Reproducible Finance with R

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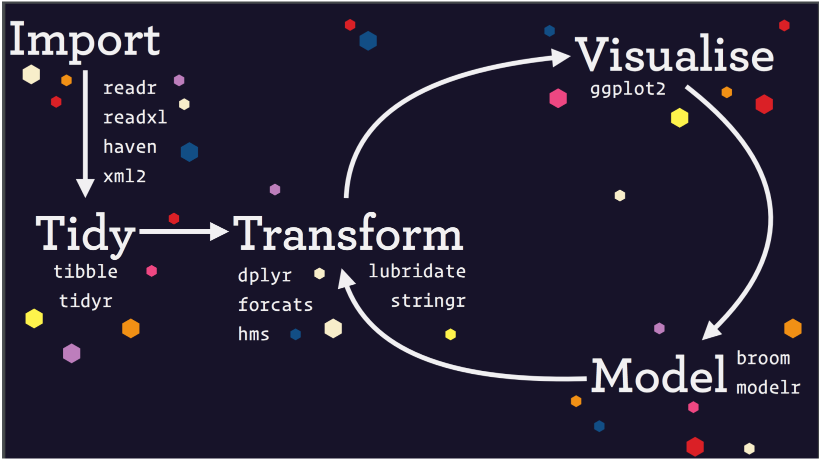
Introduction to R and RStudio

- R is a very popular statistical programming language that was born in New Zealand in 1995. Now consists of base R + 17,000 packages
- RStudio was founded by JJ Allaire in 2009 and is the most popular IDE for R coders
- www.rstudio.com
- RStudio also builds and maintains the tidyverse, a popular collection of R packages
- www.tidyverse.org
- Shiny was created by RStudio CTO Joe Cheng and enables R coders to build interactive, web-based dashboards straight from R
- shiny.rstudio.com

Data Science Paradigm



Popular packages for Finance

```r
library(PerformanceAnalytics)
library(PortfolioAnalytics)
library(TTR)
library(tidyquant)
library(timetk)
library(tibbletime)
library(quantmod)
library(xts)
```

List of packages for finance here:
https://cran.r-project.org/web/views/Finance.html

Popular packages for Visualization

```r
library(ggplot2)
library(dygraphs)
library(highcharter)
library(plotly)
library(leaflet)
```

Today's Use Case

- Import price data for 5 ETFs, convert to log returns
- Visualize prices and returns
- Calculate some statistics of interest with built-in functions
- Custom function to calculate rolling 50 and 200-day means
- Visualize custom calculations
- Visualize the trend strategy versus buy-and-hold

Learn more about R for data science

- http://r4ds.had.co.nz/

Learn more about R for Finance

- www.reproduciblefinance.com