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Time Series Plots

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RAFAEL IRIZARRY: The visualizations we have just seen

effectively illustrate that data no longer

supports the Western versus developing worldview.

But once we see these plots, new questions emerge.

For example, which countries are improving more?



Video

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Textbook link

This video corresponds to the [textbook section on time series plots](#).

Key points

- Time series plots have time on the x-axis and a variable of interest on the y-axis.
- The `geom_line()` geometry connects adjacent data points to form a continuous line. A line plot is appropriate when points are regularly spaced, densely packed and from a single data series.
- You can plot multiple lines on the same graph. Remember to group or color by a variable so that the lines are plotted independently.
- Labeling is usually preferred over legends. However, legends are easier to make and appear by default. Add a label with `geom_text()`, specifying the coordinates where the label should appear on the graph.

Code: Single time series

```
# scatterplot of US fertility by year
gapminder %>%
  filter(country == "United States") %>%
  ggplot(aes(year, fertility)) +
  geom_point()

# line plot of US fertility by year
gapminder %>%
  filter(country == "United States") %>%
  ggplot(aes(year, fertility)) +
  geom_line()
```

Code: Multiple time series



```
# line plot fertility time series for two countries- only one line (inc
countries <- c("South Korea", "Germany")
gapminder %>% filter(country %in% countries) %>%
  ggplot(aes(year, fertility)) +
  geom_line()

# line plot fertility time series for two countries - one line per coun
gapminder %>% filter(country %in% countries) %>%
  ggplot(aes(year, fertility, group = country)) +
  geom_line()

# fertility time series for two countries - lines colored by country
gapminder %>% filter(country %in% countries) %>%
  ggplot(aes(year, fertility, col = country)) +
  geom_line()
```

Code: Adding text labels to a plot

```
# life expectancy time series - lines colored by country and labeled, n
labels <- data.frame(country = countries, x = c(1975, 1965), y = c(60,
gapminder %>% filter(country %in% countries) %>%
  ggplot(aes(year, life_expectancy, col = country)) +
  geom_line() +
  geom_text(data = labels, aes(x, y, label = country), size = 5) +
  theme(legend.position = "none")
```

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