Data visualization - 03 - lines

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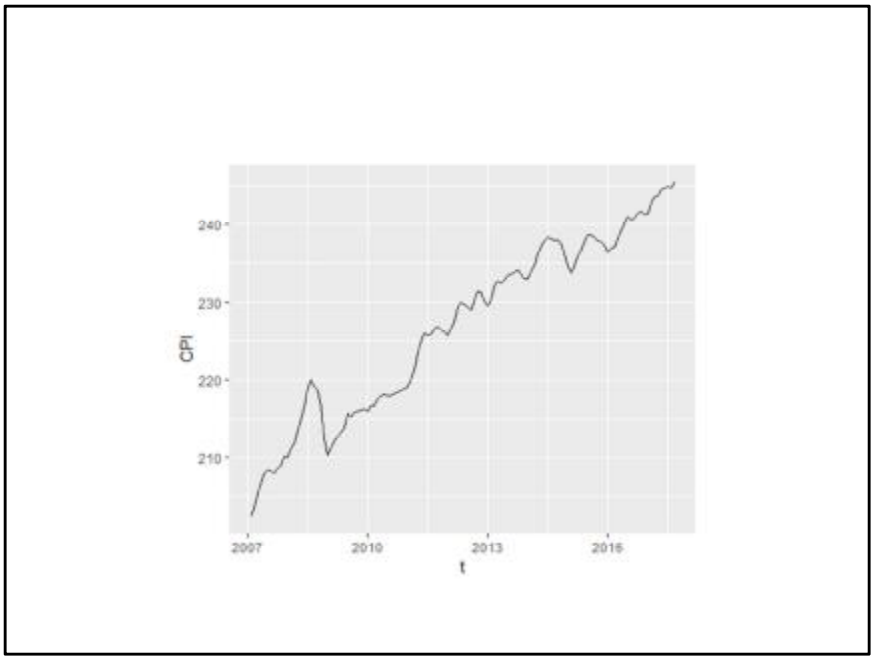
6/21/2019

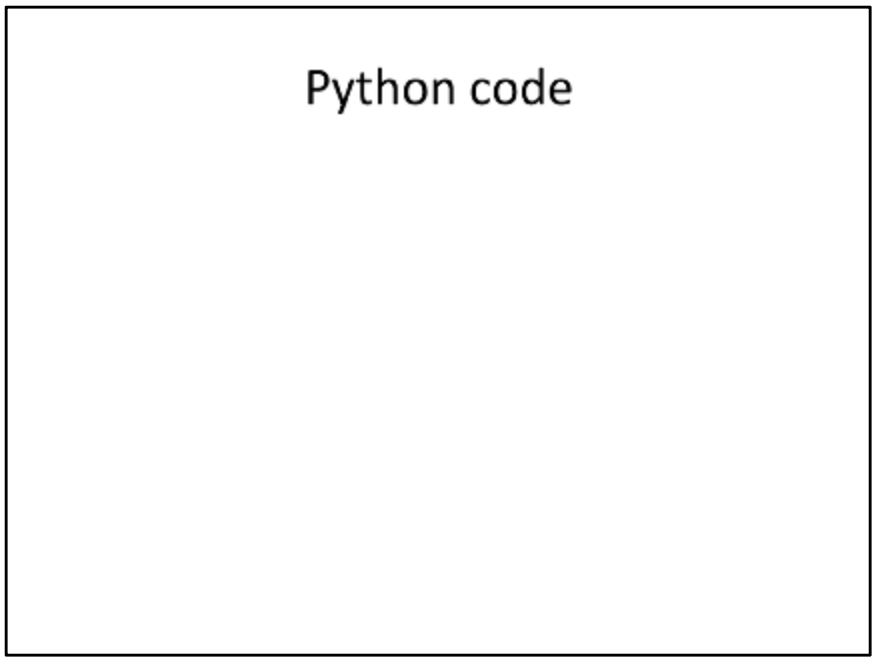

240
230
220
210
CPI
2007
2010
2013
2016
t

Notes about this talk

- This slide should not to be included in the final presentation
- 01-points MUST come before
- 02-bars could come before or after

To prepare for this section

((Download the Titanic data set))


Python code

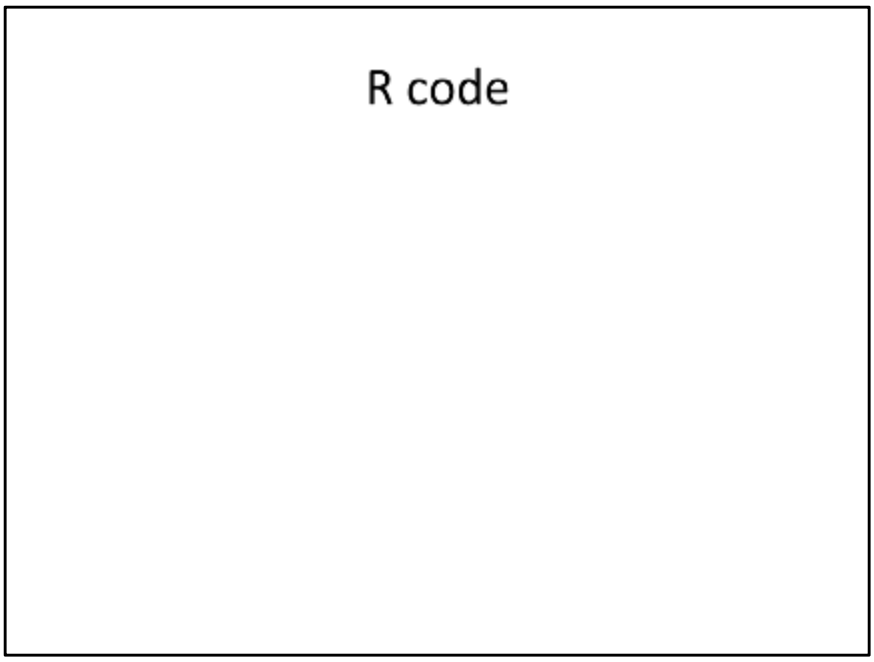
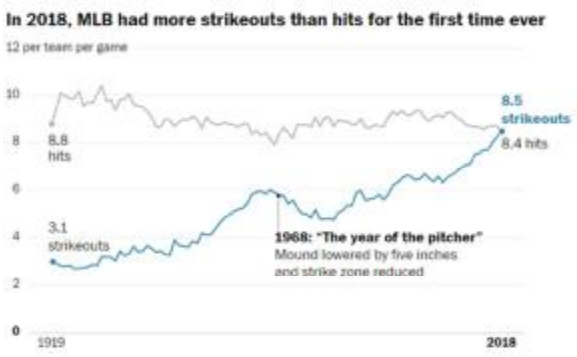

R code

Tableau steps

Group exercise (1 of 2)



Line graph of strikeouts and hits over time

This is one of two graphs. It was published in

Popvich, N., Fountain, H., & Pearce, A. (2017, September 22). We Charted Arctic Sea Ice for Nearly Every Day Since 1979. You'll See a Trend. - The New York Times. The New York Times. Retrieved from https://www.nytimes.com/interactive/2017/09/22/climate/arctic-sea-ice-shrinking-trend-watch.html

Split into pairs. Review the article briefly (about 5 minutes) and look at the graph. Explain to your partner what the graph is trying to show. Your partner will get a different graph and do the same thing with you listening this time.

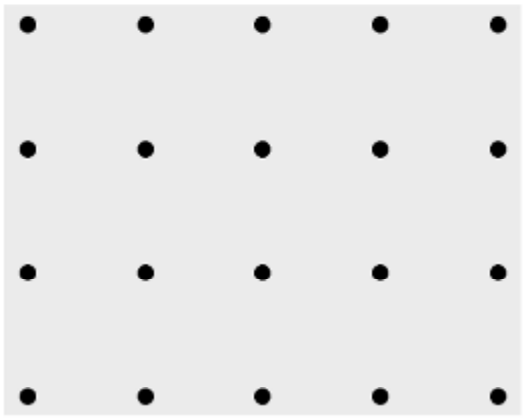
Group exercise (2 of 2)

((Find second news article and image))

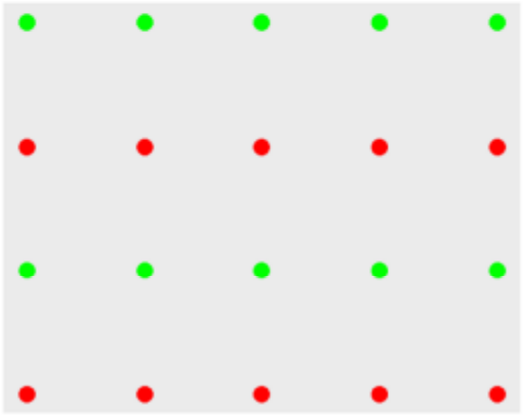
More theory – The gestalt of graphics

- How do you draw someone's eye to quickly make certain associations?
- These ideas drawn from the Bergen and Iverson workshop.

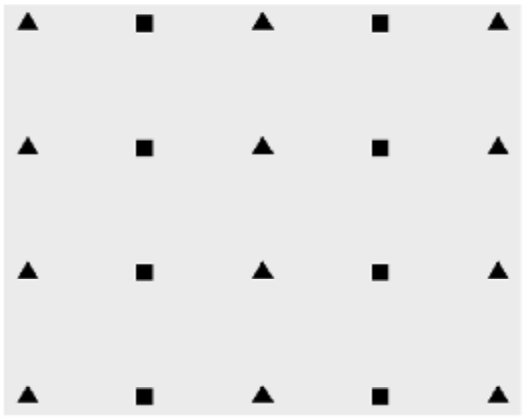
A block of points - no emphasis



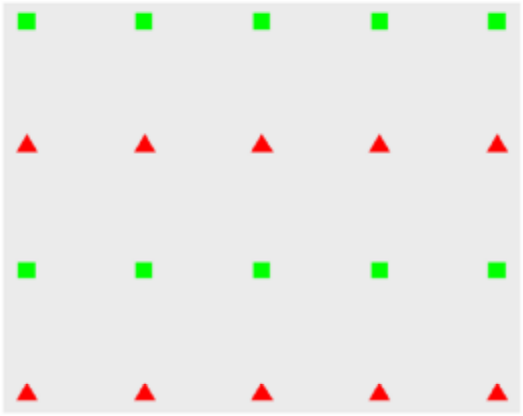
Color emphasizes rows



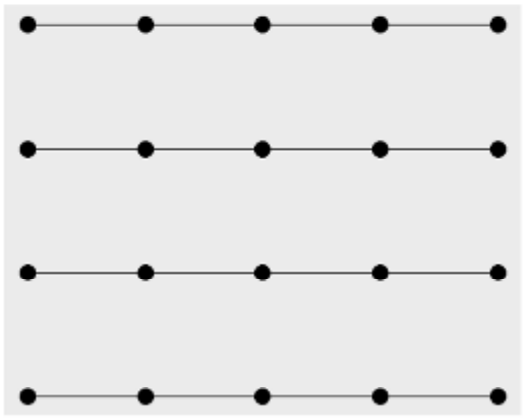
Shape emphasizes columns



Double up for stronger emphasis

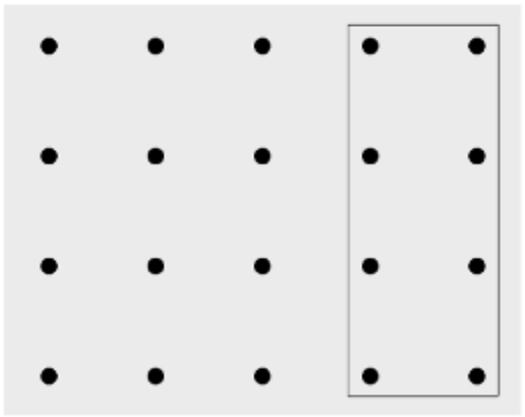


Connectedness emphasizes rows



Proximity emphasize columns

Enclosure for emphasis, eight special points

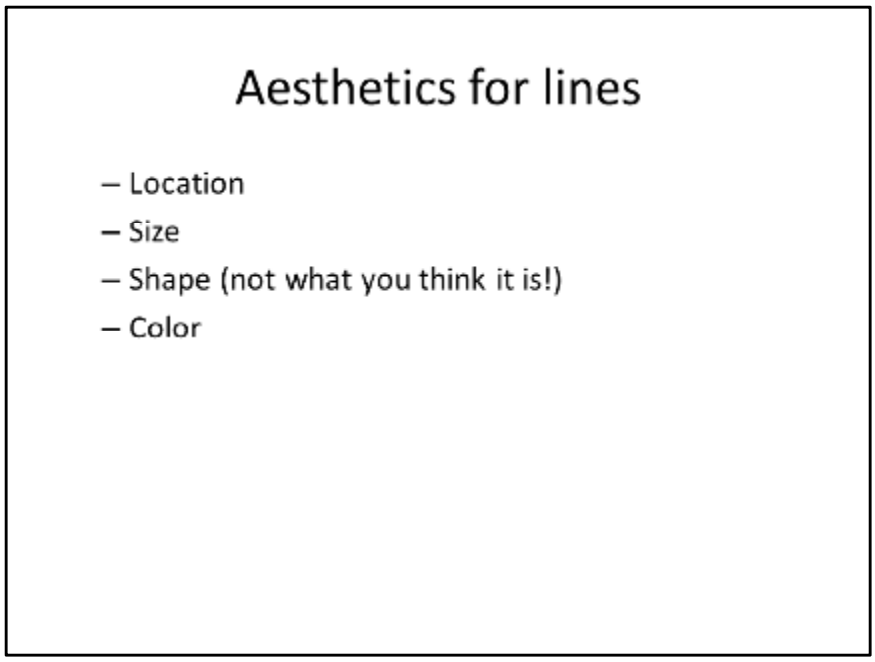


Continuity

((Show example of sloping text))

Changing your emphasis

((Recreate example from slides 47-50 of Bergen and Iverson))



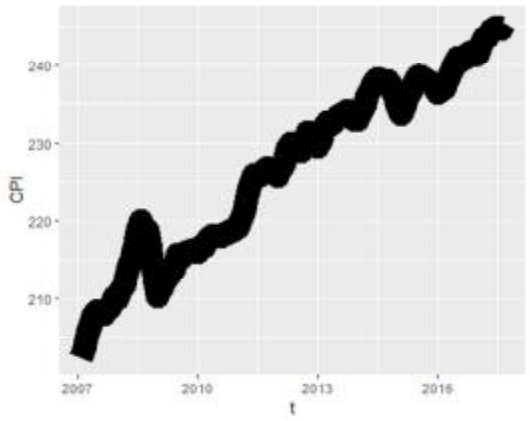
A line could mean a straight line or a curved line, a single line segment, a connected series of line segments or a polygon. It's a pretty complex thing, but generally a line represents a two dimensional relationship.

You can vary the size, shape, and color of a line. Shape is not what you think it is.

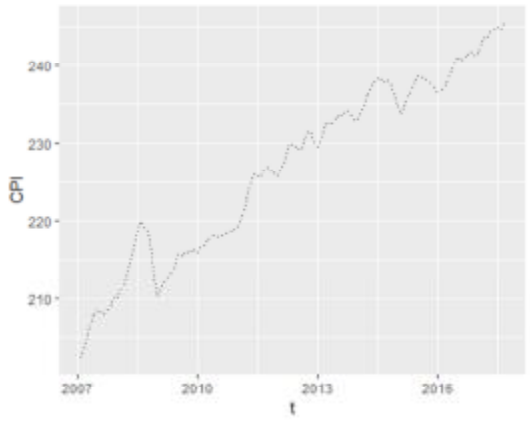
Show different types and locations of lines

((Show a curved line, a straight line, a line segment, a series of line segments, and a polygon.))

Size



Shape



On your own

- change the line to a dashed line.
- Make the width equal to 3
- Make the color green

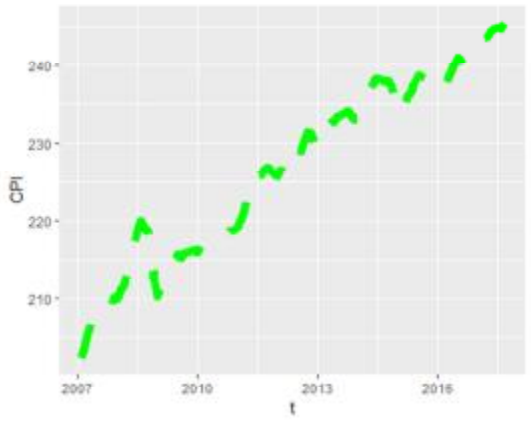
Wait before showing

((Python code))

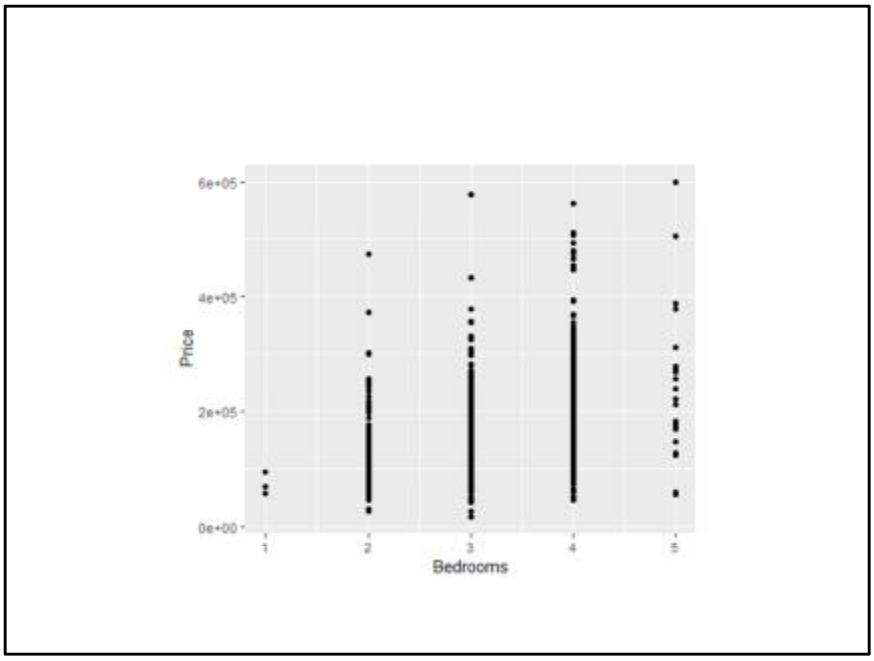
```
# R code
ggplot(cpi, aes(x=t, y=CPI)) +
  geom_line(size=3, linetype="dashed",
color="green")
```

((Tableau steps))

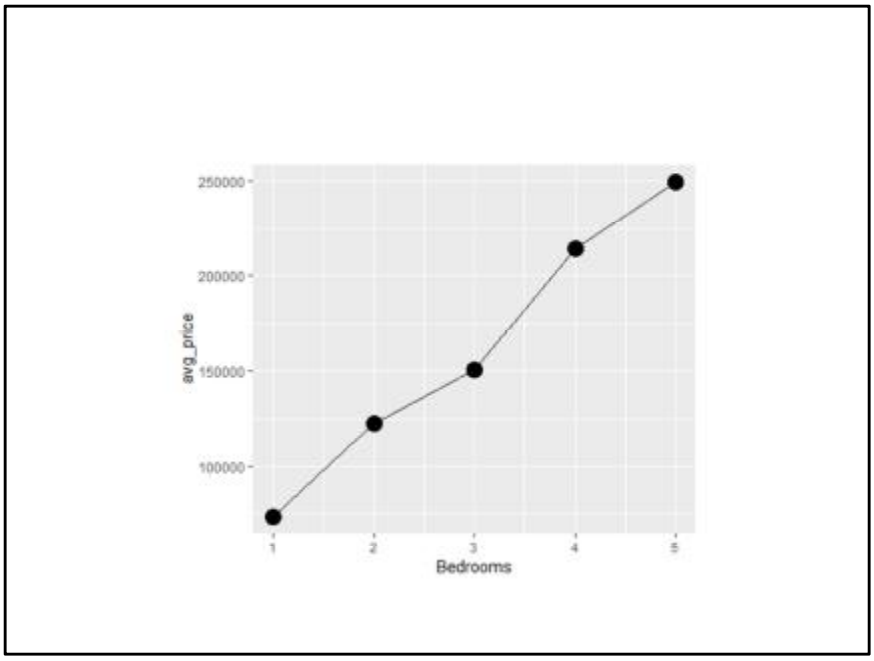
What your visualization might look like



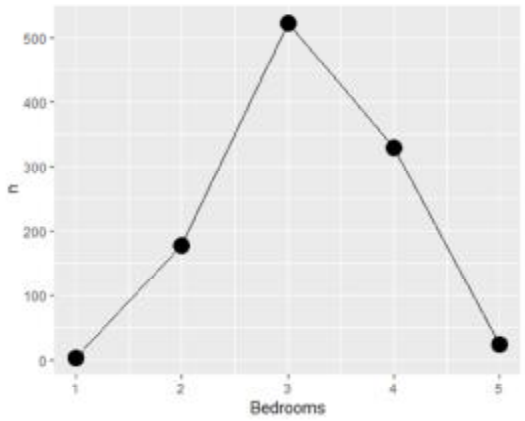
Lines as summary statistics


6e+05
4e+05
2e+05
0e+00
Price
1
2
3
4
5
Bedrooms

Lines as averages


250000
200000
150000
100000
avg_price
1
2
3
4
5
Bedrooms

Lines as counts



On your own

– Draw a line graph showing the relationship between the number of bathrooms and price.

Wait before showing

((Add code here))

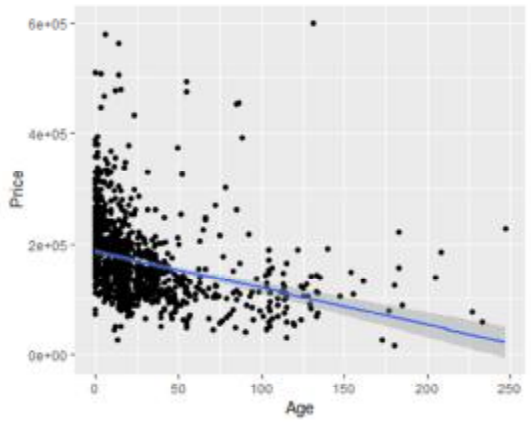
What your visualization might look like

((Add visualization here))

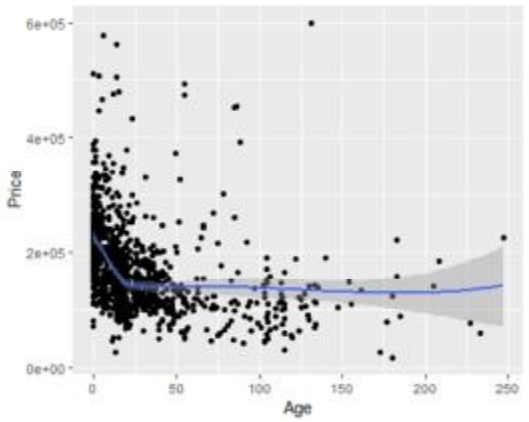
Boxplots

((Draw example and ask students to do a similar example))

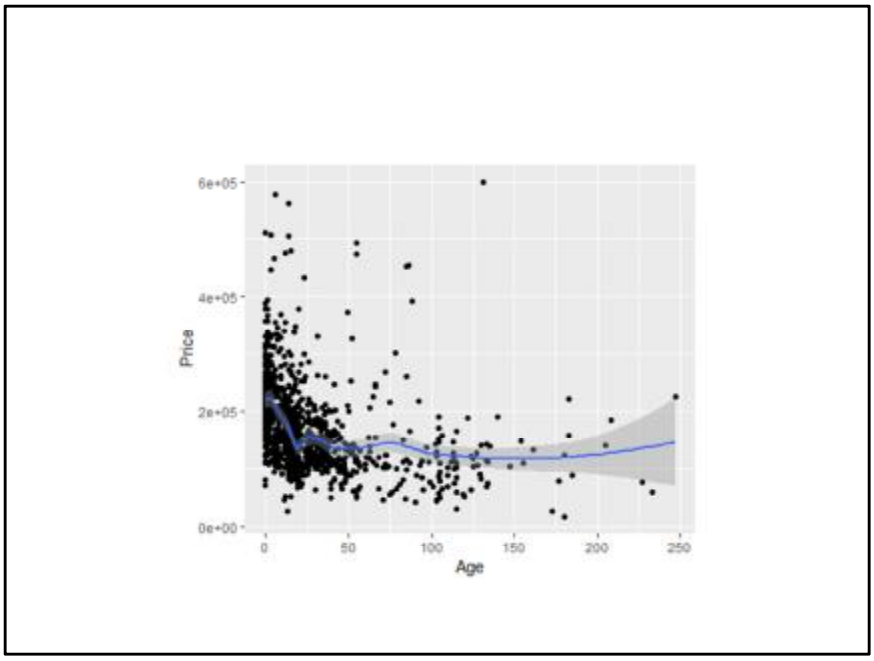
Trend lines (linear)



Trend lines (spline)



Trend lines (spline), not so smooth

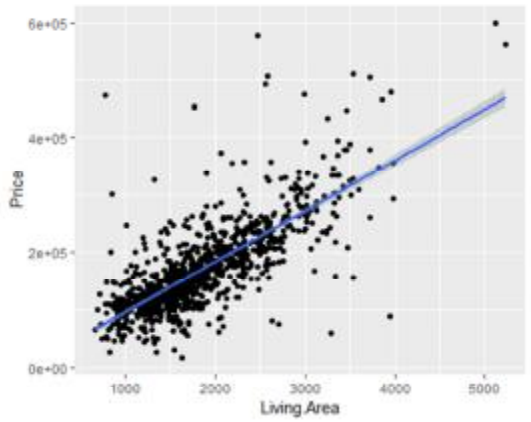

6e+05
4e+05
2e+05
0e+00
Price
0
50
100
150
200
250
Age

On your own

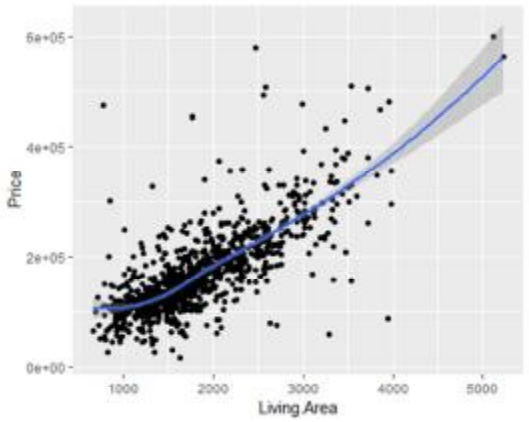
- Fit a linear trend line looking at Living.Area versus Price.
- Fit a smooth curve

Wait before showing

What your visualization might look like



What your visualization might look like



Trend lines (logistic)

((Need a different data set here. Titanic???))

Helpful tips

((Add three or four slides here. Maybe talk about opacity.))

Group exercise

- Review the following visualization in your group.
  - Summarize what aesthetics (location, size, shape, color) appear in the graph
  - What variables map to each aesthetic?

((Find new images or use the ones from earlier))

Summary (1 of 2)

- Gestalt principles
  - ((List here))
- Aesthetics for lines
  - Size, Shape, Color
- Lines as summary statistics
  - One number summary (mean, total, count, percent)
  - Two number summary (error bars)
  - Five number summary (boxplots)

Summary (2 of 2)

- Trend lines (linear, logistic, spline)
- Helpful tips
  - ((List here))