

# Albion Crash Study

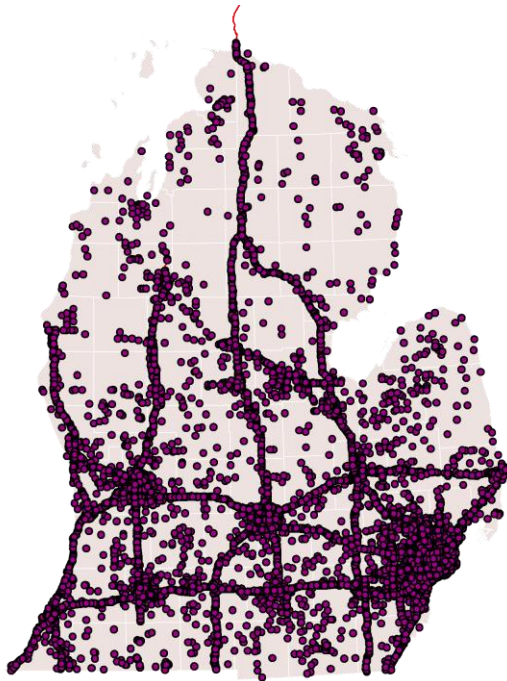
- Preliminary results
- Why present now?

# GIS Analysis

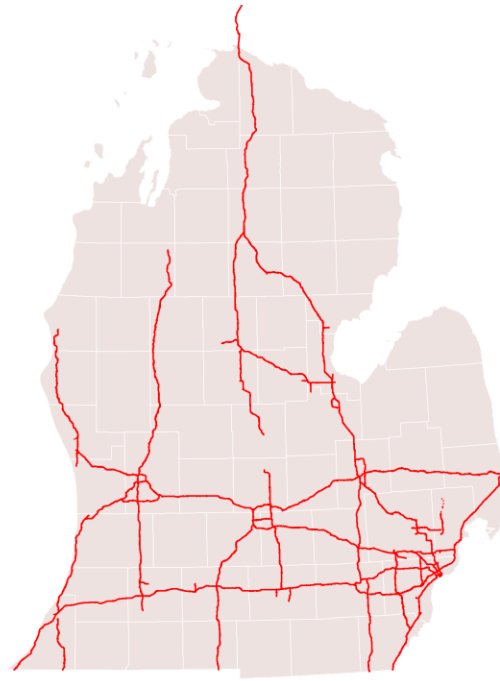
- Geo-located traffic crash data obtained from Michigan Traffic Crash Facts (MTCF), an archive of Michigan State Police accident reports ([www.michigantrafficcrashfacts.org](http://www.michigantrafficcrashfacts.org))
  - Query filters:
    - Geographic Area: **Lower Peninsula**
    - Area of Road at Crash: **All freeway areas**
    - Road Conditions: **Dry** or **Wet** (no ice or snow)
    - Weather: **Clear, Cloudy, or Rain** (no snow)

# GIS Analysis

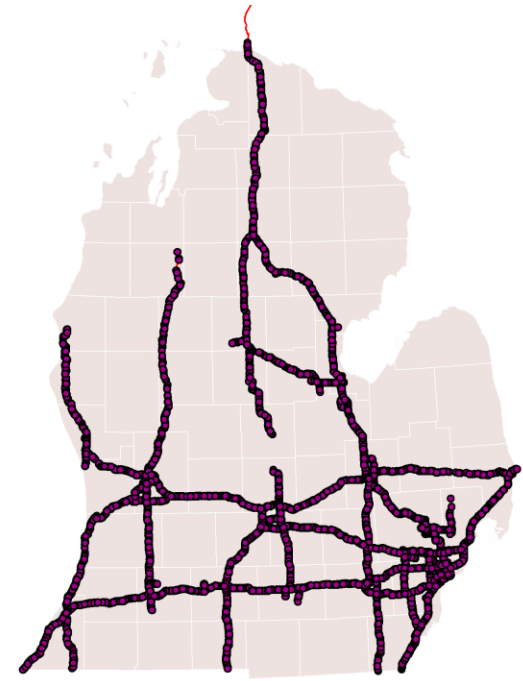
- Crashes mis-coded by MTCF as occurring in freeway areas removed
  - 0.1 mile proximity to *limited access primary roads* (TIGER/Line road Feature Class Code category A1)  
(<http://www.census.gov/geo/maps-data/data/tiger.html>)



MTCF Freeway Crashes (2004)  
 $n = 35758$



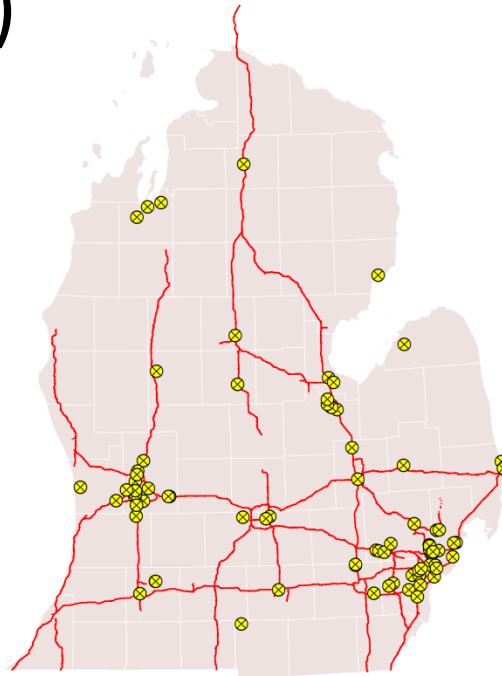
Limited Access Primary Roads  
(TIGER/Line FCC Category A1)



Primary Road Crashes (2004)  
 $n = 30106$

# GIS Analysis

- Permitted full digital billboard locations obtained from Michigan Department of Transportation (MDOT) Highway Advertising Program (HAP)

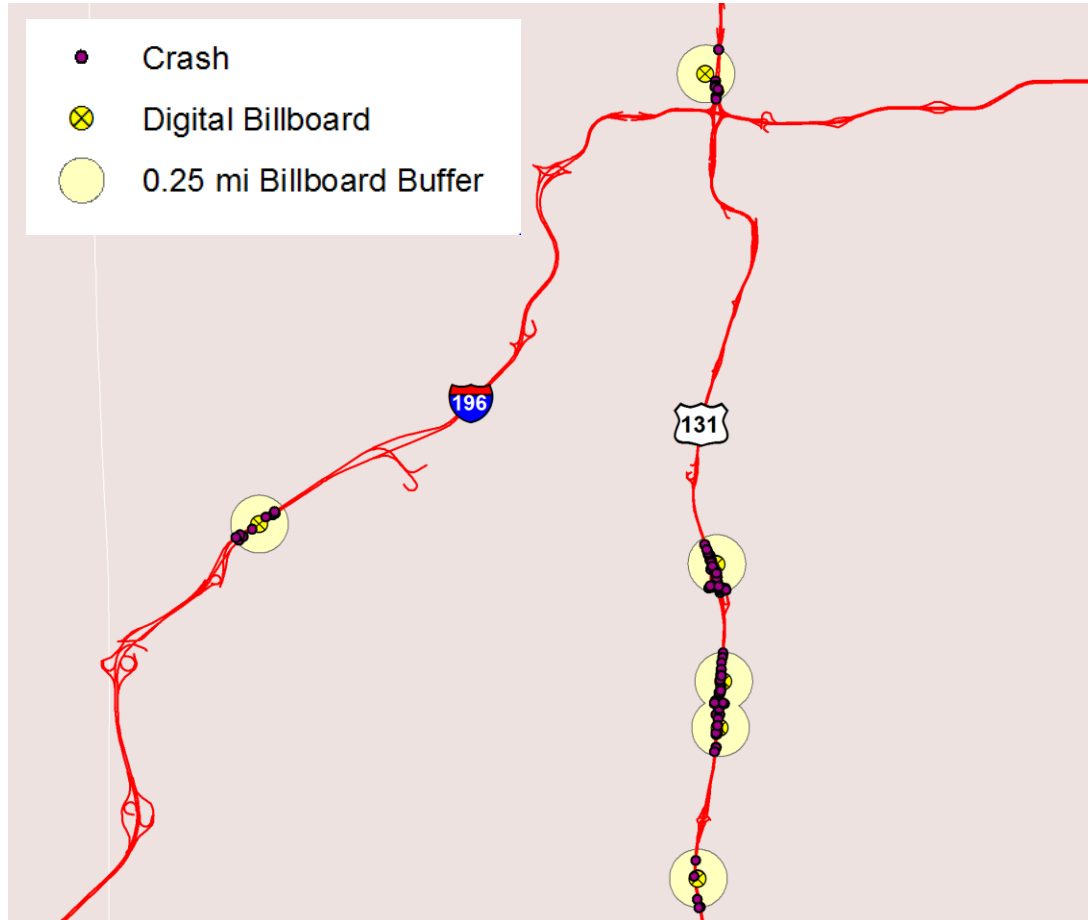


$n = 117$

# GIS Analysis

- Limited access primary road crashes selected by proximity to digital billboards

Traffic crashes within 0.25 mi of digital billboards, Grand Rapids area (2004)



# GIS Analysis

- 2004/2012 comparison of digital billboard-proximal traffic crashes on Michigan freeways:

	2004	2012
All limited access primary road crashes*	30106	27392
≤0.50 mi from digital billboards	2489	2545
≤0.25 mi from digital billboards	1202	1286
≤0.10 mi from digital billboards	402	431

\*Lower peninsula only

Road conditions: dry or wet

Weather conditions: clear, cloudy, or rain

# Change in Distribution of Crashes

- 2004/2012 change in digital billboard-proximal traffic crashes on Michigan freeways:

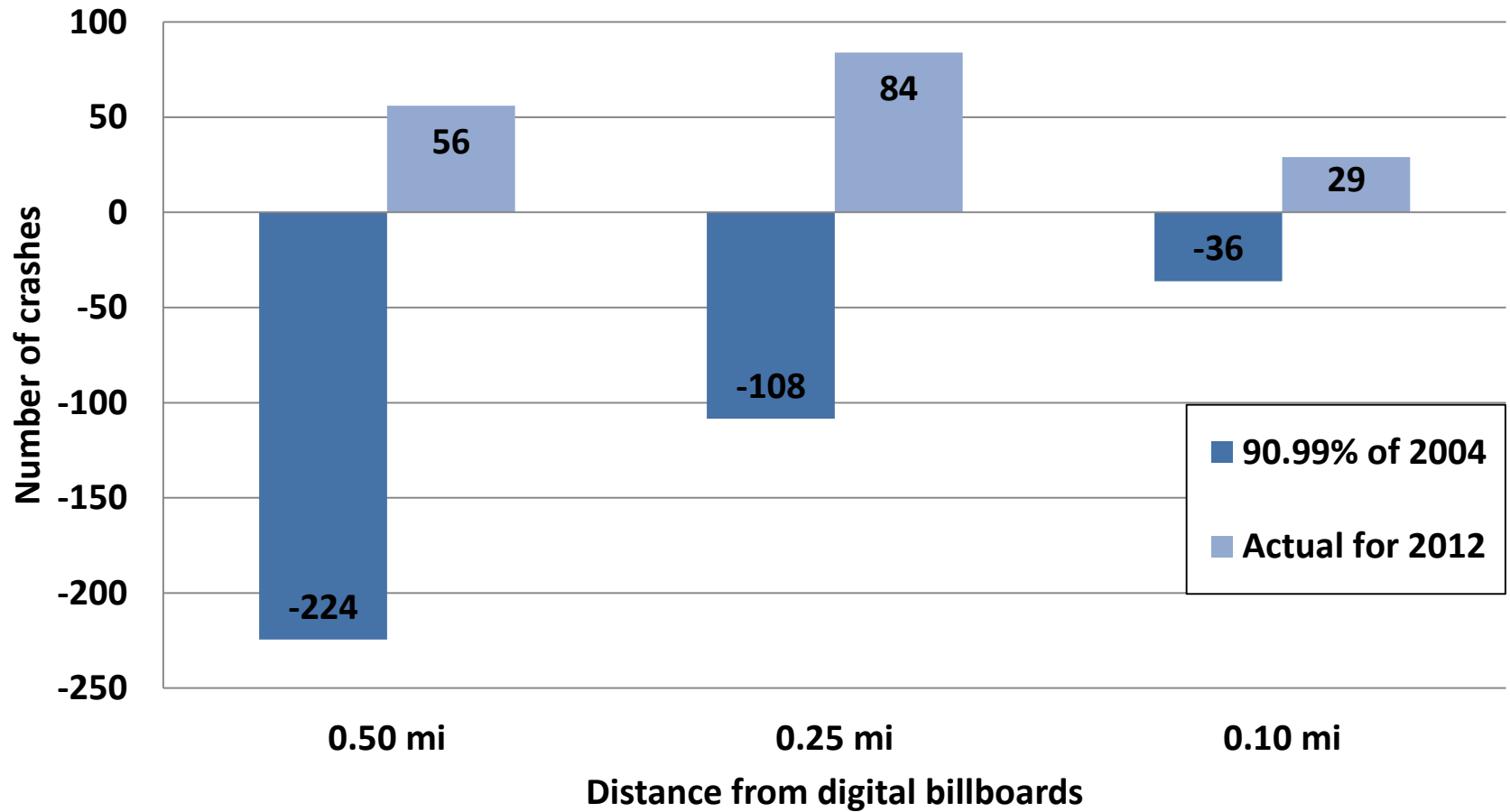
	Number	Rate, %
All limited access primary road crashes*	-2714	-9.01
≤0.50 mi from digital billboards	56	2.25
≤0.25 mi from digital billboards	84	6.99
≤0.10 mi from digital billboards	29	7.21

\*Lower peninsula only

Road conditions: dry or wet

Weather conditions: clear, cloudy, or rain

# Change in Distribution of Crashes





# “Before” and “After” Comparison

- $H_o: p_{2012}-p_{2004}=0$        $n_{2004}=30106$
- $H_a: p_{2012}-p_{2004}>0$        $n_{2012}=27393$

	Z	P-value
$\leq 0.50$ mi from digital billboards	4.337093	0.000007219
$\leq 0.25$ mi from digital billboards	4.133381	0.00001787
$\leq 0.10$ mi from digital billboards	2.387108	0.008491

- The proportions of digital billboard-proximal traffic crashes on Michigan freeways are significantly higher “after” than “before” the digital billboards were installed.

# Next Steps

- Seek independent auditor to verify methodology.
- Seek credible and widely recognized sponsor to oversee and publish final findings.
- Incorporate additional years--2004-2005 for "before" data and 2012-2013 for "after" data.
- Incorporate directional data for crashes and digital billboards.
- Determine crash/digital correlations in different weather conditions.