# Walkability / Health-Related Urban Development

Urban Data Pioneers 1.19.18

Kevin Gustavson, Karena Finnerty, Jeff Hintze, Emma Oakes, Amber Wagoner

## **Initial Problem**

 Measure neighborhood walkability: compare development patterns by analyzing connectivity, nodes, and links. (Sidewalks addressed as one part of this analysis)



### What the Problem Became...

Related research topic → Identify communities lacking in "health-accessible" urban development.

1. Identify land use policies related to healthy lifestyles. Listed were:

- sidewalks
- bike lanes / trails
- parks
- bike share

- grocery stores
- zoning/development
- medical facilities
- exercise facilities

### What the Problem Became...

Related research topic → Identify communities lacking in "health-accessible" urban development.

2. Have city land use policies negatively impacted access to healthy lifestyles?

- sidewalks
- bike lanes / trails
- parks
- bike share

- grocery stores
- zoning/development
- medical facilities
- exercise facilities

### What the Problem Became...

After discussing with DeVon Douglass:

Focused on understanding the relationship of various residential zones to health-related urban development (including walkability):

- sidewalks
- bike lanes / trails
- parks
- bike share

- grocery stores
- zoning/development
- medical facilities
- exercise facilities

# Residential Zoning

### Predominantly RS-3, distributed all over city





### Medical Facilities

Tulsa Residential Areas Within 0.5 miles of a Medical Facility

87%



## Tulsa Parks

Tulsa Residential Areas Within 0.5 miles of a City Park





### Trails

Tulsa Residential Areas Within 0.5 miles of a Trail or Bike Lane

63%



### Exercise Facilities

Tulsa Residential Areas Within 0.5 miles of an Exercise Facility

41%

**Exercise Facilities** Near Exercise Facilities Residential more than 0.5 miles away Tulsa Boundary

## Open Grocery Store

Tulsa Residential Areas Within 0.5 miles of an Open Grocery Store



36%

## **Bike Share**

Tulsa Residential Areas Within 0.5 miles of a Bike Share Station



5%

# Sidewalks

- Clipped sidewalks to each residential area
- Added all the sidewalk lengths
- Multiplied by 4 ft
- Compared sidewalk area to residential area.
- Sidewalk areas 1% or greater considered a healthier metric (green areas). 21% of areas
- Sidewalk areas greater than 0.5% → 31% of areas



### Sidewalk Area 1% or Greater

- Increased sidewalk density (walkability) with increased property density allowed by zoning rules
- Multi-family (27%) more walkable than single family (16%)

Symbol	Value	Count	Percent of Zoning Type
	RD	18	23%
	RM-0	8	21%
	RM-1	58	24%
	RM-2	69	32%
	RM-3	7	47%
	RS-1	3	4%
	RS-2	23	17%
	RS-3	56	17%
	RS-4	9	45%
	RT	5	23%
			RE = 0%





## **Outer Tulsa**

### Average Score: 2.1



### Inner Tulsa

### Average Score: 3.7





## Downtown Hot Spot

Average Score: 5.0 (by areas, not area)

Downtown Zoned "Central Business District" Has all metrics except for open grocery store

Oldest Area of town – designed as "20 minute neighborhoods": <u>pedestrian centered</u>



RS-4 Zoning (Single Family)

- Smallest lots
- Score distribution skewed somewhat to the upper end
- Very small sample set
- May have more to do with geography
- Average Score: 3.9



RS-3 Zoning (Single Family)

- Larger lots
- Distributed all over town
- Fairly even distribution (bell shaped curve)
- Average Score: 3.1



RS-2 Zoning (Single Family)

- Even larger lots
- Perhaps skews slightly to the lower end (no 7s)
- BUT none near downtown where the bike share is...so perhaps fairly normal distribution.
- Average Score: 3.1



RE and RS-1 Zoning (largest lots)

- Score distribution skewed to the lower end (no 6s or 7s)
- Average Score: 2.6 (RE: 2.57 RS-1: 2.64)





# RD Zoning (Duplex)

- Score distribution skewed to the lower end
- Small areas...less likely to be 0.5 miles from something
- Average Score: 3.2



# RM Zoning (Multi-Family)

- Scores fairly normally distributed
- Areas distributed throughout city
- 45% of residential areas (not area)
- Many small areas...less likely to be 0.5 miles from something
- Average Score: 3.4





# RM-2 (Multi-Family)

- Scores fairly slightly skewed to the higher end.
- Higher density
- Many small areas.
- Fewer areas in the city fringe
- Average Score: 3.7



# RT Zoning (Townhouse)

- Scores slightly skewed to the higher end.
- Very small sample
- Small areas...less likely to be 0.5 miles from something
- Average Score: 3.5



# Conclusions

- Increased sidewalk density (walkability) in more densely zoned neighborhoods.
- Lower health scores concentrated on the fringes of the city.
- Highest health scores downtown/midtown and in near east Tulsa.
- No clear relationship between zoning type and overall potential for a healthy lifestyle....except....
- Possible inverse relationship between lot size and potential for a healthy lifestyle.

## Possible Future Directions...

- Variable size of the polygons overestimate scores for some areas within large polygons. Redo analysis with a more uniform polygon size. Can overlay zoning if desired.
- Find and include areas where people live that are not zoned "residential", like downtown.
- Census tract may be a good base layer. Would allow a look into other variables like population, income, etc.
- Look into the data to find additional data points that could qualify (like golf courses as an exercise facility?)
- Look more closely at the downtown area and examine which districts are truly walkable.