

**LINK
HOUSTON**



BIKEHOUSTON®

Safer Streets: Prioritizing Intersections for Improvements



@BikeHouston @LINK_Houston

#SaferStreetsHTX

July 16, 2018

Problem

Houston Crashes Resulting in Incapacitation or Death of Pedestrian or Cyclist, 2016-2017

3,984

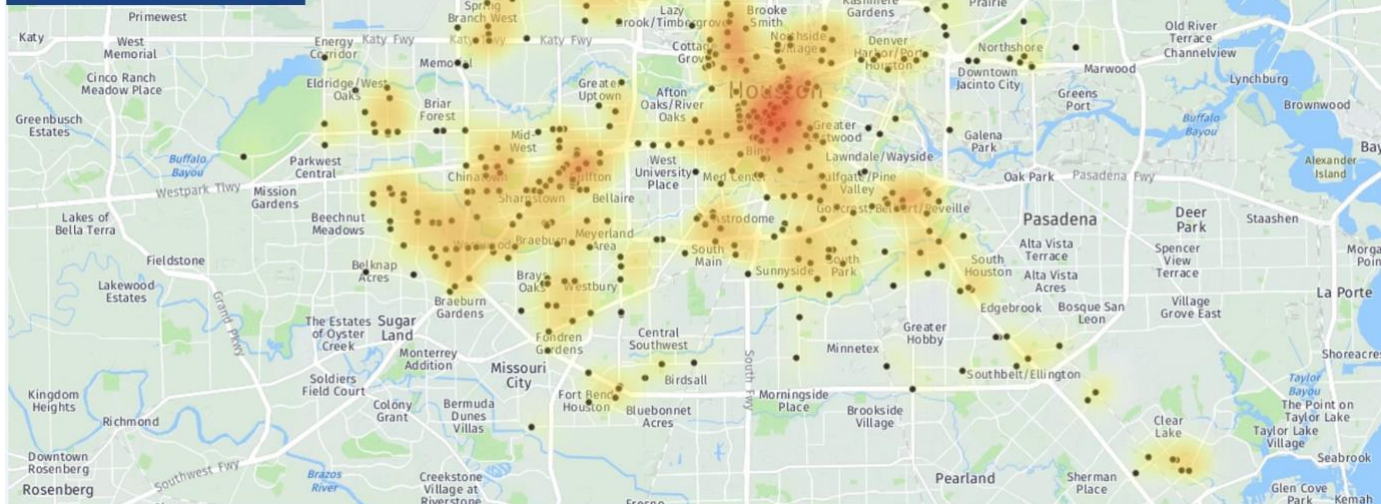
The number of crashes impacting a pedestrian or cyclist from January 1, 2016 to December 31, 2017.

641

The number of people seriously injured (i.e., rendered incapacitated) or killed in Houston:

- 382 pedestrians incapacitated
- 160 pedestrians killed
- 85 cyclists incapacitated
- 14 cyclists killed

Created by **LINK HOUSTON**
LINK Houston advocates for a robust and equitable transportation network so that all people can reach opportunity.



Data source: Texas Department of Transportation Crash Records Information System. Map created using CARTO with HERE Terrain Day basemap.

- 4 people killed in crashes while cycling in April 2018
- 160 walkers & 14 cyclists killed in 2016 & 2017
- Distribution across geography & demographics

Purpose

- Improve safety for all road users through systemic change
- *“address non-motorized safety issues and help communities create safer, better connected bicycling and walking networks”*

(U.S. DOT Safer People, Safer Streets Initiative)

- Identify needs and locations based on objective criteria
- Prioritize safety improvements and maintenance for the most vulnerable road users (pedestrians and cyclists)

Question

What are the 10 most dangerous intersections for people walking or biking in Houston?

Local Planning & Academic Research

- Local Planning/Engineering
 - *Pedestrian & Bicyclist Special District Studies*, Houston-Galveston Area Council (H-GAC)
 - *Top Ten Intersections for Phase 2* (Ongoing), City of Houston PWE
 - And others
- Academic Research
 - *Identification of High Pedestrian Crash Locations* (March 2018), Federal Highway Administration (FHWA)
 - *Synthesis of Methods for Estimating Pedestrian and Bicyclist Exposure to Risk at Areawide Levels and on Specific Transportation Facilities* (January 2017), FHWA
 - And many others

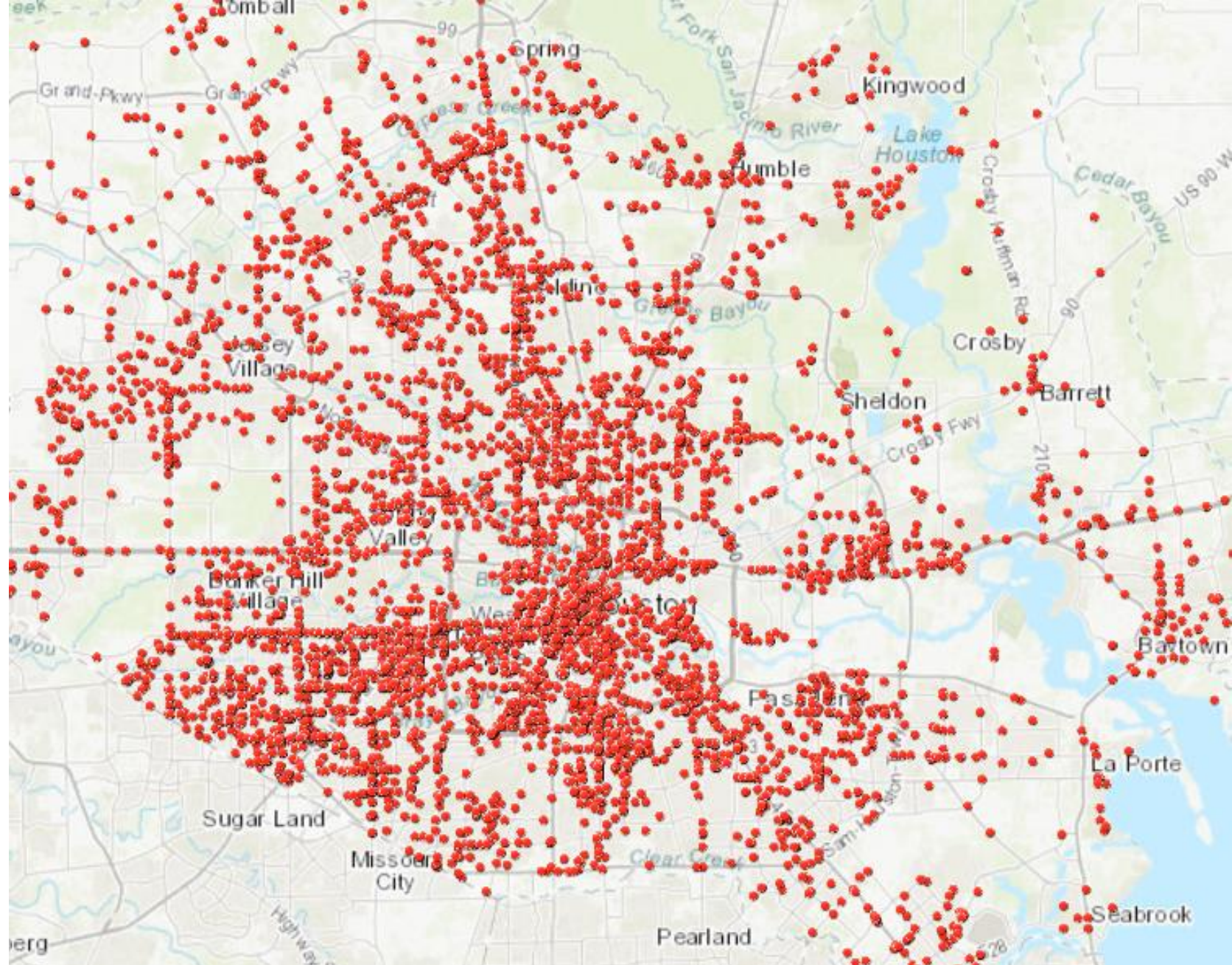
Equitable Crash-based Baseline Method

- Use crashes to systematically identify dangerous intersections
 - Identify crash locations (*TxDOT CRIS*)
 - Weight crash impacts by severity (*USDOT value of statistical life*)
 - Identify intersections (*OpenStreetMap, January Advisors help*)
 - Sum crash impacts within 150' of each intersection
 - Rank order intersections
- Ascertain context and demographic characteristics
- Compare list to other prioritized lists of intersections

12,707 Crashes Impacting a Pedestrian or Bicyclist in Harris County

Source

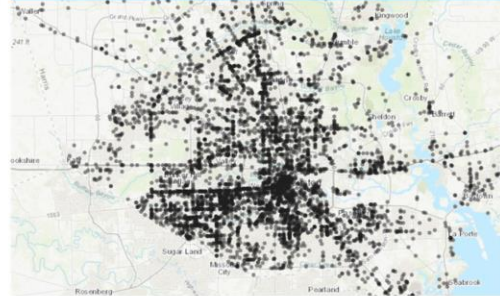
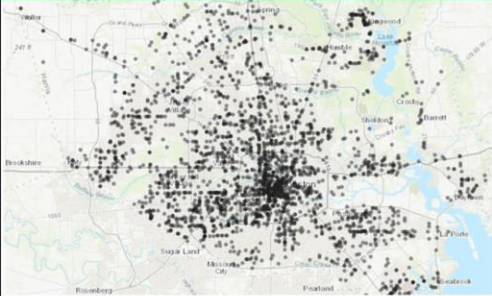
TxDOT Crash Records Information System (CRIS) from January 1, 2013 to December 31, 2017 as accessed and analyzed by LINK Houston on June 7, 2018.



People Injured or Killed in a Crash in Harris County, 2013-2017

BIKE

WALK



12,707

The number of pedestrians or bicyclists impacted in a crash from 2013 to 2017—**about 7 crashes each day.**



(Killed)

618 killed

562 Pedestrians
56 Bicyclists



(Incapacitated)

1,634 seriously injured

1,316 Pedestrians
318 Bicyclists

83% Male
17% Female



(Female/Male)

59% Male
41% Female

39% White
27% Hispanic
29% Black
4% Asian
1% Other



(Race/Ethnicity)

34% Black
31% Hispanic
28% White
4% Asian
3% Other

23% 17 or under
72% 18 to 64
5% 65 or more



(Age)

18% 17 or under
74% 18 to 64
9% 65 or more

Created by

LINK HOUSTON

LINK Houston advocates for a robust and equitable transportation network so that all people can reach opportunity.

Learn More: www.linkhouston.org

See a Map: <https://arcg.is/1C0eum>

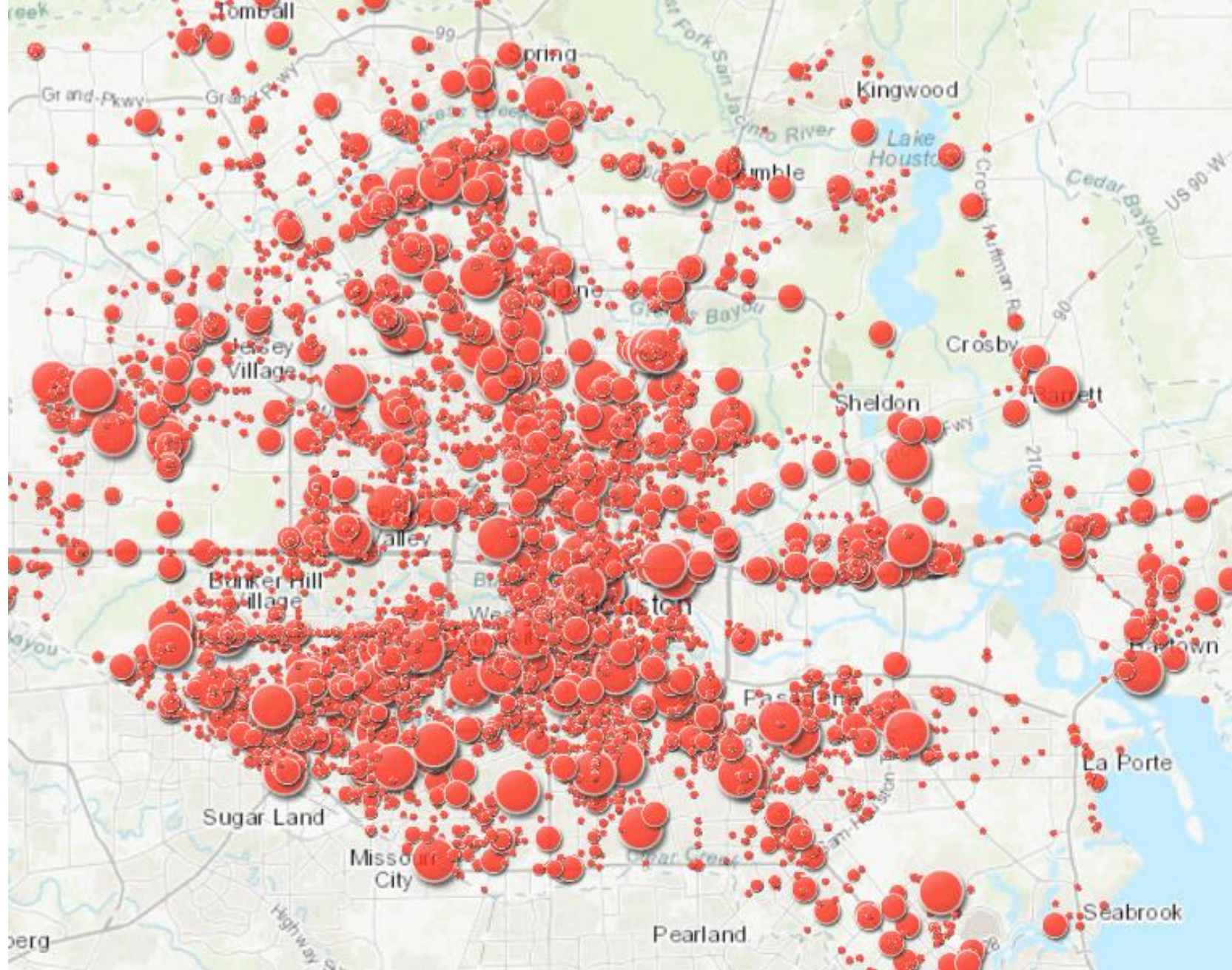
Data source: Texas Department of Transportation Crash Records Information System. Maps created using ArcGIS Online.

Crashes Weighted by Value of Prevention

Note

LINKHouston used the U.S. Department of Transportation's 2016 Value of Statistical Life (i.e., value of preventing a fatality or injury on a U.S. roadway) to weight each crash based on severity. The value of preventing a roadway fatality is estimated to be \$9.6m.

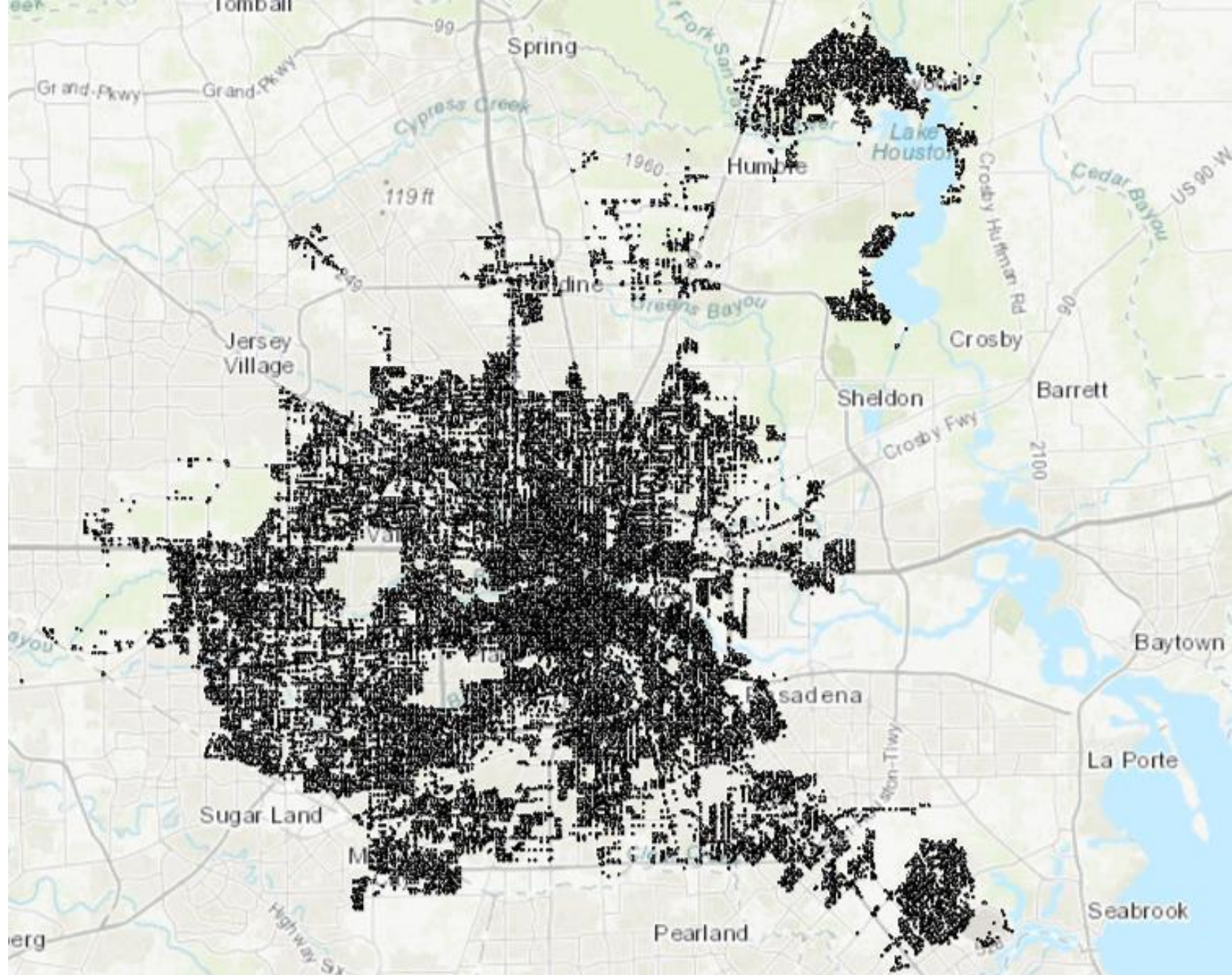
LINK Houston found that Harris County experienced about \$6.76bn in ped/bike impacts over the five year period.



57,610 Houston Intersection Points

Source

Based on OpenStreetMap data analyzed by Jeff Reichman of January Advisors at the request of LINK Houston.

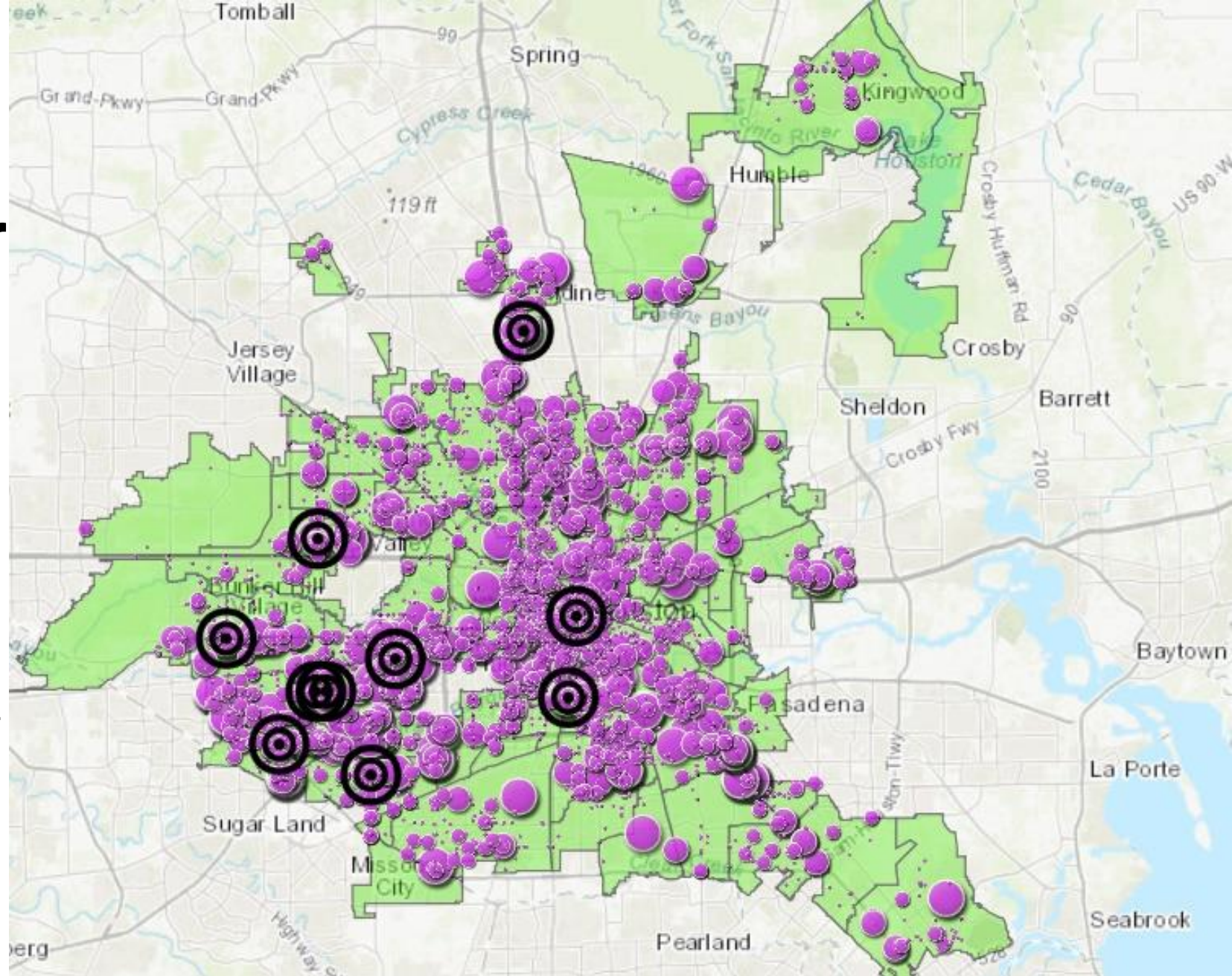


Top Ten Priority Intersections for Safer Streets for Pedestrians & Cyclists

Large black bullseyes mark the top ten most dangerous intersections.

Note

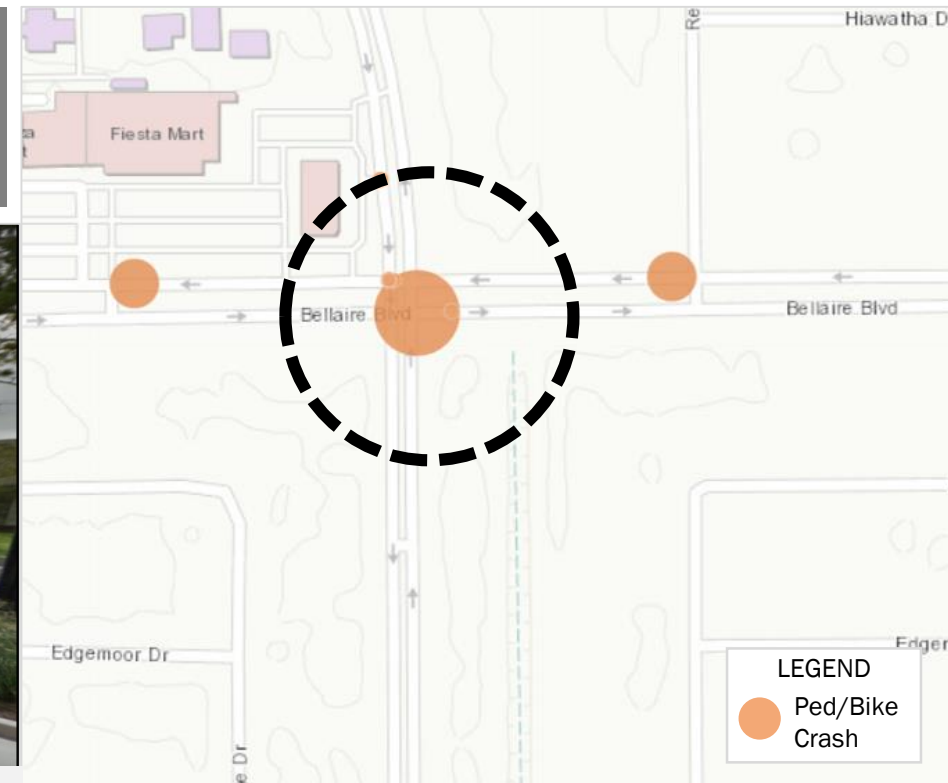
Pink circles indicate the weighted value of preventing pedestrian and bicyclist crashes that occurred from 2013 to 2017 within 150' of each intersection.



Houston's Safer Streets Priority Intersections for People Walking & Biking

July 12, 2018 Version

Safer Streets Priority Intersections for People Walking & Biking



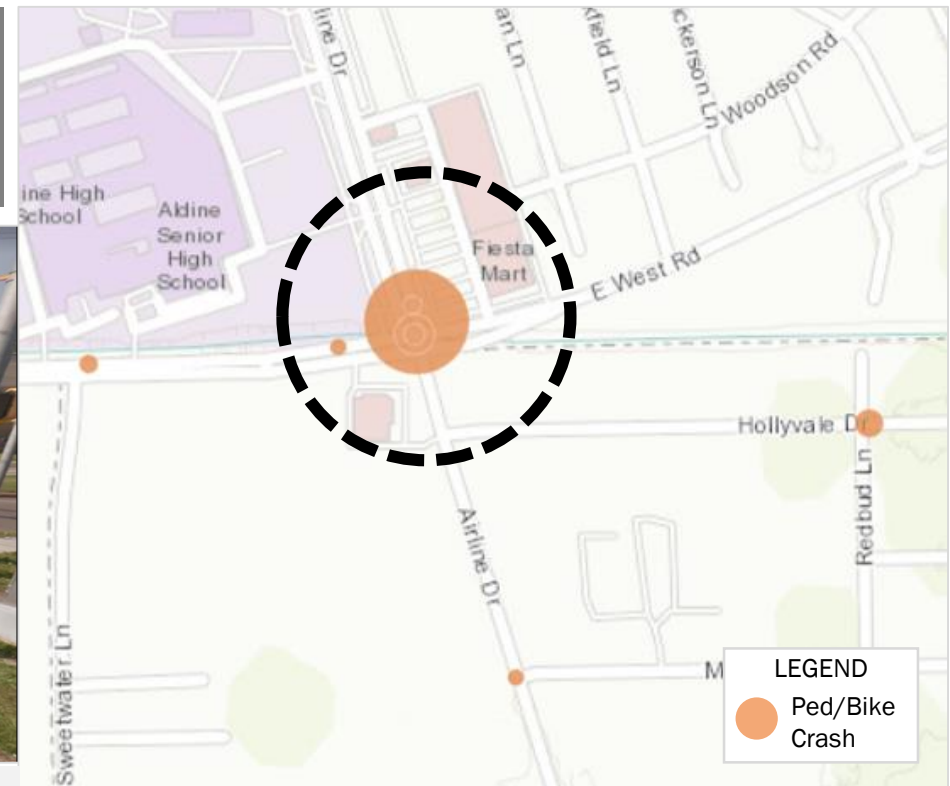
Neighborhood	Sharpstown
# of crashes	7 (6 walking, 1 biking) 1 ped death
Value of prevention	\$12.9m
# population in tract ^a	6,768 48201432902
% HHs in poverty ^a	29%
% HHs with no vehicle ^a	17%
# jobs in proximity ^b	536
# schools within 1/4-mile ^c	3
# transit stops adjacent ^d	4 (764 weekday boardings/alightings)

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**BELLAIRE &
SOUTH GESSNER**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



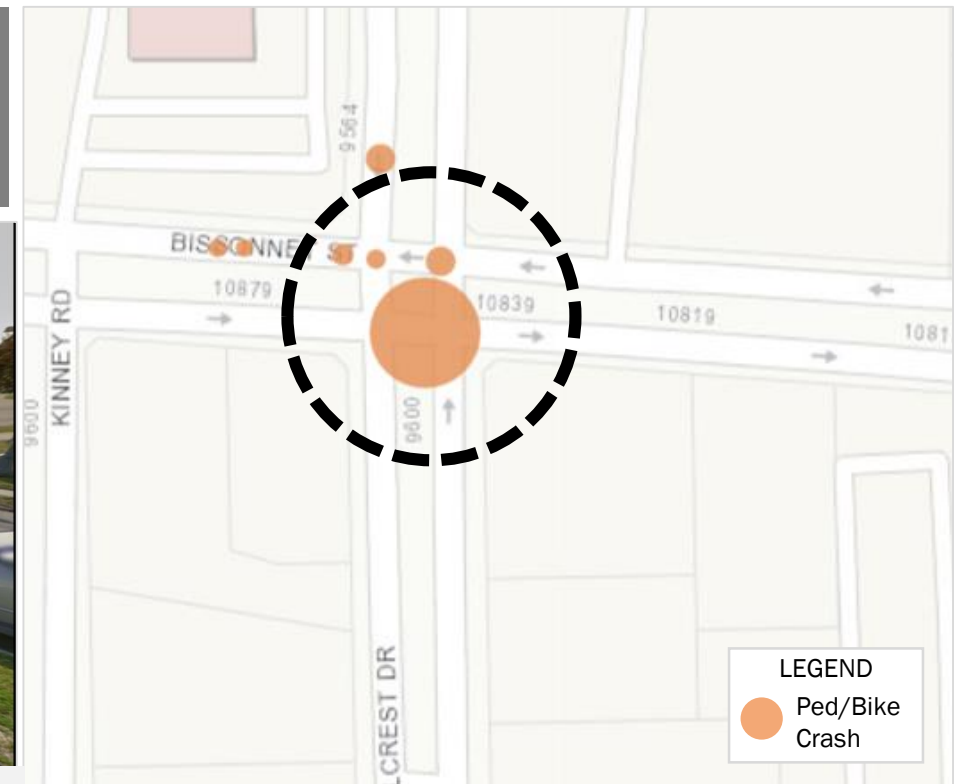
Neighborhood	Greater Greenspoint
# of crashes	6 (4 walking, 2 biking) 1 ped death
Value of prevention	\$13.0m
# population in tract ^a	7,462 48201222503
% HHs in poverty ^a	52%
% HHs with no vehicle ^a	10%
# jobs in proximity ^b	271
# schools within 1/4-mile ^c	3
# transit stops adjacent ^d	3 (224 weekday boardings/alightings)

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**WEST &
AIRLINE**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



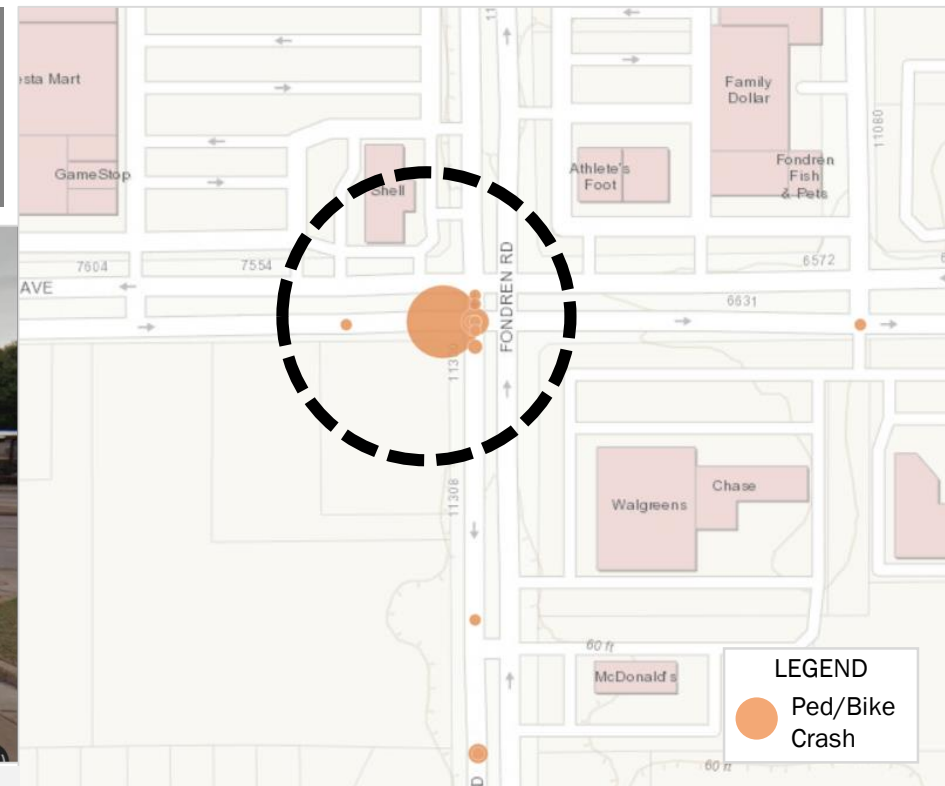
Neighborhood	Alief
# of crashes	8 (8 walking, 0 biking) 1 ped death
Value of prevention	\$13.0m
# population in tract ^a	2,780 48201453300
% HHs in poverty ^a	36%
% HHs with no vehicle ^a	10%
# jobs in proximity ^b	720
# schools within 1/4-mile ^c	3
# transit stops adjacent ^d	4 (150 weekday boardings/alightings)

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**BISSONNET &
WILCREST**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



Neighborhood	Greater Fondren Southwest
# of crashes	12 (11 walking, 1 biking) 1 ped death
Value of prevention	\$14.3m
# population in tract ^a	5,142 48201423302
% HHs in poverty ^a	20%
% HHs with no vehicle ^a	14%
# jobs in proximity ^b	791
# schools within 1/4-mile ^c	2
# transit stops adjacent ^d	3 (504 weekday boardings/alightings)

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**FONDREN &
WEST BELLFORT**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



Neighborhood	AstroDome Area/Greater OST/Macgregor
# of crashes	2 (2 walking, 0 biking) 2 ped deaths
Value of prevention	\$14.4m
# population in tract ^a	2,447 4820131700
% HHs in poverty ^a	18%
% HHs with no vehicle ^a	16%
# jobs in proximity ^b	194
# schools within 1/4-mile ^c	0
# transit stops adjacent ^d	2 (63 weekday boardings/alightings)

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OLD SPANISH TRAIL & 288 SOUTH

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



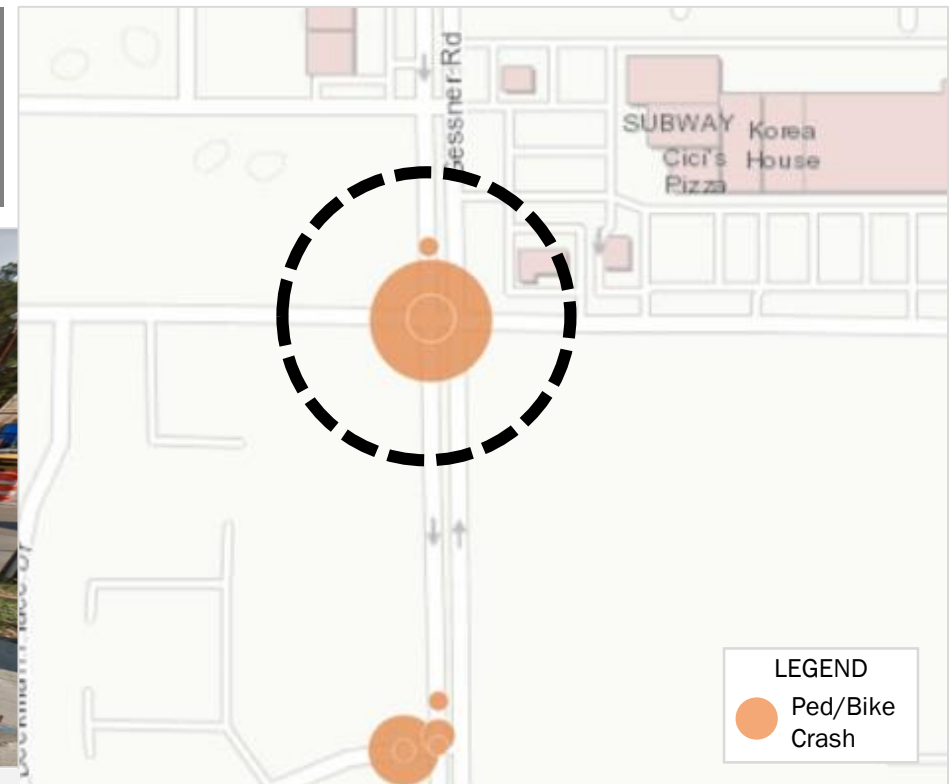
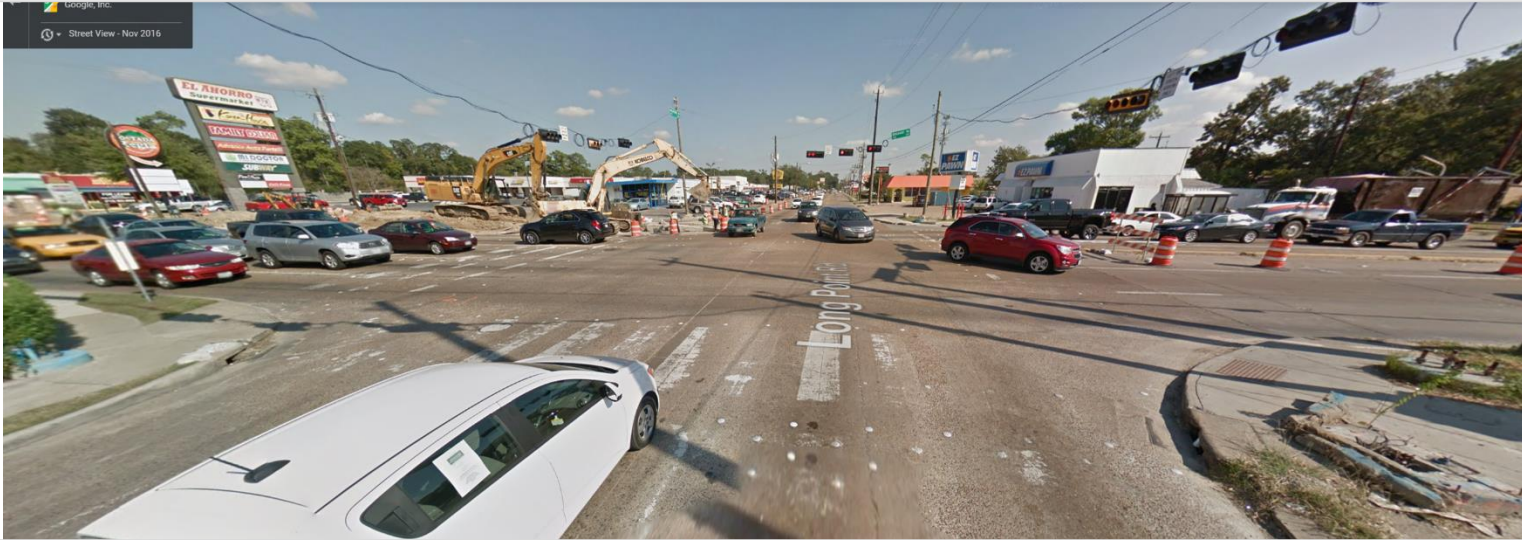
Neighborhood	Gulfton/Mid West/Sharpstown
# of crashes	5 (3 walking, 2 biking) 1 ped / 1 bike death
Value of prevention	\$14.6m
# population in tract ^a	5,019 <small>48201432801</small>
% HHs in poverty ^a	33%
% HHs with no vehicle ^a	20%
# jobs in proximity ^b	431
# schools within 1/4-mile ^c	1
# transit stops adjacent ^d	1 (269 weekday boardings/alightings)

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**WESTPARK DR &
US 59 SOUTH**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



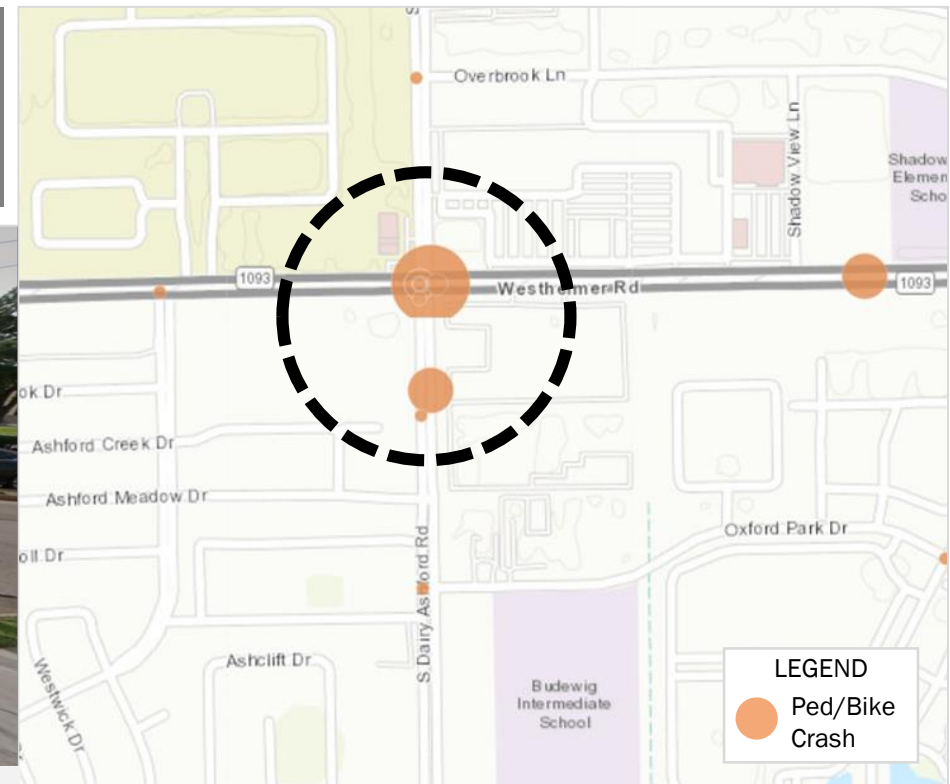
Neighborhood	Spring Branch West
# of crashes	4 (4 walking, 0 biking) 1 ped death
Value of prevention	\$14.7m
# population in tract ^a	4,324 48201522202
% HHs in poverty ^a	38%
% HHs with no vehicle ^a	10%
# jobs in proximity ^b	431
# schools within 1/4-mile ^c	2
# transit stops adjacent ^d	2 (303 weekday boardings/alightings)

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LONG POINT & GESSNER

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



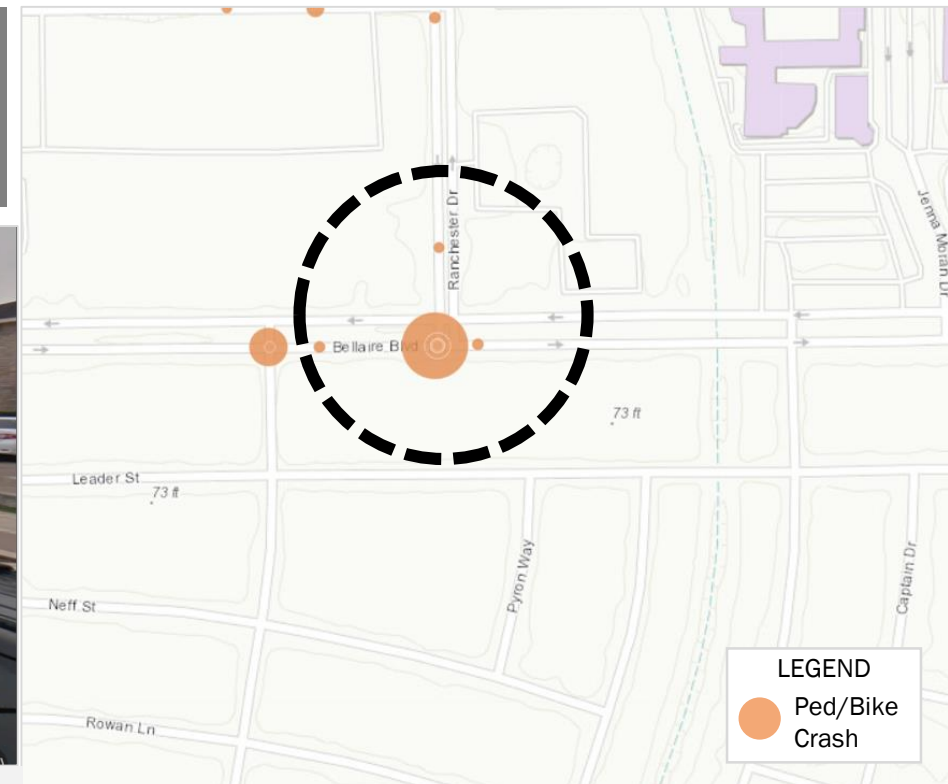
Neighborhood	Eldridge West Oaks/Briar Forest
# of crashes	11 (9 walking, 2 biking) 1 ped death
Value of prevention	\$17.2m
# population in tract ^a	8.936 48201452000
% HHs in poverty ^a	16%
% HHs with no vehicle ^a	5%
# jobs in proximity ^b	726
# schools within 1/4-mile ^c	1
# transit stops adjacent ^d	4 (371 weekday boardings/alightings)

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**WESTHEIMER &
S. DAIRY ASHFORD**

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



Nearby Neighborhood	Sharpstown
# of crashes	11 (10 walking, 1 biking) 1 ped death
Value of prevention	\$18.5m
# population in tract ^a	5,967 48201433003
% HHs in poverty ^a	52%
% HHs with no vehicle ^a	23%
# jobs in proximity ^b	409
# schools within 1/4-mile ^c	2
# transit stops adjacent ^d	2 (268 weekday boardings/alightings)

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RANCHESTER & BELLAIRE

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets Priority Intersections for People Walking & Biking



Neighborhood	Downtown (near Midtown)
# of crashes	13 (11 walking, 2 biking) 2 ped deaths
Value of prevention	\$25.1m
# population in tract ^a	4,621 48201100000
% HHs in poverty ^a	18%
% HHs with no vehicle ^a	17%
# jobs in proximity ^b	2,206
# schools within 1/4-mile ^c	0
# transit stops adjacent ^d	1 (53 weekday boardings/alightings)

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FANNIN & PIERCE

Sources: A. [H-GAC Demographic Data Explorer](#), B. [H-GAC Activity-Connectivity Explorer](#), C. Google Maps, D. Houston METRO

Safer Streets for People Walking & Biking

Priority Intersections

Approved by Mayor Turner
July 13, 2018

LINK Houston Crash-based

1. **Fannin & Pierce**
2. **Ranchester & Bellaire**
3. Westheimer & S Dairy Ashford
4. **Long Point & Gessner**
5. Westpark Dr & U.S. 59 South
6. Old Spanish Trail & 288 South
7. **Fondren & West Bellfort**
8. **Bissonnet & Wilcrest**
9. **West & Airline**
10. **Bellaire & S Gessner**

BikeHouston Members

1. **Sunset & Main & Fannin***
2. **Shepherd & Allen Pkwy & Kirby**
3. **Taylor & Spring & MKT Trl**
4. **11th St & Nicholson**
5. West 610 & Woodway & Arbor. Trl
6. **Houston & Spring & MKT Trl***
7. **Hawthorne & Spur 529 & Holman**
8. **Patterson & Washington**
9. Waugh/Heights & Memorial
10. Wesleyan & Westpark/US 59
11. Morningside & Bellaire

COH PWE Phase 2 Draft

1. Patton & Irvington
2. Renwick & Dashwood
3. Renwick & Elm
4. 11th & Nicholson
5. White Oak & Heights Trail
6. Crawford & Hermann
7. Hawthorne & Bagby
8. Eldridge & Rincon
9. Eldridge & Whittington
10. Townwood & Orem

Additional refinements needed...

And could include a variety of unbiased data (Census, roadway class, etc) or neighborhood specific data (i.e., Complete Communities, EEDC Built Environment Report, Rice Kinder Gulfton Near-Miss Study, etc).

* Project already in progress

Safer Streets for People Walking & Biking

Next Steps

Using the priority intersections...

- Create an investigation task force
 - COH: PWE, PD, HPD
 - Other Stakeholders: METRO, Harris County, TxDOT, Mgt. Districts, etc
- Establish investigation protocol and countermeasure matrix (Leverage tools created by FHWA or peer cities)
- Investigate intersections and make recommendations for infrastructure, enforcement, and education improvements
- Implement recommendations
- Document lessons learned applicable at other intersections and along travel corridors

<https://commons.wikimedia.org/wiki/File:Discussion.png>



Questions / Discussion

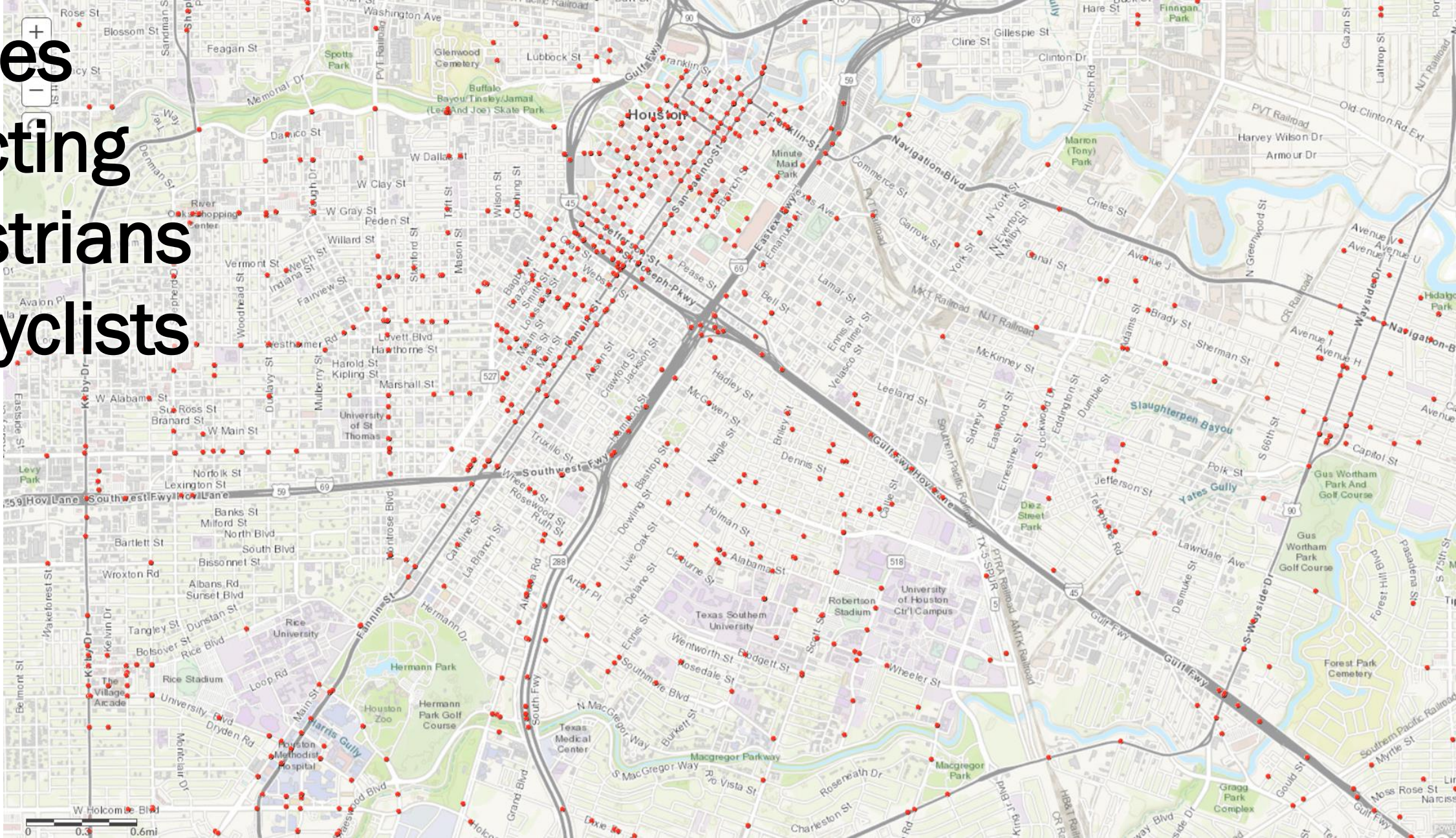
Webmap: <https://arcg.is/1C0eum>

Small Area Methodology

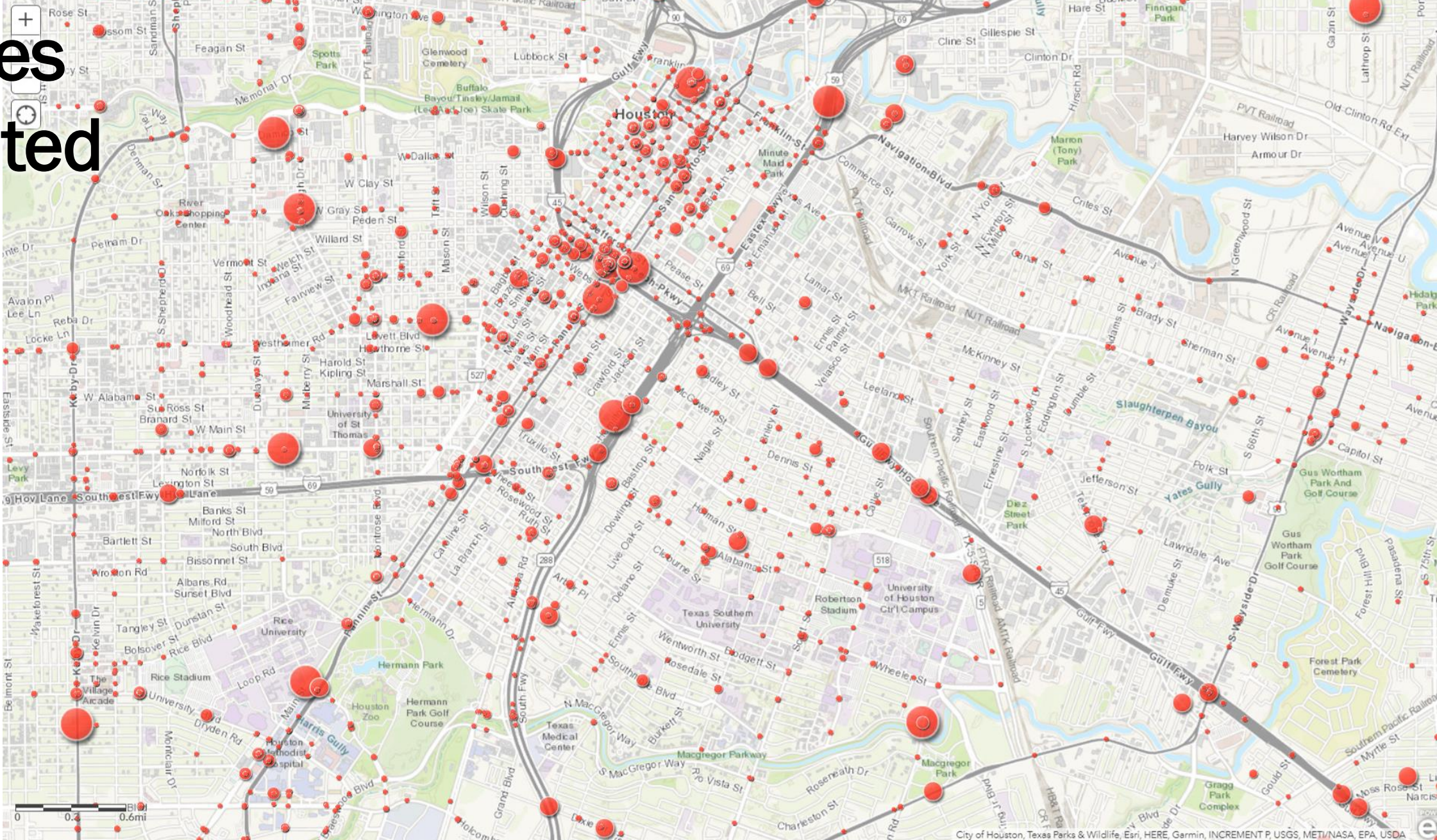
Example with 3-1-1

Comparison

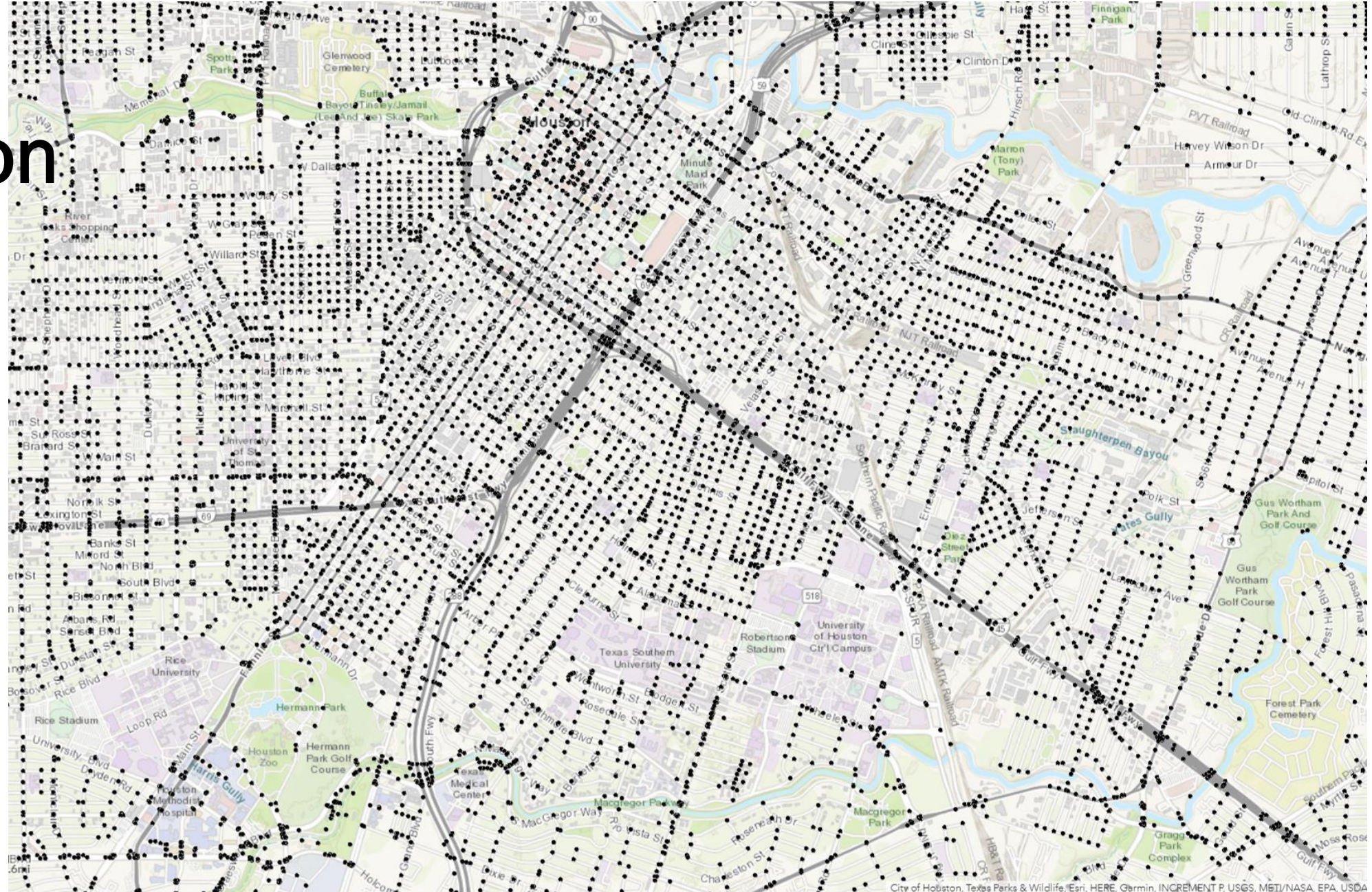
Crashes Impacting Pedestrians or Bicyclists



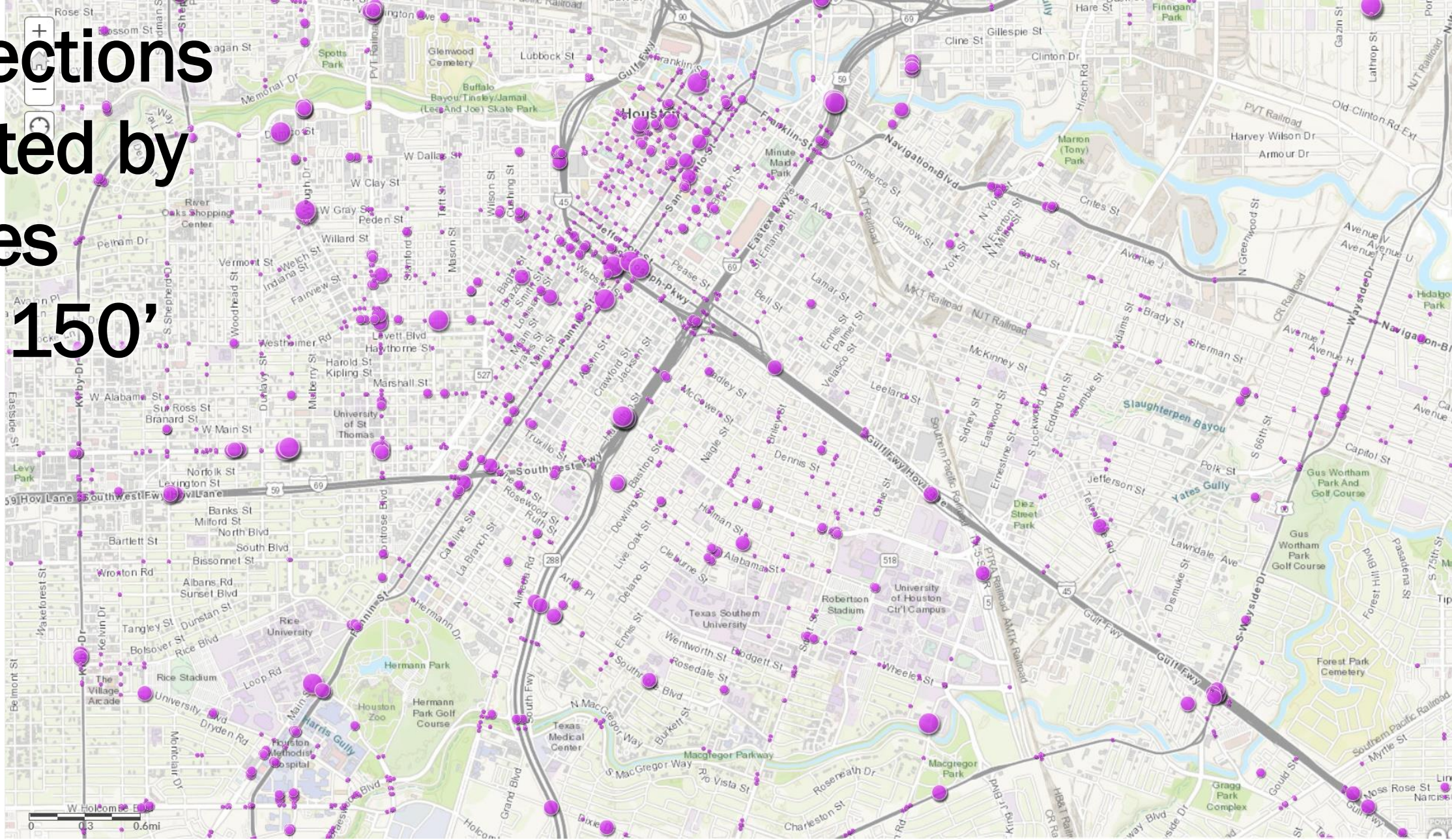
Crashes Weighted



Houston Intersection Points



Intersections Weighted by Crashes within 150'



Relevant 3-1-1 Service Requests per Intersection

Note
LINKHouston analyzed 2013-
2017 3-1-1 data from the City of
Houston.

