Redefining Access to Parks in NYC

Christine Ghossoub and Caroline Thompson
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RESEARCH QUESTION

How can we incorporate previous qualitative survey findings into quantitative measures of park accessibility using newly available or non-traditional datasets?

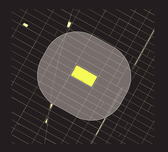
EXISTING PARK ACCESS MODELS

OPEN SPACE INDEX
for New York City:

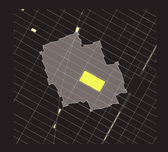
36,374 acres
8,340,000 people

0.00436 acres of park space per person

RADIAL BUFFER
1/4 MILE, 5 MINUTES



NETWORK BUFFER
1/4 MILE, 5 MINUTES



FINDINGS AND IMPLICATIONS

Perceptions of safety often do not align with the actual level of safety for pedestrians.

- Within a five-minute walk to Central Park, a vehicle is more likely to kill or seriously injure a pedestrian than near Prospect Park, but pedestrians perceive the area as safer.
- Denser neighborhoods are perceived as more safe, and often have a stronger network of nearby park access.

Pedestrians do not use any available route or shortest path to reach a park, but rather choose routes along, within, or to a park.

- Larger parks like Central or Riverside Parks experienced more pedestrians within the park, while pedestrians traveled along the boundaries of smaller parks like Bryant or Tompkins Square Parks.
- Routes along the waterfront and within view of green space are more used by more pedestrians than those on interior streets.

The perceptions and preferences of potential walkers influence the routes they take to reach a park.

- Existing models suggest that pedestrians are unbiased actors who choose routes based on shortest paths.
- Perceptions of safety or familiarity better determine potential routes than commonly-used assumptions for determining routes.

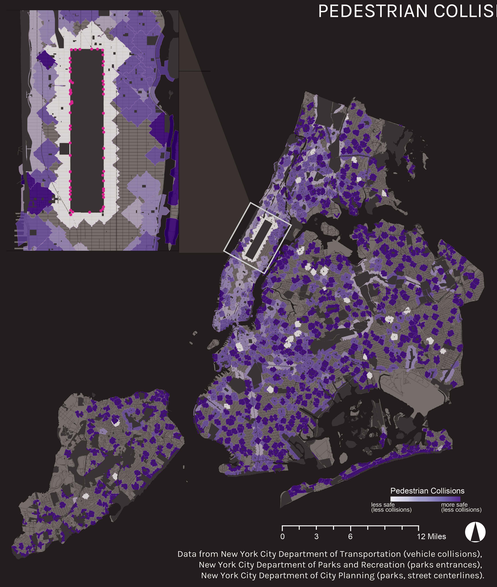
New datasets should be incorporated into analysis of access to parks.

- Datasets like Strava and StreetScore, which embed the biases of the users and systems that create the data, are useful for analysis precisely because they reflect these choices.
- Existing research from other disciplines offers evidence for different pedestrian biases in choosing a route to a park, which could be explored with some volunteered geographic data sources.

Access as Safety

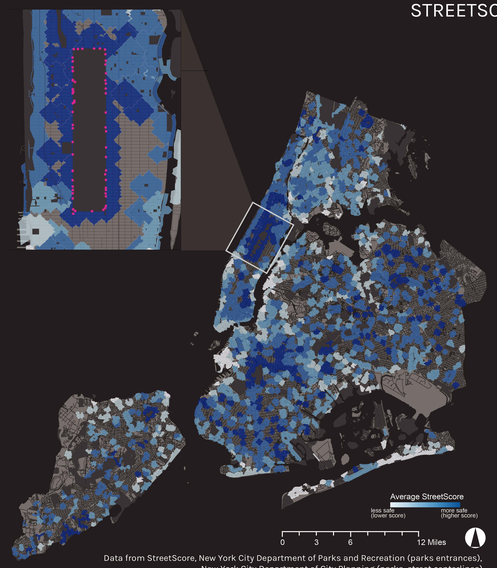
Accessibility can be defined as the ability to walk safely to a park. In accessing a park, pedestrians may choose to visit one over another by perceived safety in travelling to the park itself. By contrasting the realities of pedestrian safety with the perceptions of pedestrian safety, we can identify further layers to understanding choice as a part of access.

ACTUAL SAFETY
PEDESTRIAN COLLISIONS



Data from New York City Department of Transportation (vehicle collisions), New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).

PERCEIVED SAFETY
STREETSCORE

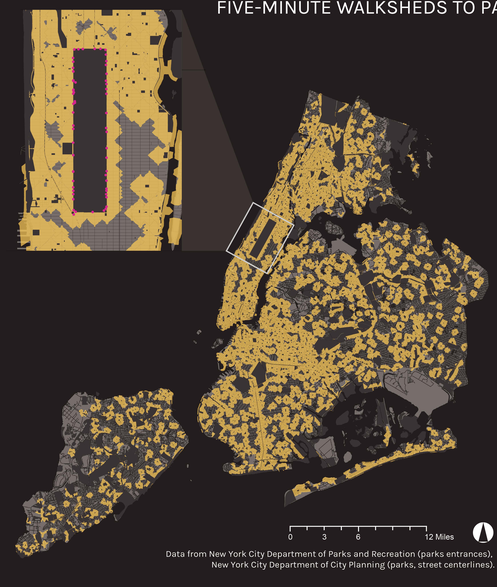


Data from StreetScore, New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).

Access as Routes

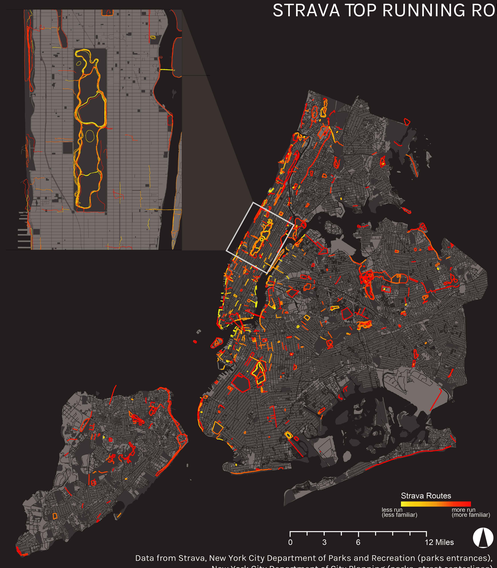
In previous studies, a five-minute walking distance (1/4 mile) is used to define the threshold of reasonable pedestrian access to a park. However the walkshed does not identify whether the routes available are used or preferred by pedestrians to access parks or other spaces. Using Strava as an indicator, parks are graded as more accessible by the number of routes that go through or pass along the edge of a park.

ACTUAL ROUTES
FIVE-MINUTE WALKSHEDS TO PARKS



Data from New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).

PERCEIVED ROUTES
STRAVA TOP RUNNING ROUTES

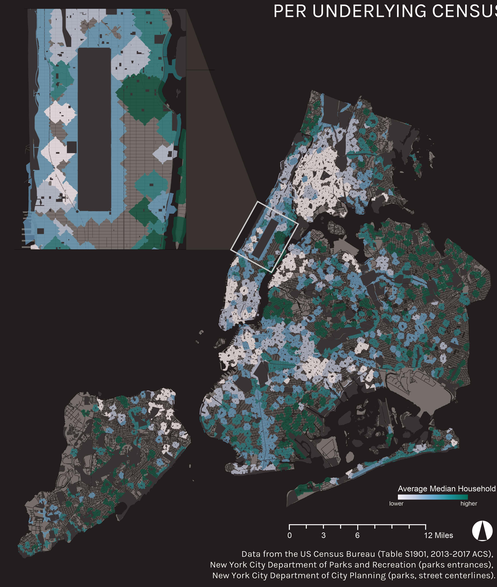


Data from Strava, New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).

Socioeconomic Factors

Park access is disproportionately accessible by some neighborhoods over others. To better understand who is affected by this unequal access, household median income and population density were mapped to better visually compare populations and their access to parks. Here, data from the census tracts that underlay the walksheds are represented on the walkshed level for easier visual comparison across datasets.

HOUSEHOLD MEDIAN INCOME
PER UNDERLYING CENSUS TRACT



Data from the US Census Bureau (Table S1901, 2013-2017 ACS), New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).

POPULATION DENSITY
PER UNDERLYING CENSUS TRACT

Data from the US Census Bureau (Table B00001, 2013-2017 ACS), New York City Department of Parks and Recreation (parks entrances), New York City Department of City Planning (parks, street centerlines).