

# Unemployment over Time

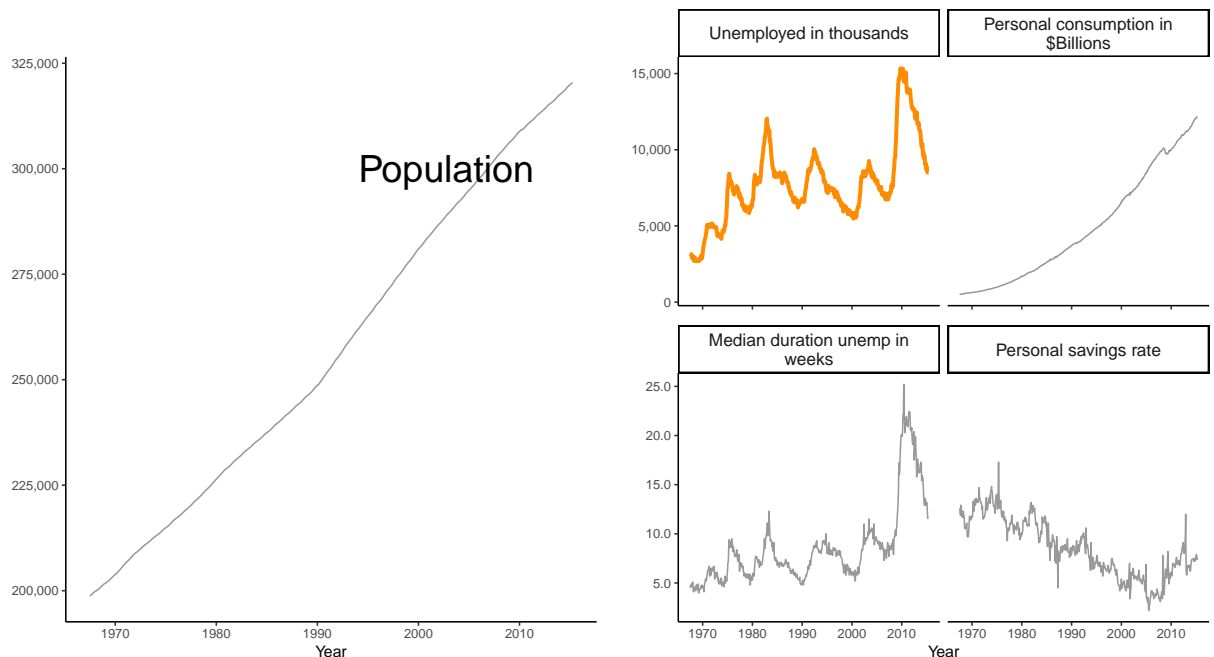
An DIIG introduction to reproducible computational analysis and report writing

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R, RStudio, and the Tidyverse are three components of a modern computational environment that leverages important characteristics of Data Science. This tool suite is extensible but available to researchers working at various level of complexity. This example report demonstrates how computational analysis can be supported by a reproducible workflow. You will see how RStudio and the Tidyverse are geared towards reproducibility; can render reports in various formats; aids in the important and time consuming task of data wrangling (80% of any data project); brings sophisticated visualization functions; and leverages sophisticated data management techniques.

Economic Time Series



Source: ggplot2::economics\_long

## Explanation

This report was generated by leveraging the various Tidyverse packages listed, and briefly introduced, below.

### dplyr

<https://dplyr.tidyverse.org>

Subset and sort

- `filter()` rows [observations]
- `select()` columns [variables]
- `arrange()` arrange rows by a variable

New variables and column totals

- `mutate()` create a new variable
- `summarize()` column totals
- `group_by()` when used with summarize, column subtotals

Add data from other data frames

- `left_join()`
- `anti_join()`

## tidyr

<https://tidyr.tidyverse.org>

- `pivot_longer()`
- `pivot_wider()`

## Visualization (ggplot2) & EDA

<https://ggplot2.tidyverse.org> <https://docs.ropensci.org/skimr>

- `skimr::skim()` - a good place to start for Exploratory Data Analysis
- `geom_histogram()`
- `geom_bar()` (and `geom_col()`)
- `geom_boxplot()`
- `geom_line()` (time series)
- `geom_point()`

## Resources

- This code repository
- Videos and guides
- Tidyverse documentation
- Center for Data & Visualization Sciences

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