

Spicing up your maps in R 🌶

Using color theory, blue rectangles,
and more.

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February 29, 2024

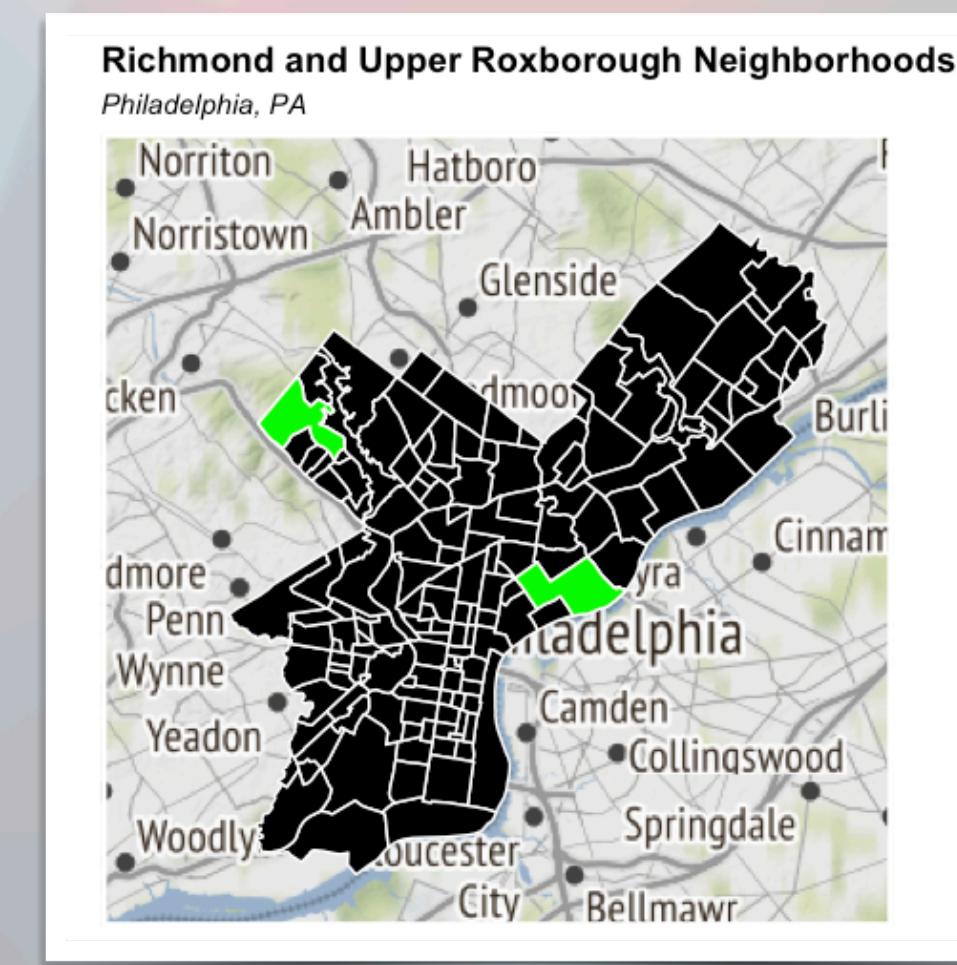
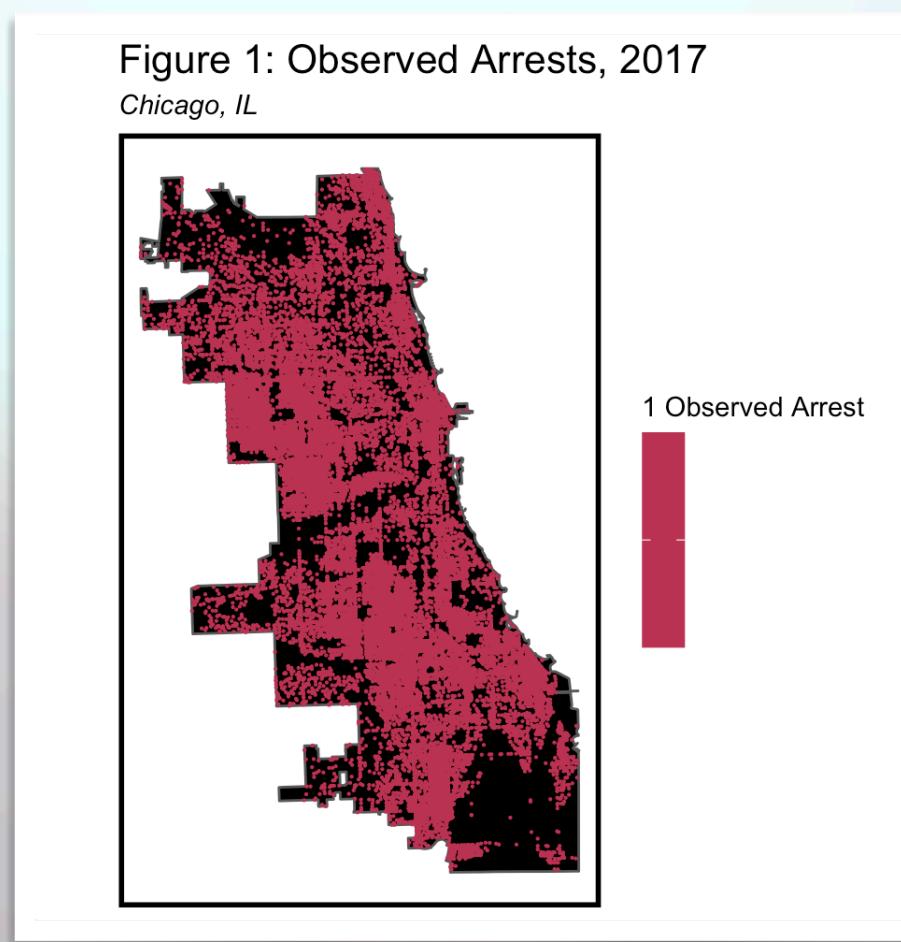
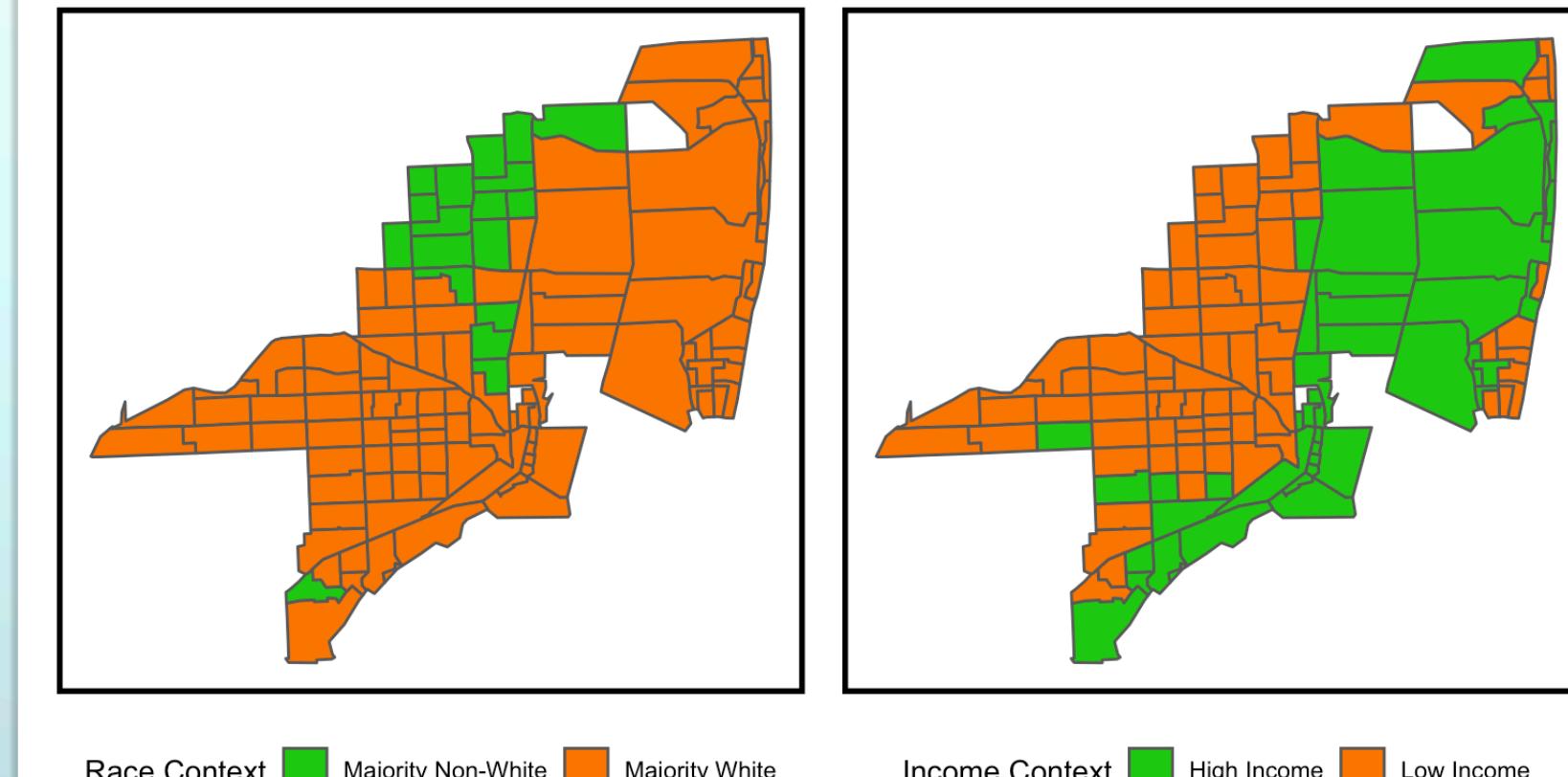
Master of Urban Spatial Analytics Program



Default R maps 🤝 90's websites



Figure 14.1: Race Context of Miami and Miami Beach Income Context of Miami and Miami Beach



Today's Agenda

1. Palettes & color theory
2. Building a good basemap
3. Customizing map layout
4. Finishing touches ✨
5. Tutorial
6. Conclusion: staying up-to-date & inspired



1

Palettes & Color Theory

Let's talk color.

Color relationships shape how our brains process visual information.

There are a few key color schemes to keep in mind..

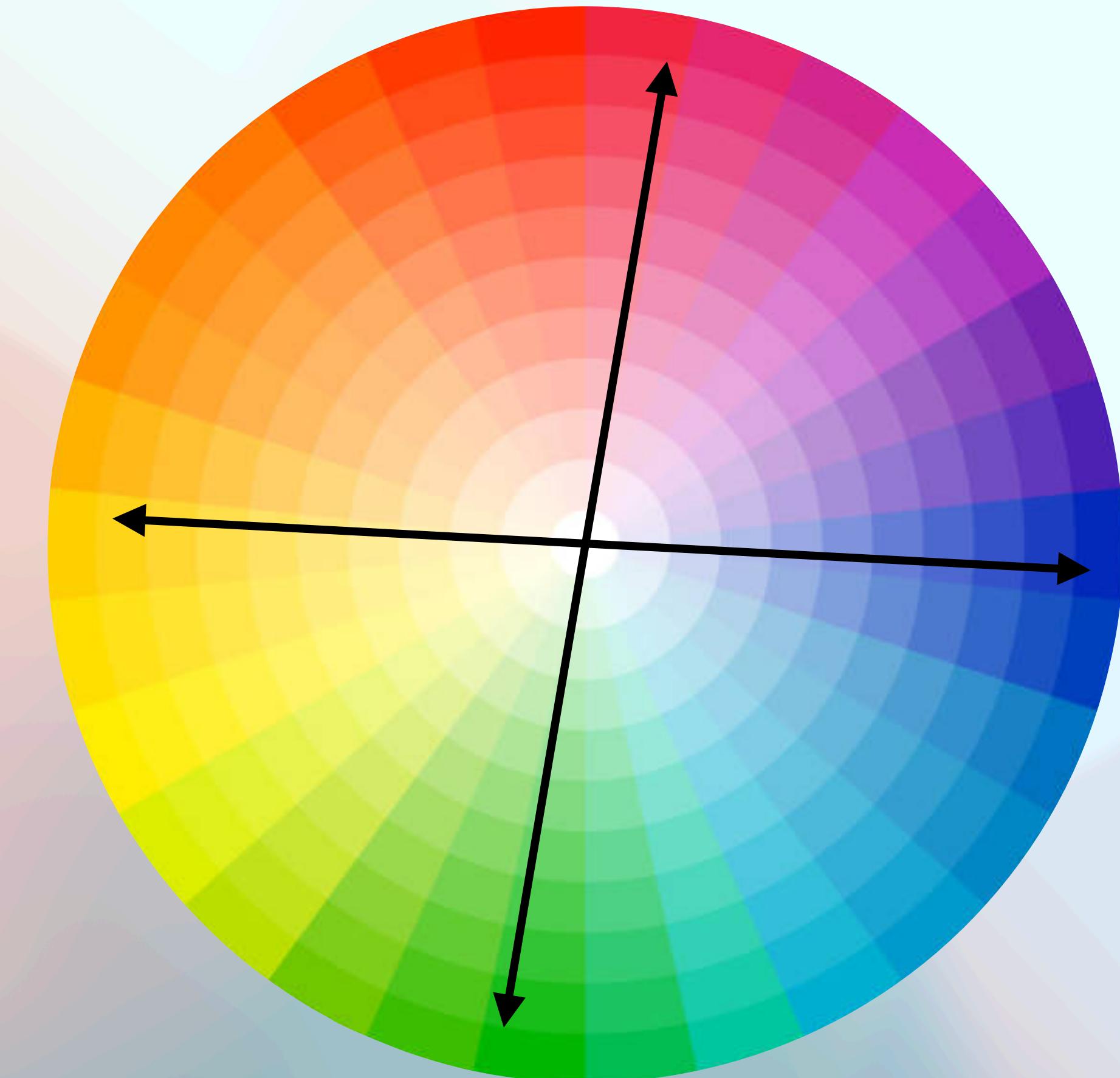


The color wheel

Complementary

These colors are ‘opposites.’

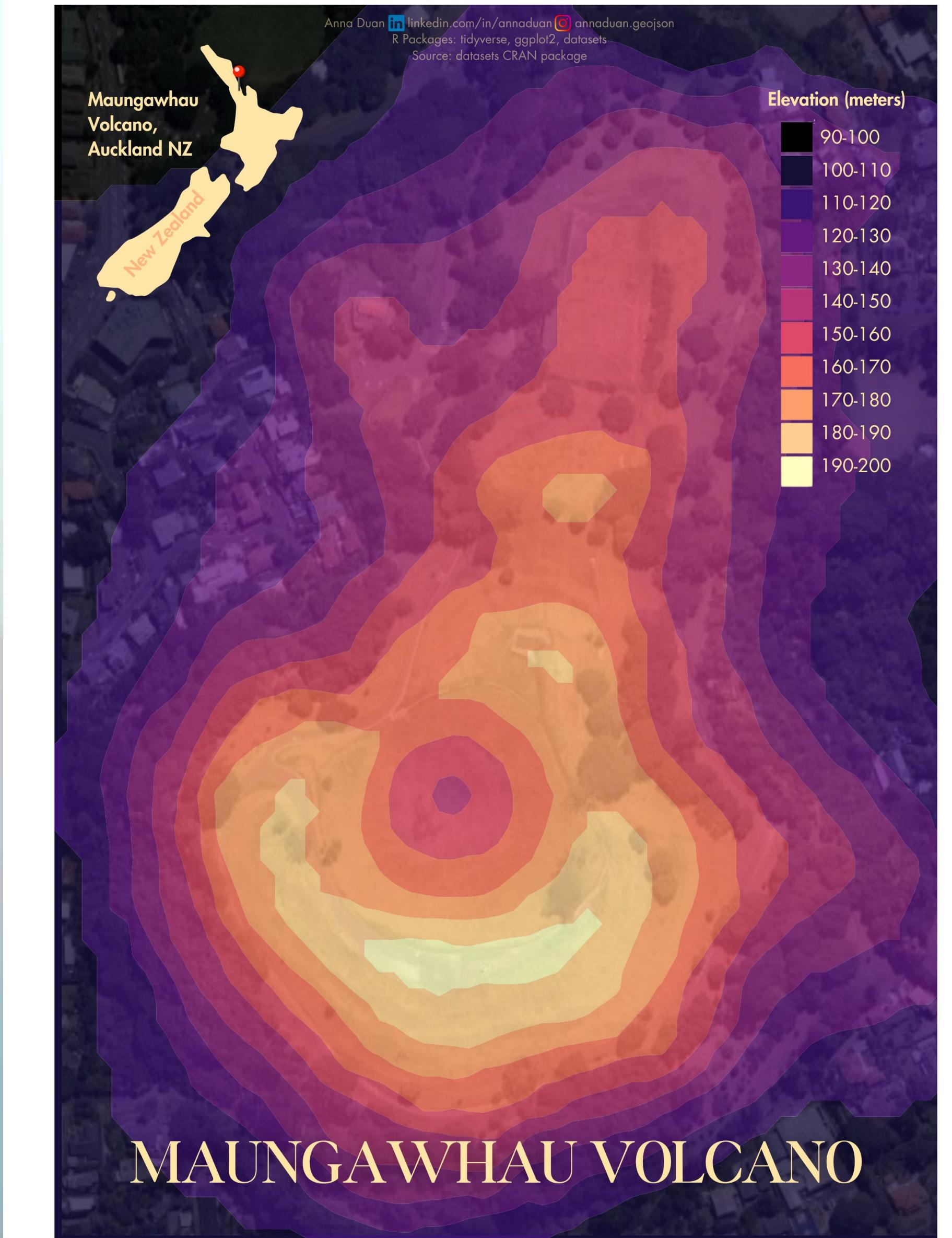
Use these pairs for emphasis, call-outs, and contrast.



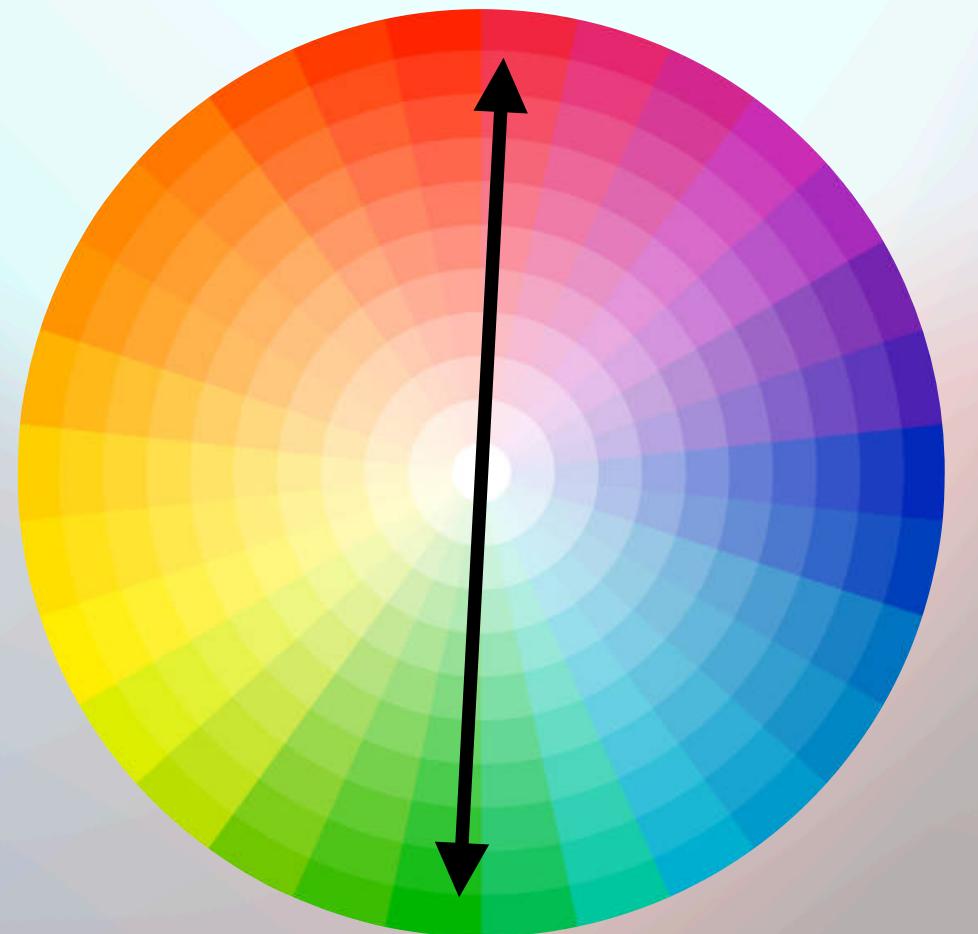
Example:



<https://search.r-project.org/CRAN/refmans/viridisLite/html/viridis.html>



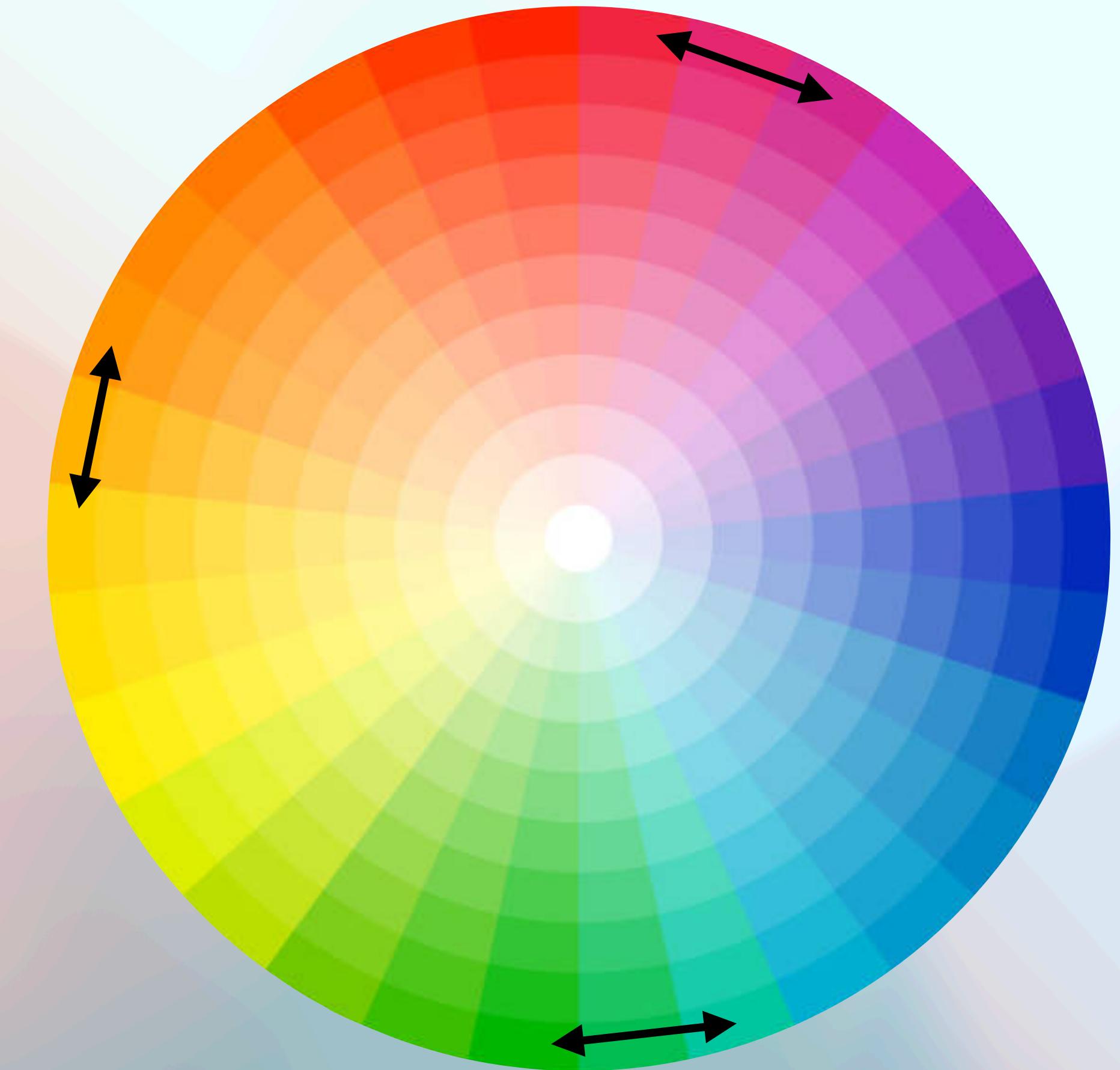
Example:



Analogous

These colors are ‘neighbors.’

Use these pairs to create coherent color schemes and a sense of calm.



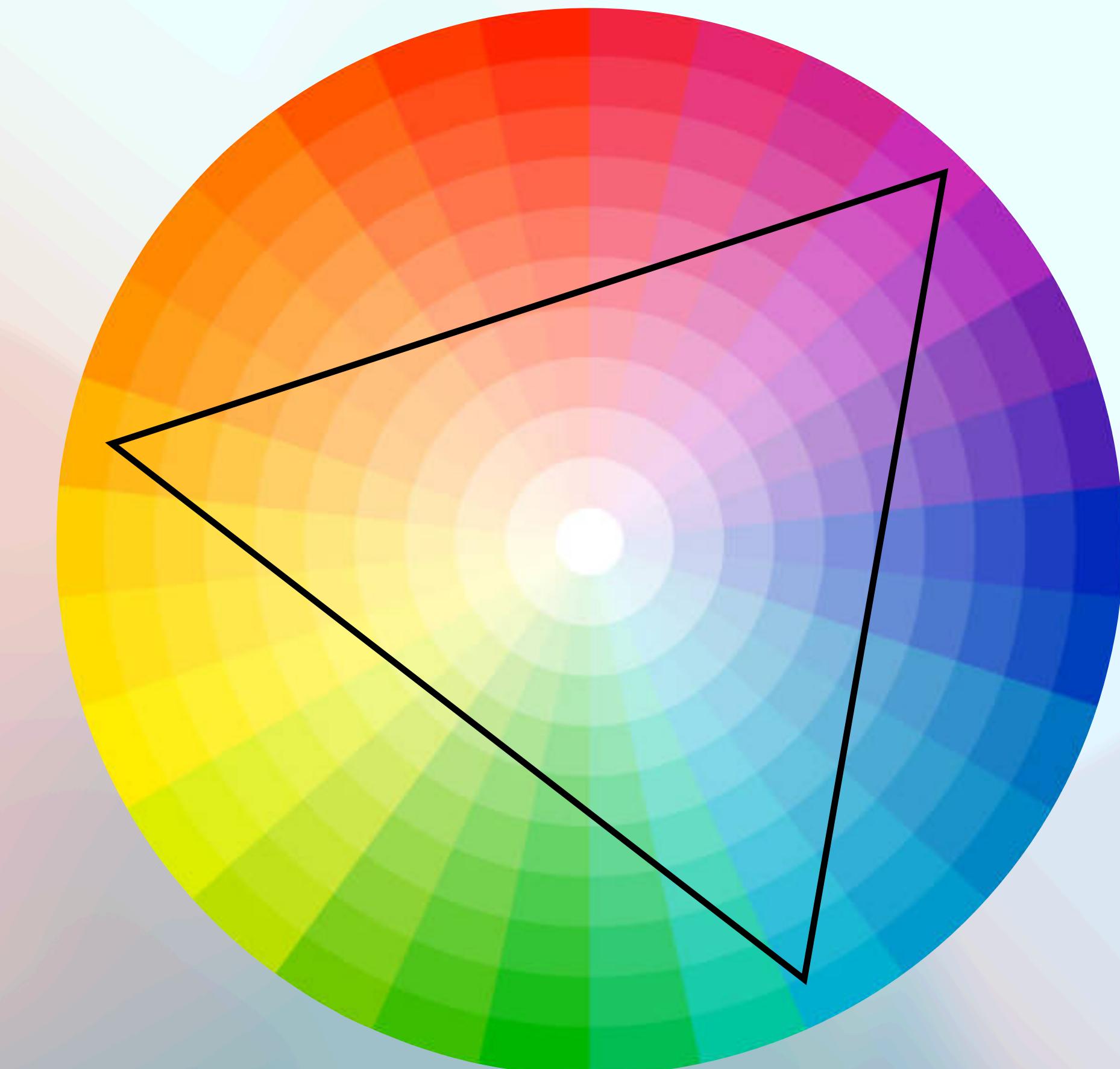
Example:



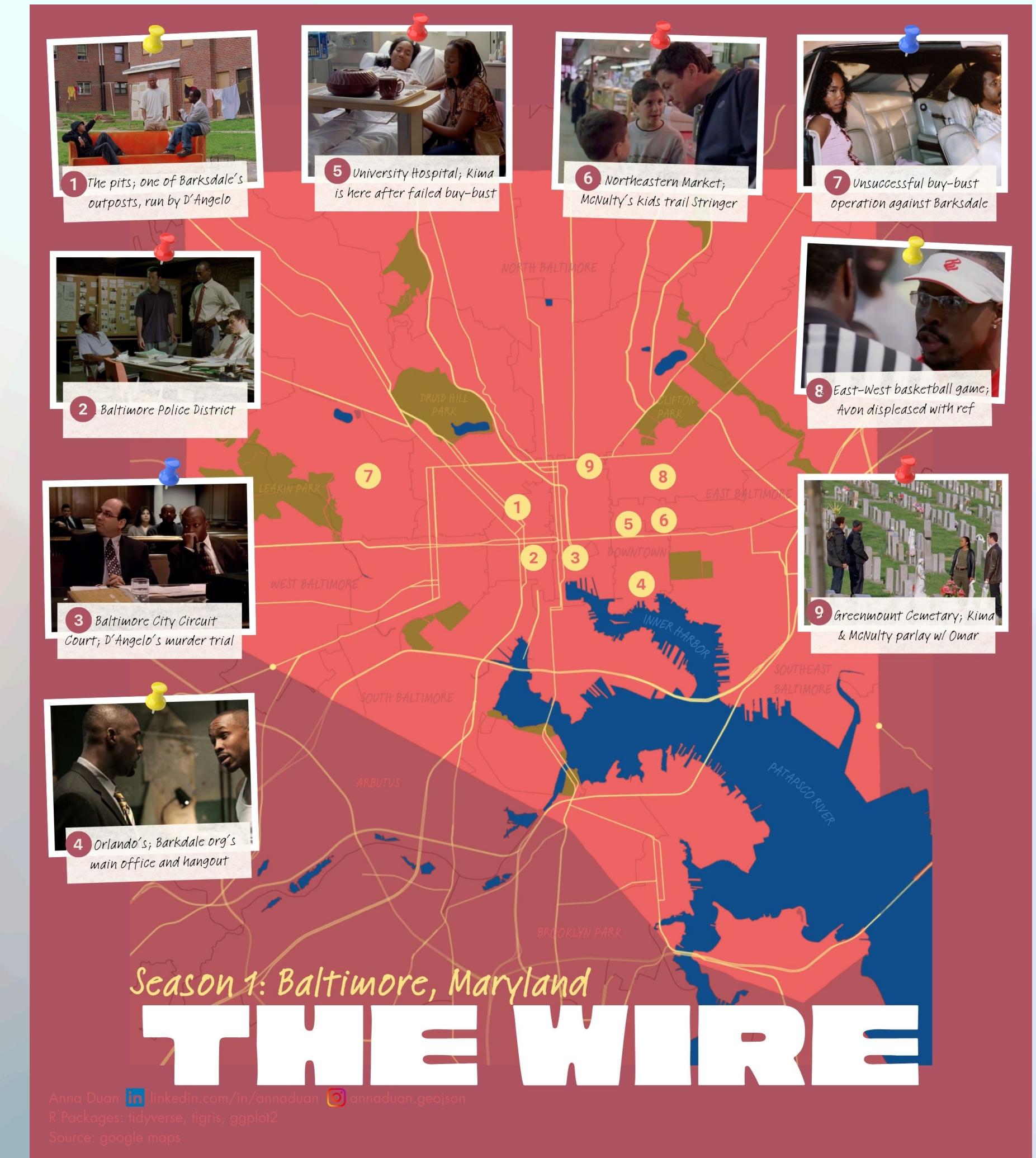
Triadic

These are *trios* of evenly-spaced
(120°) colors

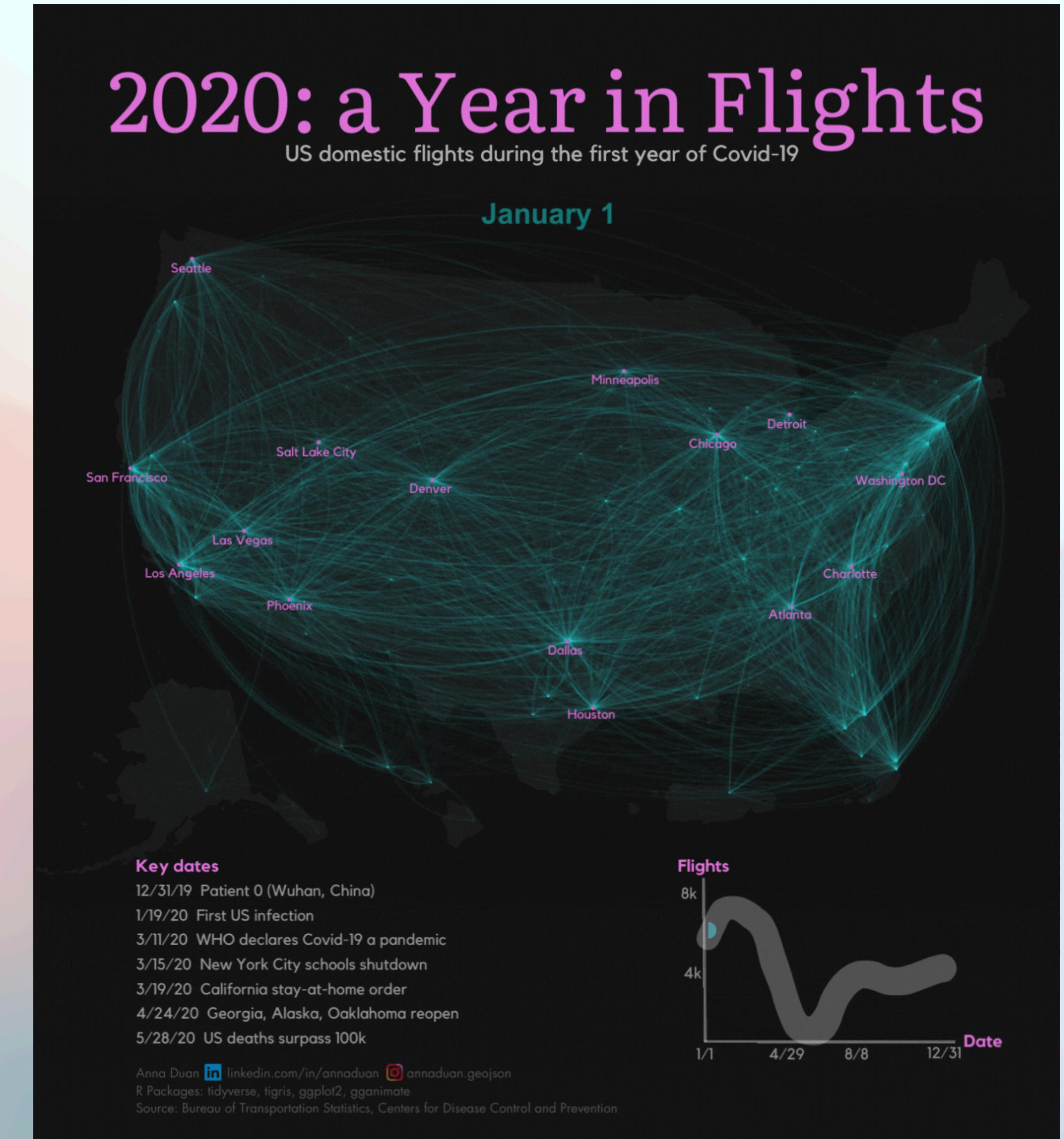
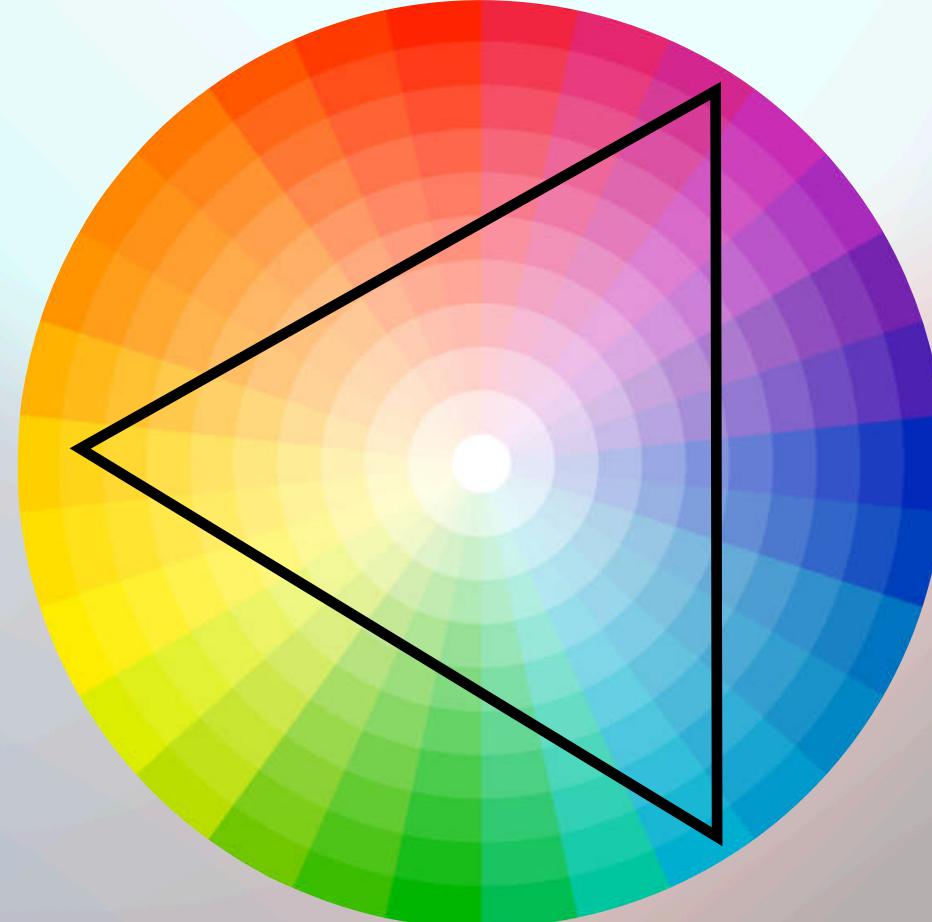
Use these colors for visual balance
(and because they look good)!



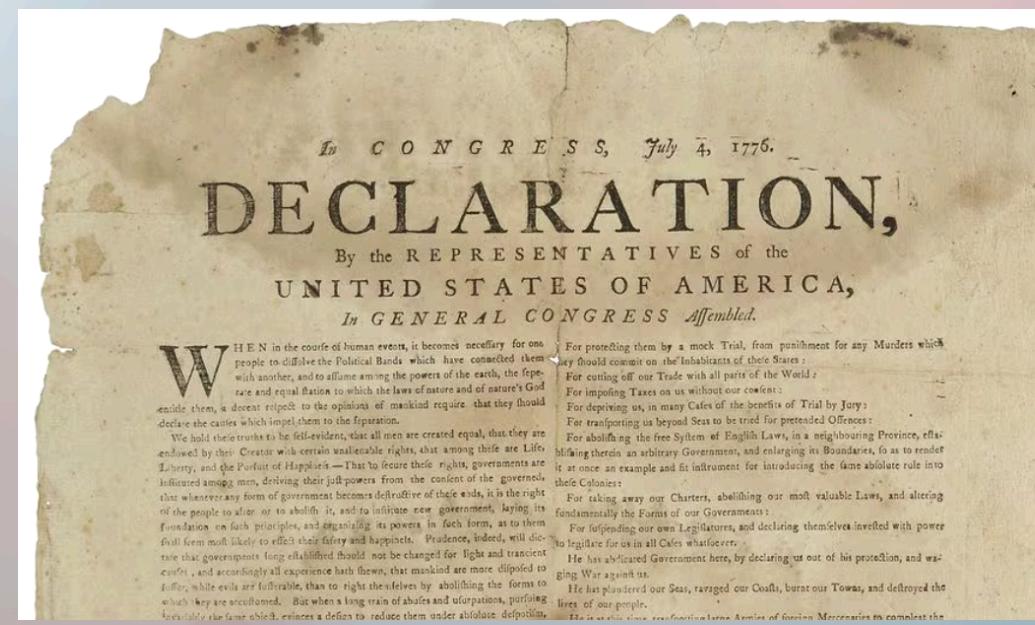
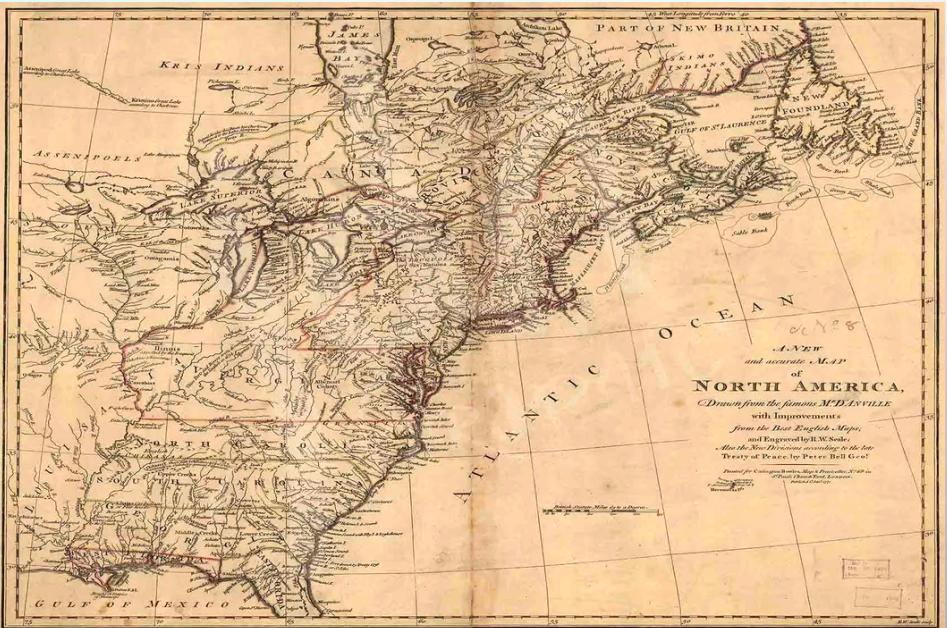
Example:



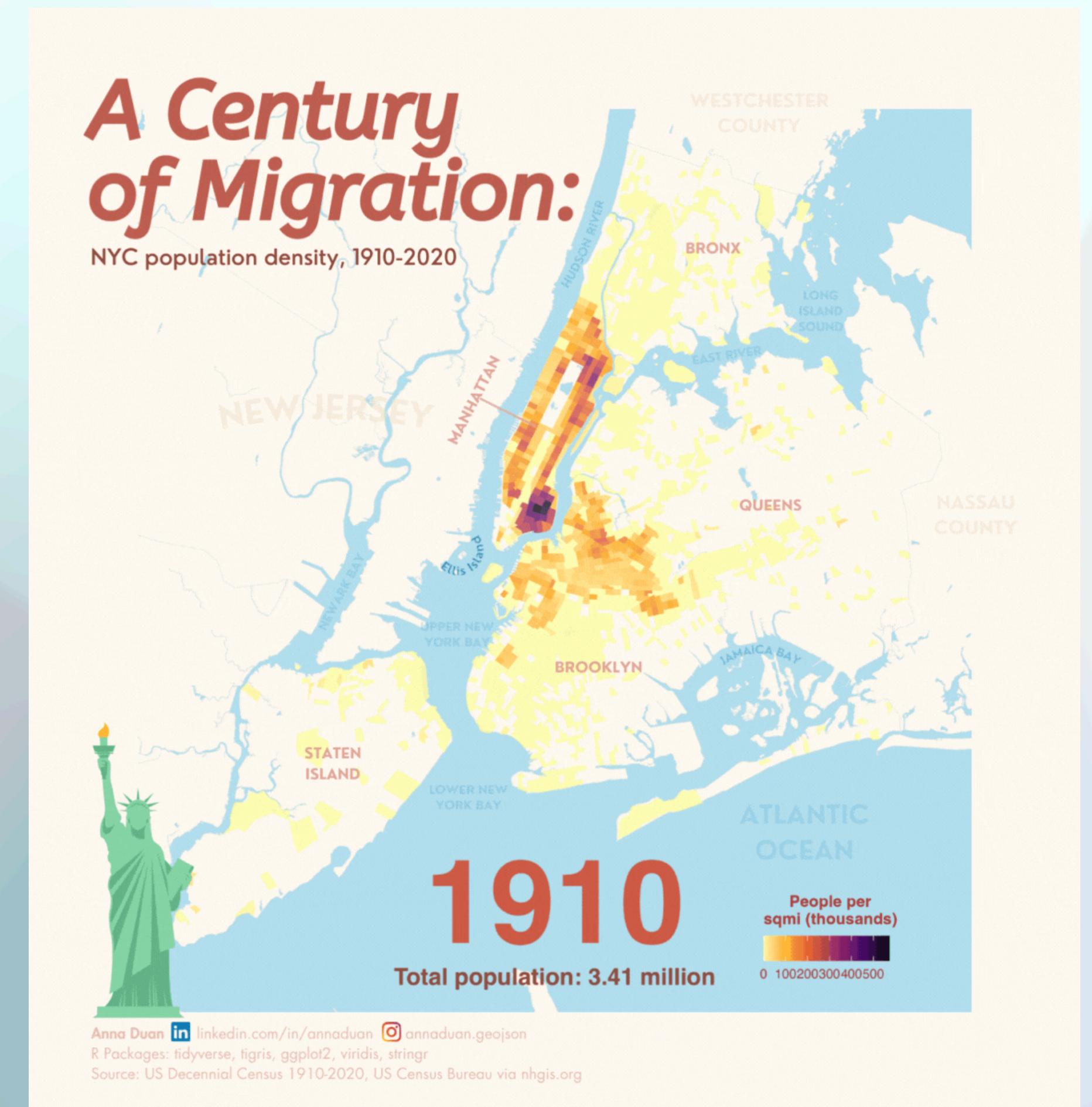
Example (kind-of):



Thematic color scheme



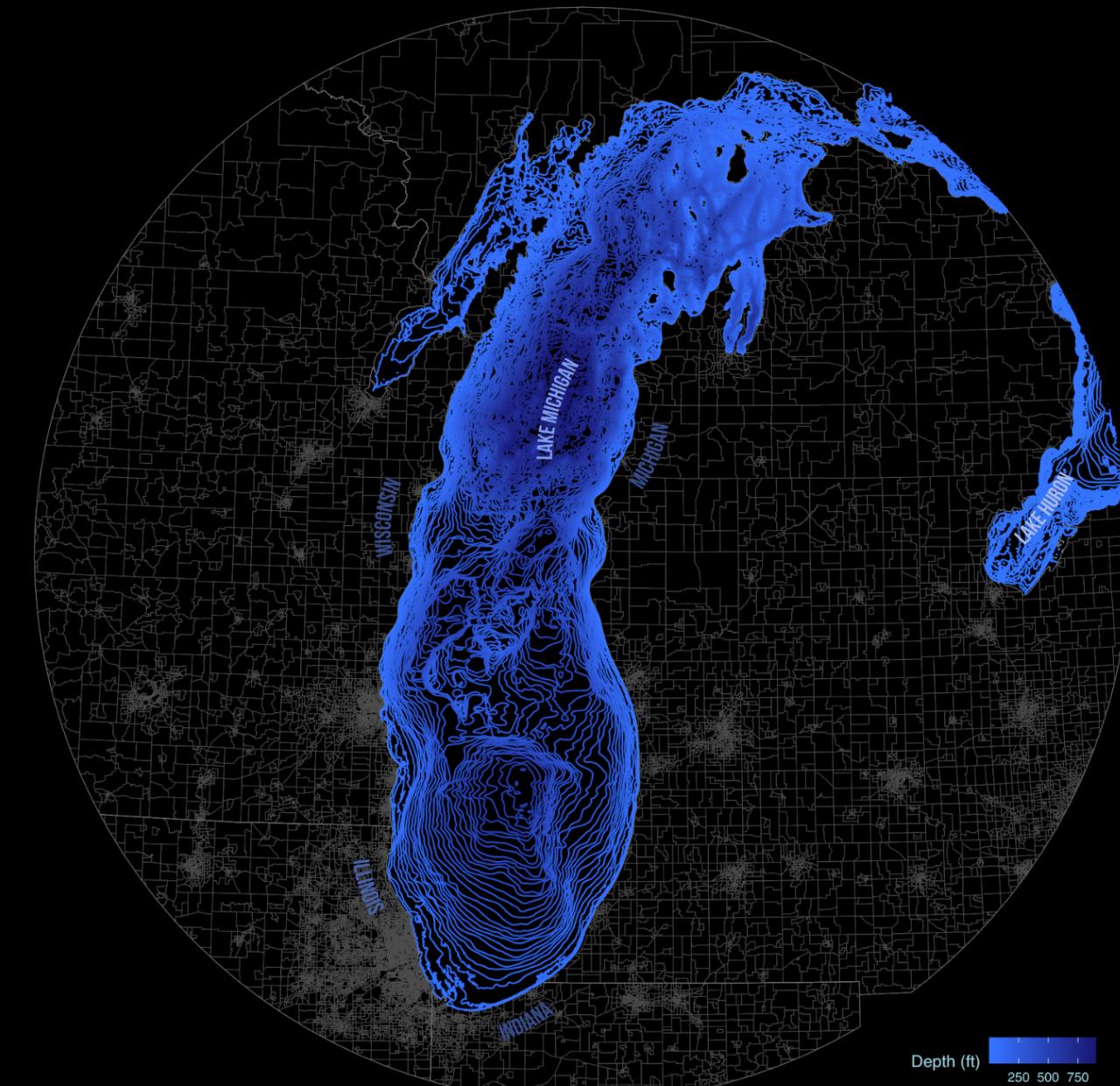
Beige = old/historic



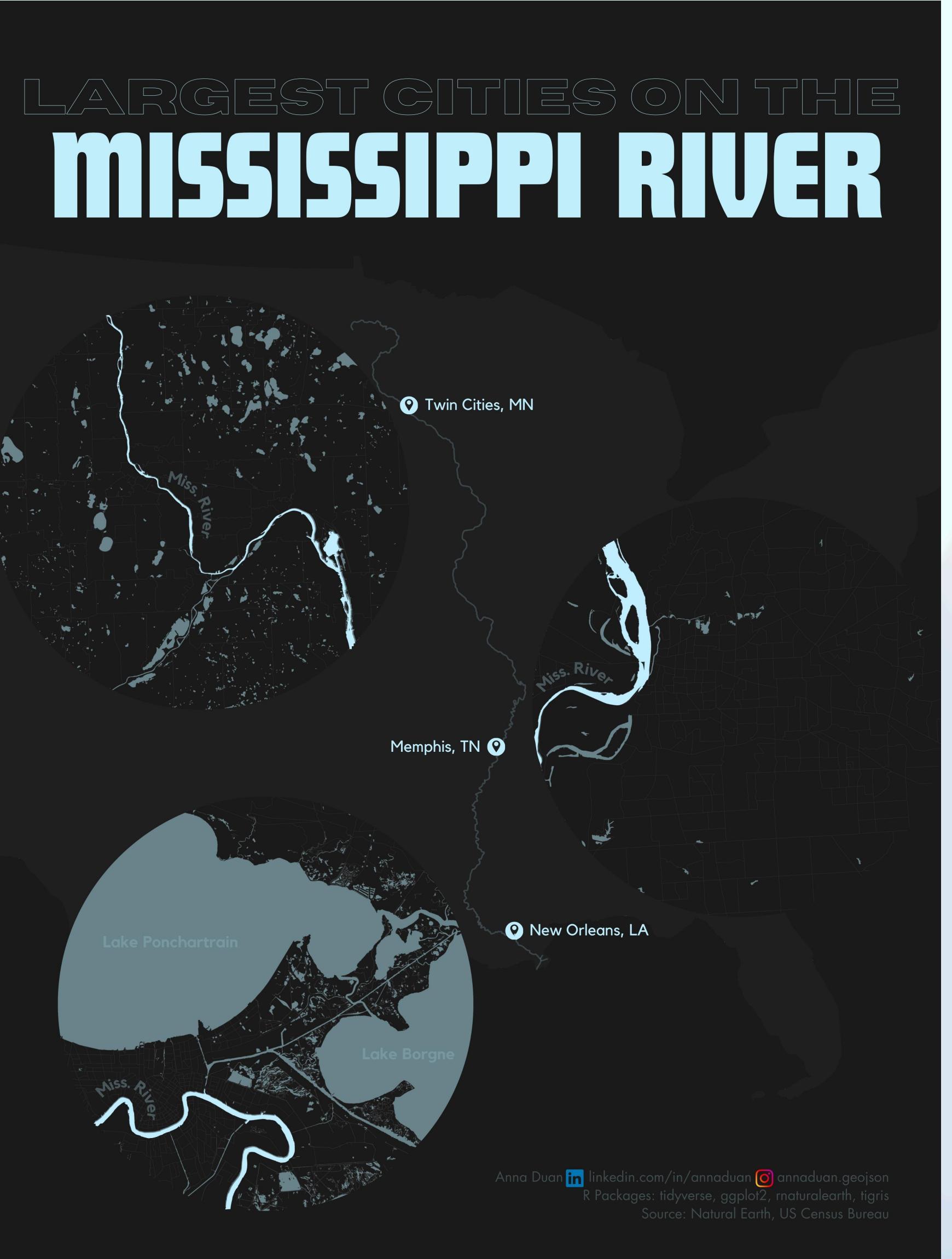
Thematic color scheme

Blue = water

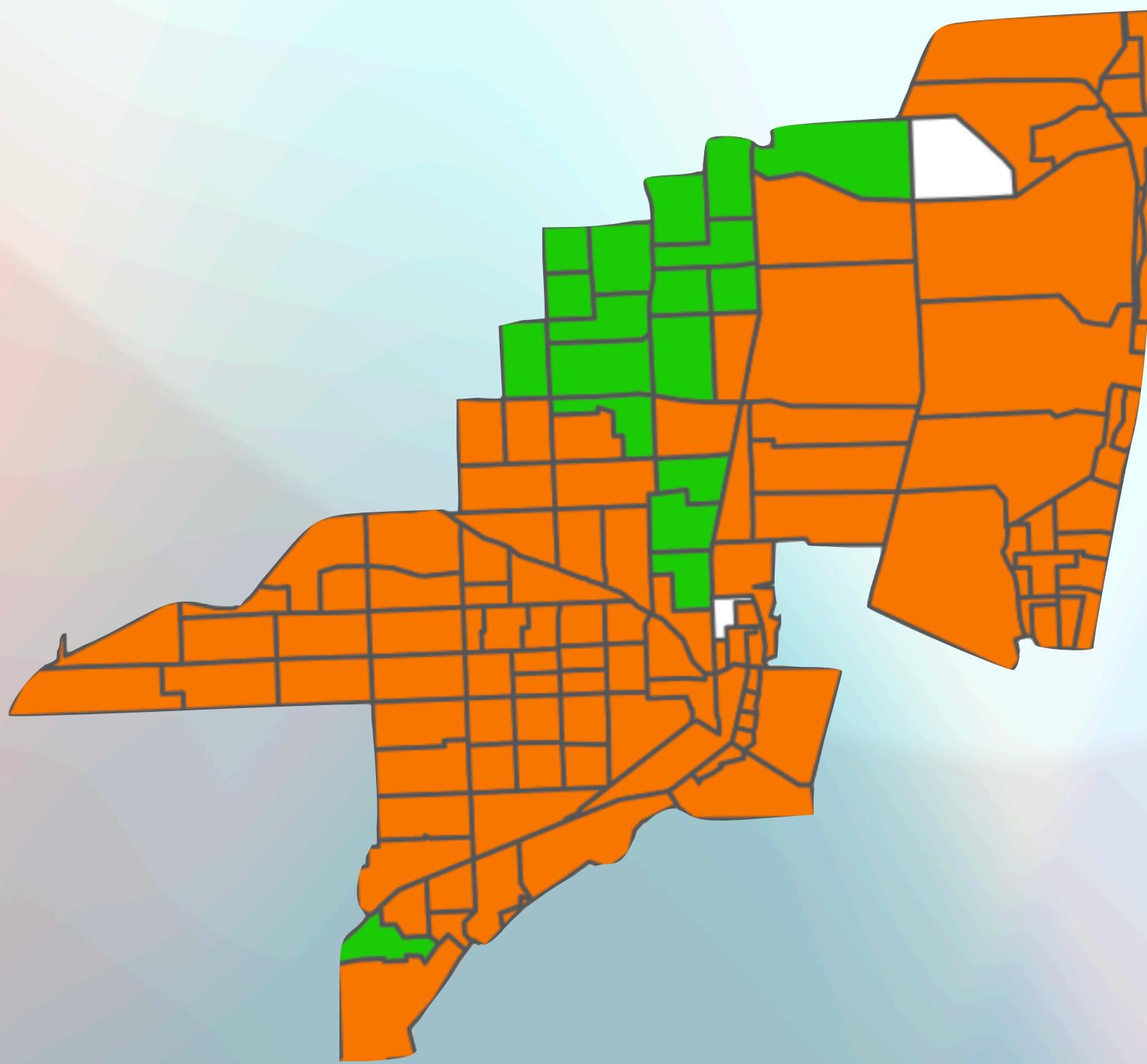
LAKE MICHIGAN
Bathymetric Contours



2 Basemaps & Hydrology

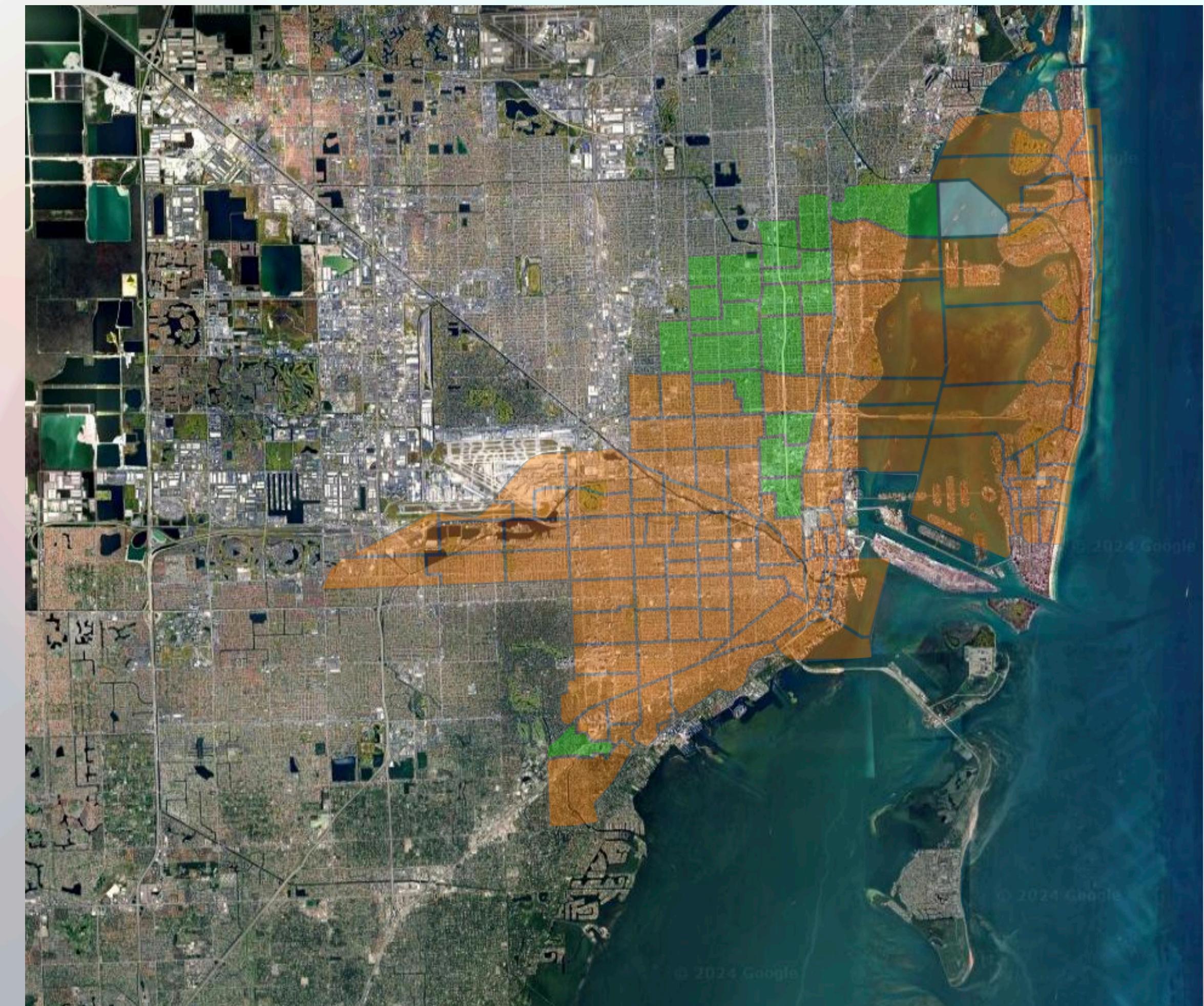


Where is this?



Miami, FL

What happened?

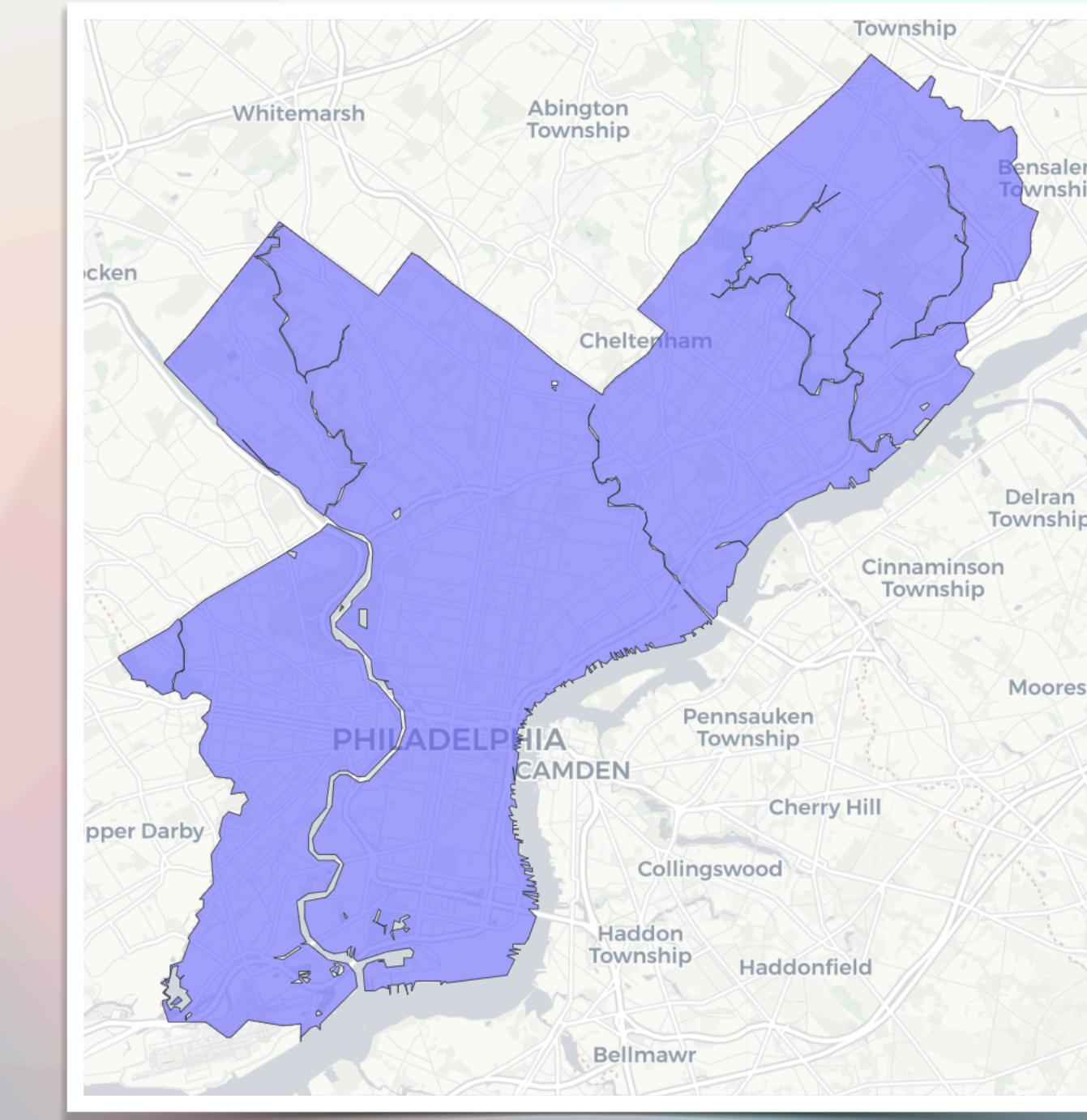


tigris to the rescue

`tigris::counties()`
`tigris::zctas()`
`tigris::tracts()`
`tigris::roads()`
`tigris::erase_water()`

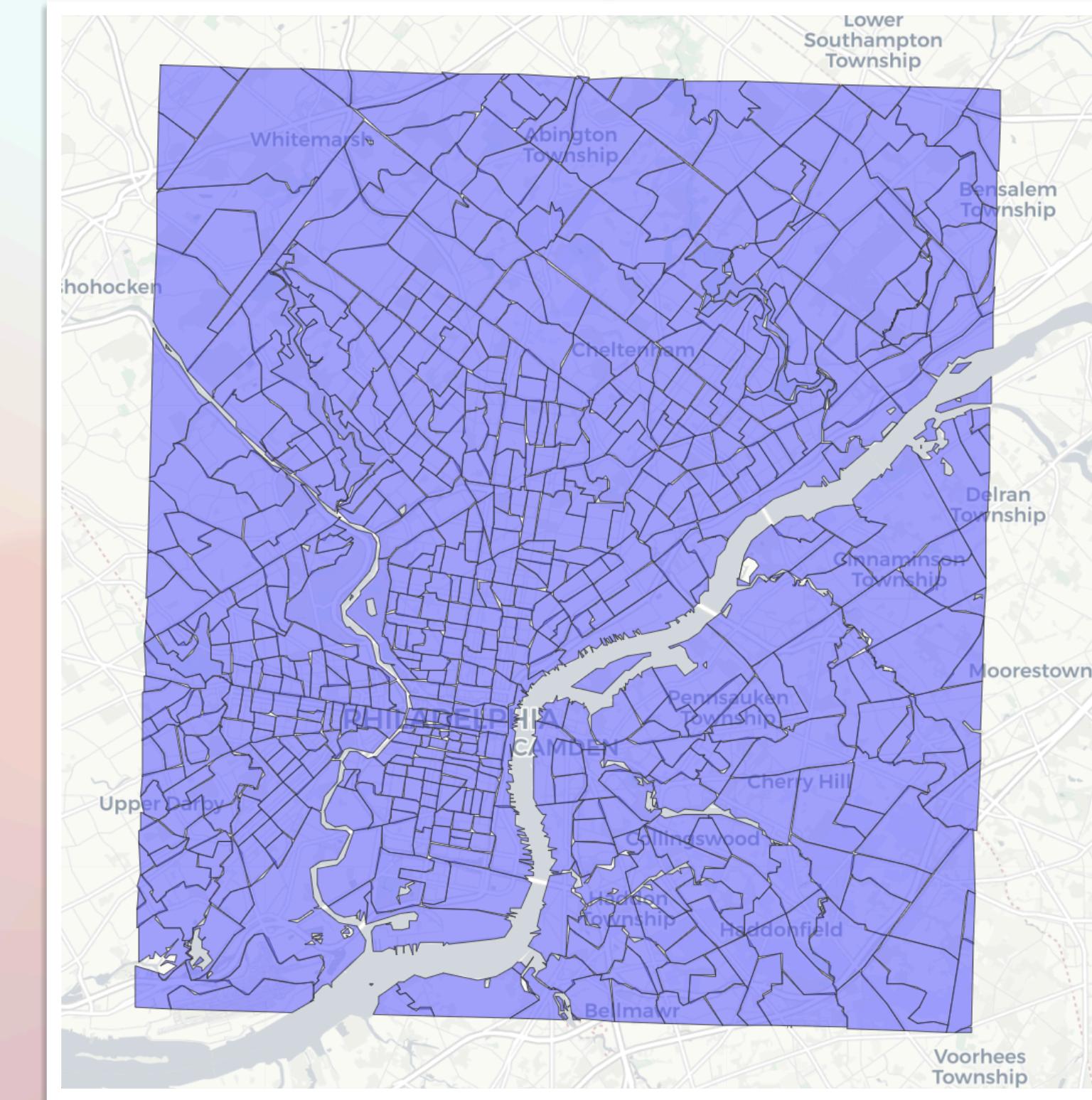


1. Download study area boundaries & erase_water()



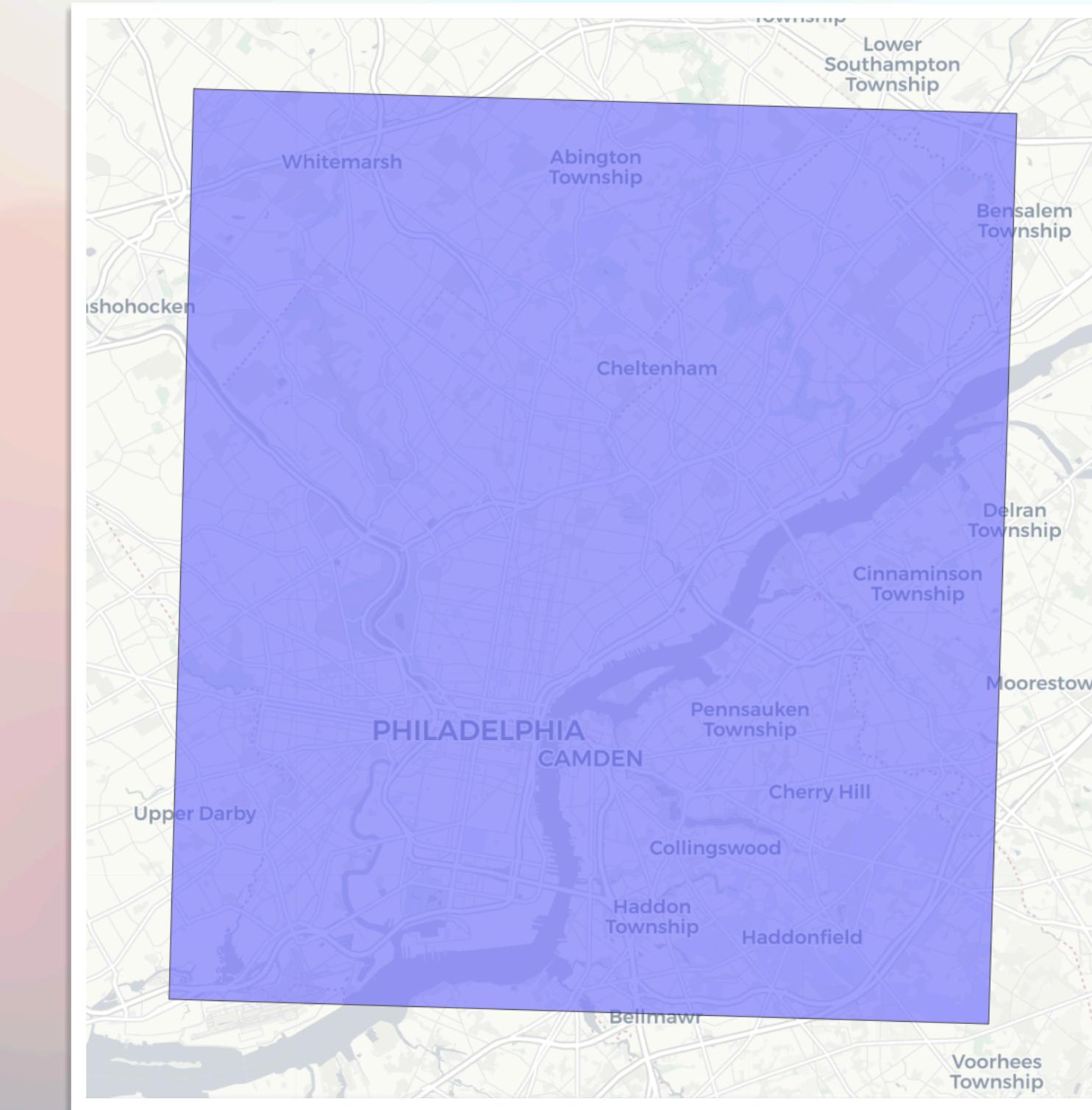
```
phl_bound <- places(state = "PA", class = "city") %>% # city bounds
  filter(NAME == "Philadelphia") %>%
  st_transform("EPSG:2272") %>%
  erase_water()
```

2. Download tracts in study area's bounding box & erase_water()



```
tract_nj <- tracts(year = 2020, state = "NJ") # NJ tracts  
tract_pa <- tracts(year = 2020, state = "PA") # PA tracts  
  
tract_bg <- rbind(tract_nj, tract_pa) %>% # Combine NJ and PA tracts  
  st_transform("EPSG:2272") %>%  
  st_make_valid() %>%  
  st_crop(st_bbox(phl_bound)) %>%  
  erase_water()
```

3. Create a rectangle using study area bounding box



```
water_rect <- st_as_sfc(st_bbox(phl_bound), crs = "EPSG:2272")
```

4. Put it all together!



```
ggplot() +  
  geom_sf(data = water_rect, fill = "lightblue2") +  
  geom_sf(data = tract_bg, fill = "gray90", color = "gray80") +  
  geom_sf(data = phl_bound, fill = "gray80", color = "gray70") +  
  theme_void()
```

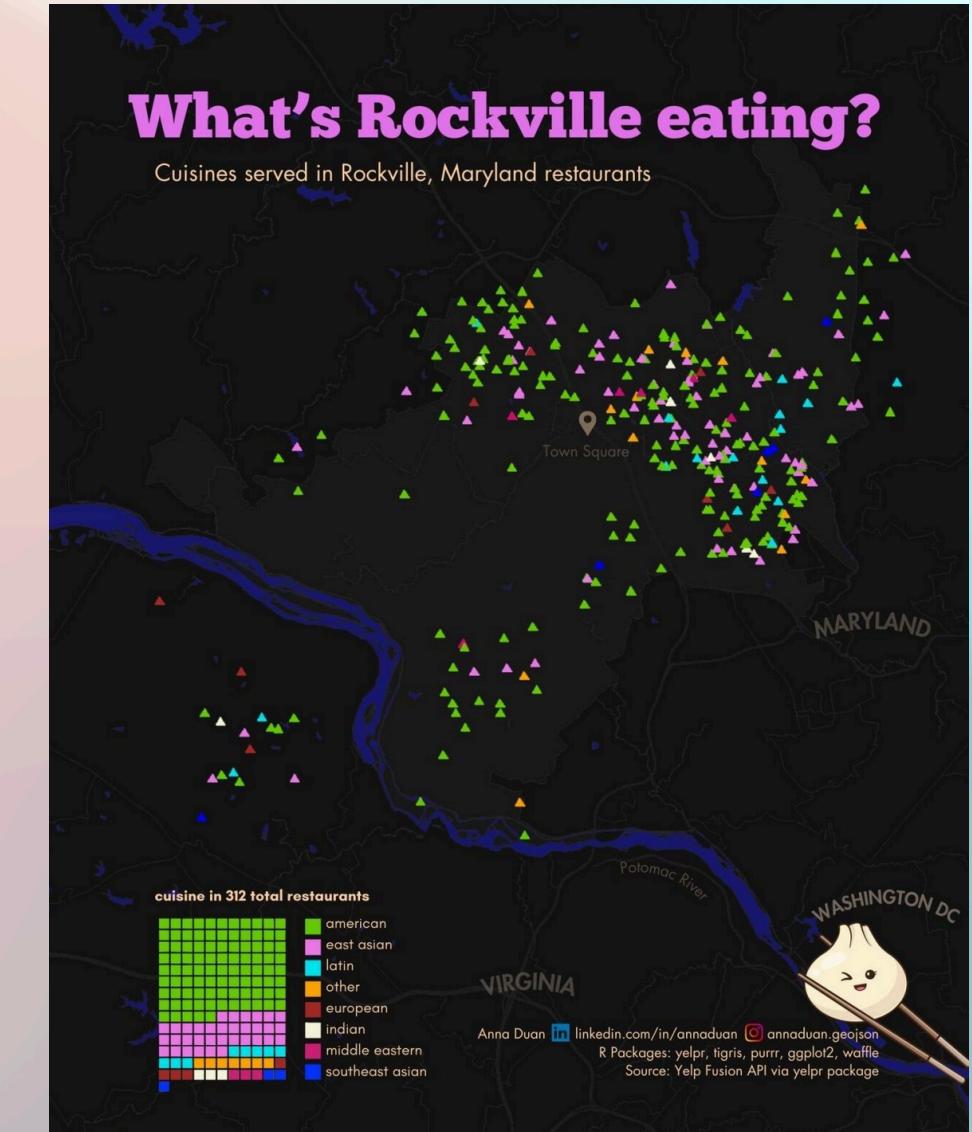
3 Layout & Themes

ggplot2::theme()

My go-tos:

- **theme_void()** for maps
- **theme_minimal()** for plots
- **theme(legend.position = c(0.8, 0.2))***
to put legend at bottom right
- **theme(legend.position = "bottom")**
to put legend at bottom of plot
- **theme(legend.position = "none")** to
hide legend

legend.position = "none"



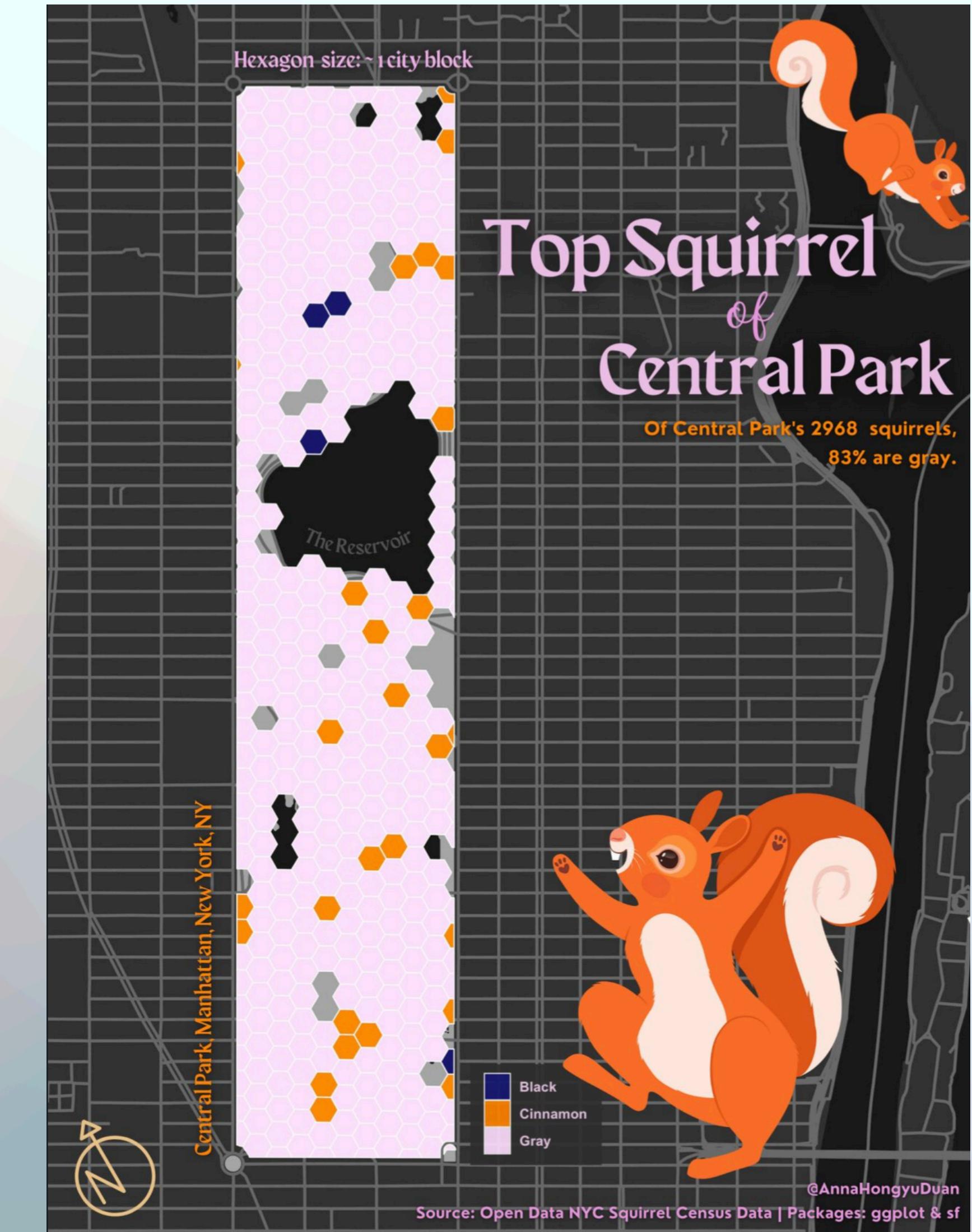
legend.position = c(0.8, 0.2)



* legend.position = c([percent of x-axis from left], [% of y-axis from bottom])

4 Finishing touches

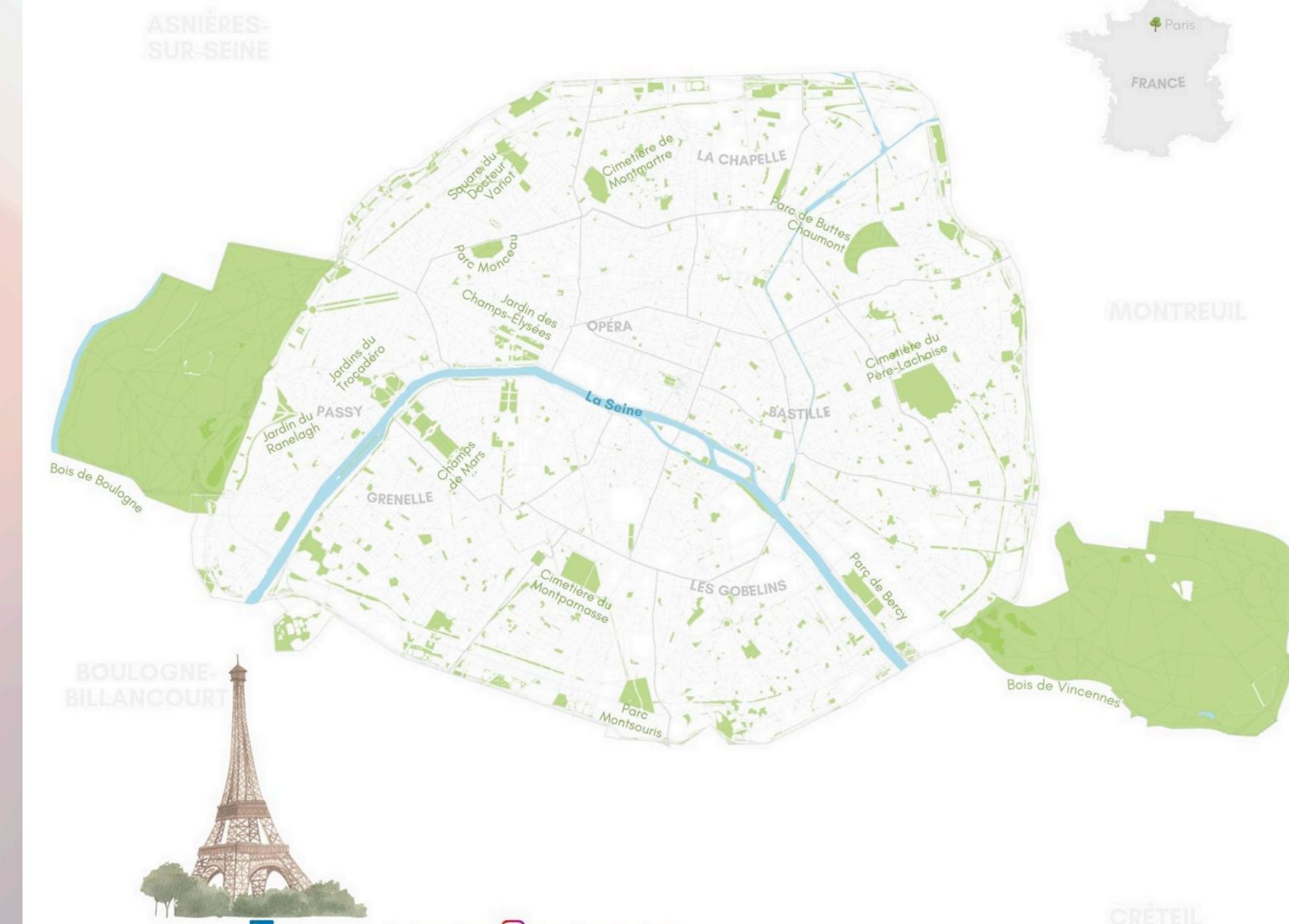
Canva is your friend for graphics



Canva is your friend for custom labels

Parc Monceau & beyond

Parks and green space in Paris, France

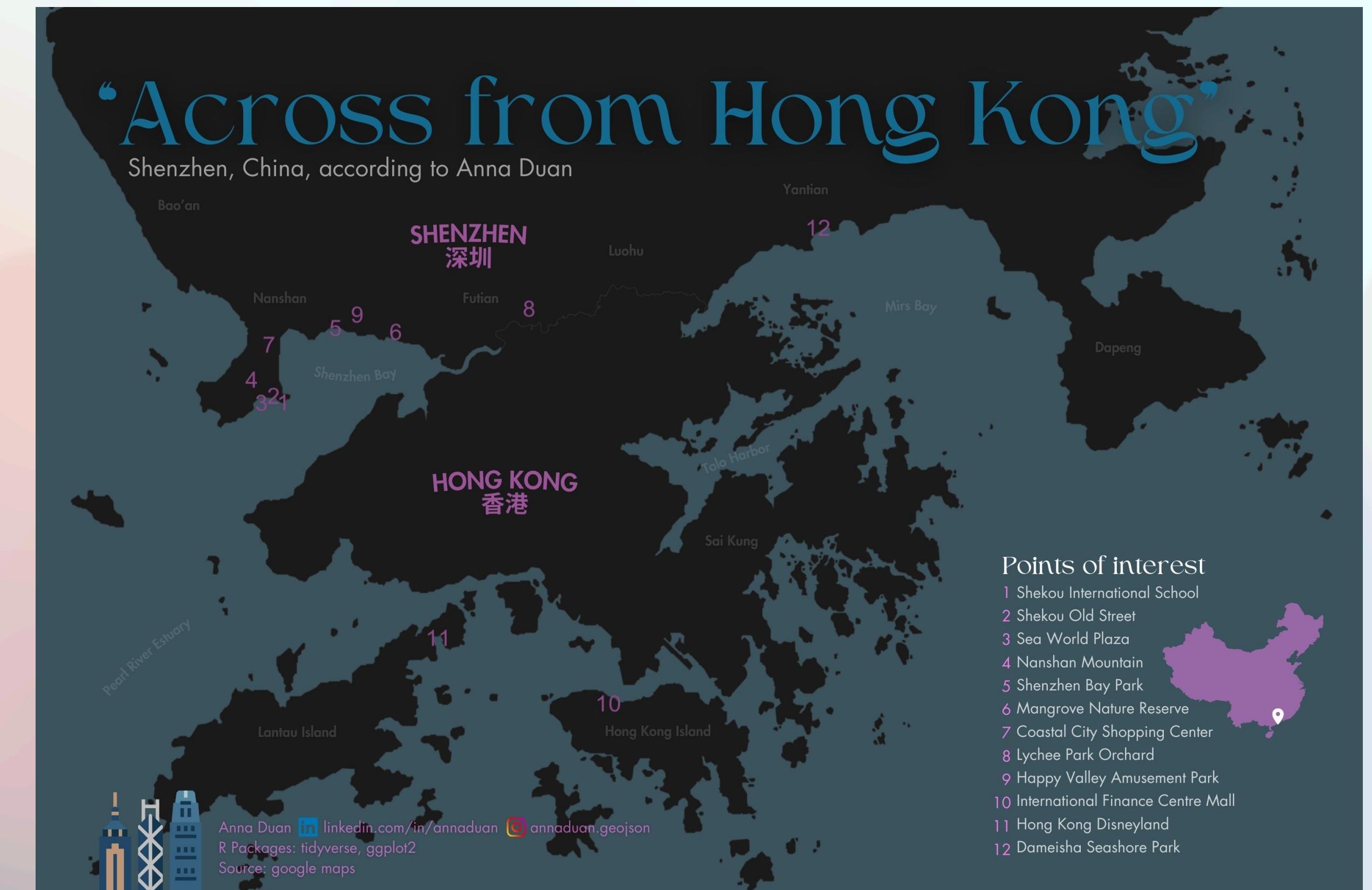


Anna Duan [in](#) linkedin.com/in/annaduan [annaduan.geojson](#)

R Packages: tidyverse, ggplot2

Source: Paris Data

Canva is your friend for inset maps



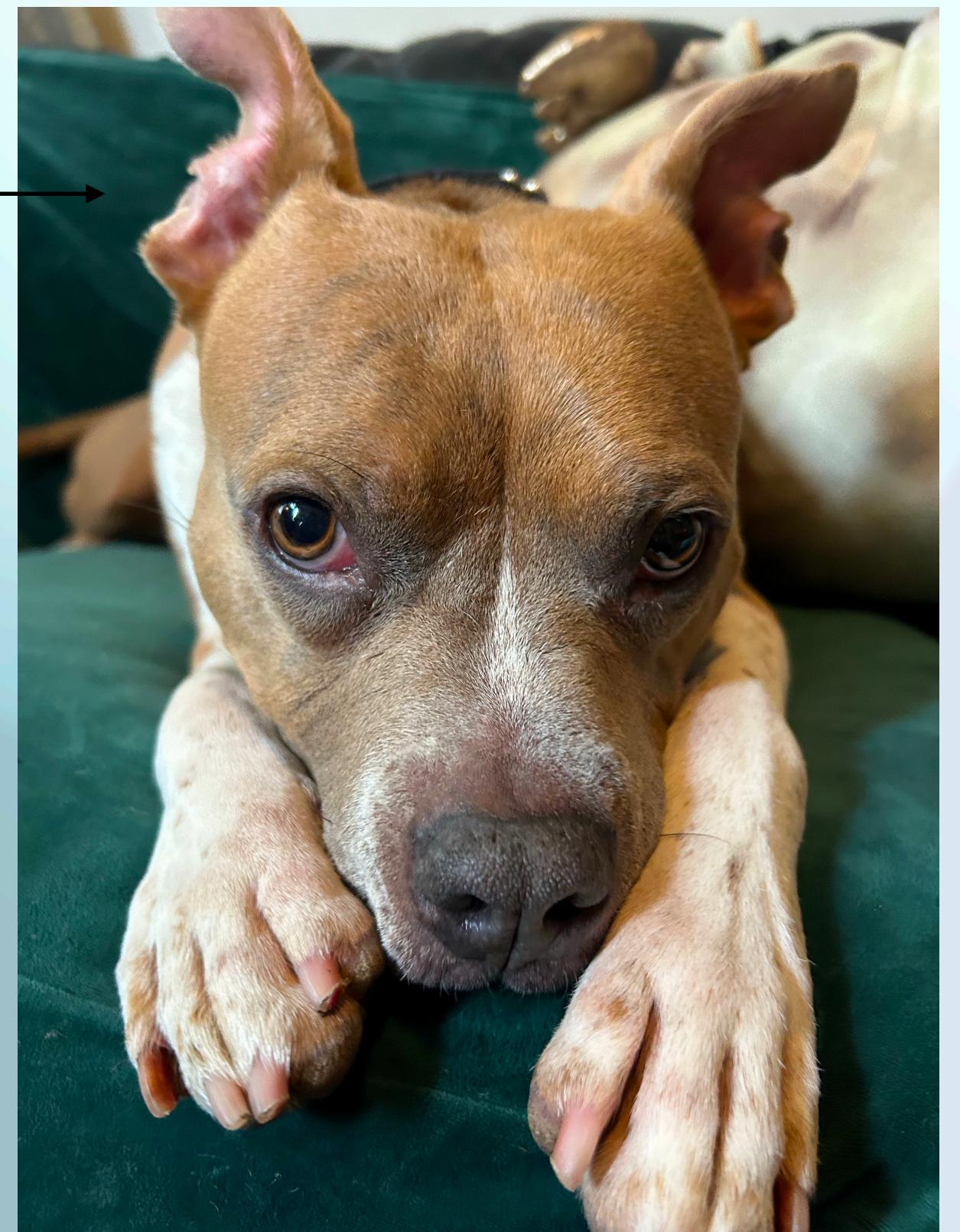
5

Concluding thoughts

TLDR:

1. Use **colors** to tell your story
2. **tigris** for easy basemaps & hydro features
3. Modify map layout with `ggplot2::theme()`
4. Don't be afraid to leave RStudio
5. Stay inspired with Linkedin, nature, art, other peoples' maps

Triadic color scheme



Let's map.

Head to today's Github repo:

<http://bit.ly/3TccTJ7>

