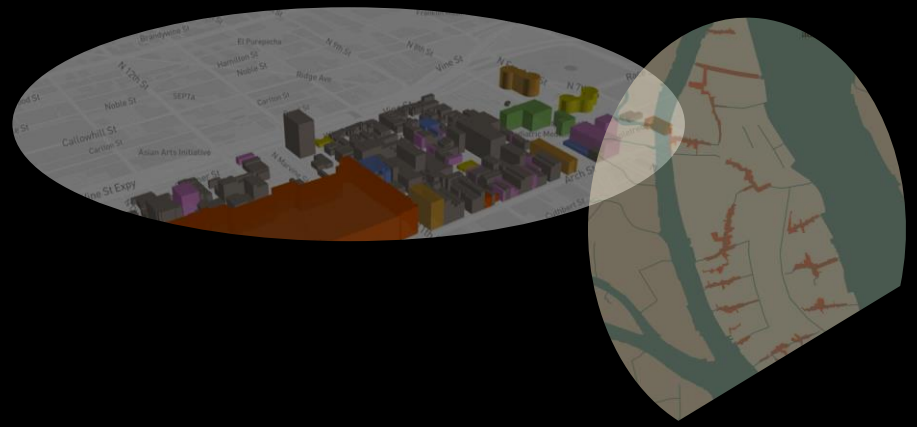
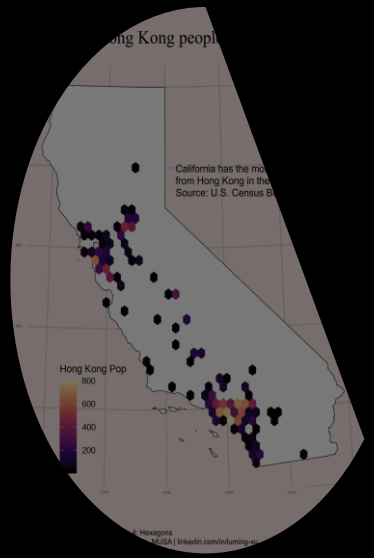


Useful R Packages

What I learned from the *#30DayMapChallenge*



Luming Xu

2024-12-06

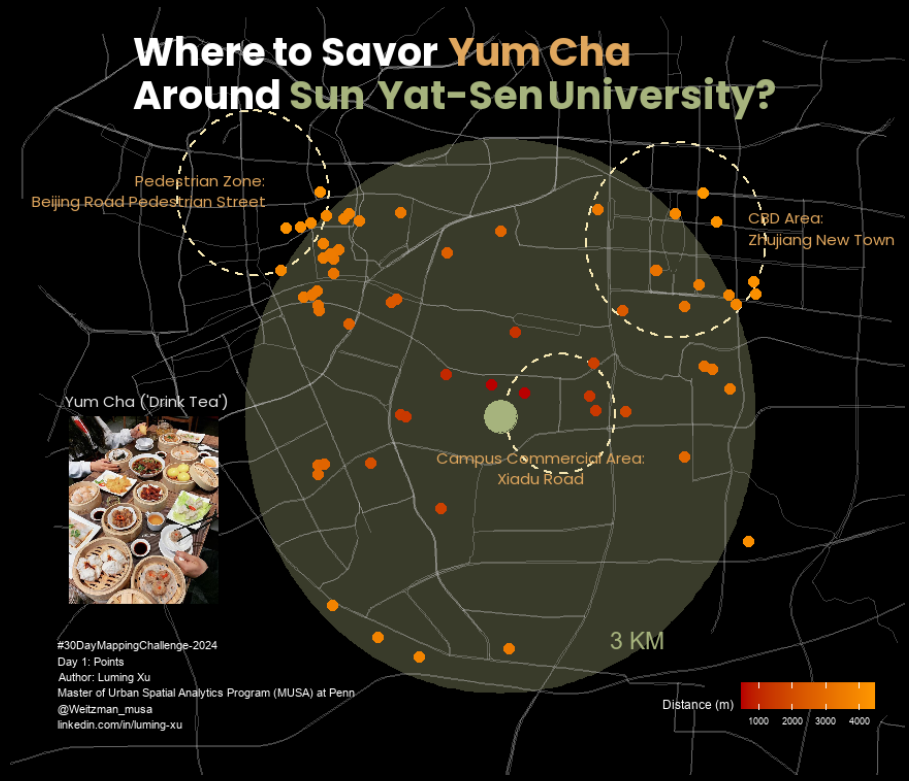
Content

- Data
  - Point of Interest (POI)
  - highway / waterway / landuse / building
- Base Map
  - Static
  - Dynamic
- Annotation
  - Font
  - Image
  - Position
- 3D Map

Data - Point of Interest (POI)

- **googleway**
  I. Google Map API
     - `api_key <- "YOUR_API_KEY"`
  II. Data wrangling: 60 maximum results limit
     - `google_places(`

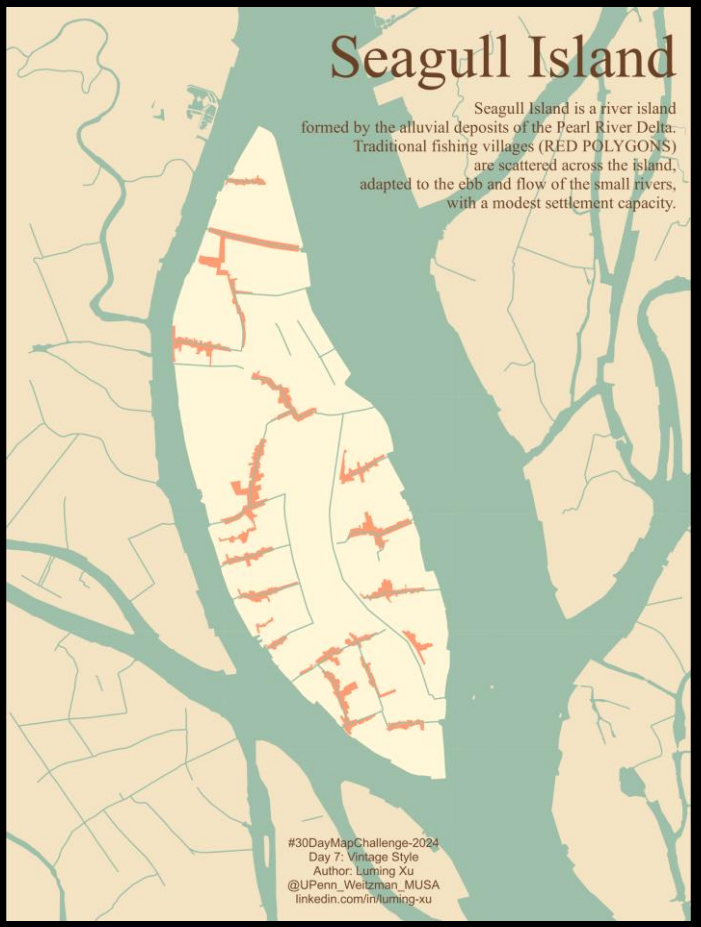
```
keyword = "yum cha",
location = c(23.1, 113.3),
radius = 3500,
place_type = "restaurant",
key = api_key)
```



Data - highway / waterway / landuse / building

- OpenStreetMap: **`osmdata`**
  I. Bounding box
     - `bbox <- c(xmin = lon1, ymin = lat1, xmax = lon2, ymax = lat2)`
  II. Data wrangling
     - `opq(bbox = bbox) %>%`

     `add_osm_feature(key = "landuse") %>%`
     `osmdata_sf()`
     - `villages <- landuse$osm_polygons %>% filter(landuse == "residential")`
- Overture Data: **`overturemapsr`**
     - `record_batch_reader('building', bbox = bbox)`



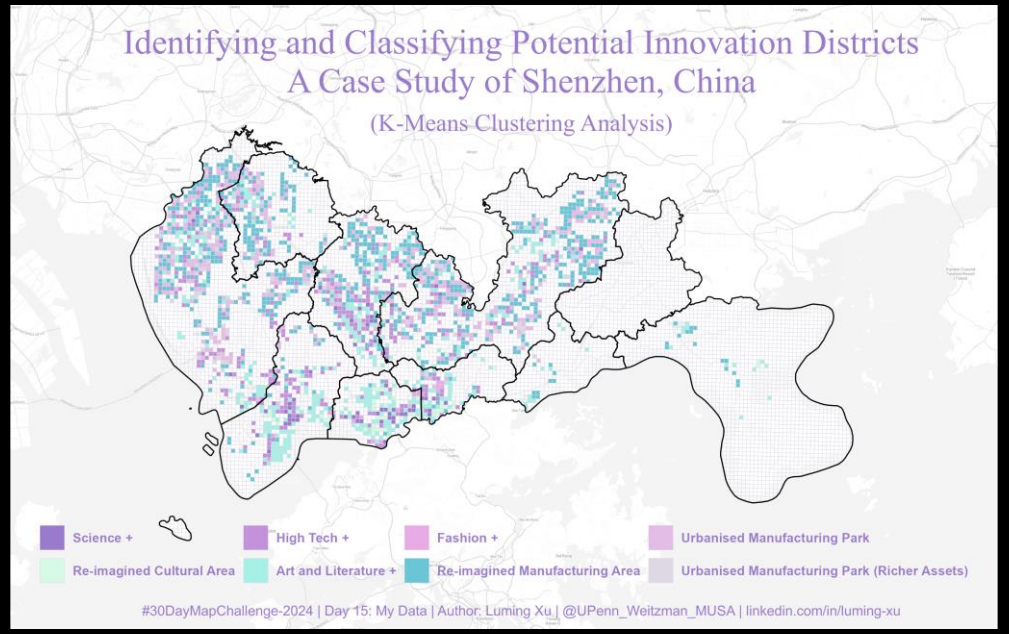
Base Map - static

- **ggmap**
  I. Stadia Maps API
     - `register_stadiamaps(key = "YOUR_STADIA_API_KEY")`
  II. Bounding box
  III. Plotting
     - `stamen_map <- get_stadiamap(`

```
bbox,
zoom = 12,
maptype = "stamen_toner_lite")
```

     - `ggmap(stamen_map) +`

```
# Add a white overlay
annotate("rect", xmin = bbox[1], xmax =
bbox[3], ymin = bbox[2], ymax = bbox[4],
fill = "white", alpha = 0.7) + …
```



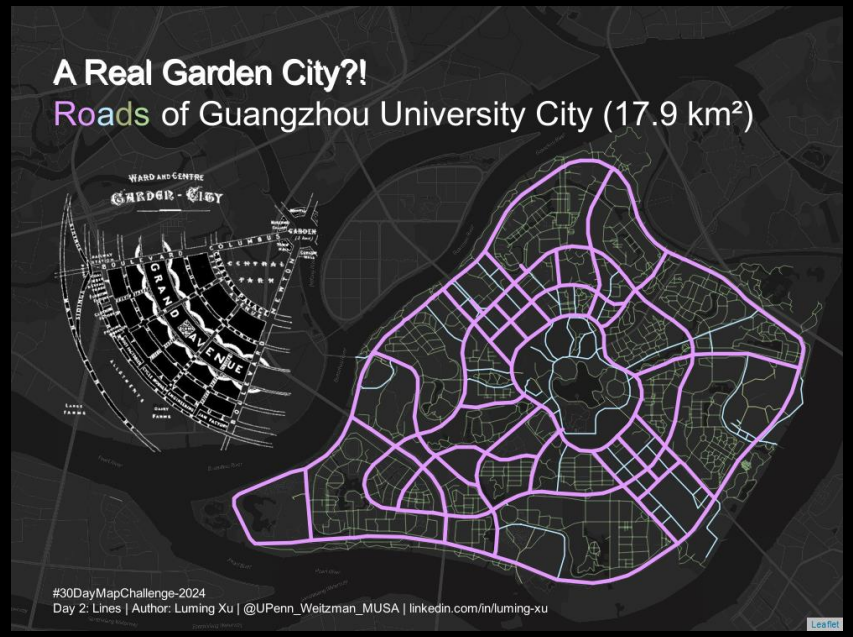
Base Map - dynamic

- **mapdeck, mapboxapi, leaflet**
  - I. Mapbox API
    - `mapbox_token <- "your_mapbox_api_key"`
  - II. Mapbox Style URL
    - `style_url <- paste0("https://api.mapbox.com/styles/v1/{username}/{style_id}/tiles/{tile_size}/{z}/{x}/{y}?access_token={access_token}", mapbox_token)`
  - III. Plotting
    - `leaflet() %>%`

    `addTiles(urlTemplate = style_url) %>%`

    `fitBounds(113.36, 23.04, 113.41, 23.08)%>% …`
  - IV. Save as png
    - **mapview**

    `mapshot(plot, file = "Outputs/static_map.png")`



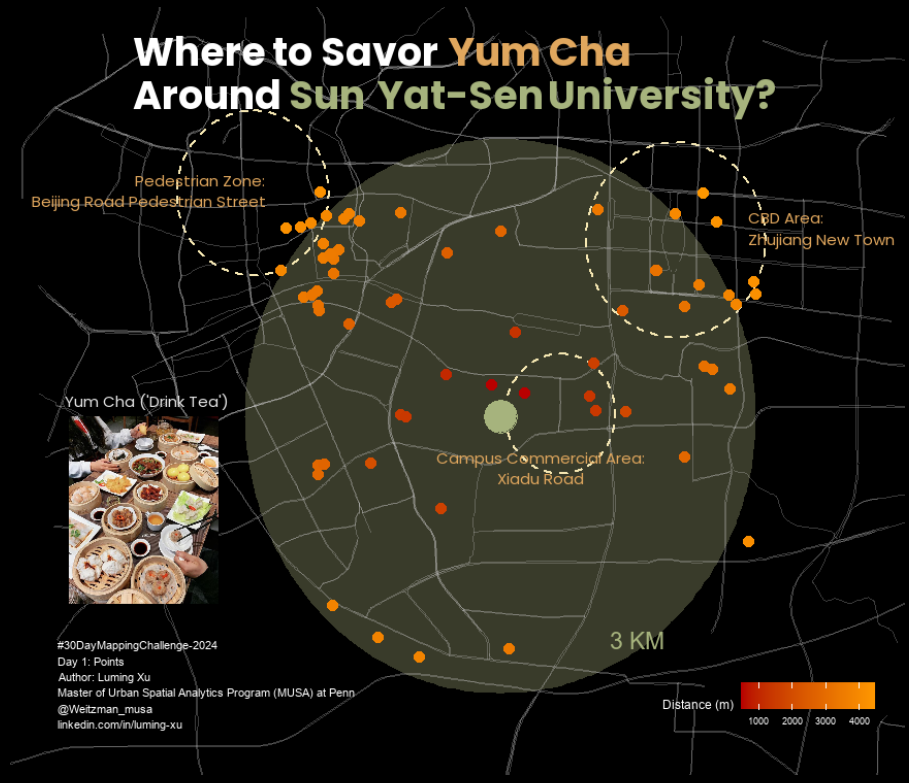
Annotation

- Font: **`showtext, sysfonts`**
  - `font_add_google("Poppins", "poppins")`
  - `showtext_auto()`
- Image: **`jpeg, grid, ggplot2`**
  I. Load the image
  - `img <- readJPEG("data/image.jpg")`

  II. Create a raster graphic object
  - `rasterGrob(img, interpolate = TRUE)`

  III. Add the image
  - `ggplot() +`

  `annotation_custom(img, xmin, xmax, ymin, ymax) + …`

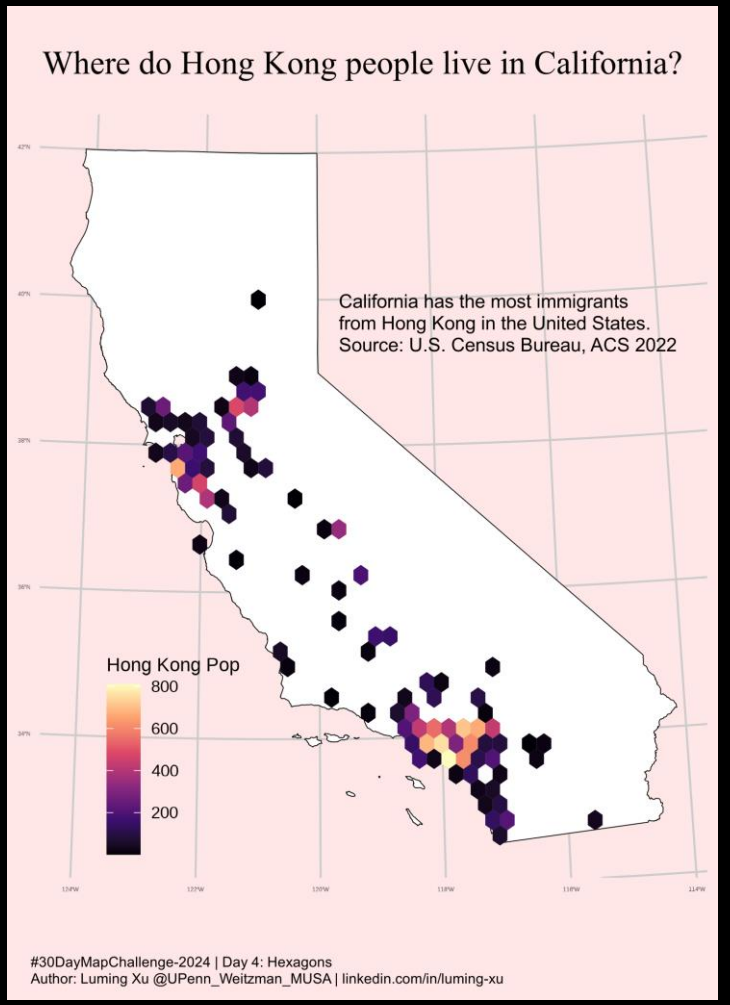


Annotation

- Position: **magick**
  I. Load the original map
     - `img <- image_read("Outputs/map.png")`
  II. Add annotations
     - `img_final <- image_annotate(`

```
img,
"Where do Hong Kong people live in California?",
size = 70, color = "black",
font = "serif bold", gravity = "north",
location = "+0+80")
```

  III. Save as png
     - `image_write(img_final, path = "Outputs/04.png")`



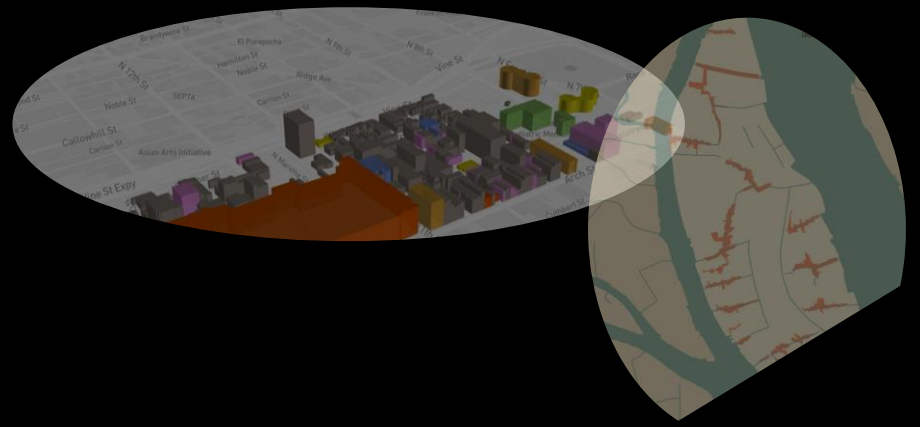
3D Map

- **mapdeck**
  - I. Mapbox API
    - `set_token("your_mapbox_api_key")`
  - II. Plotting
    - `mapdeck(`

```
style = mapdeck_style("light"),
pitch = 60, zoom = 15,
location = c(-75.155, 39.95),
bearing = 45) %>%
add_polygon(data = plot, elevation = "height",
fill_colour = "colour", tooltip = "subtype",
auto_highlight = TRUE)
```

  - III. Save as html
    - **htmlwidgets**

```
saveWidget(map, "Outputs/map.html", selfcontained = TRUE)
```



Thank you!