

PRESENTATION OVERVIEW

- 1 Why the effort?
- 2 WFRC Story Map – data collection effort
- 3 About the data - a walk through urban design elements
- 4 The role of public space in supporting walkability



WHY THE EFFORT?

Current travel patterns highly auto-centric.

Travel behavior in Wasatch Front

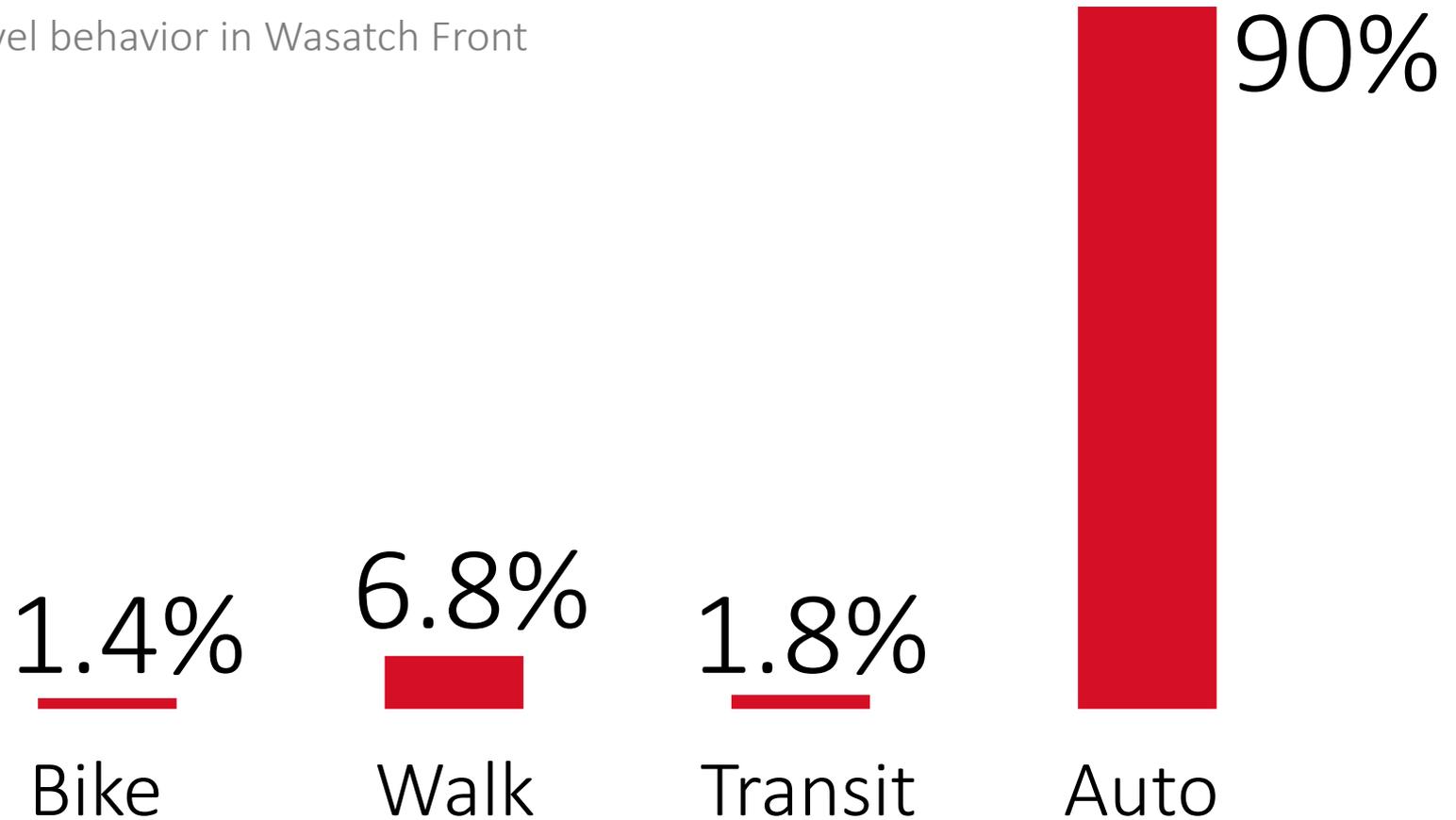




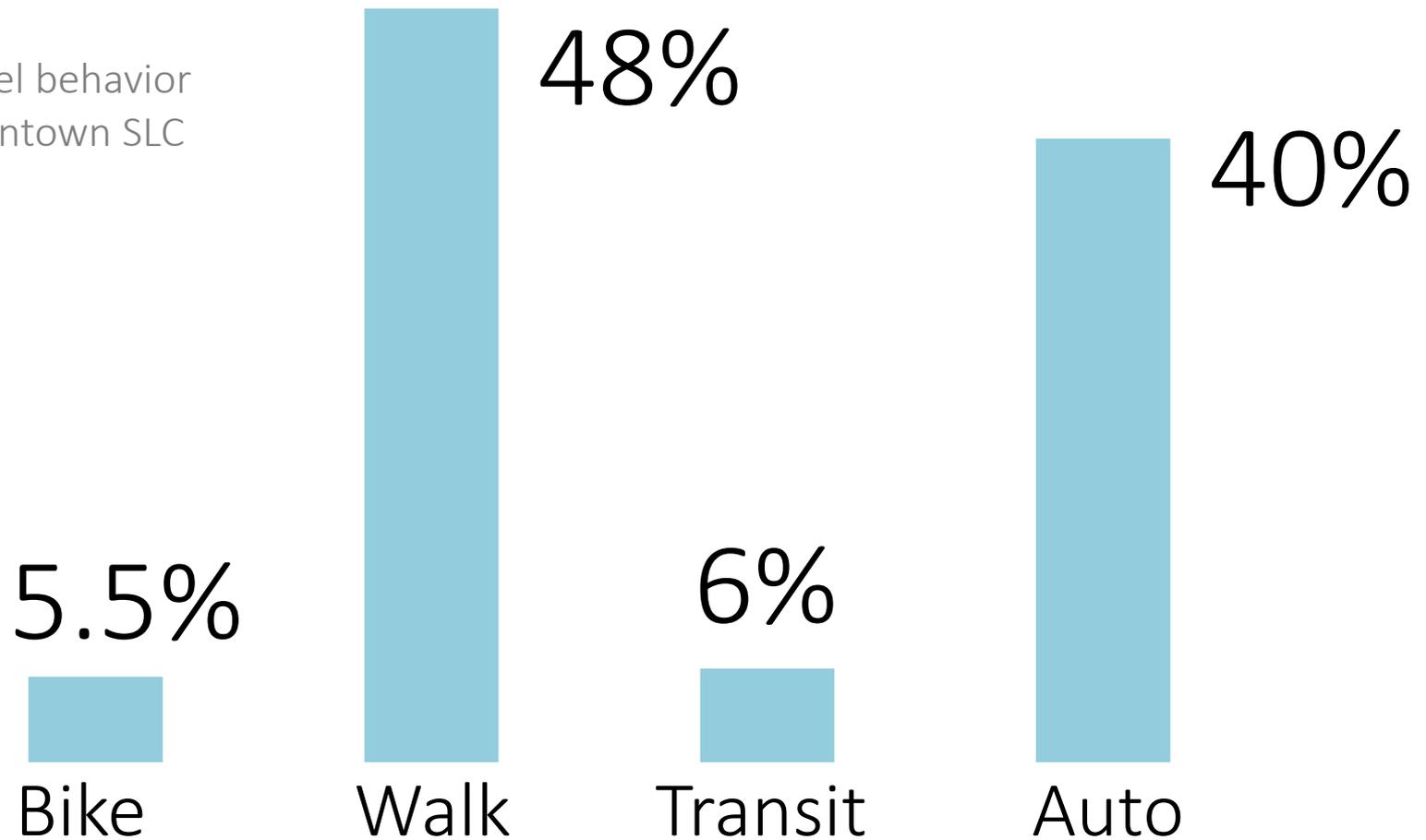
Image source: Phil Whitehouse/Flickr. <http://smartgrowth.org/how-urban-designers-can-get-smaller-cities-walking/>



WHY THE EFFORT?

...there are pockets of high walkability.

Travel behavior
downtown SLC





WHY THE EFFORT?

...there are pockets of high walkability.





WFRC STORY MAP

Data collection effort

2 Interns

5 Counties

2,000+ Man hours

1,200 Blocks across Wasatch Front with Urban Design score



WFRC STORY MAP

www.wfrc.org



WASATCH FRONT REGIONAL COUNCIL

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Home

Our region is among the fastest growing areas in America. The way we grow will largely determine the quality of life for generations to come. Through the Wasatch Front Regional Council (WFRC), local governments and community members from Salt Lake, Davis, Weber, Tooele, Morgan and Box Elder Counties in Utah come together to plan for our future.

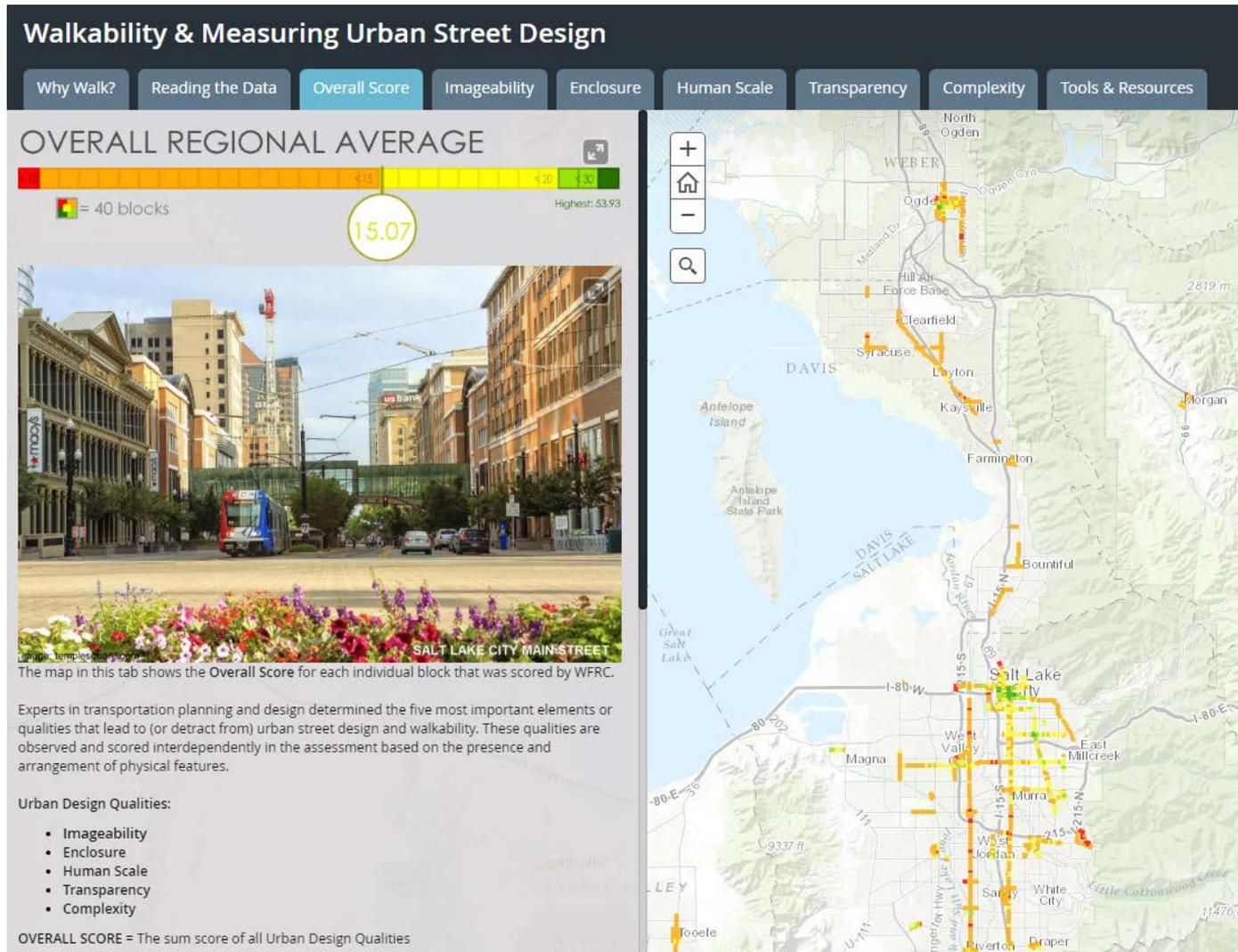


INTERACTIVE MAP GALLERY

SEARCH...

Search

WFRC STORY MAP





A WALK THROUGH THE ELEMENTS

Examples across the Wasatch Front

- 1 Imageability: 2300 E, Holladay | Score: 8.85 / 13.35
- 2 Enclosure: Main Street, Midvale | Score 3.56 / 4.16
- 3 Human Scale: 300 S., Salt Lake City | Score 12.88 / 20.40
- 4 Transparency: Main Street, Magna | Score 3.44 / 4.01
- 5 Complexity: 25th Street, Ogden | Score 15.76 / 15.76



A WALK THROUGH THE ELEMENTS

Examples across the Wasatch Front and Copenhagen

- 1 Imageability: 2300 E, Holladay | Score: 8.85 / 13.35
Kobenhavn Neighborhood
- 2 Enclosure: Main Street, Midvale | Score 3.56 / 4.16
Amagerbro Neighborhood
- 3 Human Scale: 300 S., Salt Lake City | Score 12.88 / 20.40
Nordrebro Neighborhood
- 4 Transparency: Main Street, Magna | Score 3.44 / 4.01
Christiana Neighborhood
- 5 Complexity: 25th Street, Ogden | Score 15.76 / 15.76
Nordrebro Neighborhood

A WALK THROUGH THE ELEMENTS

Imageability: 2300 E., Holladay | Score 8.85 / 13.35

Walkability & Measuring Urban Street Design

Why Walk? | Reading the Data | Overall Score | **Imageability** | Enclosure | Human Scale | Transparency | Complexity | Tools & Resources

IMAGEABILITY REGIONAL AVERAGE

40 blocks = 13.35 (Highest)

3.98

EXCHANGE PLACE PLAZA image: IBI Group

Imageability refers to the quality of a place that makes it distinct, recognizable, and memorable. A place has high imageability when physical elements capture attention, evoke feelings, and create a lasting impression.

A low score in Imageability could mean:

- Few buildings
- Vacant buildings / lots
- Lack of historic buildings
- Little to no public features

IMPROVING IMAGEABILITY

- Enhance / create public spaces such as parks, courtyards, and plazas
- Enhance natural landscape features
- Preserve historic and significant buildings
- Activate building vacancies
- Infill empty lots and parking lots to increase the number of buildings / businesses
- Encourage outdoor dining
- Decrease traffic and ambient noise where possible

Street Name	2300 E.
Start of Block	4630 S.
End of Block	Murray Holladay Rd.
Date Collected	11/2/2015
City	Holladay
County	Salt Lake
Overall Score	31.57
Imageability	8.85
Enclosure	2.09
Human Scale	8.10
Transparency	3.39
Complexity	9.16



A WALK THROUGH THE ELEMENTS

Imageability: 2300 E., Holladay





A WALK THROUGH THE ELEMENTS

Imageability: København Neighborhood



A WALK THROUGH THE ELEMENTS

Enclosure: Main Street, Midvale | Score 3.56 / 4.16

Walkability & Measuring Urban Street Design



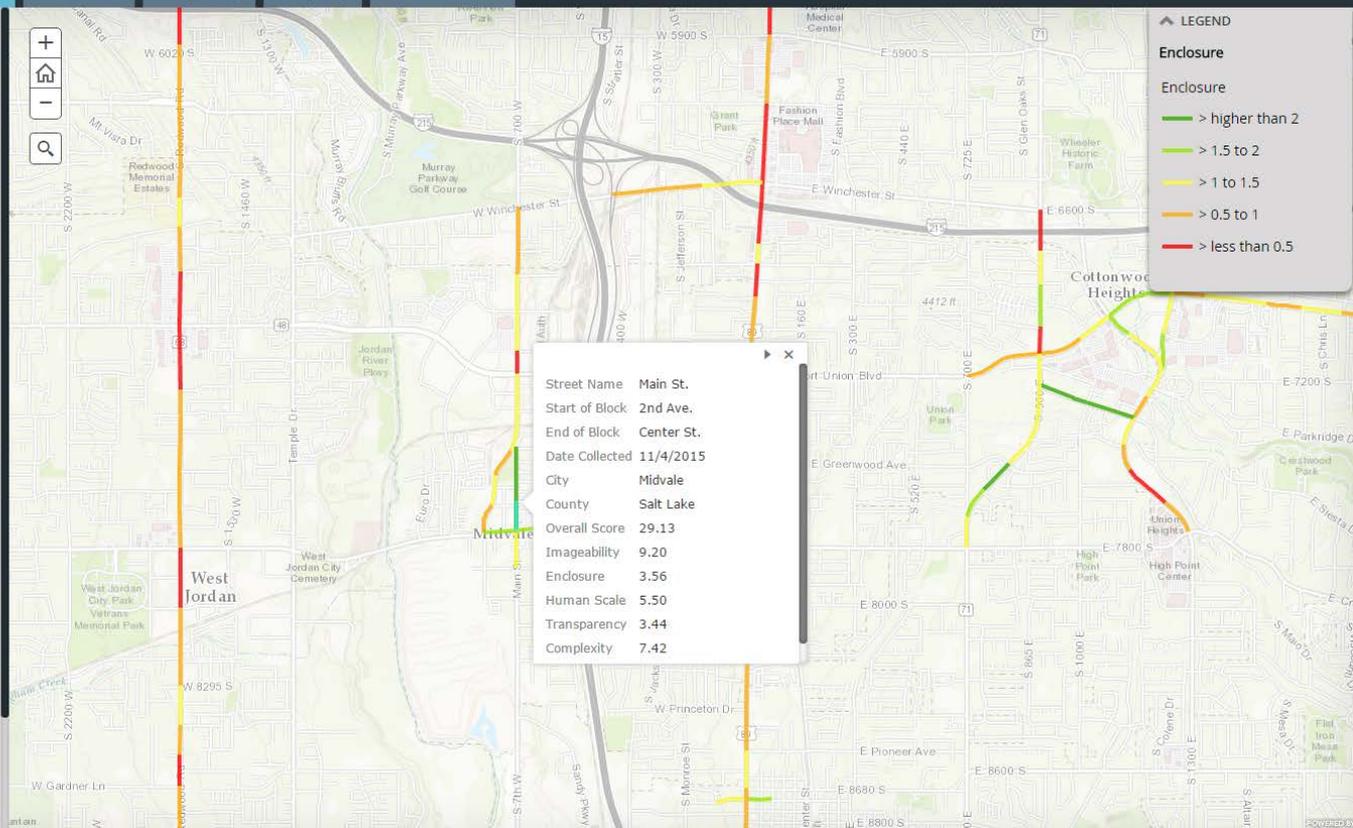
- Why Walk?
- Reading the Data
- Overall Score
- Imageability
- Enclosure
- Human Scale
- Transparency
- Complexity
- Tools & Resources



Enclosure refers to the degree to which streets and other public spaces are visually defined by buildings, walls, trees, and other elements. Enclosed spaces create a room-like quality and a safe feeling for pedestrians which encourages walking.

- A low score in Enclosure could mean:
- Lack of street wall
 - Building setbacks away from sidewalk
 - Lack of tree canopy
 - Open or vacant lots, including parking
 - Wide open streets with short buildings

- #### IMPROVING ENCLOSURE
- Increase building frontage right up to sidewalk
 - Decrease building setback requirements
 - Walls instead of fences
 - Create an overhead canopy by adding trees
 - Preserve mature tree canopies that take decades to grow
 - Infill parking & vacant lots that create a feeling of being out in the open





A WALK THROUGH THE ELEMENTS

Enclosure: Main Street, Midvale | Score 3.56 / 4.16





A WALK THROUGH THE ELEMENTS

Enclosure: Amagerbro Neighborhood





A WALK THROUGH THE ELEMENTS

Human Scale: 300 S., Salt Lake City | Score 12.88 / 20.44

Walkability & Measuring Urban Street Design

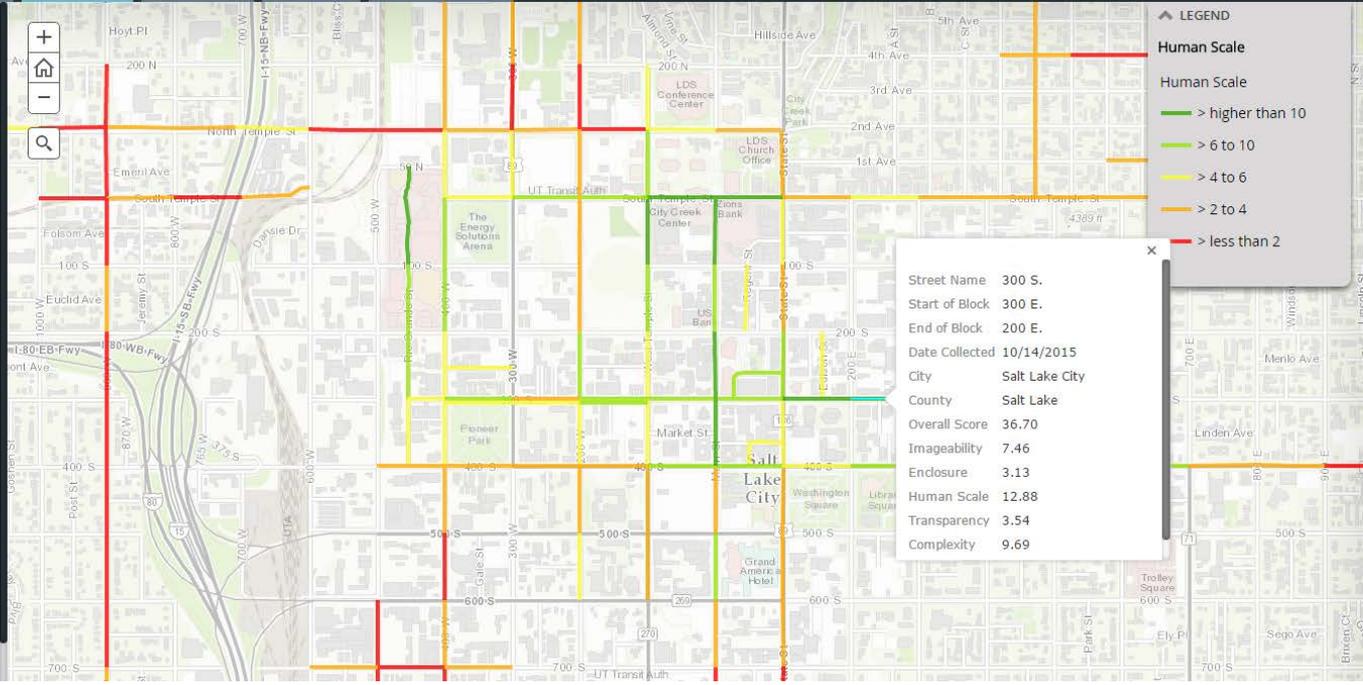


- Why Walk?
- Reading the Data
- Overall Score
- Imageability
- Enclosure
- Human Scale**
- Transparency
- Complexity
- Tools & Resources



Human scale refers to the size, texture, and articulation of physical elements that match the size and proportions of humans and the speed at which humans walk. Architectural features, pavement texture, street trees, and street furniture are all physical elements contributing to human scale. A pedestrian feels comfortable and welcome in a space high in human scale.

- A low score in Human Scale could mean:
- Open space and views
 - Lack of storefront windows
 - Lack of street furniture, objects, and architectural features





A WALK THROUGH THE ELEMENTS

Human Scale: 300 S., Salt Lake City | Score 12.88 / 20.44





A WALK THROUGH THE ELEMENTS

Human Scale: Norrebro Neighborhood





A WALK THROUGH THE ELEMENTS

Transparency: Main Street, Magna | Score 3.44 / 4.01

Walkability & Measuring Urban Street Design

Why Walk? Reading the Data Overall Score Imageability Enclosure Human Scale **Transparency** Complexity Tools & Resources

TRANSPARENCY REGIONAL AVERAGE

40 blocks = **2.31** Highest: 4.01

BROADWAY, SALT LAKE CITY

Transparency refers to the degree to which people can see or perceive human activity beyond the edge of a street or other public space. Physical elements that influence transparency include windows, doors, gates, walls, fences, landscaping, and openings into midblock spaces. That quality of transparency invites exploration.

A low score in Transparency could mean:

- Lack of storefront windows
- Reflective or tinted glass
- Inactive space (vacant buildings or lots)
- Lack of continuous streetwall ahead beyond the block

IMPROVING TRANSPARENCY

Street Name	Main St.
Start of Block	8900 W.
End of Block	9000 W.
Date Collected	10/29/2015
City	Magna
County	Salt Lake
Overall Score	23.70
Imageability	5.29
Enclosure	2.95
Human Scale	4.90
Transparency	3.44
Complexity	7.13

LEGEND

Transparency

- > higher than 3.3
- > 2.8 to 3.3
- > 2.4 to 2.8
- > 2 to 2.4
- > less than 2



A WALK THROUGH THE ELEMENTS

Transparency: Main Street, Magna | Score 3.44 / 4.01





A WALK THROUGH THE ELEMENTS

Transparency: Christiana Neighborhood





A WALK THROUGH THE ELEMENTS

Complexity: 25th Street, Ogden | Score 15.76 / 15.76

Walkability & Measuring Urban Street Design



- Why Walk?
- Reading the Data
- Overall Score
- Imageability
- Enclosure
- Human Scale
- Transparency
- Complexity**
- Tools & Resources

COMPLEXITY REGIONAL AVERAGE

5.32

Highest: 15.76

MONUMENT PLAZA, SUGAR HOUSE

Complexity refers to the visual richness of a place. The complexity of a place depends on the variety of the physical environment, specifically the numbers and kinds of buildings, colors, architectural diversity, landscape elements, public art, signage, and the presence of other people. A complex environment is enjoyable for the senses.

A low score in complexity could mean:

- Lack of variety in architecture and color
- Too few buildings in view
- Street objects not complex or interesting

Street Name	25th Street
Start of Block	Grant Ave.
End of Block	Lincoln Ave.
Date Collected	11/23/2015
City	Ogden
County	Weber
Overall Score	43.80
Imageability	12.84
Enclosure	2.85
Human Scale	8.58
Transparency	3.77
Complexity	15.76

LEGEND

Complexity

- > higher than 9
- > 7 to 9
- > 5.5 to 7
- > 4.5 to 5.5
- > less than 4.5



A WALK THROUGH THE ELEMENTS

Complexity: 25th Street, Ogden | Score 15.76 / 15.76





A WALK THROUGH THE ELEMENTS

Complexity: Norrebro Neighborhood



THE ROLE OF PUBLIC SPACE

“Walkability is **more** than about density, street-level retail, or any one design quality in isolation.”

-Laura Bliss, “How Urban Designers Can Get Smaller Cities Walking”

THE ROLE OF PUBLIC SPACE



THE ROLE OF PUBLIC SPACE



THE ROLE OF PUBLIC SPACE



THE ROLE OF PUBLIC SPACE



THE ROLE OF PUBLIC SPACE



THE ROLE OF PUBLIC SPACE



A Sidewalk Isn't Enough: Relearning How to Design for 3 mph | WC2050 Consortium
Image source: #saltlakefarmersmarket @sarcastickristin

Thank you!

callie@wfrc.org

A SIDEWALK ISN'T ENOUGH



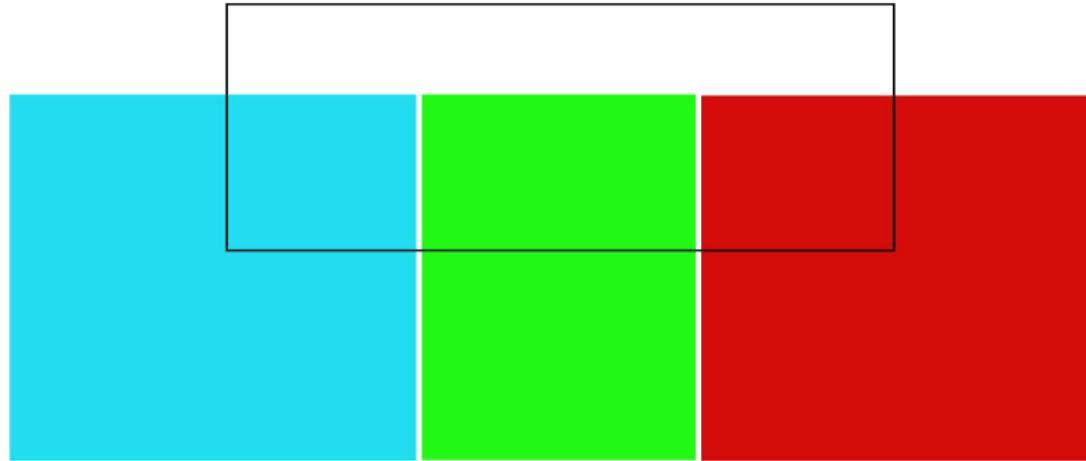
DESIGNING FOR 3 MPH



Urban Design Qualities for Street Design + Walkability:

Imageability
Enclosure
Human Scale
Transparency
Complexity
+
Continuity

DESIGN ISSUE



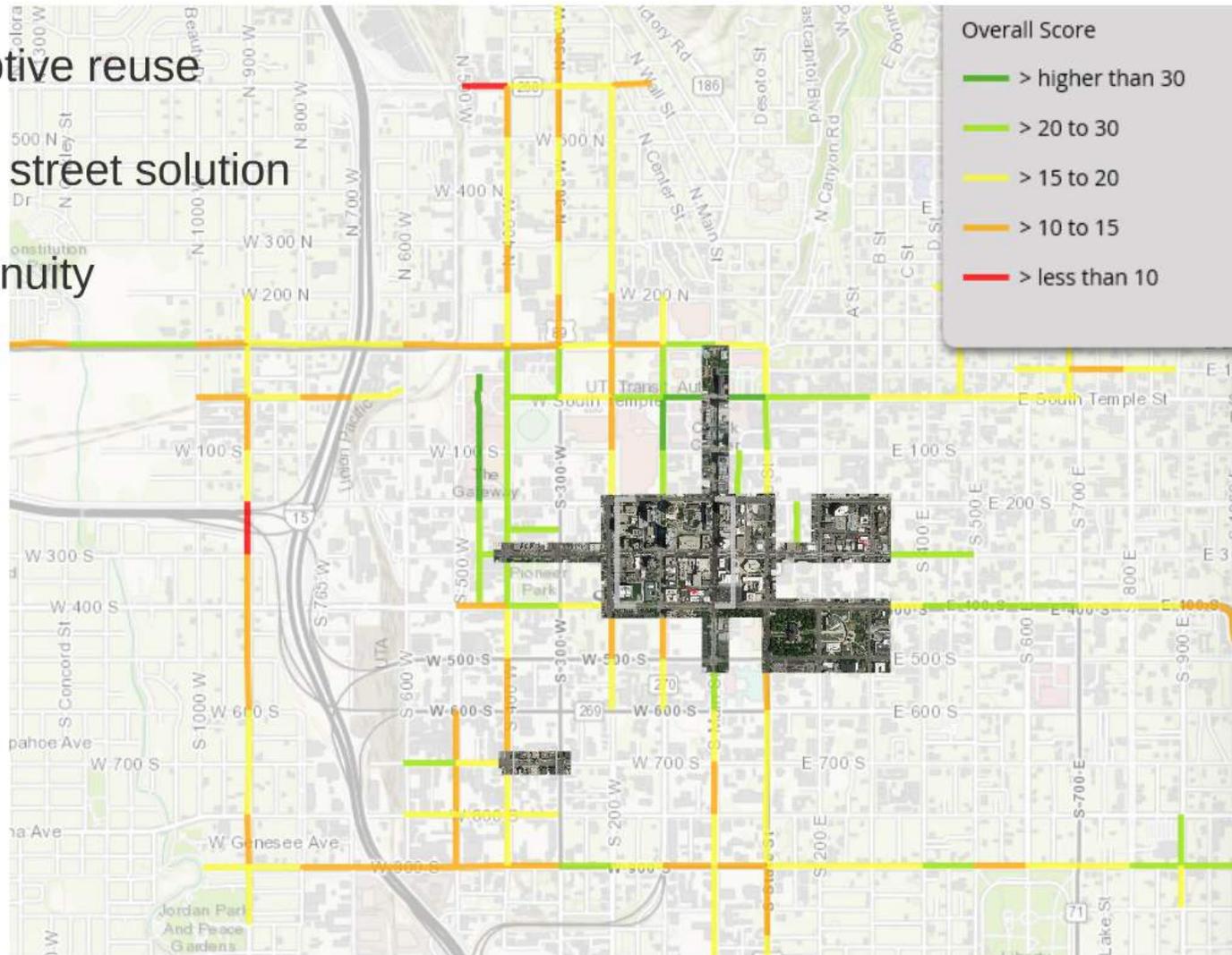
collaborative process | design solution

urban design qualities

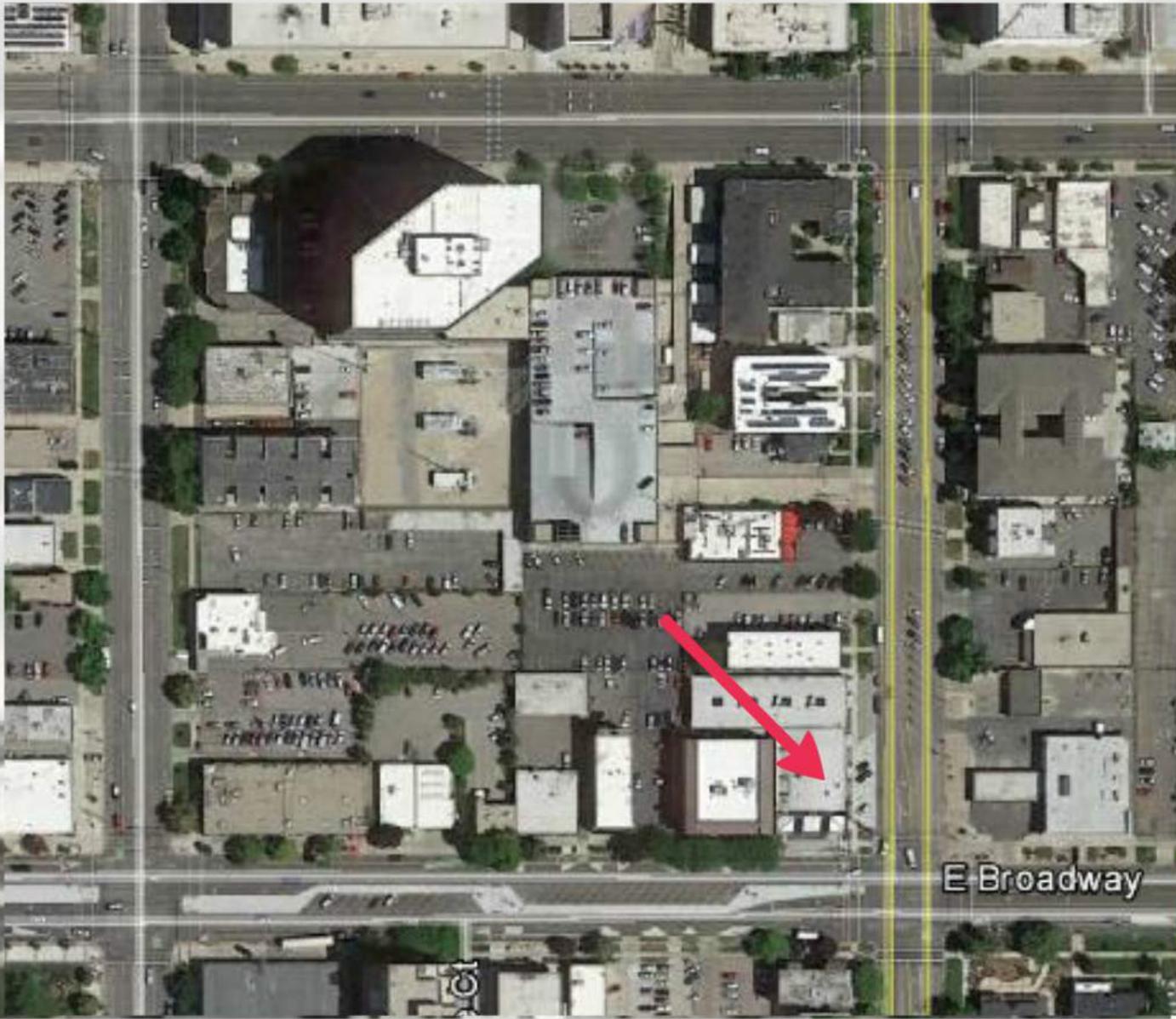
adaptive reuse

wide street solution

continuity



street design + walkability



E Broadway



complexity



imageability



human scale



enclosure

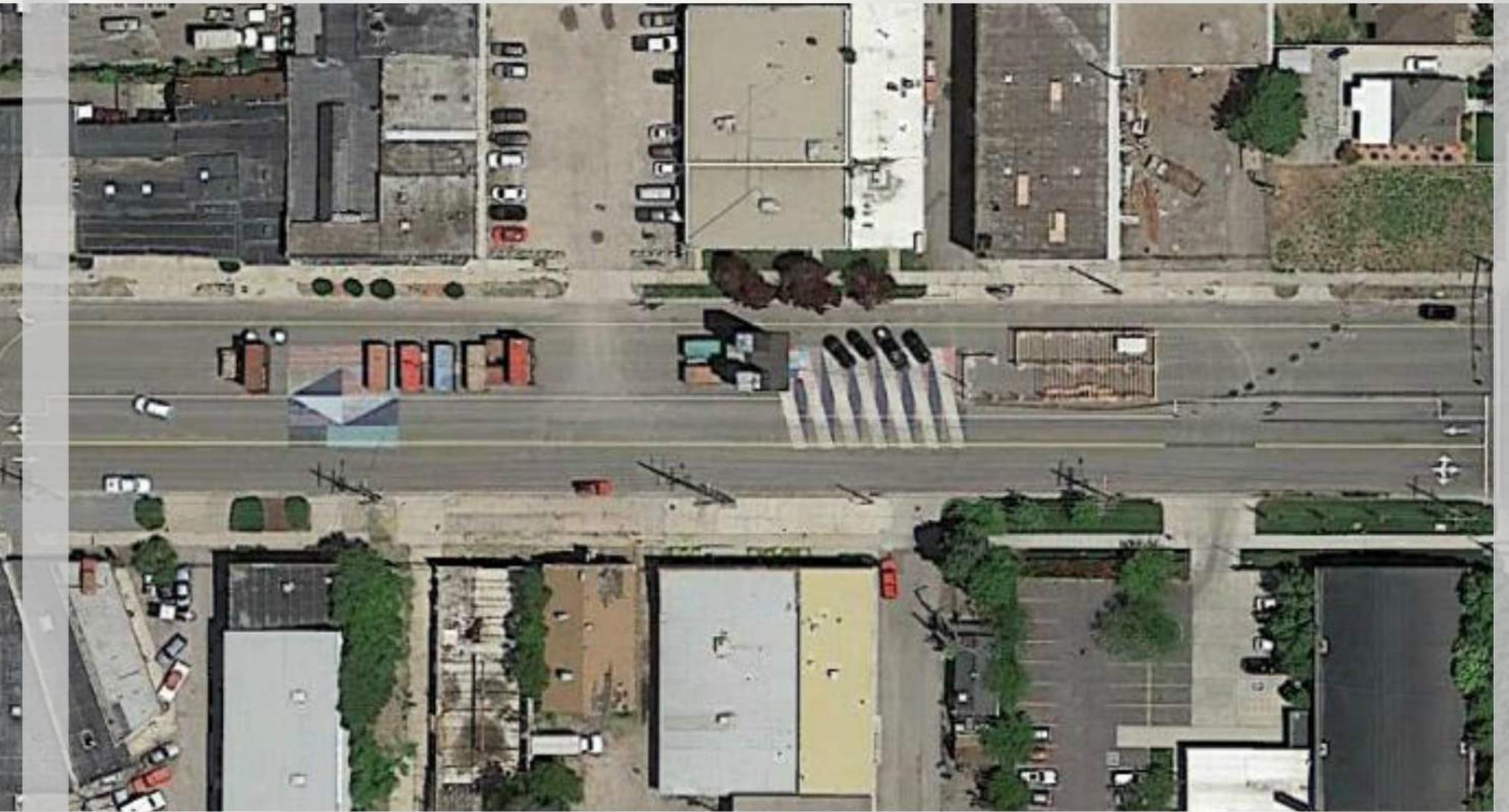
current

transparency

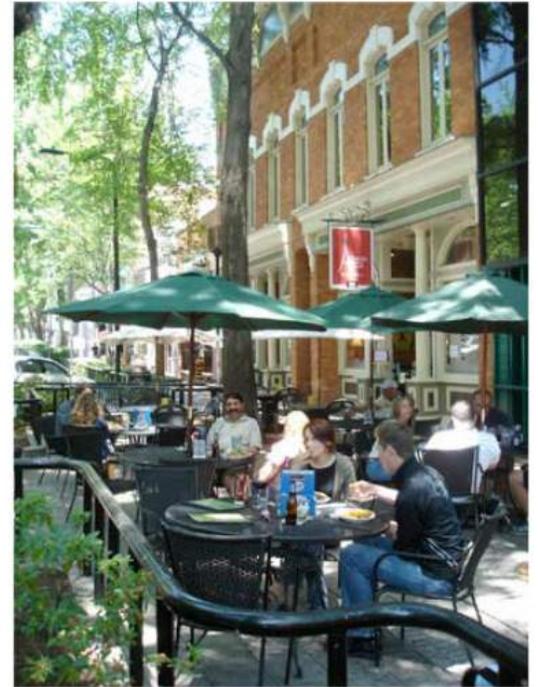
















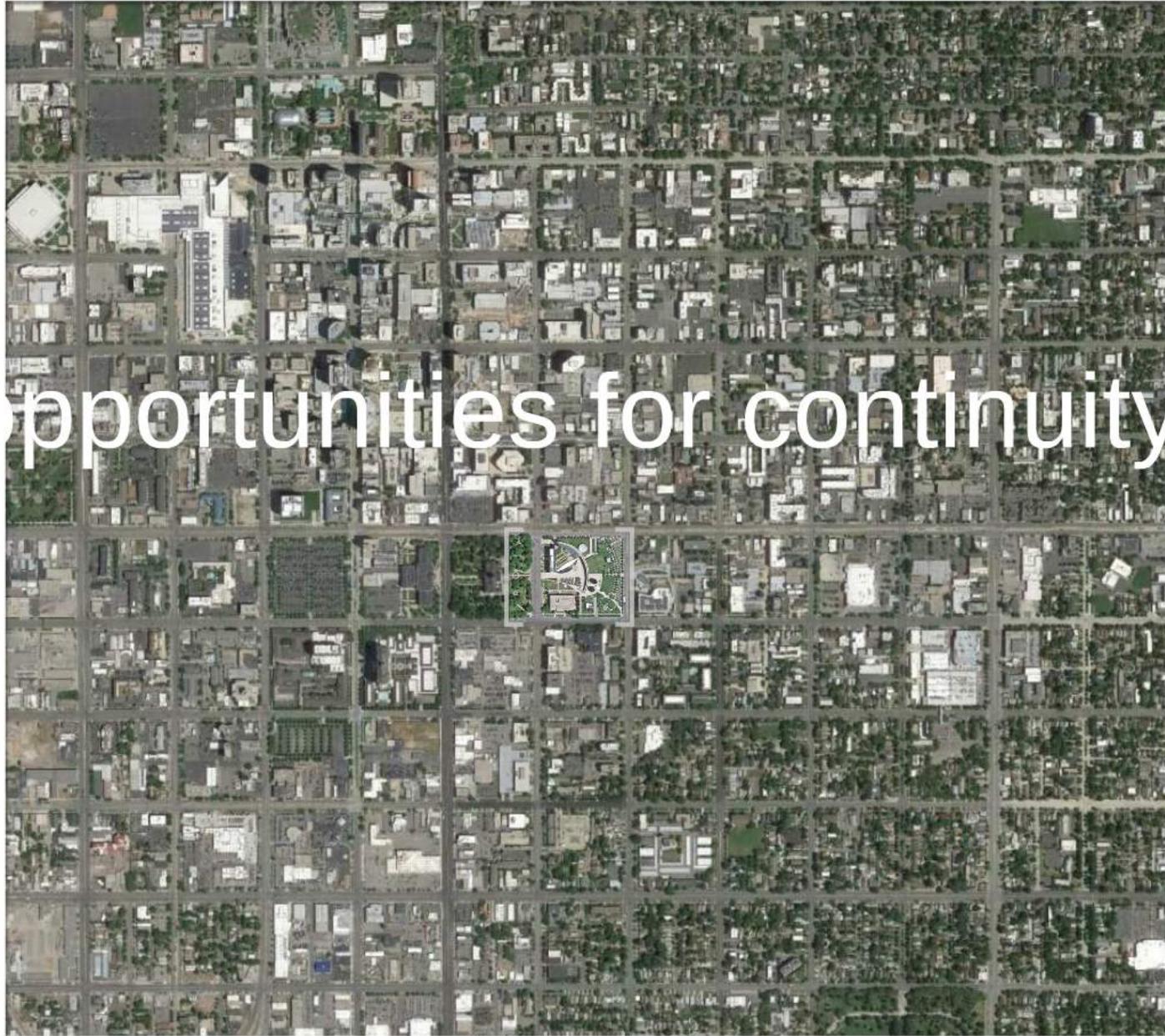












opportunities for continuity



Prezi

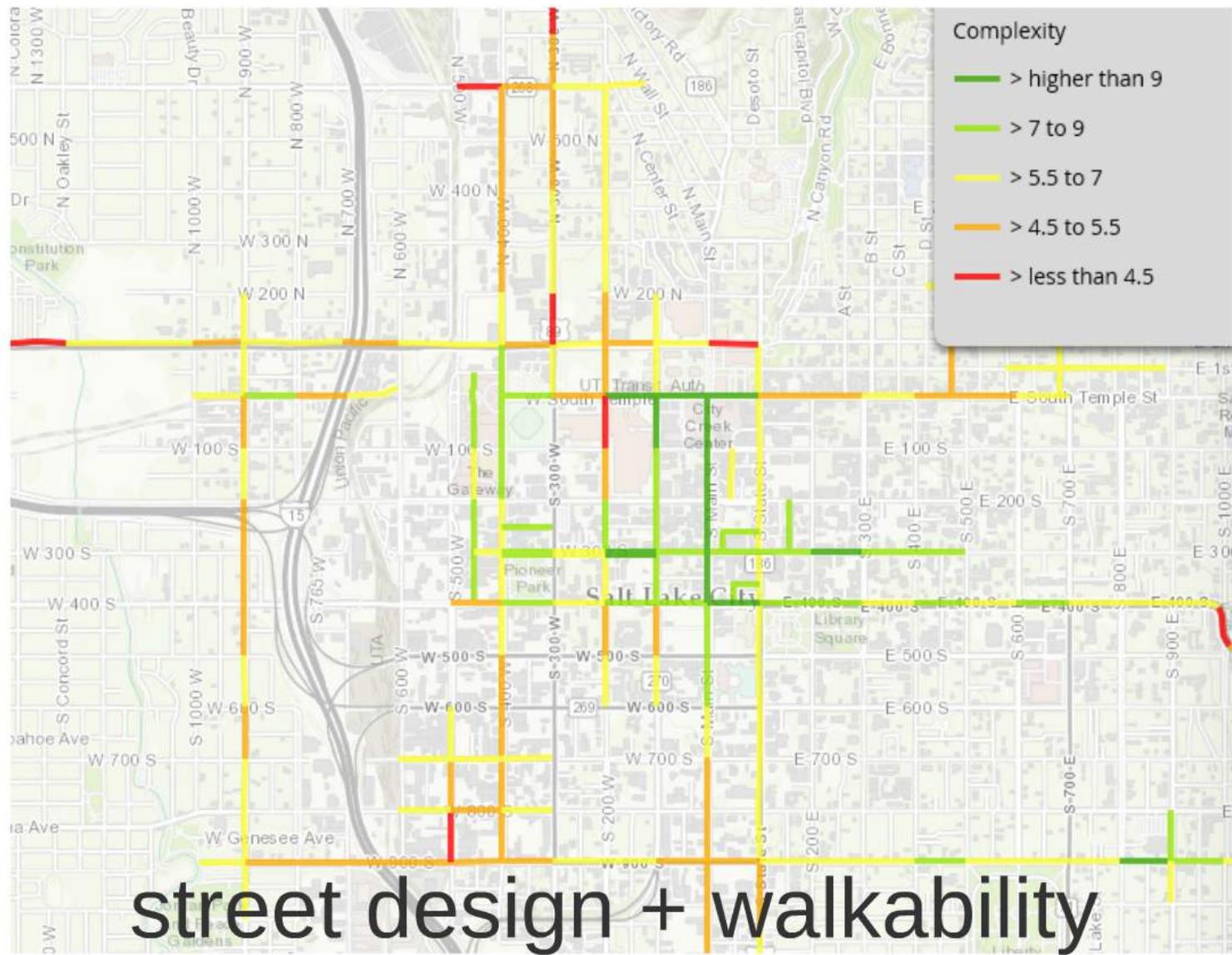






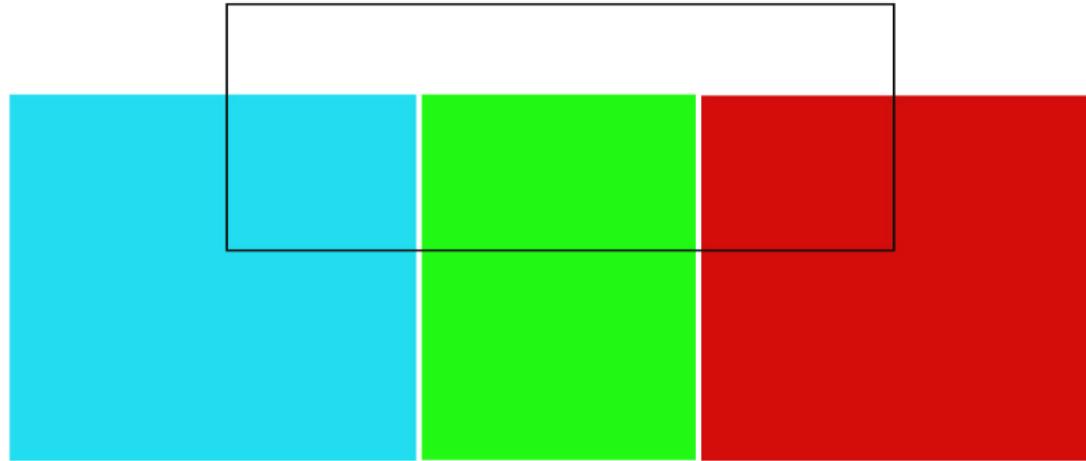








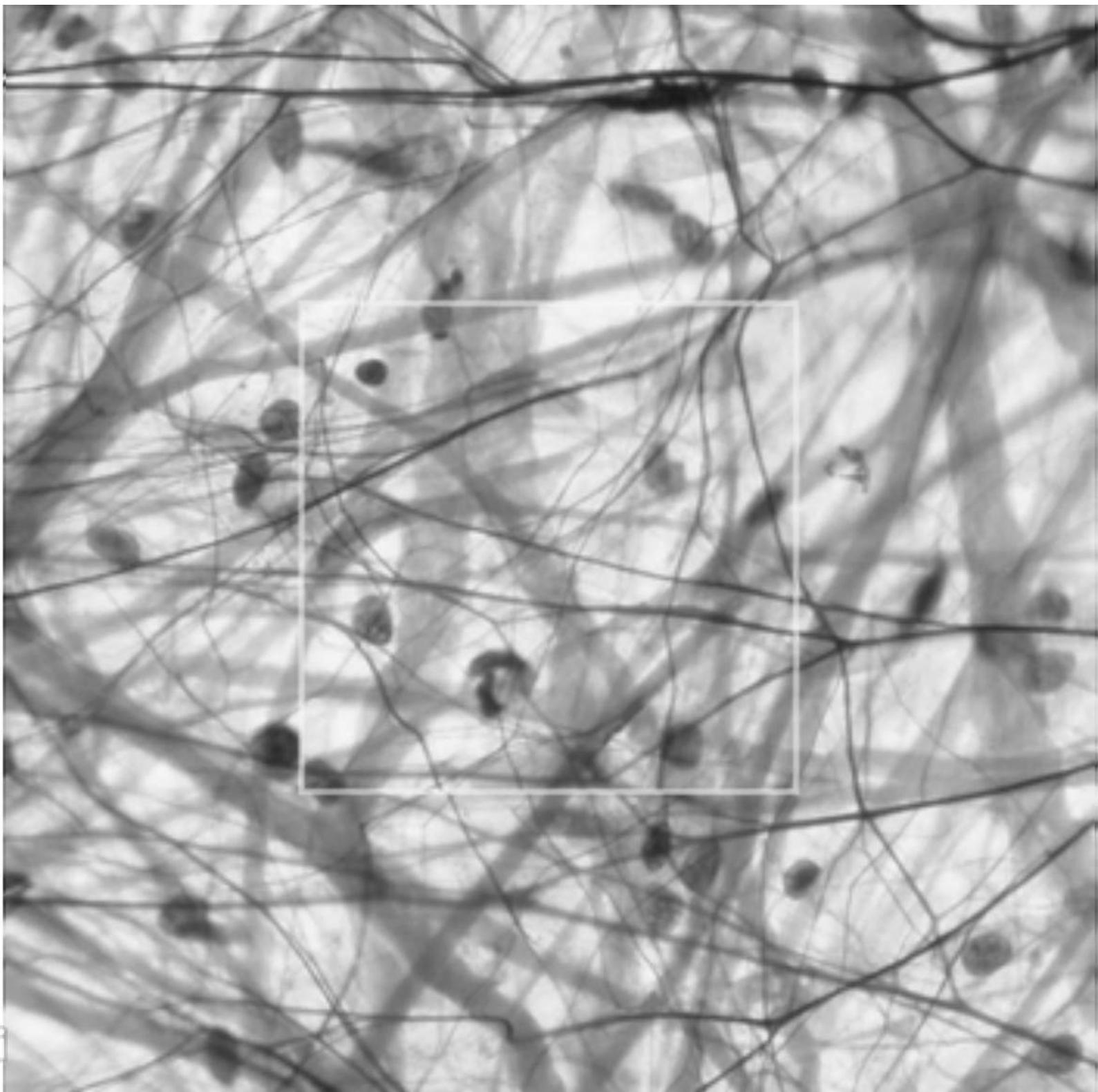
DESIGN ISSUE



collaborative process | design solution

Urban Design Qualities for Street Design + Walkability:

Imageability
Enclosure
Human Scale
Transparency
Complexity
+
Continuity



Measuring Urban Design Qualities Related to Walkability

***Reid Ewing
Department of City and Metropolitan
Planning
University of Utah***

Growing Body of Evidence

SPECIAL REPORT 282

Does the Built Environment Influence Physical Activity?

Examining the Evidence

TRANSPORTATION RESEARCH BOARD
INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

The Ds of the Built Environment

- ***Density***
- ***Diversity***
- ***Design***
- ***Destination Accessibility***
- ***Distance to Transit***
- ***Development Scale***
- ***Demand Management***

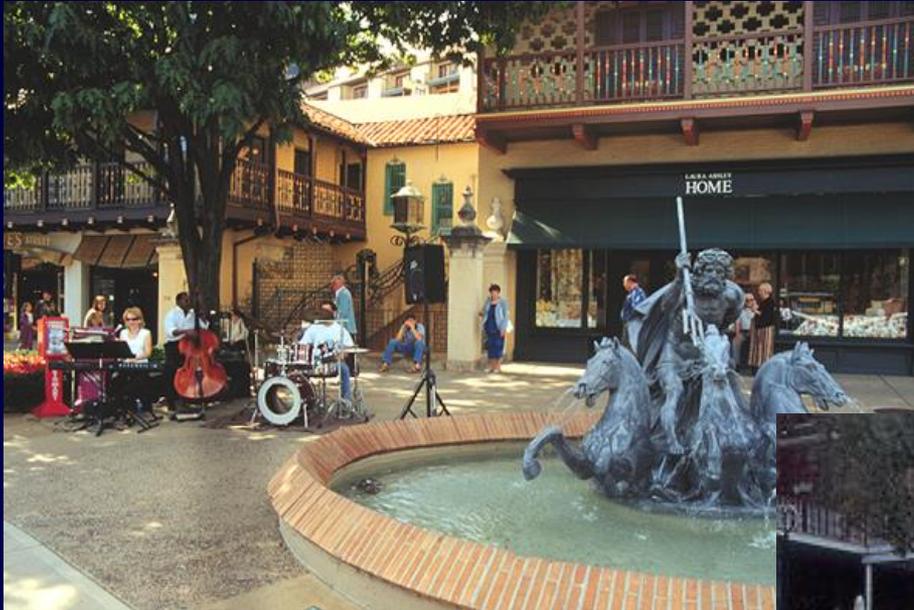
***Not a Lot to Do with Experience of
Walking Down a Street***

Genesis of Project

- ***Jane Jacobs, Death and Life of Great American Cities***
- ***Christopher Alexander, A Pattern Language - Towns Buildings Construction***
- ***Richard Hedman, Fundamentals of Urban Design***
- ***Allan Jacobs, Great Streets***
- ***Kevin Lynch, The Image of the City***
- ***William H. Whyte, City—Rediscovering the Center***

Imageability is the quality of a place that makes it distinct, recognizable, and memorable. A place has high imageability when specific physical elements and their arrangement capture attention, evoke feelings, and create a lasting impression.

All Five Senses



Enclosure refers to the degree to which streets and other public spaces are visually defined by buildings, walls, trees, and other vertical elements. Spaces where the height of vertical elements is proportionally related to the width of the space between them have a room-like quality.

Visual Enclosure



Too Low and Too High (Maybe)



Transparency refers to the degree to which people can see or perceive what lies beyond the edge of a street or other public space and, more specifically, the degree to which people can see or perceive human activity beyond the edge. Physical elements that influence transparency include walls, windows, doors, fences, landscaping, and openings into midblock spaces.

Transparency



Study in Contrasts



Human scale refers to the size, texture, and articulation of physical elements that match the size and proportions of humans and, equally important, correspond to the speed at which humans walk. Building details, pavement texture, street trees, and street furniture all contribute to human scale.

Buildings



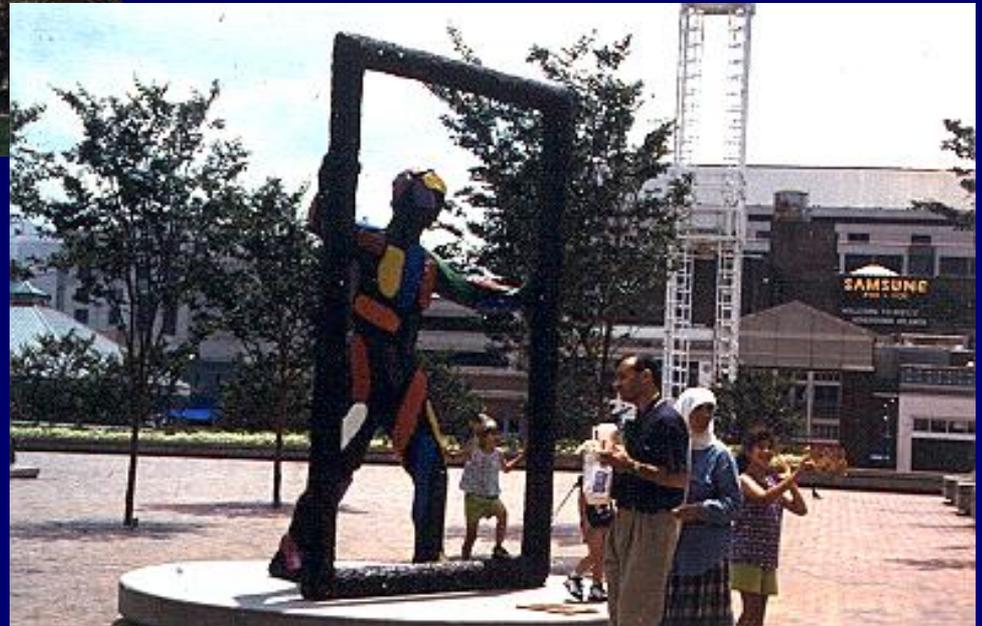
Signage



Parking

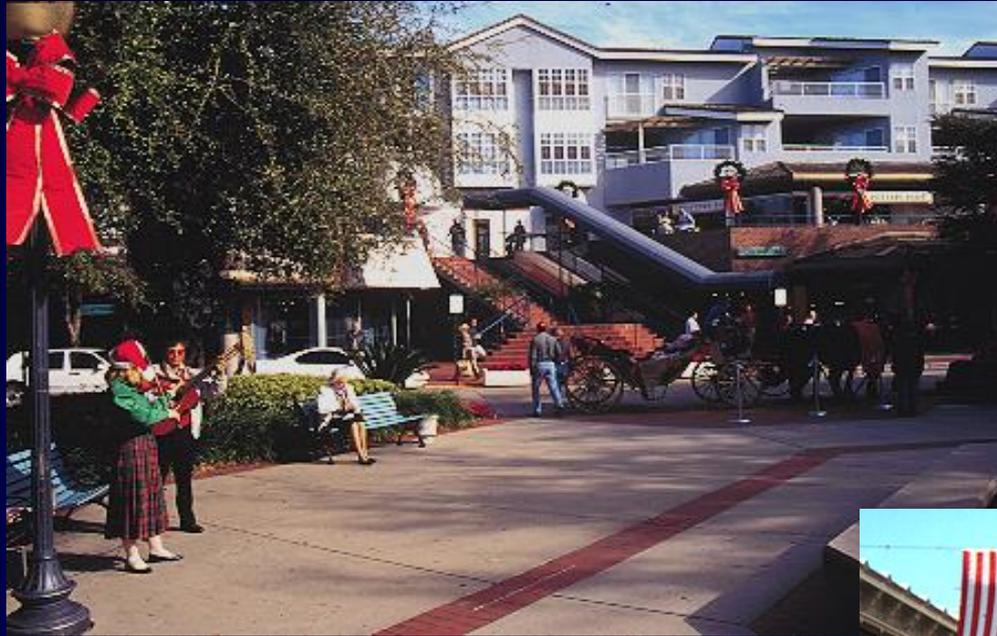


Public Art



Complexity refers to the visual richness of a place. The complexity of a place depends on the variety of the physical environment, specifically the numbers and kinds of buildings, architectural diversity and ornamentation, landscape elements, street furniture, signage, and human activity.

Complexity



But Coherent and Orderly



Work Plan

- ***Expert Panel***
- ***Literature Review with Definitions***
- ***Library of Video Clips***
- ***Visual Assessment Survey***
- ***Quantitative and Qualitative Analyses***
- ***Instrument Development, Testing, and Training***
- ***Illustrated Field Manual***

Perceptual Qualities

41 qualities



8 qualities

- ***Imageability***
- ***Enclosure***
- ***Human Scale***
- ***Transparency***
- ***Linkage***
- ***Complexity***
- ***Coherence***
- ***Legibility***

Expert Panel Ratings



Best Match Run

High Values of All Eight Qualities



Best Match Run

***High Values of Enclosure, Transparency,
Complexity, and Coherence***



Best Match Run

Low Values of All Qualities



Best-Fit Transparency Model

Variable	Coefficient	t- statistic	p- value
constant	1.709		
proportion first floor with windows	1.219	3.13	0.002
proportion active uses	0.533	2.96	0.004
proportion street wall – same side	0.666	2.57	0.011
Proportion of Scene Variance Explained	0.62		
Proportion of Total Variance Explained	0.32		

Field Manual

Focuses on Urban Design Qualities that Meet Performance Criteria

- Imageability***
- Enclosure***
- Transparency***
- Human scale***
- Complexity***

Qualitative Introduction to Urban Design Quality

imageability

Imageability is the quality of a place that makes it distinct, recognizable, and memorable. A place has high imageability when specific physical elements and their arrangement capture attention, evoke feelings, and create a lasting impression.

What do the experts say?

"generic places with no character have no imageability"

"really imageable places are recognizable and memorable"

"distinct views can make an otherwise ordinary place very imageable"

"architecture that suggests importance, presence of historical buildings, and landmarks"

"is the place unique?"

Streets filled with people, many signs to draw pedestrians, and strong landmarks make Times Square in New York City a very imageable place.

HIGH IMAGEABILITY



Few pedestrians, no street activity like outdoor dining, and no features that serve as landmarks make this street hardly distinguishable from others and thus not that imageable.

LOW IMAGEABILITY



Detailed Illustrated Steps

measuring imageability

5. count buildings with non-rectangular shapes

Step 1

Walk entire length of study area (1 block or approximately... feet)

Step 2

As you walk, note buildings whose shape is not a simple rectangular box. on either side of the street.

Note:

Consider a non-rectangular building to be any building that from any angle is not a simple rectangle. Buildings with a basically rectangular shape but have a pitched roof or ornamental trim will be considered as non-rectangular. Use the figures to familiarize yourself with the concept.

Step 3

Record the number of buildings that have a non-rectangular shape.

(a) 1 non-rectangular building

The building trim on the left most building does enough to deviate the otherwise rectangular building to non-rectangular.

(b) 2 non-rectangular buildings

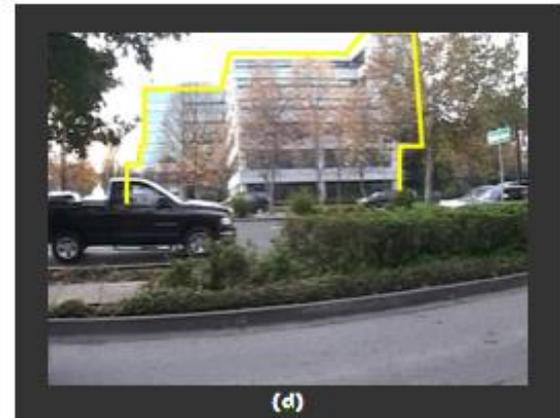
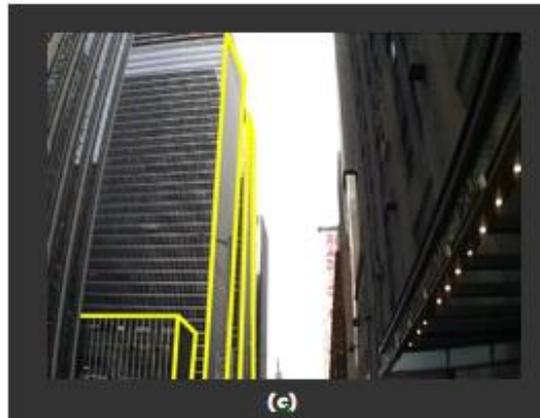
The pitched roofs and chimneys make the two left most buildings non-rectangular.

(c) 3 rectangular buildings

These modern skyscrapers all have simple rectangular shapes.

(d) 1 non-rectangular building

While the office park building shown does not have any curved edges and is comprised of all right angles, it does not have a simple box shape.



Columbia U Follow-Up

- ***More Complete and Tested Field Manual***
- ***Rating of 588 Street Segments in NYC***
- ***Translation to GIS Based System***
- ***Relationship to BMI***

NB Regression with Urban Design Variables

Parameter Estimates							
Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-4.858	.5219	-5.881	-3.835	86.655	1	.000
far	.149	.0284	.093	.205	27.441	1	.000
entropy	.651	.3243	.015	1.286	4.026	1	.045
intden	-.002	.0005	-.003	-.001	9.953	1	.002
walkscore	.030	.0054	.020	.041	31.147	1	.000
length	7.623	1.6103	4.467	10.780	22.412	1	.000
imageabilityall	.129	.0794	-.026	.285	2.655	1	.103
enclosure	-.079	.0705	-.217	.059	1.253	1	.263
humanscale	-.092	.0677	-.225	.041	1.849	1	.174
transparency	1.075	.1209	.838	1.312	79.051	1	.000
complexityall	-.045	.0737	-.189	.100	.370	1	.543
(Scale)	1 ^a						
(Negative binomial)	1						

Dependent Variable: pedcount

Model: (Intercept), far, entropy, intden, walkscore, length, imageabilityall, enclosure, humanscale, transparency, complexityall

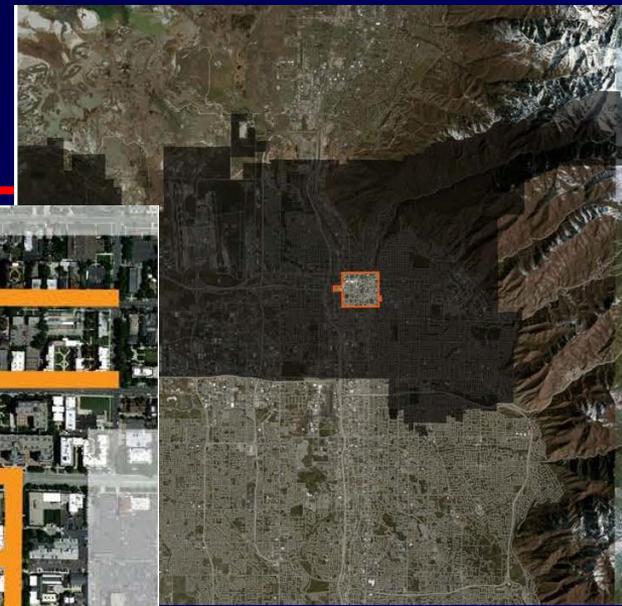
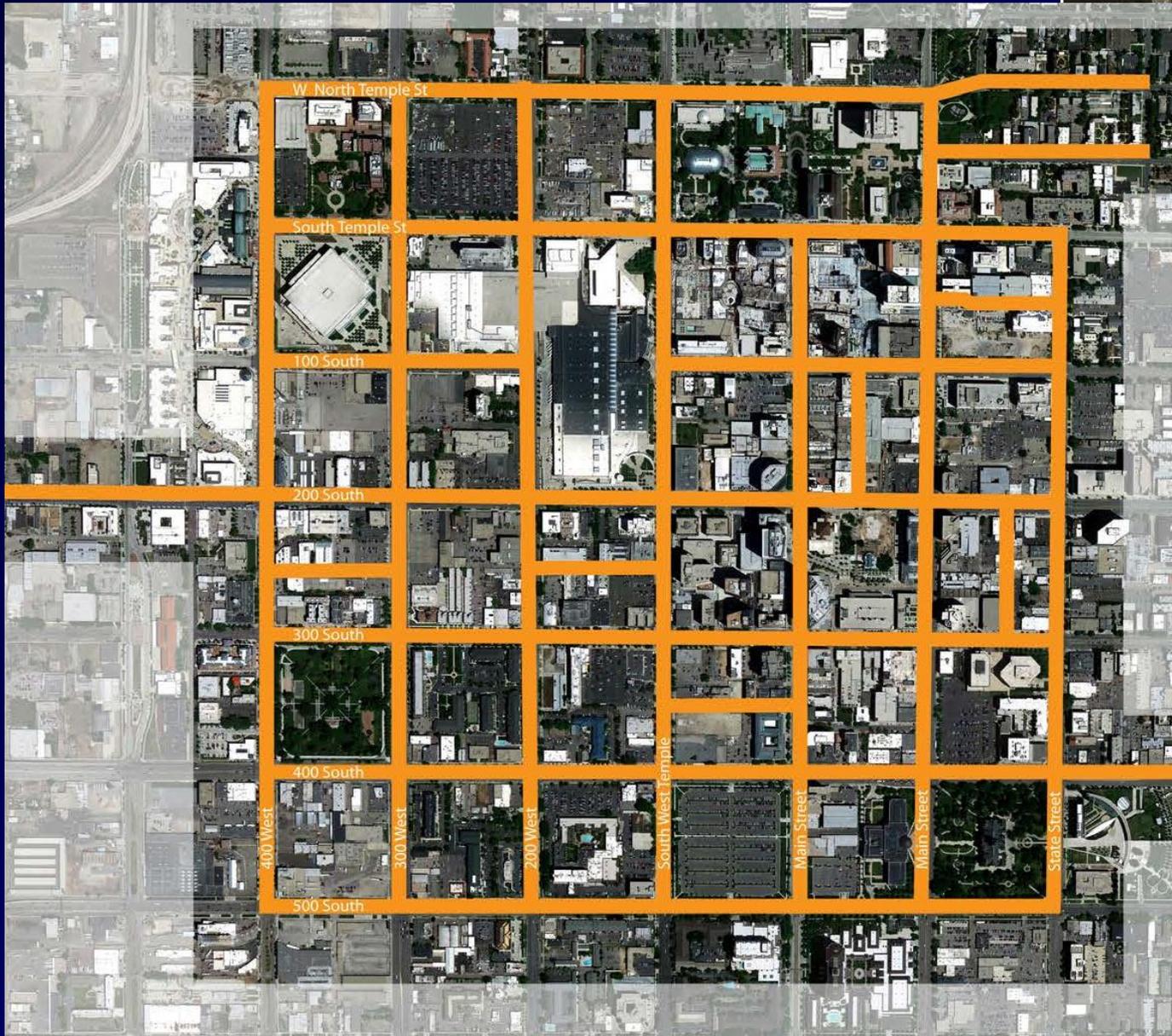
a. Fixed at the displayed value.

Measuring Urban Design

Salt Lake City Study



Study Area



*Downtown 'Free Fare Zone' (FFZ)
Salt Lake City, UT*

179 block faces

Outcome variable: Pedestrian activity

The number of people encountered over a 30 minutes time period for a given block face during peak hours for a 'typical' weekday (September and October of 2012)

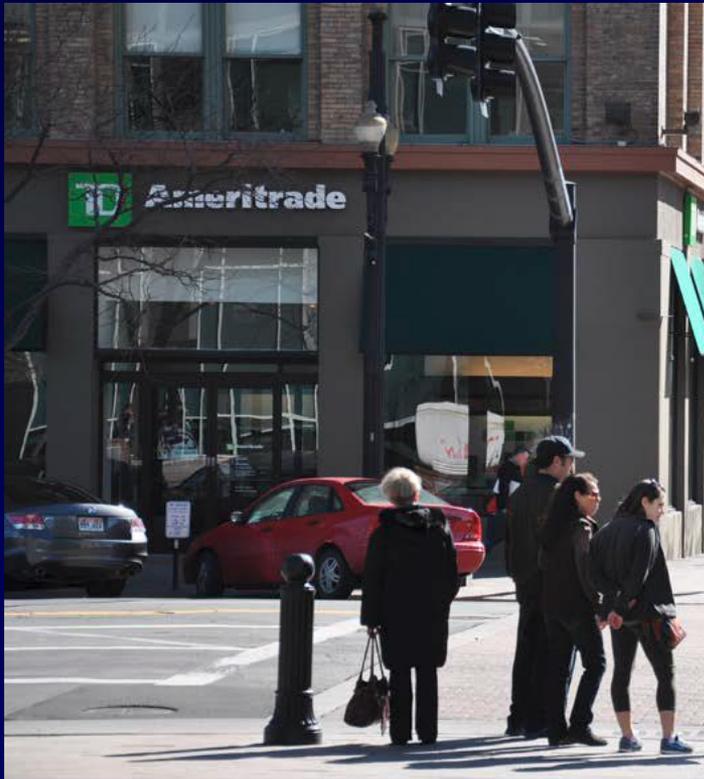
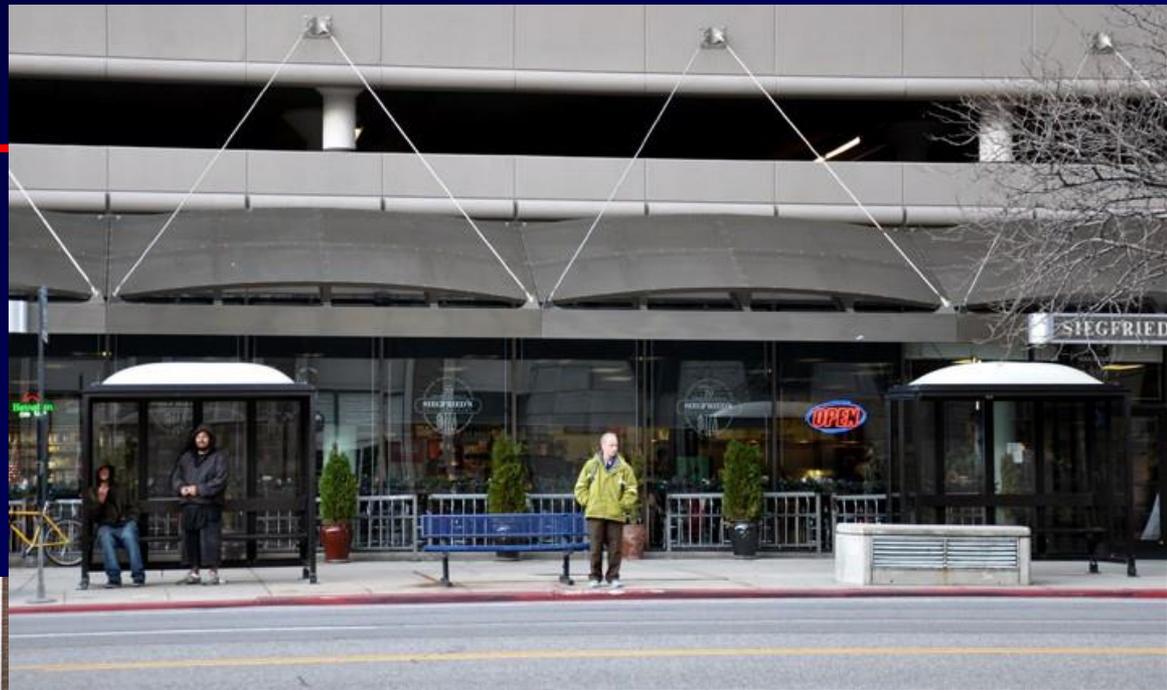


Imageability



262 S Main St

Human Scale



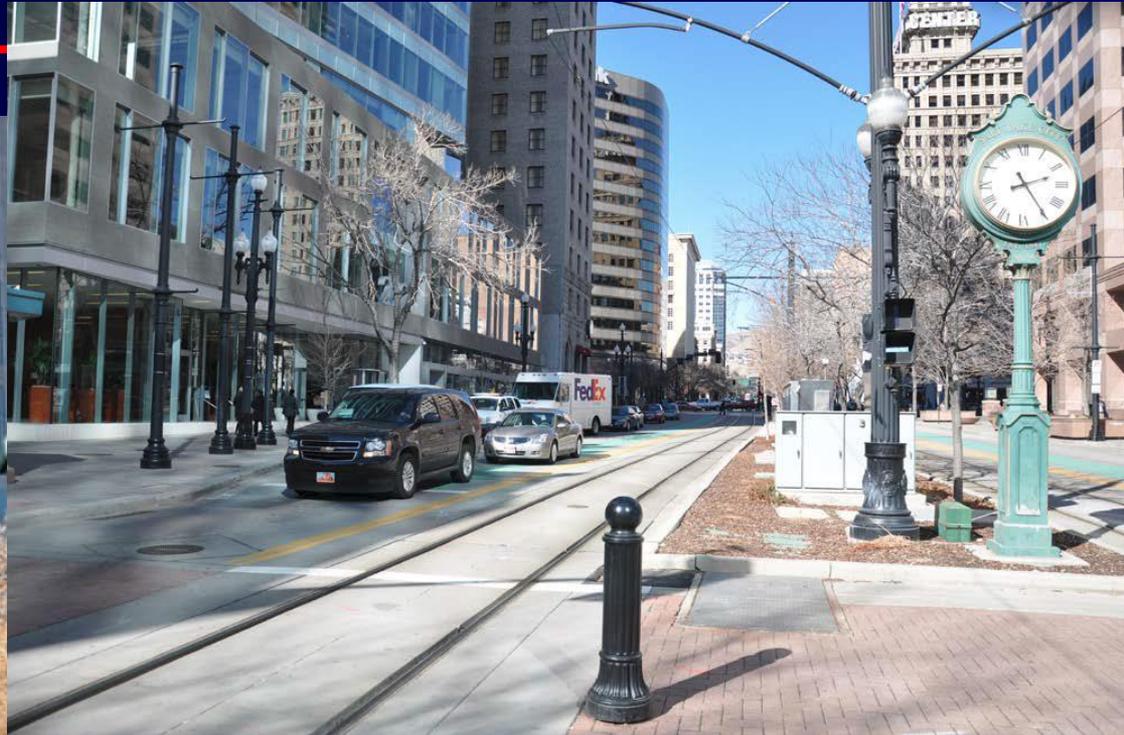
32 W 200 S

2 E Broadway

Enclosure



311 S Main St



245 S Main St

Transparency



254 S Main St

Complexity



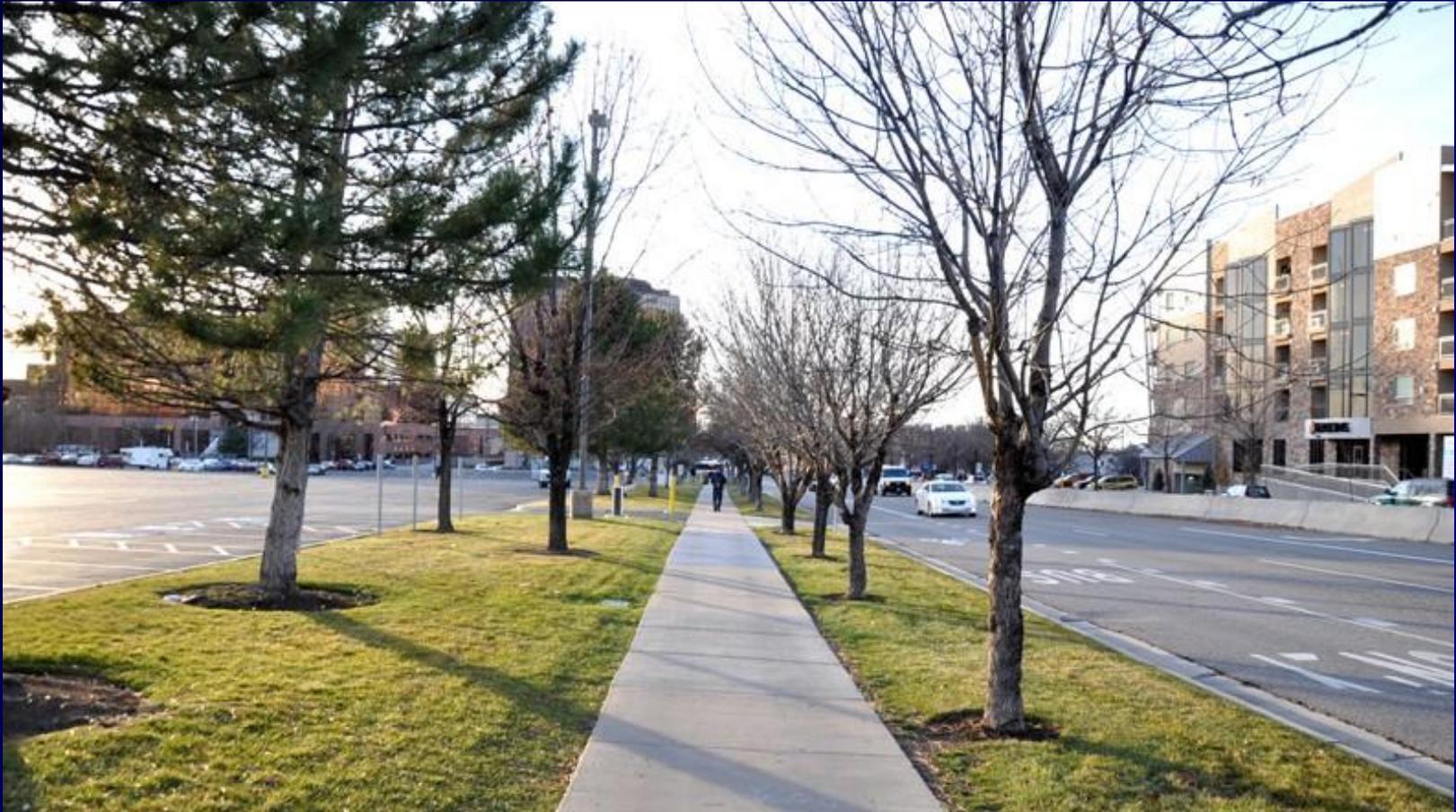
262 S Main St

High Value of All 5 Qualities



169 S Main St

Low Value of All 5 Qualities



230 W N Temple St

D Variables

- ***Density – Floor Area Ratio***
- ***Diversity – Entropy based on floor area***
- ***Design – Intersection Density***
- ***Destination Accessibility – Walk Score***
- ***Distance to Transit – Miles to Nearest Transit Line***
- ***Demographics – Per Capita Income***

Results

	Model 1				Model 2			
	coeff.	std. error	t-ratio	p-value	coeff.	std. error	t-ratio	p-value
intercept	2.27	1.76	1.67	0.20	3.95	1.41	7.81	0.005
far	1.69	0.60	7.85	0.005	1.07	0.59	3.30	0.069
popden	0.00004	0.000001	17.76	< 0.001	0.00003	0.000001	11.52	0.001
entropy	1.56	0.81	3.71	0.054	1.89	0.62	9.19	0.002
intden	.011	.0032	10.97	0.001	.004	0.0025	2.47	0.12
pct4wy	.001	.0033	.004	0.95	-.001	0.0027	0.31	0.58
wlksr	.019	0.015	1.60	0.21	.007	0.01	0.41	0.52
transitdis	-3.62	0.51	51.41	< 0.001	-2.20	0.48	21.02	< 0.001
blkfar	.61	0.17	12.61	< 0.001	0.11	0.12	0.81	0.37
blkentropy	.034	0.27	.015	0.90	0.14	0.23	0.34	0.56
ret	.47	0.40	1.39	0.24	0.16	0.33	0.24	0.62
hhsz	.68	0.16	17.29	< 0.001	.57	0.15	15.12	< 0.001
blklngh	.25	2.20	.013	0.91	-3.06	1.55	3.91	0.048
imageability					.28	.08	11.81	0.001
enclosure					.06	.05	1.14	0.28
human scale					.16	.11	2.13	0.14
transparency					.45	.12	13.46	< 0.001
complexity					-.071	.12	.32	0.57
fitted (ME)					-0.6827	.69	-0.980	0.02
n				179				179
likelihood ratio statistics				107.65 (12)				135.59 (17)

While the D variables are included as controls, the primary focus of this study is the five urban design qualities, both individually and as a whole.

- Two of the five measures of urban design qualities found in Model 2, 'transparency' and 'imageability', are highly significant.*
- 'Enclosure' and 'complexity' have no individual relationship to pedestrian activity.*
- As a whole, however, the five urban design qualities improved the fit of the model.*

REID EWING AND KEITH BARTHOLOMEW

latz

PEDESTRIAN & TRANSIT-ORIENTED
design



Urban Land
Institute