PA446 Midterm

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Part I

Question 1

Think of a civic problem you would like to address by creating a data application. Include the following in your answer:

1. Describe the civic problem and its implications for the community. Be as specific as possible.

   Land use and zoning policies are foundational to people's experiences of where they live, work, and play, but are often obscured by complicated and inaccessible bureaucratic processes. Thus, it is difficult for people to know when zoning changes or new developments are occurring in their neighborhoods. This is an issue because zoning can be an insidious tool that perpetuates segregation, environmental racism, exclusionary housing policies, car-centric development, and climactic harm.

   Zoning and land use decisions have historically been leveraged to concentrate locally unwanted land uses, or LULUs, in predominantly Black and Latino/a/x neighborhoods. Examples of LULUs could be a trash incinerator or other heavy polluting industry. This has implications for the health and well-being of the residents of the adjacent neighborhoods. In Chicago, there is a high concentration of "sacrifice zones" – or areas that bear "the brunt of pollution from industrial activity and other polluting sources" (Campa 2023). The City of Chicago has the largest life expectancy gap among American cities, in part because of the ongoing placement of polluting industries in the same predominantly Black and Latino/a/x areas (Campa 2023).

   Further, after desegregation, municipalities used zoning to perpetuate segregation through exclusionary zoning policies. By prohibiting the construction of multi-family housing, cities prevented racially and economically diverse neighborhoods from proliferating.

   Despite this history of zoning decisions perpetuating systemic racism and environmental degradation, zoning is a tool that can be used to overhaul the urban fabric. Equitable

transit-oriented development can be encouraged through zoning policies that encourage the development of high-density, mixed-uses around public transit hubs. This type of zoning policy also encourages walkability, which promotes better health outcomes for residents and decreases car dependency, which is better for the environment.

If people are uninformed about the zoning districts and policies around them, then they are not able to hold city officials accountable. They might learn of a new undesirable land use when it is too late to intervene. This can be a matter of life and death in sacrifice zones.

2. Briefly describe the data application that can help address the civic problem defined in (1).

   Generally, the data application would be used by residents of a locale. They could enter the name of their neighborhood into the application, and the application would provide pertinent zoning and development concerns in the neighborhood. This would include basic zoning information, like the existing permissible uses by zoning districts in the neighborhood. The application would also provide building permit applications, upcoming zoning board of appeals (ZBA) meetings, the agendas for these meetings, information on participating in public comment sessions, and other resources about zoning based on the neighborhood in which one resides. The application could also provide historical context on the neighborhood, including redlining maps, previous zoning codes, and explanatory text on the harms zoning has wrought previously. There would also be a mapping component of the application, where proposed or under construction developments could be displayed. Users would also be able to enter points onto the map if the application does not have the new developments in its database. The application could also provide a draft email to send to their alderperson or ZBA members regarding proposed zoning changes or new developments.

   This would help to address the problem described previously by demystifying the zoning process while also calling attention to how critical it is to be informed about zoning and land use matters. It would educate residents on ways to advocate for themselves, why certain zoning policies are harmful, and alternative zoning policies. This could empower residents to advocate for themselves. It would also assist the city with soliciting feedback from residents, which is a best practice in urban planning. Ideally, this would lead to more democratic zoning and land use decisions. This could also help build trust between residents and the city by increasing transparency.

References:

Campa, Aydali. 2023. "Chicago Looks to Overhaul Its Zoning and Land Use Policies to Address Environmental Discrimination." *Inside Climate News* (blog). August 15, 2023. https://insideclimatenews.org/news/15082023/chicago-environmental-justice-zoning-policies-pollution-cumulative-impact/.

Question 2

Include the source code and output in your final Quarto document when answering this question. Load the data file called 'cell.csv'

```
# load libraries
library(tidyverse)
library(usethis)
library(ggthemes)
library(rvest)
library(gt)
library(gtExtras)

# read csv
cell <- read_csv("./cell.csv")
```

- Of the states with a texting ban, which one has the highest number of traffic deaths?

```
cell %>%
  filter(text_ban == 1) %>%
  filter(numberofdeaths == max(numberofdeaths))
```

```
# A tibble: 1 x 10
   year state      state_numeric population numberofdeaths urban_percent
  <dbl> <chr>              <dbl>      <dbl>          <dbl>         <dbl>
1  2012 California             5   38041430           2857            48
# i 4 more variables: cell_subscription <dbl>, cell_ban <dbl>, text_ban <dbl>,
#   total_miles_driven <dbl>
```

Answer: California

- How many states have a cell ban, how many have a texting ban, and how many have both?

```
cell %>%
  filter(text_ban == 1) %>%
  summarize(unique(state))
```

```
# A tibble: 34 x 1
   `unique(state)`
   <chr>
 1 Alaska
 2 Arkansas
 3 California
 4 Colorado
 5 Connecticut
 6 Delaware
 7 Georgia
 8 Illinois
 9 Indiana
10 Iowa
# i 24 more rows
```

```
cell %>%
  filter(cell_ban == 1) %>%
  summarize(unique(state))
```

```
# A tibble: 10 x 1
   `unique(state)`
   <chr>
 1 California
 2 Connecticut
 3 Delaware
 4 Maryland
 5 Nevada
 6 New Hampshire
 7 New Jersey
 8 New York
 9 Oregon
10 Washington
```

```
cell %>%
  filter(text_ban == 1 &
           cell_ban == 1) %>%
  summarize(unique(state))
```

```
# A tibble: 10 x 1
   `unique(state)`
   <chr>
```

```
 1 California
 2 Connecticut
 3 Delaware
 4 Maryland
 5 Nevada
 6 New Hampshire
 7 New Jersey
 8 New York
 9 Oregon
10 Washington
```

Answer: 10 have a cell ban, 34 have a texting ban, and 10 have both.

- What is the average number of deaths in states with a texting ban versus those without?

```
cell %>%
  filter(text_ban == 1) %>%
  summarize(mean(numberofdeaths))
```

```
# A tibble: 1 x 1
  `mean(numberofdeaths)`
                   <dbl>
1                   567.
```

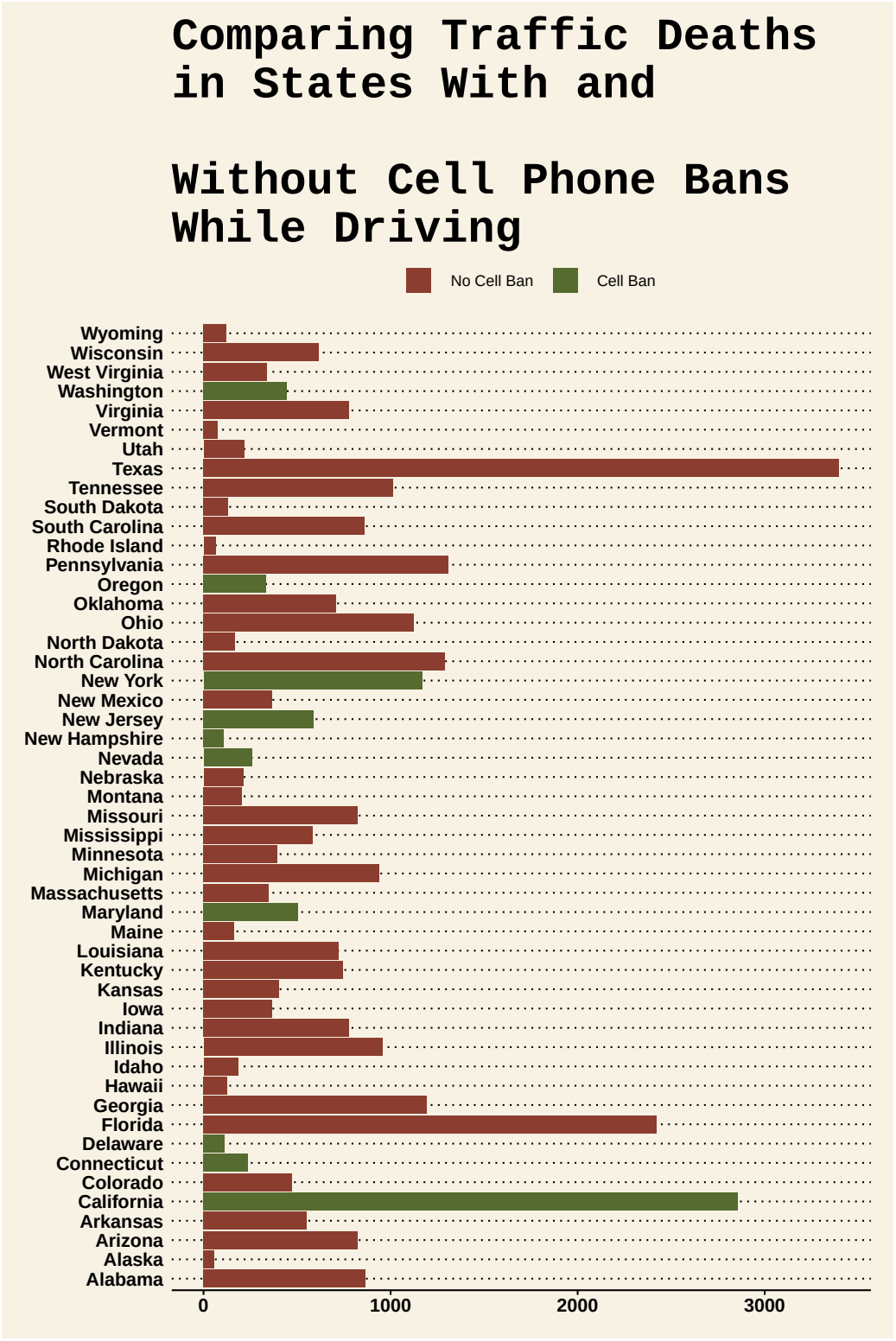
```
cell %>%
  filter(text_ban == 0) %>%
  summarize(mean(numberofdeaths))
```

```
# A tibble: 1 x 1
  `mean(numberofdeaths)`
                   <dbl>
1                   892.
```

The average number of traffic deaths is 567 for states with texting bans, and 892 for states without texting bans.

- Plot the relationship between population and the number of traffic deaths for those with and without a cell ban on the same plot.

```r
cell %>%
  group_by(cell_ban) %>%
  mutate(cell_ban = factor(cell_ban,
                           levels = c(0,1),
                           labels = c("No Cell Ban", "Cell Ban")))%>%
  ggplot() +
  geom_col(mapping = aes(x = state, y = numberofdeaths,
                         fill = cell_ban),
           position = position_dodge(0.8)) +
  scale_fill_manual(values = c("No Cell Ban" = "coral4",
                               "Cell Ban" = "darkolivegreen")) +
  labs(title = "Comparing Traffic Deaths \nin States With and
       \nWithout Cell Phone Bans \nWhile Driving",
       x = "State",
       y = "Number of Traffic Deaths",
       fill = "") +
  coord_flip() +
  theme_wsj()
```


Comparing Traffic Deaths in States With and Without Cell Phone Bans While Driving
No Cell Ban
Cell Ban
Wyoming
Wisconsin
West Virginia
Washington
Virginia
Vermont
Utah
Texas
Tennessee
South Dakota
South Carolina
Rhode Island
Pennsylvania
Oregon
Oklahoma
Ohio
North Dakota
North Carolina
New York
New Mexico
New Jersey
New Hampshire
Nevada
Nebraska
Montana
Missouri
Mississippi
Minnesota
Michigan
Massachusetts
Maryland
Maine
Louisiana
Kentucky
Kansas
Iowa
Indiana
Illinois
Idaho
Hawaii
Georgia
Florida
Delaware
Connecticut
Colorado
California
Arkansas
Arizona
Alaska
Alabama
0
1000
2000
3000

Question 3

Go to the web link https://www.nytimes.com/topic/subject/elections. Extract data from the "Latest" section and create a table comprising three variables (Article Name, Article Description (the short text after the title), and Author Name). Extract information on at least ten articles. Ideally, the table will have three columns and at least ten rows. Make sure to include both the source code and output in your final Quarto document.

```
url <- "https://www.nytimes.com/topic/subject/elections"
html <- read_html(url)


title <- html |>
  html_elements(".css-8hzhxf") |>
  html_text2() # title

descrip <- html |>
  html_element("p.css-1pga48a.e15t083i1") |>
  html_text2()# description

descrip <- html %>%
  html_elements(".css-1pga48a.e15t083i1") %>%
  html_text2()

authorname <- html |>
  html_elements(".css-1i4y2t3.e140qd2t0") |>
  html_text2() # author name

# Build the tibble
nyttable <- tibble(title, authorname, descrip)

# i tried using gt() but it got cut off in the rendered pdf
nyttable %>%
  gt() %>%
  cols_label(title = "Article Table",
             authorname = "Author Name",
             descrip = "Description") %>%
  tab_source_note(source_note = md("*Source: New York Times*")) %>%
  tab_options(column_labels.background.color = "skyblue") %>%
  as_raw_html()
```

Article Table	Author Name
Boeing in Talks to Buy Spirit AeroSystems, a Struggling Supplier	By Niraj Chokshi and Sydney
From a Funeral Image, the Textures of Faith and State in Russia	By Valerie Hopkins and Oleg
DeSantis Vetoes Blanket Social Media Ban for Youths Under 16	By Natasha Singer
What's Behind the Turmoil at New York Community Bank?	By Santul Nerkar
Penn Trustees Meeting Is Cut Short After Students Protest Over War in Gaza	By Stephanie Saul
How Should You Respond to a Friend's Appalling Post?	By Kwame Anthony Appiah
With So Many Flavors of Inflation, Which Should We Care About?	By Peter Coy
Robert M. Young, Filmmaker Who Indulged His Wanderlust, Dies at 99	By Richard Sandomir
Six Takeaways From Hunter Biden's Testimony	By Luke Broadwater
McConnell's Early Decision to Step Aside Fuels G.O.P. Fight to Succeed Him	By Carl Hulse

Source: New York Times

```
# this is the only way i could get the tibble to show up in my output
# but unfortunately the entries get cut off
as_tibble(nyttable)
```

```
# A tibble: 10 x 3
   title                                                authorname descrip
   <chr>                                                <chr>      <chr>
 1 Boeing in Talks to Buy Spirit AeroSystems, a Struggling S~ By Niraj ~ Under ~
 2 From a Funeral Image, the Textures of Faith and State in ~ By Valeri~ The op~
 3 DeSantis Vetoes Blanket Social Media Ban for Youths Under~ By Natash~ The st~
 4 What's Behind the Turmoil at New York Community Bank?      By Santul~ The le~
 5 Penn Trustees Meeting Is Cut Short After Students Protest~ By Stepha~ The me~
 6 How Should You Respond to a Friend's Appalling Post?       By Kwame ~ The ma~
 7 With So Many Flavors of Inflation, Which Should We Care A~ By Peter ~ Here's~
 8 Robert M. Young, Filmmaker Who Indulged His Wanderlust, D~ By Richar~ The su~
 9 Six Takeaways From Hunter Biden's Testimony                By Luke B~ The pr~
10 McConnell's Early Decision to Step Aside Fuels G.O.P. Fig~ By Carl H~ Conten~
```

Part II

Question 4

Link to webpage with CV: https://emiller1031.github.io/midterm_pa446/

Link to GitHub repo for midterm: https://github.com/emiller1031/midterm_pa446