Ray Dominic Maldonado

Transportation GIS Analyst

Good Morning!

Hello All,

I thank you for your time and appreciate this opportunity to share with you my thesis on *Wrong Way Driving in San Antonio, Texas* and custom geoprocess, the *Ray Dominic Maldonado (RDM) Transportation Model*.

Should you have questions I can be reached at **rdmaldonado@ymail.com**.

Geographic Information Systems?

- Vector Data
  - Points
    - Crashes, POI's
  - Lines
    - Roads, Routes
  - Polygons
    - Boundaries, Parcels
- Raster Data
  - Basemaps
    - Bing, OSM, Google

Highway Performance Monitoring System

- National Information System for aggregating all Public Roadway data

- TX is 1st with 300,000mi+ of roadways, CA is 2nd with ~150,000mi+

- Collect, Report, Calibrate, Route, QA

- Could layer Percent Passing route events with WWD routes for spatial analysis

Office of Highway Policy Information
Highway Performance Monitoring System

OHPI Home > Highway Performance Monitoring System > Field Manual

Field Manual
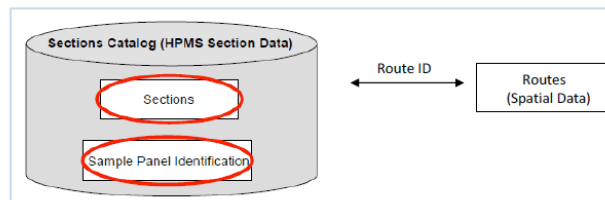**Chapter 4 DATA REQUIREMENTS AND SPECIFICATIONS**

4.1 Overview

Chapter 3 provided a detailed description of the catalogs and datasets that comprise the HPMS data model. This chapter provides data collection and reporting requirements for the Sections and Sample Panel Identification datasets, which the States are responsi addition, this chapter contains information on the datasets that are developed and maintained by FHWA, and the datasets that are sources.

Upon submittal to FHWA, the Sections and Sample Panel Identification datasets will be stored in the Sections Catalog. These data respective State's Linear Referencing System (LRS) network for data management and analysis purposes, as shown in Figure 4.1 in the Sections catalog will be spatially linked to the Routes dataset (in the Shapes Catalog) via the Route ID field, which serves as embedded in each of these datasets (as discussed in Chapter 3).

Figure 4.1: Sections/Routes (LRS) Data Linkage

County of Be(x)ar

Bexar County, Texas

Want more? **Browse data sets for Bexar County**

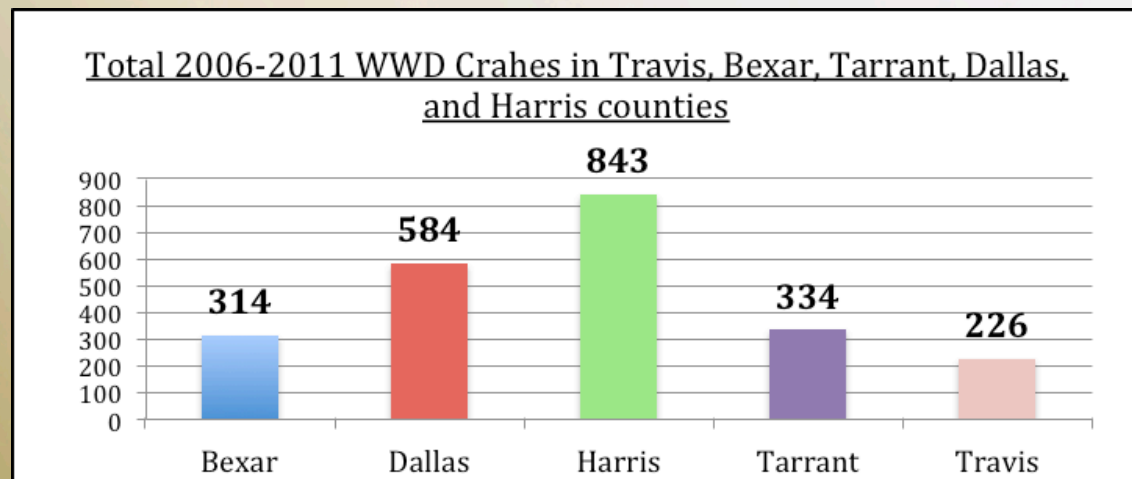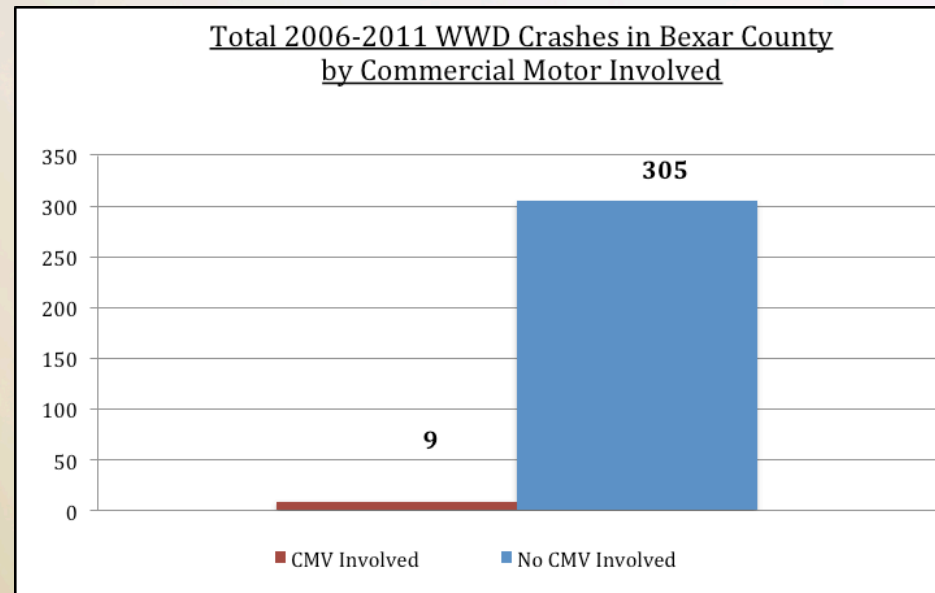| People QuickFacts	Bexar County	Texas
Population, 2012 estimate	1,785,704	26,059,203
Population, 2010 (April 1) estimates base	1,714,777	25,145,561
Population, percent change, April 1, 2010 to July 1, 2012	4.1%	3.6%
Population, 2010	1,714,773	25,145,561
Persons under 5 years, percent, 2011	7.5%	7.6%
Persons under 18 years, percent, 2011	26.9%	27.1%
Persons 65 years and over, percent, 2011	10.4%	10.5%
Female persons, percent, 2011	50.9%	50.4%
White persons, percent, 2011 (a)	85.9%	80.9%
Black persons, percent, 2011 (a)	8.0%	12.2%
American Indian and Alaska Native persons, percent, 2011 (a)	1.3%	1.0%
Asian persons, percent, 2011 (a)	2.6%	4.0%
Native Hawaiian and Other Pacific Islander persons, percent, 2011 (a)	0.2%	0.1%
Persons reporting two or more races, percent, 2011	2.0%	1.7%
Persons of Hispanic or Latino Origin, percent, 2011 (b)	58.9%	38.1%
White persons not Hispanic, percent, 2011	30.2%	44.8%
Living in same house 1 year & over, percent, 2007-2011	80.4%	82.1%
Foreign born persons, percent, 2007-2011	12.8%	16.2%
Language other than English spoken at home, percent age 5+, 2007-2011	42.8%	34.4%
High school graduate or higher, percent of persons age 25+, 2007-2011	81.7%	80.4%
Bachelor's degree or higher, percent of persons age 25+, 2007-2011	25.6%	26.1%
Veterans, 2007-2011	153,044	1,618,413
Mean travel time to work (minutes), workers age 16+, 2007-2011	24.2	24.8

Wrong Way Driving Crash & Route Analysis

- San Antonio, Bexar County ranks 4th in the top 5 counties of TX (314) regarding WWD

- Compared to DFW and Houston, San Antonio's metropolitan population is significantly smaller so Crashes per Capita is a better indicator of the situation

- The geographic disbursement of crashes is relatively dense as much of the population and businesses are in Central & North side of Bexar County
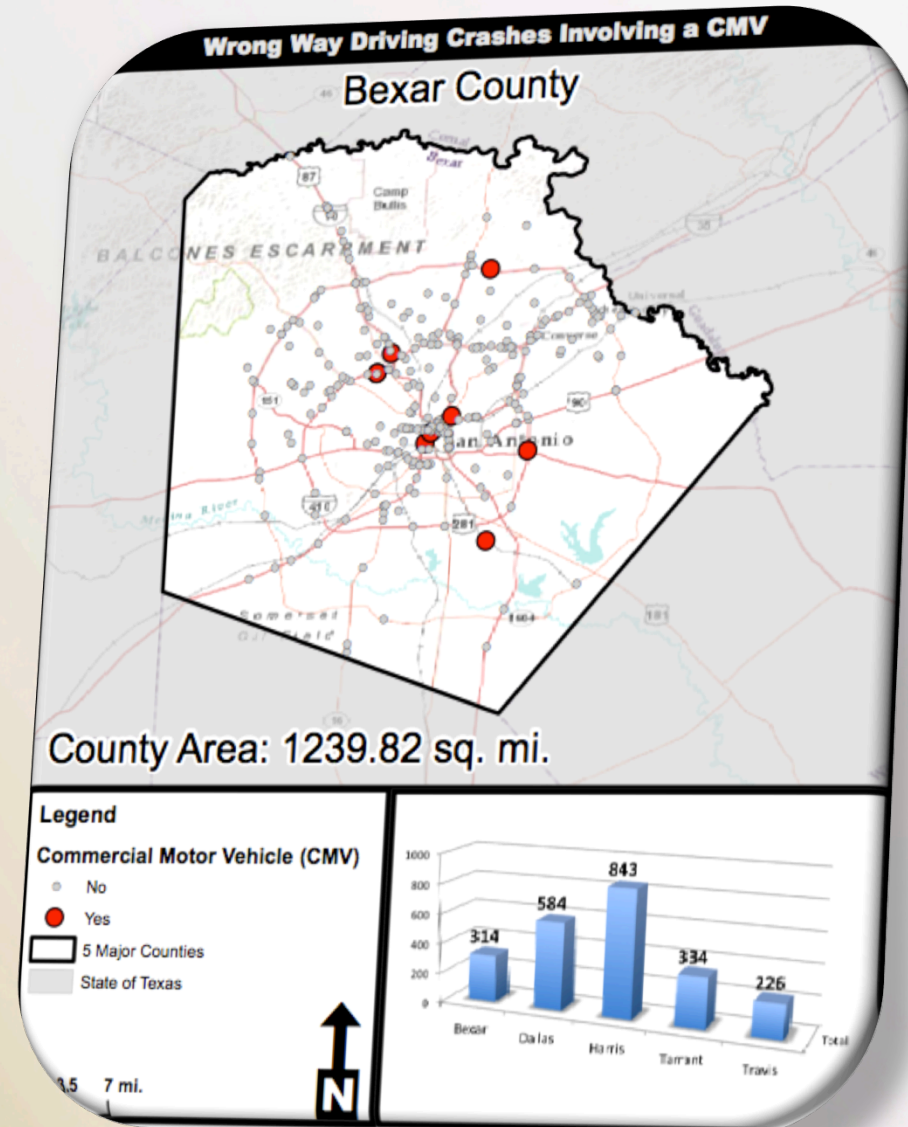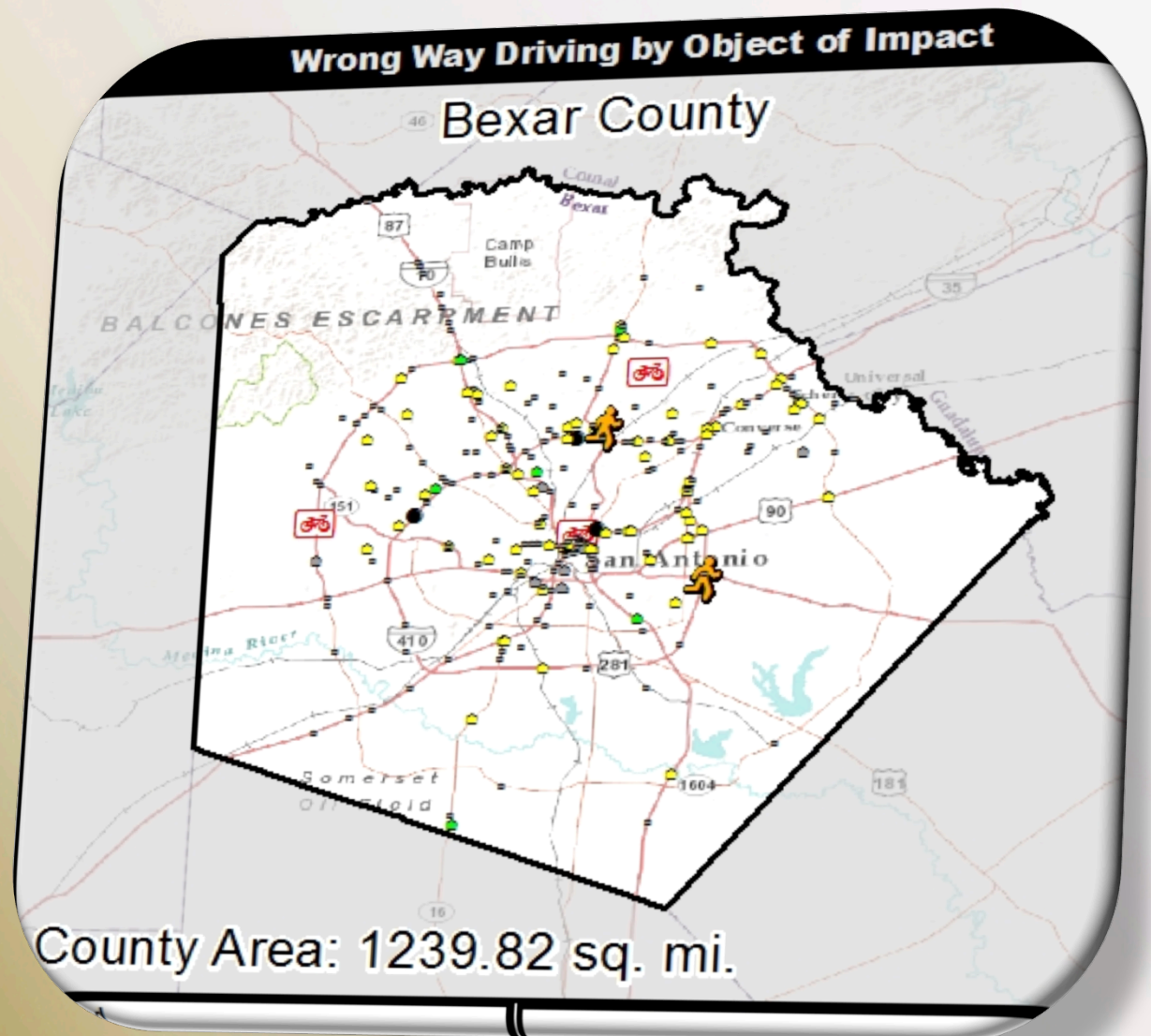

Wrong Way Driving Crashes Involving a CMV

Bexar County

County Area: 1239.82 sq. mi.

Legend

Commercial Motor Vehicle (CMV)
- No
- Yes
- 5 Major Counties
- State of Texas

Bexar 314, Dallas 584, Harris 843, Tarrant 334, Travis 226

Wrong Way Driving Crash & Route Analysis

Total 2006-2011 WWD Crashes in Bexar County by Commercial Motor Involved

Total 2006-2011 WWD Crahes in Travis, Bexar, Tarrant, Dallas, and Harris counties

Wrong Way Driving Crash & Route Analysis

Wrong Way Driving by Object of Impact

Bexar County

County Area: 1239.82 sq. mi.
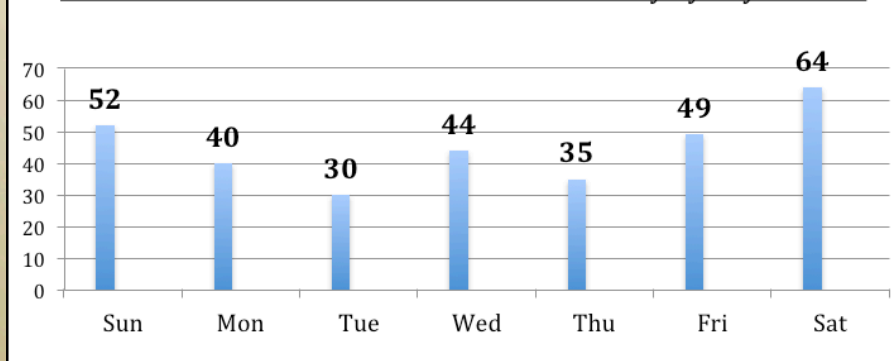
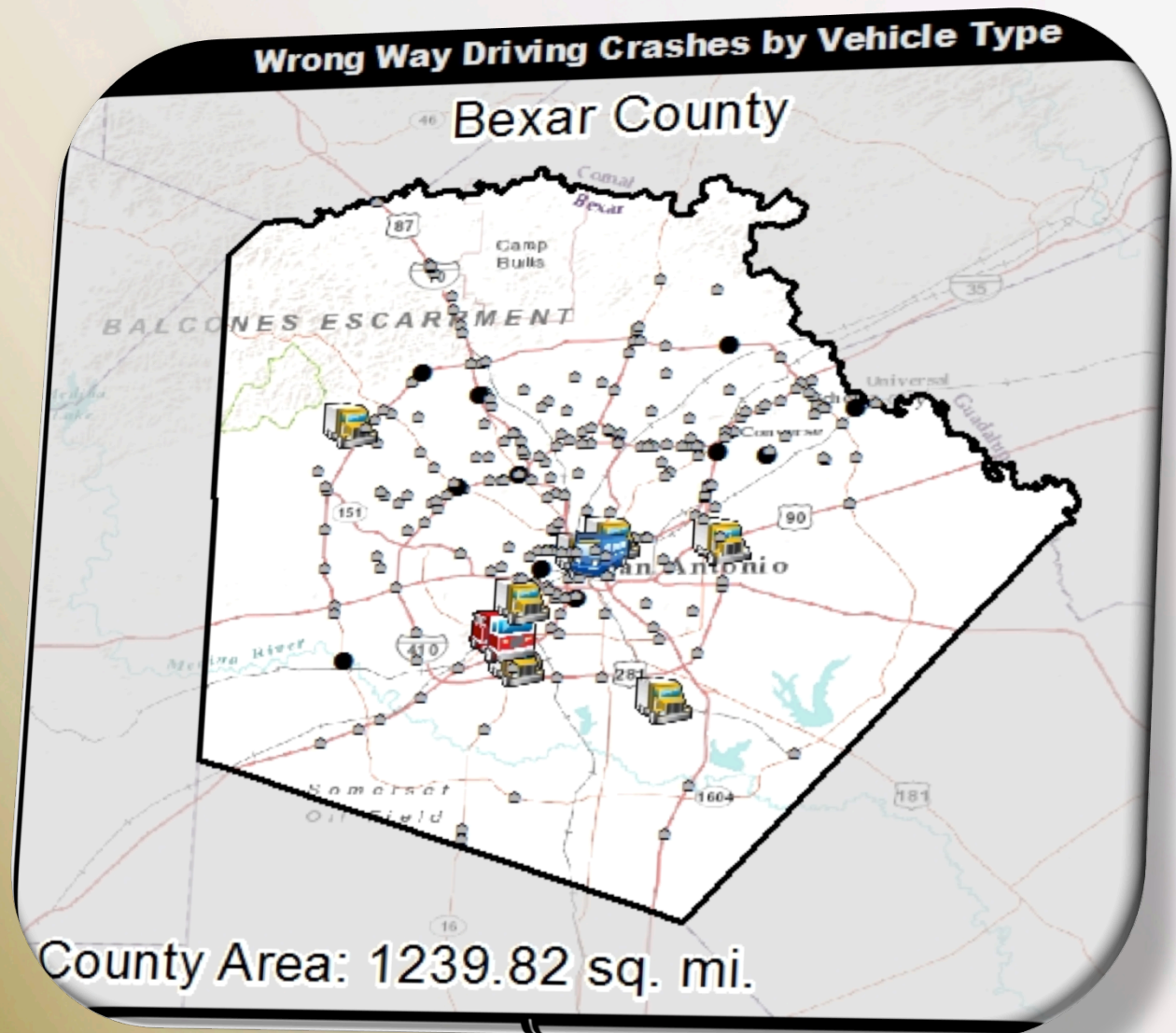# Wrong Way Driving Crash & Route Analysis

Total 2006-2011 WWD Crashes in Bexar County by Harm Event
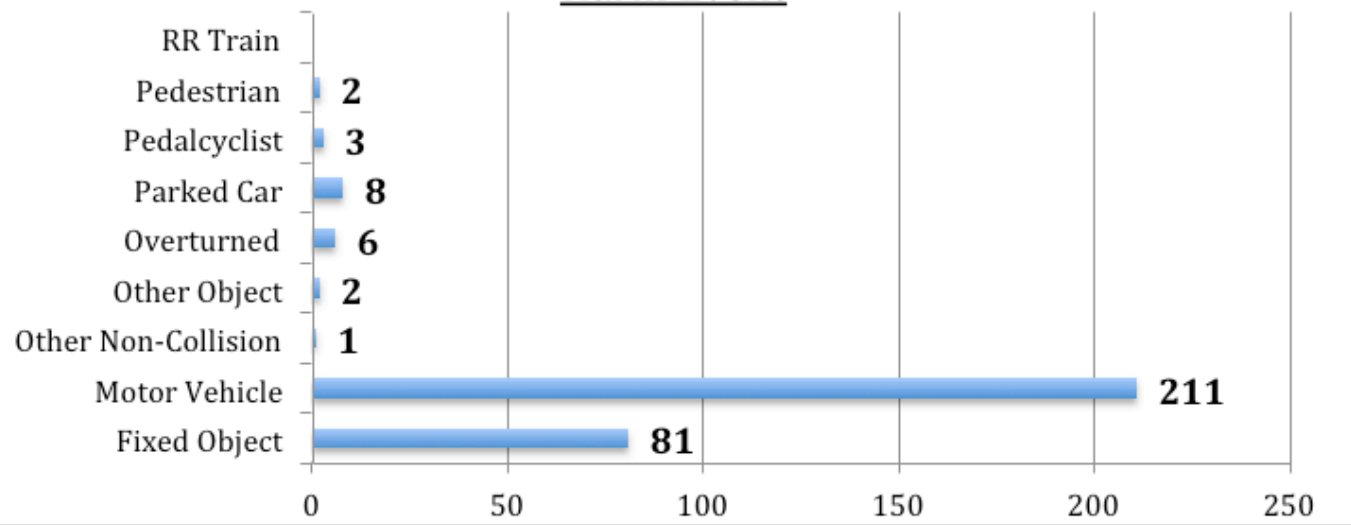
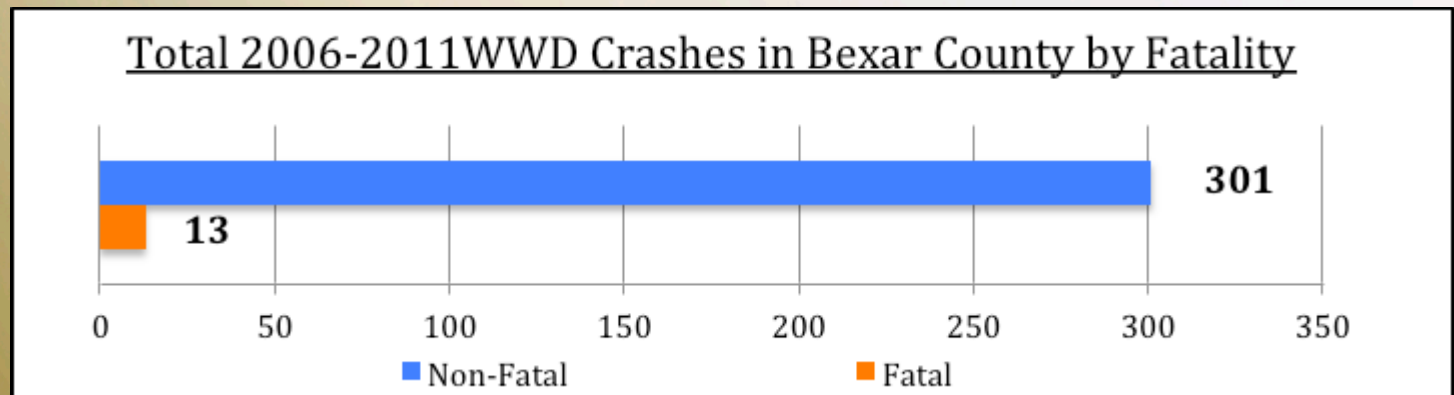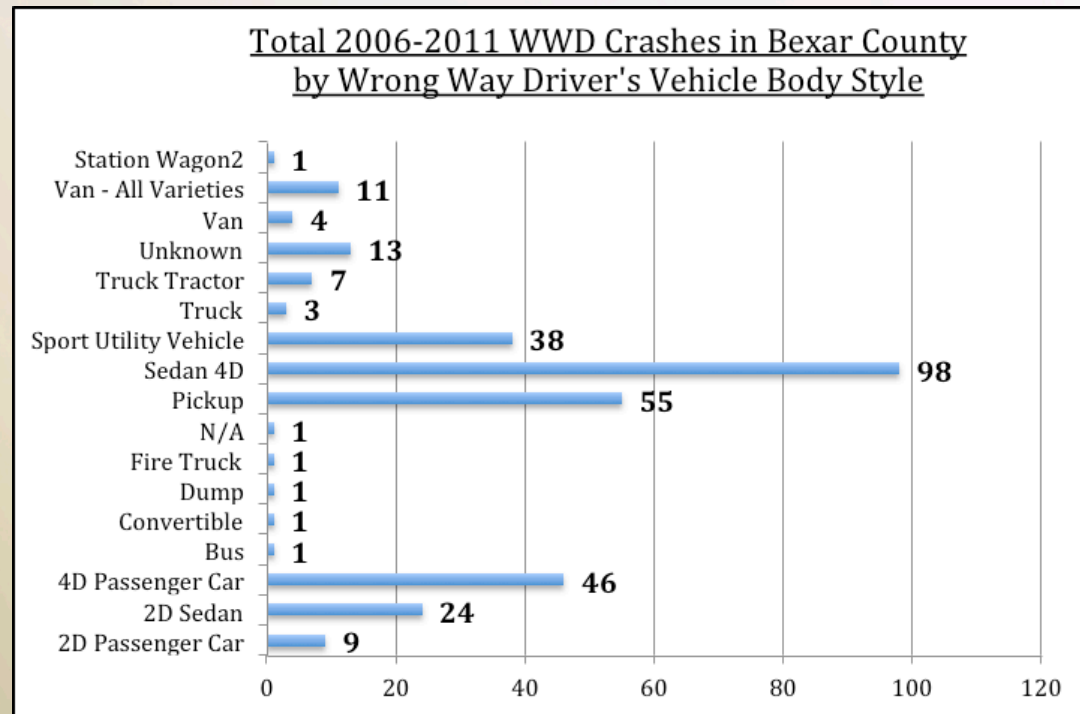Total 2006-2011 WWD Crashes in Bexar County by Day of Week

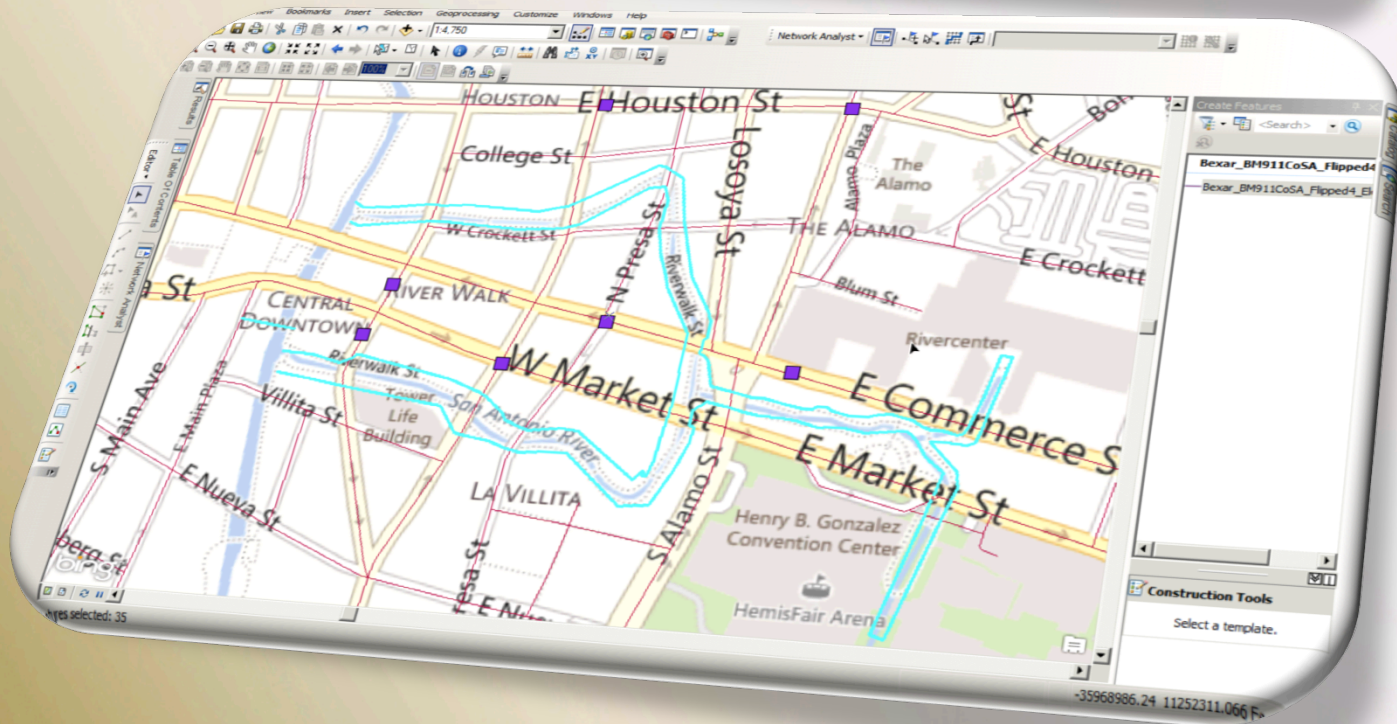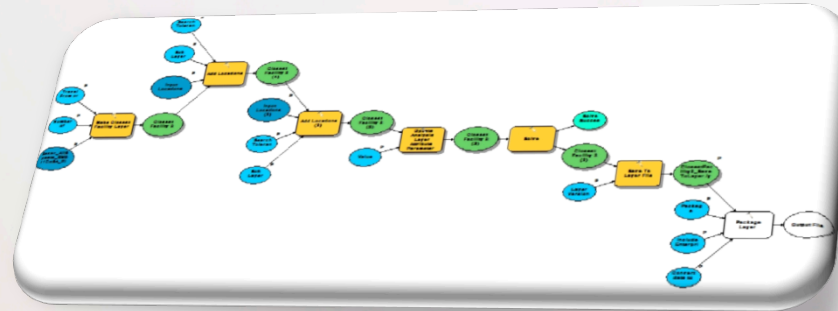# Wrong Way Driving Crash & Route Analysis

Wrong Way Driving Crashes by Vehicle Type

Bexar County

County Area: 1239.82 sq. mi.

Wrong Way Driving Crash & Route Analysis

Total 2006-2011 WWD Crashes in Bexar County by Wrong Way Driver's Vehicle Body Style

Body Style	Count
Station Wagon2	1
Van - All Varieties	11
Van	4
Unknown	13
Truck Tractor	7
Truck	3
Sport Utility Vehicle	38
Sedan 4D	98
Pickup	55
N/A	1
Fire Truck	1
Dump	1
Convertible	1
Bus	1
4D Passenger Car	46
2D Sedan	24
2D Passenger Car	9

Total 2006-2011WWD Crashes in Bexar County by Fatality
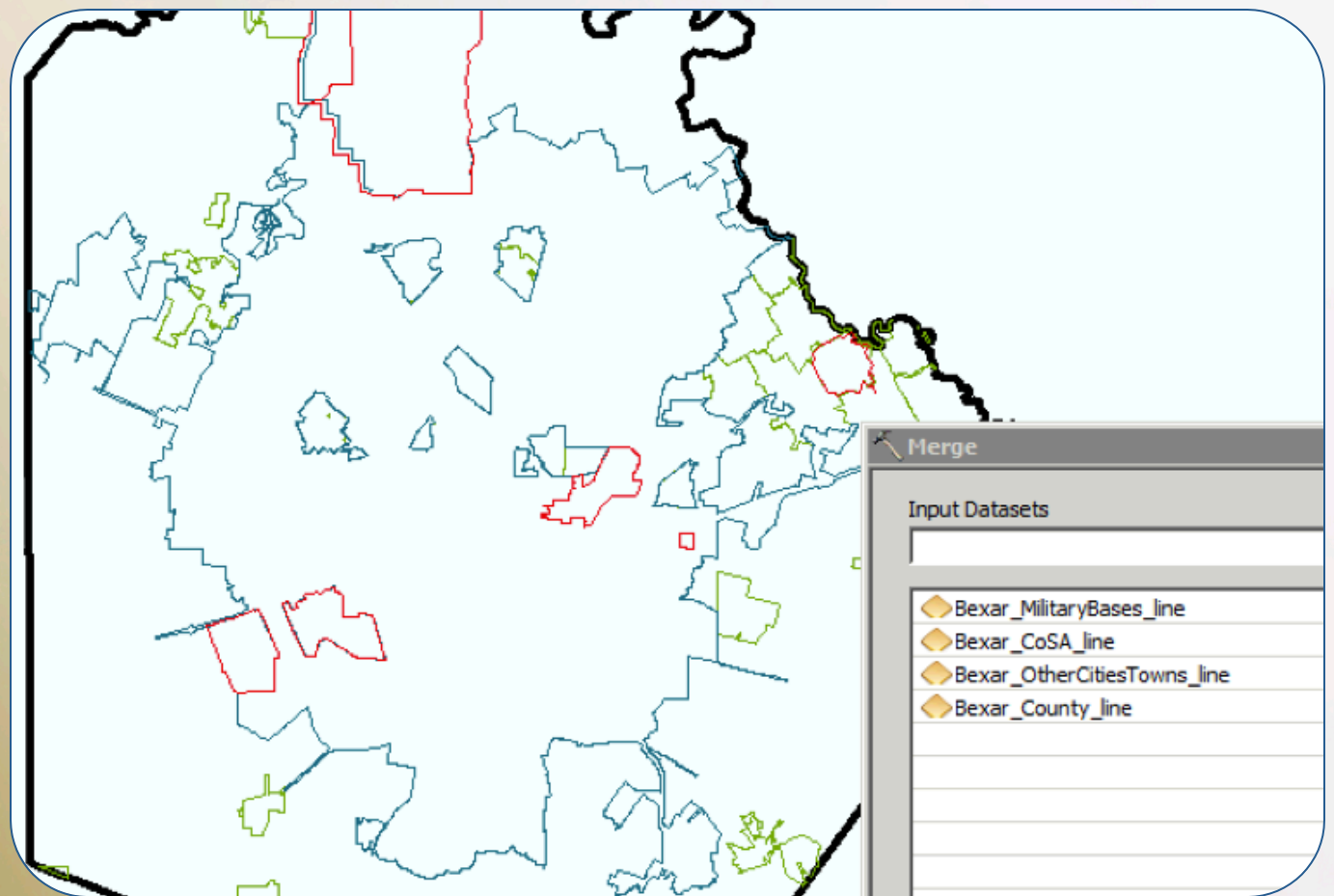
Non-Fatal: 301
Fatal: 13

Wrong Way Driving Crash & Route Analysis

- Closest Facility Model using Net.Analyst, ArcGIS 10.1

- ModelBuilder → .GPK

- Network Dataset (BM-911)

Wrong Way Driving Crash & Route Analysis

Wrong Way Driving Crash & Route Analysis

- San Antonio – Wrong Way Driver Task Force is unsure how drivers are entering roadways

- Incidents: WWD Crashes (CRIS)

- Facilities: Alcohol Retailers (TABC)

- Barriers: Jurisdictional Boundaries

- "One Way" Traffic Parameter can be toggled to different values to simulate varying levels of DUI/DWI

- Result dataset is outputted to user's choice of ArcGIS version .LPK file

Wrong Way Driving Crash & Route Analysis

- RDM Transportation Model
  - Routes all crashes back from facility of origin
  - Provides Driving Directions from Facility to Incident, even for Wrong Way direction of travel
  - Each route is unique, and spatially tied to its facility
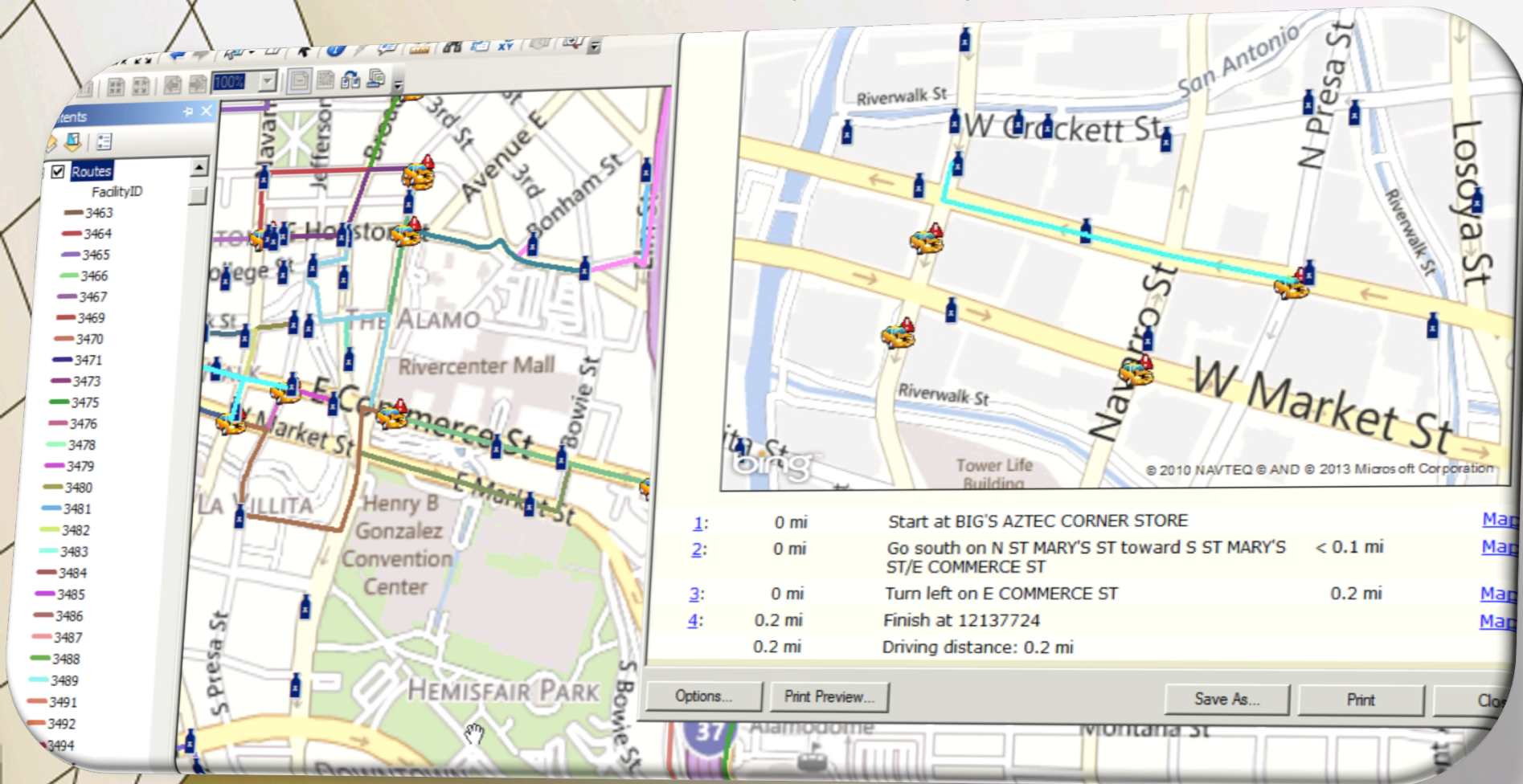
Holiday Crash Analysis

Total 2006-2011 WWD in Bexar County by Date

Tourist Crash Analysis

Traffic Jam Safety Committee requested data for crashes caused by Impaired tourists; but now we can compare geographies of W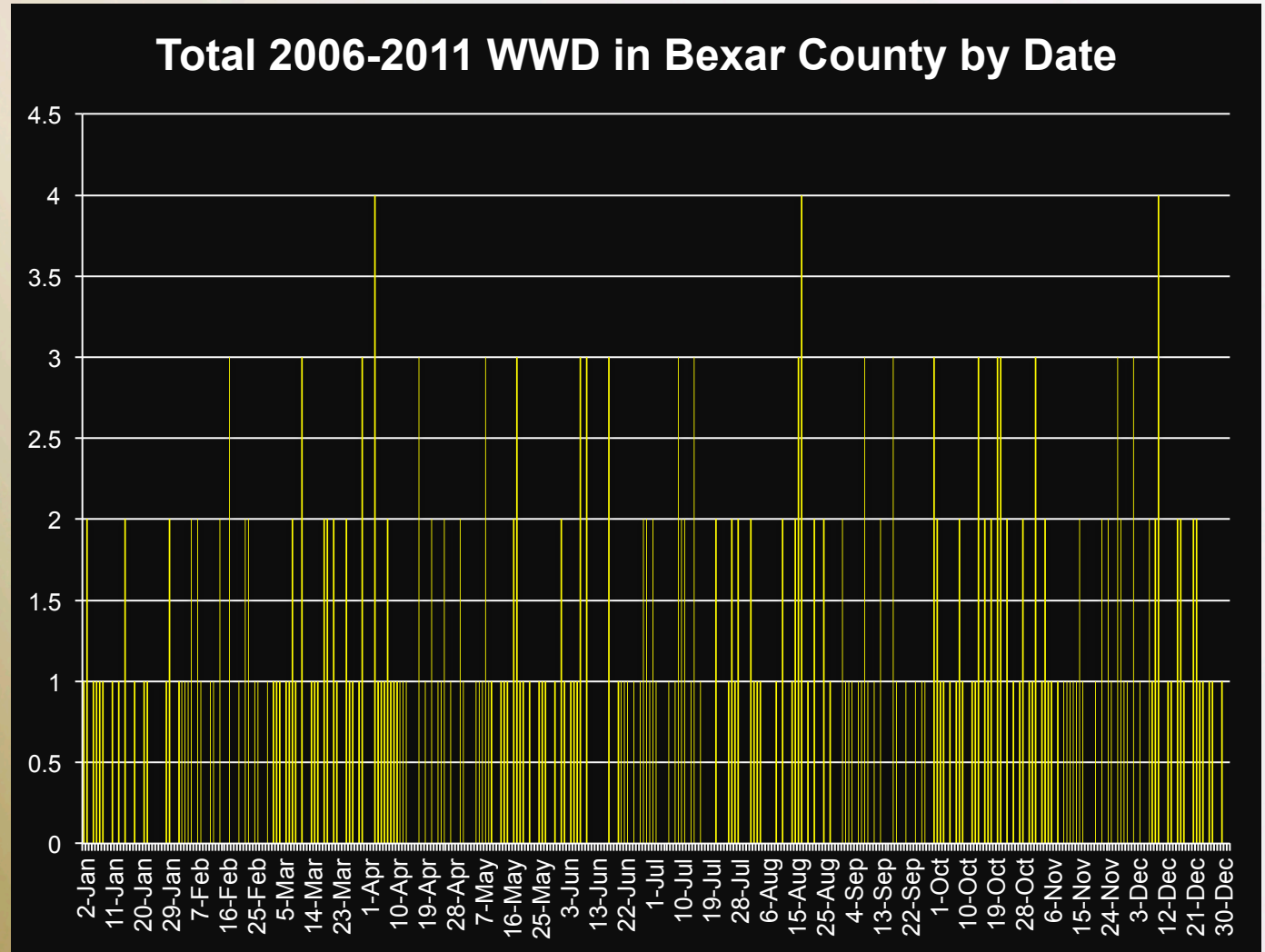WD and contributing factors thereof to discern if our roadway network is comparatively difficult to navigate for residents of specific regions; especially w/the use of HPMS as basedata

http://www.sametroplan.org/imap
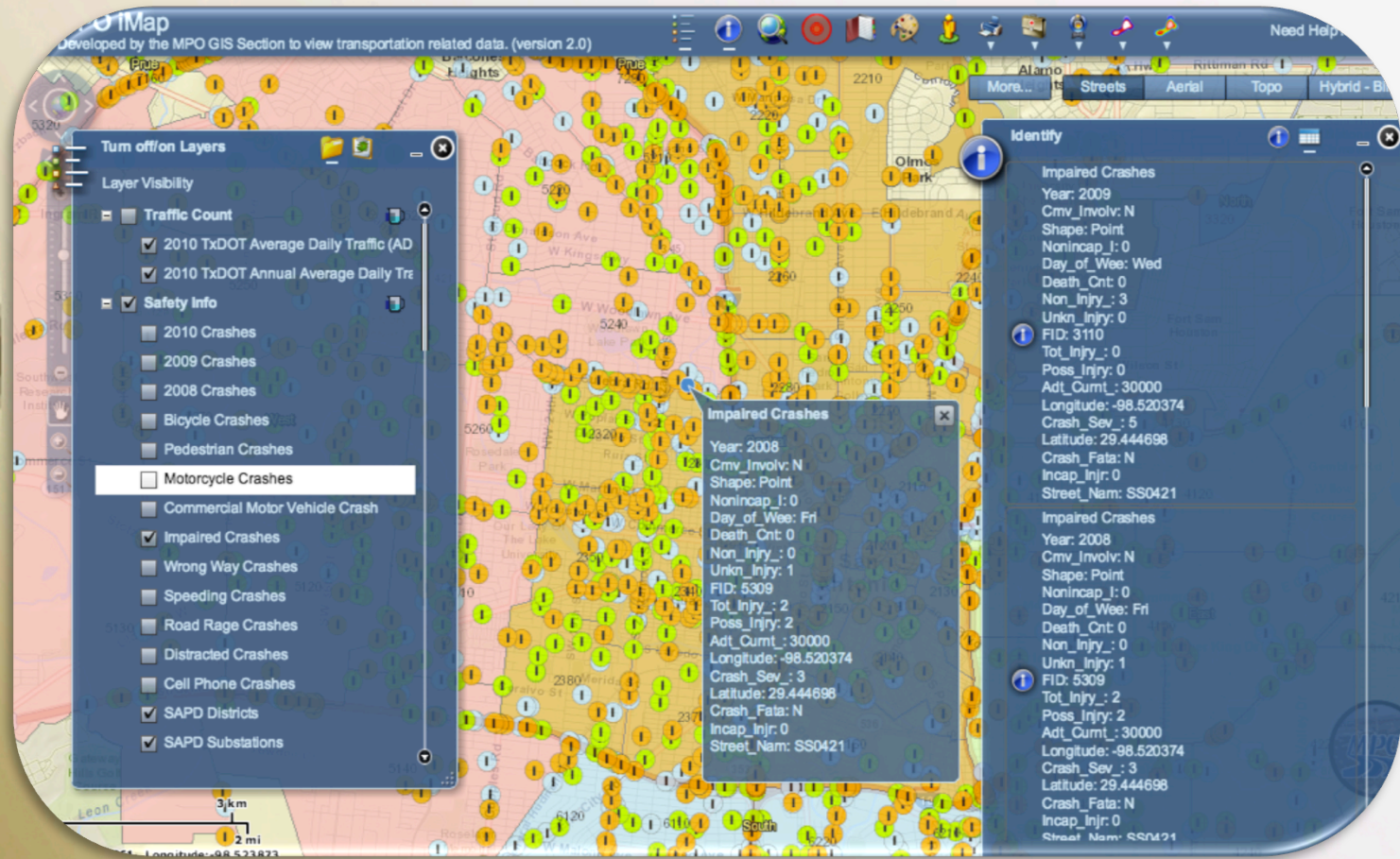
Public Involvement & WWD Analysis

Figure 1. Map of the Study Area

Figure 2

http://www.sametroplan.org/WCP/WCP.html

Safety Committees & User Groups

TEXAS DEPARTMENT OF TRANSPORTATION
Home | Contact Us

The San Antonio Wrong Way Driver Initiative

- Interagency Planning and Cost Sharing

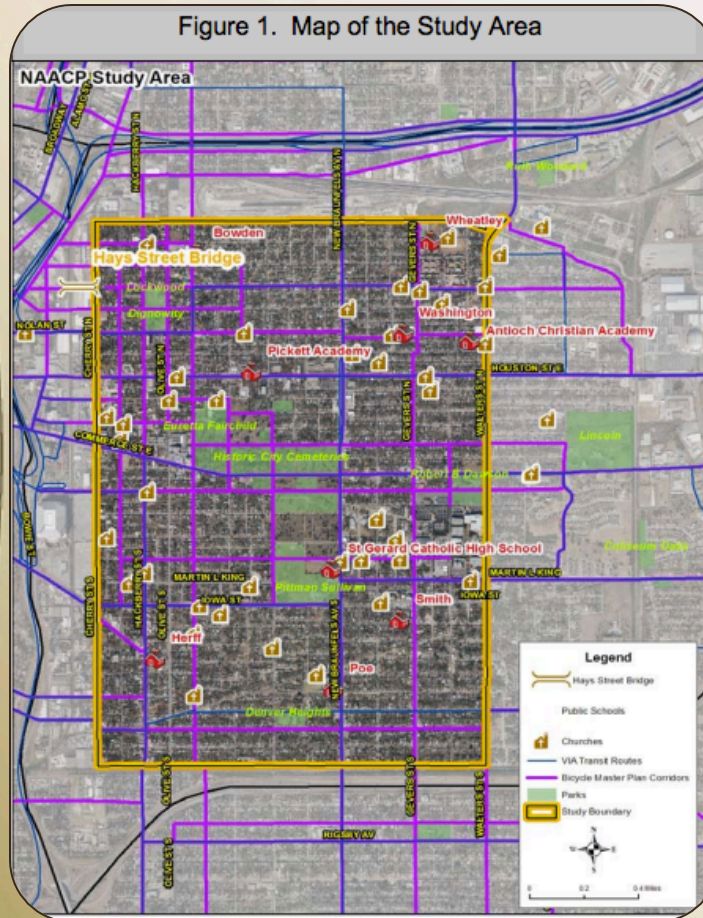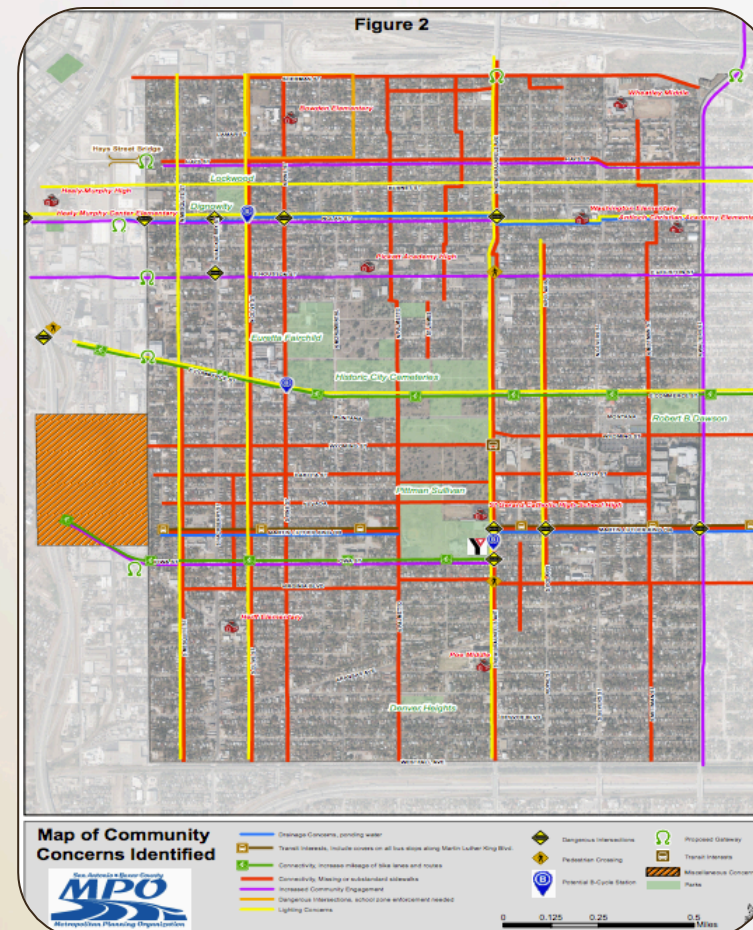- Focus Efforts on Collaborative Projects

- Official forum for Public & Private Organizations to discuss ideas, and relay information to media

- Receive feedback on parameters of newly developed tools like RDM Transportation Model

http://www.scaug.org/ALAMOGIS

http://yptransportation.org/chapters/yptaustin/

http://www.transguide.dot.state.tx.us/sat/wwd/

http://www.sametroplan.org/trafficjam/members.html

http://www.sametroplan.org/Committees/SGCC/SGCC.html

Strategic Geospatial Coordination Committee (SGCC)

TRAFFIC JAM
Traffic Safety Coalition
Mission:
To educate the community by providing s of transportation through collaboration

YOUNG PROFESSIONALS in TRANSPORTATION
AUSTIN CHAPTER
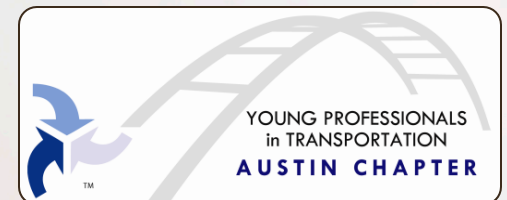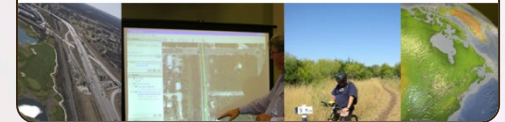
Alamo Area GIS User Group (AAGIS)

Alternative Transit = Safe Transit?

MONDAY, APRIL 2, 2012

Where do you B: Guest Blog

One of our MFB's (most frequent b-cyclers), Ray Maldonado, has clocked some serious mileage and trips since he became a member of the program. He is a pro at using the system and taking advantage of its benefits. He was kind enough to share his B-cycle experience/expertise with us. Thanks, Ray. You rock.

Dear B-Cycle,

Like any multimodal resident of San Antonio I'm always looking for new ways to travel efficiently, quickly, and most of all safely. When my coworkers told me about B-Cycle I was intrigued with the idea of bike sharing especially downtown where dense traffic restricts getting to points of interests in a timely manner. At the time I had a mountain bike, and lived near my office (MPO; SouthTown). Less than a month of bike ownership later I broke a pedal, caught a flat, and the bike was stolen from my complex. Soon after that I subscribed to B-Cycle's annual program and sold my motorcycle, my only motorized transport. From October 2011 – January 2012 I B-Cycled to work everyday and even on weekends to enjoy downtown scenery; Christmas décor on the Riverwalk was amazing! After just three months of daily riding I had traveled 200+ miles, scored all kinds of freebies on Nuride.com, and saved up enough to buy a motorcycle & truck! Not to mention I could feel the health benefits of muscle strength, increased energy, and weight loss. It's been a fun ride, and as the weather improves I hope to be back on B-Cycle regularly :)

Ride Safe,

Ray Maldonado

- Ultimately, it is our duty as Transportation Analysts and Enforcers to keep roadways as safe as possible so efficient traffic and transit can persist without risk of injury or danger otherwise

http://sabcycle.blogspot.com/2012/04/where-do-you-b-guest-blog.html

Questions…?

Ray Dominic Maldonado

210-602-8991

rdmaldonado@ymail.com

Crestview Train Station
Austin, TX, 78752