Welcome to the course!

IMPORTING AND MANAGING FINANCIAL DATA IN R

Joshua Ulrich
Instructor

datacamp

About me

- Author and/or maintainer of several packages
  - `TTR`, `xts`, `quantmod`, `blotter`, `quantstrat`
- R/Finance Conference Organizing Committee
- St. Louis R User Group

What is getSymbols()?

- Provides access to multiple data sources
- Returns `xts` object by default
- Can import data two ways:
  - Return data like an ordinary function
  - Create an object like `load()` does in base R

```
getSymbols(Symbols = "AAPL", src = "yahoo")
```

```
"AAPL"
```

```
getSymbols("AAPL")
```

```
"AAPL"
```

```
head(AAPL)
```

```
           AAPL.Open AAPL.High AAPL.Low AAPL.Close AAPL.Volume AAPL.Adjusted
2007-01-03     86.29     86.58    81.90      83.80   309579900      10.85709
2007-01-04     84.05     85.95    83.82      85.66   211815100      11.09807
2007-01-05     85.77     86.20    84.40      85.05   208685400      11.01904
2007-01-08     85.96     86.53    85.28      85.47   199276700      11.07345
2007-01-09     86.45     92.98    85.15      92.57   837324600      11.99333
2007-01-10     94.75     97.80    93.45      97.00   738220000      12.56728
```

getSymbols() data sources

Yahoo! Finance	YAHOO! FINANCE
Google Finance	Google Finance
FRED	FRED ECONOMIC DATA | ST. LOUIS FED
Oanda	OANDA
CSV	.csv

Other getSymbols() data sources

- Yahoo! Finance Japan
- MySQL
- SQLite
- RData
- rds (created by `saveRDS()`)

getSymbols() example

```
# Load data like load()
getSymbols("AAPL", auto.assign = TRUE)
```

```
"AAPL"
```

```
head(AAPL, n = 3)
```

```
           AAPL.Open AAPL.High AAPL.Low AAPL.Close AAPL.Volume AAPL.Adjusted
2007-01-03     86.29     86.58    81.90       83.80   309579900      10.85709
2007-01-04     84.05     85.95    83.82       85.66   211815100      11.09807
2007-01-05     85.77     86.20    84.40       85.05   208685400      11.01904
```

getSymbols() example

```
# Return data like a normal function
aapl <- getSymbols("AAPL", auto.assign = FALSE)
head(aapl, n = 3)
```

```
           AAPL.Open AAPL.High AAPL.Low AAPL.Close AAPL.Volume AAPL.Adjusted
2007-01-03     86.29     86.58    81.90      83.80   309579900      10.85709
2007-01-04     84.05     85.95    83.82      85.66   211815100      11.09807
2007-01-05     85.77     86.20    84.40      85.05   208685400      11.01904
```

Let's practice!

IMPORTING AND MANAGING FINANCIAL DATA IN R

Introduction to Quandl

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What is Quandl?

- Data service:
  - **https://www.quandl.com/**
- R package:
  - **https://CRAN.R-project.org/package=Quandl**
- Function:
  - `Quandl::Quandl()`

Quandl() versus getSymbols()

- Both provide access to multiple data sources
- `Quandl()` always returns data (i.e. does not behave like `load()`)

```
# Instrument and source specified by Symbols and src arguments
quantmod::getSymbols(Symbols = "DGS10", src = "FRED")
```

```
# Instrument and source specified by code argument
dgs10 <- Quandl::Quandl(code = "FRED/DGS10")
```

Quandl() versus getSymbols()

- `type` argument controls class of return object:
  - "raw" (`data.frame` object), `xts`, `zoo`, `ts`, `timeSeries`

```
# Return xts object instead of data.frame
dgs10 <- Quandl::Quandl(code = "FRED/DGS10", type = "xts")
```

- Defaults
  - `getSymbols()` returns `xts`
  - `Quandl()` returns `data.frame`

Let's practice!

IMPORTING AND MANAGING FINANCIAL DATA IN R

Finding data from internet sources

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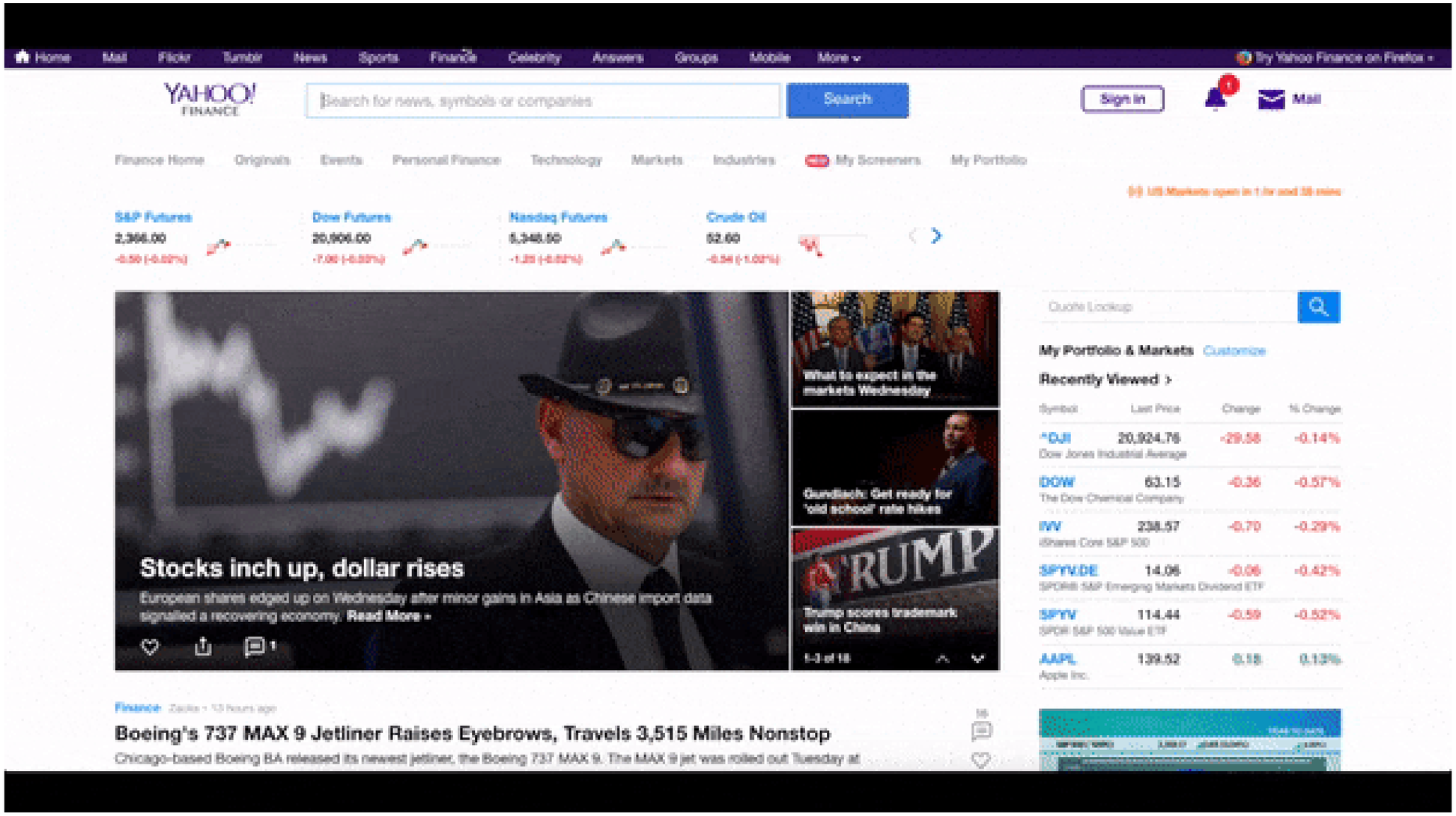
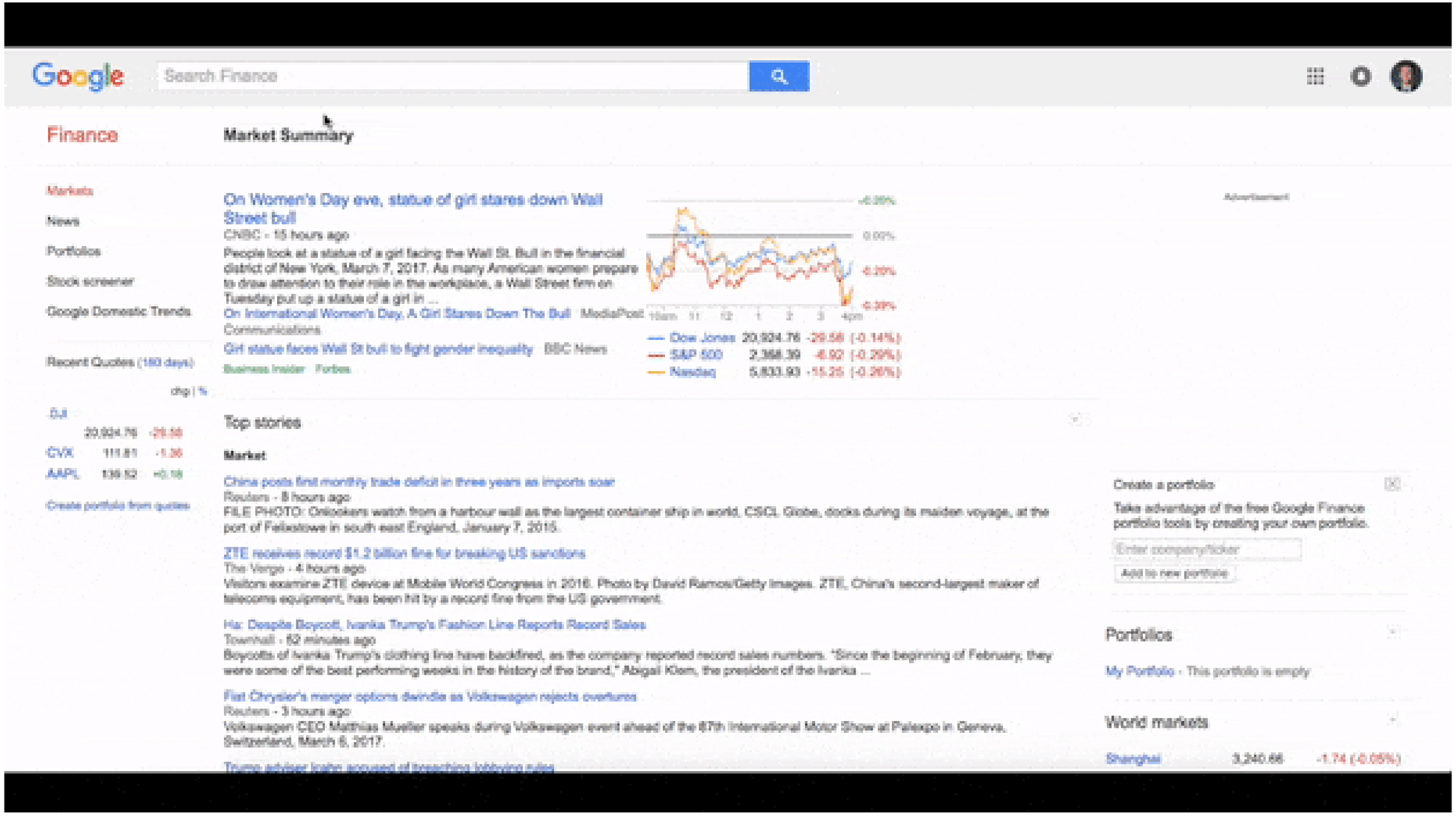
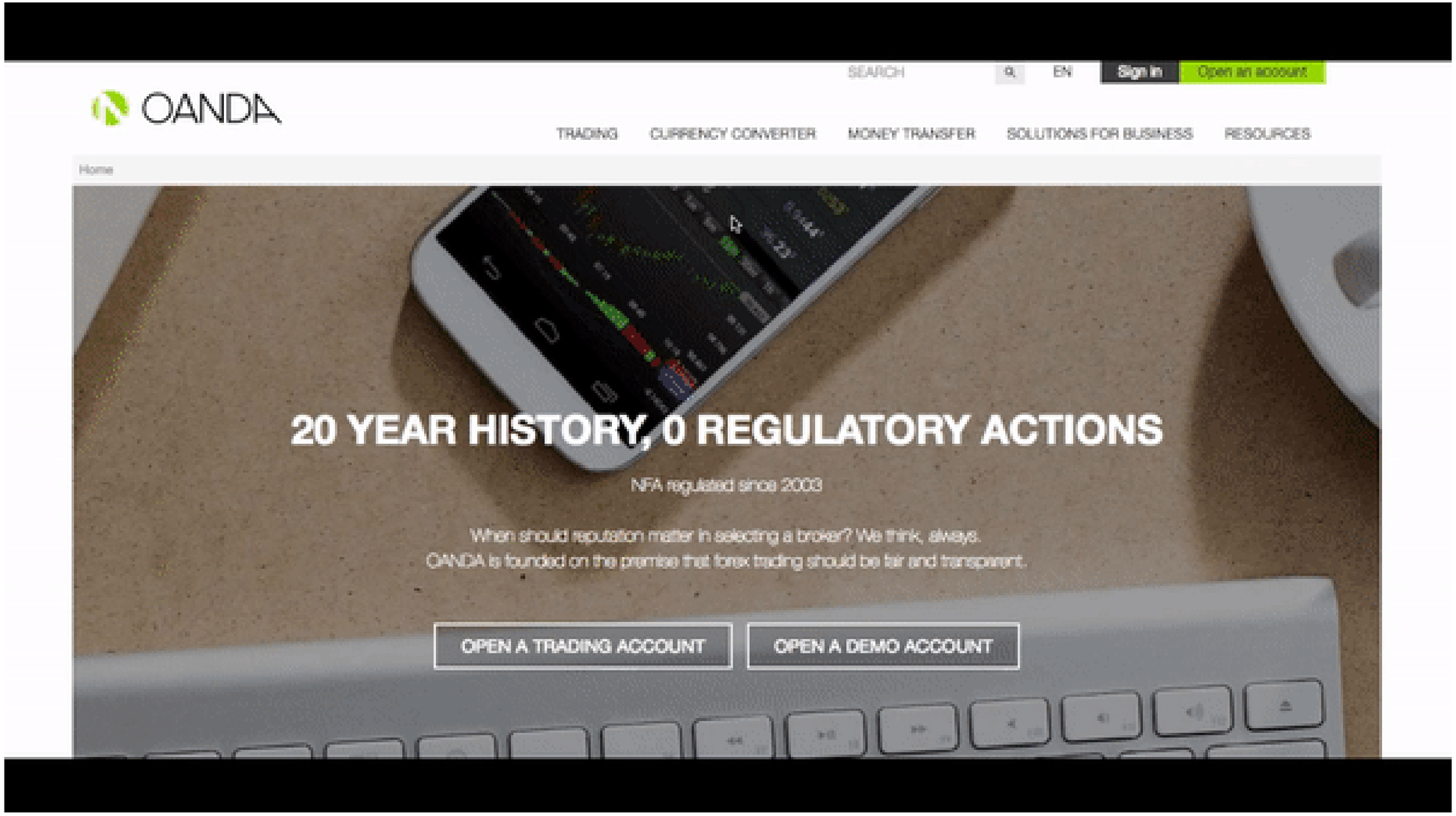
Yahoo Finance



Google Finance



Oanda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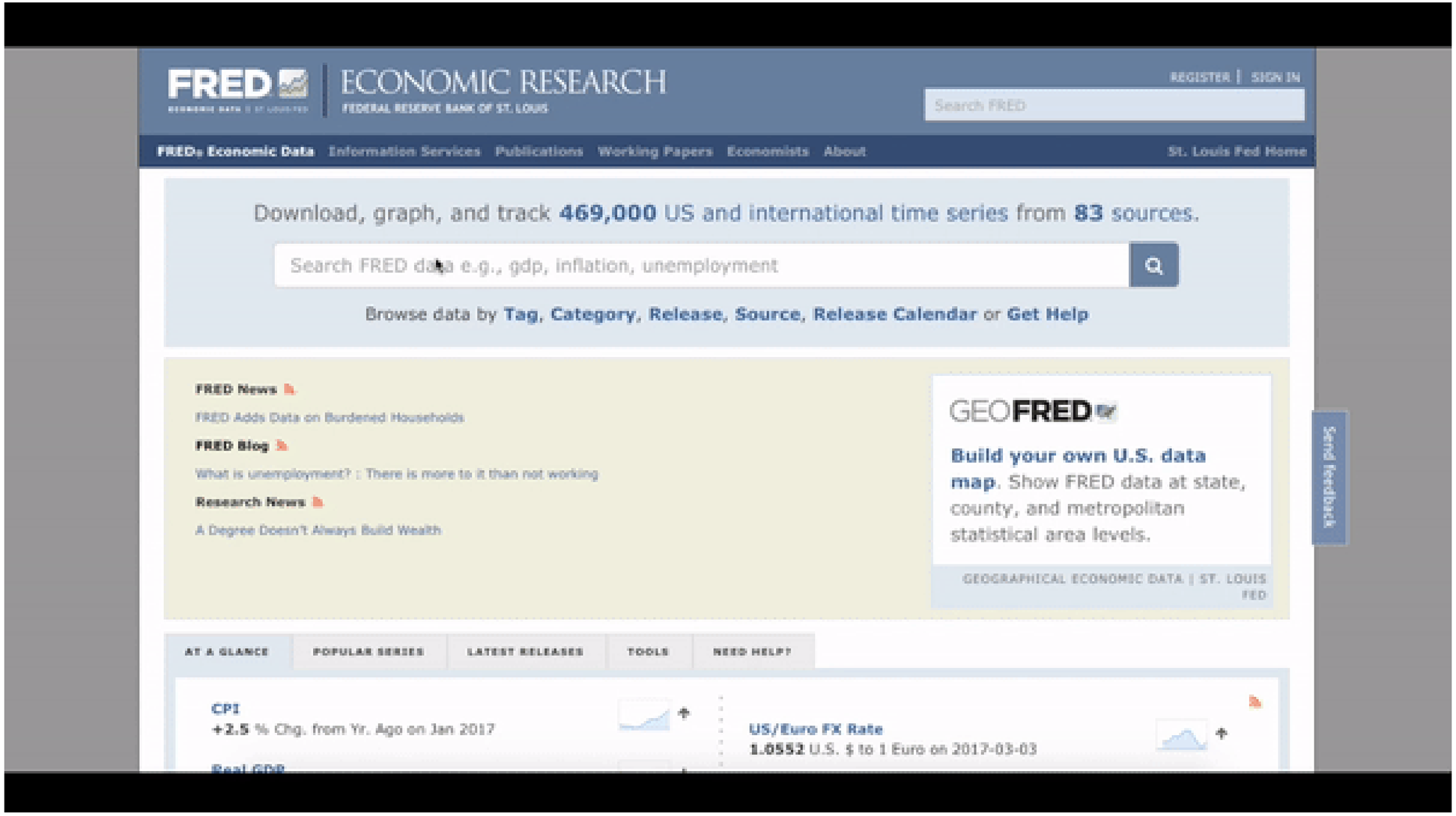
FRED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+2.5 % Chg. from Yr. Ago on Jan 2017
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Let's practice!

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