Visualization with ggplot2

CASE STUDY: EXPLORATORY DATA ANALYSIS IN R

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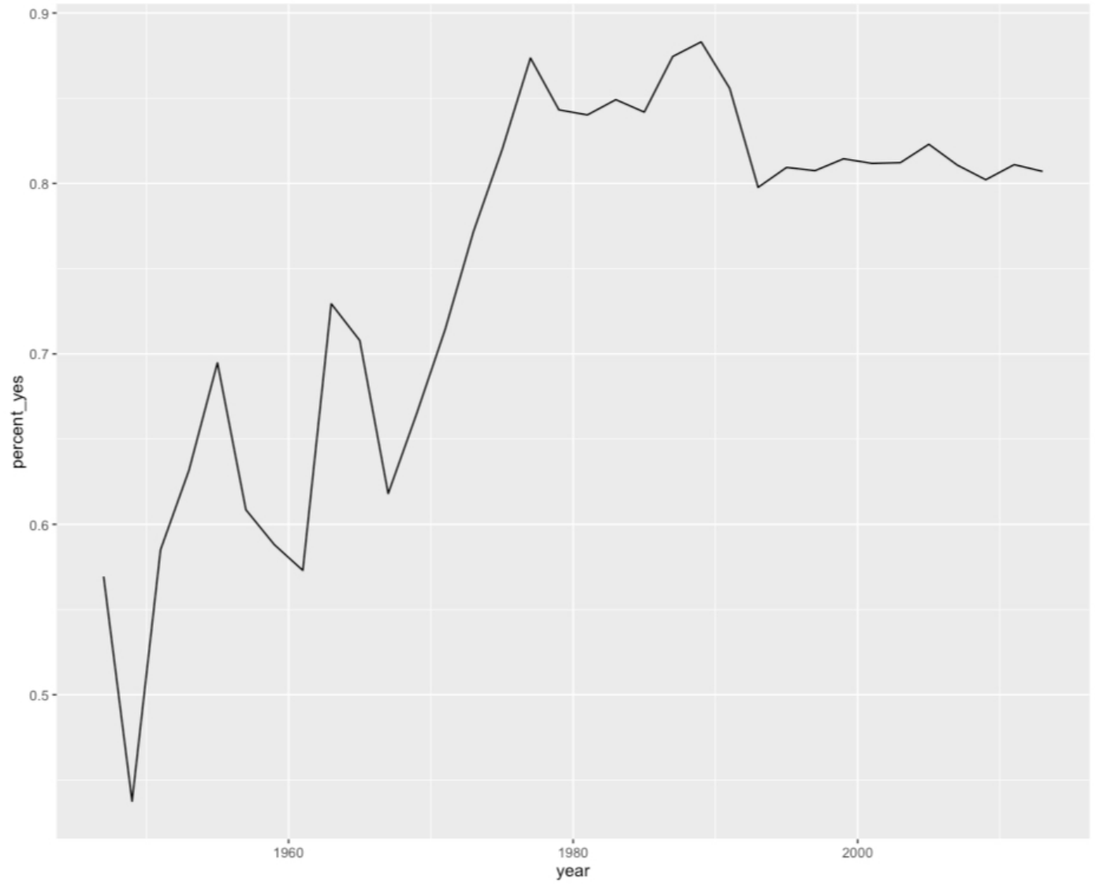
datacamp

By-year data

```
by_year
```

```
# A tibble: 34 × 3
    year total percent_yes
   <dbl> <int>       <dbl>
1   1947  2039   0.5693968
2   1949  3469   0.4375901
3   1951  1434   0.5850767
4   1953  1537   0.6317502
5   1955  2169   0.6947902
6   1957  2708   0.6085672
7   1959  4326   0.5880721
8   1961  7482   0.5729751
9   1963  3308   0.7294438
10  1965  4382   0.7078959
# ... with 24 more rows
```

Visualizing by-year data



Visualizing by-year data

```
library(ggplot2)
ggplot(by_country, aes(x = year, y = percent_yes)) +
    geom_line()
```

```
    year total percent_yes
   <dbl> <int>       <dbl>
1   1947  2039   0.5693968
2   1949  3469   0.4375901
3   1951  1434   0.5850767
4   1953  1537   0.6317502
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# ... with 24 more rows
```

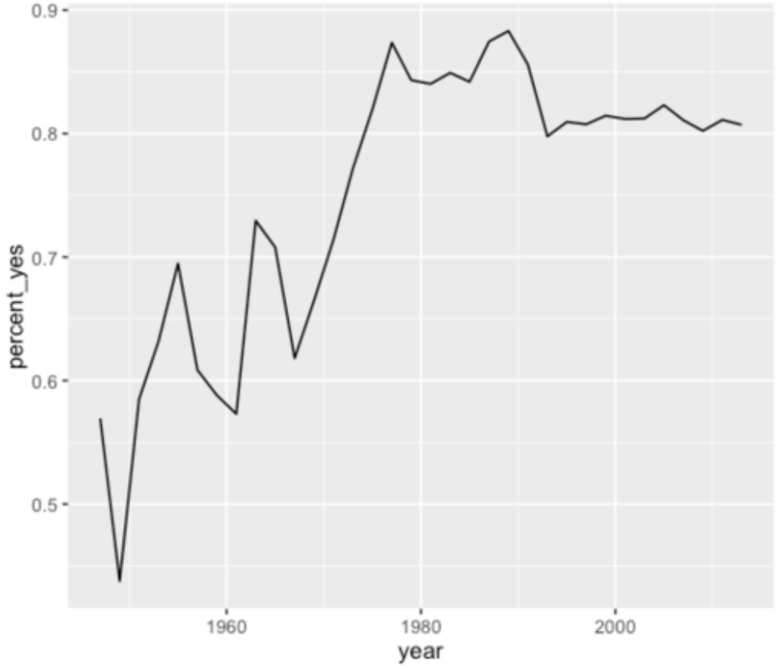

Let's practice!

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Visualizing by country

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Examining by country and year

1977

1978

1979

1980

1981

Summarizing by country and year

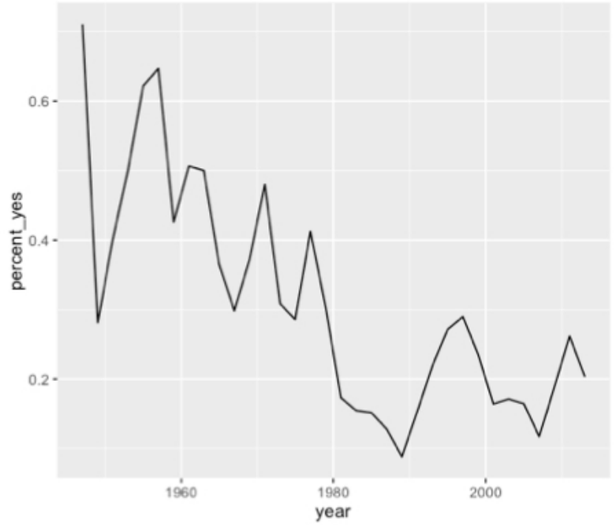
```
by_year_country <- votes_processed %>%
  group_by(year, country) %>%
  summarize(total = n(),
            percent_yes = mean(vote == 1))
by_year_country
```

```
Source: local data frame [4,744 x 4]
Groups: year [?]
   year     country total percent_yes
  <dbl>       <chr> <int>       <dbl>
1  1947 Afghanistan    34   0.3823529
2  1947   Argentina    38   0.5789474
3  1947   Australia    38   0.5526316
4  1947     Belarus    38   0.5000000
5  1947     Belgium    38   0.6052632
# ... with 4,739 more rows
```

Filtering for one country

```
by_year_country %>%
  filter(country == "United States")
```

```
# A tibble: 34 × 4
    year       country total percent_yes
   <dbl>         <chr> <int>       <dbl>
1   1947 United States    38   0.7105263
2   1949 United States    64   0.2812500
3   1951 United States    25   0.4000000
4   1953 United States    26   0.5000000
5   1955 United States    37   0.6216216
6   1957 United States    34   0.6470588
7   1959 United States    54   0.4259259
8   1961 United States    75   0.5066667
9   1963 United States    32   0.5000000
10  1965 United States    41   0.3658537
# ... with 24 more rows
```



The %in% operator

```
c("A", "B", "C", "D", "E") %in% c("B", "E")
```

```
FALSE  TRUE FALSE FALSE  TRUE
```

Filtering for multiple countries

```
us_france <- by_year_country %>%
  filter(country %in% c("United States", "France"))
us_france
```

```
# A tibble: 68 × 4
    year       country total percent_yes
   <dbl>         <chr> <int>       <dbl>
1   1947        France    38   0.7368421
2   1947 United States    38   0.7105263
3   1949        France    64   0.3125000
4   1949 United States    64   0.2812500
5   1951        France    25   0.3600000
6   1951 United States    25   0.4000000
7   1953        France    18   0.3333333
8   1953 United States    26   0.5000000
9   1955        France    27   0.7407407
10  1955 United States    37   0.6216216
# ... with 58 more rows
```

Visualizing vote trends by country

```
# A tibble: 68 × 4
    year       country total percent_yes
   <dbl>         <chr> <int>       <dbl>
1   1947        France    38   0.7368421
2   1947 United States    38   0.7105263
3   1949        France    64   0.3125000
4   1949 United States    64   0.2812500
5   1951        France    25   0.3600000
6   1951 United States    25   0.4000000
7   1953        France    18   0.3333333
8   1953 United States    26   0.5000000
9   1955        France    27   0.7407407
10  1955 United States    37   0.6216216
# ... with 58 more rows
```


```
ggplot(us_france, aes(x = year, y = percent_yes,
                      color = country)) +
  geom_line()
```

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Faceting by country

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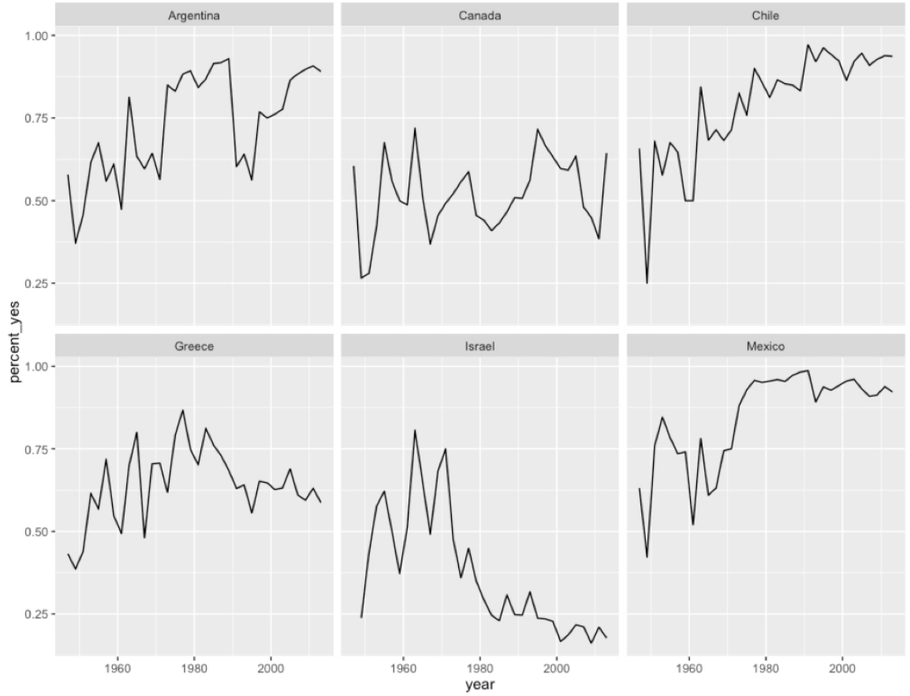
Graphing many countries

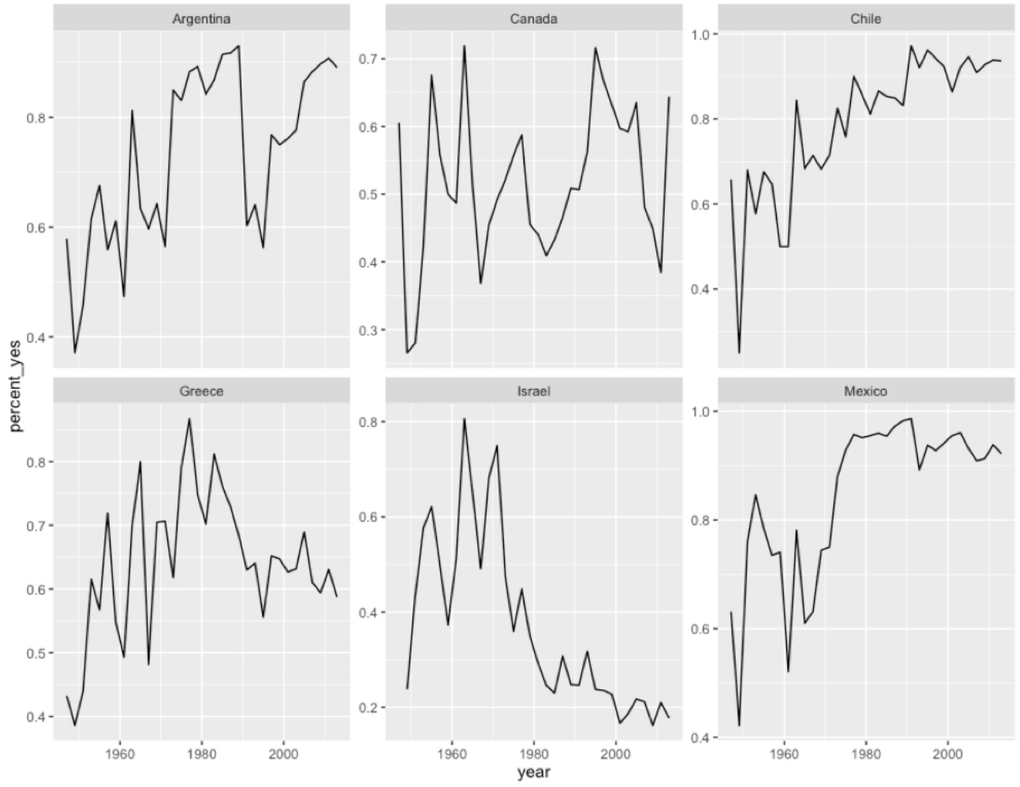
Graphing many countries

```
ggplot(many_countries, aes(year, percent_yes)) +
  geom_line() +
  facet_wrap(~ country)
```



Graphing on separate scales

```
ggplot(many_countries, aes(year, percent_yes)) +
  geom_line() +
  facet_wrap(~ country, scales = "free_y")
```



Graphing on separate scales

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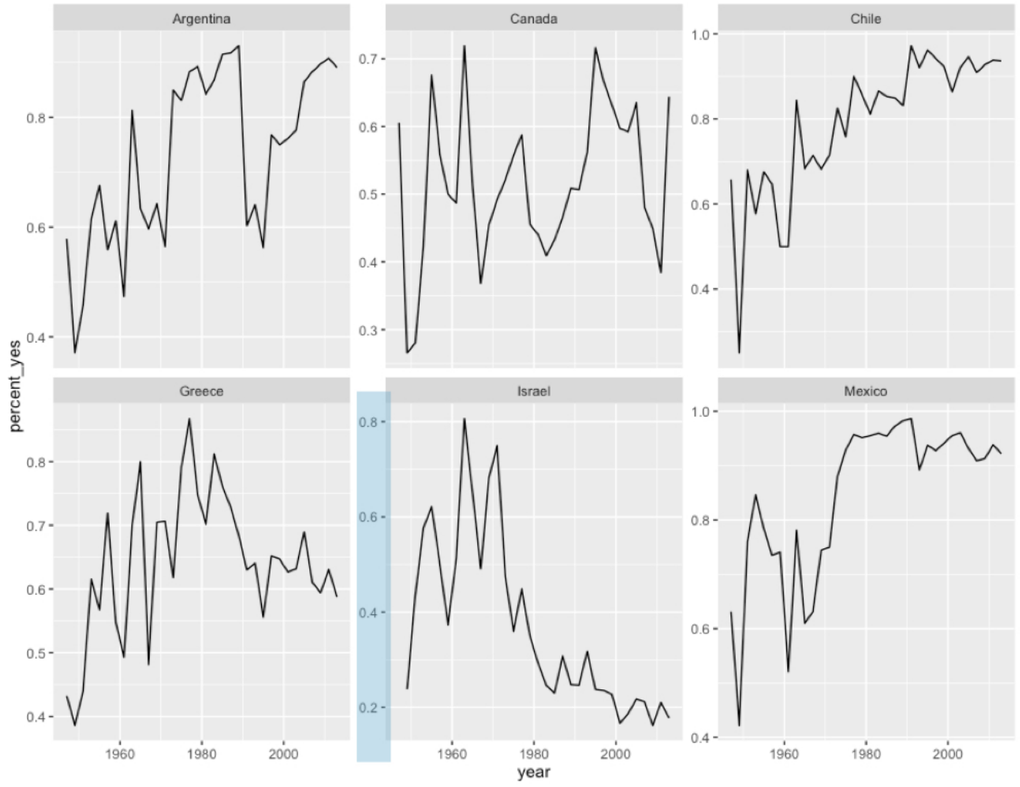

Graphing on separate scales

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ggplot(many_countries, aes(year, percent_yes)) +
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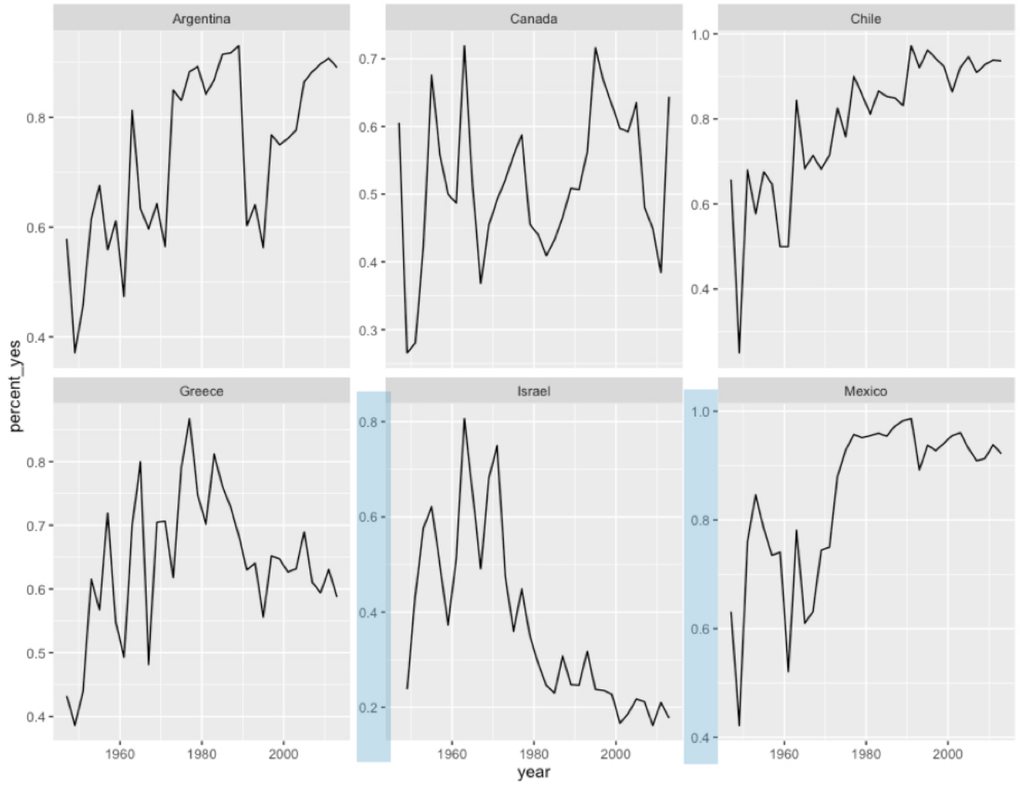

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