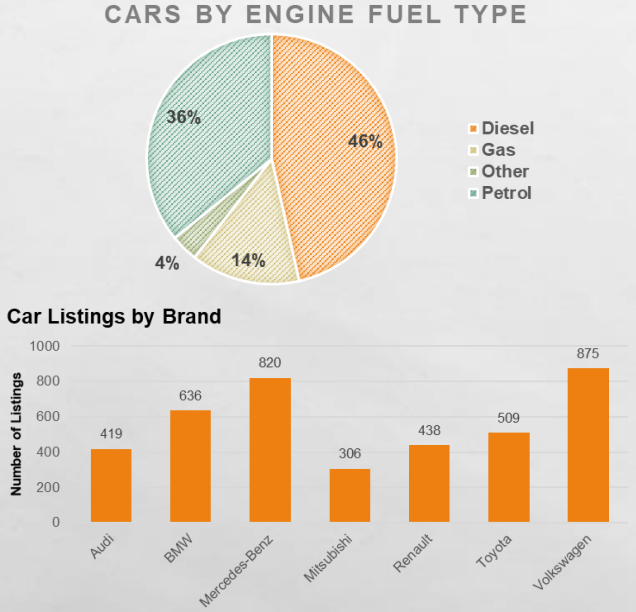
365 DataScience

THE COMPLETE DATA VISUALIZATION COURSE

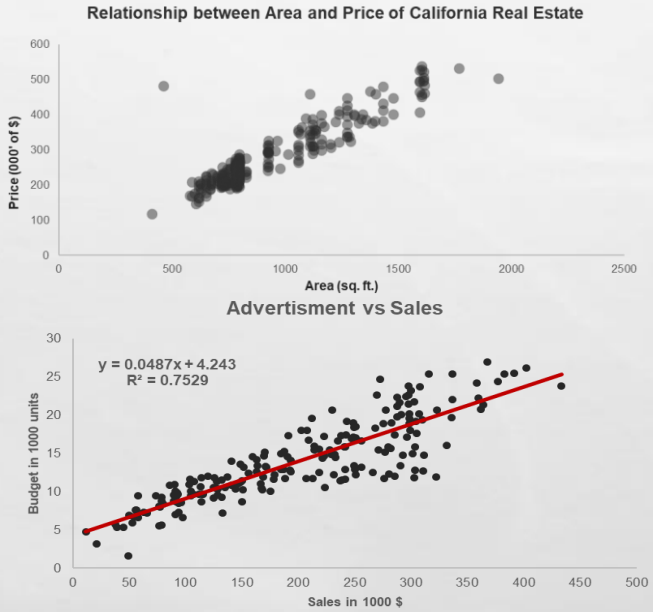
CHARTS AND DATA TYPES

THERE IS NEVER ONLY ONE RIGHT VISUALIZATION

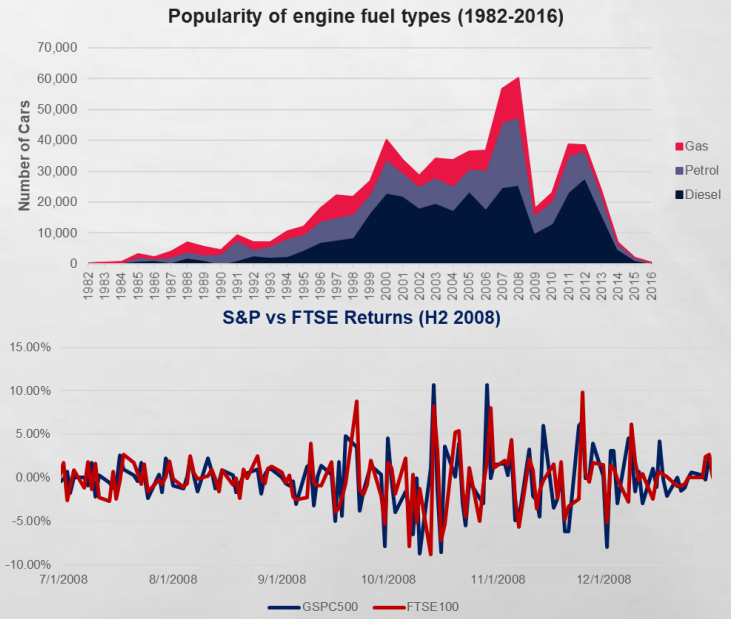
NUMERICAL & CATEGORICAL



NUMERICAL & NUMERICAL

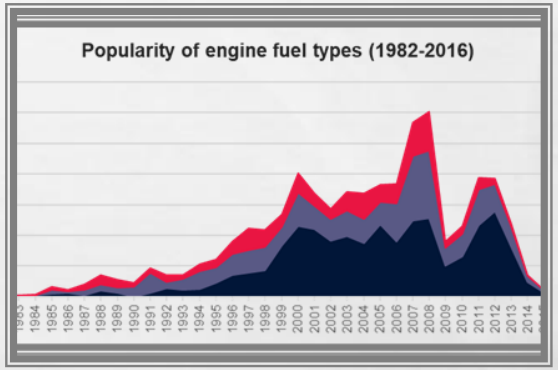


TIME SERIES



COLORS

CHOOSE 2-3 COLORS FOR YOUR CHART



PREDETERMINED

COMPANY COLORS

CLIENTS REQUEST SPECIFIC COLORS

ONLINE TOOLS

CREATE YOUR OWN CUSTOM PALETTE

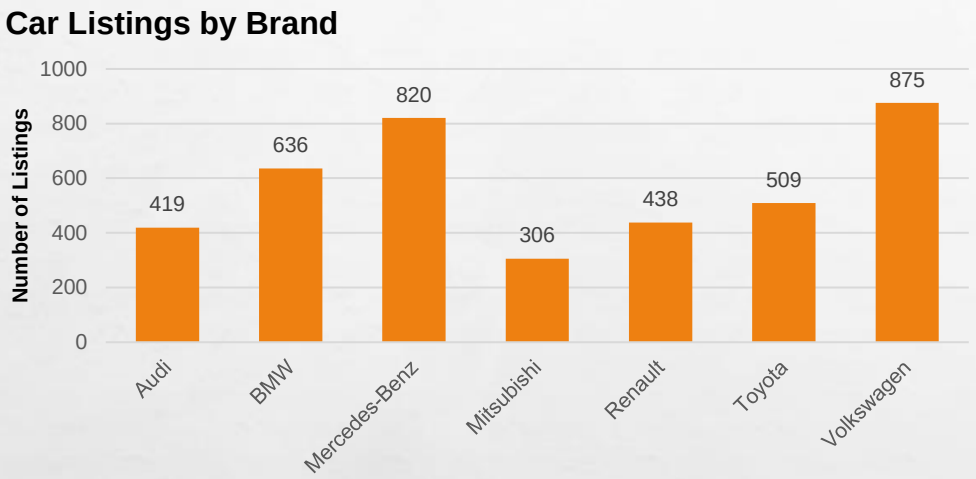
WITH THE AID OF ONLINE TOOLS

OUR COLOR PALETTES

YOU CAN USE ANY OF OUR TEMPLATES

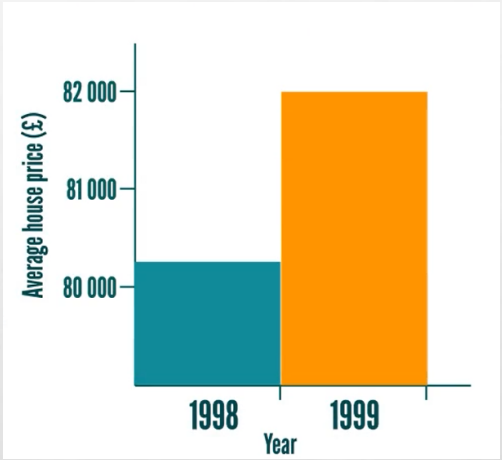
TO BUILD YOUR OWN GRAPHS AND CHARTS

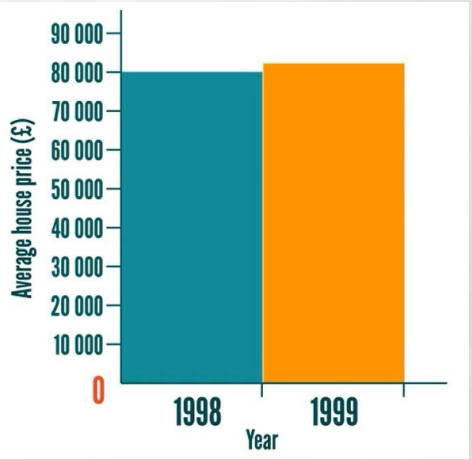
Bar Chart



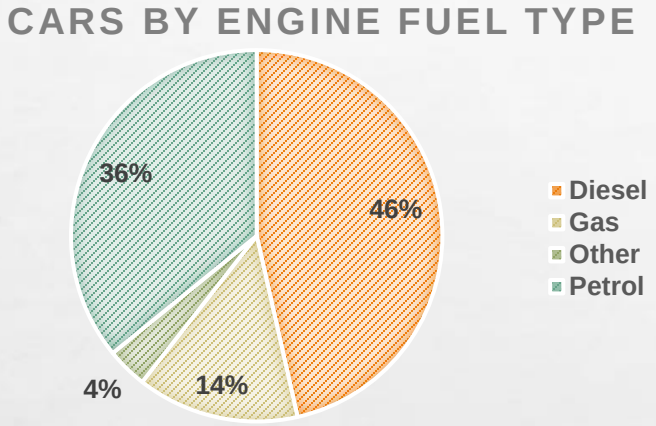
- INTUITIVE
- APPROPRIATE FOR NON-TECHNICAL AUDIENCES
- ONE OF THE MOST COMMONLY USED CHARTS

- COMMUNICATE YOUR INTENTIONS CLEARLY
- MAKE SURE YOUR CHART ISN'T MISLEADING



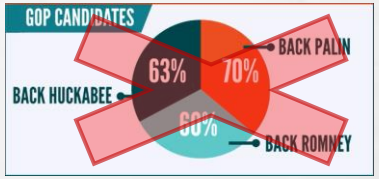


Pie Chart

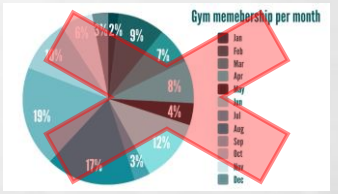


- APPROPRIATE FOR NON-TECHNICAL AUDIENCES
- WIDELY USED, DESPITE CRITICISM
- A FEW CATEGORIES
- DATA SUMS UP TO 100%

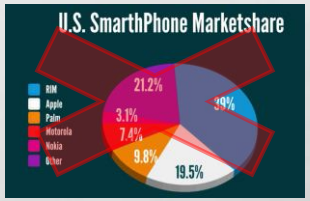
- DON'T USE WHEN DATA ≠ 100%



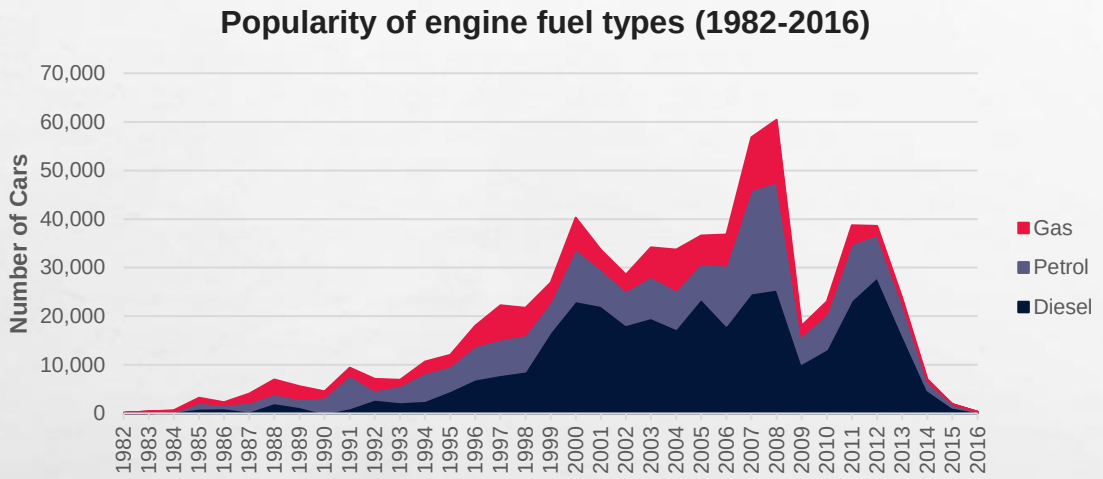
- DON'T USE WHEN THERE ARE TOO MANY CATEGORIES



- NO 3D OR DOUGHNUT



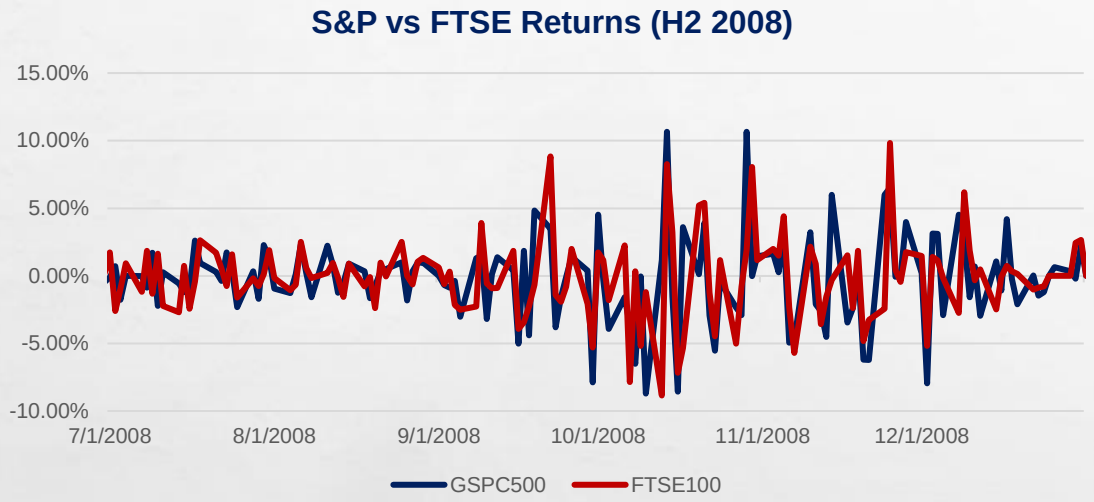
Stacked Area Chart



- COMPARE VOLUME AMONG FEATURES
- AT LEAST THREE FEATURES
  - ORDERING FOR AT LEAST TWO OF THEM
- TIME SERIES DATA

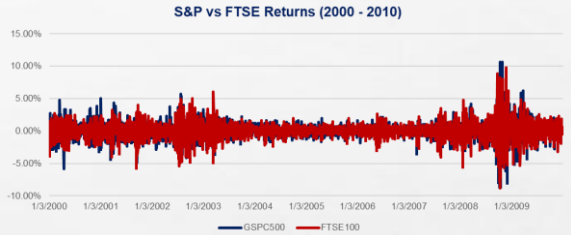
- AVOID WHEN YOU HAVE TOO MANY CATEGORIES – A LINE CHART WORKS BETTER
- AVOID WITH CATEGORIES OF SIMILAR SIZE – DIFFICULT TO DETERMINE SIZE OF NON-RECTANGULAR SHAPES
- ORDER CATEGORIES BY SIZE – TO IMPROVE READABILITY
- Y-AXIS MUST START AT 0 – WE'RE MEASURING VOLUME

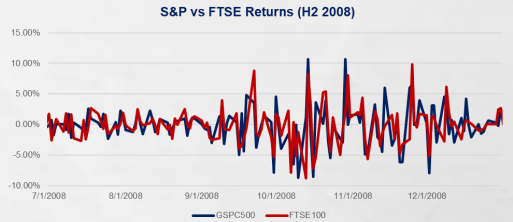
Line Chart



- UP TO SEVERAL CATEGORIES
- TIME SERIES DATA
- Y-AXIS DOESN'T HAVE TO START AT 0

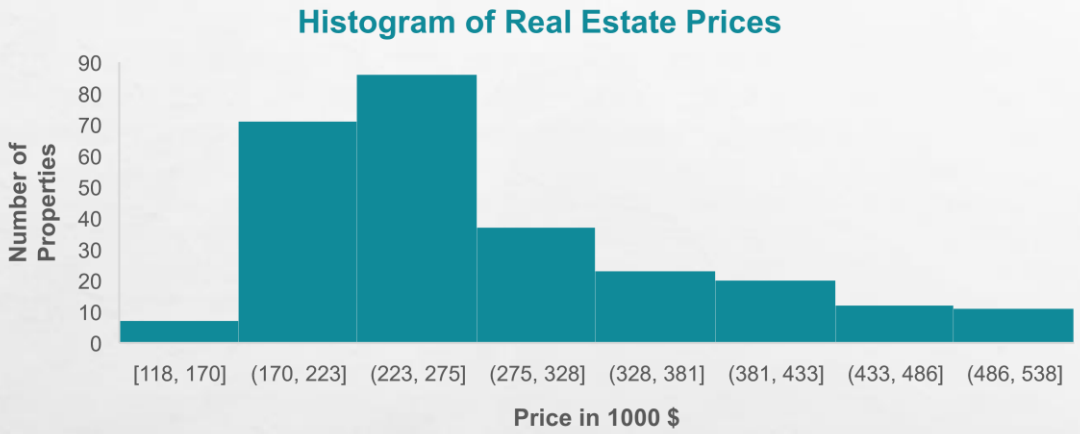
- WHEN YOU HAVE A LARGE PERIOD OF TIME, NARROW IT DOWN TO GAIN MORE INSIGHT





- BE CAREFUL NOT TO INCLUDE TOO MANY CATEGORIES, TO AVOID A SPAGHETTI CHART

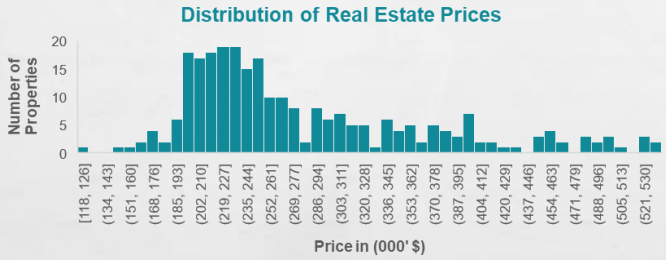
Histogram



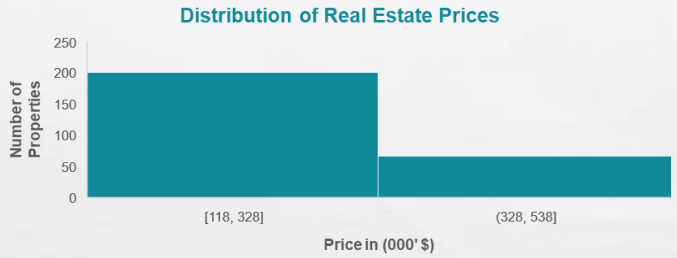
- DISTRIBUTION OF A NUMERIC VARIABLE
- THE VARIABLE'S RANGE OF VALUES IS SPLIT INTO INTERVALS OR BINS
- Y-AXIS – NUMBER OF OBSERVATIONS WITHIN EACH INTERVAL (OR DENSITY)

- SIMILAR TO A BAR CHART, NO GAP BETWEEN BINS
- TO CREATE A HISTOGRAM
  - DETERMINE THE INTERVAL SIZE
  - CHOOSE THE NUMBER OF BINS

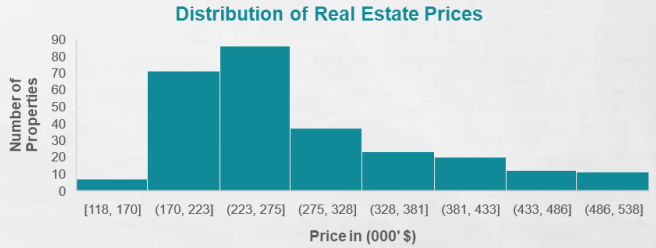
CHOOSING THE NUMBER OF BINS



START WITH A VERY LARGE NUMBER TO OBSERVE THE DATA PATTERN



REDUCE THE NUMBER

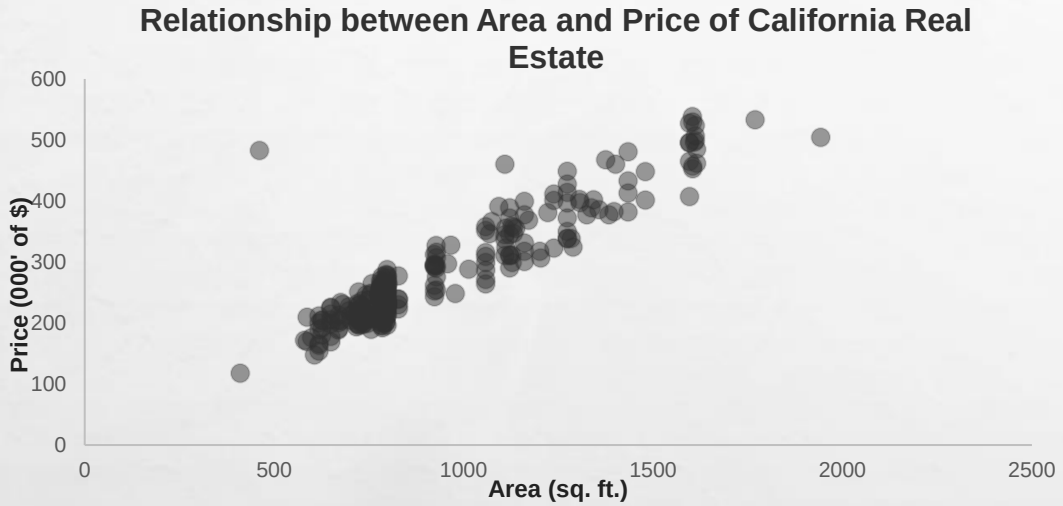


CHOOSE SEVERAL BINS, SUCH THAT THE PATTERN IN THE DATA IS VISIBLE

There are scientific approaches, however, they are not often used in practice.
The reason is that real data has noise, is discrete, etc.

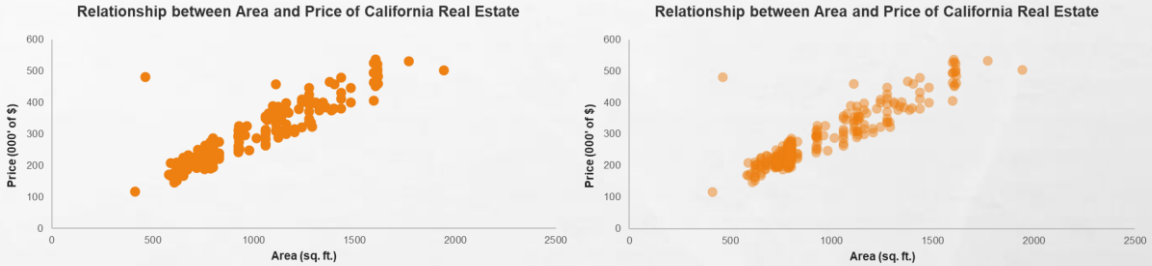
Scott's rule - $3.49\sigma n^{-1/3}$
Sturge's Rule - $K = 1 + 3.322 \log_N$
Doane's Rule - $\log_2(n) + 1 + \log_2(1 + \frac{\sqrt{b}}{\sigma\sqrt{b}})$

Scatter Plot



- DISPLAYS EACH POINT FROM THE DATA, INSTEAD OF SHOWING AGGREGATED FORM
- SHOWS RELATIONSHIP BETWEEN VARIABLES

- USE TRANSPARENCY TO AVOID OVERPLOTTING

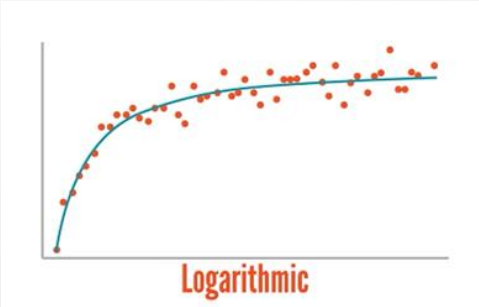


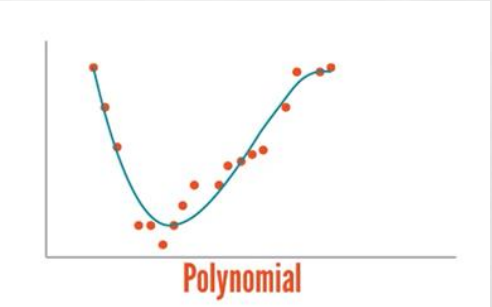
- A THIRD VARIABLE COULD BE USED WITH A COLOR PARAMETER

Regression Plot

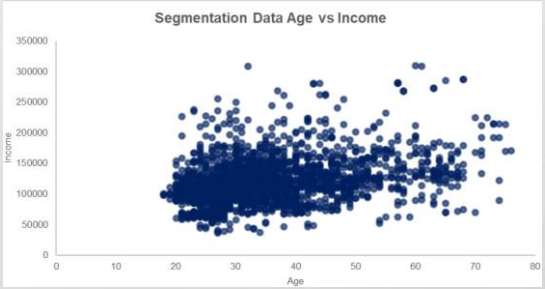
- USED TO DETERMINE RELATIONSHIPS BETWEEN PREDICTOR(S) AND OUTCOME
- REGRESSION LINE & EQUATION HELP US QUANTIFY THE RELATIONSHIP

- THERE EXIST MANY TYPES OF RELATIONSHIPS BETWEEN VARIABLES





- SOMETIMES THERE IS NO APPARENT RELATIONSHIP BETWEEN FEATURES



ADDITIONAL RESOURCES

- HTTPS://SEABORN.PYDATA.ORG/TUTORIAL/REGRESSION.HTML
- HTTP://WWW.COOKBOOK-R.COM/
- HTTP://WWW.STAT.COLUMBIA.EDU/~TZHENG/FILES/RCOLOR.PDF
- HTTPS://PYTHON-GRAPH-GALLERY.COM/100-CALLING-A-COLOR-WITH-SEABORN/
- HTTPS://WWW.DATA-TO-VIZ.COM/
- HTTPS://COOLORS.CO/