R PROGRAMMING

for data visualization

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Today's goals

LEARN principles of a key R plotting framework

UNDERSTAND what R can do for visualizations

KNOW what to do next to learn more

``Homework''

goo.gl/7fPYUx

Today's plan

PLOT

MAP

INTERACT

REPORT

TIDY

PREREQUISITES

Setting up for success

[R vs. RStudio]

[R packages]

Installing R packages

```
install.packages("readr")
```

Use the **install.packages** function to install an R package to your computer.

Loading R packages

```
library("readr")
```

Use the **library** function to load an R package that is installed on your computer.

Assign an object a name with R's **gets arrow**

Assignment with the gets arrow

You want to read in the “daily_fatalities.csv” file, which is in the “data” subdirectory.

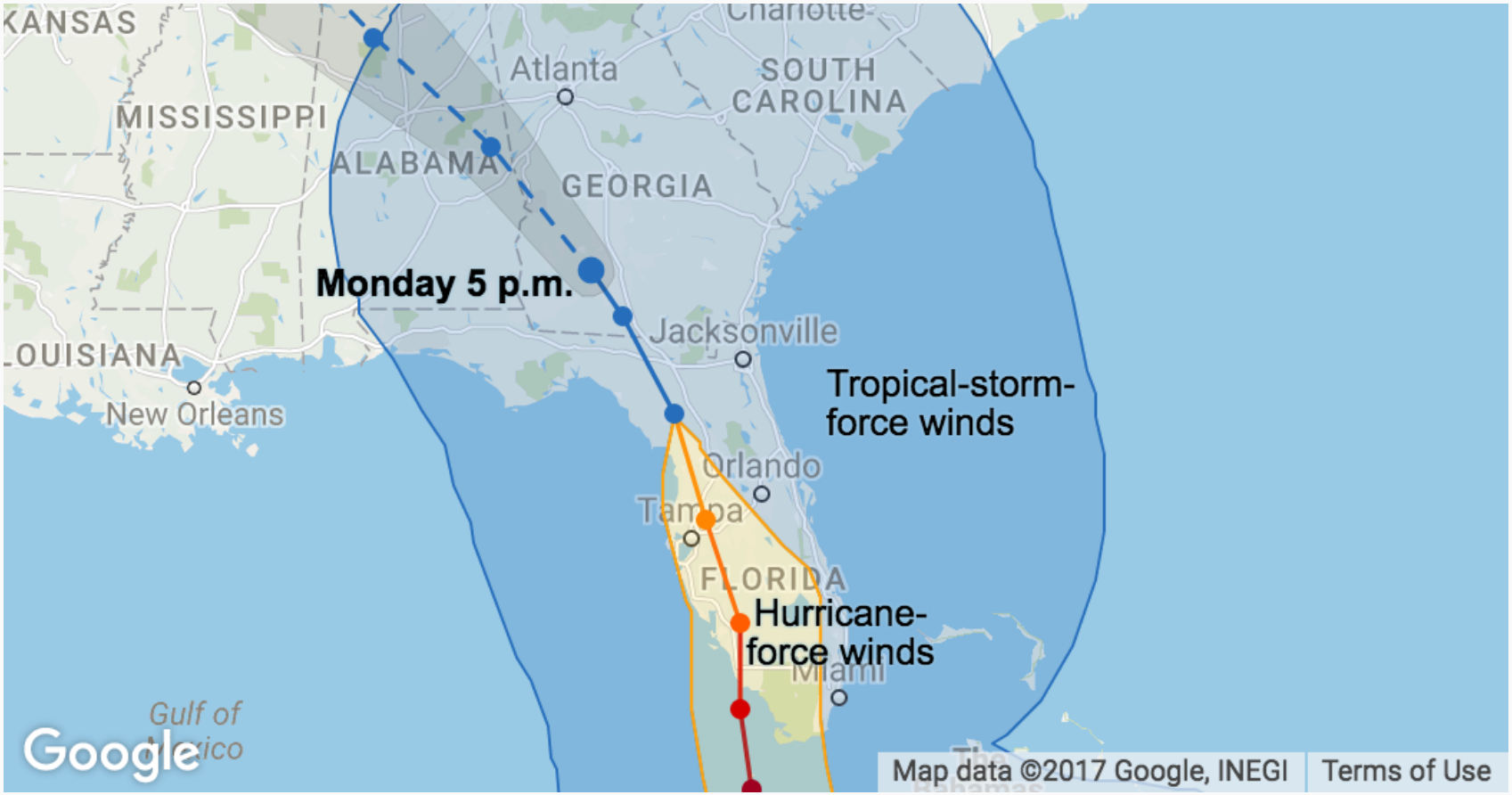
Assignment with the gets arrow

Assign the filepath of this file to the R object named **fatalities_files**.

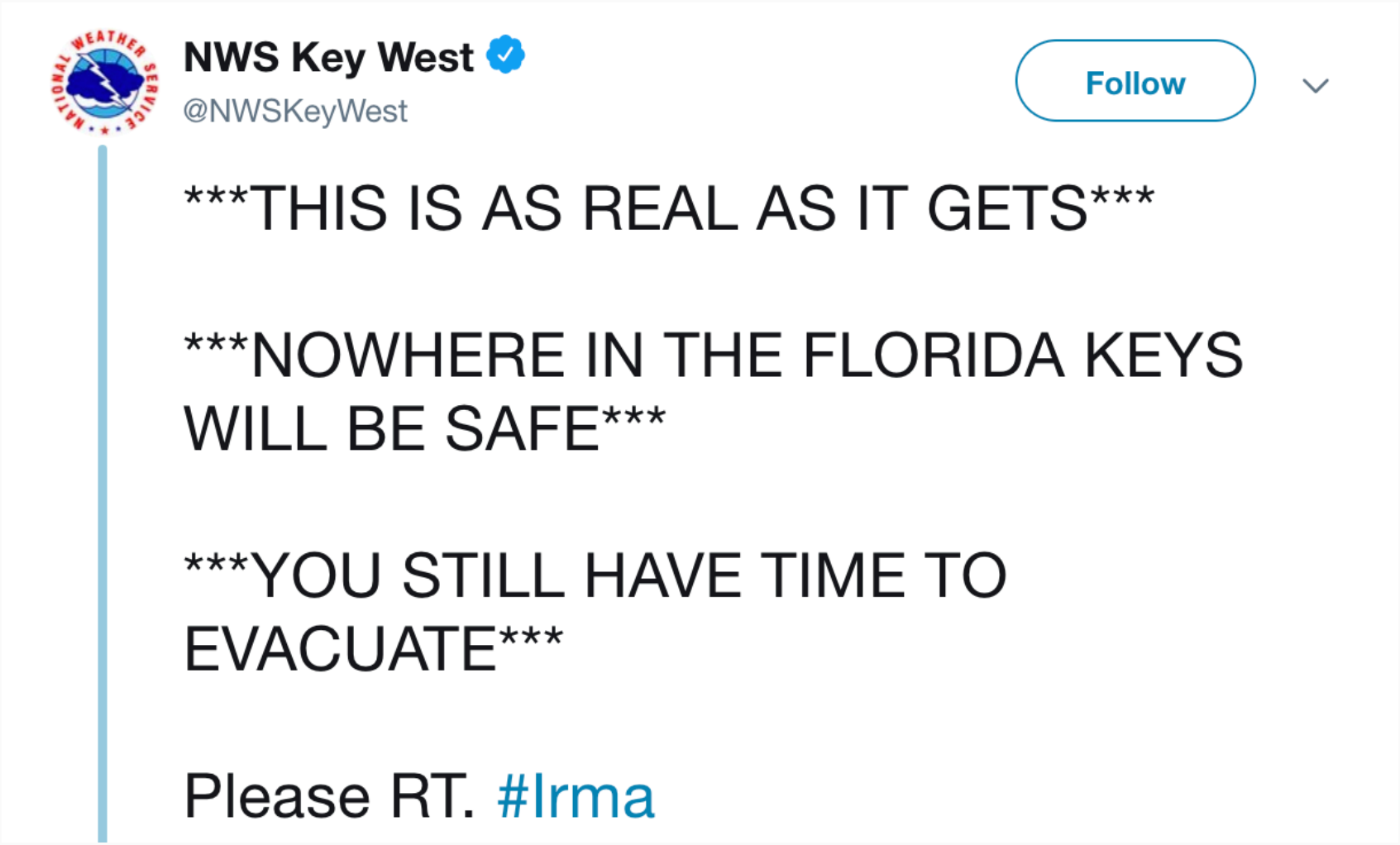
Reference that object to read in the data and assign it to the R object named **daily_fatalities**.

```
fatalities_file <- ”data/daily_fatalities.csv”
daily_fatalities <- read_csv(fatalities_file)
```

Hurricane Irma



Hurricane Irma



Hurricane Irma

Navy evacuates over 5,000 personnel from Florida base ahead of Hurricane Irma

Published time: 6 Sep, 2017 05:08
Edited time: 7 Sep, 2017 10:56

Get short URL

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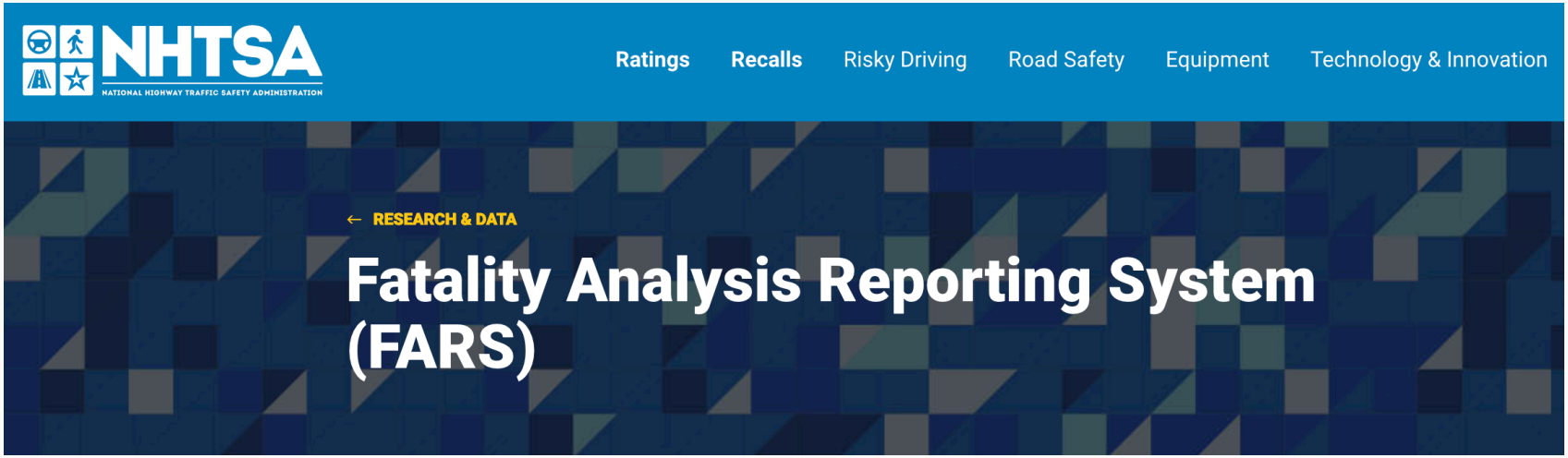


https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

Example data

```
daily_fatalities
```

```
## # A tibble: 28 x 4
##    date        week weekday   fatals
##    <date>     <dbl> <chr>      <dbl>
##  1 2017-08-27    35 Sunday         4
##  2 2017-08-28    35 Monday         5
##  3 2017-08-29    35 Tuesday        6
##  4 2017-08-30    35 Wednesday      6
##  5 2017-08-31    35 Thursday       6
##  6 2017-09-01    35 Friday         9
##  7 2017-09-02    35 Saturday       8
##  8 2017-09-03    36 Sunday        15
##  9 2017-09-04    36 Monday         7
## 10 2017-09-05    36 Tuesday        8
## # ... with 18 more rows
```

PLOT

R’s **ggplot2** framework for plotting

[Layering for ggplot]

Spot the differences

geoms and their aesthetics

scales

labels

themes

[Live coding example]

MAP

R's **sf** framework for mapping

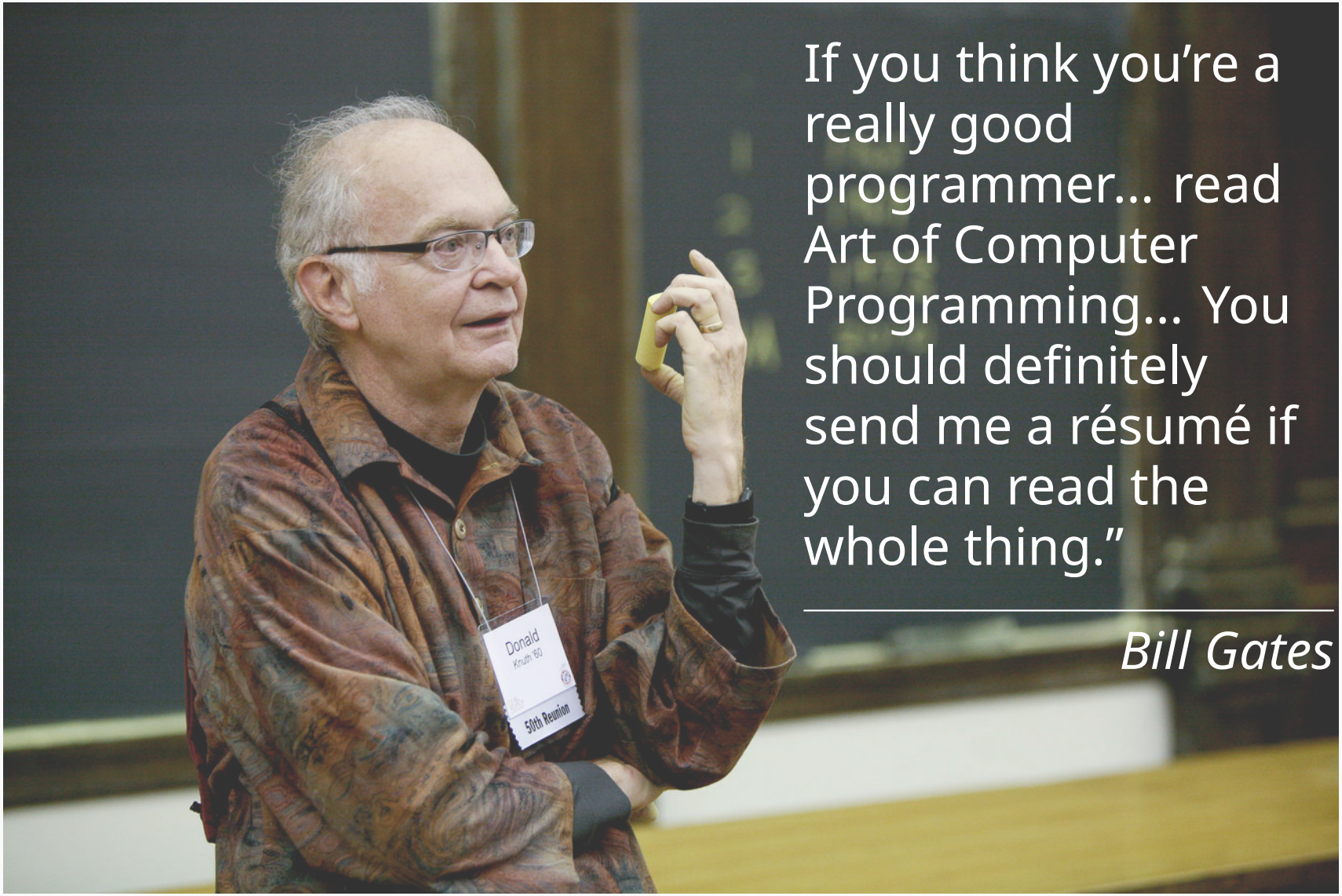
INTERACT

R’s **htmlwidgets** framework for interacting

REPORT

R's **RMarkdown** framework for reporting

Donald Knuth



Yihui Xie

WYSISYG

What **Y**ou **S**ee **I**s **W**hat **Y**ou **G**et

````
Text of the report, with Markdown **format markers**.

```{r}
number_one <- 1

number_one
```

More text, \*also\* with Markdown format markers.
And a list:

\- Item 1

\- Item 2
````

Text of the report, with Markdown **format markers**.

```
number_one <- 1
number_one
```

```
## [1] 1
```

More text, *also* with Markdown format markers. And some items:

- Item 1
- Item 2

```
irma_week_accs <- fl_accidents %>%
  group_by(fips) %>%
  summarize(fatals = sum(fatals))

irma_accs <- fl_counties %>%
  full_join(irma_week_accs, by = c("GEOID" = "fips")) %>%
  mutate(fatals = ifelse(is.na(fatals), 0, fatals))

fl_accidents <- fl_accidents %>%
  st_as_sf(coords = c("longitud", "latitude")) %>%
  st_set_crs(st_crs(

irma_track <- st_read("data/al112017_best_track",
                      layer = "al112017_lin") %>%
  st_transform(crs = st_crs(irma_accs))
```

st_read(dsn, layer, ...)

[Live coding example]

TIDY

R’s **tidyverse** framework for tidying

[Live coding example]

Presento

The design is clean

The rules are simple

The code is extensible

Open Source Fonts

This is Montserrat

This is Noto Sans

This is Lato (light)

This is inconsolata

This is Alegreya Sans small caps

Color Palette

BIG BOLD TEXT

but background color does not work

RUN!