

Harnessing GIS: Engagement and Policy Tools



Billy Fields

Assistant Professor Political Science

Texas State University

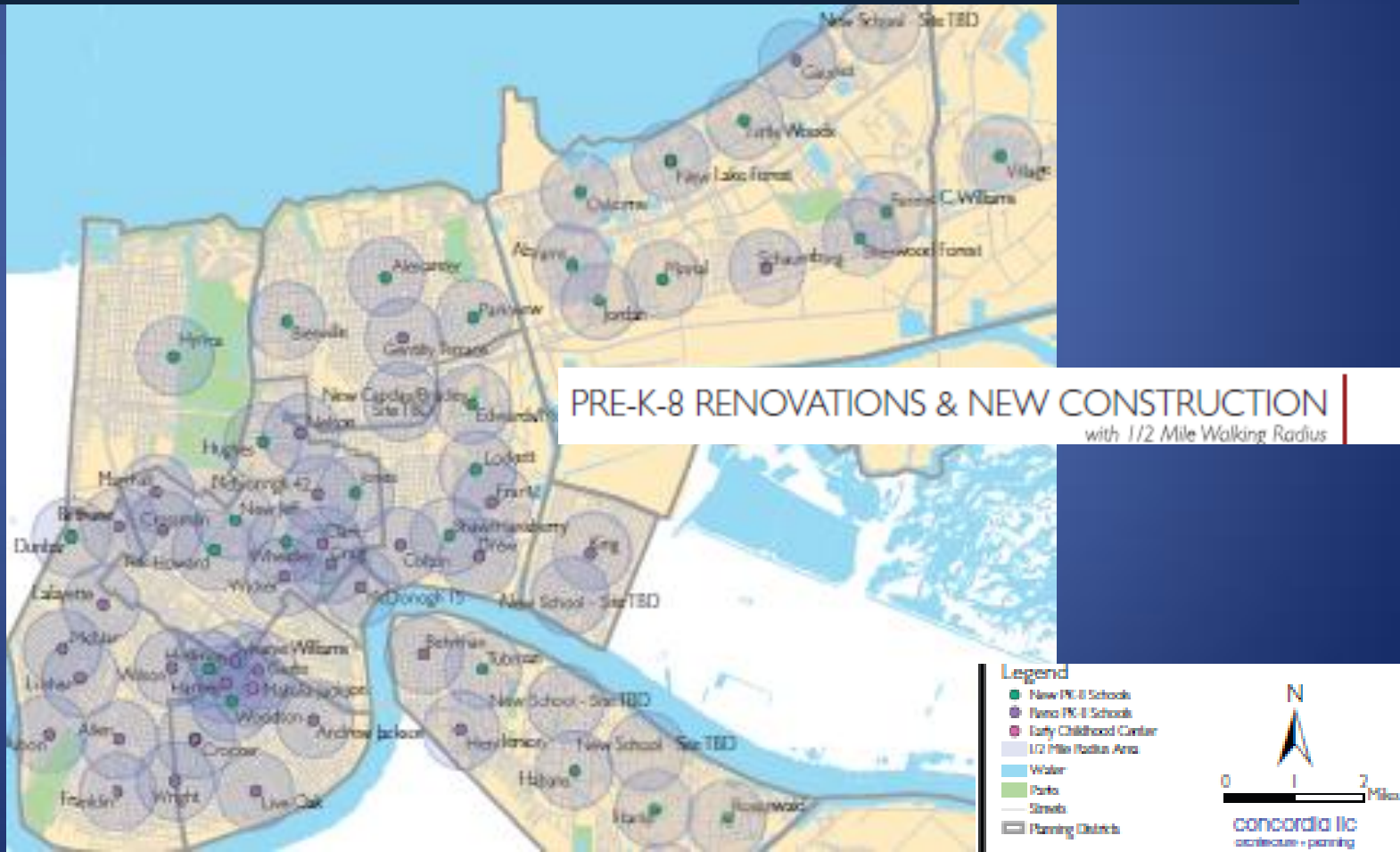
TEXAS STATE

UNIVERSITY
SAN MARCOS

Center for Research, Public Policy, and Training

Overview

- Linking GIS and advocacy concepts
- Example 1: Technical crash data evaluation
- Example 2: BikeEasy Audit Tool (BAT)



Linking GIS and Advocacy

- Understanding transportation and GIS data acts as a barrier for policy engagement
- Need tools to provide accepted data to enter policy process
- Increasing number of tools that make data collection easier

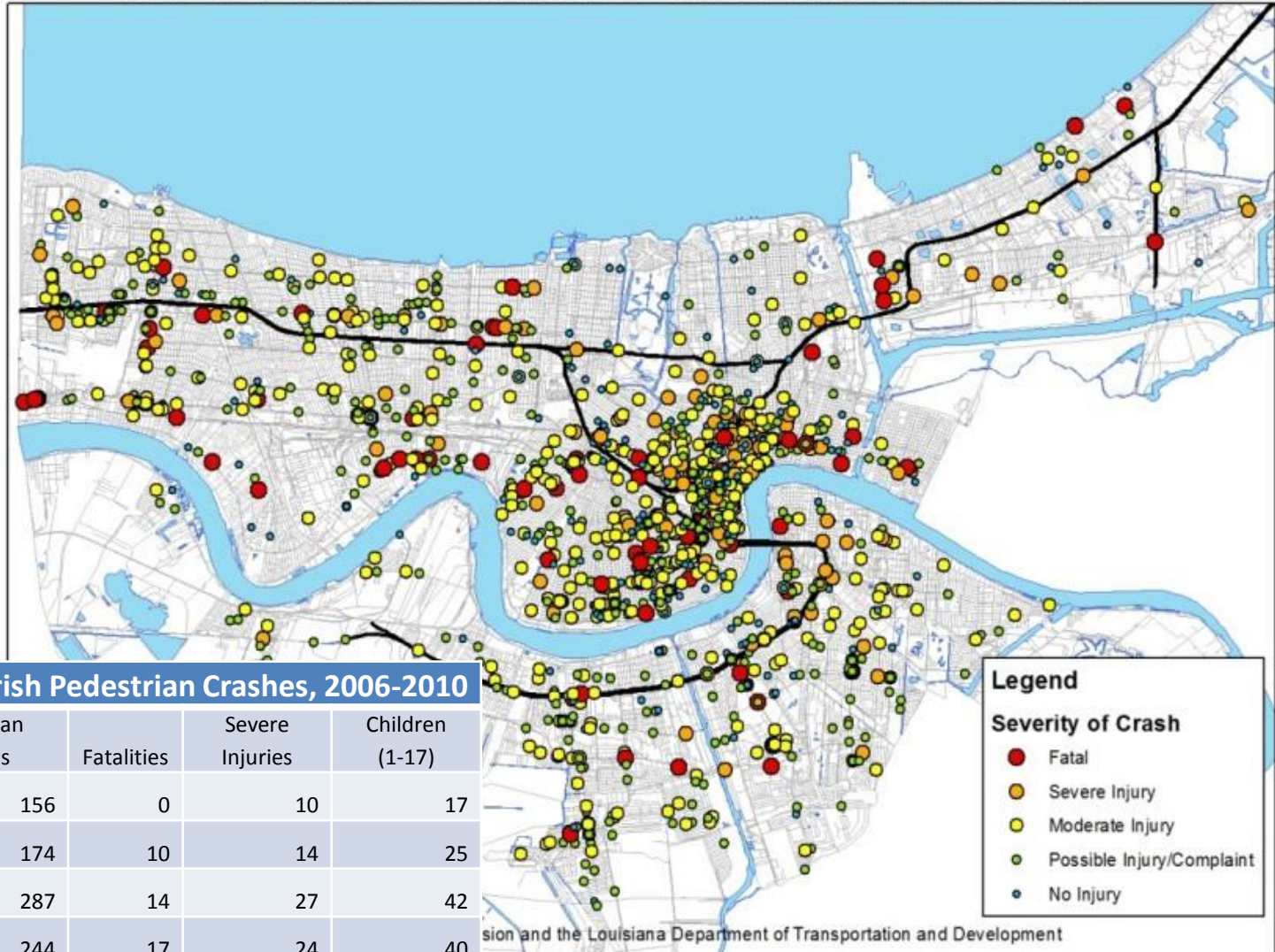
Make It So!

Empowering Communities to make a Difference

Thank you for your interest in **MakeltSo!** This app is designed to empower everyday community members to document where the local infrastructure breaks down for cyclists, pedestrians, and transit users. The motivation behind this tool is to help communities gather data and put pressure on local city staff and elected officials to spend as much time, energy, and money making as comprehensive transportation networks for biking, walking, and transit as has been created for vehicles over the last 70 years.

Making Sense of GIS Data: Mapping Crashes

Pedestrian Crashes by Severity, Orleans and Jefferson Parish, 2006-2010



Orleans Parish Pedestrian Crashes, 2006-2010

	Pedestrian Crashes	Fatalities	Severe Injuries	Children (1-17)
2006	156	0	10	17
2007	174	10	14	25
2008	287	14	27	42
2009	244	17	24	40
2010	290	1	25	49
TOTAL	1151	42	100	173

Legend

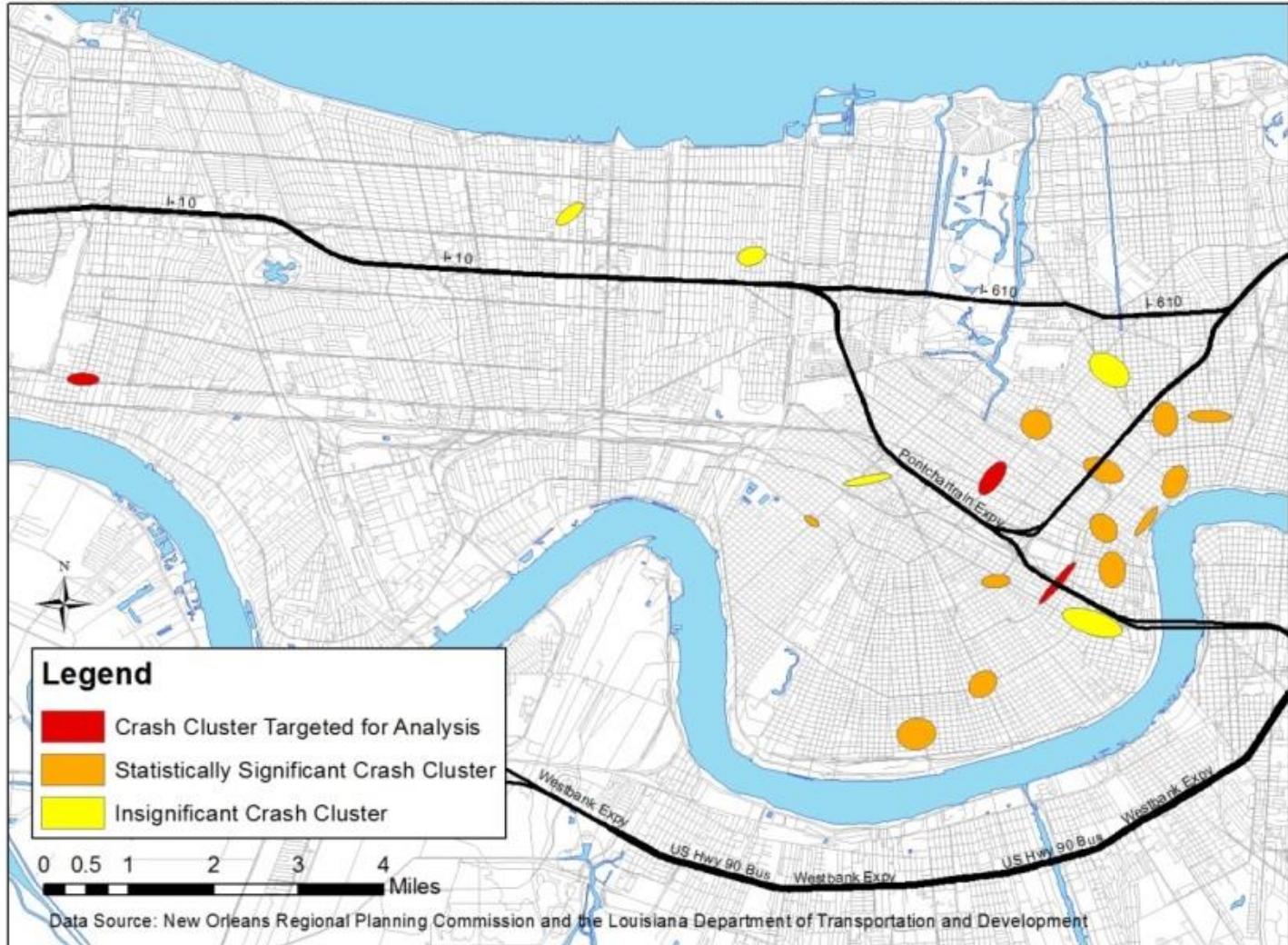
Severity of Crash

- Fatal
- Severe Injury
- Moderate Injury
- Possible Injury/Complaint
- No Injury

Division and the Louisiana Department of Transportation and Development

Making Sense of GIS Data: Hot Spot Analysis

STAC Pedestrian Crash Clusters, Orleans and Jefferson Parish East Bank Core, 2006-2010



Making Sense of GIS Data: Audit

Figure 37: Audit Findings—Tulane and S Broad (1)



Narrow pedestrian access zone on South Broad Street at Canal St impedes accessibility

Figure 39: Audit Findings—Tulane and S Broad (3)



Severe trip hazards on South Broad Street at Tulane Avenue

Figure 41: Audit Findings—Tulane and S Broad (5)



Sidewalks are missing or damaged on Tulane Avenue at S Dorgenois St

Figure 38: Audit Findings—Tulane and S Broad (2)



Pedestrian wait times exceed 60 seconds to cross S South Broad Street at Gravier St

Figure 40: Audit Findings—Tulane and S Broad (4)



Crosswalks are faded and missing; curb and median lack ADA ramps at Tulane Avenue and South Broad Street

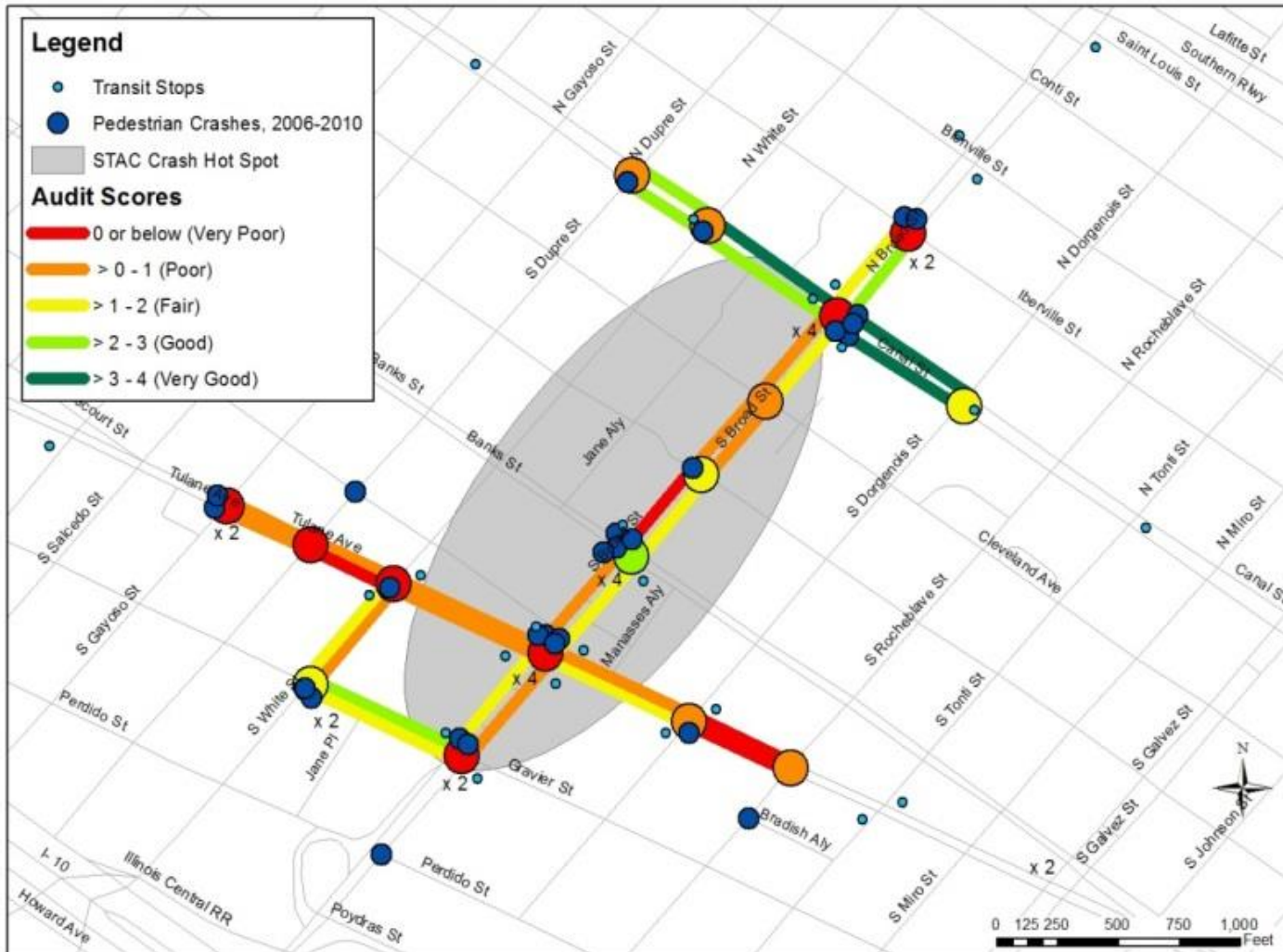
Figure 42: Audit Findings—Tulane and S Broad (6)



Cars frequently obstruct sidewalks on South Broad Street

Making Sense of GIS Data: Audit

Pedestrian Crashes and Pedestrian Infrastructure Audit Scores, Tulane-Broad Hot Spot



Crash Data Source: New Orleans Regional Planning Commission, Courtesy of Louisiana Department of Transportation and Development

Making Sense of GIS Data: Counts

Pedestrian and Bicycle Count Summary, Tulane Avenue				
	Pedestrians		Bicycles	
	Tulane Avenue	New Orleans Average (Observed)	Tulane Avenue	New Orleans Average (Observed)
Total Observed	468	317	71	114
Estimated Daily Traffic (EDT)	1,731	928	263	392
Gender				
Female	36.8%	40.6%	16.9%	28.7%
Male	63.3%	59.4%	83.1%	71.3%
Race				
White	29.7%	58.4%	50.7%	69.7%
Black	65.7%	36.1%	47.9%	25.7%
Other	4.7%	5.5%	1.4%	4.6%
Age Group				
Adult	96.4%	95.4%	98.6%	98.1%
Youth	3.6%	4.6%	1.4%	1.9%
Travel Orientation				
Street (Pedestrians)	4.9%	4.8%		
Street--Right Way (Bicycles)			43.7%	81.0%
Street--Wrong Way (Bicycles)			5.6%	7.0%
Sidewalk	94.9%	91.3%	50.7%	11.8%
Neutral Ground	0.2%	3.9%	0%	0.2%
Helmet Use (Bicycles)			8.5%	23.0%
Observation Dates: 3/26/13; 3/28/13				

Taking GIS to the Streets: Bicycle Audit

The Atlantic
CITIES
PLACE MATTERS

See how we create chemistry.

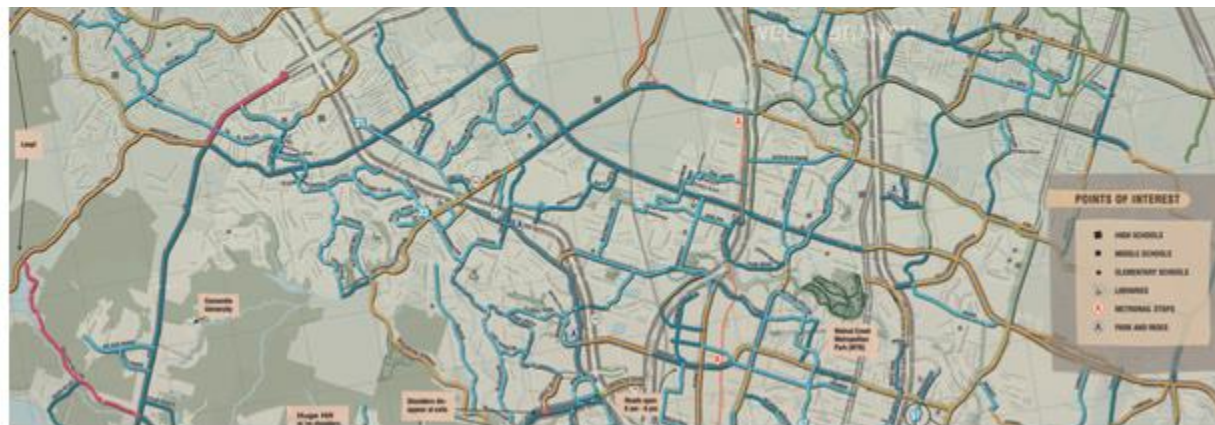
JOBS & ECONOMY / COMMUTE / HOUSING / ARTS & LIFESTYLE / DESIGN / TECH

MAPS

Bike Maps That Give Riders the Info They Actually Need

SARAH GOODYEAR FEB 15, 2013 25 COMMENTS

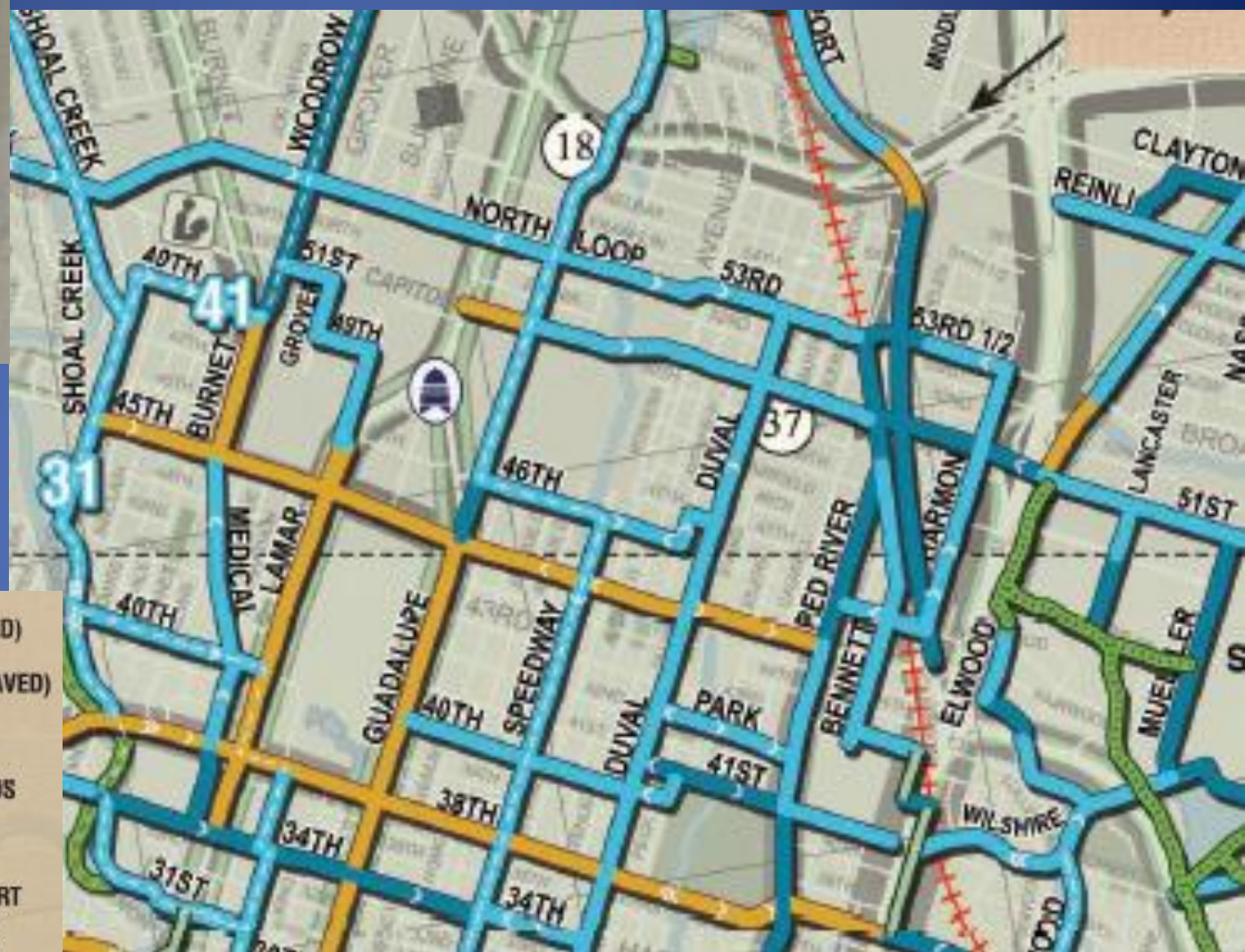
The city of Austin is doing its best to remove the mystery by using a mapping system that gives riders a quick, color-coded visual overview of its bike network, all keyed to the real-world experience a person can expect when cycling on any given street. According to Nathan Wilkes, a project designer and network planner at the Austin public works department who specializes in bike infrastructure, the map is heavily influenced by the thinking of Roger Geller, the bicycle coordinator for the city of Portland Oregon, who developed [an influential taxonomy](#) of transportation cyclist types in his city.



AUSTIN TEXAS BICYCLE MAP

LEGEND

- SEPARATED PATHS (PAVED)
- SEPARATED PATHS (UNPAVED)
- HIGH-COMFORT ROADS
- MEDIUM-COMFORT ROADS
- LOW-COMFORT ROADS
- EXTREMELY LOW COMFORT
- RESTRICTED SIDEWALKS
(see reverse map)
- HELPFUL SIDEWALKS
- MINOR TRAILS
(may require walking)



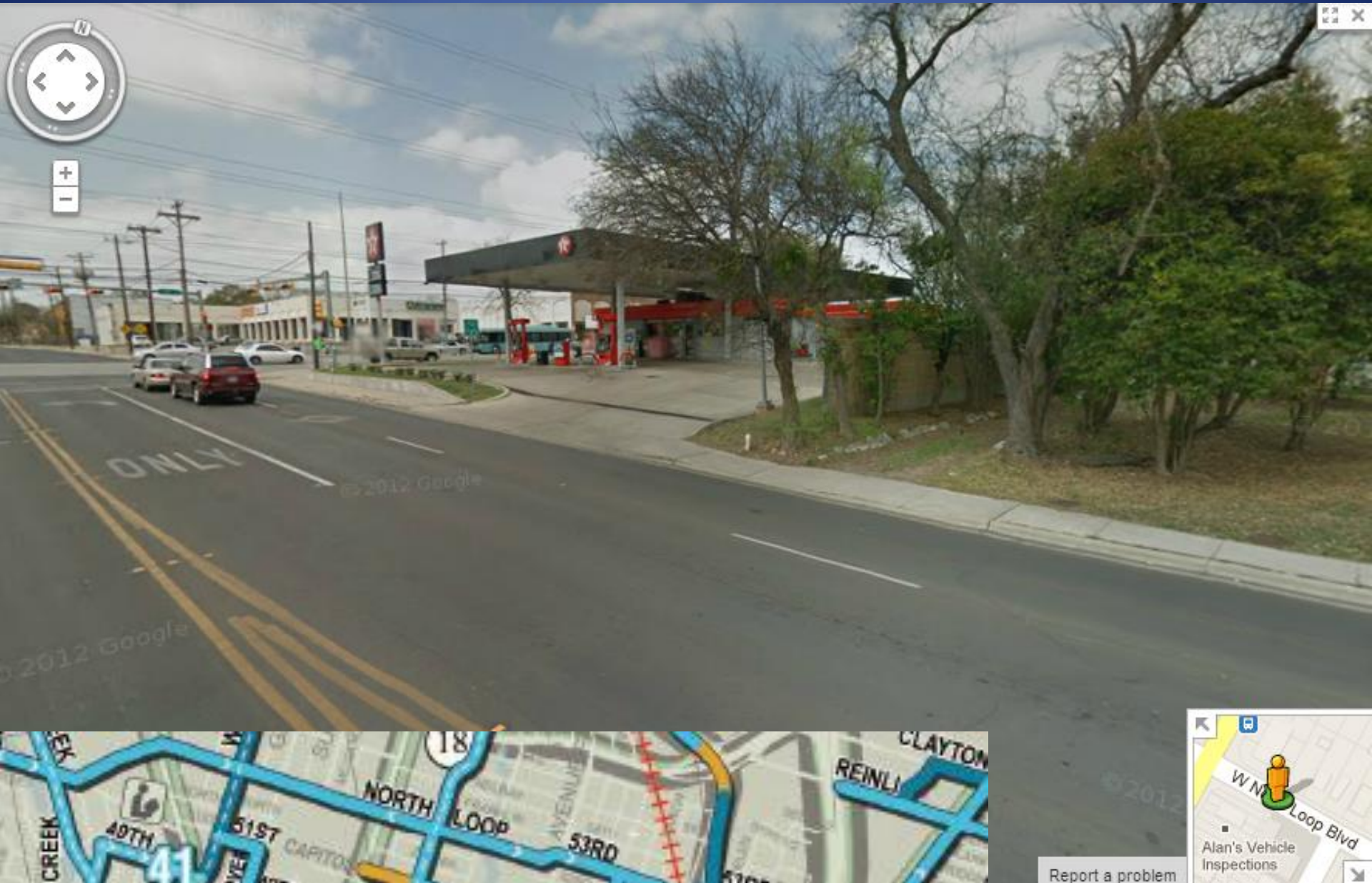
Problem: Need a tool that measures bicyclists' street comfort that is easy to use and disseminate to public and non-profit organizations



New Tool: Bike Easy Audit Tool (BAT)

Result: National best practice tool that helps clearly “map” conditions and prioritize investments to close gaps in system

Austin "High Comfort" Example: North Loop at Lamar



Report a problem

Bike Easy Audit (BAT)

Location: North Loop at Lamar

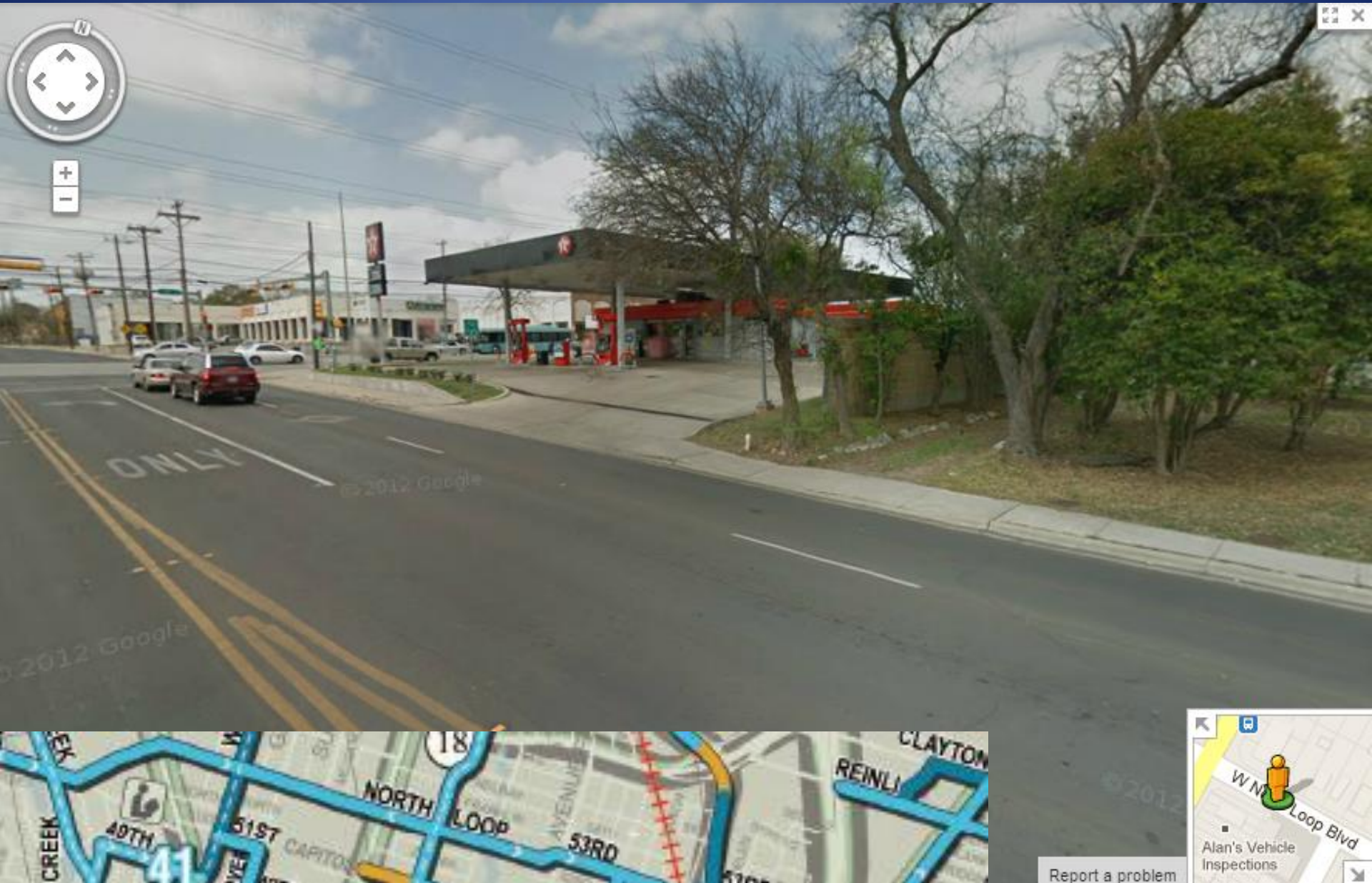
Overall Feel of Place		
Do or would you feel safe riding your bicycle here?	Circle: Yes/No	Describe: Traffic speeds up for intersection and there is no bike facility. This is a more intense road section.

Question	Bike Facility Availability		Score
1	Is there a bike facility?	If yes, add 5. If no, score 0	0
	Bike Facility Quality		Score
2	Are there obstructions/debris?	If yes, subtract 1	0
3	Is facility continuous for entire block (excluding intersection)?	If no, subtract 1	-1
4	Does the facility provide a dedicated, separated space for bicyclists?	If no, subtract 1	-1
5	Speed	If posted speed is above 30 mph, subtract 1	0
6	Road Intensity	If ADT is above 20,000, subtract 1	0
	Total Score	Add all rows together for final score	-2

Bicycle Facility Type (circle)							
Bike lane	Buffered bike lane	Contra flow bike lane	Green lane	Cycletrack	Bicycle boulevard	Sharrow	None

A Little Bit About You				
Please circle the statement that best describes you	I feel comfortable riding my bike on any street in any condition	I feel comfortable riding on a designated bicycle facility	I feel comfortable riding only on quiet streets or on trails/paths	I do not feel comfortable or interested in bicycle riding

Low-Stress Comfort Score: 0



Questions?



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Community Commons: A Suite of Tools for SRTS Assessment and Planning



**Erin Barbaro
Center for Applied Research and Environmental Systems (CARES)
Institute for People, Place and Possibility (IP3)**

July 2013

What is Community Commons?

www.communitycommons.org

Community Commons is about bringing you—community change makers--together to **connect with thought leaders and peers, share stories and strategies, and use the latest technology and tools to make real change.**



www.communitycommo Search



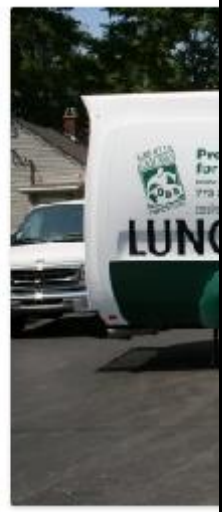
COMMUNITY COMMONS

Menu

Supporting collaboration through data, maps and stories.



Lunch Is On When School Is Out



Get the Word Out

Use the resources here to help you get the benefits of walking

Related posts

Every Body Walk at S

Marissa's Dance Dar

Out
summer many children
ny food. Continue



uggling with
nited and

What can you find on www.communitycommons.org?

- Original content
- Thousands of national-sourced GIS data layers to use in maps and reports
- Group spaces to collaborate
- Active social media about healthy, sustainable communities



A National Web-based GIS

Environment

Education

Food

Housing

Poverty

Economic /Income

Transportation

Demographic

Health

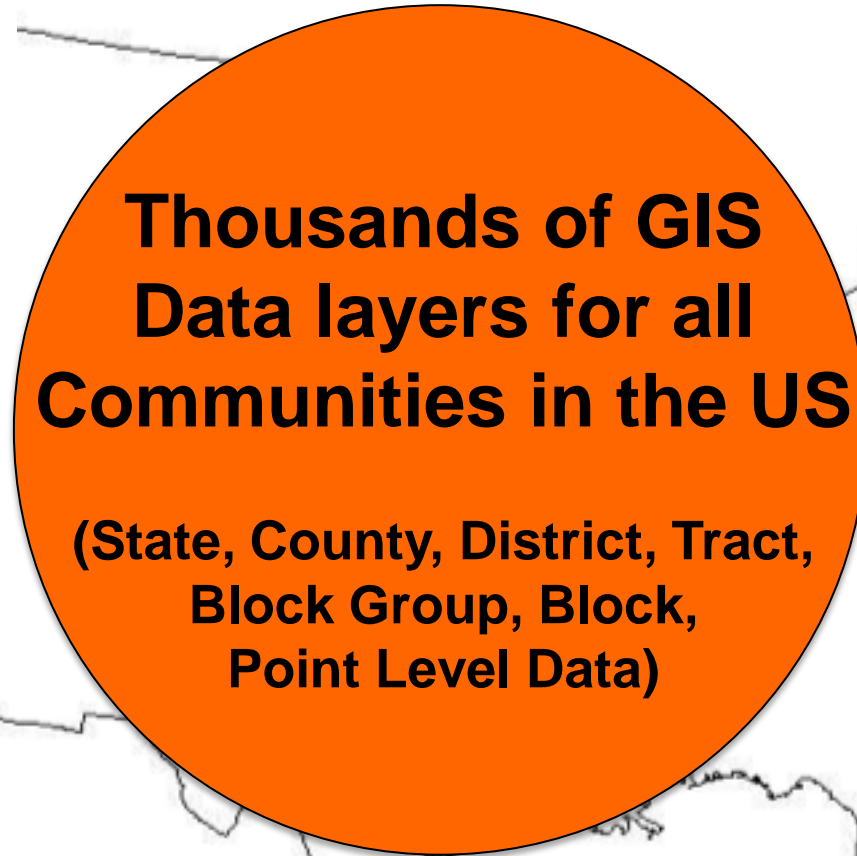
Civic

Political

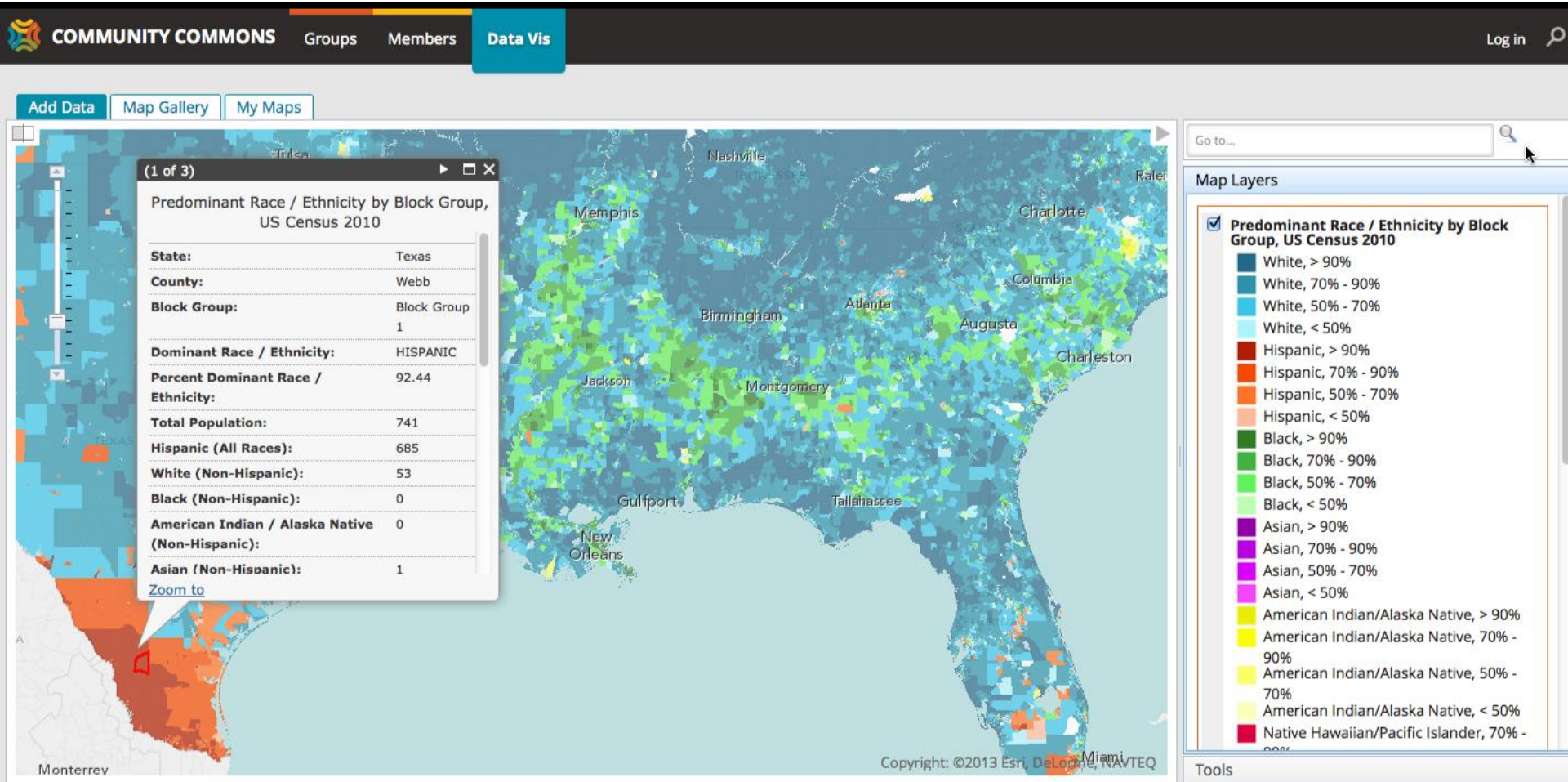
Emergency Management

**Thousands of GIS
Data layers for all
Communities in the US**

**(State, County, District, Tract,
Block Group, Block,
Point Level Data)**



Example: Predominant Race/Ethnicity by Block Group Census 2010



Continuous Data Expansion and Updates

Example: Head Start Childcare Centers (April 2013)

The screenshot displays the COMMUNITY COMMONS web application interface. At the top, there is a navigation bar with the logo, "COMMUNITY COMMONS" text, and tabs for "Groups" and "Maps & Data". On the right side of the top bar are links for "Help", "Log in", and "Register". Below the navigation bar, there are three tabs: "Add Data", "Map Gallery", and "My Maps".

The main content area is split into two map views. The left view shows a satellite map of Washington, DC, with numerous colored dots representing Head Start facilities. The right view shows a street map of the same area, with colored dots and lines indicating the locations and boundaries of the facilities. The street map includes labels for various streets such as Florida Ave NW, Rhode Island Ave NW, New York Ave NE, and Pennsylvania Ave NW.

On the right side of the map, there is a "Map Layers" panel. It contains a search bar with "washington, dc" entered. Below the search bar, there are four map layers, each with a checked box, a color-coded dot, and buttons for "Label", "Info", and "Remove":

- Head Start Facilities, Migrant/Seasonal Centers by Location, ACF 2012 (Red dot)
- Head Start Facilities, Early Childhood Centers by Location, ACF 2012 (Brown dot)
- Head Start Facilities, Centers by Location, ACF 2012 (Green dot)
- Head Start Facilities, All by Location, ACF 2012 (Blue dot)

At the bottom of the interface, there is a "Reference Maps" section and a "Tools" section. A large black box with the number "1" is overlaid on the bottom right corner of the map area.



Community Health Needs Assessment

- Identify **vulnerable populations** in your community
- Create a report within minutes featuring:
 - over 80 regularly updated indicators
 - social determinants
 - health and wellness
 - Report includes maps, graphs, and dashboards
- Print, save, modify, share

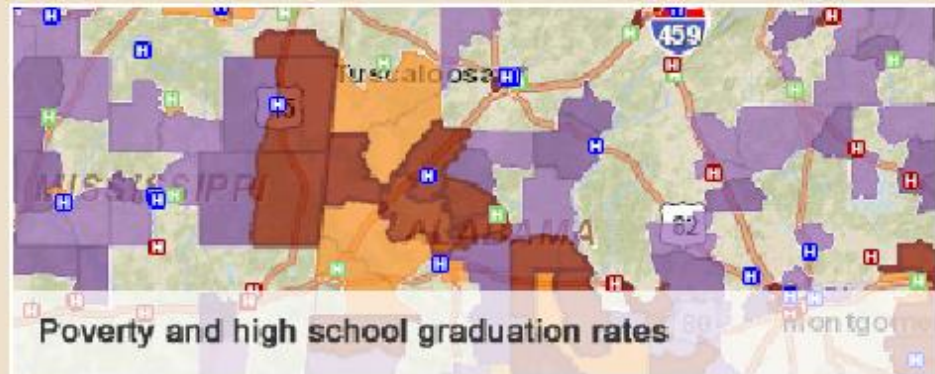


Live Demonstration

Community Health Needs Assessment (CHNA)

Vulnerable Population Footprint

Define areas of concern for vulnerable populations and health disparities in your community based on spatial visualization of two indicators, **poverty rate** and **educational attainment**, which have been shown to strongly influence individual risk factors and community health status.



Recommended workflow:

Vulnerable Population
Footprint

Core Health Indicators
Report

Full Health Indicators
Report



Are you in?

- ✓ **VISIT** www.communitycommons.org
- ✓ **REGISTER** with the site
- ✓ **COMPLETE** a personal profile
- ✓ **ADD** your initiative to the Map of the Movement
- ✓ **“LIKE”** the Community Commons on Facebook
- ✓ **FOLLOW** @CommunityCommon on Twitter
- ✓ **BROWSE** the Maps and Data
- ✓ **CREATE** a Vulnerable Population Footprint with CHNA
- ✓ **GENERATE** a report on your community with CHNA



20-4072

DO IT YOURSELF
MAP OF:

PLG 9/13



MIDWOOD

107TH

20-4072

DO IT YOURSELF

MAP OF:

PLG 9/13



<http://bit.ly/OpenPlansSRTS>



MIDWOOD

NOTICE





New York City Bike Share

Help shape NYC's new transit option



YvoHsizo wants a Boerum Hill station. [Check it out →](#)

Tell us where you'd like to see a bike share station

Click "Suggest Station", then drag the map pin to make adjustments.

Click "Confirm Station" when you're done, and tell us why it's a good location.

SUGGEST STATION

Legend:
 separated cycle path
 striped route
 on-street signed route

Map data ©2012 Google

What Is Bike Share?

Bike share is a network of thousands of

Bike Share in NYC

Bike Share in NYC will be run by [Alta](#)

Get Involved

NYC DOT and [Alta Bicycle Share](#) invite



Suggest a location

Your name

Email address

Or sign in with

I'd use this location for...

- WORK/SCHOOL
- SHOPPING
- FUN
- HOME

Why is this a good location for a bike share station?

Why is this a good location for a bike share station?

Home zip code

Submit Location



Help plan Chicago's Bike Share program!

Use the map to suggest locations for bike share stations. Explore and share suggestions, add your comments, and show support.



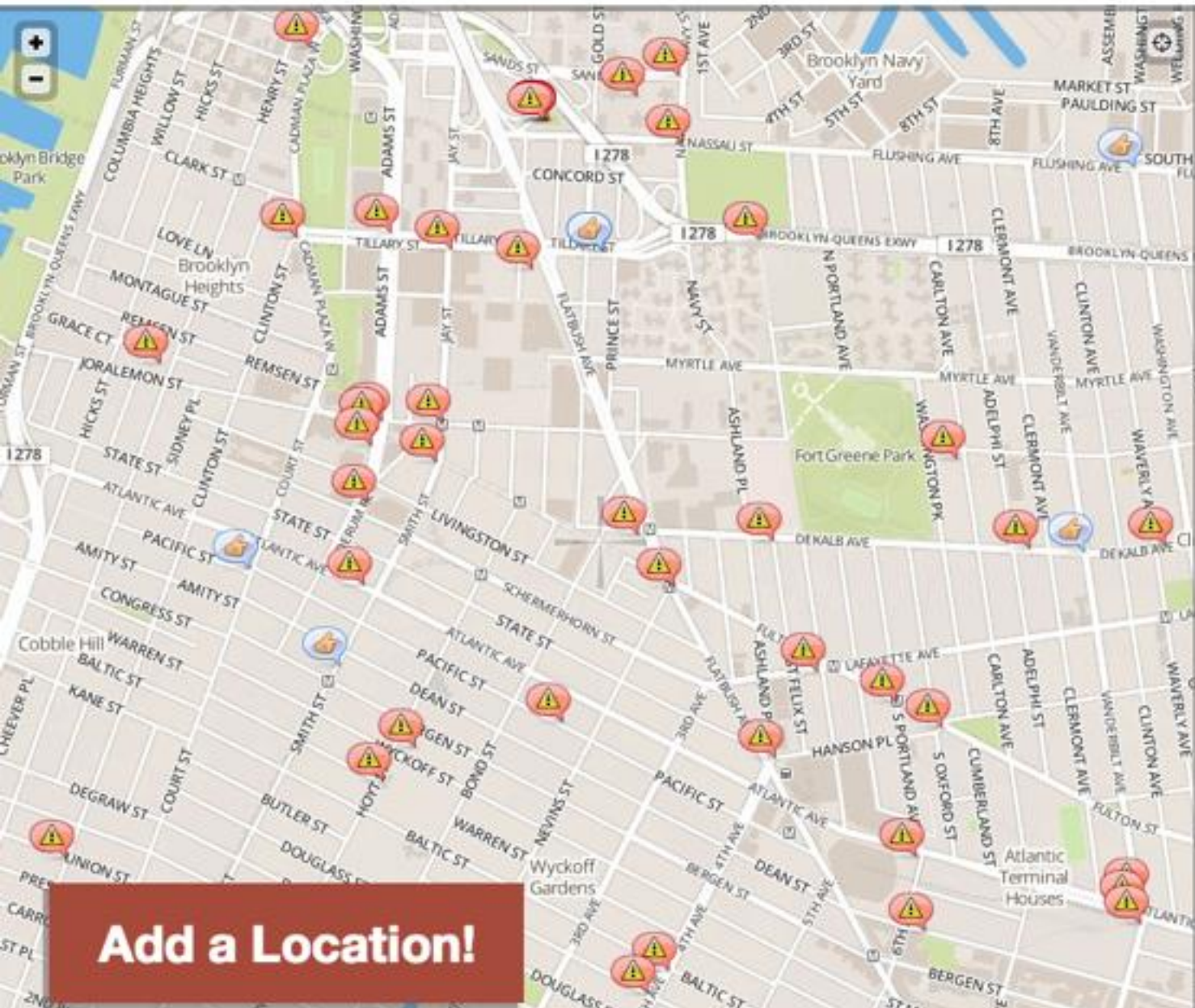
- Michelle Mergler** suggested a station in Logan Square.
- John Brophy** suggested a station in West Ridge.
- Jessica J Peterson** supported Someone's suggestion in Lincoln Square.



<http://bit.ly/OpenPlansSRTS>

KIDS RIDING ON SAFE STREETS

About Make Brooklyn Safer



- Someone supported an Unsafe Intersection
- Someone identified an Unsafe Intersection
- Someone commented on an Unsafe Intersection
- John identified an Unsafe Intersection
- Someone supported an Unsafe Intersection
- Bill identified an Unsafe Intersection
- Bozo identified an Unsafe Intersection
- Someone commented on Brooklyn Bridge Entrance at Tillary
- Someone supported an Unsafe Intersection
- Someone supported DeKalb & Flatbush
- Someone supported Bedford & Dean
- Someone supported an Unsafe Intersection

<http://bit.ly/OpenPlansSRTS>

KIDS RIDING ON SAFE STREETS

About Make Brooklyn Safer



Support This! [Twitter] [Facebook]

Jacob L added this point 6 months ago.

S corner of Hanson Pl and Fulton St

Traffic turning right from Hanson Pl onto Fulton St does not yield to pedestrians.

Traffic Does Not Yield

0 comments [LEAVE A COMMENT](#)

Description

Give us a brief description of the problem or place, and the approximate time and day when you pass by here.

Your Name

You must leave name to have your commi

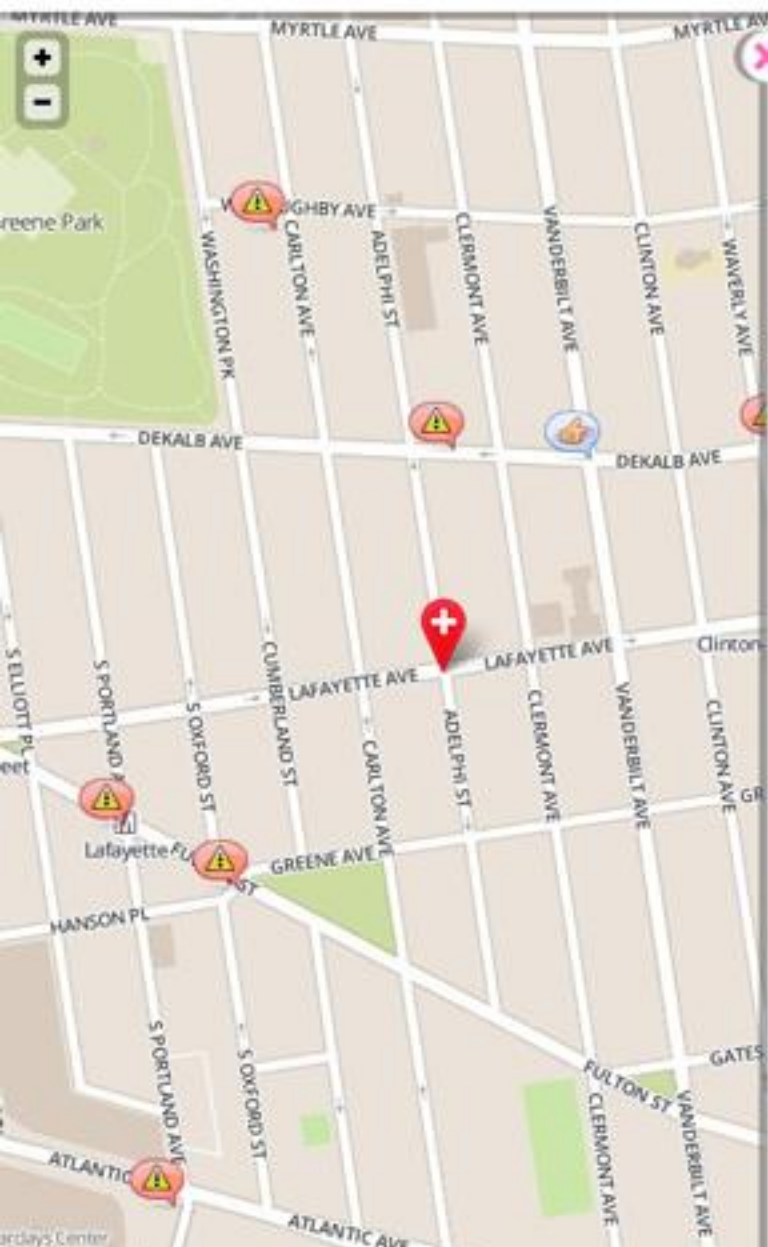
- Traffic Does Not Yield (optional)
- Bike Lane Blocked (optional)
- No Bike Lane (optional)
- Speeding Traffic (optional)
- Not enough time to cross (optional)
- Dangerous Crossing (optional)
- Sidewalk too small (optional)
- Crosswalk Blocked (optional)

- Someone identified an Unsafe Intersection
- Someone commented on an Unsafe Intersection
- John identified an Unsafe Intersection
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<http://bit.ly/OpenPlansSRTS>

KIDS RIDING ON SAFE STREETS

About Make Brooklyn Safer



Tell us more...

Intersection

For example, NE corner of Adams St and ...

Description

Give us a brief description of the problem or place, and the approximate time and day when you pass by here.

Location Type

Unsafe Intersection

Traffic Does Not Yield (optional)

Bike Lane Blocked (optional)

No Bike Lane (optional)

Speeding Traffic (optional)

Not enough time to cross (optional)

Dangerous Crossing (optional)

Someone identified an Unsafe Intersection

Someone commented on an Unsafe Intersection

John identified an Unsafe Intersection

Someone supported an Unsafe Intersection

Bill identified an Unsafe Intersection

Bozo identified an Unsafe Intersection

Someone commented on Brooklyn Bridge Entrance at Tillary

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Someone supported Bedford & Dean

Someone supported an Unsafe Intersection

<http://bit.ly/OpenPlansSRTS>

Make a map of walking around your neighborhood

Make a walking map...

-  Mark the places you love to walk.
-  Report problematic or dangerous places.
-  Leave comments about your walk.
-  Share your map with friends.

Use this website to make a simple map of good and bad places to walk around your neighborhood!

[How?](#) | [Examples](#) | [About](#)

Don't show this again

Okay!

Make a map of walking around your neighborhood






Improvements needed in Westville

Like 1

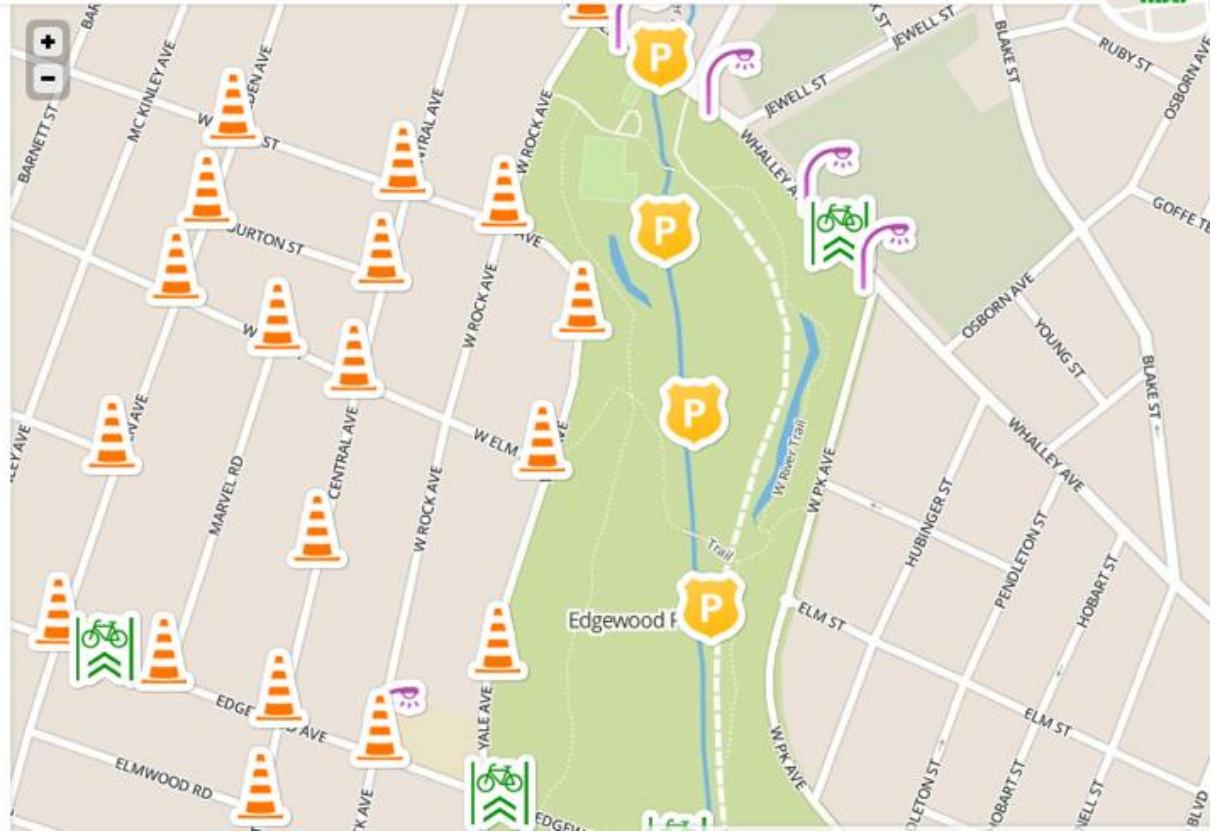
Add a comment

 Add a comment...

Posting as Ellen McDermott (Change) [Comment](#)

Post to Facebook

Facebook social plugin





5th Ave & 40th St

Add a Comment

40th is almost impossible to navigate as a pedestrian. It's packed with people. The bike lane is useless--it's full of cars. Please eliminate a lane of traffic and make this ped/bike friendly.

2 of 3



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3 Comments

<http://bit.ly/OpenPlansSRTS>

Add a Comment

5th Ave & 40th St



more bike

ZOOM TO THIS COMMENT'S VIEW

1 of 3

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3 Comments

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Ellen McDermott

emcdermott@openplans.org

@Hey_Nell



GIS and Safe Routes to School Improving Data Collection and Usage

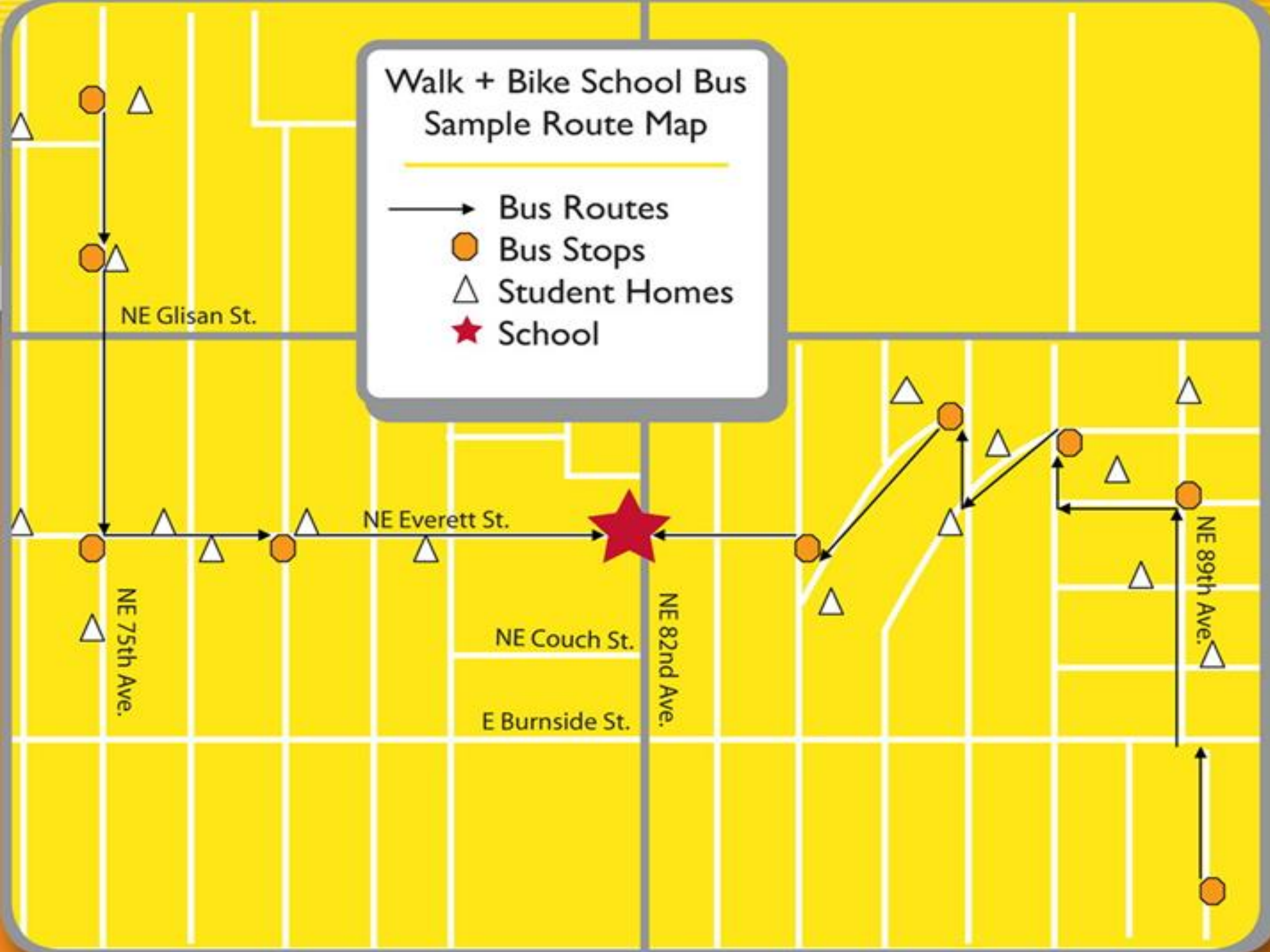




Safe Routes to School

Walk + Bike School Bus Sample Route Map

- Bus Routes
- Bus Stops
- △ Student Homes
- ★ School





GIS is a tool that can store, manage, analyze and display locational data in a way that allows the user to see correlations, patterns and a picture of their community that words, graphs and tables cannot communicate as well.



Austin, TX, April 22-23:

1. Obtaining data necessary for planning and implementation of Safe Routes to School, walking and bicycling
2. Creating standards for data collection, dissemination and storage
3. Storing collected data on a local and national level so that they are accessible to all people
4. Ensuring that accessible and standardized data tools will be open source in order to allow for future creation of new applications and uses





Data Collection

Local Level

Many ways it is being collected and stored
Gov and private collection and use
Walkabouts, parent surveys, student tallies

National Level

Federal gov is primary collector:
Federal grants
FHWA/HHS/
US Census
NHTS
FARS
ACS
GTFS
HPMS
BRFSS



Tools and Datasets

Federal

**American
Community
Survey
(ACS)**

**Federal
Analysis
Reporting
System
(FARS)**

**General
Transit Fee
Standard
(GTFS)**

**Highway
performance
measure
set
(HPMS)**

**Non-profit/
Private**

**311 GIS
app**

**Boltage
Program**

**City
Scan**

**Community
Commons**

**Cycle
Track**

ESRI

**ITO
World**

Google

NATVEQ

**Open
Street
Map**

**Saris
Racks**

Spotify

STRAVA

**TELE
Atlas**

URISA

Vertices

Walkscore



Findings

- A Uniform Data Tool is Needed
- Protocols are Necessary
- Mobile Devices are Key
- Photos Provide Perspective
- Open Source and Open Data

DATASET	PRIMARY QUESTIONS	SECONDARY QUESTIONS
1. Standard Level of Comfort	Do you feel safe walking or riding a bicycle along this block?	
2. Presence of a Sidewalk	Does a sidewalk exist?	Condition of the sidewalk- Does the sidewalk have cracks? Is it uneven? How wide is the sidewalk?
3. Intersections	Are crosswalks Present?	Are there crossing signals at the intersection? Does the intersection have a stop sign or stop lights? Are crosswalks striped? Are crossing guards present before and after school? Does the street have medians? Are there mid-street crosswalks? Are the intersections near the school safe?
4. Bicycle Facilities	Are there places to safely ride a bicycle?	Are there places to park a bicycle securely?
5. School location and Student Catchment Areas	How many students live within a 1 to 2-mile radius of a school?	
6. Speed	What is the speed limit of the street?	
7. Collision Data	How many injuries and accidents have happened on this block?	
8. Health Indicators	Are there basic public health concerns in the neighborhood?	Do lower income areas have less access to walking and bicycle riding?
9. Existing patterns	Where are people currently walking? Are there goat paths?	Are children using a more direct path that lacks sidewalks?
10. Crime Data	Is crime a deterrent to walking and bicycle riding?	



Recommendations

- Show Economic Benefits with GIS
- Make the Health Connection with GIS
- Active Transportation Committee on GIS
- Local Assistance and Data Access
- Social Media



Safe Routes to School

- Increased Funding
- Where Students Live
- School Siting
- School Oriented Development
- Social Equity
- Remote Drop Off Locations
- Crash Data



NYC, MO, MT



<http://saferoutespartnership.org/resourcecenter/National-Partnership-Webinars>



A Framework for GIS and Safe Routes to School

Contact:

Robert Ping

robert@saferoutespartnership.org

503.289.0441

