# Using GIS as a tool in Transportation Planning



Codie Leseman, Transportation Planner II

Kyle Durant, Transportation Planner II

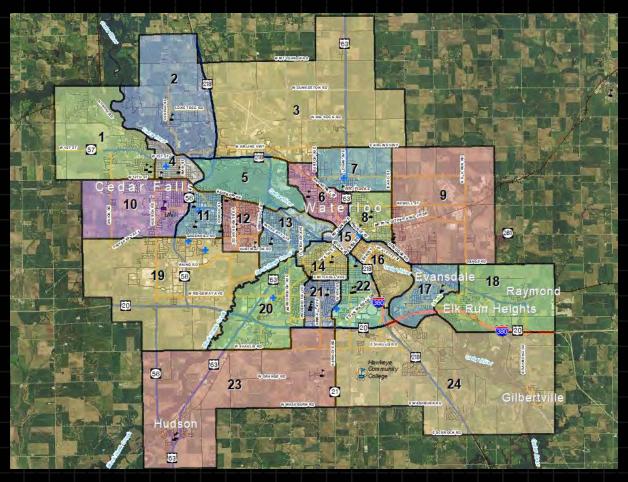
Iowa Northland Regional Council of Governments (INRCOG)

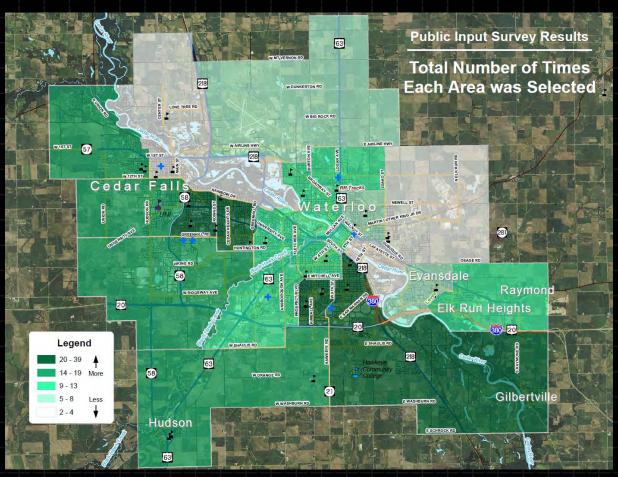
(319) 235-0311

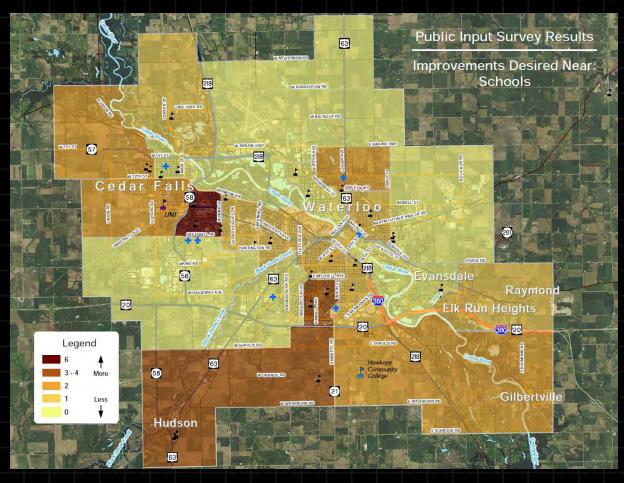
#### Introduction

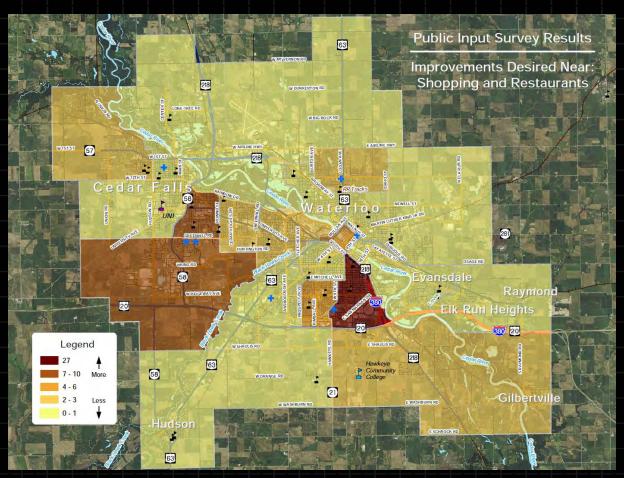
- Goal is to hopefully inspire new project ideas
- Interruptions are welcome
- All projects presented are something other than a final map product



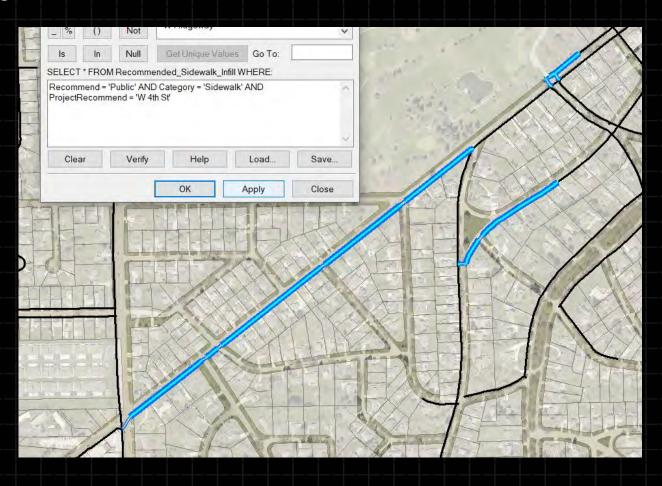








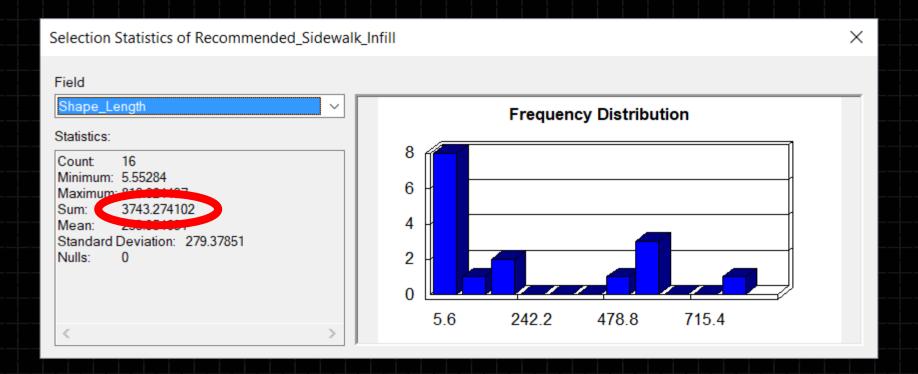
Project identification



Project identification

Zone	Recommend	Shape_L				n-oject			ProjectRecomm	end
8	Public	585	<u></u>	Sort Ascen	ding	1	W 4th	n St		
8	Public	92	₹	Sort Desce	nding	1	W 4th	n St		
8	Public	810		Advanced :	Sorting		W 4tr			
	Public	622		Advanced .	sorung		W 4tr			
	Public	54		Summarize	<u></u>	_	W 4th			
_	Public	597	Σ	Statistics			W 4th			
	Public	172		Statistics		2	W 4tr			
	Public	13		Field Calcu	Statistics			n St		
	Public	8		Calculate 6	C			n St		
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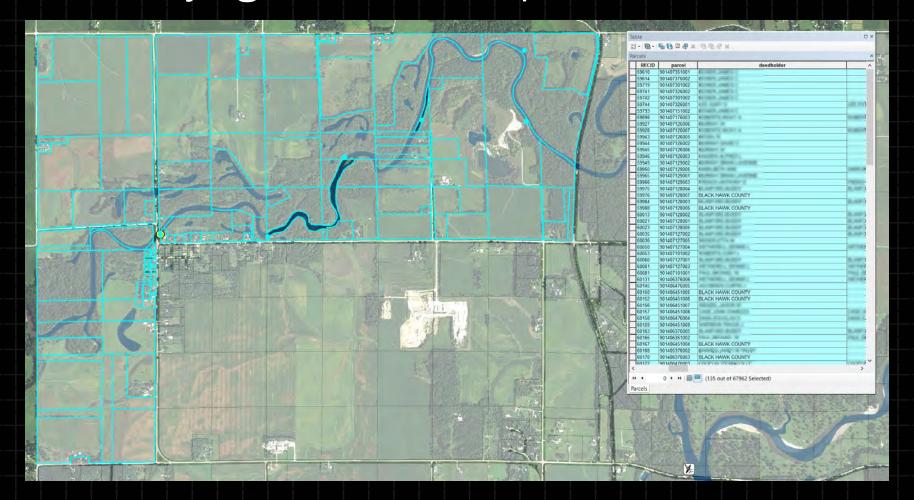
Project identification



3,743 linear feet x \$60 per linear foot = \$224,580 estimated cost



Identifying land ownership

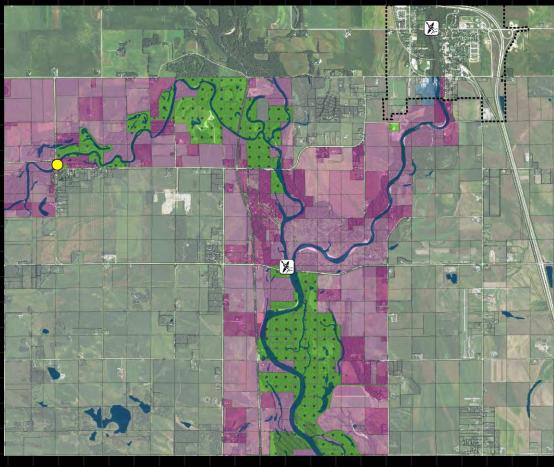


Identifying land ownership

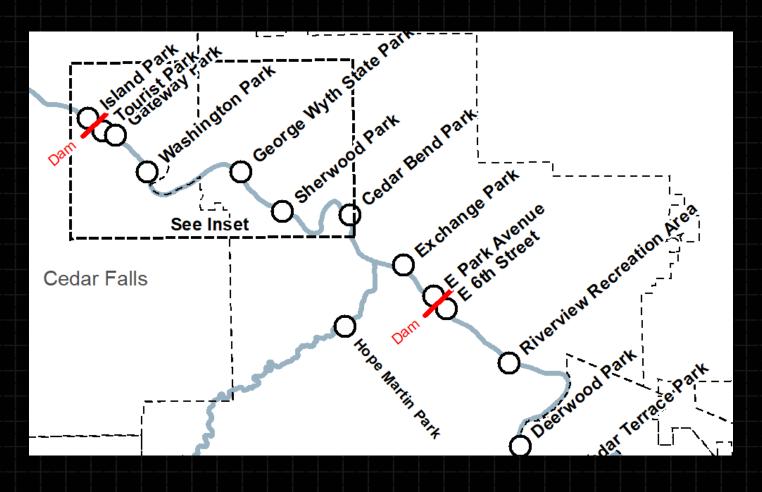
Pai	cels			
	RECID	parcel	deedholder	
	60061	901407127003		
	60081	901407101001	75-2, MC100, W	184.3
	60131	901406376006	of the last of the	-1-
	60145	901406476005	ACRES CATE A	
	60150	901406451005	BLACK HAWK COUNTY	
	60152	901406451006	BLACK HAWK COUNTY	
	60156	901406451007		
	60157	901406451008	THE RESIDENCE OF THE PROPERTY	
	60158	901406476004	man more at a	
	60159	901406451009	patricular frame.	
	60163	901406376005	E, ser III, Scott	-
	60165	901406351002	Page Alfred V	
	60167	901406451004	BLACK HAWK COUNTY	
	60168	901405376002	Grand T., and T. of History	
	60170	901406376003	8,84 mg = 10.60	
	60172	901406476003	Maria Indiana (A.)	
	60183	901405376003	ment of the contract of the co	
	60187	901404376006	P Breach, Julian Proc. B	
	60188	901406451002	(H. 27) (M. 190), (190)	
	60192	901406476002	BLACK HAWK COUNTY CONSERVATION	
	60193	901405351003	BLACK HAWK COUNTY CONSERVATION	
	60197	901405451003	Security (1994) (1994)	
	60199	901405476003	TOMORIO CONTROLLO	
	60224	901406476006	BLACK HAWK COUNTY CONSERVATION	
	60226	901406451003	mental and the	
	60237	901405451002	Total control	

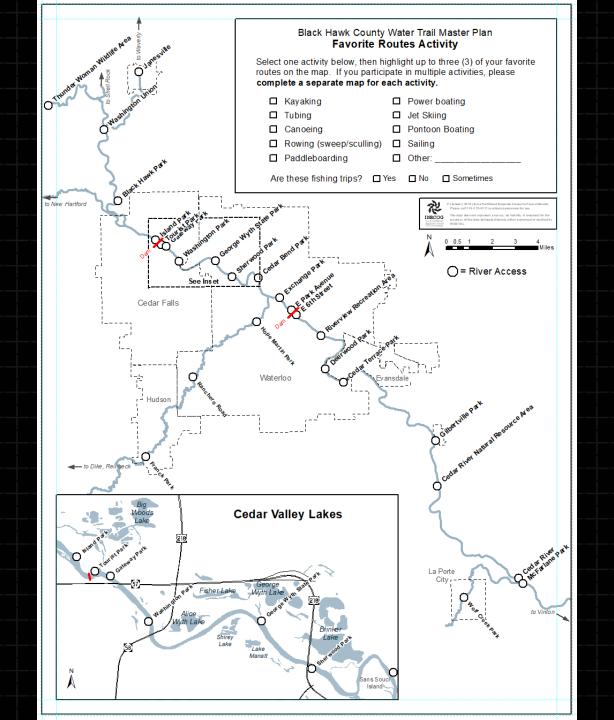
Identifying land ownership





Materials for public input





Materials for public input



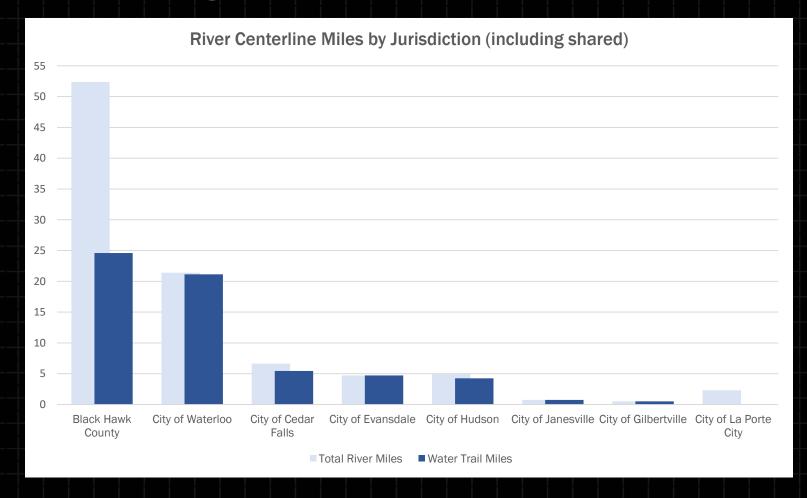
Calculating centerline miles

SELECT \* FROM River\_Centerlines\_sp83 WHERE:

(Juris\_Name = 'Waterloo' OR Juris\_Name = 'Cedar Falls and Waterloo'
OR Juris\_Name = 'Evansdale and Waterloo') AND (WT\_Name = 'Black
Hawk Creek' OR WT\_Name = 'Cedar River')

Jurisdiction	Miles (ex. shared)	Miles (incl. shared)	Entire county, all tributaries
Black Hawk Co.	22.00	24.59	52.38
City of Waterloo	17.20	21.14	21.41
City of Cedar Falls	4.14	5.45	6.63
City of Evansdale	0.00	4.71	4.71
City of Hudson	4.26	4.26	4.96
City of Janesville	0.74	0.74	0.74
City of Gilbertville	0.00	0.50	0.50
City of La Porte City	0.00	0.00	2.29

Calculating centerline miles



► This form should be completed by an					
Please use a black or blue pen to com					
Mark X to indicate your answer, if yo and merk the correct answer with an		ge your answer,	darken the box	with the in	orrect answer,
Your Travel Experiences					
1. How often do you use each of the fol	lowing to get fro	m place to place	ie?		
		A few times a week	A few finies a month:	A few times:	News
Walk					
	П	H	П	-	
Personal Vehicle (Car/Truck/SUV)	-	-	-	ä	ē
Tau survice or ridesham such as					
				III.	
			<b>I</b>		
váin/Subway					
Paritransit					
2. How much do you agree or disegree y	with each of the	following?			
	Strongly aprice		Neither agree or disagree		Strongly
The price of gas affects the number of		П			П
places ( go Getting from place to place costs too	-	- 7	_		
Using G	ilS a	s a t	i loo	n tra	nsno
I bike to places to save money					ıı iope
Luse public transportation to save		4	- 4	п	17
money NAT		$M_{\rm M}$			
Technology You Use					
3. How after do you use the following	Aviet to sea	A frontin	A less to		DI
3. How often Target Howley  Desktop or laptop contages	IV	a week	a muniti		
Desktop or laptby computer		П			
Tables					
Other device, please specify				-	
		2			1796

## National Household Travel Survey

- INRCOG is one of 13 "add-ons"
- 1,221 surveys completed in INRCOG region



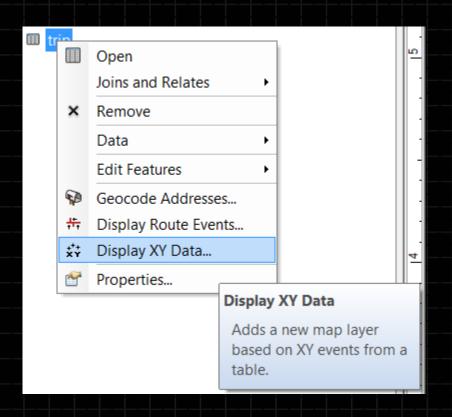
## National Household Travel Survey

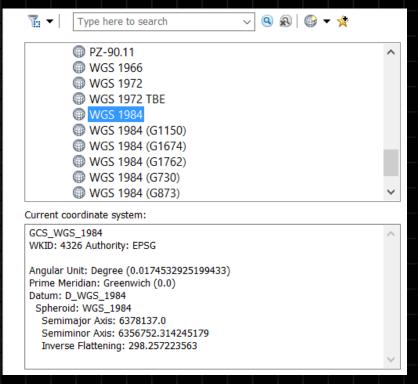
- 8,722 trips recorded
  - 541 were walking trips
  - Used ArcMap to join "trips" and "location" files
  - Cleaned up data in Excel and combined trips:

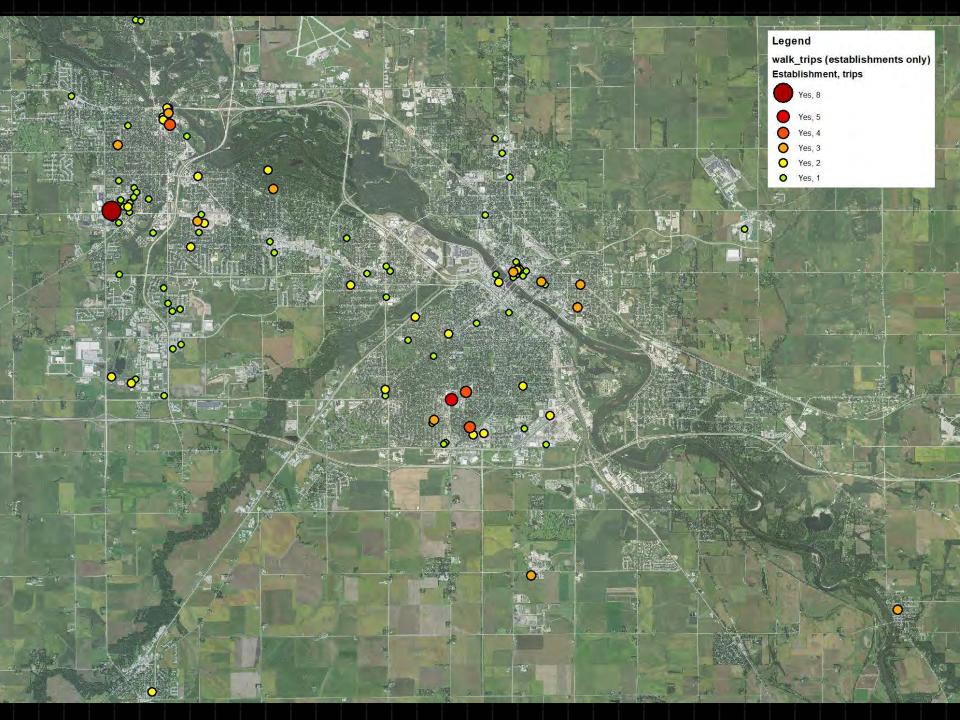
goforwalk	other	trips	home	Shape *	Establishment
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	Yes	1	<null></null>	Point	No
<null></null>	Yes	2	<null></null>	Point	No
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	<null></null>	3	<null></null>	Point	Yes
<null></null>	<null></null>	4	<null></null>	Point	Yes
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	<null></null>	2	<null></null>	Point	Yes
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	<null></null>	1	<null></null>	Point	Yes
<null></null>	<null></null>	2	<null></null>	Point	Yes
Yes	<null></null>	1	<null></null>	Point	No
<null></null>	<null></null>	3	<null></null>	Point	Yes

## National Household Travel Survey

Projecting the data using lat/long









Make Google work for you



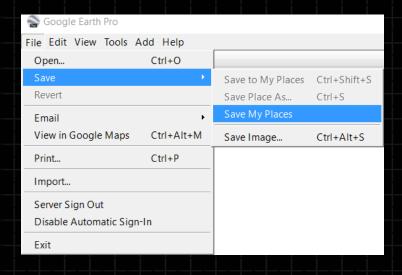
Show balloon

Fly here

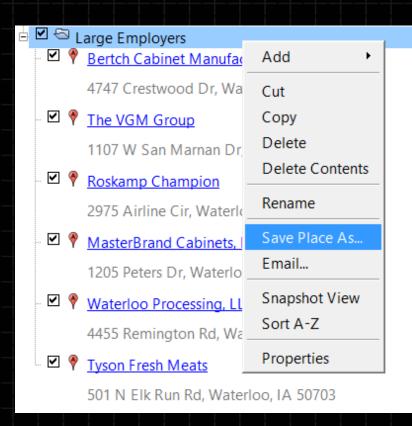
Save to My Places

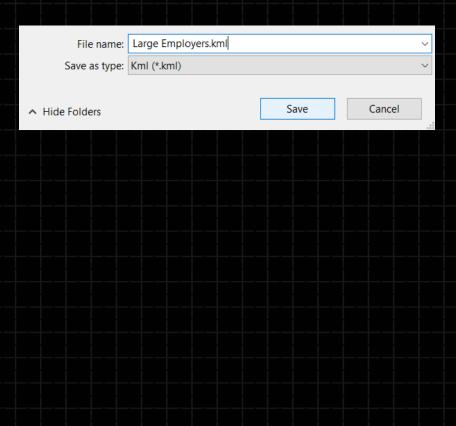
Copy as KML





▼ Places
🔄 🗹 🥯 My Places
🖶 🗖 🗀 Folder: MPO Bicycle Accommodation Plan
🖶 🗖 🗀 Folder: RTA Bicycle Accommodation Plan
🖶 🗖 🗀 Folder: Water Trails
🖶 🗖 🗀 Folder: Park Avenue
🖶 🗹 🗀 Project: MET Transit Remix
🖶 🗖 🗀 Project: Trails Wayfinding Signage
🖶 🗖 🗀 Project: Wolf Creek Bridge
🗆 🗀 Project: Pedestrian Plan for UNI
🖶 🗖 🗀 Concept: Bike Share
🖶 🗖 🗀 Concept: Recycling
🖶 🗖 🗀 Concept: Civil Rights History Walking Tour
□    □    Concept: Northeast Industrial Access
🖶 🗖 🗀 Concept: US-63 Old Enhancement Grant
☐ ☐ Temporary Places





Waterlooprocessing, II.C.

Tremtheshthefts

0 4747 Crestwood Dr. Waterloo, IA 50702

0 4455 Reminaton Rd Waterloo IA 50703

0 501 N Elk Run Rd. Waterloo, IA 50703

0 2975 Airline Cir. Waterloo, IA 50703

0 1205 Peters Dr. Waterloo, IA 50703

0 1107 W San Marnan Dr. Waterloo, IA 50701

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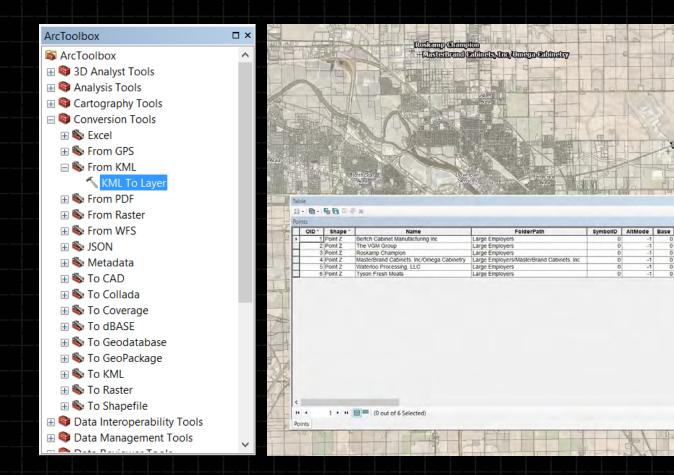
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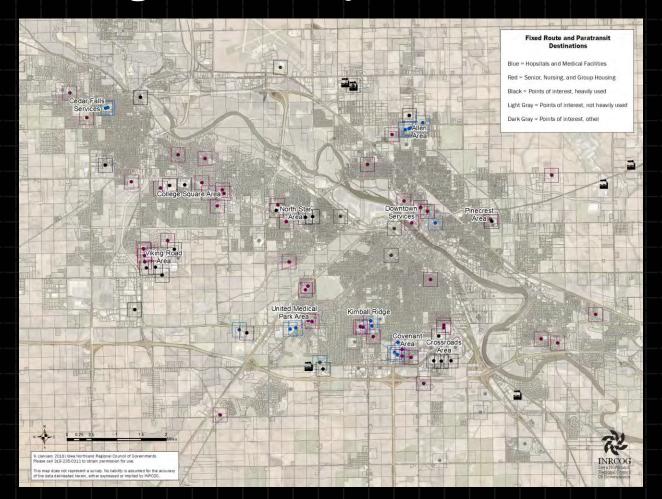
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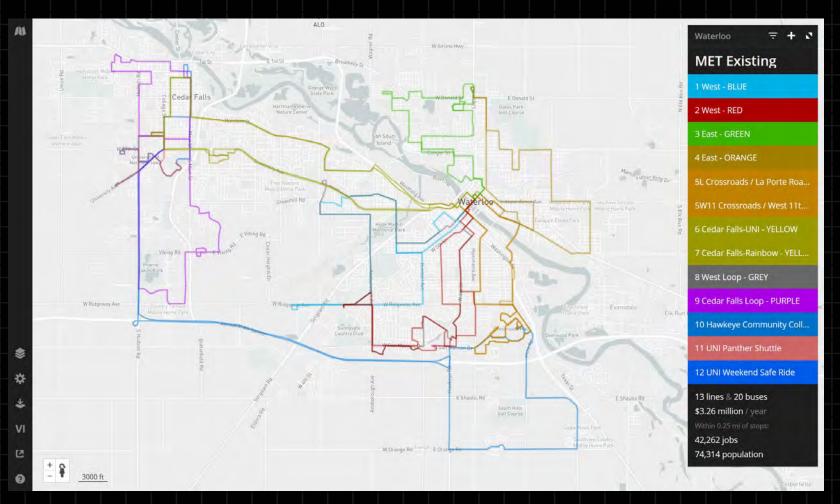
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Weekday													
FROM	TO	EVERY	RUNTIME	LAYOVER	SPEED	BUSES	UTILIZATION						
05:30	07:00	90 min	77.2 min	7.8 min	15.0 mph	1 bus	95.3%						
07:00	09:15	30 min	77.2 min	7.8 min	15.0 mph	3 buses	69.5%						
09:15	16:00	90 min	77.2 min	7.8 min	15.0 mph	1 bus	96.2%						
16:00	19:00	45 min	77.2 min	7.8 min	15.0 mph	2 buses	77.7%						
19:00	22:00	90 min	77.2 min	7.8 min	15.0 mph	1 bus	96.8%						
Satur	day												
FROM	то	EVERY	RUNTIME	LAYOVER	SPEED	BUSES	UTILIZATION						
06:00	20:00	40 min	77.2 min	7.8 min	15.0 mph	3 buses	66.7%						
Sund	ay												
FROM	то	EVERY	RUNTIME	LAYOVER	SPEED	BUSES	UTILIZATION						
06:00	18:00	75 min	77.2 min	7.8 min	15.0 mph	2 buses	54.0%						

Remix software

17.65 miles & 2 buses

\$282.2k / year

Within 0.25 mi of stops:

14,772 jobs

20,652 population

20.3% in poverty

1.4% limited English

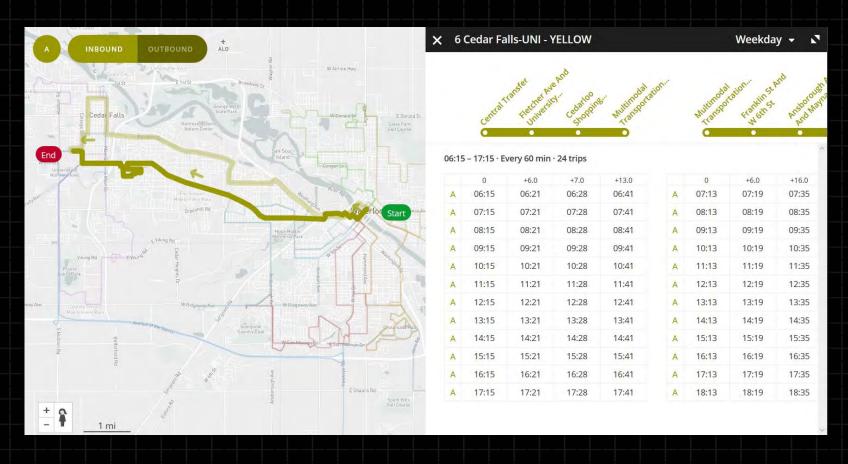
12.0% minority

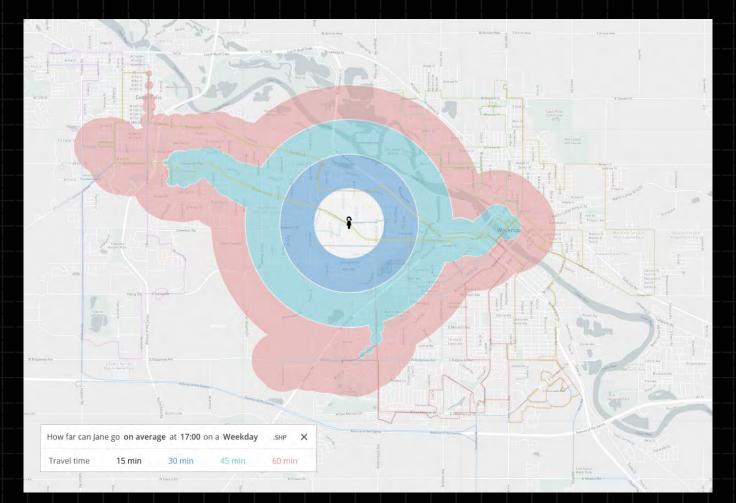
12.7% senior (65 +)

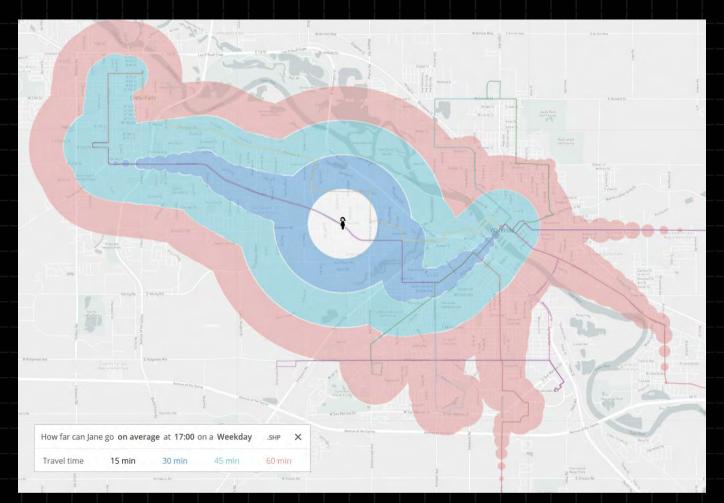
10.3% with disabilities

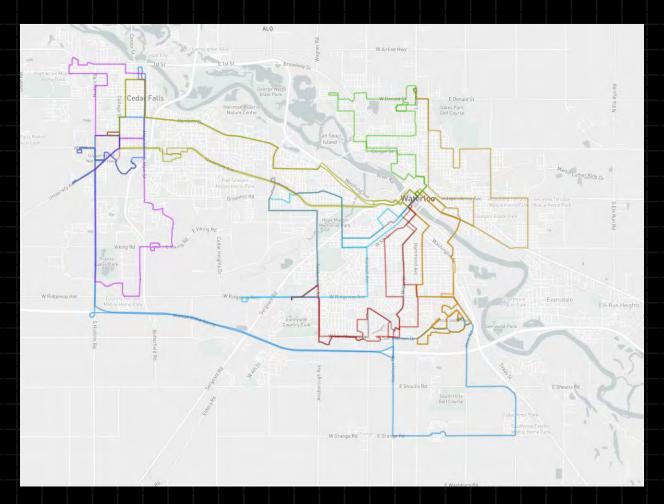
9.0% with no vehicles

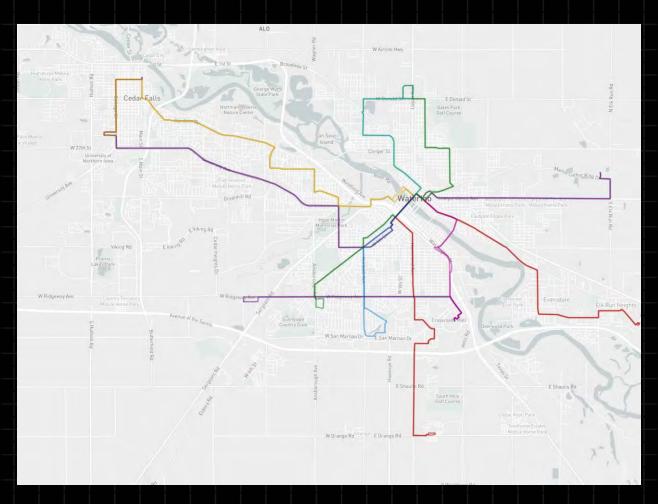
16.2% youth (18 -)







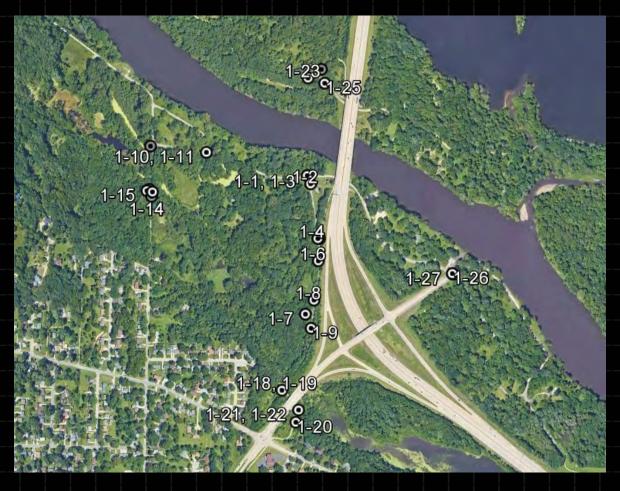








Google Earth as a GIS



Calculating distances quickly



Calculating distances quickly



	Α	В	C	D	E	F	G	H	1	J	K	L	M	N	0	P	Q	R
	Sign																	
1	Loc. #	Sign 1	Sign 2	Destination 1	Arrow	Miles	Time	Destination 2	Arrow	Miles	Time	Destination 3	Arrow	Miles	Time	Post	Notes	
2	5-1	Destination		Aquatic Center	Left	0.2	1	Viking Rd Shopping	Left	2.3	14	Uni of Northern Iowa	Up	0.6	4		Mount to	traffic pole
3	5-2	Destination		Aquatic Center	Right	0.2	1	University Ave Shopping	Up	0.5	3	Downtown Cedar Falls	Up	1.9	11		Mount to	traffic pole
4	5-3	Destination		University Ave Shopping	Right	0.5	3	Downtown Cedar Falls	Right	1.9	11	Uni of Northern Iowa	Left	0.6	4	1		
5	5-4	Destination		University Ave Shopping	45° Left	0.4	2	George Wyth State Park	Right	1.7	10	Downtown Cedar Falls	Right	1.8	11	1		
6	5-5	Destination		Aquatic Center	Left	0.3	2	Viking Rd Shopping	Left	2.4	14	University Ave Shopping	45* Right	0.4	2	1	Remove e	xisting wood po
7	5-6	Destination		Aquatic Center	45° Right	0.3	2	Uni of Northern Iowa	45° Right	0.6	4	Downtown Cedar Falls	45° Left	1.8	11			
8	5-7	Destination		University Ave Shopping	45° Right	0.7	4	Uni of Northern Iowa	45° Left	0.9	5	Downtown Cedar Falls	45° Left	2.2	13	1		
9	5-8	Destination		University Ave Shopping	U-Turn Le	0.7	4	Greenhill Rd Trail	Up	0.8	5	Viking Rd Shopping	Up	2.0	12			
10	5-9	D11-1	M6-3													1		
11	5-10	D11-1	M6-3															
12	5-11	Destination		Aquatic Center	Up	0.5	3	University Ave Shopping	Up	0.7	4	Downtown Cedar Falls	Right	2.1	13	1		
13	5-12	Destination		Uni of Northern Iowa	Up	0.3	2	Hillside/Jennings Courts	Left	0.7	4	Downtown Cedar Falls	Left	2.1	13			
14	5-13	Destination		Hillside/Jennings Courts	Up	0.7	4	George Wyth State Park	U-Turn Le	1.9	11	Downtown Cedar Falls	U-Turn Le	2.1	13	1		
15	5-14	Destination		Uni of Northern Iowa	Up	0.3	2	University Ave Shopping	Up	0.7	4	Downtown Cedar Falls	45* Right	2.1	13			
16	5-15	D1-2b		UNI	Left			Shopping	Right							1		
17	5-16	Destination		Greenhill Rd Trail	Up	0.7	4	Hudson Rd	Up	1.1	7	Prairie Lakes Park	Left	0.8	5	1		
18	5-17	Destination		Prairie Lakes Park	Right	0.8	5	Uni of Northern Iowa	Up	2.5	15	Downtown Cedar Falls	Up	3.8	23			
19	5-18	Destination		Greenhill Rd Trail	Left	0.7	4	Uni of Northern Iowa	Right	2.5	15	Downtown Cedar Falls	Right	3.8	23	1		
20	5-19	D1-2b		UNI	Left			Shopping	Right							1		
21	5-20	Destination		Uni of Northern Iowa	U-Turn Ri	0.3	2	University Ave Shopping	U-Turn Ri	0.7	4	Hillside/Jennings Courts	Up	0.7	4	1		
22	5-21	Destination		Uni of Northern Iowa	45° Right	0.7	4	Greenhill Rd Trail	Left	1.2	7	Viking Rd Shopping	Left	2.4	15			
23	5-22	Destination		Greenhill Rd Trail	Left			Viking Rd Shopping	Up	1.2	7	Sergeant Rd/US-63 Trail	Up	5.6	34	1		
24	5-23	Destination		Greenhill Rd Trail	Right			Uni of Northern Iowa	Up	1.7	10	Downtown Cedar Falls	Up	3.0	18			
25	5-24	D11-1	M6-3													1		
26	5-25	D11-1	M6-3															
27	5-26	Destination		Prairie Lakes Park	Left	1.6	10	Uni of Northern Iowa	45° Right	1.7	10	Downtown Cedar Falls	45° Right	3.0	18	1		
28	5-27	Destination		Viking Rd Shopping	Up	0.6	4	Sergeant Rd/US-63 Trail	Up	5.0	30	Prairie Lakes Park	Left	1.0	6	1		
29	5-28	Destination		Prairie Lakes Park	Right	1.0	6	Uni of Northern Iowa	Up	2.3	14	Downtown Cedar Falls	Up	3.6	22			
30	5-29	Destination		Viking Rd Shopping	Left	0.6	4	Uni of Northern Iowa	Right	2.3	14	Downtown Cedar Falls	Right	3.6	22	1		
31	5-30	D11-1	M6-1					1								1		
32	5-31	D11-1	M6-1													1		
33	5-32	D11-1	M6-1															
34	5-33	Destination		Greenhill Rd Trail	Left	0.7	4	Prairie Lakes Park	Up	0.8	5	Downtown Cedar Falls	Up	3.9	23	1		
35	5-34	D11-1	M6-1													1		
36	5-35	D11-1	M6-1															
37	5-36	Destination		Hudson Rd	Left	0.4	2	Uni of Northern Iowa	Right	2.0	12	Downtown Cedar Falls	Right	3.3	20	1		
38	5-37	Destination		Prairie Lakes Park	Right	1.4	9	Viking Rd Shopping	Right	1.5	9	Downtown Cedar Falls	Up	3.3	20			
39	5-39	Destination		Viking Rd Shopping	Up	1.3	8	Uni of Northern Iowa	Left	1.7	10	Downtown Cedar Falls	Left	3.0	18	1		
40	5-40	Destination		Prairie Lakes Park	Right	1.6	10	Uni of Northern Iowa	Right	1.7	10	Downtown Cedar Falls	Right	3.0	18	1		
41	5-42	Destination		Viking Rd Shopping	Right	1.0	6	Cedar Heights Rd Trail	Up	1.7	10	Downtown Waterloo	Up	7.5	45	1		
42	5-43	Destination		Viking Rd Shopping	Left	1.0	6	Uni of Northern Iowa	Up	1.9	11	Downtown Cedar Falls	Up	3,2	19			
43	5-44	D11-1	M6-3			-		1								1		
44	5-45	D11-1	M6-3															
45	5-46	Destination		Peet Junior High	Right	0.2	1	George Wyth State Park	Up	1.4	8	Downtown Cedar Falls	Up	1.6	10	1		
46	5-47	Destination		Peet Junior High	45° Left	0.2	1	Uni of Northern Iowa	45" Left	0.7	4	University Ave Shopping	45° Right	0.7	4	1		
47	5-48	D1-2b		UNI	Left			Jr High	Right							1		
48	5-49	D1-2b		Jr High	Left			UNI	Right							1		
49	5-50	Destination		Aquatic Center	Left	0.5	3	University Ave Shopping	Left	0.7	4	Downtown Cedar Falls	Right	1.6	10	1		
50	5-51	Destination		University Ave Shopping	Left	0.7	4	George Wyth State Park	45° Right	1.4	8	Downtown Cedar Falls	45° Right	1.6	10	1		
51	5-52	D11-1	M6-1															
52	5-53	D11-1	M6-1															
53	5-54	D1-2b		UNI	Left			Downtown	Right							1		
54	5-55	D11-1	M6-3													1		
55	5-56	D11-1	M6-3													1		
56																		



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