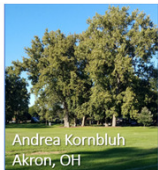


questions

Are municipal parks evenly distributed across Akron?

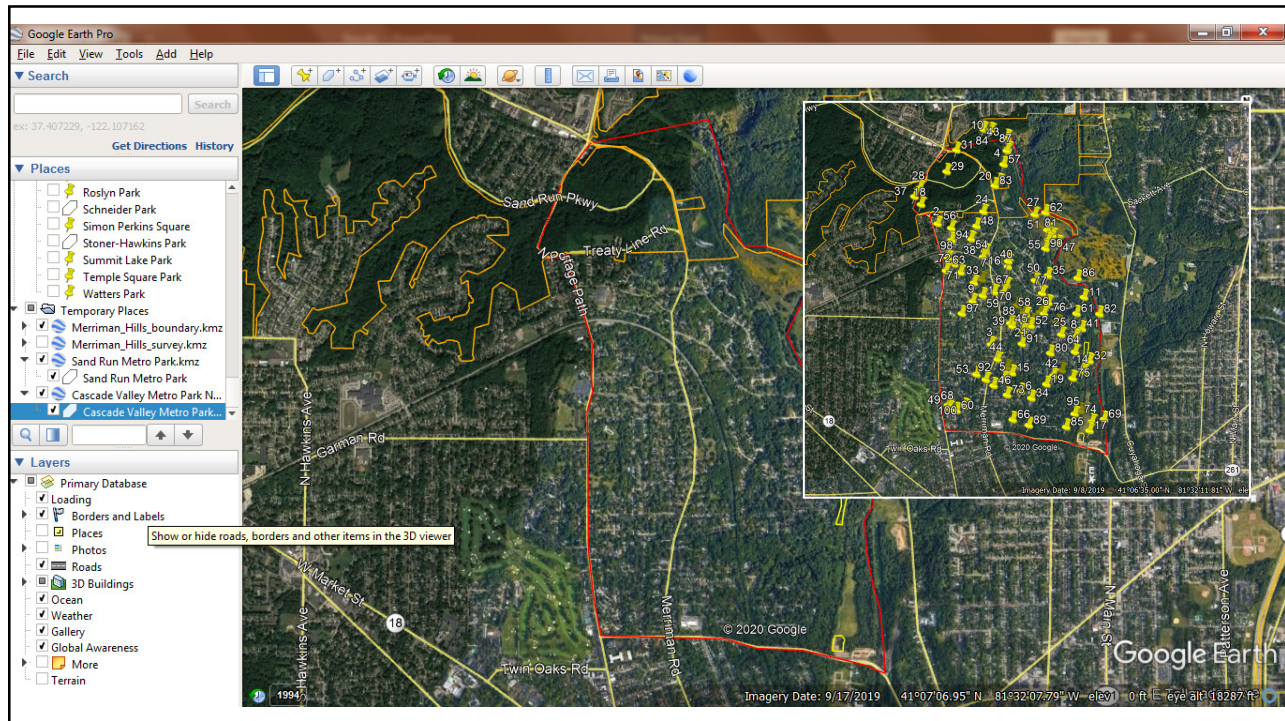
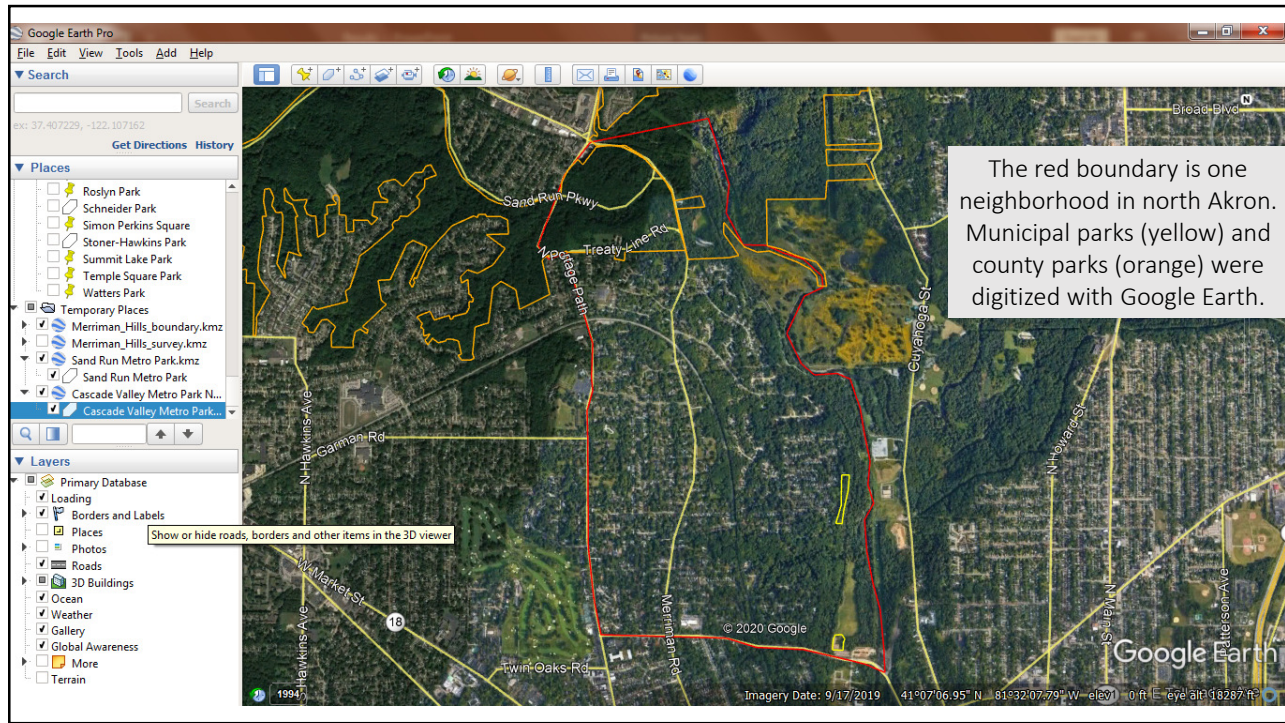
Are there any relationships between demographic factors and the location of parks which could inform future park development?

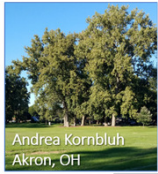
Does the distribution of trees correspond to the distribution of parkland, or are these two separate issues?



methods

- sort demographic data, available at the neighborhood scale
- digitize 24 neighborhoods with *iTree Canopy*, using PDF as reference
- perform cover assessment with *iTree Canopy*
- open .kmz in *Google Earth*, redraw boundaries, and measure area
- digitize 89 municipal parks and 6 county parks, excluding sports fields and traffic islands
- calculate population and natural resource statistics
- prioritize preservation based on select social and ecological factors





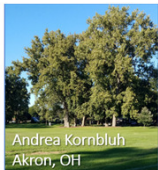
demographic factors

Statistics from 2014 US Census data:

- number of housing units
- population size
- median household income
- median age

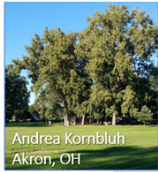
The analysis follows the City's organizational structure – neighborhoods, instead of census blocks.

Neighborhood shapefiles were requested but not obtained.



cover assessment and tree benefits

- three (3) impervious cover classes: building, road, other
- six (6) pervious cover classes: tree, shrub, herbaceous – natural, herbaceous – cultivated, soil/bare ground, water
- preliminary classification of 100 random points per neighborhood using *iTree Canopy*
- tree benefits (amount and monetary value, annual basis) selected from those calculated by *iTree Canopy*: carbon sequestration, carbon storage, PM2.5 removal, avoided runoff



results, social analysis

- median household income, range = \$11,444 – 89,568/yr
- weak positive correlation (0.342) btw income and parkland (% total)
- lowest median income (< \$20,000/yr): Downtown, Summit Lake, University Park, West Hill, Cascade Valley, Sherbondy Hill

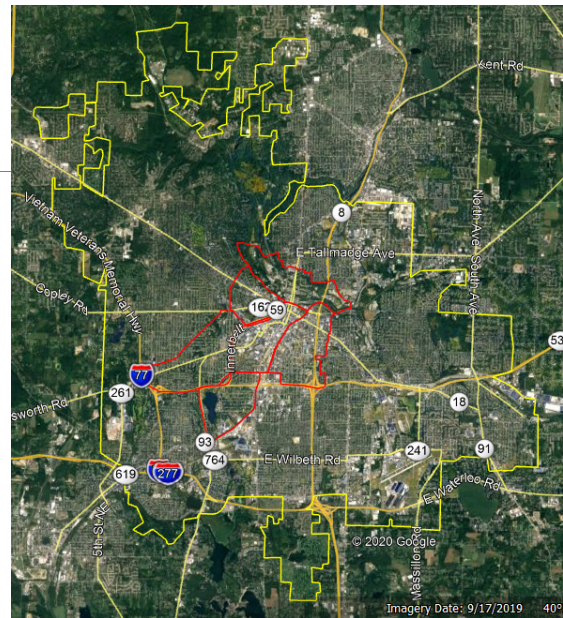
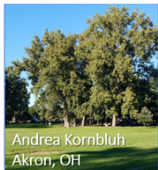


Image credit: Google Earth



results, social analysis

- population density, range = 540 – 7,848 indiv/mi²
- weak negative correlation (-0.348) btw population density and parkland
- highest population (> 5,000 indiv/mi²): Highland Square, North Hill, University Park, South Akron

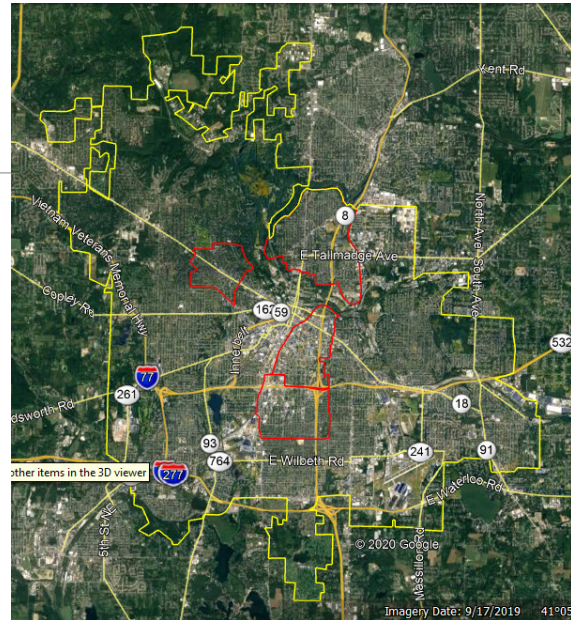
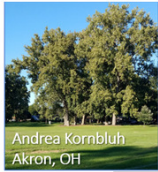
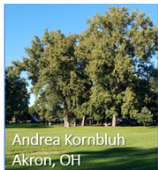


Image credit: Google Earth



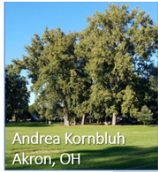
results, ecological analysis

- pervious land cover, range = 34.4 – 87.9%
- six (6) neighborhoods with the lowest pervious cover (< 60%) include 3/4 of the **most populous** and 2/6 of the *lowest income*: **Highland Square, South Akron, University Park, Downtown, Chapel Hill, East Akron**
- additional tree benefits through 10% increase in tree cover in one neighborhood:
 - C seq, 160.06 to 296.82 t/yr = \$3,507
 - PM2.5, 207.91 to 385.56 kg/yr = \$21,488
 - avoided runoff, 7.65 to 14.18 ML/yr = \$15,425



results, ecological analysis

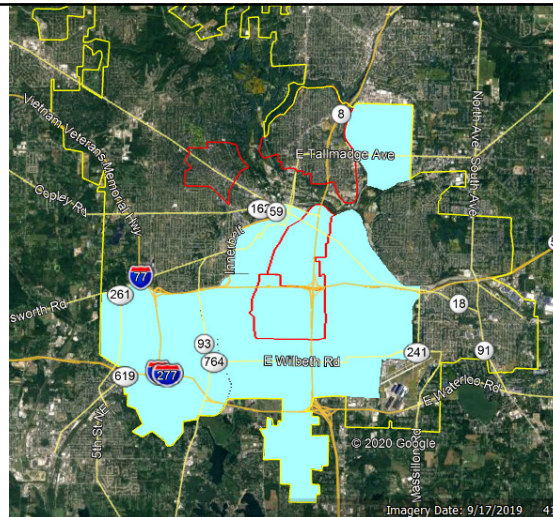
- tree cover, range = 3.0 – 56.0%
- nine (9) neighborhoods have < 25% tree cover, including 2/4 of the **most populous** and 3/6 with the *lowest income*: Coventry Crossing, Chapel Hill, Kenmore, *Summit Lake*, Middlebury, East Akron, **South Akron**, Firestone Park, **University Park, Downtown**
- Each neighborhood has an additional 18.2 – 62.6% of pervious, or undeveloped, land cover that could be converted to trees.
- Size and ownership of undeveloped parcels is under analysis.



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recommendations

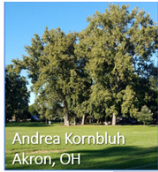
- Recent health (CDC, 2018) and environmental (City of Akron, 2019) statistics of note include:
 - adult asthma rate, 10.9%
 - adult obesity, 37.4%
 - water quality parameters associated with runoff (NO_3^- , org C, turbidity) at the high end of the scale (but in compliance)
- **New parks:** Prioritize the 4 neighborhoods with the highest population density (> 5000 indiv/ mi^2) and $< 1\%$ existing parkland.
- **Tree planting:** Prioritize the 9 neighborhoods with $< 25\%$ canopy cover and available pervious surface.



Prioritization of Akron neighborhoods for improved preservation

blue = $< 25\%$ canopy cover, prioritize tree planting

red outline = > 5000 indiv/ mi^2 and $< 1\%$ parkland, prioritize new park development



references

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