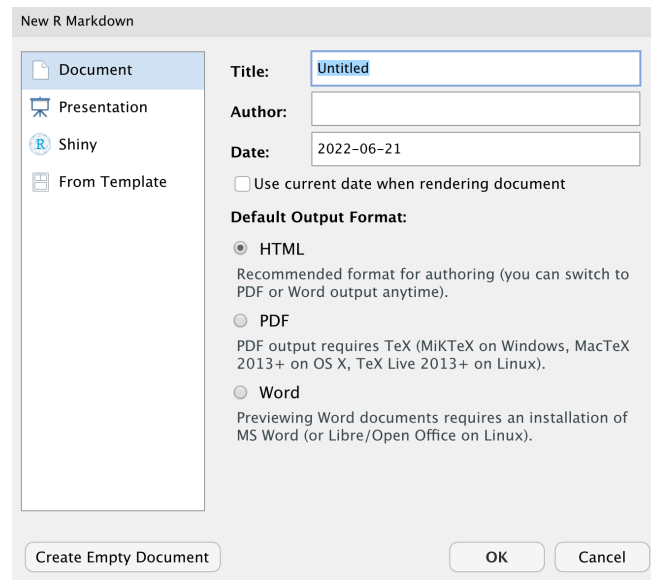
# R script vs R markdown

## Script

- Code is written directly on the script
- Comments are marked with '#'
- Output is printed on the console

## R markdown

- Code is written inside R chunks
- Comments are written directly on the document
- Output to multiple formats

# Starting a file

- File > New file > R Markdown
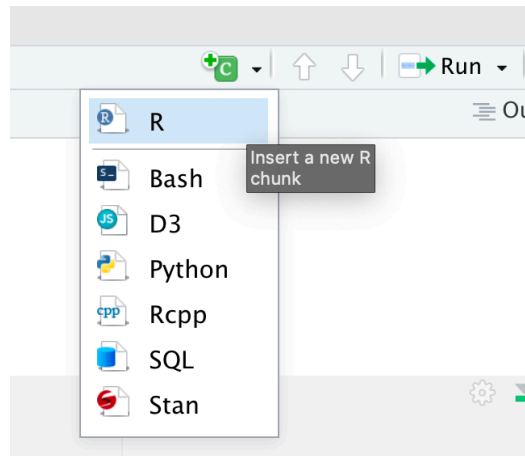- Assign a title
- Create empty document

# Starting a file

- Open a new chunk

# Starting a file

- Start writing some code

```r
library(tidyverse)
library(janitor)
sinai_covid <- read_csv("sinai_covid.csv")
sinai_covid <- clean_names(sinai_covid)
```

```r
sinai_covid %>%
  select(age, ethnicity, facility) %>%
  head()

ggplot(sinai_covid, aes(x = age, color = facility)) +
  geom_line()
```

# Chunk options

- echo
- eval
- warnings
- message
- out.width
- out.height
- fig.align
- fig.alt
- ...

# Bullet lists

You can use bullets (+, -, *) or numbers (1, 1.1)

```
## Bullet lists

- First element
+ Second element
* Third element

1. A number
2. Another number

1.1 A deep number
1.2 A second number
```

# Working with tables

Using the kableExtra package

```
library(kableExtra)
x <- sinai_covid %>%
  select(age, ethnicity, facility) %>%
  head(5)

kable(x, caption = "Head of sinai covid") %>%
  kable_styling()
```

Head of sinai covid

| age | ethnicity | facility |
| --- | --- | --- |
| 63 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 64 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 21 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 51 | NON-HISPANIC | MOUNT SINAI QUEENS HOSPITAL |
| 72 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |

# More styling

```r
kable(x, caption = "Head of sinai covid") %>%
  kable_styling() %>%
  kable_classic(full_width = FALSE,
                html_font = "Cambria")
```

## Head of sinai covid

| age | ethnicity | facility |
| --- | --- | --- |
| 63 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 64 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 21 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 51 | NON-HISPANIC | MOUNT SINAI QUEENS HOSPITAL |
| 72 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |

# Using the flextable package

```
library(flextable)
flextable(x) %>%
  autofit()
```

| age | ethnicity | facility |
|---|---|---|
| 63 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 64 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 21 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |
| 51 | NON-HISPANIC | MOUNT SINAI QUEENS HOSPITAL |
| 72 | NON-HISPANIC | THE MOUNT SINAI HOSPITAL |

# The yaml section

- Add a title

```
---
title: "My first pipeline"
output:
  html_document
---
```

- Create a table of contents

```
---
title: "My first pipeline"
output:
  html_document:
    toc: true
    toc_depth: 2
---
```

- Floating table of contents

```
---
title: "My first pipeline"
output:
  html_document:
    toc: true
    toc_float: true
---
```

# Animated plots with gganimate

```r
library(gganimate)

influenza <- read.csv("influenza_vaccination.csv")
influenza <- clean_names(influenza)

influenza %>%
    group_by(mmwr_year, race_eth) %>%
    summarise(mean_vaccinated = mean(vaccinated)) %>%
    ggplot(aes(factor(mmwr_year), mean_vaccinated,
               color = race_eth)) +
    geom_point()
```

# Adding time transition

```
influenza %>%
    group_by(mmwr_year, race_eth) %>%
    summarise(mean_vaccinated = mean(vaccinated)) %>%
    ggplot( aes(race_eth, mean_vaccinated)) +
    geom_col() +
    theme(axis.text.x = element_text(angle = 90)) +
    transition_states(mmwr_year)
```

# Adding time as title

```
influenza %>%
    group_by(mmwr_year, race_eth) %>%
    summarise(mean_vaccinated = mean(vaccinated)) %>%
    ggplot( aes(race_eth, mean_vaccinated)) +
    geom_col() +
    theme(axis.text.x = element_text(angle = 90)) +
    labs(title = 'Year: {frame_time}') +
    transition_time(mmwr_year)
```

# Thanks!