IC23037: An Analysis of E-DUI Law Understanding

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Background

- King County is a highly populated county in Washington with a large rate of distracted drivers
- Washington enacted the E-DUI law in 2017 that outlawed *any* use of cellphone while driving or stopped at intersections.
- Primary resource available is a CSV of survey data gauging understanding, practice, and opinions from the public of the new law from 2018-2022 (no 2020 data)

Initial Questions

- How did survey results change. . .
  - Over time?
  - Across demographics?
  - For technology asked about?

Initial Findings

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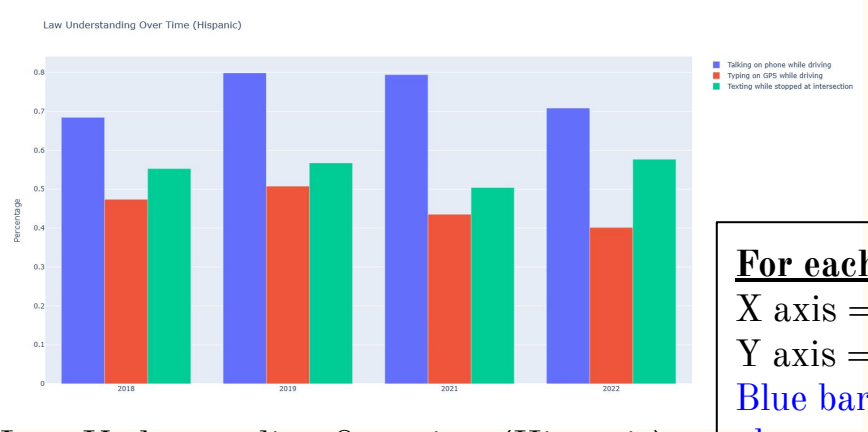
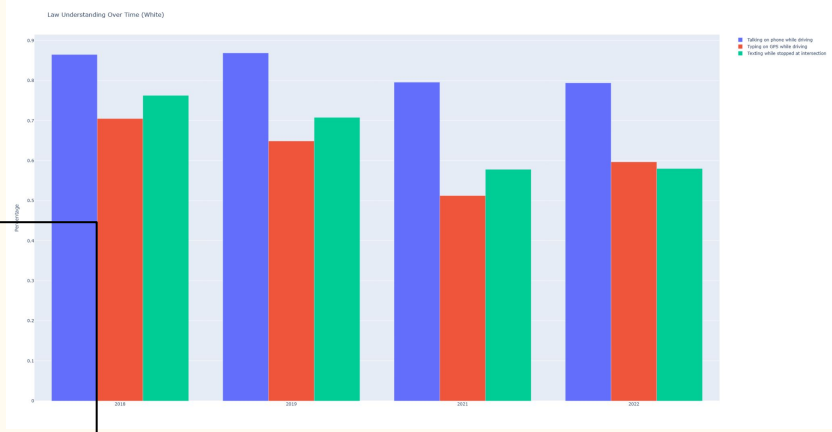
Grouped by race



Law Understanding Over time (Hispanic)



Law Understanding Over time (White)

For each graph:

X axis = year

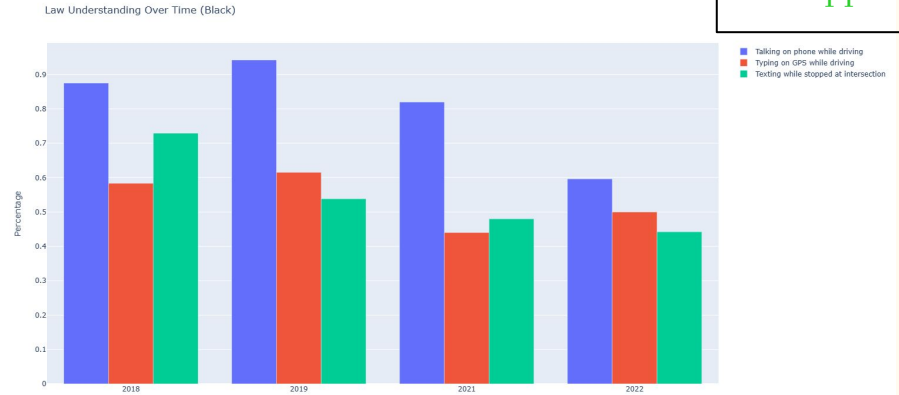
Y axis = percentage

Blue bar = talking on phone while driving

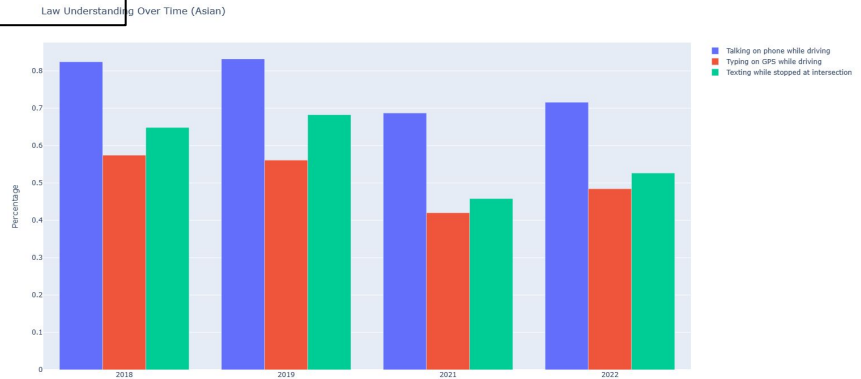
Red bar = typing on GPS while driving

Green bar= texting while at stopped at intersection

Law Understanding Over time (Black)



Law Understanding Over time (Asian)



Initial Findings

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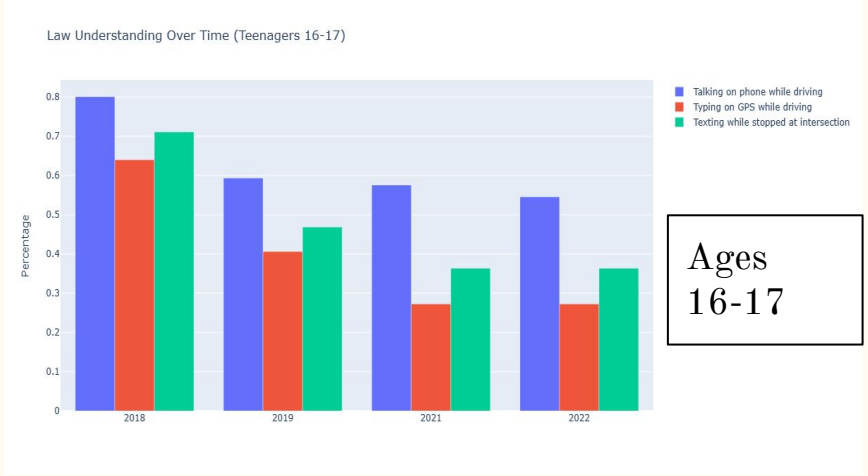
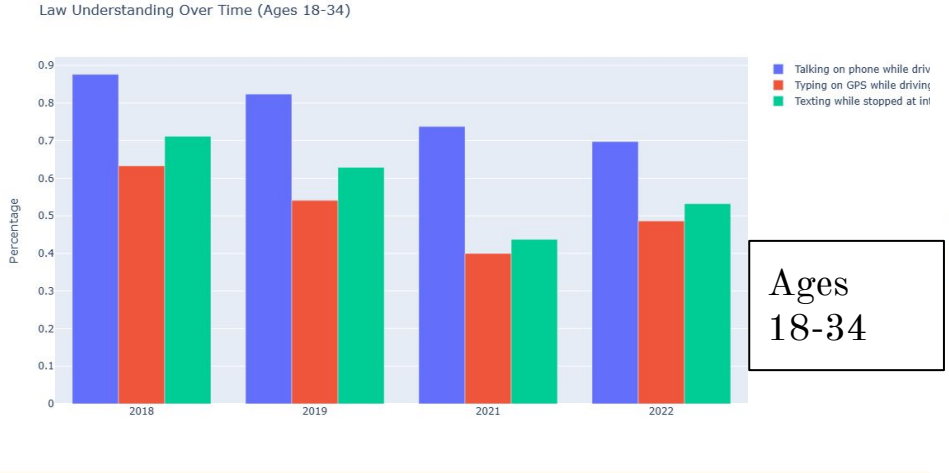
Grouped by age group

Changes in Perception in Regards to Age

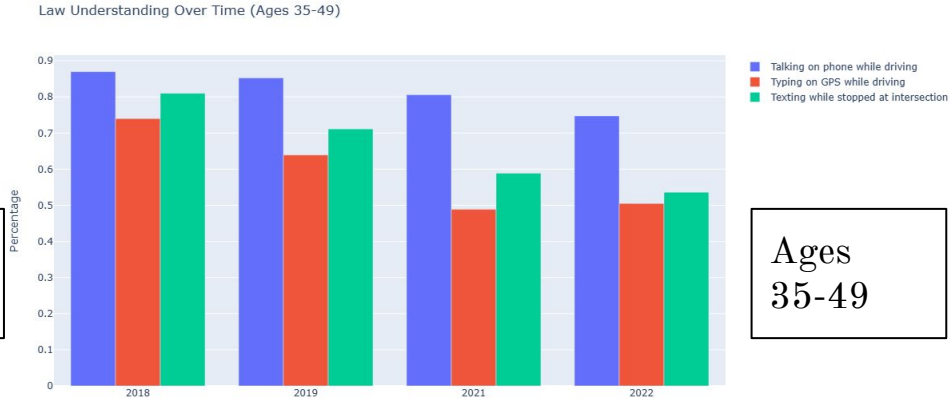
- X axis = year
- Y axis = percentage
- Blue bar = talking on phone while driving
- Red bar = typing on GPS while driving
- Green bar= texting while at stopped at intersection



Ages 16-17



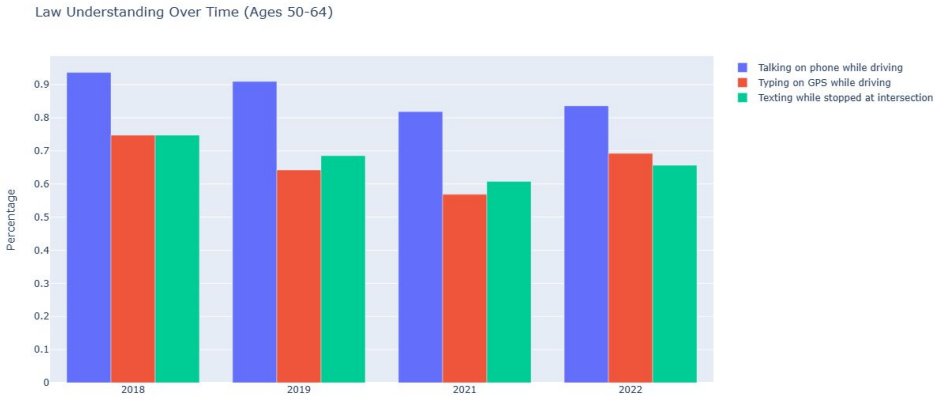
Ages 18-34

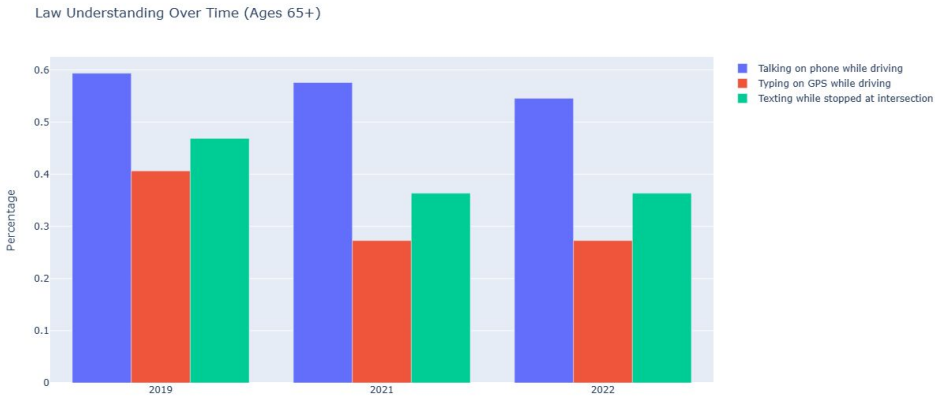


Ages 35-49

Change in Perception in Regards to Age

- X axis = year
- Y axis = percentage
- Blue bar = talking on phone while driving
- Red bar = typing on GPS while driving
- Green bar= texting while at stopped at intersection





No data provided for 2018 for age 65+

What insight did we gain from these graphs?

- Overall decrease in understanding over time across subgroups!
- Graphs make it easy to see change over time, but not to compare the subgroups

What do we do about it?

- Compare each subgroup within each year
- Have only one question per graph

Difference in Understanding Between Races

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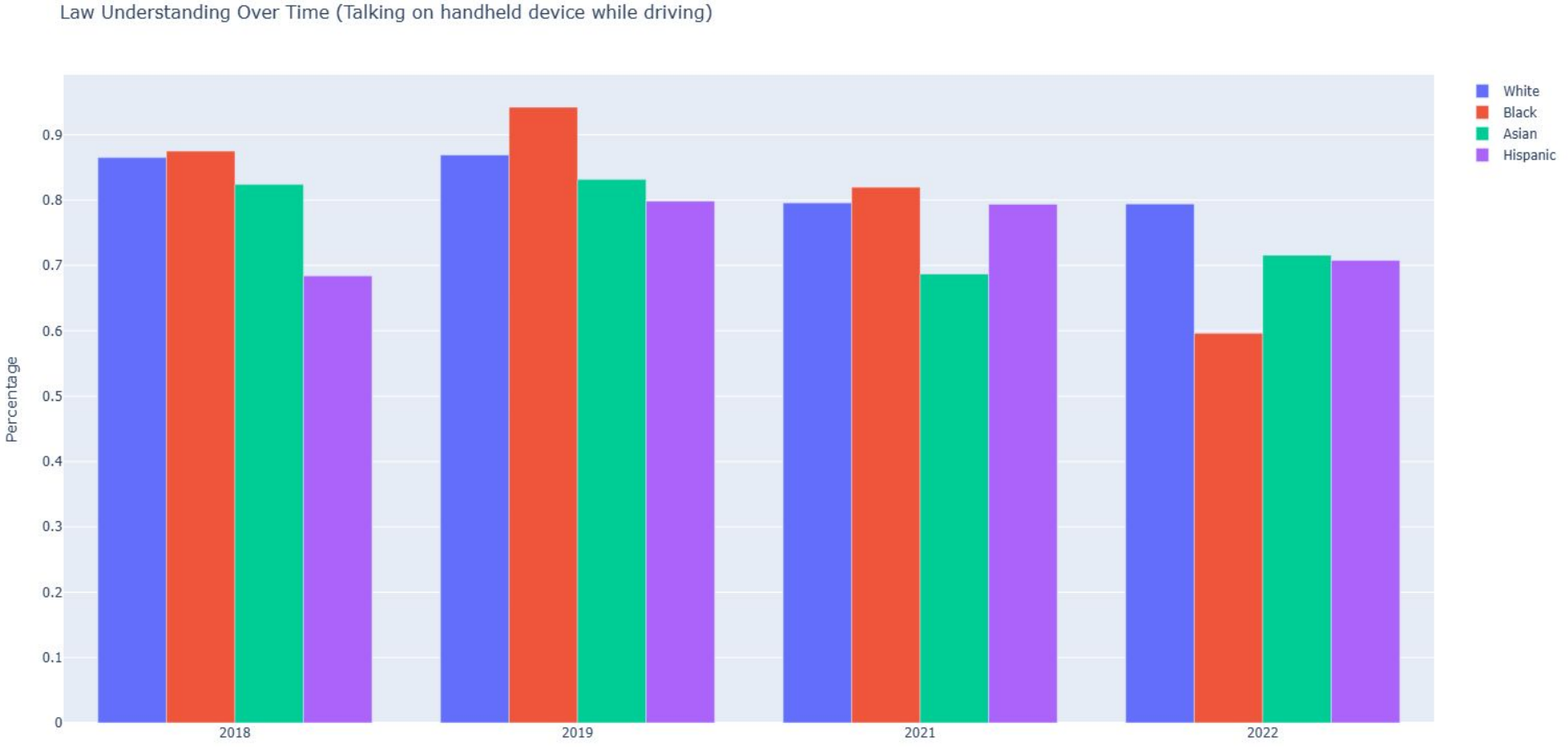
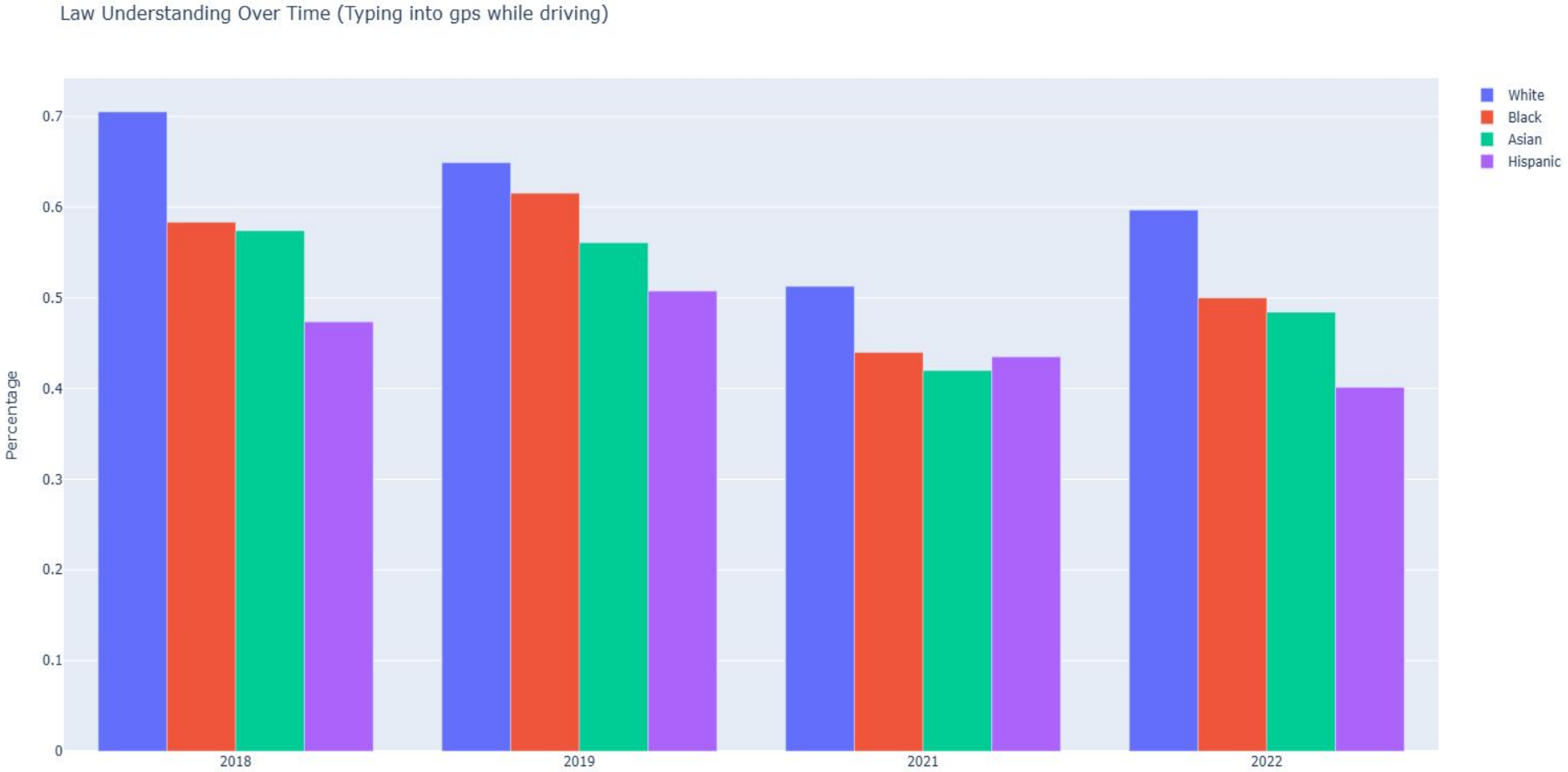
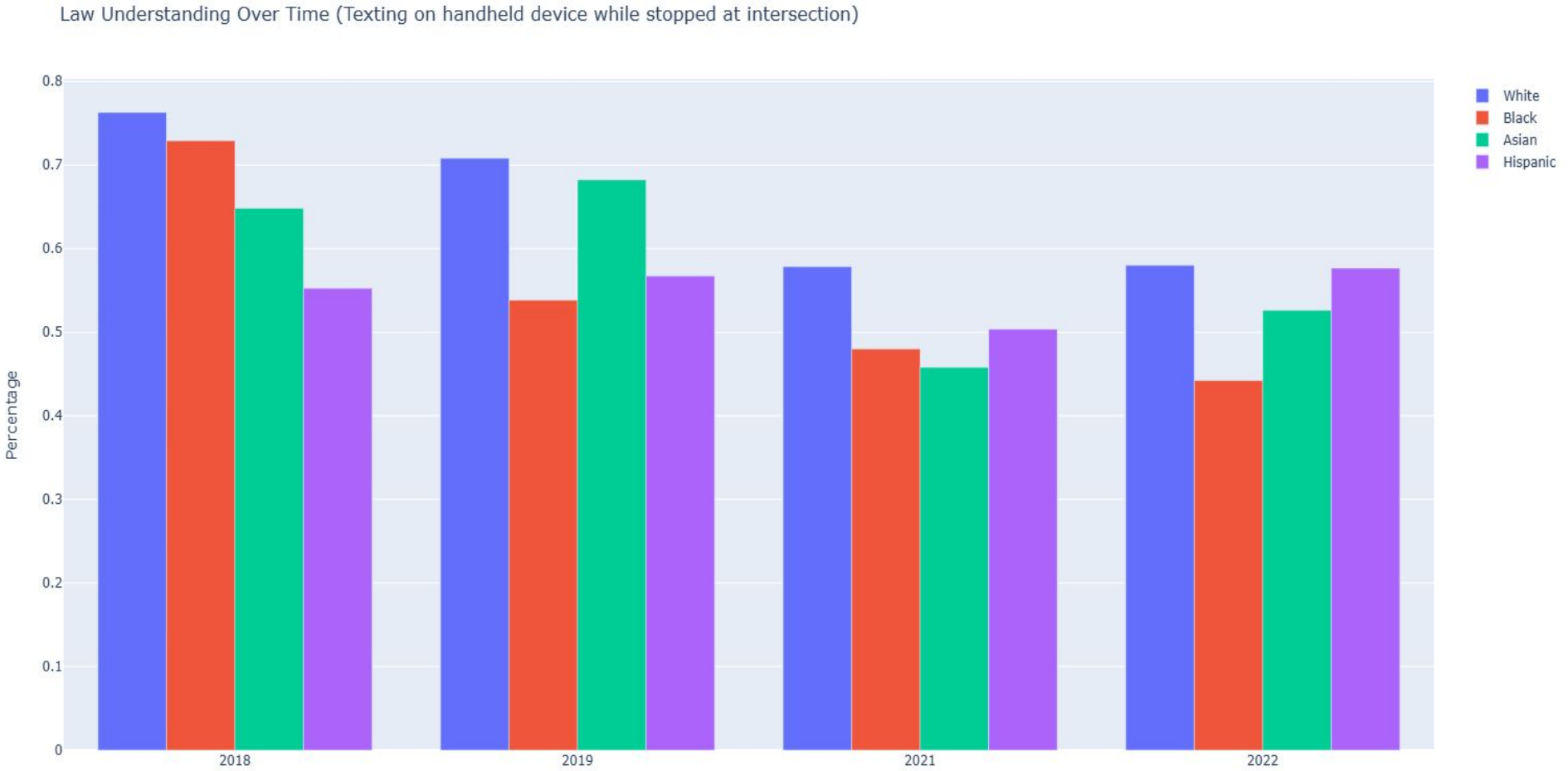
Grouped by survey question

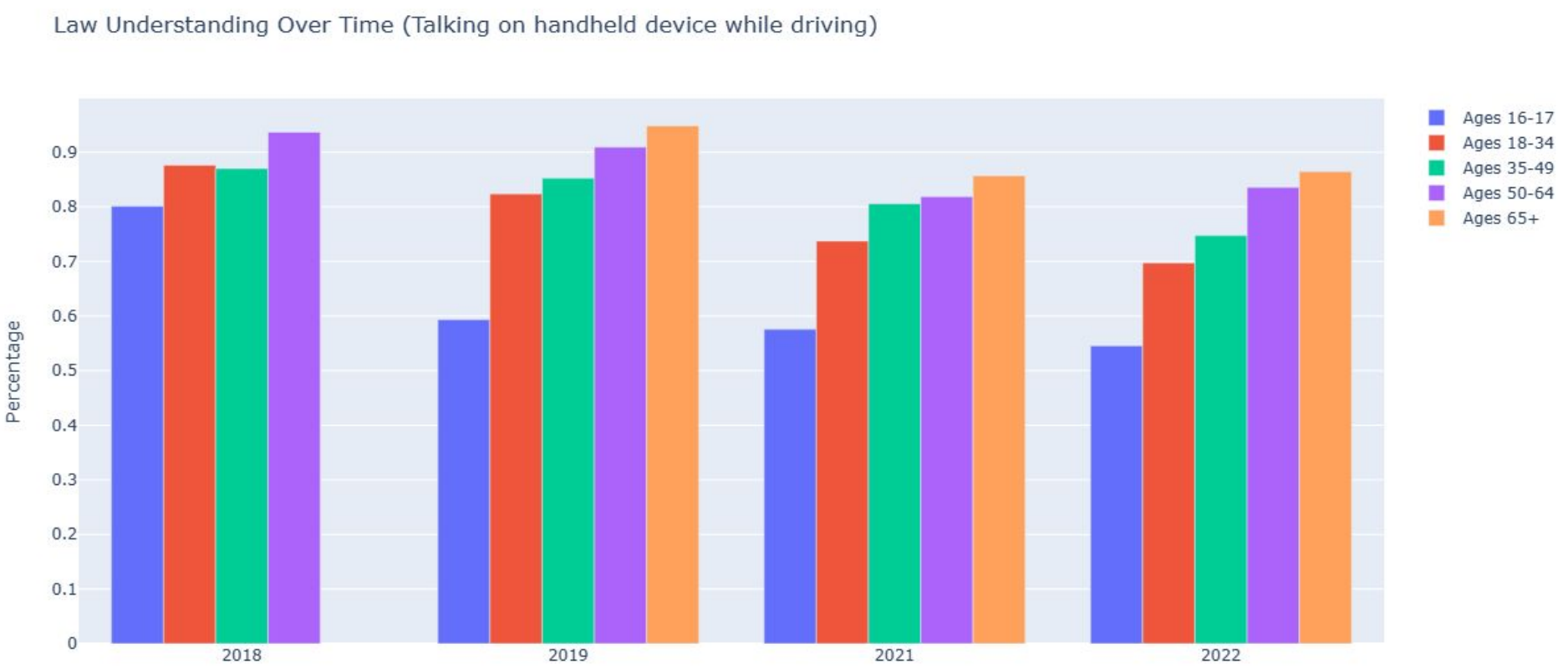

Law Understanding Over Time (Talking on handheld device while driving)
Percentage
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
2018
2019
2021
2022
White
Black
Asian
Hispanic

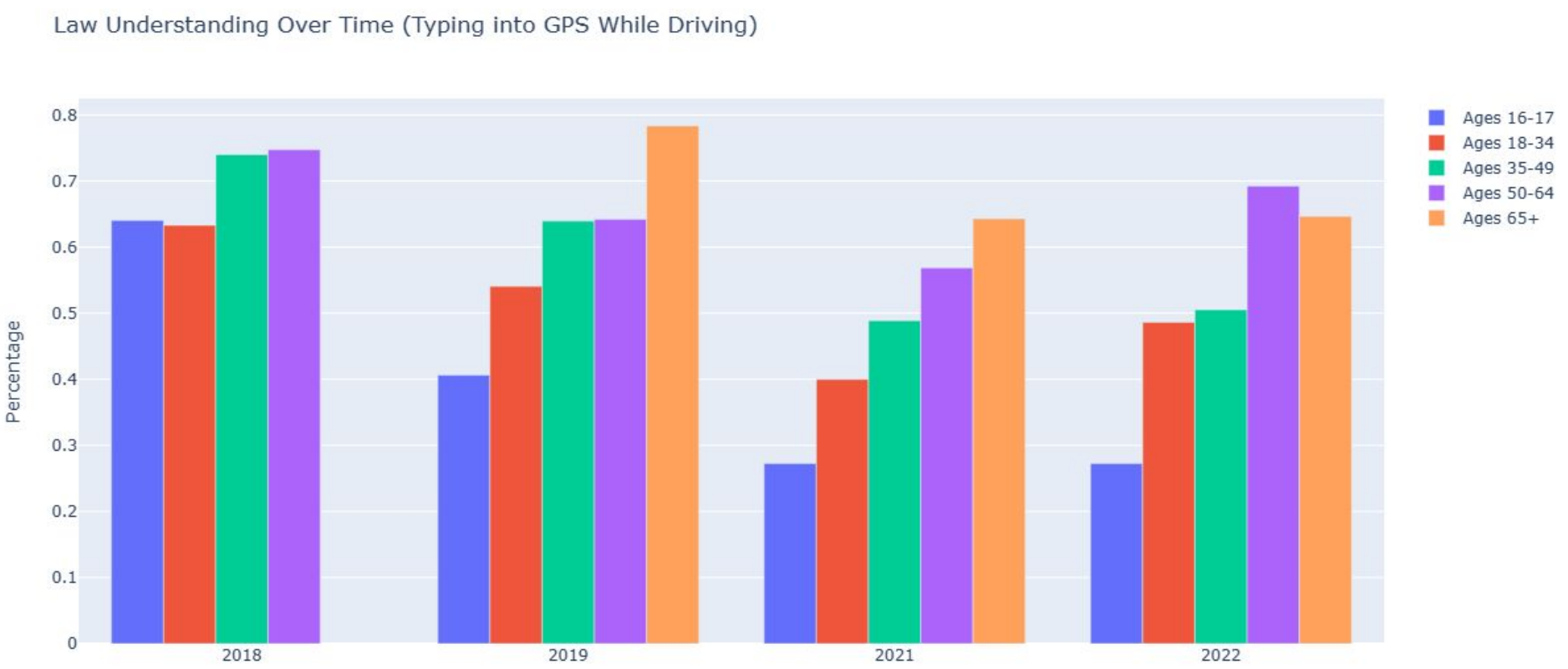

Law Understanding Over Time (Typing into gps while driving)
Percentage
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
2018
2019
2021
2022
White
Black
Asian
Hispanic

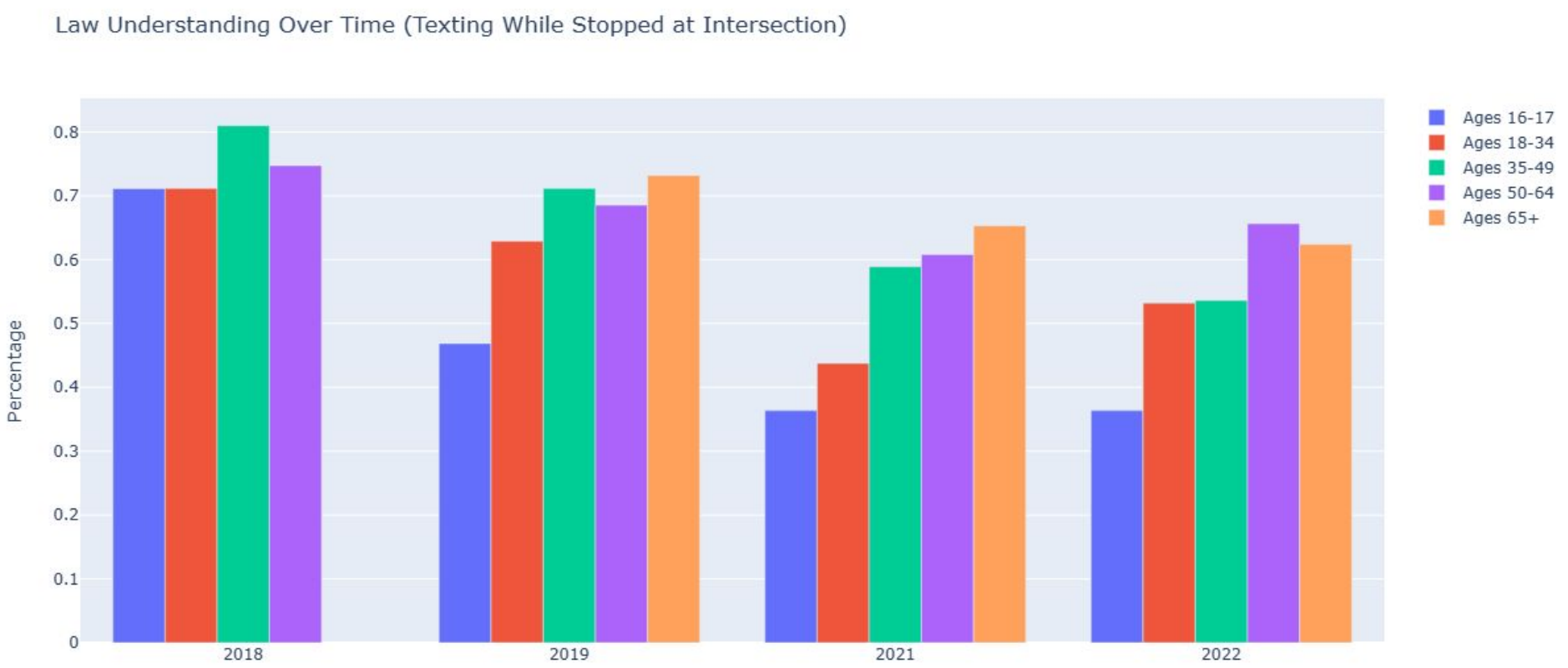

Law Understanding Over Time (Texting on handheld device while stopped at intersection)
Percentage
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2018
2019
2021
2022
White
Black
Asian
Hispanic

Difference in Understanding Between Age Groups

Grouped by survey question


Law Understanding Over Time (Talking on handheld device while driving)
Percentage
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
2018
2019
2021
2022
Ages 16-17
Ages 18-34
Ages 35-49
Ages 50-64
Ages 65+


Law Understanding Over Time (Typing into GPS While Driving)
Percentage
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
2018
2019
2021
2022
Ages 16-17
Ages 18-34
Ages 35-49
Ages 50-64
Ages 65+


Law Understanding Over Time (Texting While Stopped at Intersection)
Percentage
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
2018
2019
2021
2022
Ages 16-17
Ages 18-34
Ages 35-49
Ages 50-64
Ages 65+

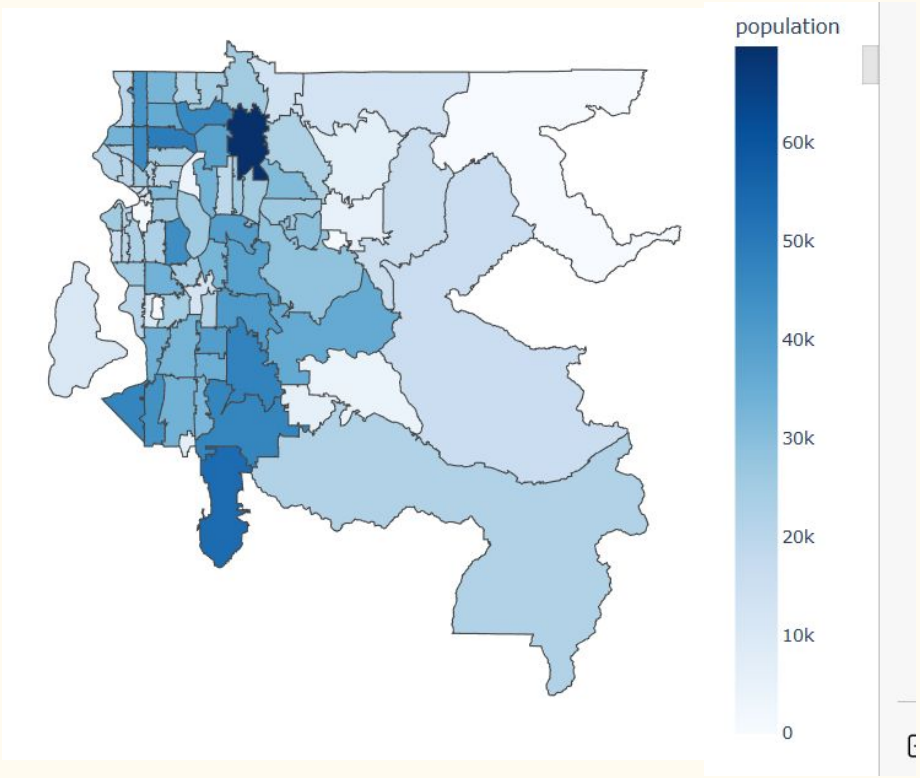
Initial Conclusions

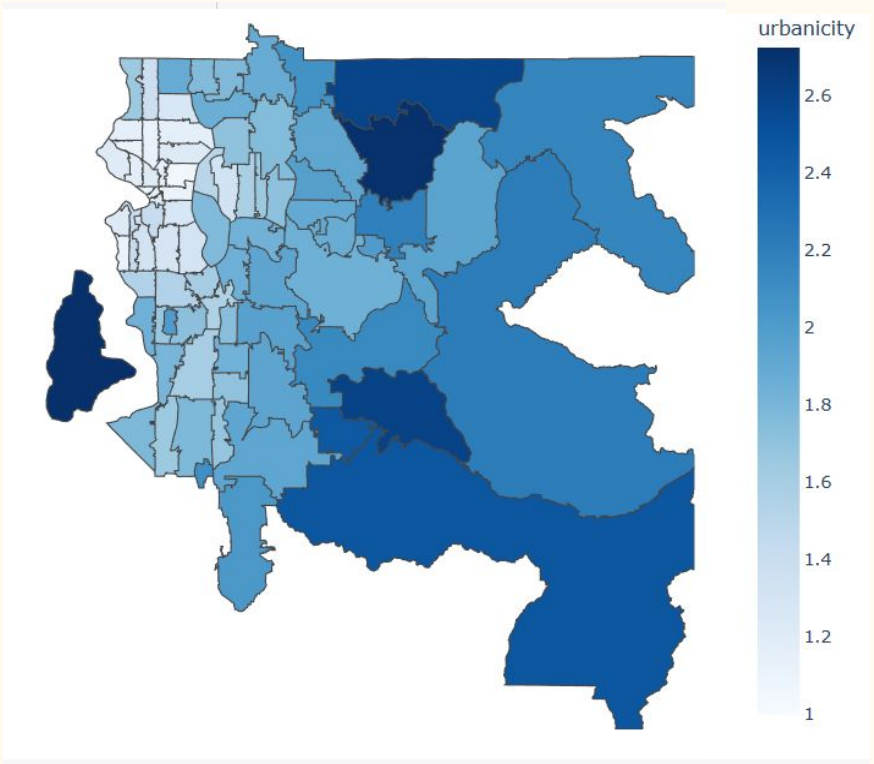
- There is a much larger decrease in understanding of the law for people ages 16-17 which may be because there is a higher turnover rate of new drivers between the years that the survey was conducted.
- Therefore, there is less of a change for the broader age groups.

Zip Code / Geographic

Using outside data

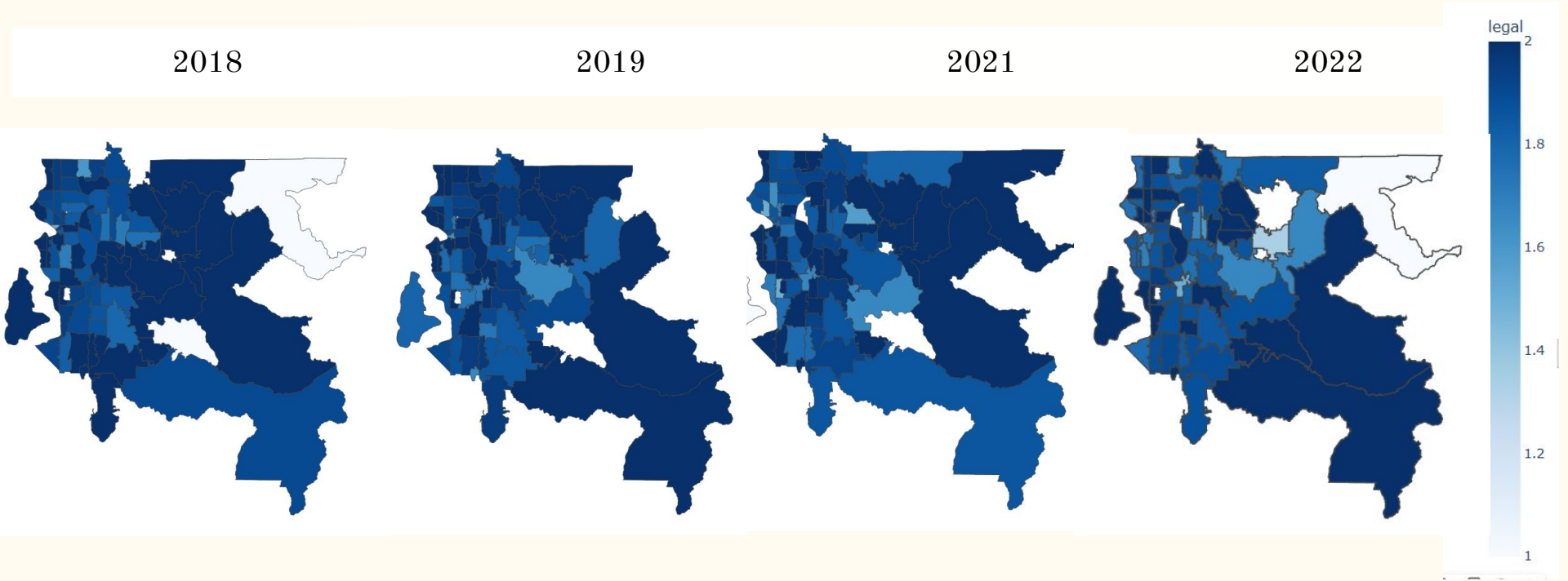
Correlation Between Population and Urbanicity





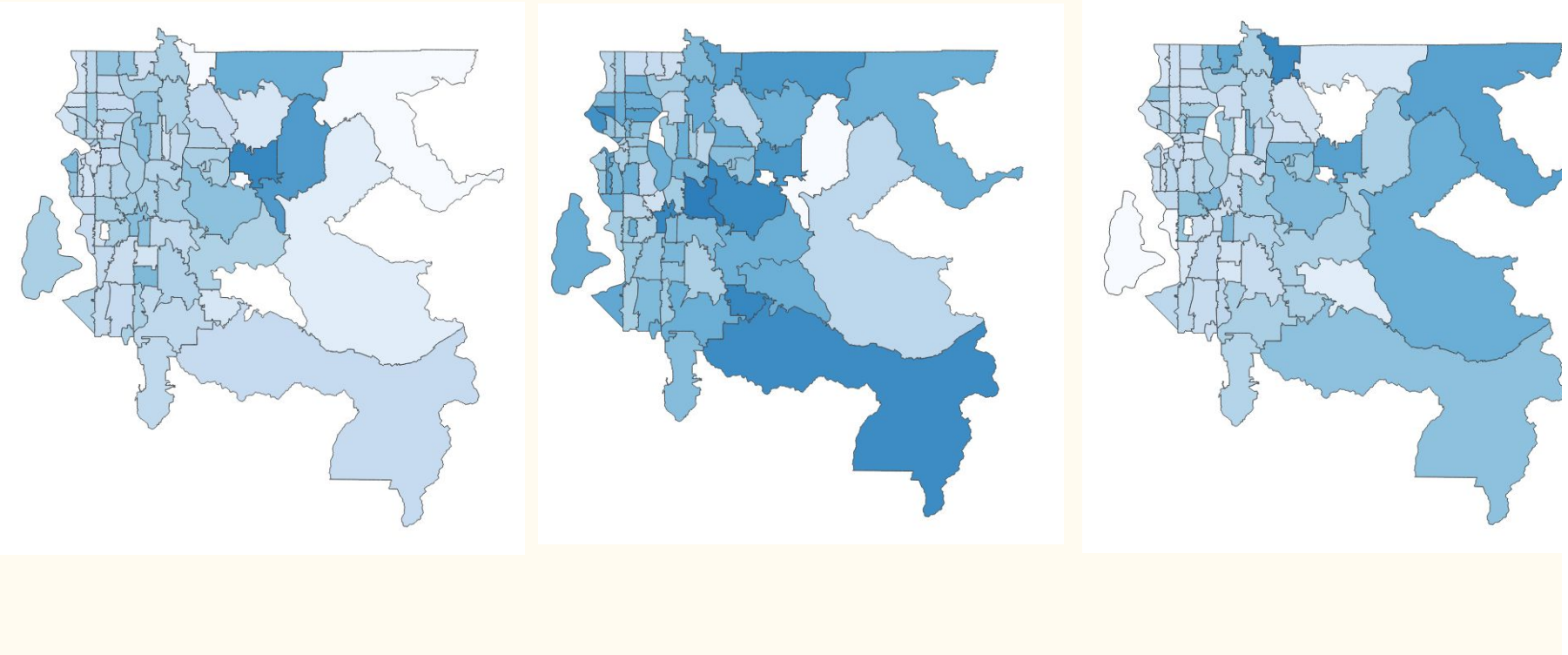
Change of Perception of “Talk on a hand-held cell phone while driving” Over Time

2018 2019 2021 2022



Change of Perception of “Talking On a Cell Phone” Over Time

2019 2021 2022



Supplemental Demographic Information for Interpretation Help

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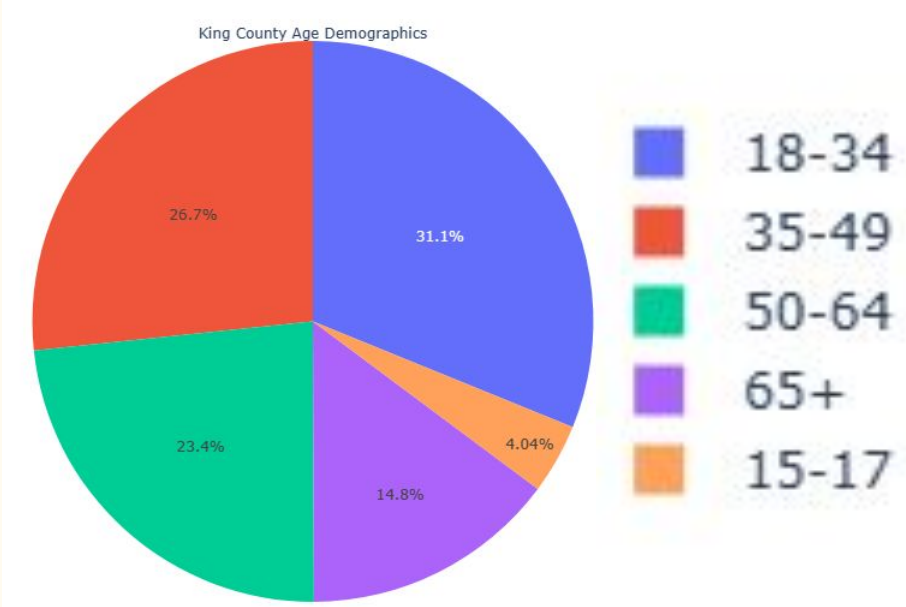
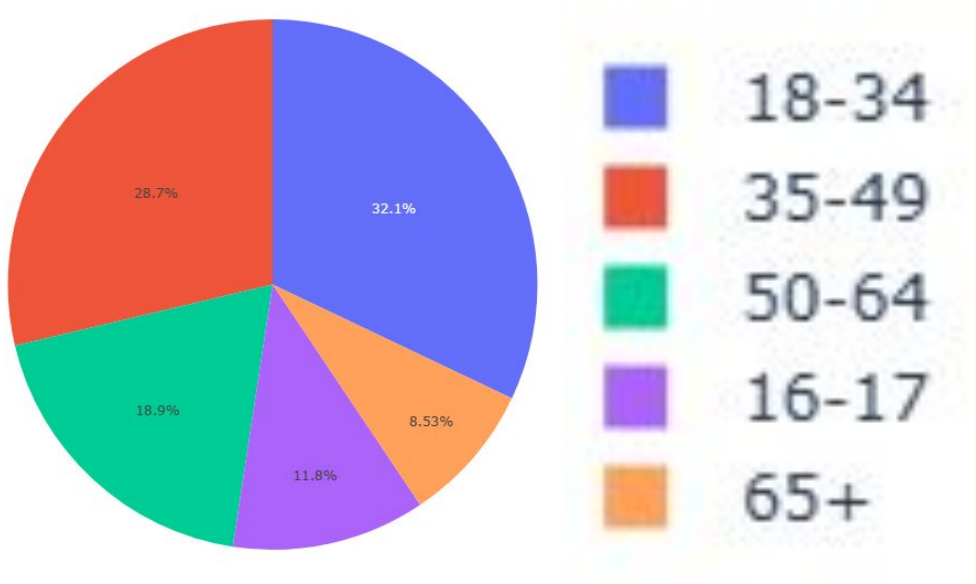
Using outside data

Age Demographic Differences

King County Population

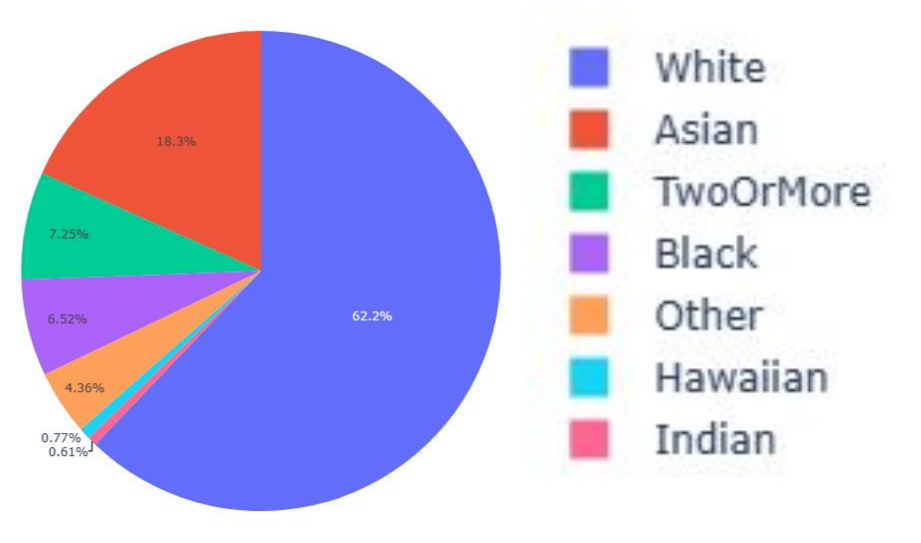


Survey Population

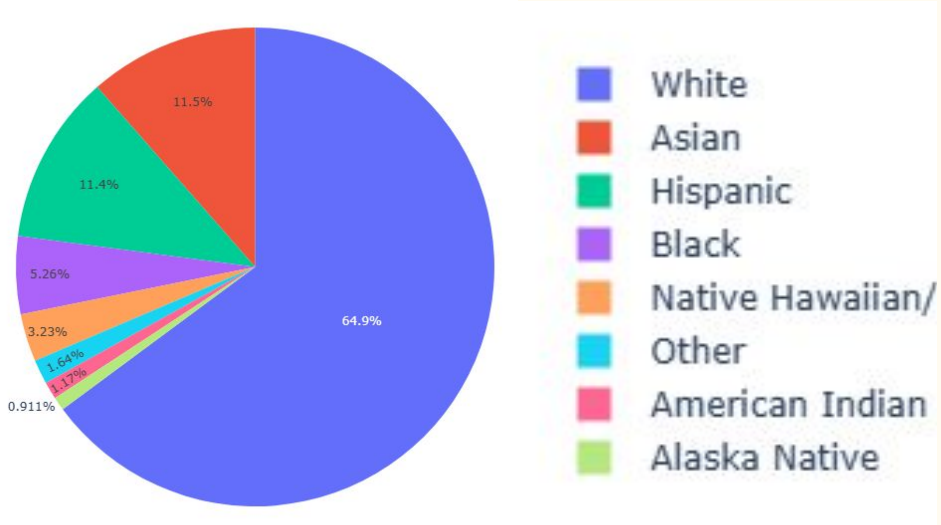


Race Demographic Differences

King County Population



Survey Population



How does this information help us?

- The survey data given is an accurate representation of the actual population
- The county is primarily (>60%) White
- The county (that is of driving age) is primarily between the ages of 18 and 49
- We can use this to interpolate what percent of the population understands these laws
    - Ex: multiply White results by ~60 and Asian results by ~18

Final Conclusions

What are the KEY conclusions we can draw from this data?

- There is a general decrease in understanding over time across *all* variables (race, age group, and survey question)
- With some exceptions, Hispanic and Asian populations have a lower level of understanding of the new E-DUI laws

What suggestions/policies can we promote as a result?

- Need to target the younger age groups, whether that is through
  - More rigorous written tests when getting your permit/license
  - Social media
  - Have these discussions about laws junior/senior year of high school when the majority of kids are starting to drive
- Spreading more information in other languages because the Hispanic and Asian communities are less likely to be fluent in English (possible language barrier)

Reflections

If we could go back in time, what would we do different?

- Initial set back when we wanted to compare results to congressional voting districts
  - (Didn't realize we were only working with one county)
- Make plots that gave us trendlines
  - (Emphasize decrease in understanding across a subgroup over time)
- Spend more time deciphering the questions we were going to ask and answer. We jumped around a lot with data analysis at the beginning

Resources

- Used google collab to share code
  - https://colab.research.google.com/drive/19K10gNRmF1RqNgVQhu-Lr2gKiUOFkOTt#scrollTo=cok5I1vTBGA3
- Used outside data on populations in Washington
  - https://www.unitedstateszipcodes.org/zip-code-database/ (gives population of each zip code)
- Used stackoverflow to figure out how to do a choropleth map and for zip codes in King County
  - #https://stackoverflow.com/questions/73044138/plotly-how-to-draw-a-zip-code-level-choropleth-map

Questions?