Texas A&M Transportation Institute

Tools and Strategies to Improve Transportation Safety in the Permian Basin

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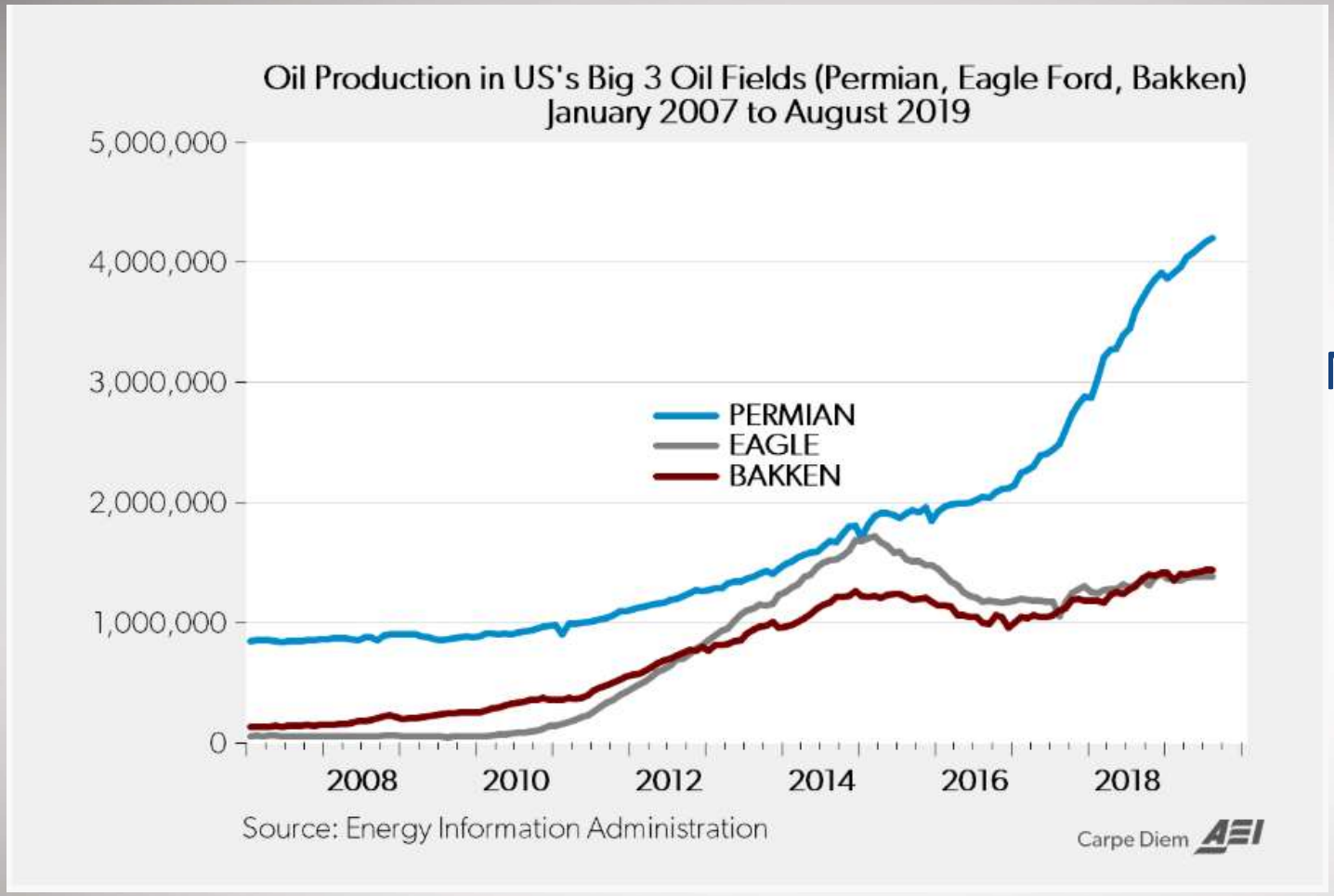
(Preliminary – Subject to Change)

Bottom Line

- Increased crashes resulting from combination of risk and exposure. Significant potential outside of TxDOT to bring solutions.
- Access Management is critical to address regardless of the roadway improvements made. This is an urban problem in a rural area.
- Public sector opportunities (Supply Side Focus):
  - Access Management – fewer access points, better driveways, turn lanes, and wayfinding signs
  - Intersection/roadway improvements – sustain focus through ups and downs
  - Enforcement/Education – DPS/Permitting
- Private Sector Opportunities (Demand Side Focus)
  - Demand reduction – Fresh water, waste
  - Technology – Routing, timing of shipments
  - Enforcement/Education - Employee and Contractor compliance



Permian Basin

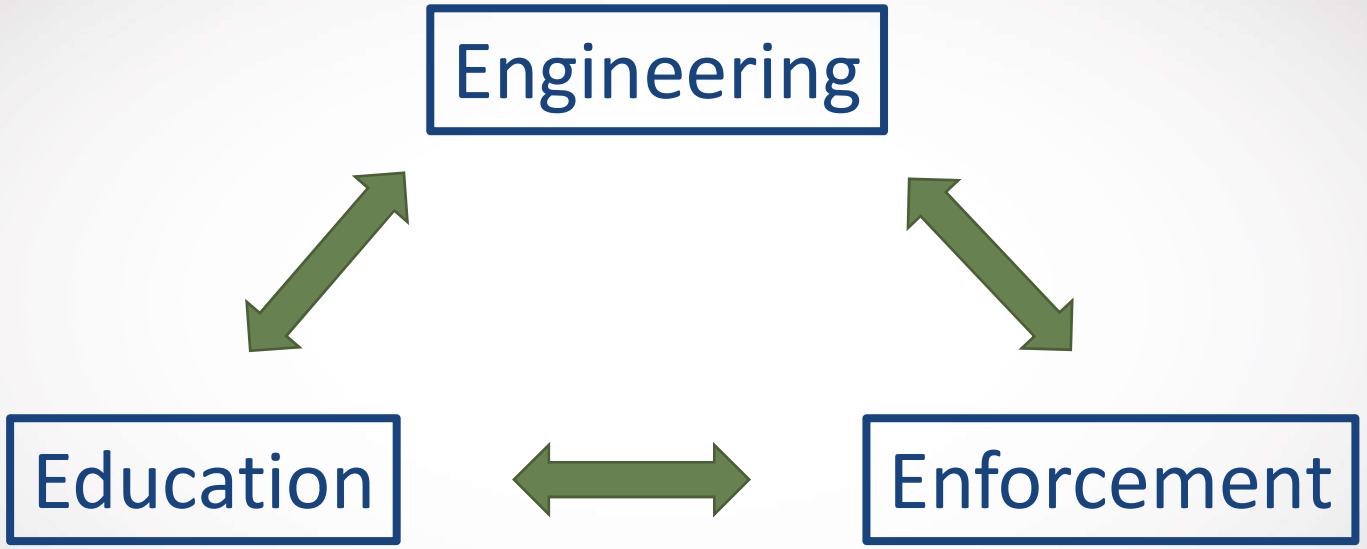
Not “playing out” any time soon

WATER (TRUCK/PIPELINE/WELL)
SAND (TRUCK)
CHEMICALS (TRUCK)

OIL/GAS (TRUCK/PIPELINE)
BRINE (TRUCK/INJECTION)
MUD/OTHER (LANDFILL)

Everything entering or leaving a well site is a transportation challenge.

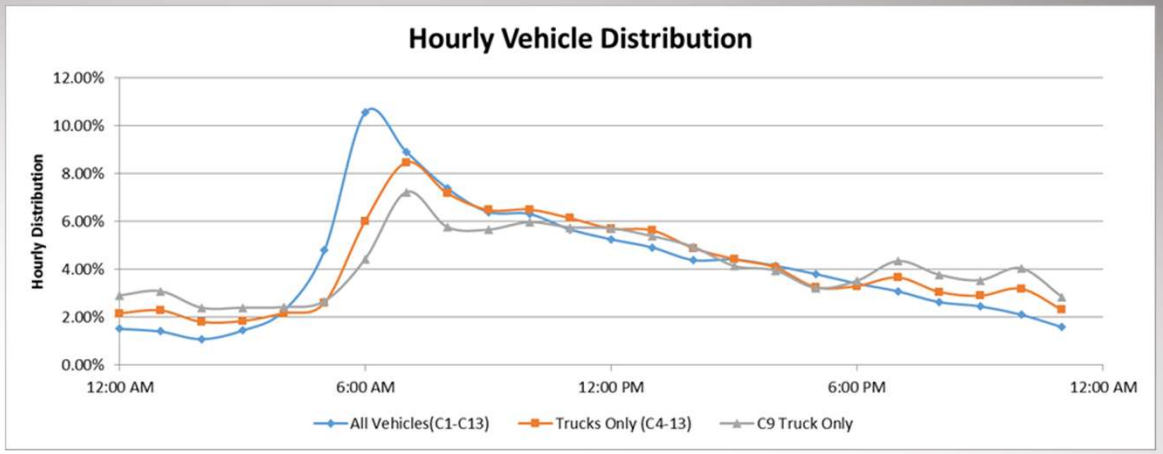
Solving Transportation Safety Challenges



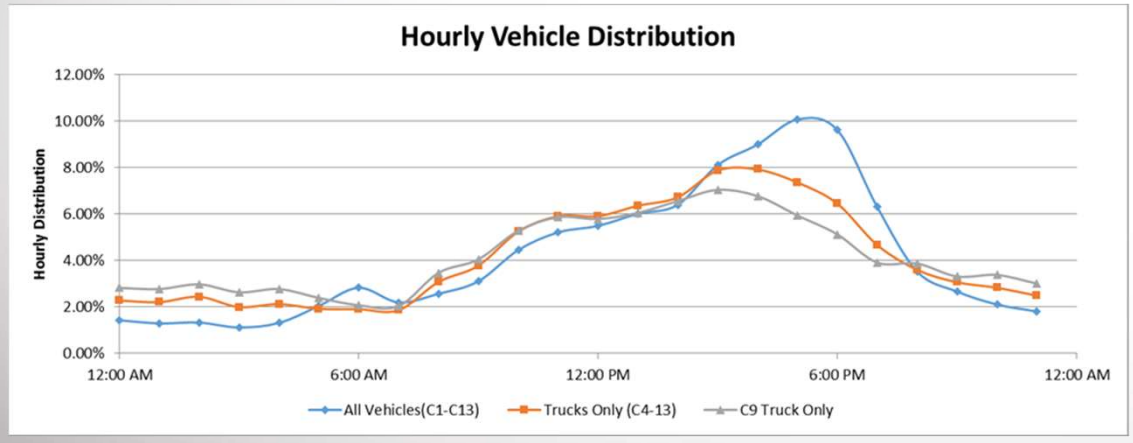
Traffic Data Findings

- Key Elements
  - Traffic Counts
  - Vehicle Classification
  - Vehicle Weight
- Data Trends
  - ADTs in excess of 10K
  - 30% - 40% Trucks (more like an IH)
  - 15% - 25% of trucks overweight

Hourly Vehicle Distribution



Northbound US285 (North of SH302)



Southbound US285 (North of SH302)

Urban Characteristics (Timing Opportunity?)

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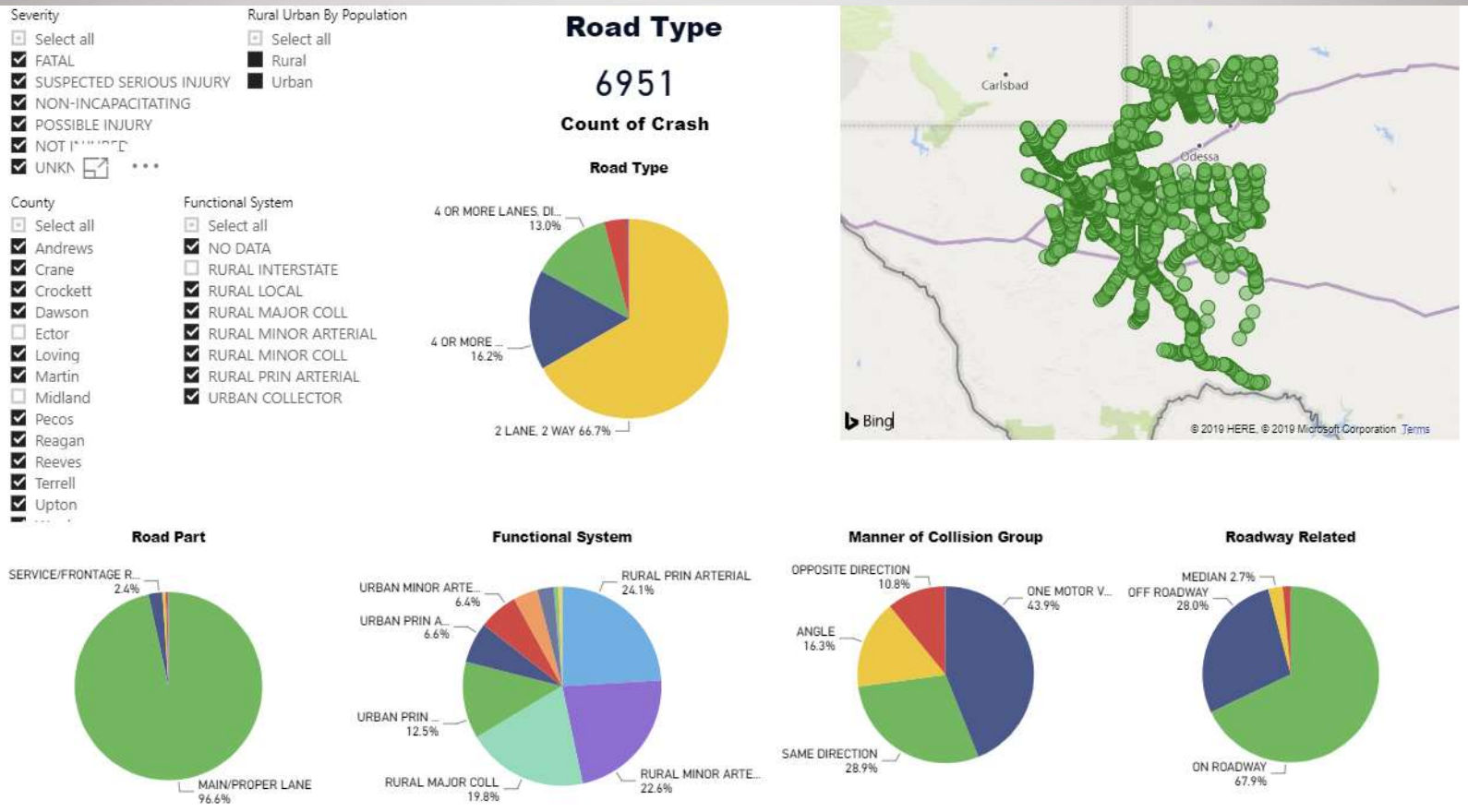

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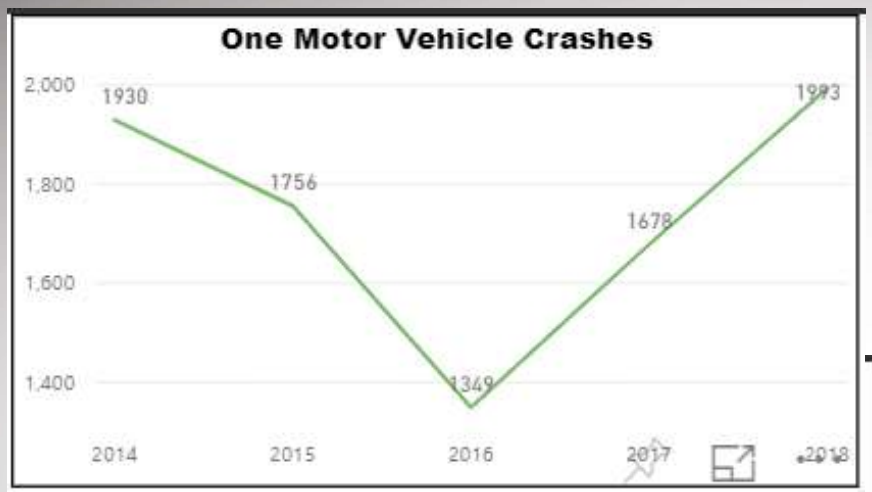

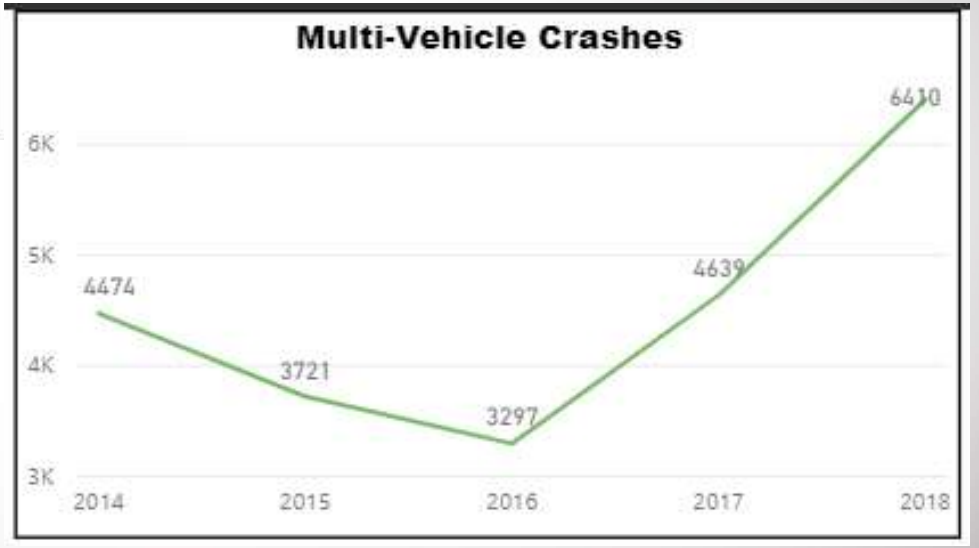

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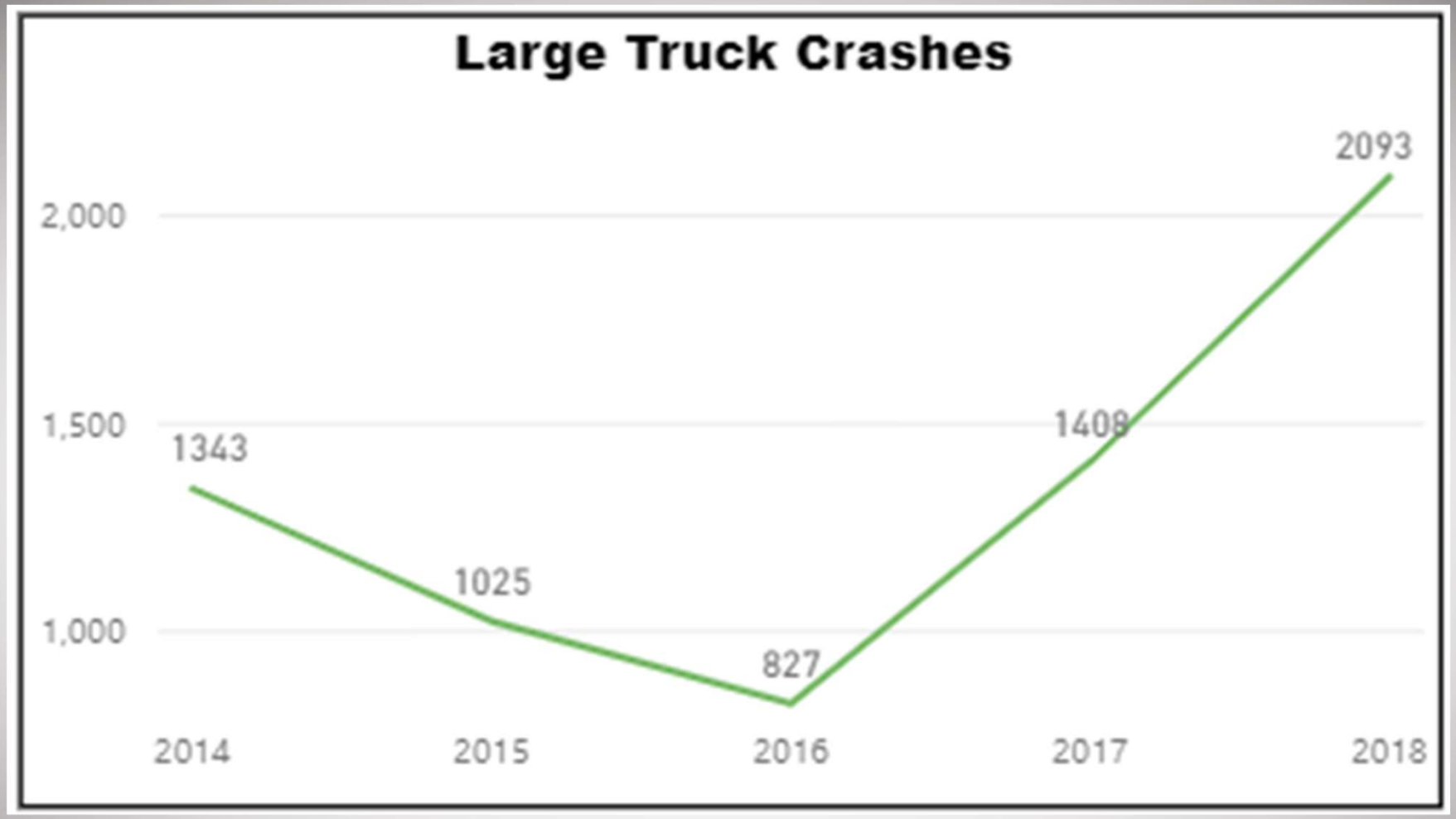

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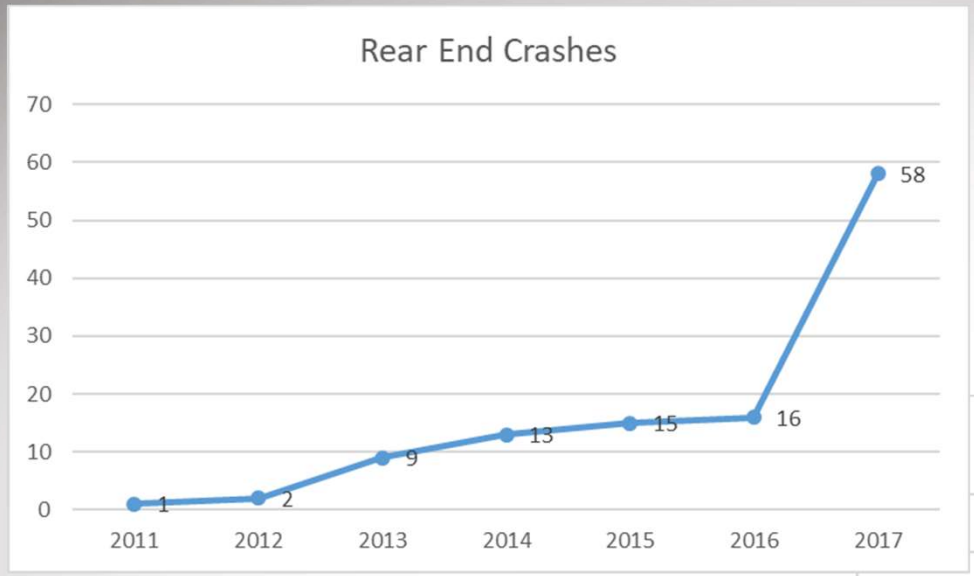
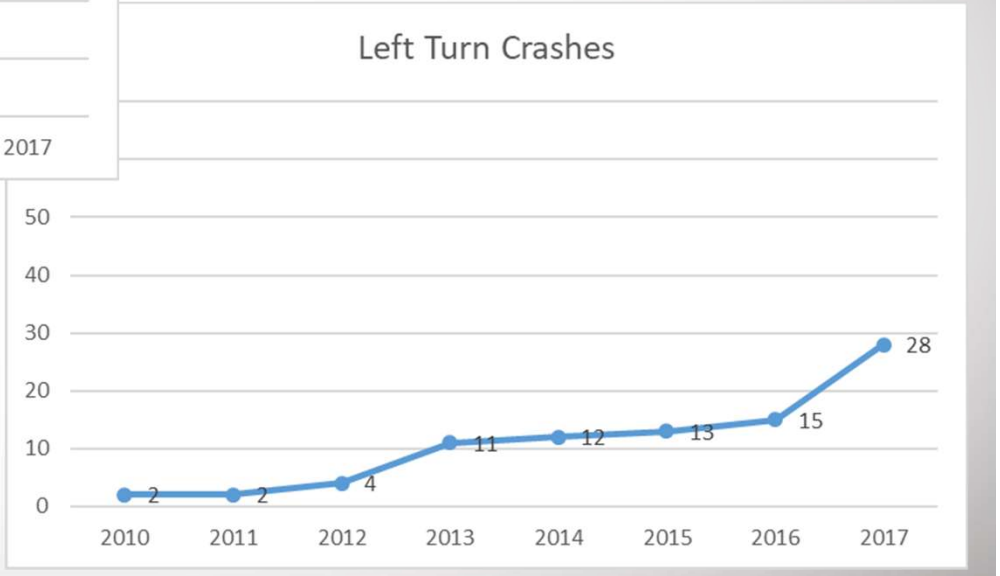
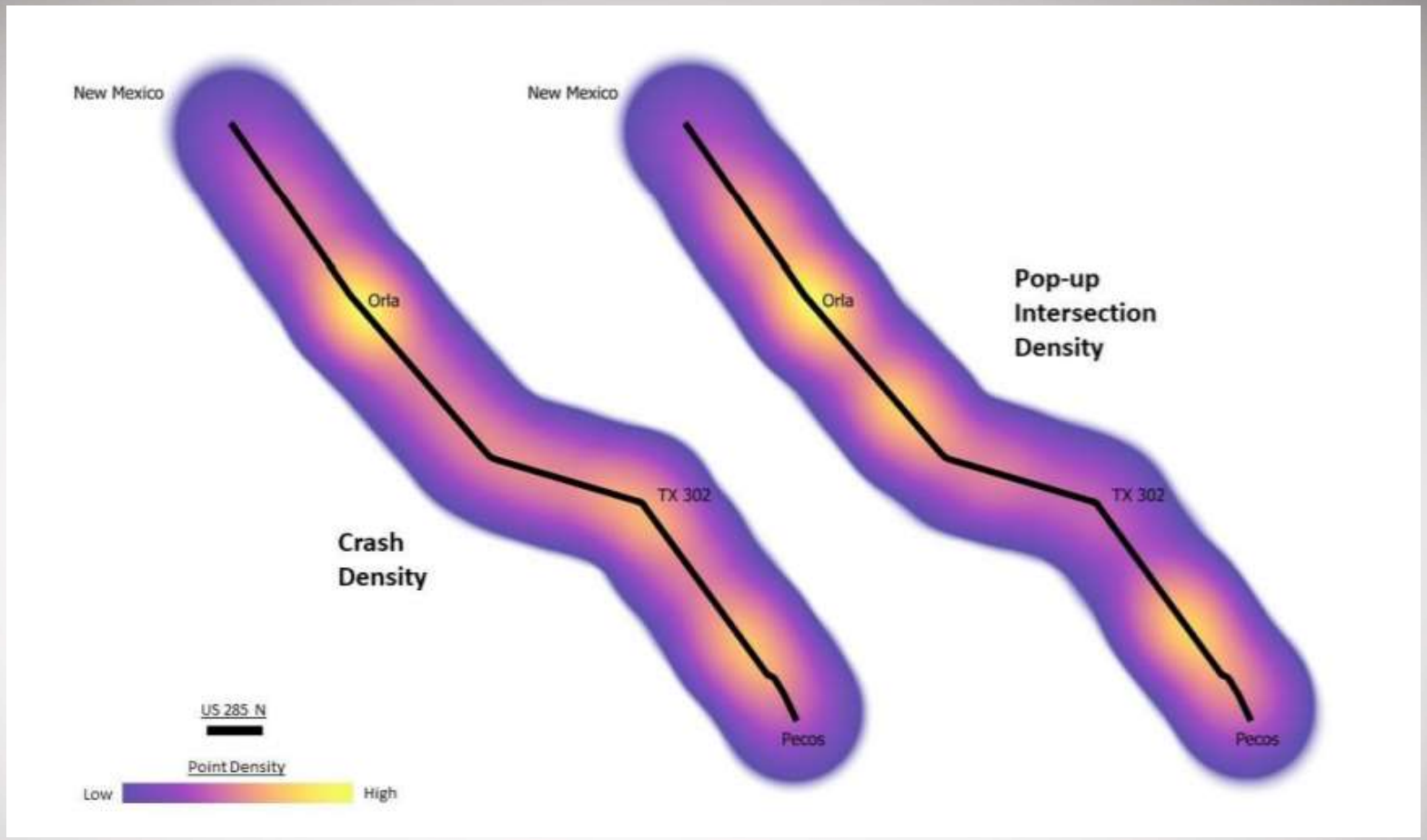




US 285 Crashes – Significant Trends

Preliminary - Subject to Change



US 285 Crashes – Heat Map

Preliminary - Subject to Change

Crash Reduction Potential

Left-Turn Lane

48% crash reduction for installing turn lanes on both approaches of the major road (4-leg intersection)

Right Turn Lane

31% decrease in rear-end crashes for installing right-turn lane

Roundabout

71% reduction for installing a single-lane roundabout in a rural setting with an 87% reduction in injury crashes.

Two-Way Left-Turn Lane

34% to 36% reduction for installing a TWLTL

Super 2

35% reduction for converting a two lane rural road to a Super 2 configuration

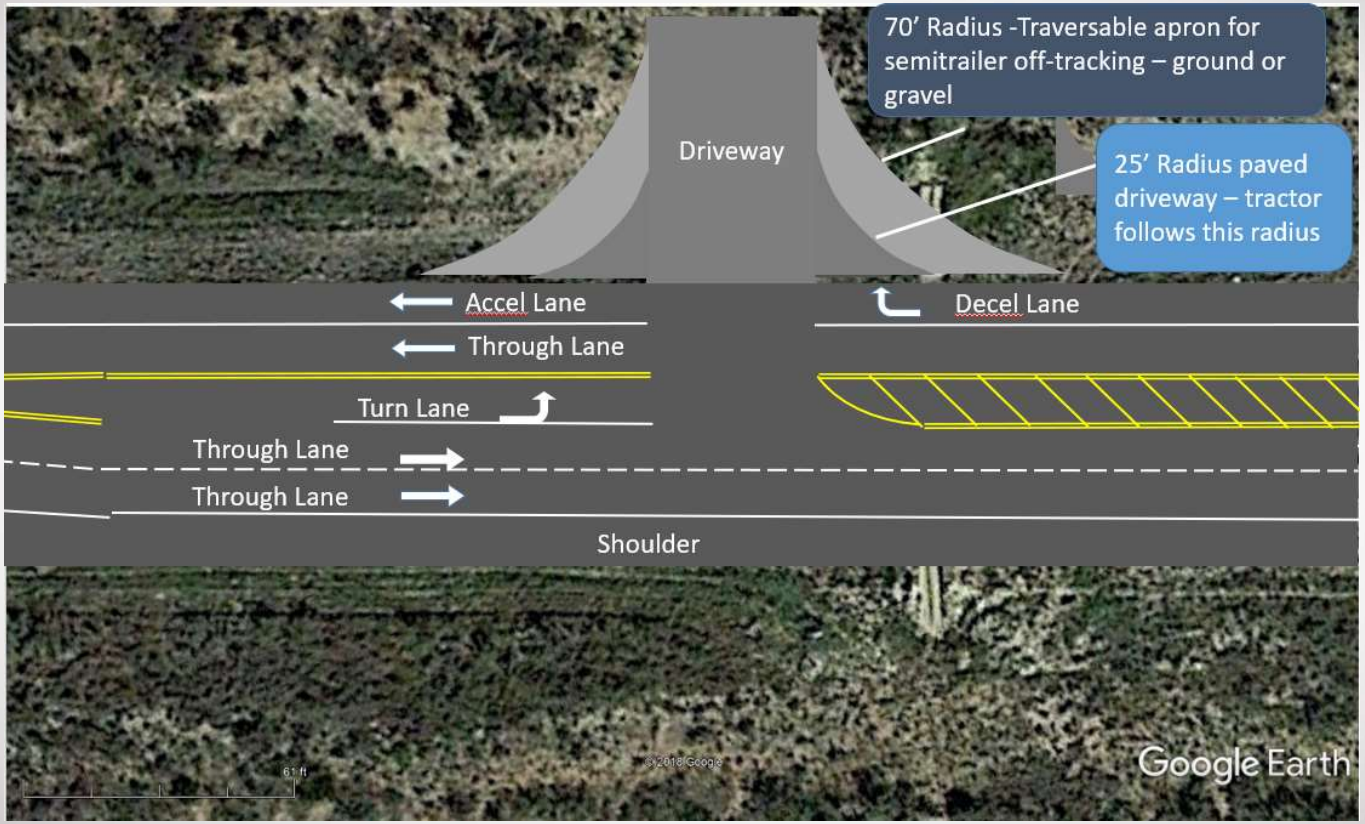
What Does the Data Tell Us?

- Crashes occur throughout the corridor.
- Access Management is the top issue – Too many access points, poor driveways, need for more turn lanes, and better wayfinding.
- Intersection improvements – great potential to reduce delays
- Opportunities exist for reduction in demand (fresh water/timing).
- Overweight trucks have a huge impact on pavement condition – which is then followed by construction activity.
- Roadway demand is not going away soon– Sustain focus (public and industry) through ebb and flow of energy economics.

Access Management Findings/Recommendations

1. Existing TxDOT Policy provides great flexibility
2. Improve access points – Implement the hybrid driveway design that accommodates the range of larger vehicles (WB-67).
3. Improve spacing/interaction of access points –current practice supports spacing of one mile.
4. Pursue combining driveways.
5. Provide provisions for turning movements (TWLTL/Left Turn Lanes, Right Turn Lanes/Full Width Shoulders)
6. Add Mile Markers/Standardized Site Signing to aid in navigation

Hybrid Driveway



Further Opportunities for Success

- CDL/Vehicle Condition/Overweight/Speeding
- General Driver Behavior/Hours of Service
- Real-Time Driver/Dispatch Information (incidents/congestion)
- New technology – combination vehicles?
- Scheduling/Routing to avoid peaks
- Support the plan – Industry has a strong voice, **and** is in position to take actions for a positive outcome.

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