Draw me a map v. paint me a picture

helping students know when to write about process and when to write about findings

Sara Stoudt, sas072@bucknell.edu, @sastoudt
Joint work with: Deborah Nolan @DebAtStats

“Process” Writing

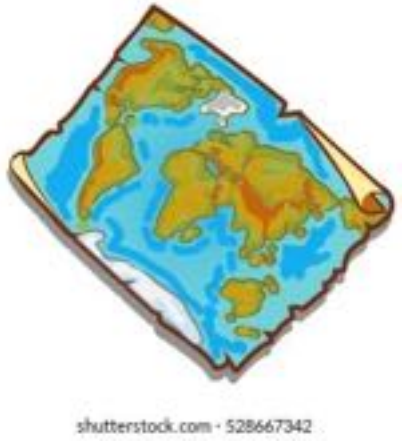
I did this, then this, then this….

Spot it in the wild: linear recount of steps

Effective for: reproducibility, supplementary materials, methods sections

Ineffective for: a non-technical audience, a reader who is skimming

The trap: look how fancy I am



“Finding” Writing

I found…

Spot it in the wild: typically does not follow the order in which the data analysis was actually performed in

Effective for: storytelling

Ineffective for: a methodological audience

The trap: cool, but is this really “novel”?

Activities to Disentangle Writing Approaches

Process

- Write pseudocode and compare with a peer to assess similarities and differences.
- Annotate code and share with a peer to assess understandability.
- Explain the behind-the-scenes of a final project as if you were talking to a future employer in an interview.

Findings

- Read and discuss structure of an article where the methods section is not the main focus and/or comes at end (examples: PNAS, data journalism and the “nerd box”)
- Write a press release for a final project. (No methods allowed!)
- **Storyboarding -** with student or instructor generated figures

What is a storyboard?

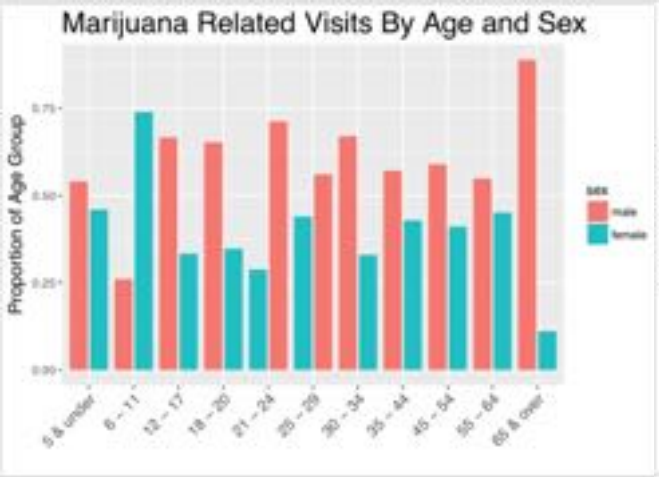
- visual outline used in movie making ➜ set of figures and tables with connecting text from an exploratory phase of analysis
- tactile way to group, filter, and order intermediate products of an analysis to find the bigger picture

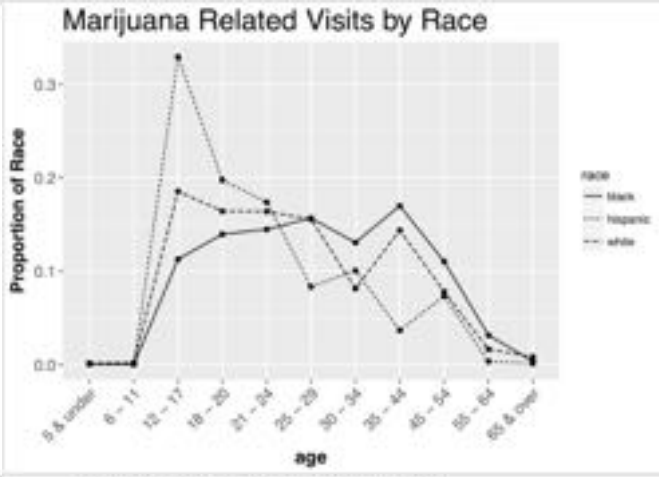
https://oaklandliving.wordpress.com/2010/12/29/last-chance-to-see-pixar-at-oakland-museum-of-california/

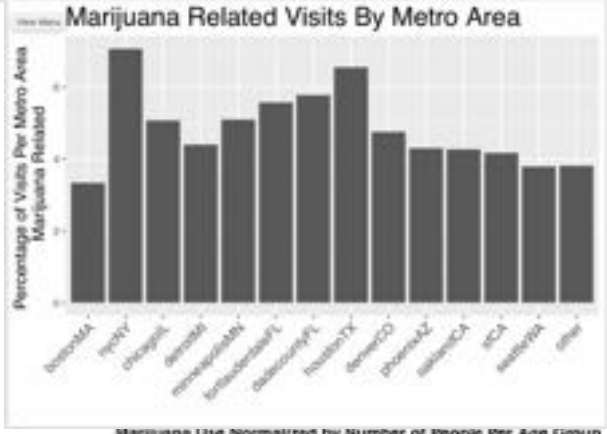
How do I make a storyboard?

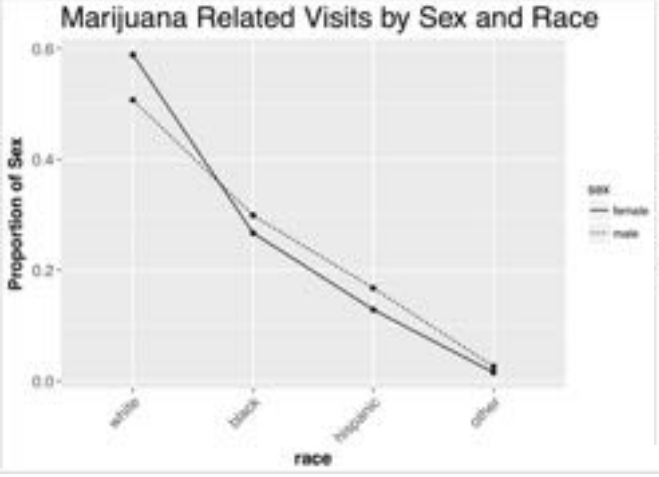
0. Choose a dataset.

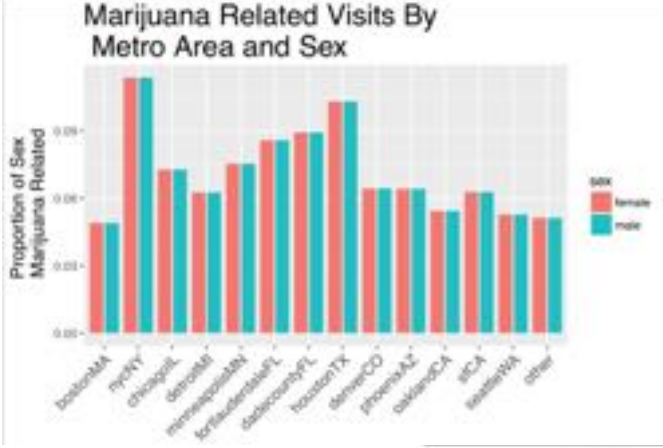
1. Collect tables and plots. (Exploratory Data Analysis - EDA)
2. Group related findings.
3. Make an argument (find the story).
4. Choose the tables and plots needed to tell your story.
5. Sequence the chosen tables and plots
6. Add captions and transitions.
7. Iterate.

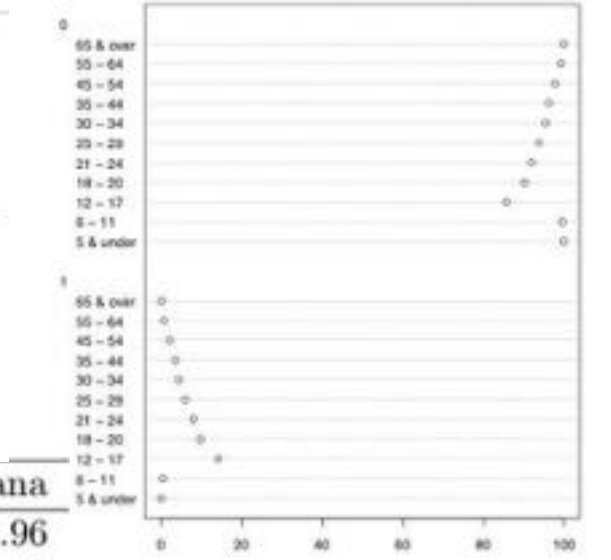












*Data in sample figures comes from the Drug Abuse and Warning Network (DAWN)

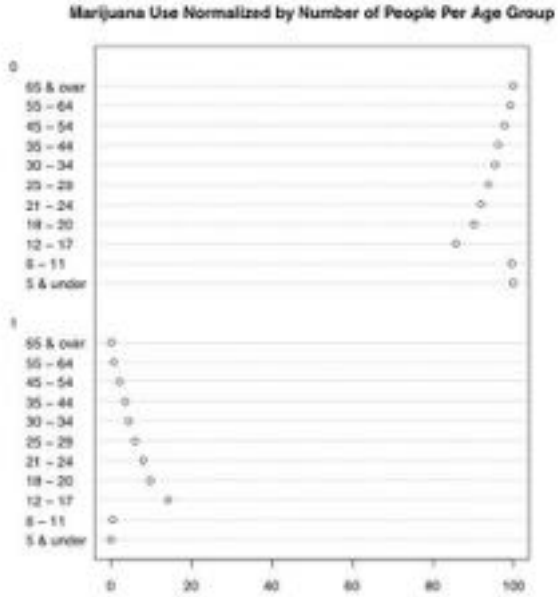
	isMarijuana
0	95.96
1	4.04

My story:

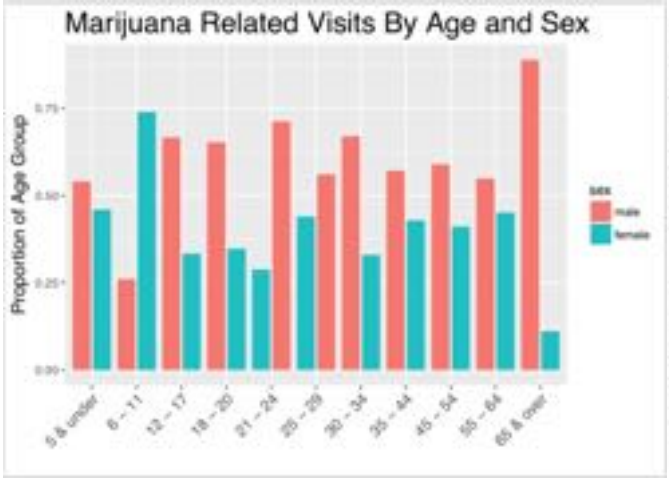
Although marijuana-related visits to the emergency room do not make up a large proportion of drug related visits, we are still interested in who is affected. Are there demographic discrepancies that may inform future prevention policies?

	isMarijuana
0	95.96
1	4.04

Of drug-related ER visits, those dealing with marijuana are few.

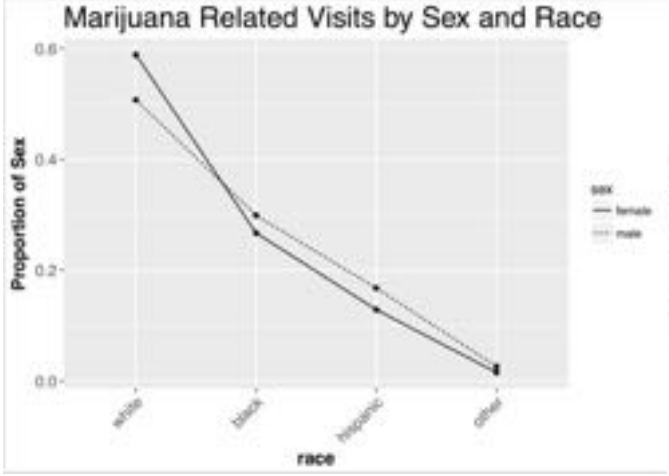


Marijuana is most prevalent in the 12-17 year old ER patients and steadily declines with age.



Do the age trends differ between gender? Yes! Females have their greatest percentage of marijuana incidents in their late 20s while males have their peak much earlier (12-17).

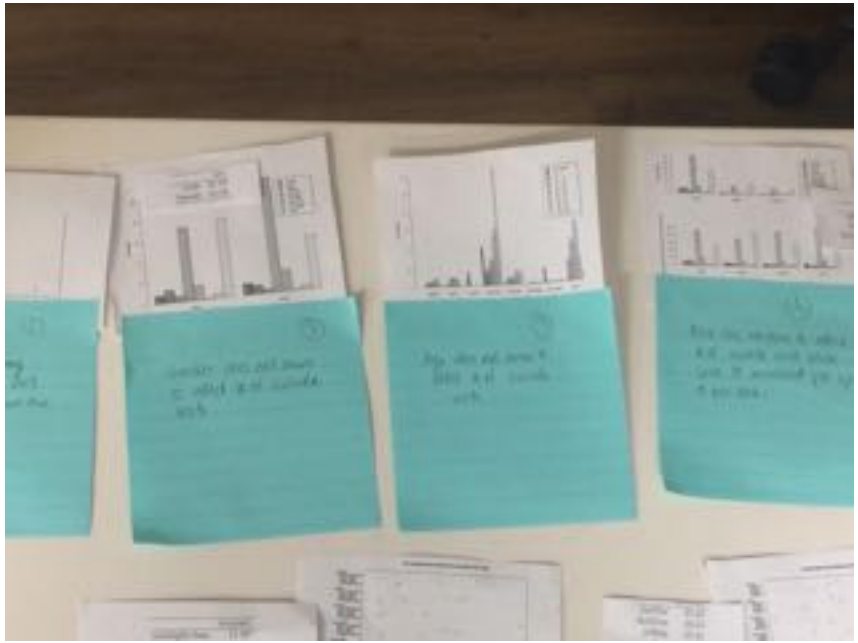
There are noticeable differences between genders across all age groups. More men than women come into the ER having used marijuana.



Are the differences between gender consistent across race? Yes! The gap between males and females does narrow from white to black to Hispanic but not dramatically.

Logistics

- In person: index cards and post-it notes
- Online: Google Slides



Your turn!

Breakout Rooms (20 minutes)

Share (10 minutes)

Questions (10 minutes)

Data* from Behavioral Risk Factor Surveillance System focusing on the theme of caregiving, subset of Pennsylvania data from 2015 and 2020

Some context from the Morbidity and Mortality Weekly Report (MMWR): https://www.cdc.gov/mmwr/volumes/69/wr/mm6907a2.htm

*Thanks to Bea Capistrant for an R package that compiles and organizes this data to streamline the EDA process. (https://github.com/bcapistrant/brfssR)

Breakout Room Materials

- Room 1
- Room 2
- Room 3
- Room 4
- Room 5

(if necessary)

- Room 6
- Room 7
- Room 8
- Room 9
- Room 10

Questions?

sas072@bucknell.edu

@sastoudt