



Bike Equity in Chicago:

**An observational assessment tool for
neighborhood bikeability**

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May 7, 2018



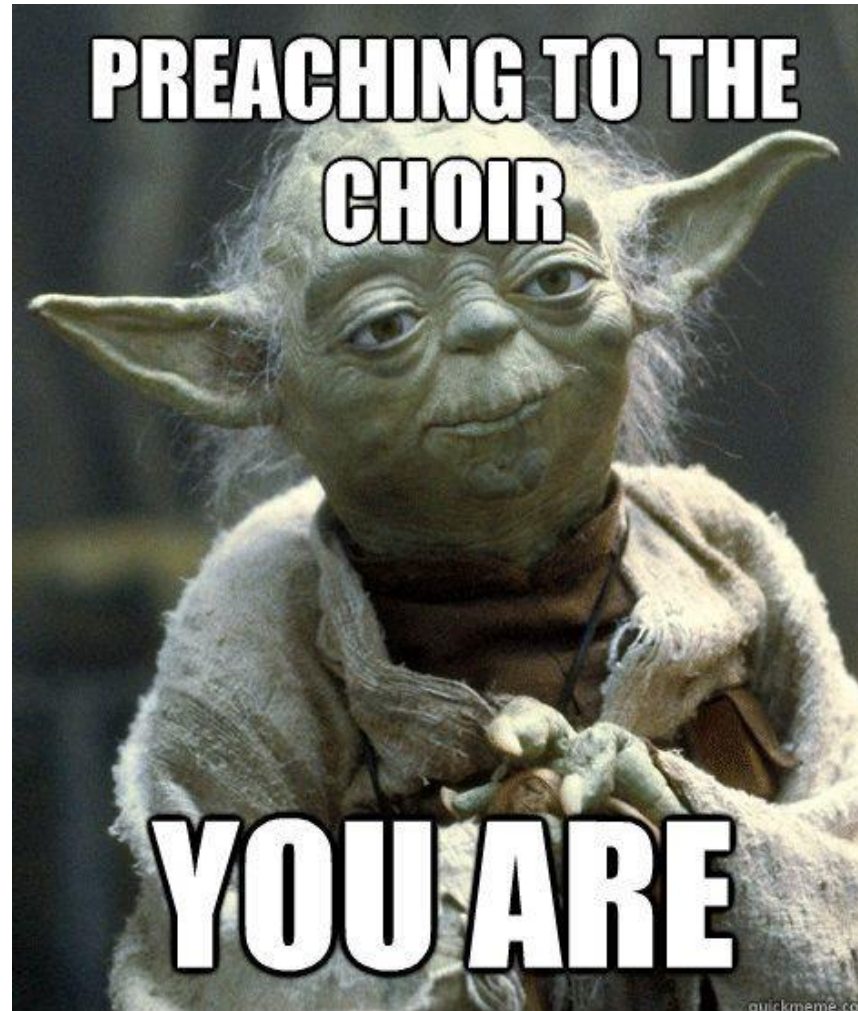
The next 15 minutes

- Background
- Project Aims
- Methodology
- Results
- Discussion
- Final Thoughts

This project was conducted as a capstone project and does not meet the definition of human subject research as defined by 45 CFR 46.102(f).



The benefits of bicycling



Source: QuickMeme



The benefits of bicycling



Economic



Environmental



Social



Health

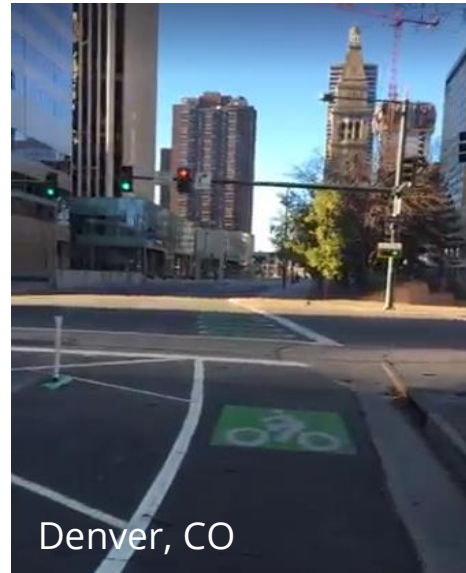


Chicago, IL

Photographs taken by presenter



Brooklyn, NY



Denver, CO



Atlanta, GA

IT'S NOT FAIR!

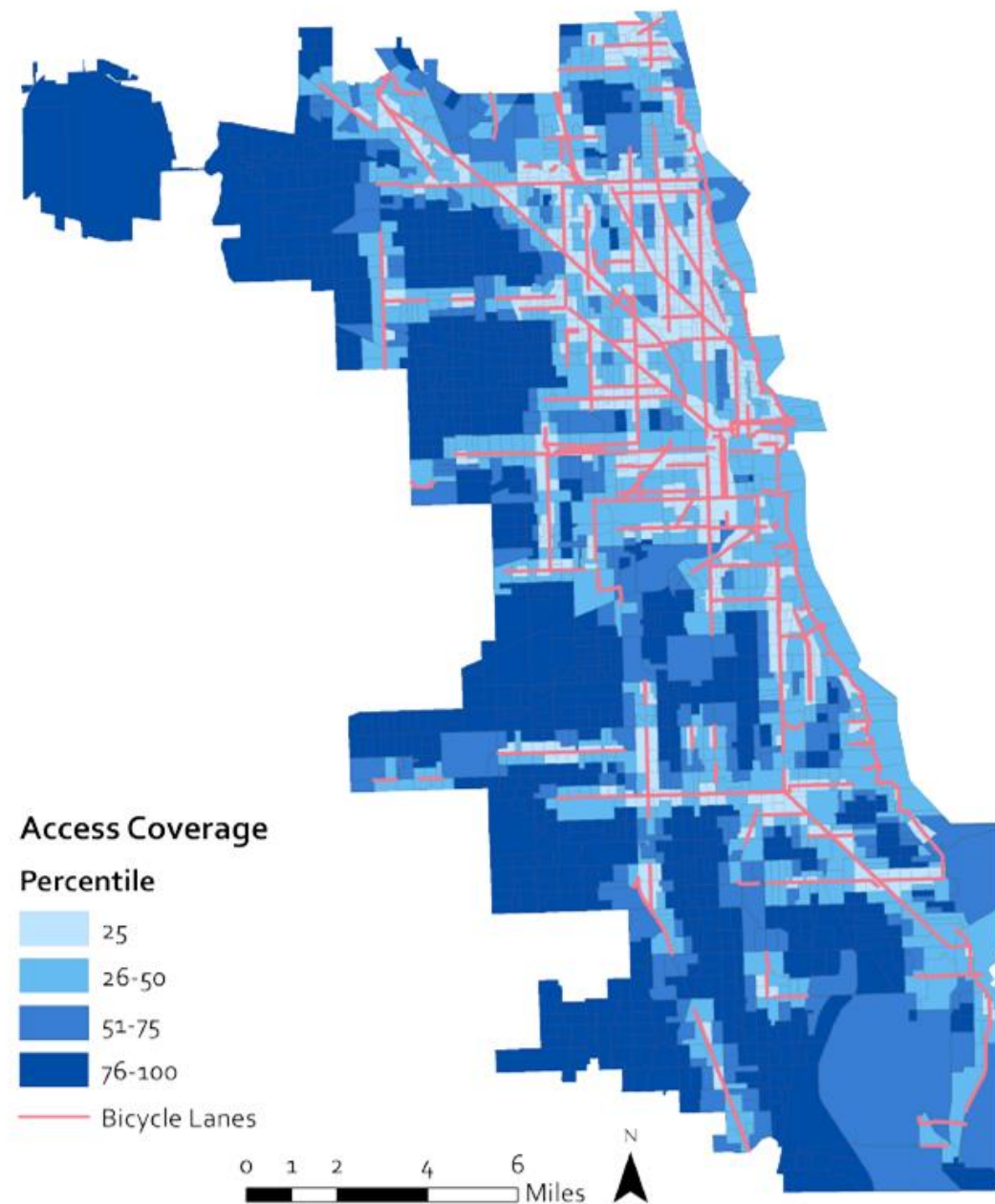




Bicycling & Chicago

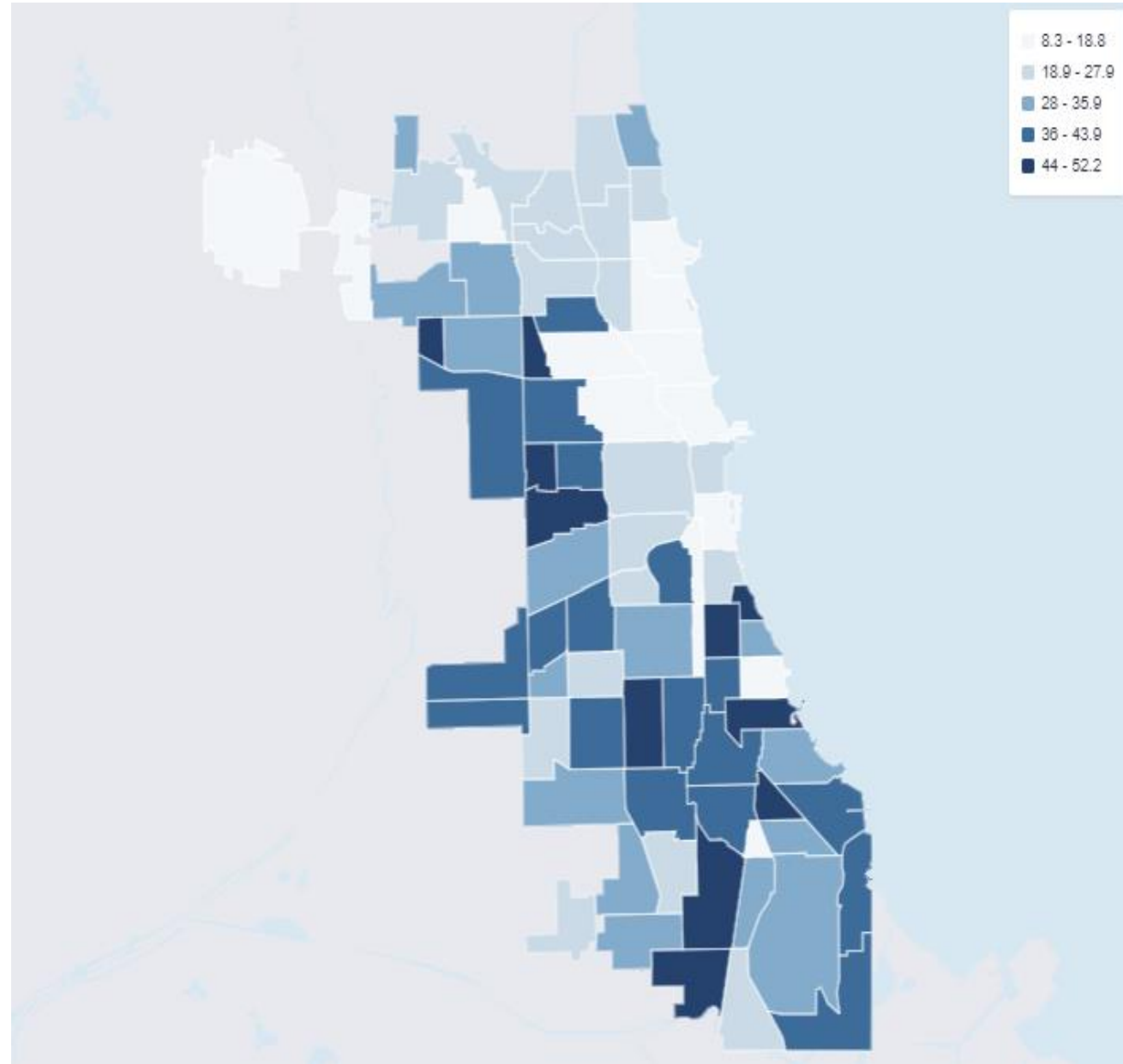


Bicycle Lane Coverage, Chicago



Source: Rachel Prelog

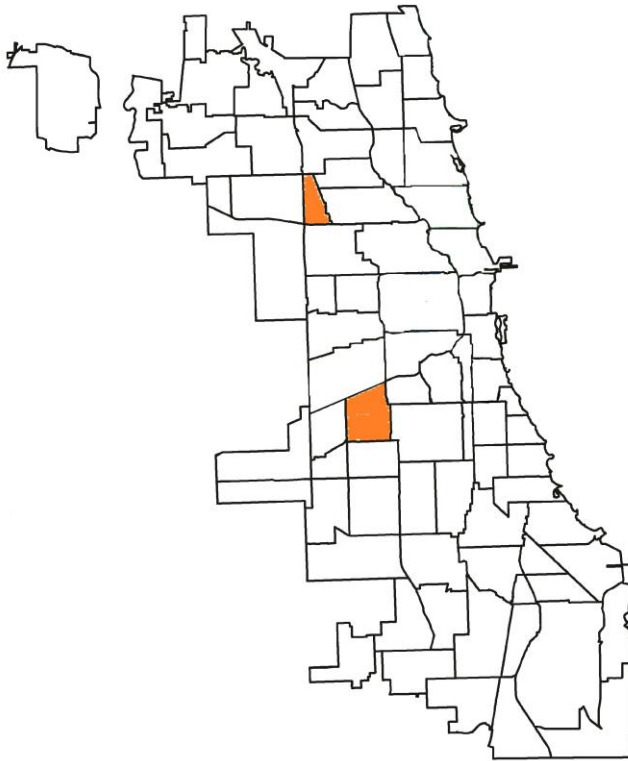
Obesity Rates by Community Area, Chicago



Source: Chicago Health Atlas



Let's take a closer look



Location	% Walk or Bike to Work	Obesity Rate
Chicago	8.6%	29.7%
Hermosa	5.7%	47.4%
Brighton Park	4.6%	39.1%



Defining “bicycle equity”

“The **distribution** of impacts (benefits and costs) and whether that distribution is considered **fair or appropriate**” (Litman, 2017)



Defining “bicycle equity”

“The **distribution** of impacts (benefits and costs) and whether that distribution is considered **fair or appropriate**” (Litman, 2017)

“The **fair and just distribution** of bicycle resources [...], **prioritizing** the communities and **people** who are in a **disadvantaged position** as those who should receive the most bicycle resources due their needing the most and their potential of **benefiting the most**.” (Slow Roll Chicago, 2017)



Categorizing bicycling



No Way, No How



Interested but Concerned



Enthused and Confident



Strong and Fearless

Assessment Tools

Level of Traffic Stress

LTS 1



LTS 2



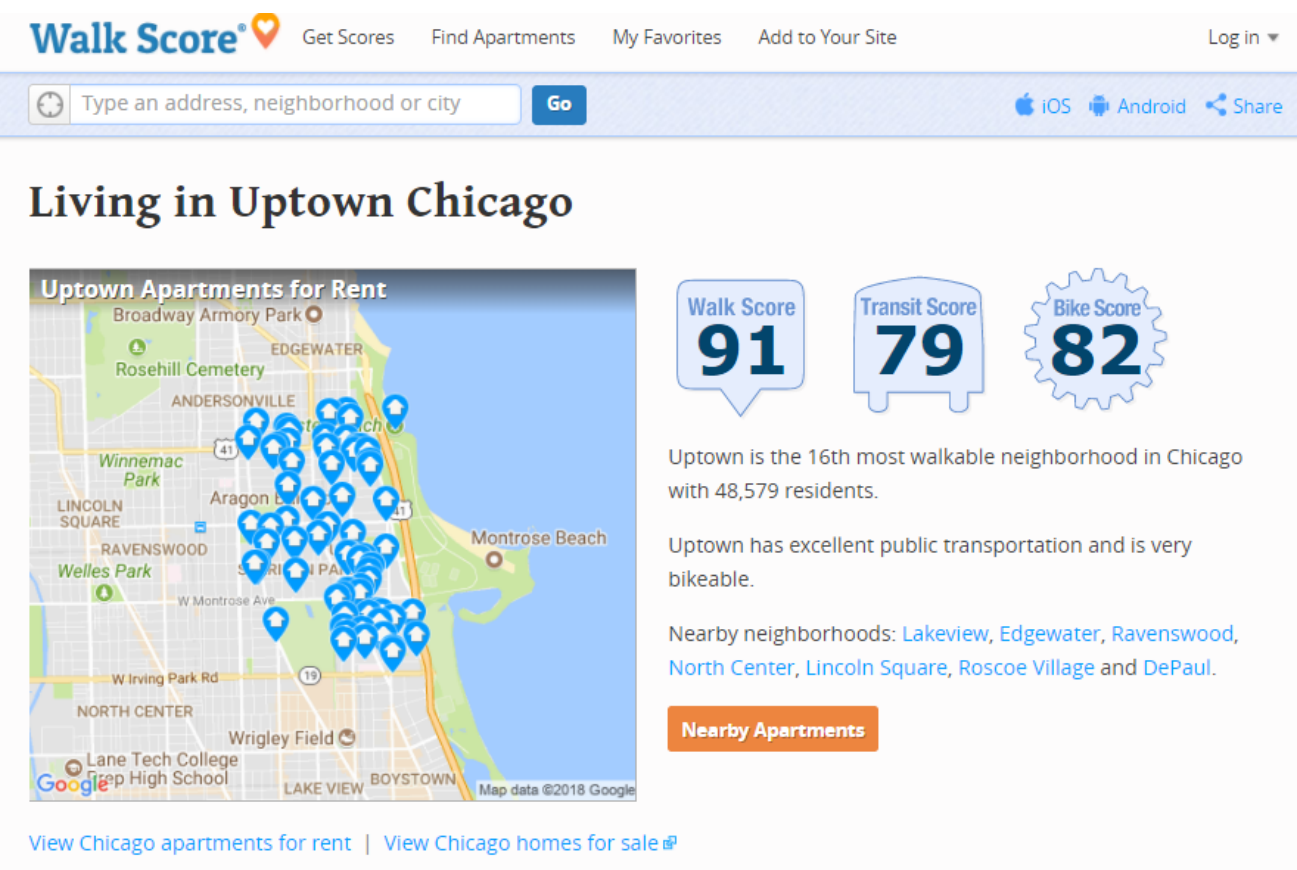
LTS 3



LTS 4



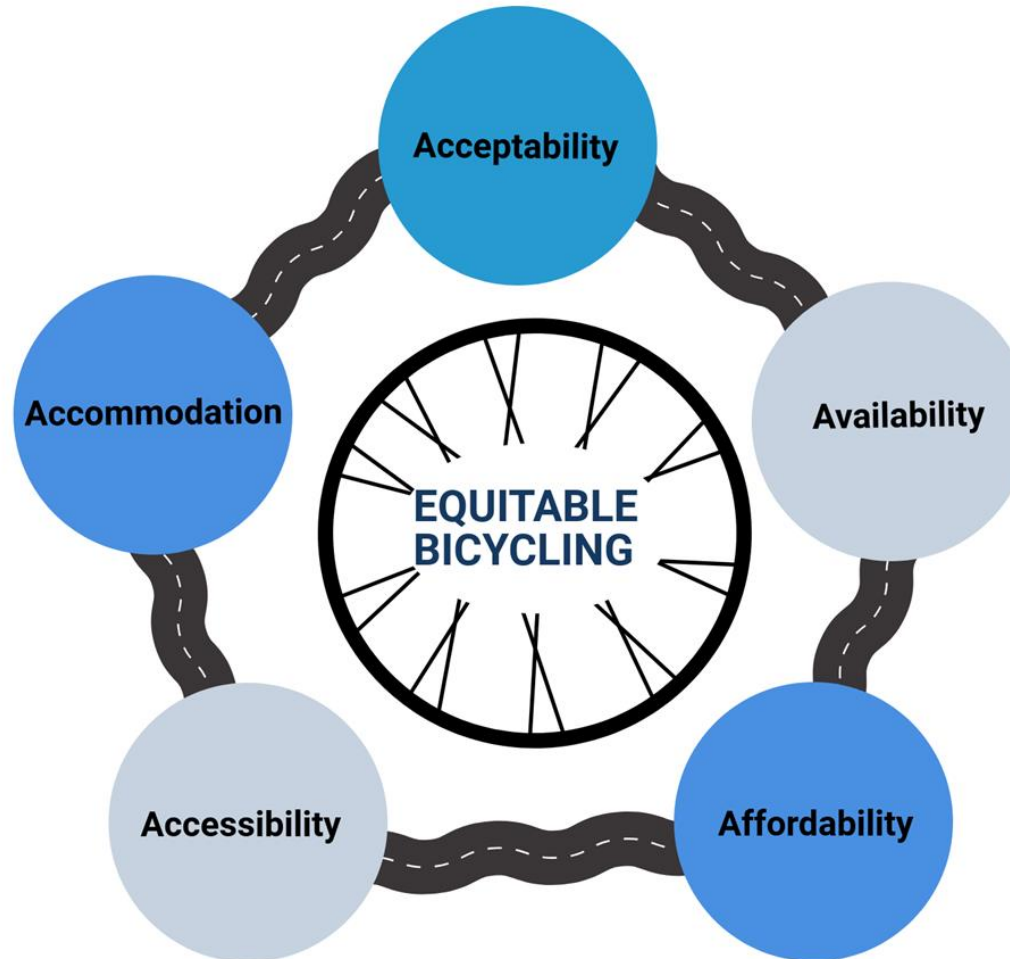
Walk Score



Source: Walk Score



Dimensions of Access (Penchansky & Thomas)





Project Aims

- **Develop** a tool to assess equity in bicycling opportunities
- **Pilot** the tool from a cyclist perspective
- **Evaluate** the equity of bicycling in predominantly Spanish-speaking communities



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Methodology



Equity & Bicycling Tool

START LOCATION:

END LOCATION:

DATE:

TIME:

Circle what you observe. Put the according column score in the "Score" column. See the **Glossary** for words in *italics*.

		0	1	2	3	
AVAILABILITY	1	Is there a <i>Bike Share</i> station on or near this block?	No	Less than 1/4 mile (~2-3 blocks, 5 min walk)	Across street/corner, but separate block	Yes – please answer questions on Pg. 3
	2	Are there <i>bike parking/racks</i> ? (excludes sign posts) # Bicycle Racks:	No	Yes, one rack	Yes, a few (2-3)	Yes, many (4+)
	TOTAL AVAILABILITY SCORE					

ACCOMMODATION	3	Is there <i>bicycle infrastructure</i> on the street? (e.g. painted bicycle lanes, "sharrow" image, barrier-protected bicycle lanes, etc.)	There is no bicycle infrastructure	Yes, minimal (e.g. "sharrow")	Yes, some (e.g. painted bicycle lane)	Yes, there is protected or separated bicycle infrastructure	
	4	Is there parking next to the bicycle infrastructure <u>or</u> where people would ride?	Yes, right next to the bicycle way	Yes, but there is a striped barrier	Yes, but there is a physical barrier	No there is not	
	5	Is the bicycle infrastructure clear of any obstacles?	There is no bicycle infrastructure	No, cars or other large obstructions	No, there is glass, trash or other small obstructions	Yes, the lane is clear	
	6	How fast are the people driving appear to be going? Posted: _____	Over 30 mph (fast)	About 30 mph	20 – 30 mph	< 20 mph	
	7	How many total road lanes are there? Include turning lanes & ignore parking/ loading zones. Circle: one way or two way	4+ lanes	3 lanes	2 lanes	1 lane	
	8	Are there alleys or driveways?	Multiple	A few	One	The block is continuous	
	9	Is there <i>bicycle signage</i> ? (e.g. bike route, share the road)	No			Yes	
	TOTAL ACCOMMODATION SCORE						

Divided by
dimension
of access

Equity & Bicycling Tool

Example of
"acceptability"

ACCEPTABILITY	11	Do you see people riding bicycles down the street? # of people: _____	No	Yes, one	Yes, 2-3	Yes, ≥ 4	
	12	Is the condition of the road surface safe for bicycling?	No, it needs to be resurfaced/is dangerous	It depends (grates, metal plates, construction plates)	It depends (potholes, cracks, bumpy)	Yes, street is well-paved/in good condition	
	13	What is the condition of the bicycle infrastructure?	There is no bicycle infrastructure	It is blocked	It is faded or needs some maintenance	It is well-maintained	
	14	Would you feel safe to ride with children on this street?	No way, no how!	I don't think so	It depends	Yes, I'd feel very comfortable and safe	
	15	How comfortable would you feel riding a bicycle on this street?	Not comfortable at all	I would have safety concerns	It would be manageable	I would feel very comfortable	
	TOTAL ACCEPTABILITY SCORE						

Equity & Bicycling Tool

Total Block Score

Let's calculate the block score:

- Enter the total score from each dimension
- Use a paper and pencil, or calculator, to find the average score – the score divided by the number of questions
- Add all the “average scores” to find the total block score

	Score	Score divided by # of questions	Average Score
AVAILABILITY		___ / 2	
ACCOMMODATION		___ / 7	
AFFORDABILITY		___ / 1	
ACCEPTABILITY		___ / 5	
ACCESSIBILITY		___ / 7	
BIKE SHARE TOTAL SCORE		___ / 8	
TOTAL BLOCK SCORE			

BLOCK #: 921

Bikeability + Equity Street Tool – DRAFT v11.13.17

PAGE 1

START LOCATION: Willard & 26thEND LOCATION: Central Park @ 26DATE: ✓

TIME:

Circle what you observe. Put the according column score in the "Score" column. See the **Glossary** for words in *italics*.

		0	1	2	3	Score
AVAILABILITY	1 Is there a <i>Bike Share</i> station on this block?	No			Yes – please answer questions on Pg. 3	3
	2 Are there <i>bike parking/racks</i> ? (excludes sign posts) # Bicycle Racks: <u>2</u>	No	Yes, one rack	Yes, a few (2-3)	Yes, many (4+)	2
	TOTAL AVAILABILITY SCORE					5

ACCOMMODATION	3 Is there <i>bicycle infrastructure</i> on the street? (e.g. painted bicycle lanes, "sharrow" image, barrier-protected bicycle lanes, etc.)	There is no bicycle infrastructure	Yes, minimal (e.g. signage, "sharrow")	Yes, some (e.g. painted bicycle lane)	Yes, there is protected or separated bicycle infrastructure	1
	4 Is there parking next to the bicycle infrastructure <i>or</i> where people would ride?	Yes, right next to the bicycle way	Yes, but there is a striped barrier	Yes, but there is a physical barrier	No there is not	0
	5 Is the bicycle infrastructure clear of any obstacles?	There is no bicycle infrastructure	No, cars or other large obstructions	No, there is glass, trash or other small obstructions	Yes, the lane is clear	3
	6 How fast are the people driving appear to be going? Posted: _____	Over 30 mph (fast)	About 30 mph	20 – 30 mph	< 20 mph	2
	7 How many total road lanes are there? Include turning lanes & ignore parking/ loading zones. Circle: <i>one way</i> or <i>two way</i>	4+ lanes	3 lanes	2 lanes	1 lane	2
	8 Are there alleys or driveways?	Multiple	A few	One	The block is continuous	2
	9 Is this a designated <i>greenway</i> route?	No			Yes	0
	TOTAL ACCOMMODATION SCORE					10
AFFORDABILITY	10 Is there any messaging about affordability of bicycling, bicycle resources, etc.?	No			Yes	0
	TOTAL AFFORDABILITY SCORE					0

Equity &
Bicycling Tool
in action



Data Collection

Piloted in **9** Community Areas

- 3 predominantly Spanish-speaking
 - South Lawndale
 - Brighton Park
 - Hermosa
- 3 predominantly English-speaking*
 - Near North Side
 - Lincoln Park
 - Lake View
- 3 linguistically diverse*
 - Rogers Park
 - Near West Side
 - Bridgeport



Data Collection

Piloted in 9 Community Areas

- 3 predominantly Spanish-speaking
 - South Lawndale
 - Brighton Park
 - Hermosa
- 3 predominantly English-speaking*
- Near North Side
- Lincoln Park
- Lake View
- 3 linguistically diverse*
 - Rogers Park
 - Near West Side
 - Bridgeport



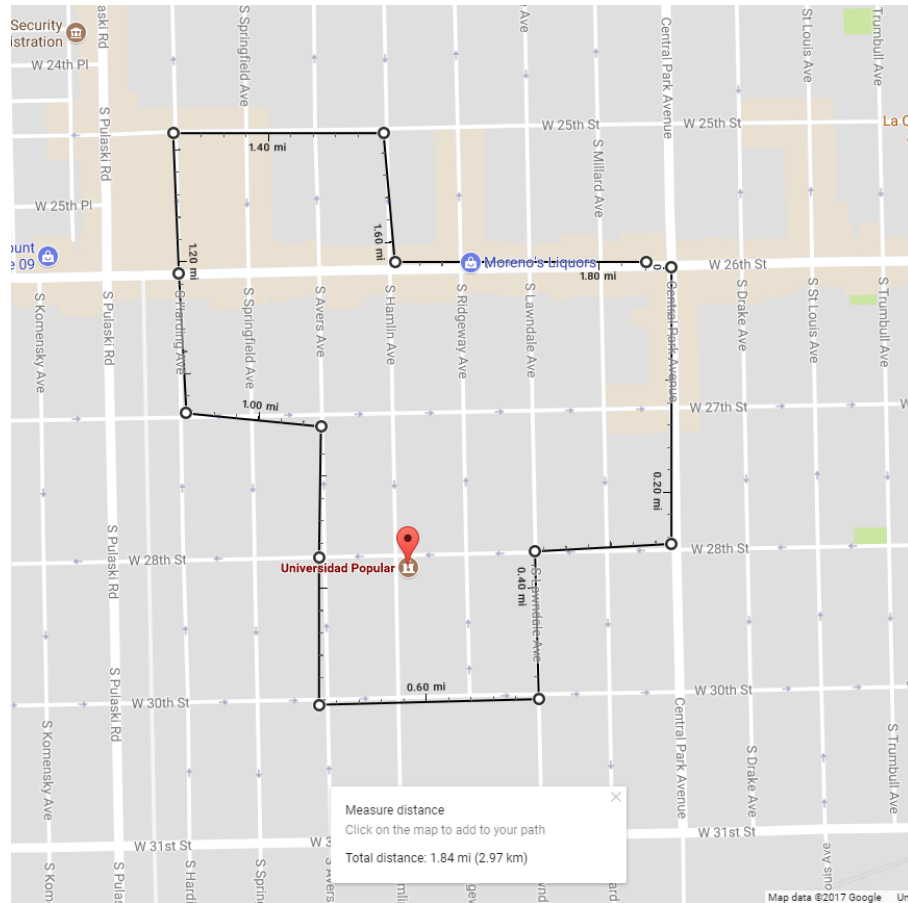
Data Collection

Piloted in 9 Community Areas

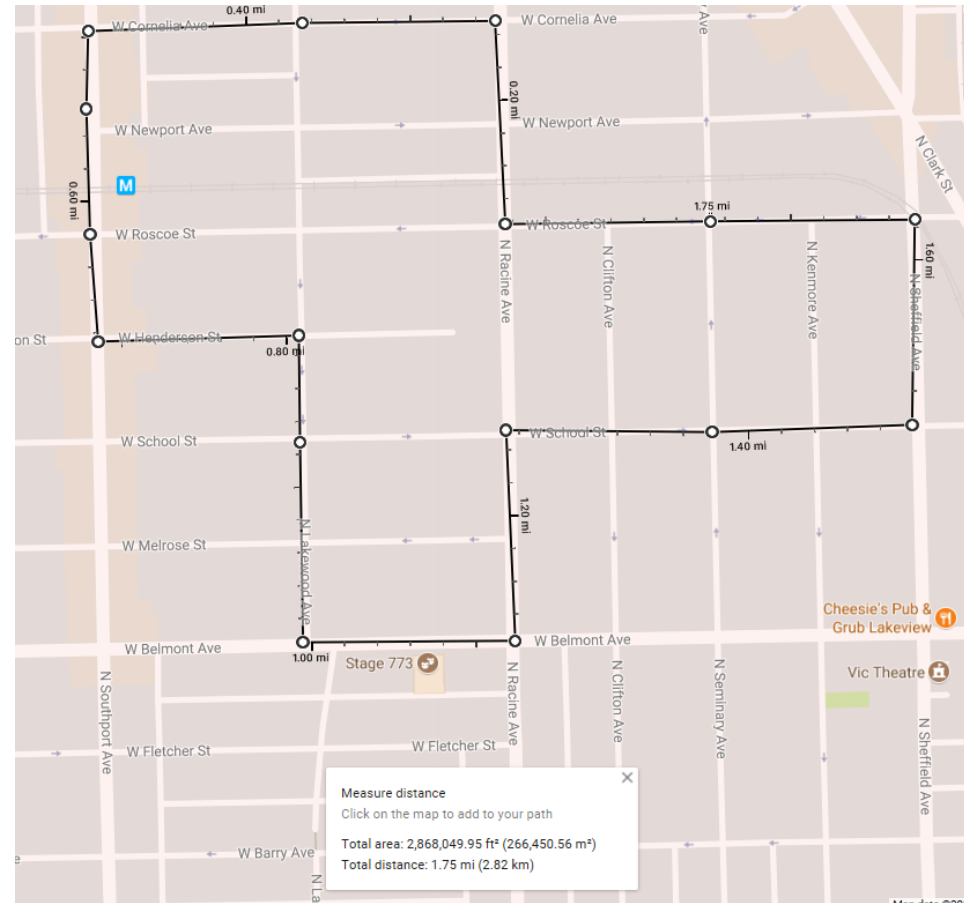
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Neighborhood Routes



South Lawndale



Lake View



Findings

Statistically significant differences:

- Availability
- Accommodation
- Acceptability
- Accessibility

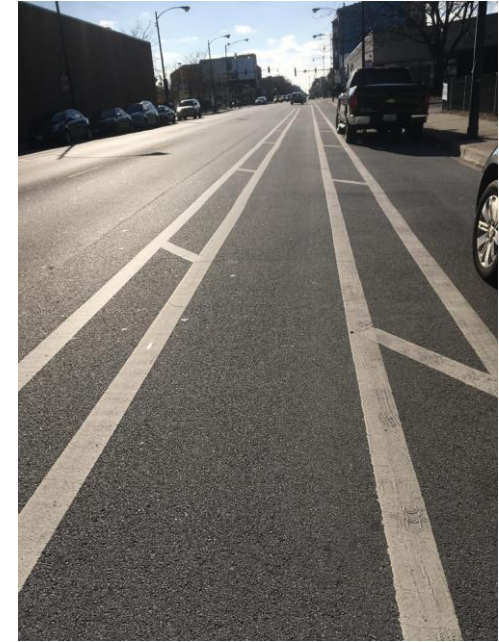
Dimension	Spanish-speaking	Diverse	English-speaking
Availability	0.33	0.91	1.4
Accommodation	0.88	0.86	1.01
Affordability	0.0	0.0	0.0
Acceptability	1.46	1.59	1.82
Accessibility	2.03	2.2	2.4
Bike Share	0.50	1.94	2.07
Total	4.70	5.70	6.90



Neighborhood Street, South Lawndale; S Avers Ave



Faded 'Sharrow' Bicycle Lane, South Lawndale; N California Ave



Buffered Bicycle Lane, Bridgeport; Halsted St



Bicycle Parking, Lake View; N Southport Ave



4 Lane Road, Hermosa; W Fullerton Ave



Limitations

- Seasonal effects
- Selection bias
- Subjectivity
- Lack of qualitative input



Discussion

Findings suggest:

- Need to improve resources surrounding affordability
- Less opportunities in predominantly Spanish-speaking community areas than less vulnerable communities
- Tool could be promising to identify inequities

For equity in bicycling opportunities:

- Further **qualitative insight**
- Better understand **subjective dimension**



March 2018

Photographs taken
by Elliot Luke

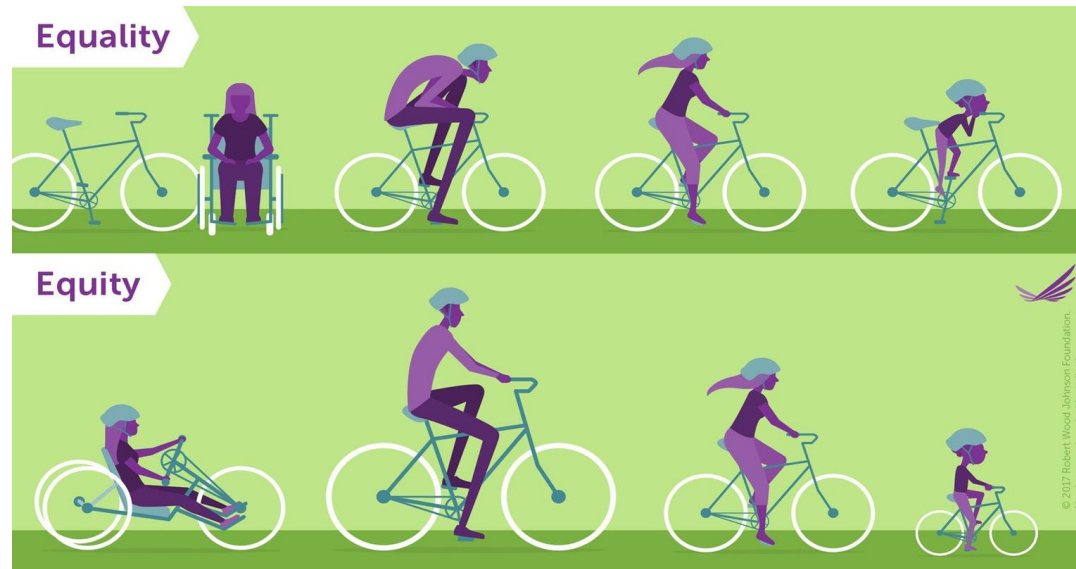


Final Thoughts

IF interventions don't attend to the dimensions of access

THEN some people are able to engage in the intervention more than others

WHICH MEANS health inequities are enabled & reinforced



Source: Robert Wood Johnson Foundation

Acknowledgements

I would like to thank Dr. Hebert-Beirne and Dr. Kennelly for their guidance throughout this project. And, to Elliot Luke for all your support!

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