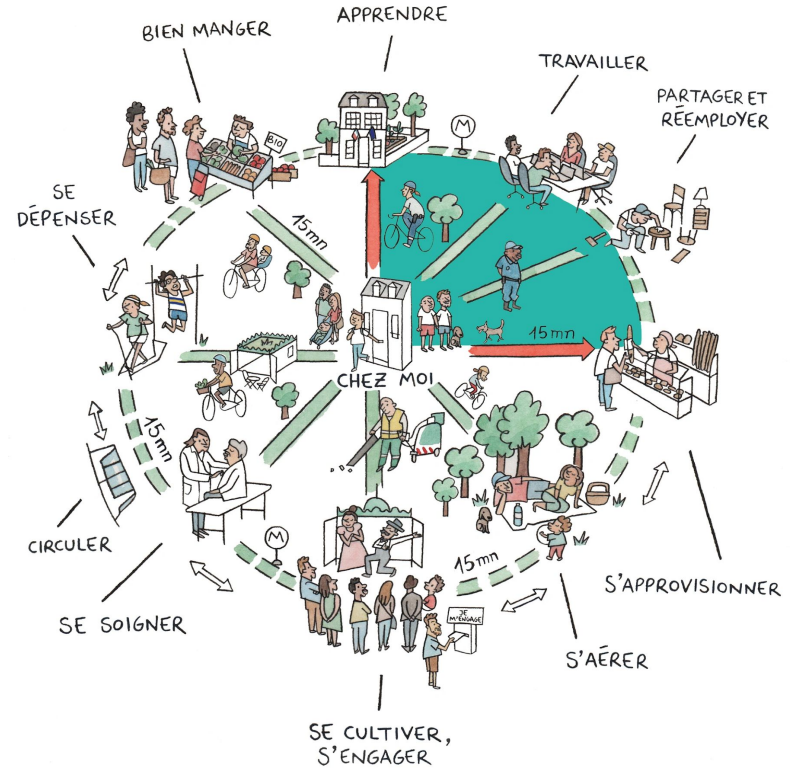


The 15-Minute City

Sean Connelly

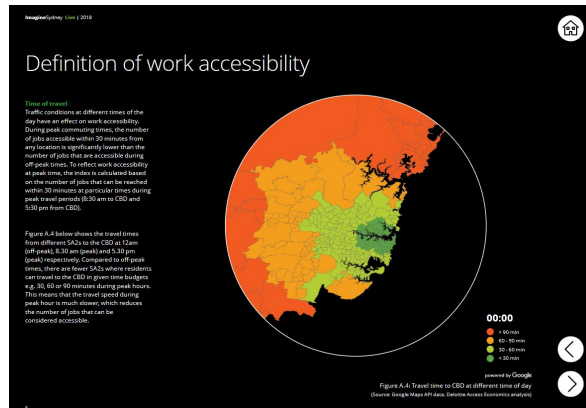
Paris as a Leader

- 2020 - Mayor Anne Hidalgo reelection campaign centered around neighborhood livability
 - “Paris en Commun’s 15-minute city concept. From the top, clockwise, the headings read: Learn, Work, Share and Re-Use, Get Supplies, Take the Air, Self-Develop and Connect, Look After Yourself, Get Around, Spend, and Eat Well. (Paris en Commun)”

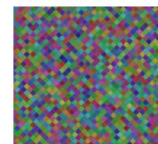


Neighborhood Livability

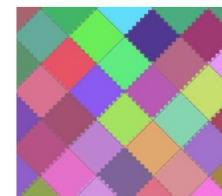
- Not a new concept, but lack of consistency
 - Time/Distance Cutoffs
 - Mode
 - Data Sources
 - Index Elements
- Increasingly a focus of Chicago planning professionals and advocates



330' Tile Grid



33' ESRI GRID

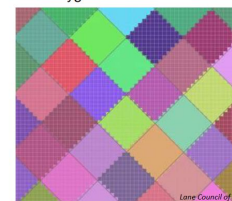


20-Minute Neighborhood Walkability Analysis

Analysis Framework

A grid of polygonal square tiles (40,000) is laid over the urban landscape and used to collect a series of metrics regarding the qualities of that landscape in terms of the presence of people and the presence of urban services in a walking and bike context. Collection of some of these attributes uses finer-scale, 33', geometries that are aggregated to the 330' tile. The lattice structure is tilted 45d to better capture network distances

33' Polygonal Grid



Get Census Tract Data

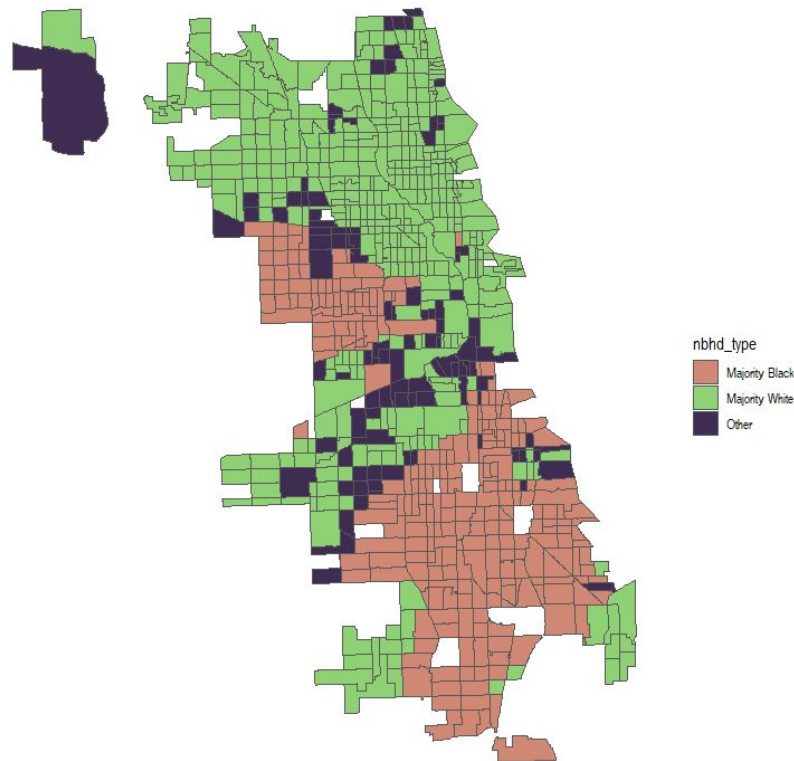
- Download tract-level data to get a proxy for density, investigate disparities
- Use *tidycensus* package to access API directly

```

32
33 # List of variables from ACS 5-Year estimates
34 ref_vars_18 <- load_variables(2018, "acs5", cache = TRUE)
35
36 ref_tables_18 <- ref_vars_18 %>%
37   mutate(table = str_extract(name, "\\.*(?=)")) %>%
38   group_by(table, concept) %>%
39   summarize(n())
40
41 # Grab variables in race, income tables
42 vars <- ref_vars_18 %>%
43   filter(str_detect(name, pattern = "(B02001_*)|(B19001_*)"))
44
45 # ACS end years
46 years <- list(2010, 2018)
  
```

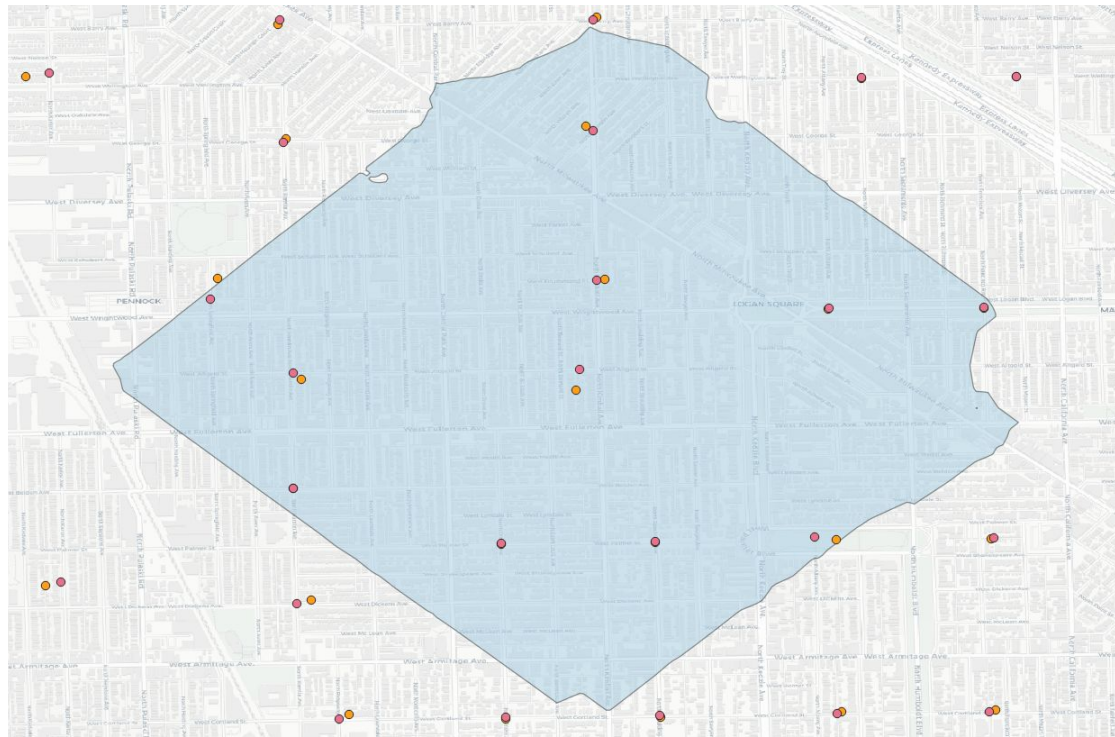
```

64
65 # Grab census data for tracts located within Cook County
66 acs_raw_cook <- map(years,
67   ~ get_acs(
68     geography = "tract",
69     variables = vars %>% pull(name),
70     year = .x,
71     survey = "acs5",
72     state = "IL",
73     county = "Cook",
74     geometry = FALSE)) %>%
75   map2(years, ~mutate(.x, id = .y))
76
  
```



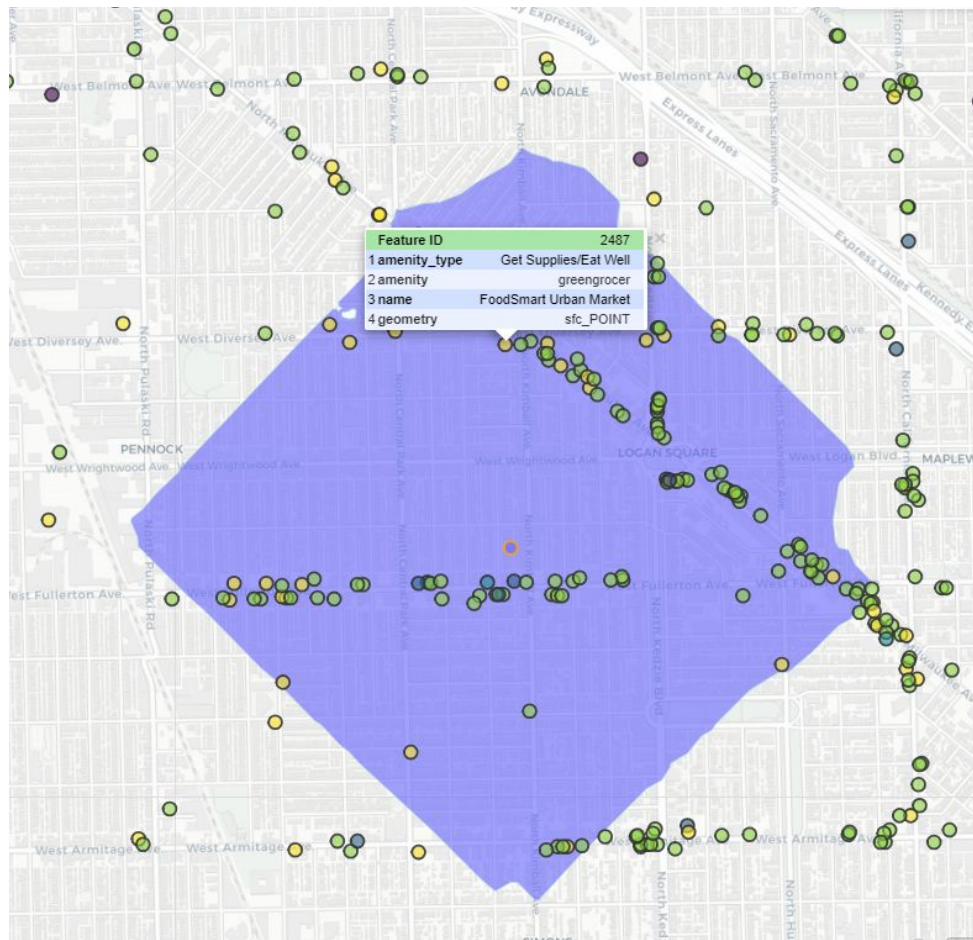
Build Isochrones

- Construct 15-minute walksheds based on street network data
 - Tract centroid →
 - Nearest node of street net from *dodgr* package →
 - Build out
- QGIS step of workflow
 - QNEAT3 Network Analysis Tool



Get Amenities

- Access OpenStreetMap information using the *osmdata* package (~5,600 features)
- "Learn" → school
- "Self-Develop/Connect" → library, community_centre, theatre
- "Take Care" → hospital, clinic, pharmacy
- "Exercise" → fitness_centre, sports_centre
- "Play Outdoors" → park, playground
- "Shop Local" → marketplace, restaurant, bar, cafe, clothes, department_store, variety_store
- "Get Supplies/Eat Well" → supermarket, convenience, greengrocer, bakery, deli



Create Amenity Scores

- Amenity_score for tract = (# of amenities within isochrone) / (total population / area in km²)
- Elements kept separate, rather than combined into one measure
- Converted into percentiles

Raw Amenity Scores in Chicago

By Amenity Type

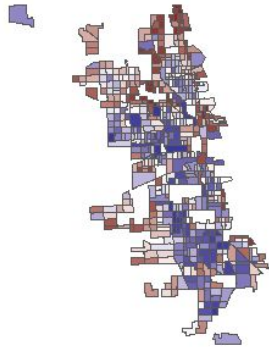


Data: OSM, ACS

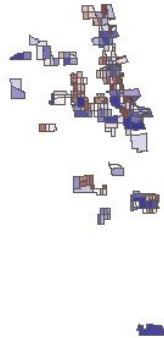
Percentile Amenity Scores in Chicago

By Amenity Type

Learn



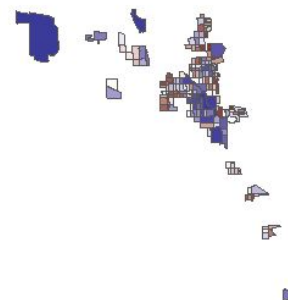
Self-Develop/Connect



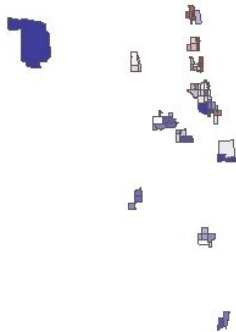
Take Care



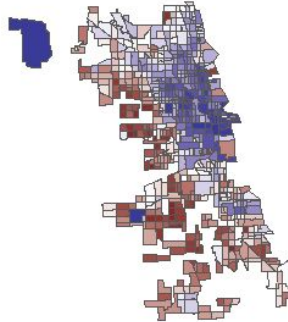
Exercise



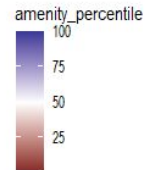
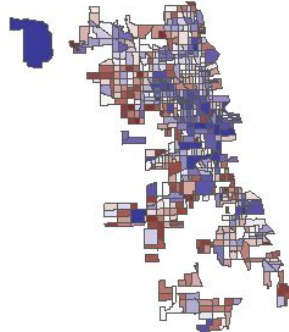
Play Outdoors



Shop Local



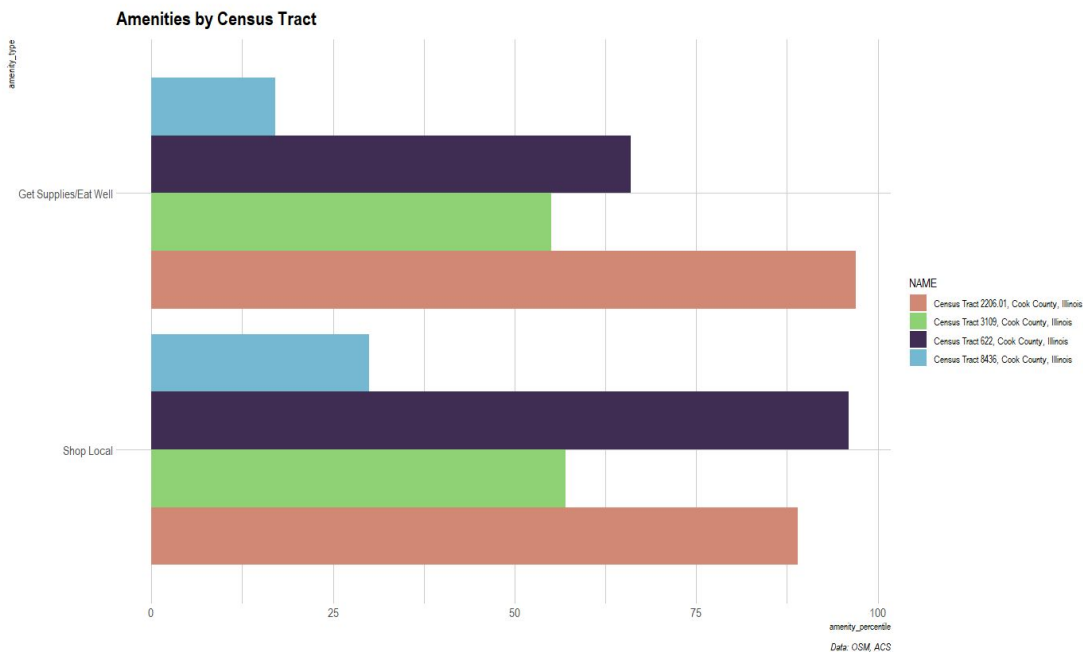
Get Supplies/Eat Well



Comparisons between Tracts

- Future ideas
 - Interactive tool to allow for direct comparisons

amenity_quant/nbhd_type	Majority Black	Majority White	Other
1	12.7% (85)	22.7% (367)	21.6% (79)
2	22.0% (147)	19.1% (309)	20.3% (74)
3	22.3% (149)	19.2% (311)	19.5% (71)
4	28.7% (192)	16.4% (266)	19.7% (72)
5	14.3% (96)	22.6% (365)	18.9% (69)
Total	100.0% (669)	100.0% (1618)	100.0% (365)



Sources

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