VISION ZERO
AND BEYOND

A SIMPLE YET POWERFUL DATA STRATEGY FOR EVALUATING ENGINEERING SOLUTIONS

www.visionzero.lacity.org
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INTRODUCTION

The Los Angeles Department of Transportation (LADOT), in collaboration with the Los Angeles County Department of Public Health (LACDPH), developed a simple—yet powerful—database and analysis tool that now plays a key role in how Los Angeles prioritizes projects, applies for grant funding, and designs for safety on our streets. Moving beyond the macro-level Vision Zero strategy development, this tool provides a more targeted approach to estimating the safety benefit of specific engineering countermeasures. Providing highly customizable queries, the process proposed in this paper can be implemented quickly and applied to improve the work transportation planners and engineers already do on a daily basis, such as apply for grants to fund basic safety improvements.

METHODOLOGY

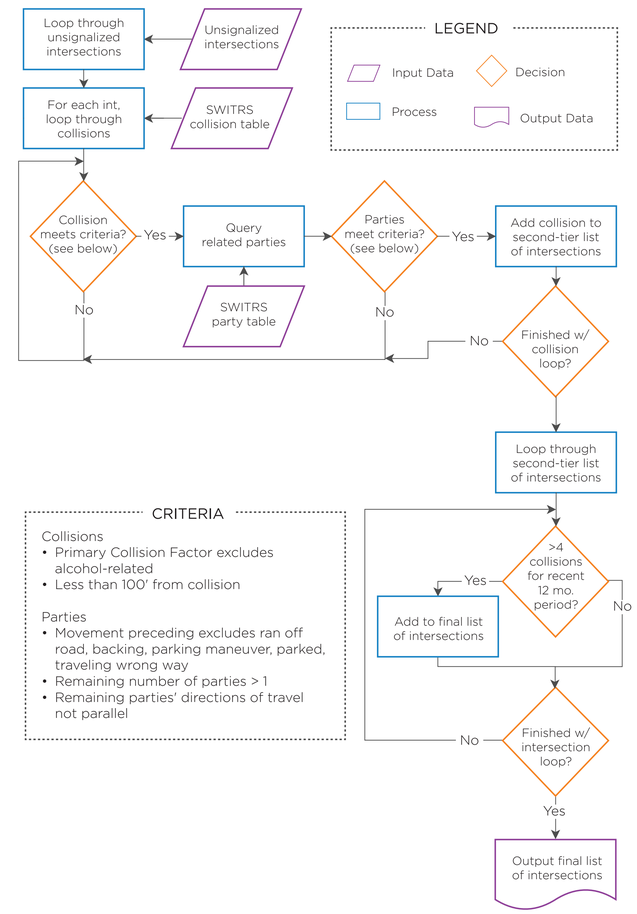
STEP 1 Assemble Data

STEP 2 Relate Infrastructure Data

STEP 3 Run Evaluation Tool

STEP 4 Confirm Findings

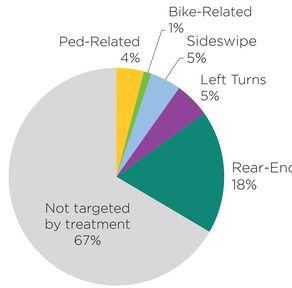
EVALUATION TOOL PROCESS



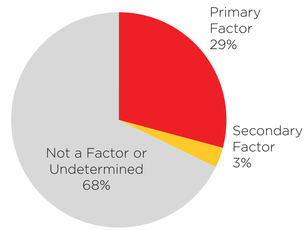
Example Process Diagram for Evaluation Tool (Step 3): This process diagram documents the method by which collisions are evaluated in the tool to determine if they qualify to be used in warranting signal improvements.

CASE STUDY 1: SAFETY BENEFIT FORECASTING

One of the capabilities of the tool includes forecasting the safety benefit of various engineering countermeasures, including roadway reconfigurations. Given a list of unique segment identifiers a corridor, the Python script is configured to break down the collisions by type. Because each collision type is tied to a proven crash reduction factor associated with a road diet treatment, LADOT can precisely estimate the safety benefit and quickly produce visually appealing charts when communicating with stakeholders.



Percent of All Collisions on Corridor Targeted by Treatment (by type)



Collisions with Speeding as a Contributing Factor

Example Evaluation Output (Step 3) Left: The output of the evaluation tool estimates the percentage of collisions, and adds categories for each type, that could be addressed by a road diet. Right: The tool also reports the incidence of speeding on the corridor.

CASE STUDY 2: SIGNAL IMPROVEMENTS

Beyond Vision Zero, City engineers have a process for determining when we need to upgrade infrastructure based on safety criteria, such as when a stop sign, a signal, or change in phasing of an existing signal can be done. When an intersection meets specific safety criteria, such as a history of collisions at the location, the upgrades are considered "warranted." Below is an example of how the database was used to efficiently identify the locations.

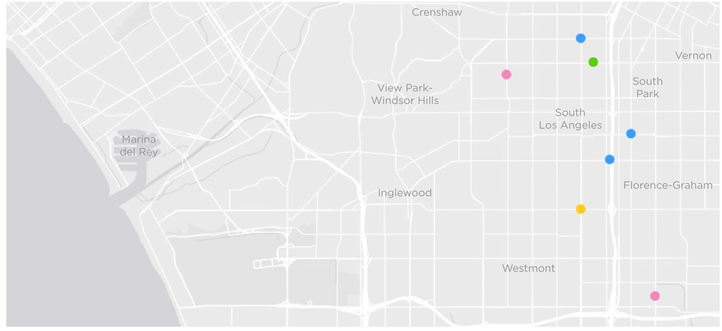
```
#### This script builds a table of the number of collisions involving L or U Turns (for each direction) ####
import operator
import arcpy
import csv
from arcpy import env

##### Setup Workspace #####
env.workspace = "Z:/VisionZero/GIS/Data/OtherDOT_AnalysisProjects/MetroExpressLanes Mar2016/MetroExpressLane
UnSigInt = "UnSigIntwithin3miBuffer"
# Still need to subset out DUIs and conflicting collisions
Collisions = "SWITRS2009to2013within3mibuffer_sober"
Parties = "Collisions2009to2013PartiesJoin"

##### Loop through the Intersections, then Collisions, then Parties #####

```

Example Python Script (Step 3): This python script crawls through the database and find intersections where protected turns are warranted based on the safety criteria.



Example Output for Confirming Findings (Step 4): In order for our engineers to easily review, discuss and identify which locations would be included in the application for funding, results of the analysis are uploaded to a web map using ESRI ArcGIS online.