


**CITY OF LOS ANGELES**  
**INTER-DEPARTMENTAL MEMORANDUM**

Date: January 11, 2018

To: Honorable City Council  
c/o City Clerk, Room 395  
Attention: Honorable Mike Bonin, Chair, Transportation Committee

From: Seleta J. Reynolds,  General Manager  
Department of Transportation

Subject: Vision Zero / Implementation Strategy for the Safety of the Traveling Public / Hazard Mitigation (Council File: 17-1137)

**SUMMARY**

In response to Council File 17-1137, the Los Angeles Department of Transportation (LADOT) provides the attached presentation on the High-Injury Network (HIN) and the methodology used to establish the network. The presentation includes background on LADOT's data validation process, collision analysis, safety counter-measures, and how LADOT is responding to and improving relevant data.

**RECOMMENDATION**

The Los Angeles Department of Transportation recommends that City Council receive and file this item.

**BACKGROUND**

In 2015, the City developed and announced the Vision Zero program, a set of data-backed policy strategies with the objective of reducing and eventually eliminating traffic fatalities.

On October 4 2017, Councilmembers Krekorian and Ryu introduced a motion to instruct the Department of Transportation to develop and report on the Vision Zero data analysis approach, data validation process, and project implementation strategy that reflects the City Council's goal of addressing all threats to the safety of the traveling public, whether the root causes are because of the design of infrastructure, its state of repair, or because of any other cause that has the potential to cause injury or death. The attached presentation includes background on LADOT's data validation process, collision analysis, safety counter-measures, and how LADOT is responding to and improving relevant data.

Further, LADOT was instructed to begin reporting on an annual basis with a set of proposed Vision Zero projects for consideration by the Council and for inclusion in the Mayor's proposed budget. LADOT will follow-up with a future report on the 2018 Vision Zero Action Plan and Progress Report.

**FINANCIAL IMPACT**

There is no anticipated fiscal impact to the City of Los Angeles due to this action.

SJR/NG/JC

Attachment





**LOS ANGELES** | 2015-2025

**VISION ZERO DATA PRESENTATION TO  
COUNCIL TRANSPORTATION COMMITTEE**

**LOS ANGELES DEPARTMENT OF TRANSPORTATION**

***FEBRUARY 14, 2018***



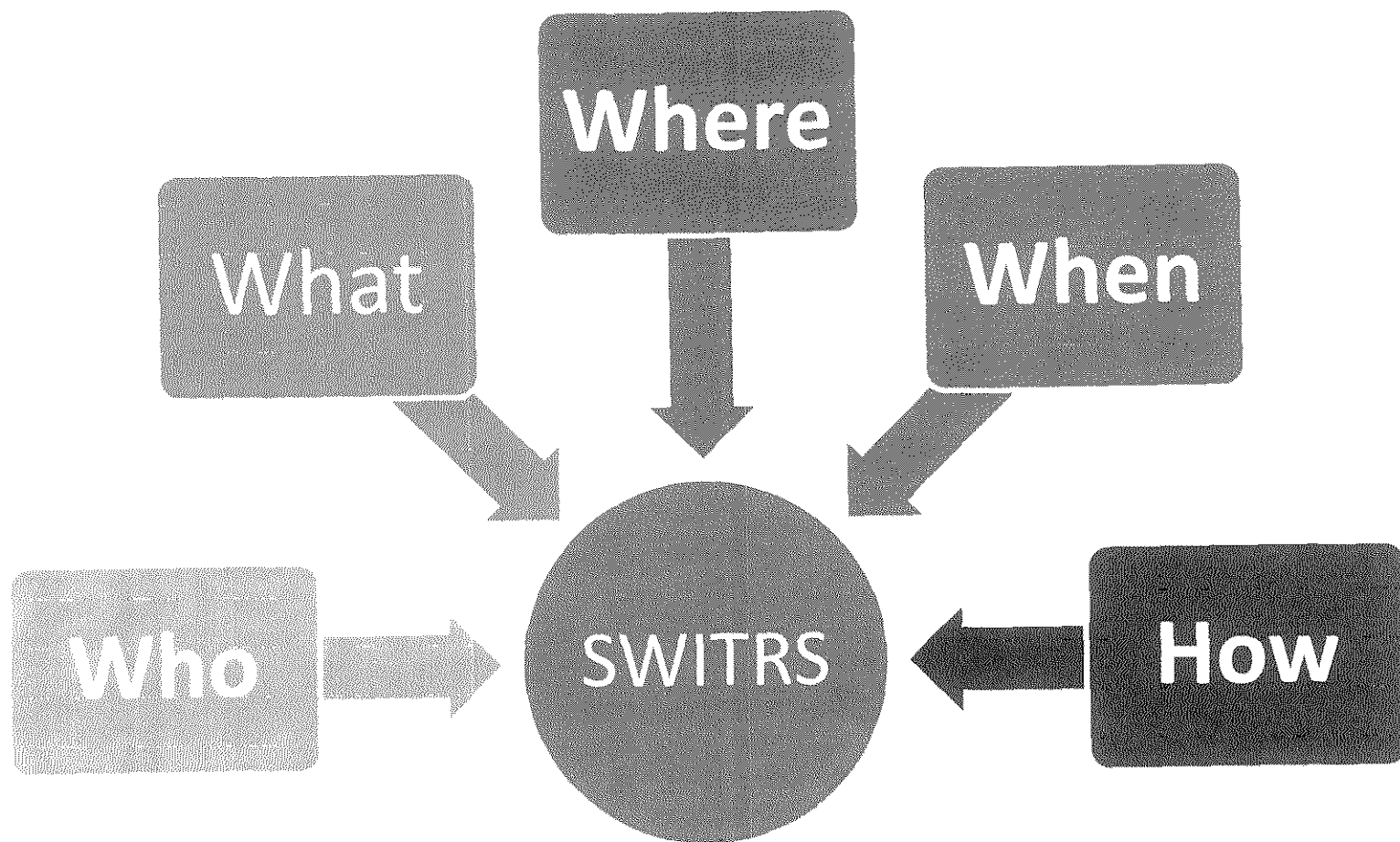
### Our Vision Zero Data...

- Is comprehensive
- Is public
- Informs **where** we do our work
- Guides **how** we design



# DATA PROCESS & ASSEMBLY

# Statewide Integrated Traffic Records System (SWITRS)



# Current Collision Data Process – 7-9 Months



**LAPD**

Fill out  
Form 555



Prepare SWITRS Tables  
(Process / Organize / Digitize  
Data)



Clean data\*  
(2 full-time staff)



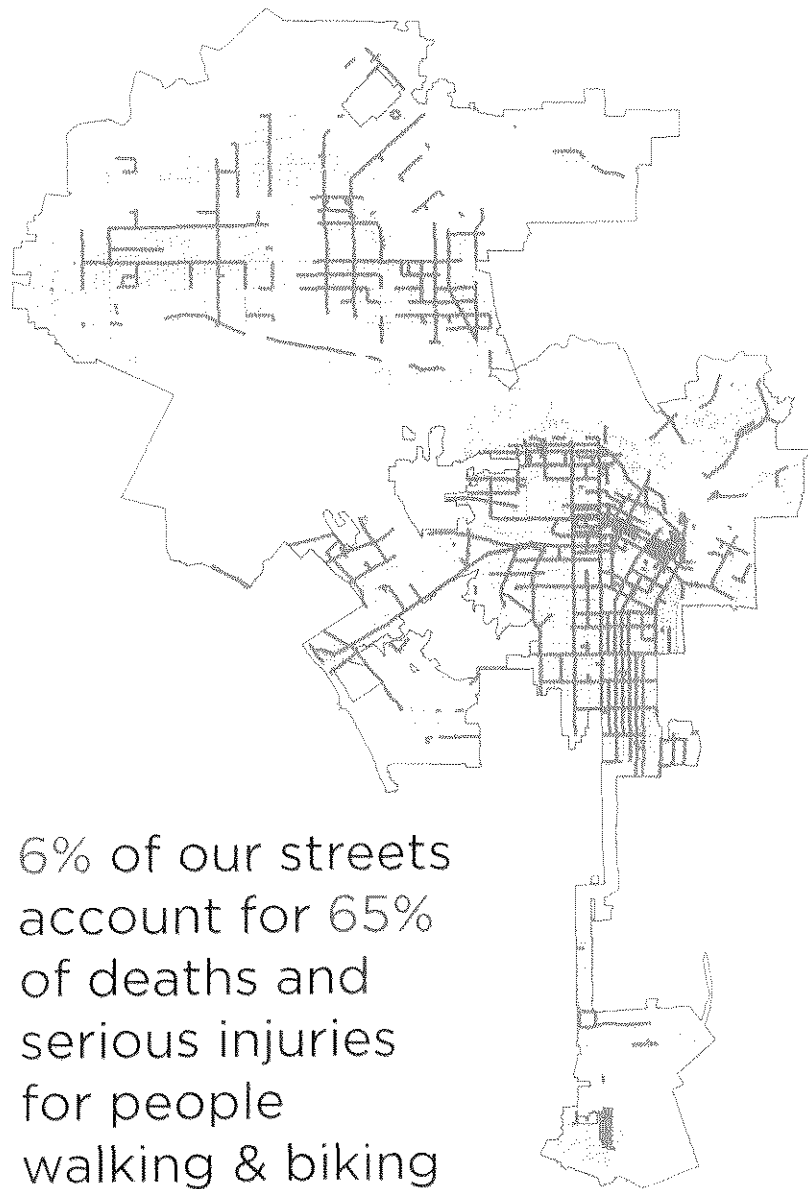
Use Data to Inform  
Engineering

## Error Types

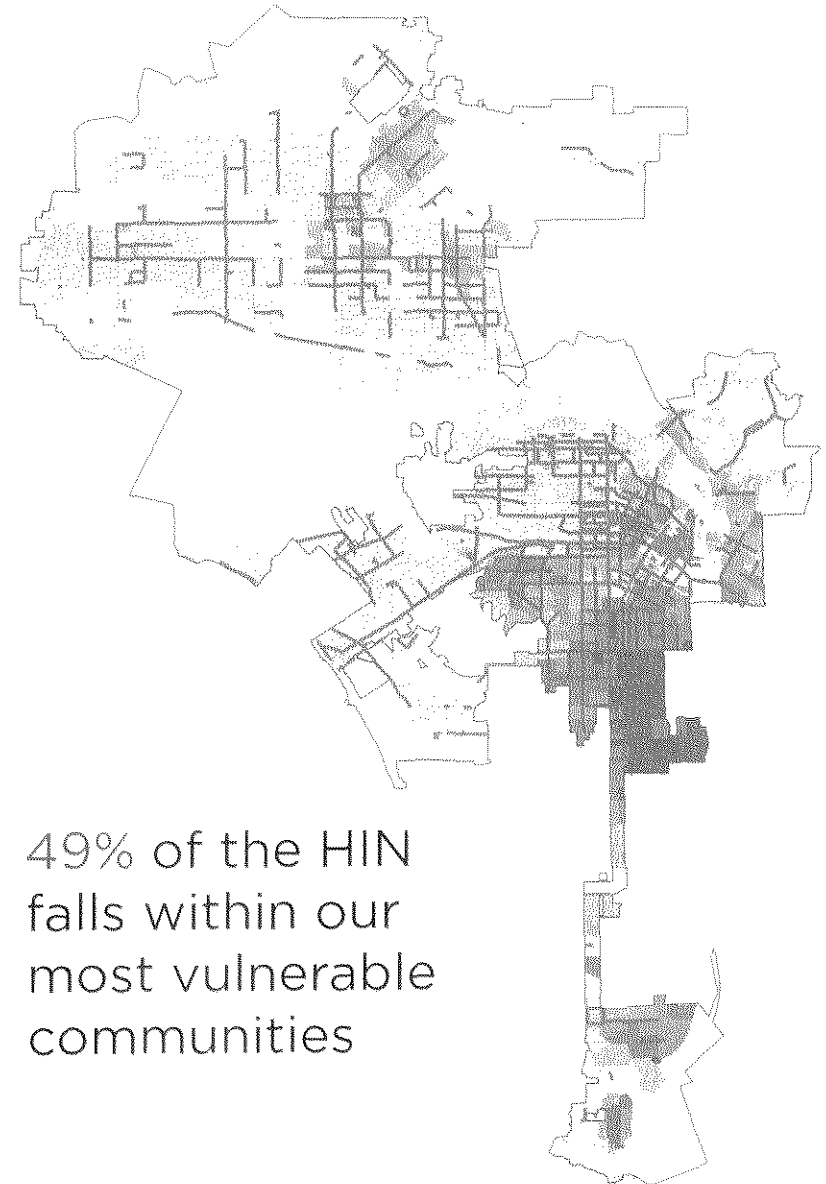
1. No X,Y coordinates
2. Missing data
3. Contradicting data



# HIGH INJURY NETWORK (HIN)

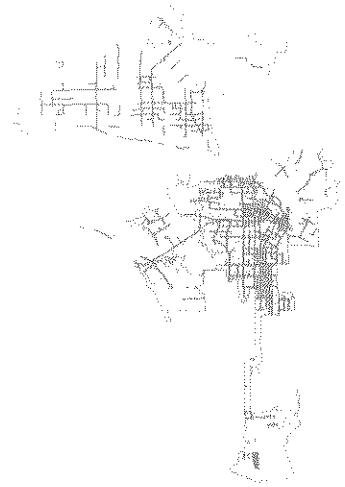


*Source: 2009 - 2013 SWITRS*





# Adding Infrastructure Data



+

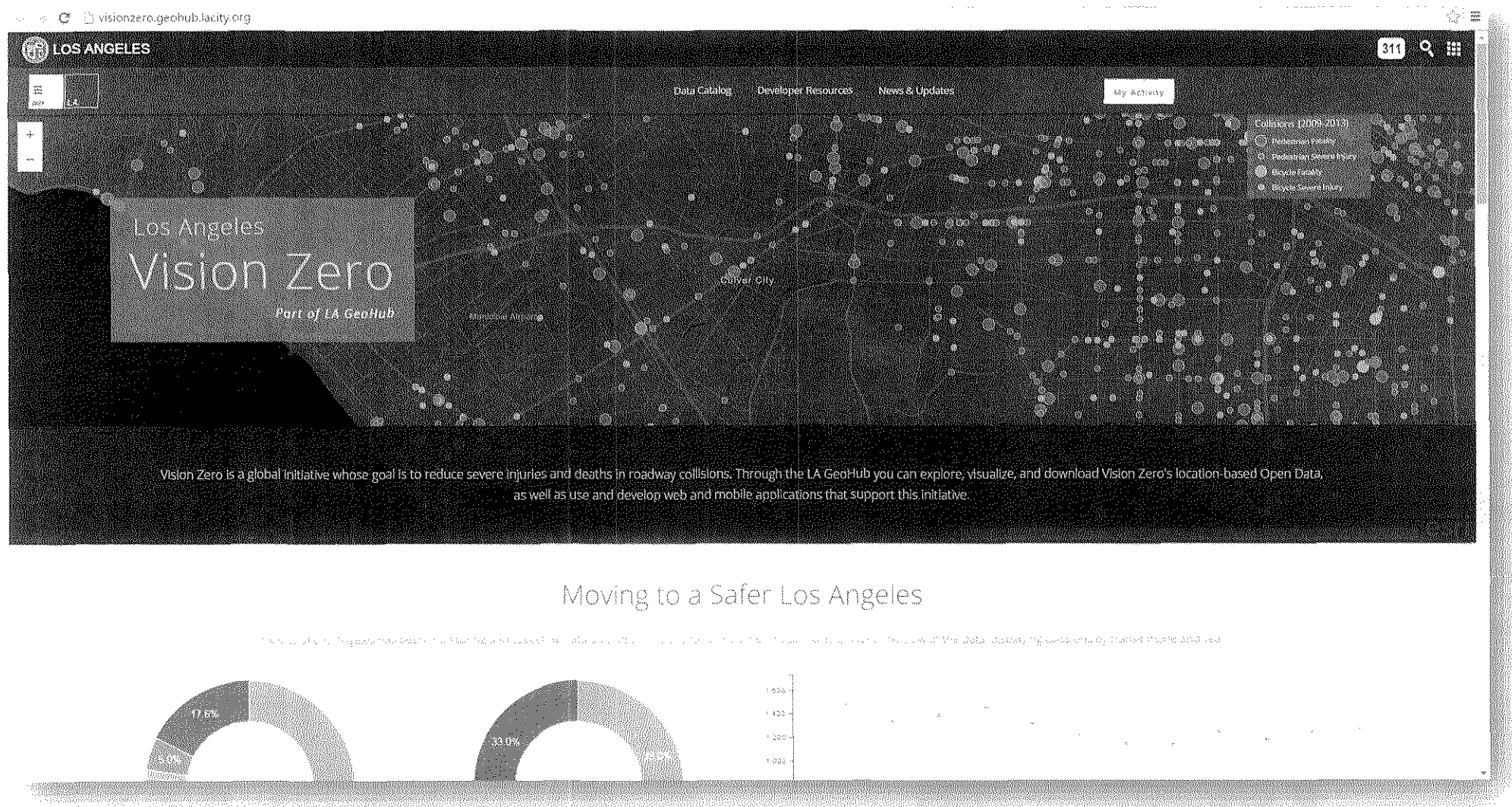
Pedestrian Countdown

Signalized/Non-signalized  
Intersection

Crosswalk Markings



# Publishing the Database



LADOT has published all the collision and infrastructure data used in the Vision Zero Technical Collision Analysis to <http://visionzero.geohub.lacity.org>

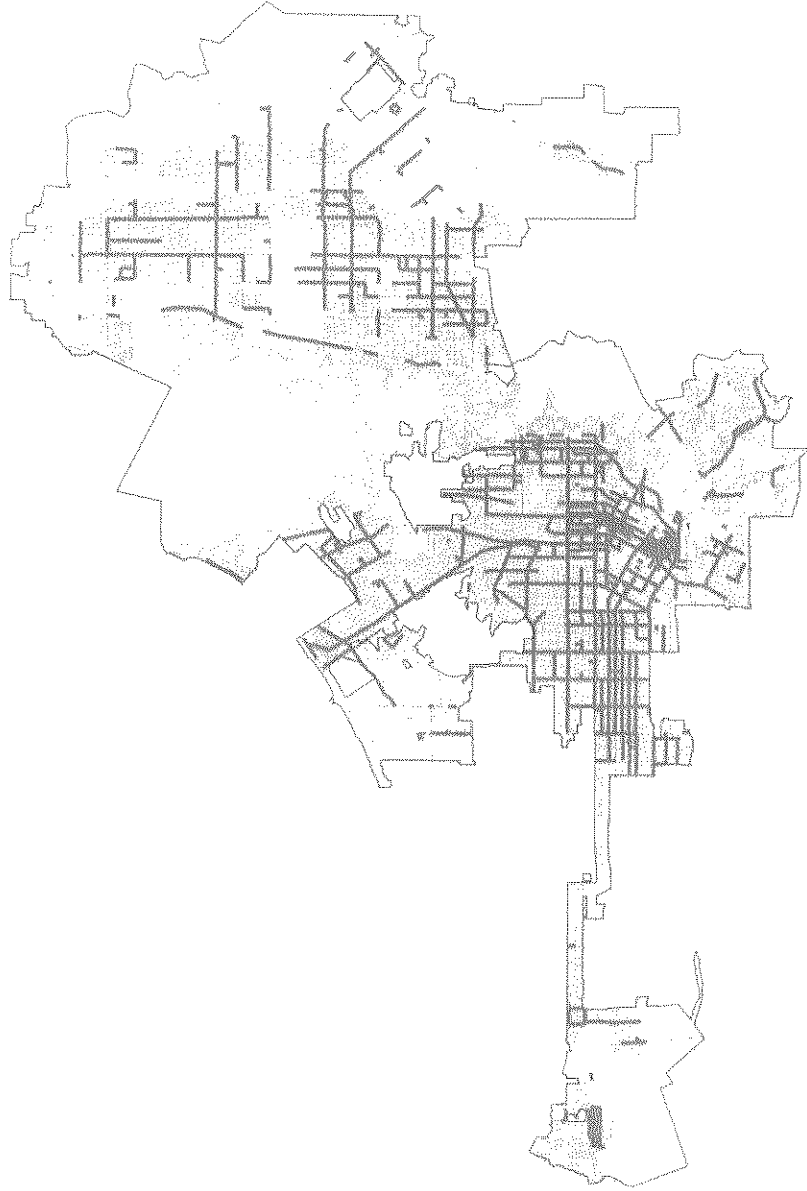
## Data Process Summary

- High-Injury Network developed using industry best practices
  - 5-years of collision data
  - Network analysis
  - Prioritize over-represented vulnerable population
- Develop infrastructure asset database
- Regularly publish and update data



# HOW DO WE USE THIS DATA TO HELP DEVELOP A WORKPLAN?

# High-Injury Network (HIN) – 5 Years of Collision Data



**We began with a basic overlay of 5 years of injury data on the City of LA street network, highlighting streets that showed a disproportionate number of severe and fatal injuries.**

**Even though the High-Injury Network represents only 6% of our streets, that's still over 460 miles of streets!**

**How do we further prioritize to create an annual work-plan?**



# LOCATION PRIORITIZATION

## Potential Location Priorities

Most  
Severe/  
Fatal Injuries

Children &  
Seniors

Social  
Equity

Geographic  
Equity

Dangerous  
Behavior

Low-Cost/  
Low-  
Complexity

In February and March 2016, LADOT met with Vision Zero public stakeholders (including the Vision Zero Task Force, council office staff, the Vision Zero Alliance, and more) to solicit input on potential factors we should consider to develop our year one work plan.

## LOCATION PRIORITIZATION

- **Vision Zero Alliance Feedback**
- **62 In-Person Surveys**
- **522 Online Surveys**

Location Priority	Combined Weighted Score
Crash Severity	0.478
Party Vulnerability	0.361
Social Equity	0.333
Dangerous Behavior	0.303
Geography	0.273
Inexpensive & Simple	0.252

# Developing a Work Plan – Priority Corridors

Intersection Score =  
Fatality (x1.5) +  
Severe Injury +  
Child or Senior\* +  
Target Community\*\*

\*0 or 1 if a child or senior was present at any KSI collision

\*\*0 or 1 if the location was in a target community

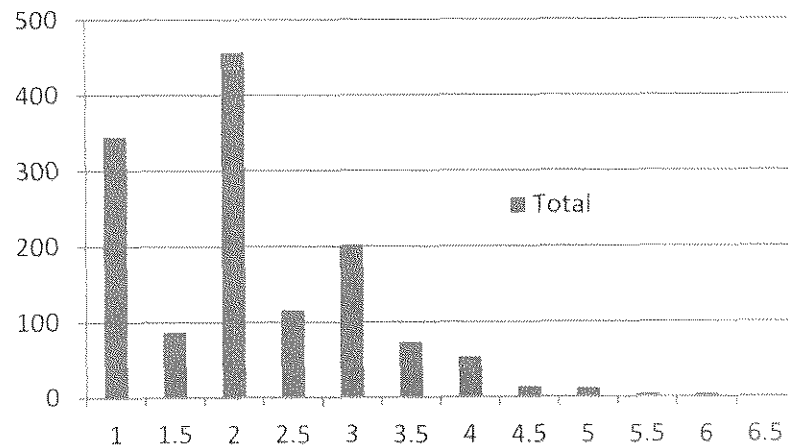
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## Intersection Score Distribution



- Among intersections with at least one KSI
- Highest score = 6.5 (two intersections)

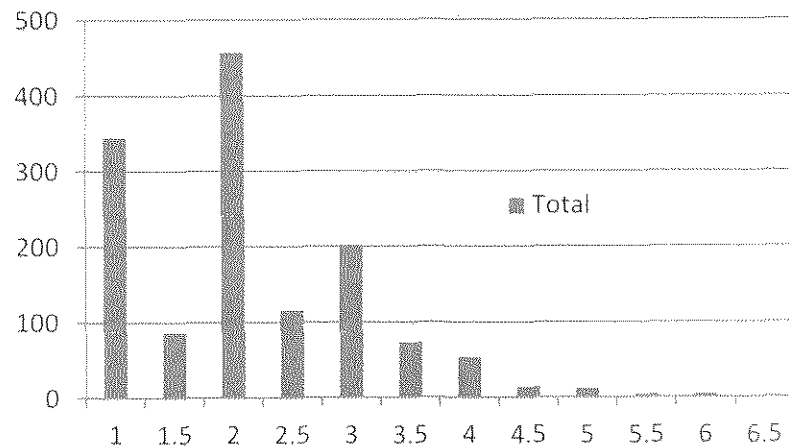
# Developing a Work Plan – Priority Corridors

$$\text{Intersection Score} = \text{Fatality (x1.5)} + \text{Severe Injury} + \text{Child or Senior}^* + \text{Target Community}^{**}$$

\*0 or 1 if a child or senior was present at any KSI collision

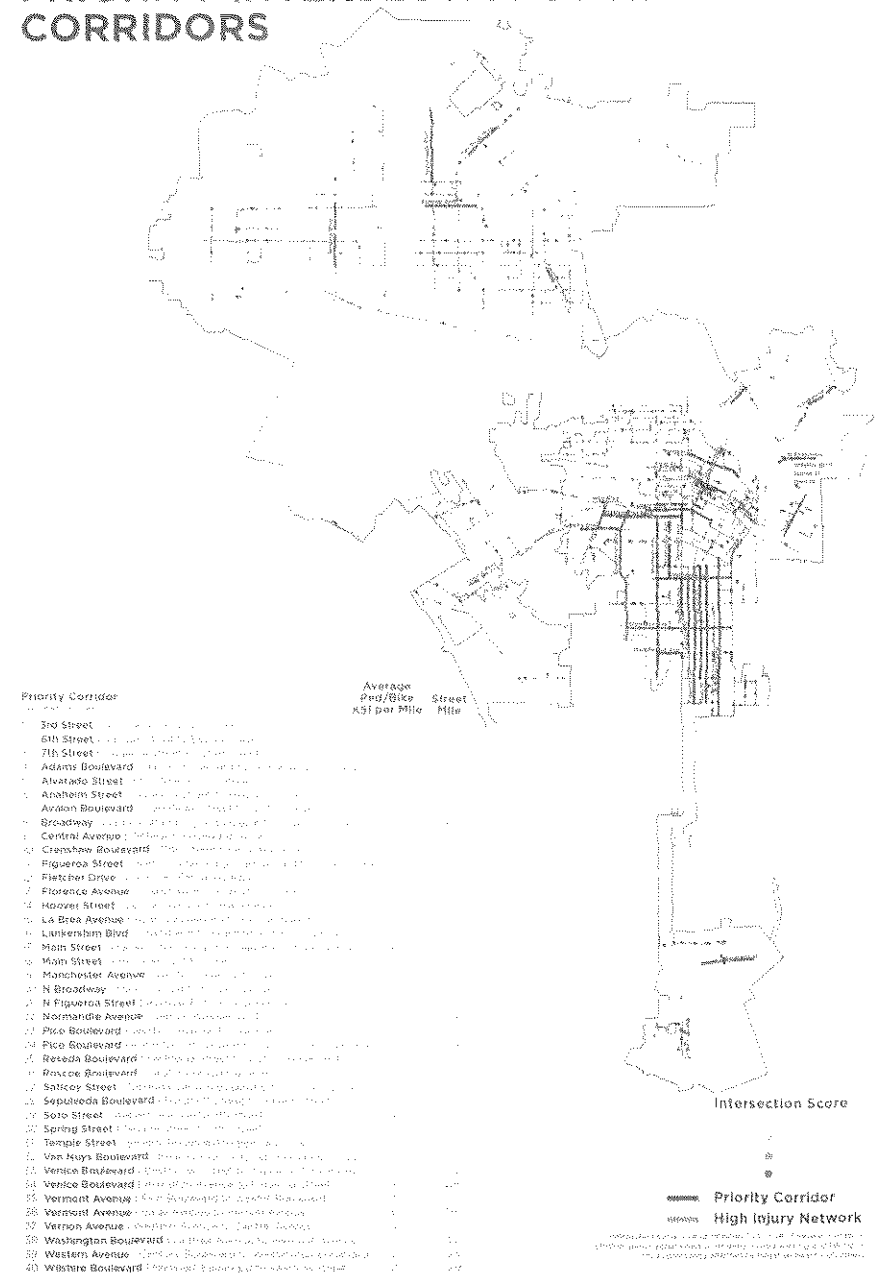
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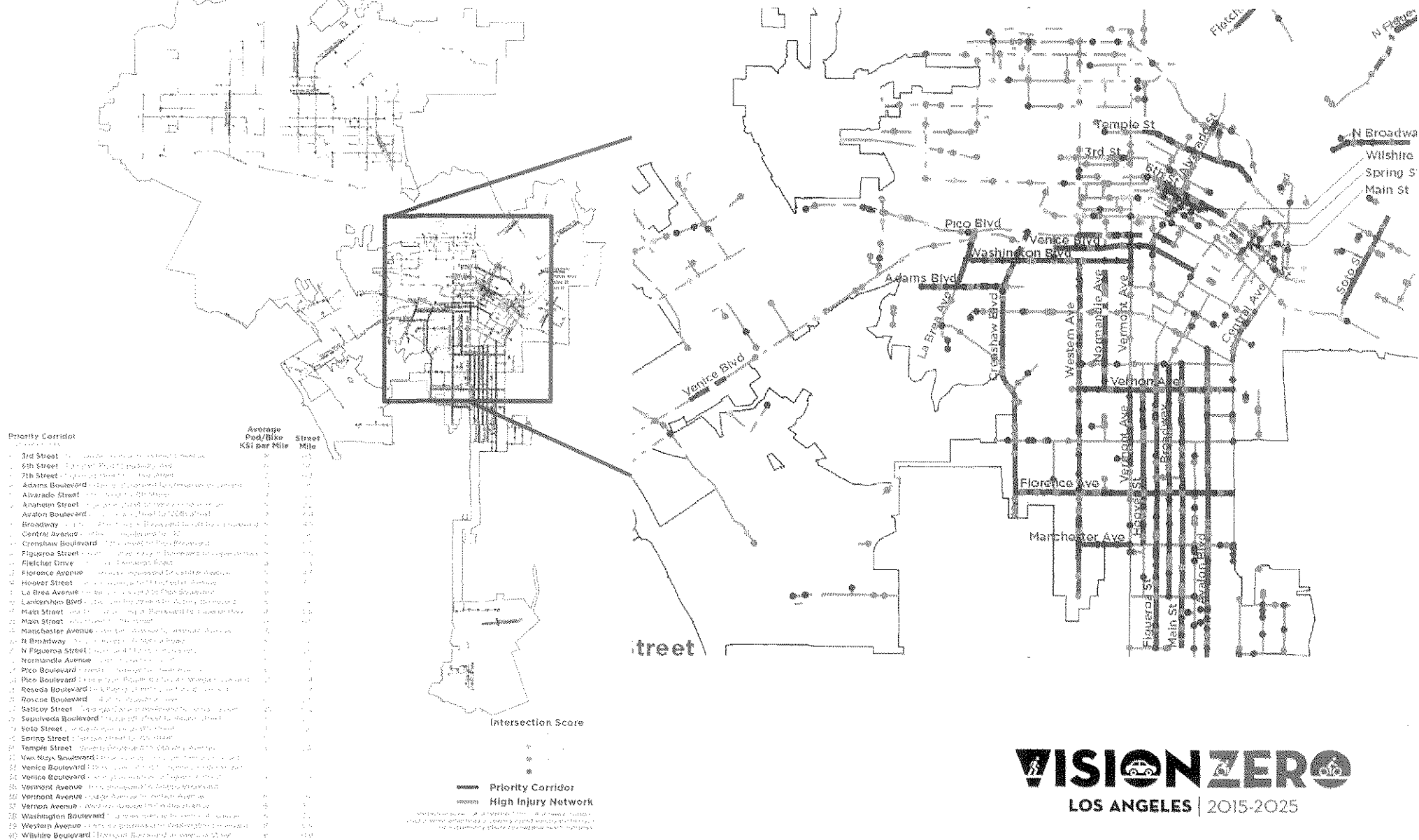
## HIGH INJURY NETWORK PRIORITY INTERSECTIONS AND CORRIDORS





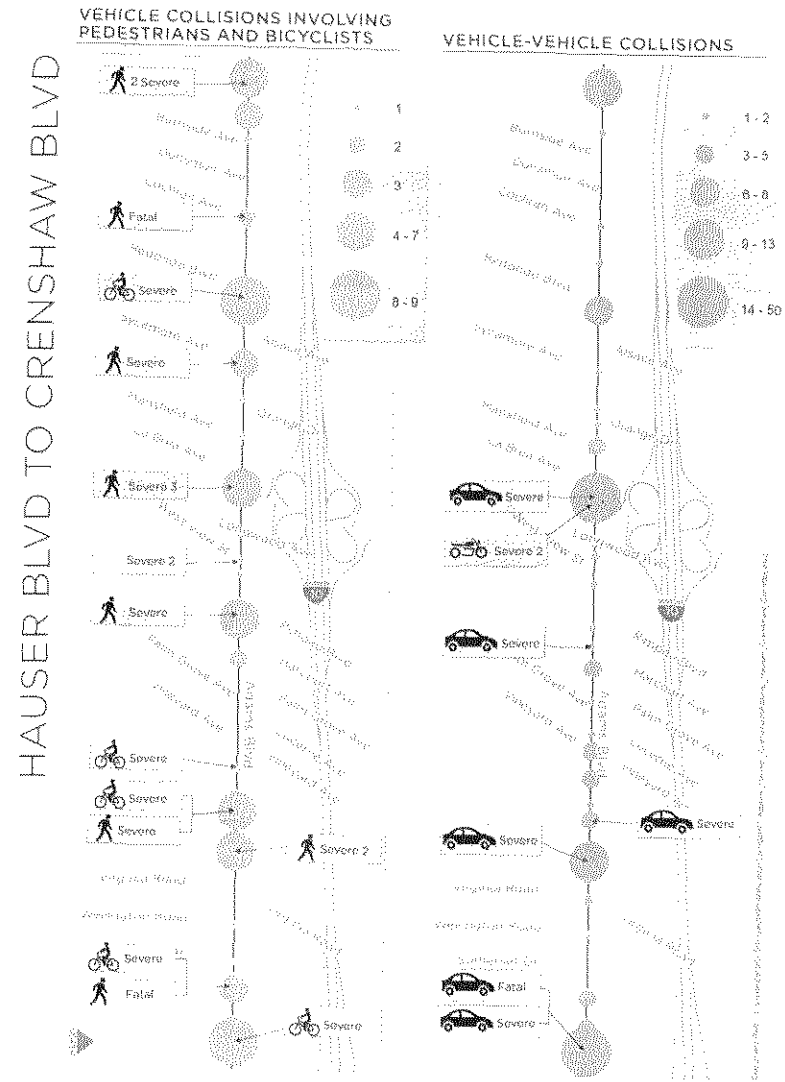
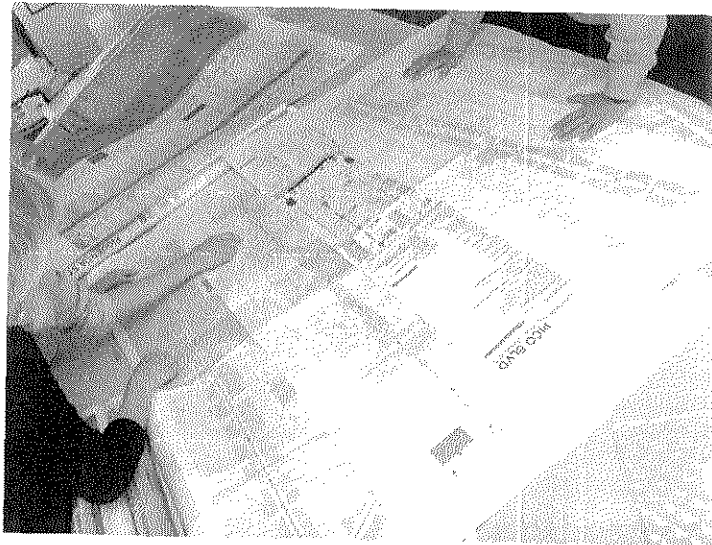
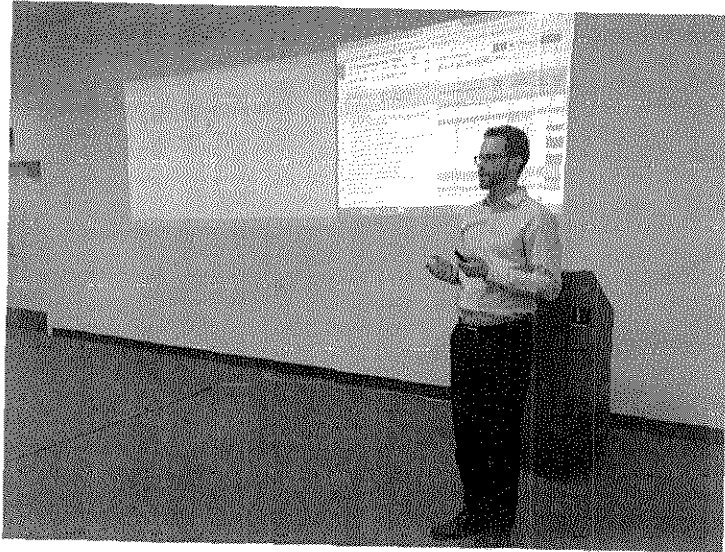
# Focus on Corridors To Address Speed & Conflict

## HIGH INJURY NETWORK PRIORITY INTERSECTIONS AND CORRIDORS



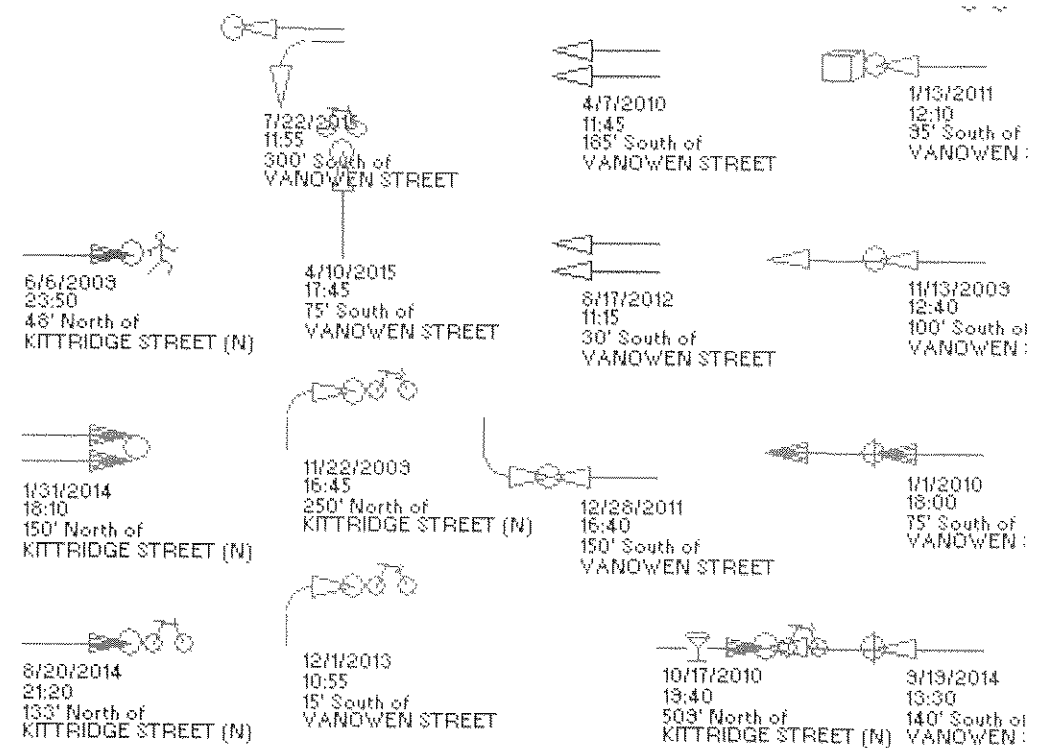
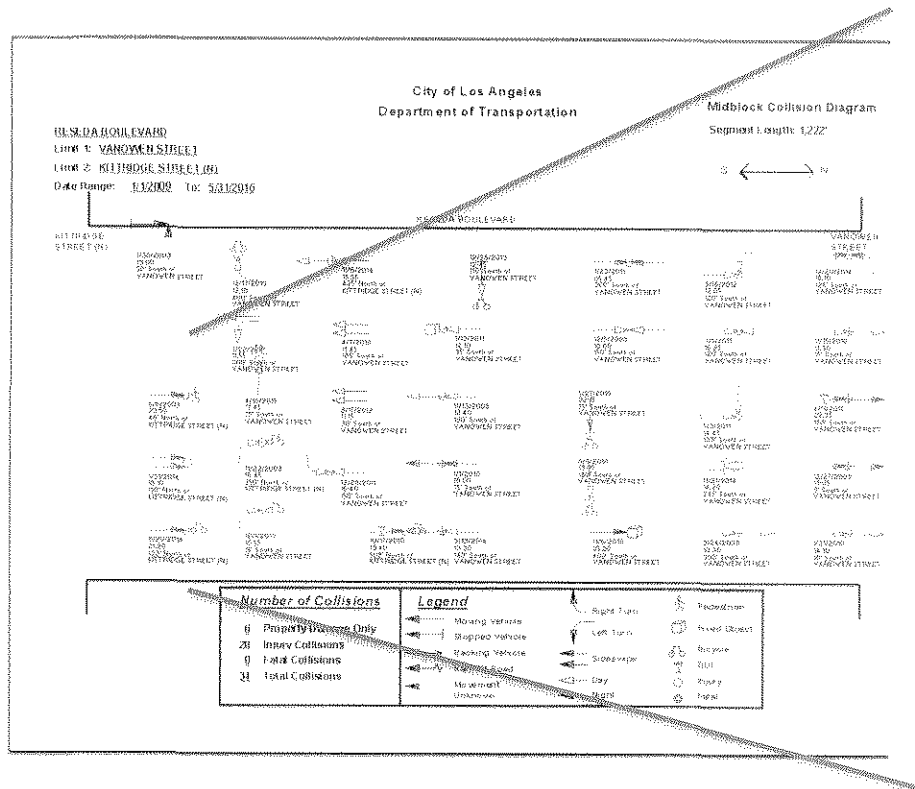
## Corridor Applications – Engineering Design

After priority locations have been identified, LADOT engineers and planners move into conceptual design. First we developed a toolbox of safety countermeasures, then we did a detailed mapping of the collision hotspots and the surrounding assets / land-use.



# Corridor Example: Reseda Bl

## Collision Diagrams are Used to Identify Correctable Collision Patterns



# Reseda Bl: Pair Profiles with Countermeasures

## Profile











- Two fatal left-turn vehicle-to-vehicle collisions within signalized intersections
- Vehicle-to-bicycle collisions with bicycles traveling on the wrong side of the road
- Left-turn and right-turn vehicle-to-pedestrian collisions within signalized intersections

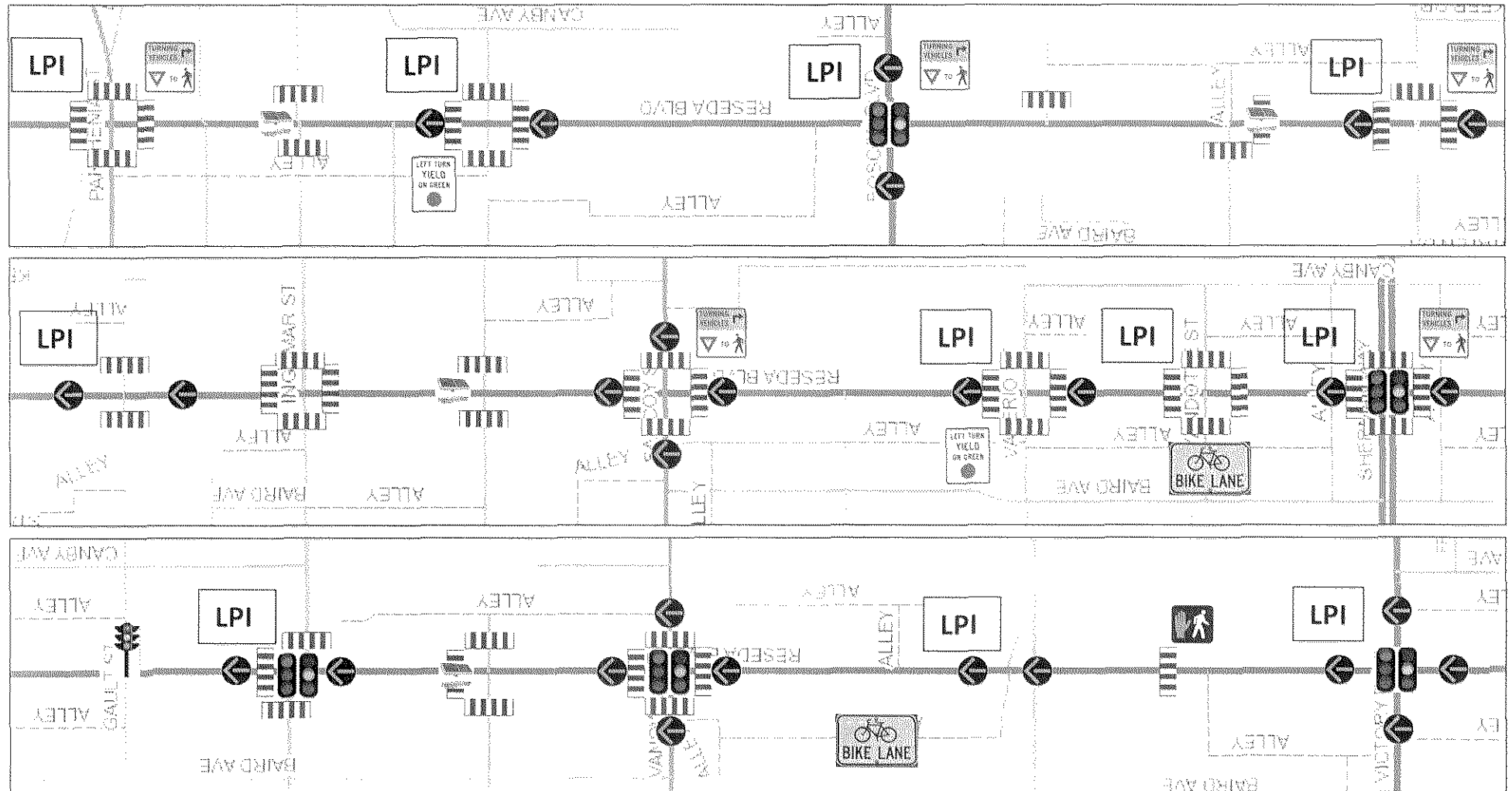


## Proposed Countermeasure

- Install Protected Only Left-Turn Phase (CRF 99% reduction in left-turn collisions)
- Install additional bike lane pavement markings and bike sharrows at midblock locations (reduction in riding against flow of traffic)
- Install right (/left) turn vehicles Yield-to-Ped signs and install LPI where feasible (CRF 5-59% reduction in ped collisions)

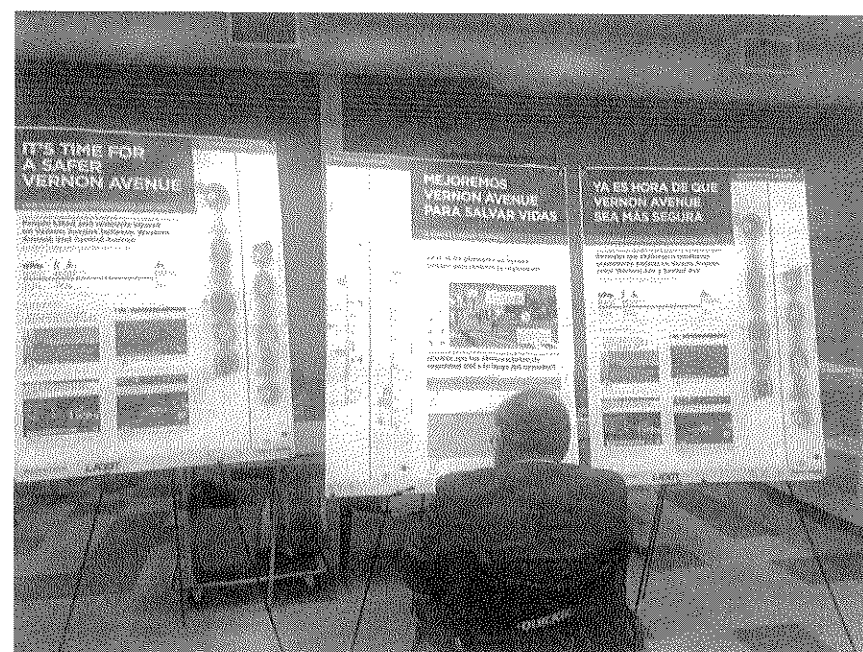
# Reseda Bl: Overview of Proposed Countermeasures

Continental Crosswalk		Increased Yellow & All-Red		New Signal		New Bike Lane	
Left Turn Phase		LPI		RT Yield to Ped.			
RRFB's		APWD		LT Yield to Ped.			

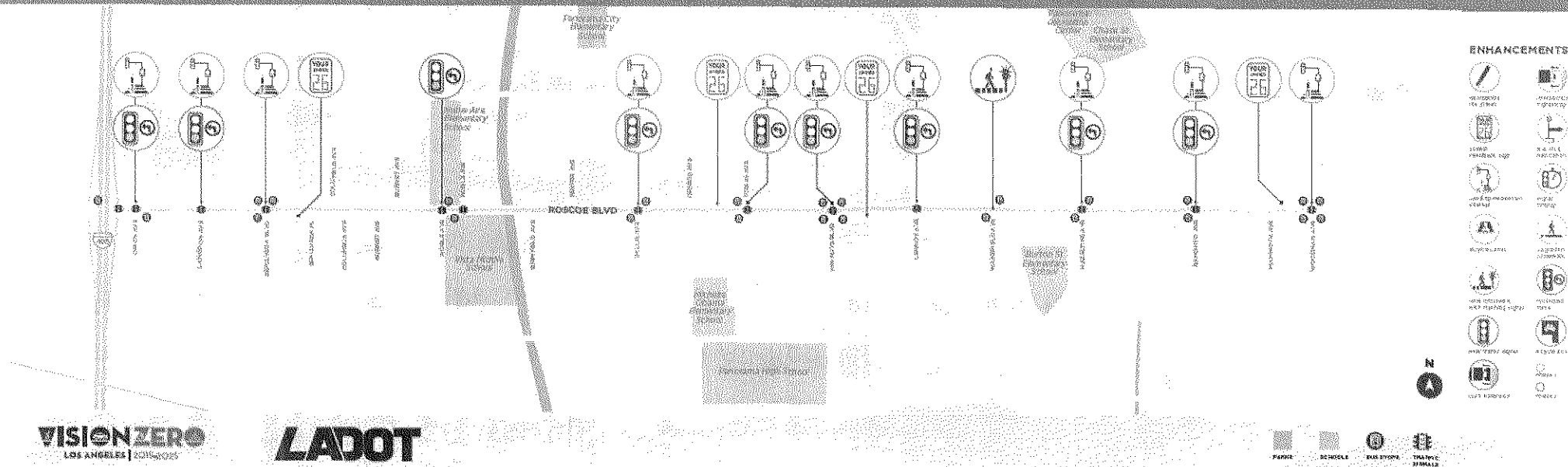




## PROJECT-BASED ENGAGEMENT & COMMUNITY FEEDBACK



PLANNED ENHANCEMENTS	



## Workplan Development Summary

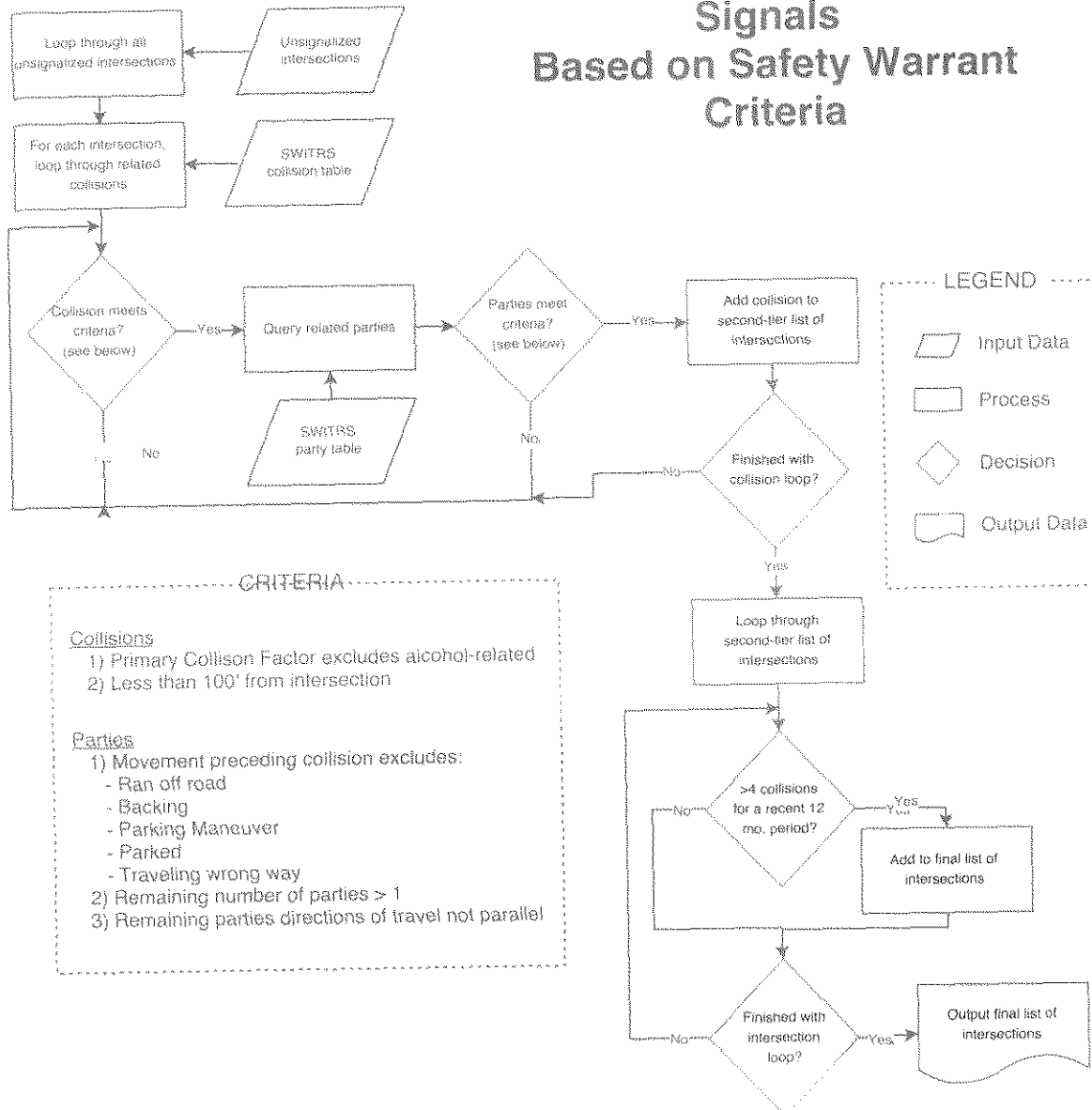
- Location prioritization methodology based on public vetting process
- Priority Corridors are a subset of High-Injury Network
  - 90 miles vs 460 miles
- Safety improvements designed and installed in phases
  - Phase 1 – striping & paint
  - Phase 2 – signal improvements
  - Phase 3 – concrete

# EXAMPLE BIG DATA APPLICATION



# Signal Warrant Analysis

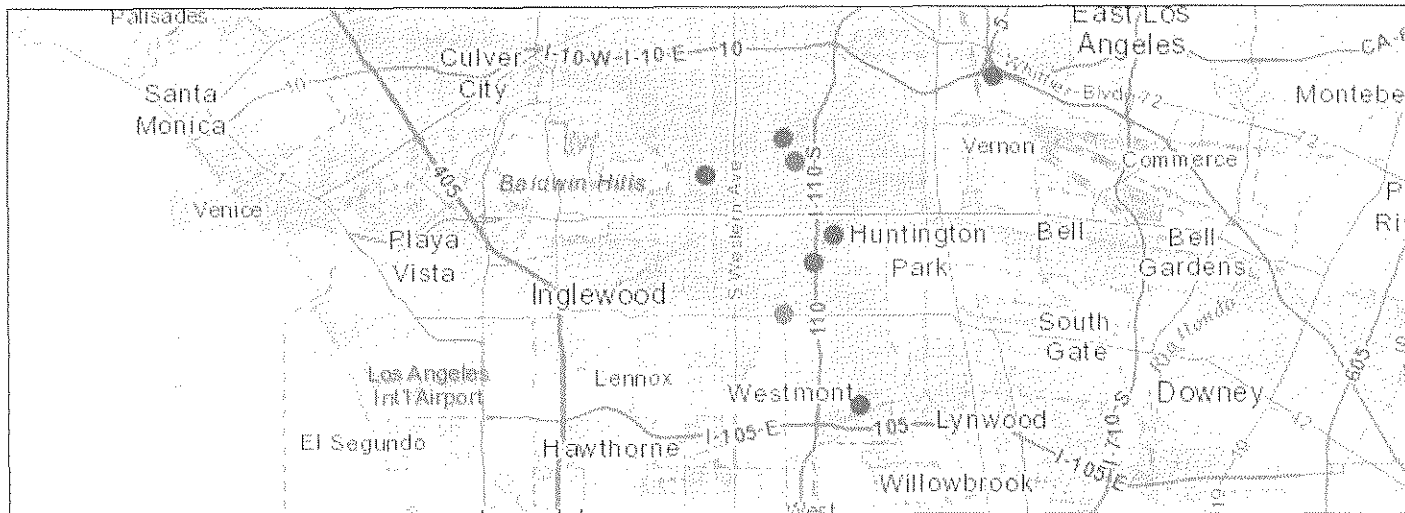
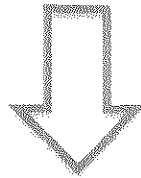
## Citywide Identification of New Signals Based on Safety Warrant Criteria



# Big Data Applications

```
1 ##### This script builds a table of the number of collisions involving L or U Turns (for each direction) #####
2
3 import arcpy
4 from arcpy import env
5
6 ##### Setup workspace #####
7 env.workspace = "Z:/VisionZero/GIS/Data/OtherDOT_AnalysisProjects/MetroExpressLanes_Mar2016/MetroExpressLanesMar2016.gdb"
8 SigInt = "SigIntwithin3miBuffer"
9 Collisions = "Parties2013DriversUorLTurn"
10
11 ##### Loop through the Intersections & Count Collisions per Intersection #####
12
13 Collision_Table = []
14 print "Done"
15 int_fields = ["ASSETID", "LTurn_N", "LTurn_S", "LTurn_E", "LTurn_W", "LTurn_None"]
16 collision_fields = ["Parties DTR OF TRAVEL", "SWITRS2009 to 2013 IntID"]
```

Data  
Analysis



Identified  
Intersections  
For Safety  
Upgrades



## Big Data Application Summary

- Transportation “Big Data” allows for proactive identification of safety needs
- More efficient use of LADOT engineer & design resources
- Programmatic application of safety countermeasures

# NEXT STEPS

## Next Steps

1. Publishing the Updated High-Injury Network with 2012-2016 data
2. LACDPH Analysis
  - Cost of Fatalities & Severe Injuries
  - Underreporting
3. Ongoing evaluation of project effectiveness
4. Ongoing coordination with State Transportation Agencies
  - LAPD Digital Records
  - CalSTA request to improve safety data and education efforts

