



RIO GRANDE BLVD AND CANDELARIA RD INTERSECTION REASSESSMENT

**PARSONS
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September 10, 2013

Meeting Agenda



1. Opening Comments
2. Introductions
3. Meeting Purpose and Rules of Conduct
4. Assessment Overview and Findings
5. Questions and Comments
6. Closing Comments

Meeting Purpose



- Present findings for the update and reassessment of the Rio Grande and Candelaria Road Intersection Study
- Listen and record public comments
- Answer questions

Meeting Rules of Conduct



- ***Please...***
 - Keep comments brief. We want everyone to have an opportunity to comment.
 - Be courteous and respectful to other participants.

Meeting Rules of Conduct



- Methods of commenting...
 - By speaking during the comment session of tonight's meeting
 - In writing using the comment form
 - Using the project email address...
Riogrande@pbworld.com
- All forms of comment carry equal weight

Assessment Overview



- Why the reassessment was done
- Data sources and methodologies
- Key Findings
- Conclusions

Reassessment Objectives



- City Council Directive
 - Supplement to the previous study completed in 2008
 - Reassess using the latest available data



Study Scope

- Limited to the intersection of Rio Grande Blvd. and Candelaria Road
- Did not consider broader corridor issues





Evaluation Factors

- Crash data to assess intersection safety
- Traffic volume data to assess intersection operations
- Speed data to assess existing travel speeds near the intersection
- Benefit-Cost assessment

Crash Data



- Reported crashes for the years 2004 through 2012
 - **Filed** crash reports maintained by APD
 - Geo-referenced data compiled by the UNM Division of Government Research
 - Data base of **filed** crash reports maintained by NMDOT Traffic Safety Bureau



Crash Data Analysis

- **Number:** How Many Crashes Occurred?
- **Types:** Rear-end, Right-Angle, Left-turn, Fixed Object, etc.
- **Severity:** Property Damage Only (PDO), Injury, Fatal
- **Contributing Factors:** Driver Inattention, Failure to Yield, Excessive Speed, Alcohol Involved, etc.

Crash Data Analysis



- Two crash metrics calculated from data...crash rate and crash severity
- Crash rate
 - the number of crashes per one million vehicles entering the intersection
 - normalizes the data for comparison to other intersections

Crash Data Analysis



- Crash Severity
 - Ratio of crashes involving injury and/or fatalities to total crashes.
 - Puts seriousness of crashes in perspective

$$\textit{Severity} = \frac{\textit{Injury} + \textit{Fatal Crashes}}{\textit{Total Crashes}}$$



Crash Analysis Findings

Crash Overview – 2004 to 2012:

- 75 total crashes over 9 years (avg. of 8.3/yr.)
- 21 of the 75 crashes involved injuries (28%)
- No fatalities recorded in the assessment period
- 5 crashes involved alcohol (~7%)
- Top Contributing Factors
 - Driver Inattention (57%)
 - Failure to Yield (21%)
 - Excessive Speed (17%)

Crash Analysis Findings



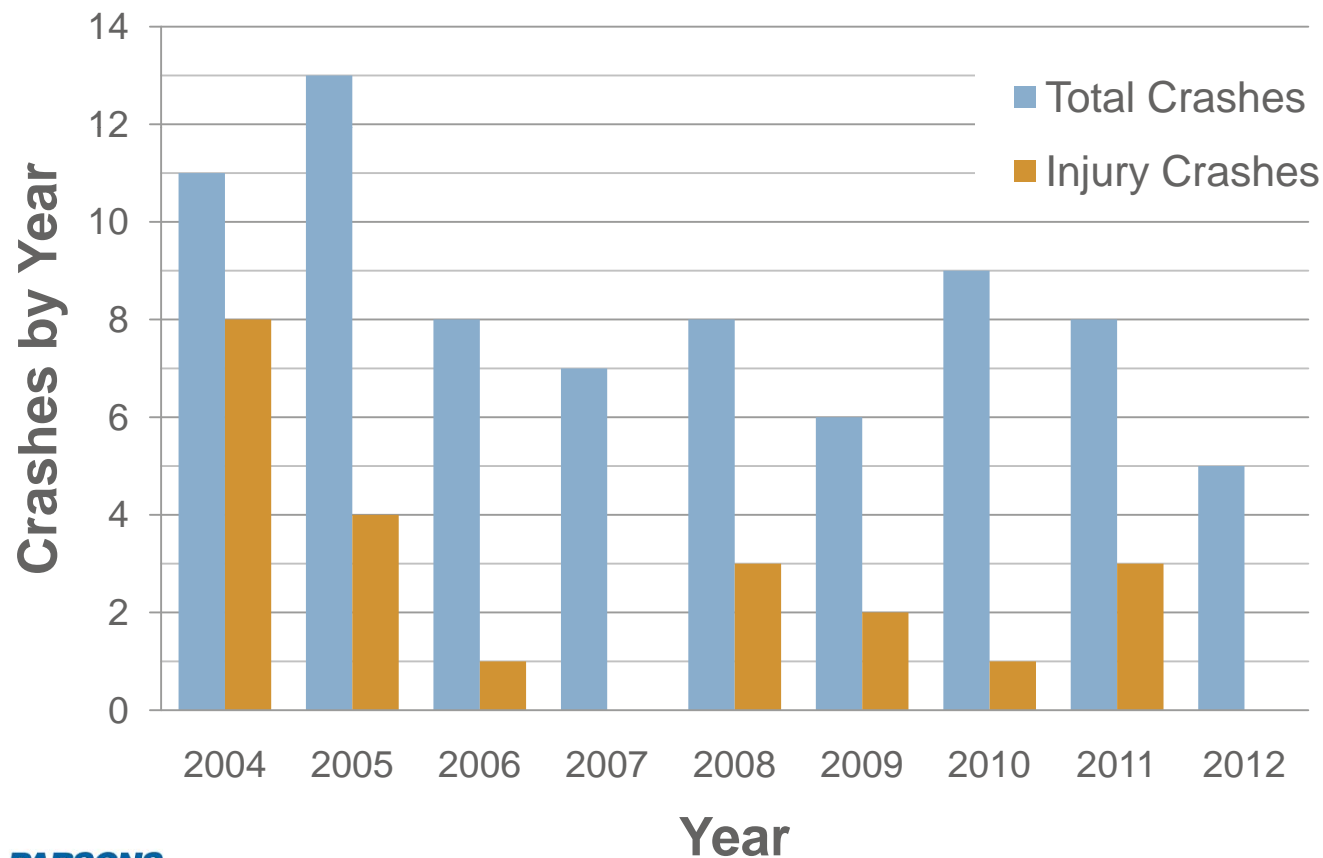
- **Predominant Crash Types:**

Crash Type	<i>Overall</i>	<i>2008 Study</i>	<i>2013 Study</i>
	2004 to 2012	2004 to 2006	2010 to 2012
Left-Turn	23	10	6
Rear-End	13	8	2
Right Angle	12	2	7
Fixed Object	8	3	2
Sideswipe	8	1	3

Crash Findings



- In general, the number and severity of crashes has declined significantly since 2004 and 2005





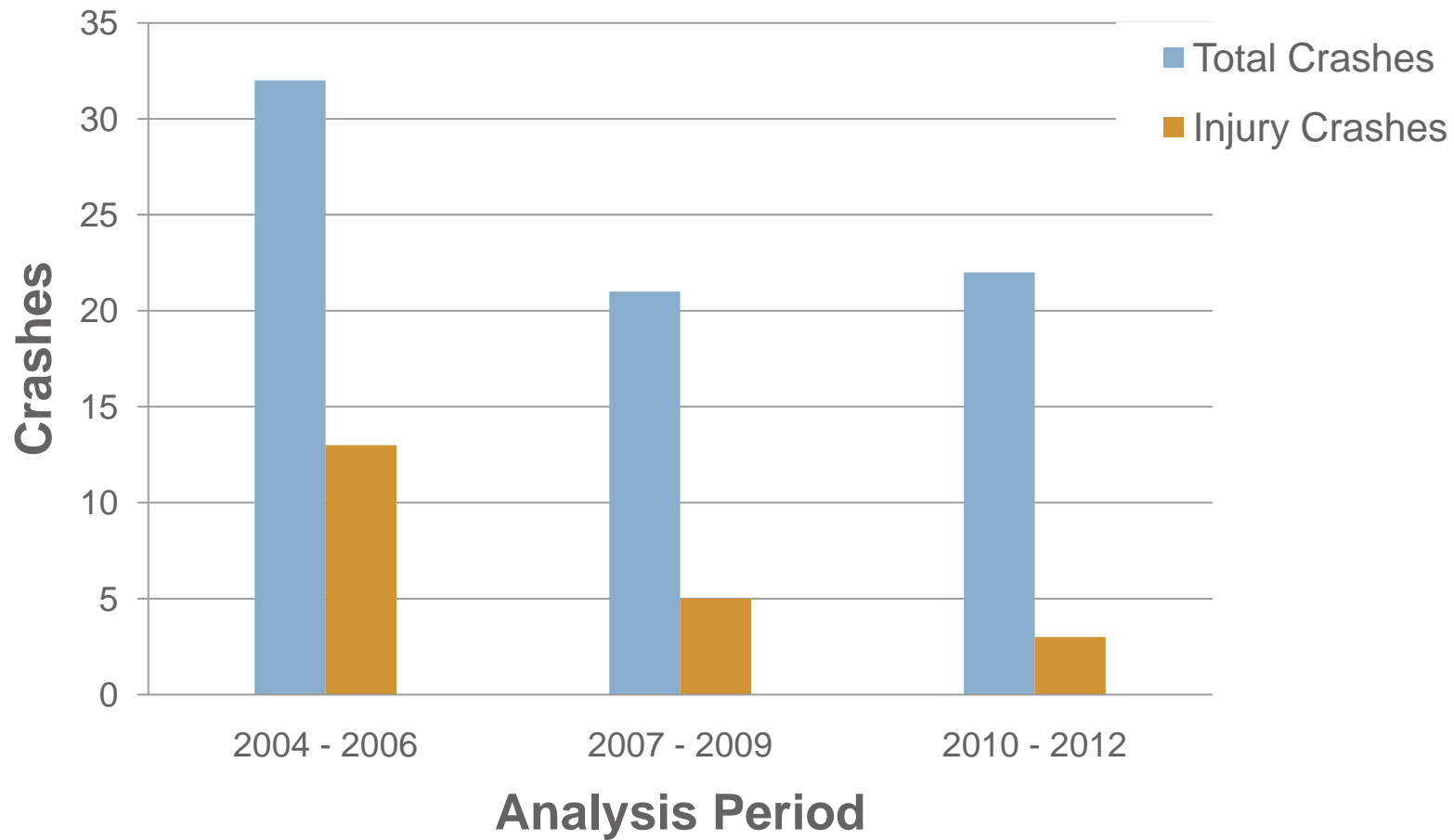
Crash Findings

- Typically, crash data is evaluated in 3-year periods
- Number of crashes resulting in injuries has declined significantly from the values used in the 2008 study

	2004 - 2006	2007 - 2009	2010 - 2012
Total Crashes	32	21	22
Injury Crashes	13	5	3
Injury %	41%	24%	14%
Crash Rate	1.48	1.06	1.24

 = Data used for 2008 Study

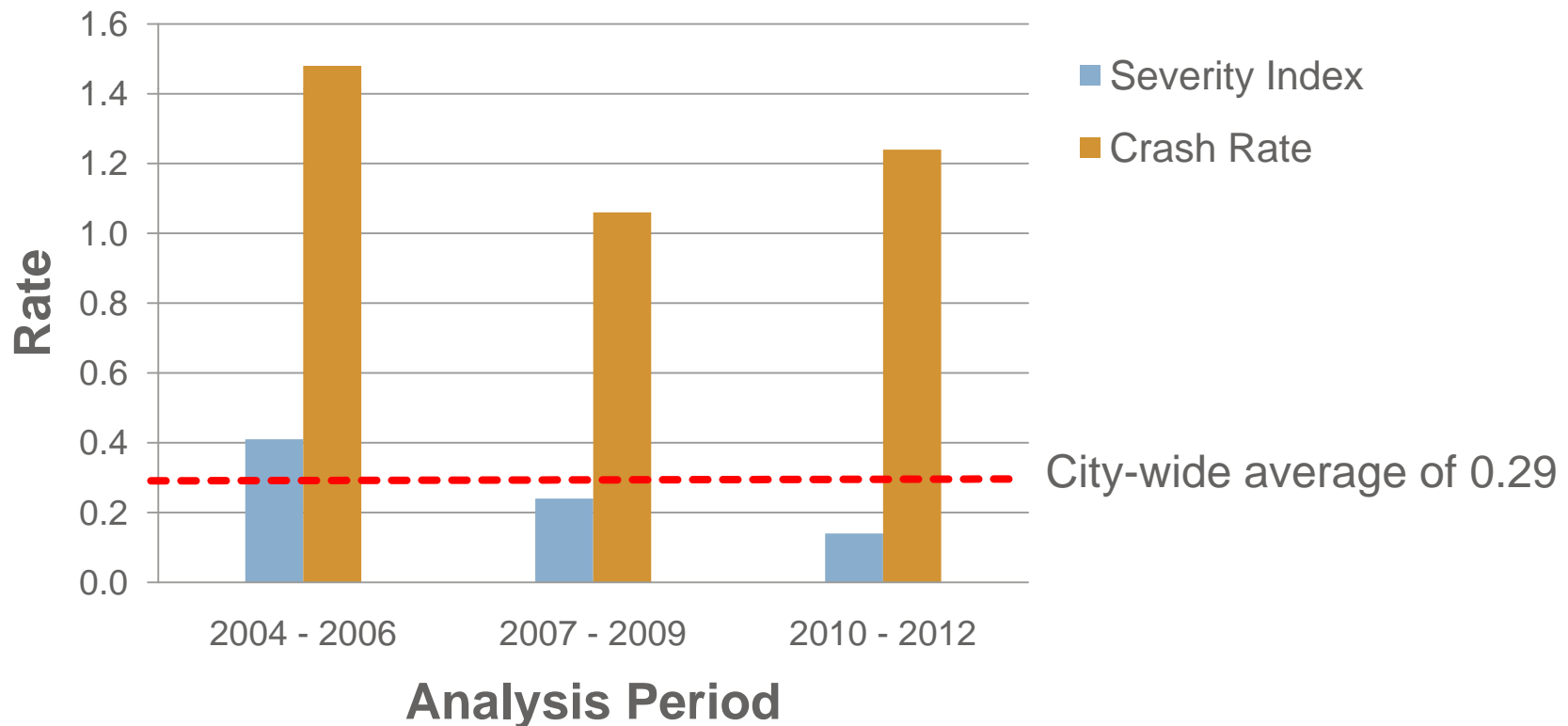
Crash Findings



Crash Findings



- Severity has decreased since the 2008 study
- Severity has been below city-wide average for last 6 years



Traffic Operations Analysis

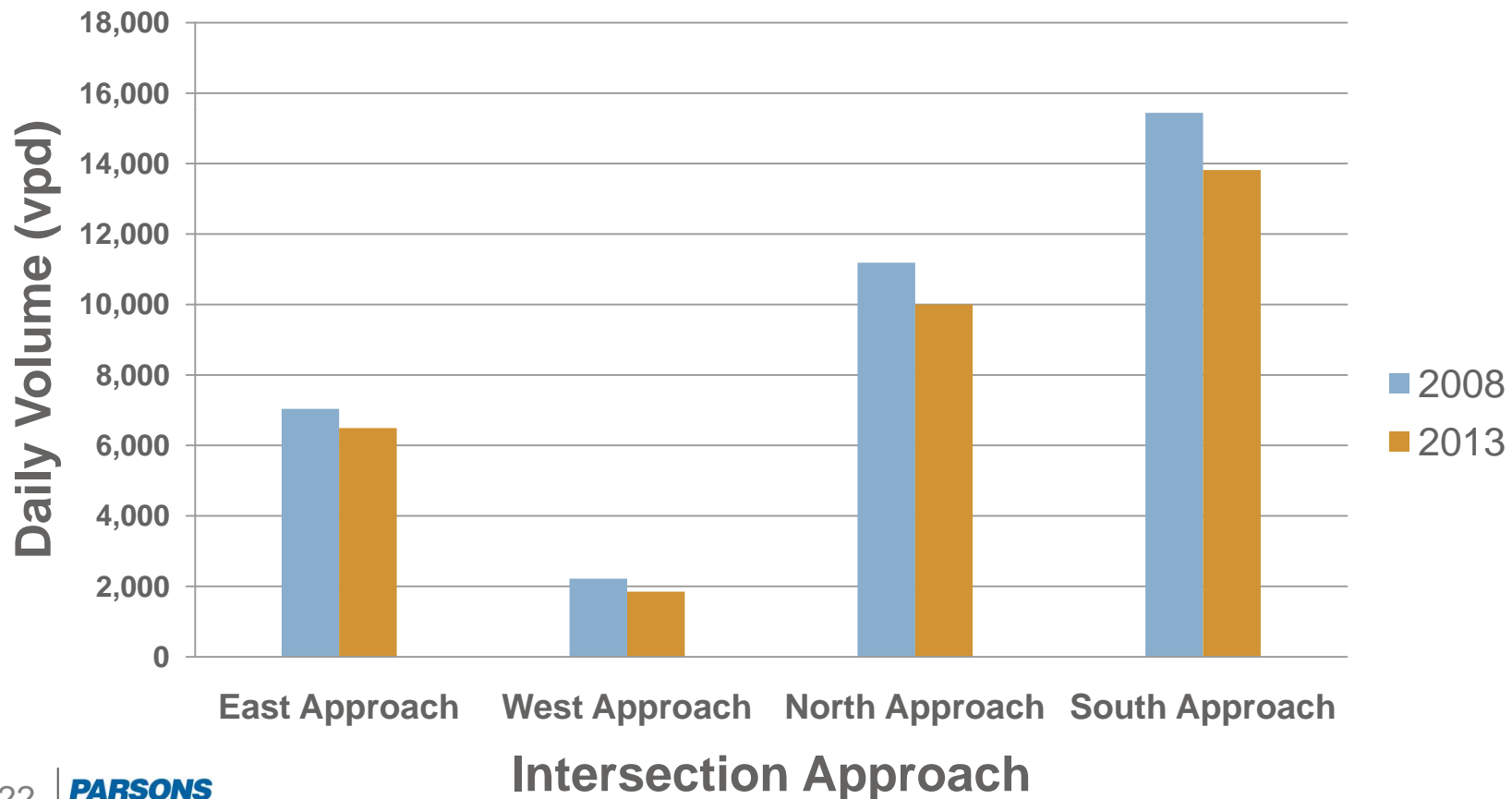


- First step... collect current volume data for a typical weekday
- Used two methods
 - Continuous 72-hour counts for approach volumes
 - 9-hour intersection counts for turn movements

Traffic Operations Analysis



- Data indicate a slight decline since 2008



Traffic Operations Analysis

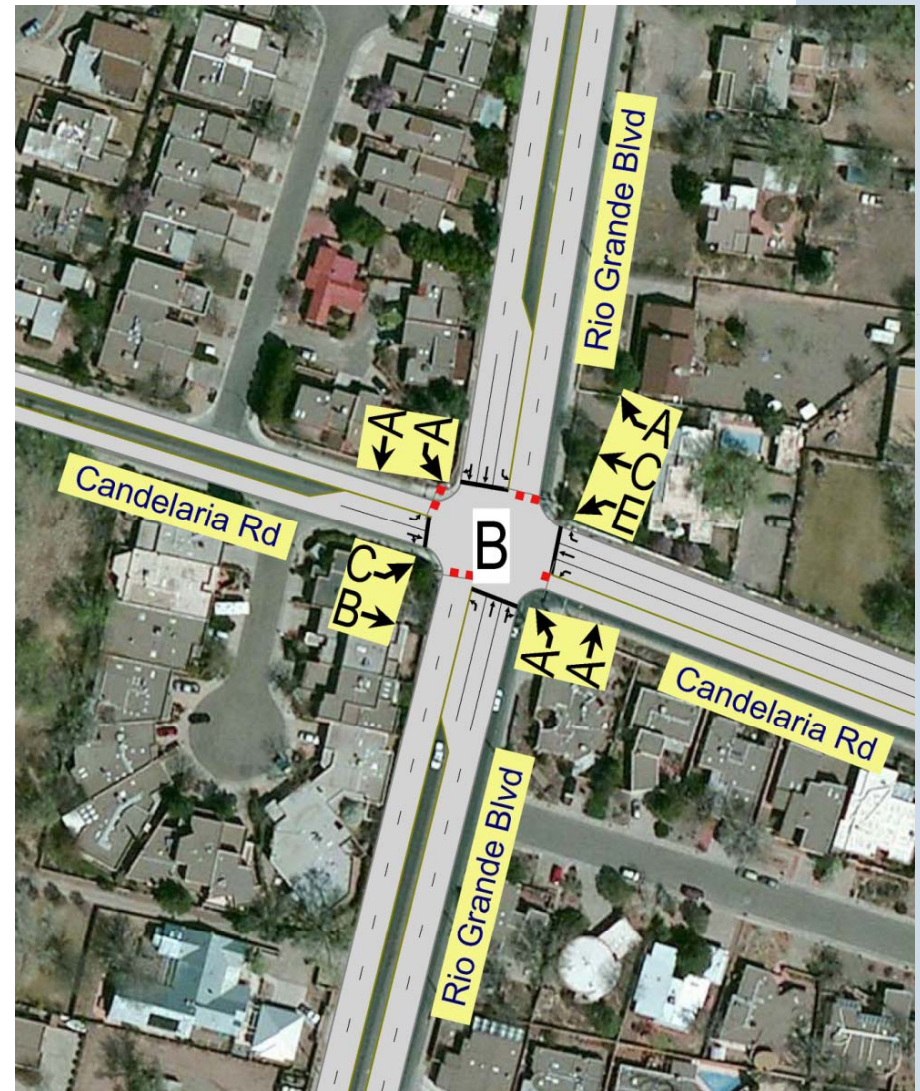


- Second step... assess intersection performance
 - Used methods, software, and other tools accepted by FHWA, NMDOT, and COA
 - Evaluated morning, noon, and evening peak periods
- Evaluated...
 - Driver delay
 - Intersection level of service
 - Queue lengths



Findings – Signalized Intersection

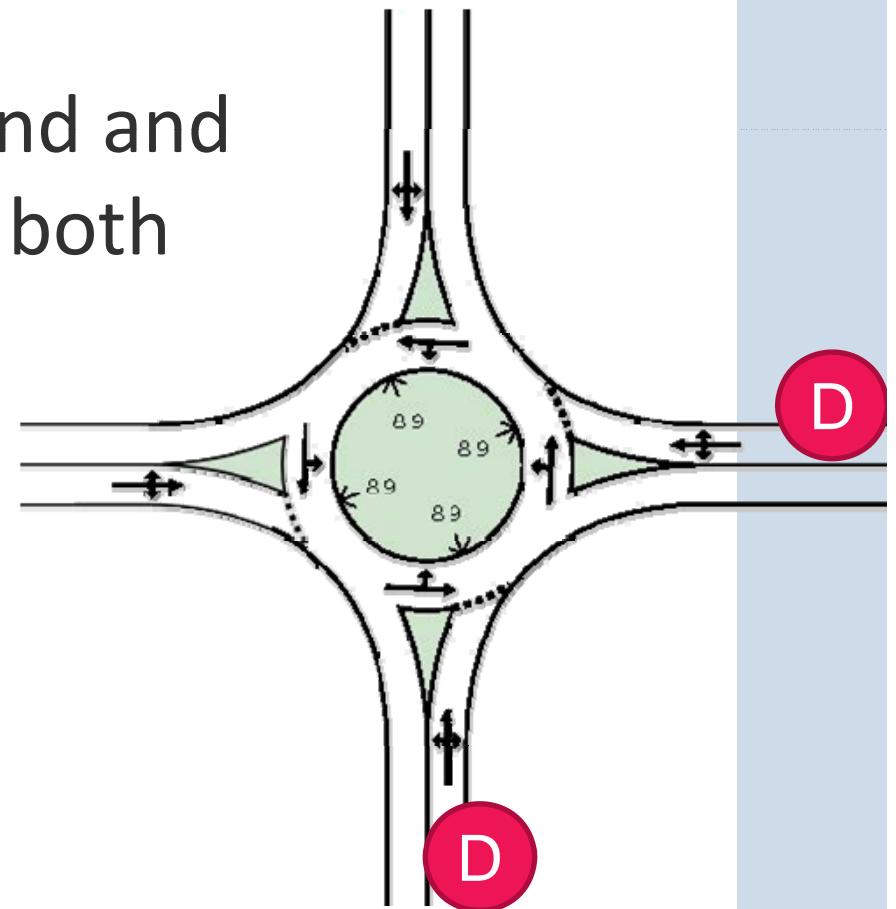
- Signalized intersection operates well (LOS B)
- One problem movement...WB to SB left-turn



Findings – Roundabout Intersection



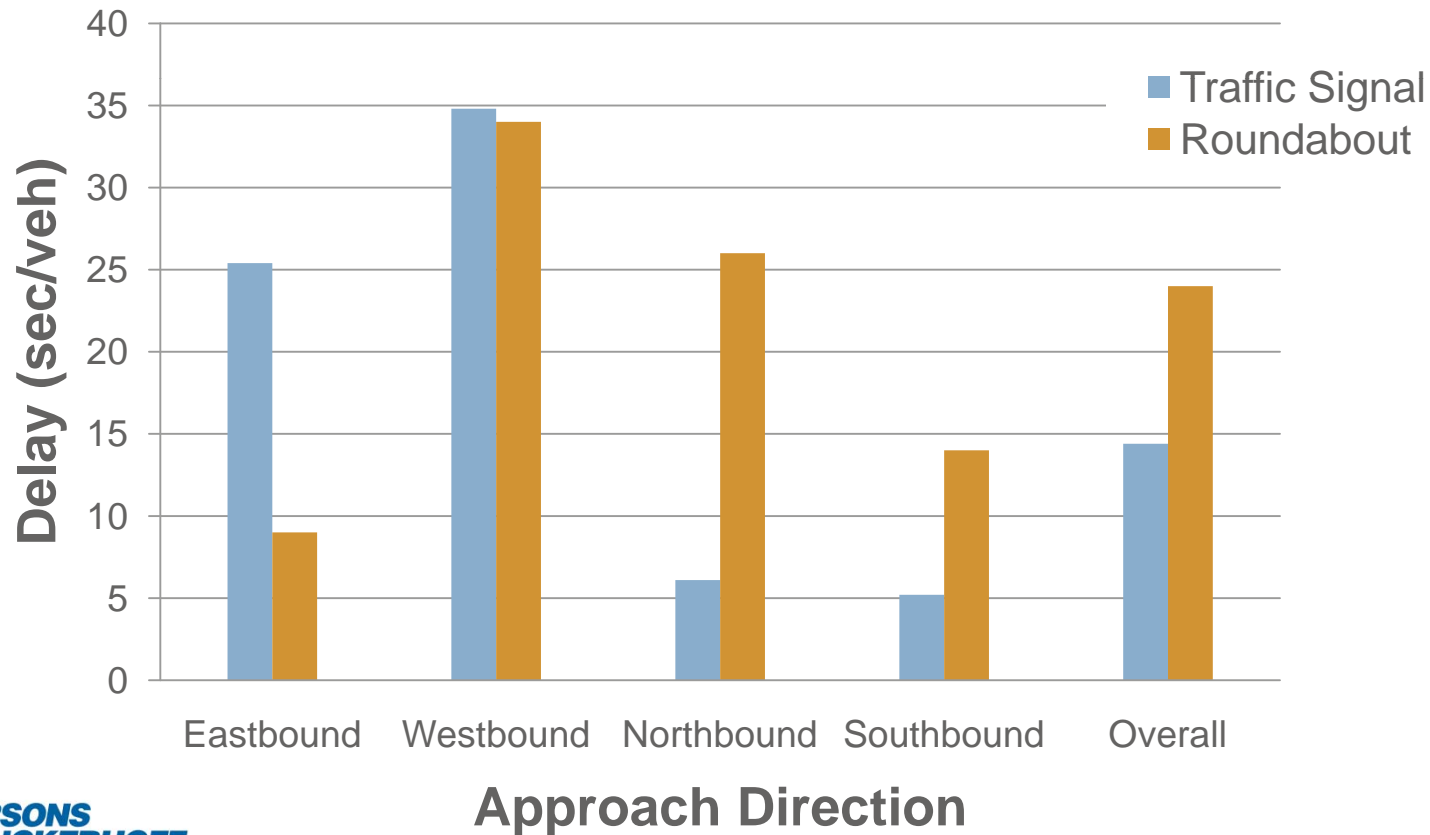
- Roundabout intersection generally operates well
- Two problems... westbound and northbound approaches; both operate at LOS D
- Potential queue problem
 - Northbound approach
 - Interferes with side streets



Traffic Findings – Vehicle Delay



- Peak-hour delay is generally greater with a roundabout configuration



Travel Speeds



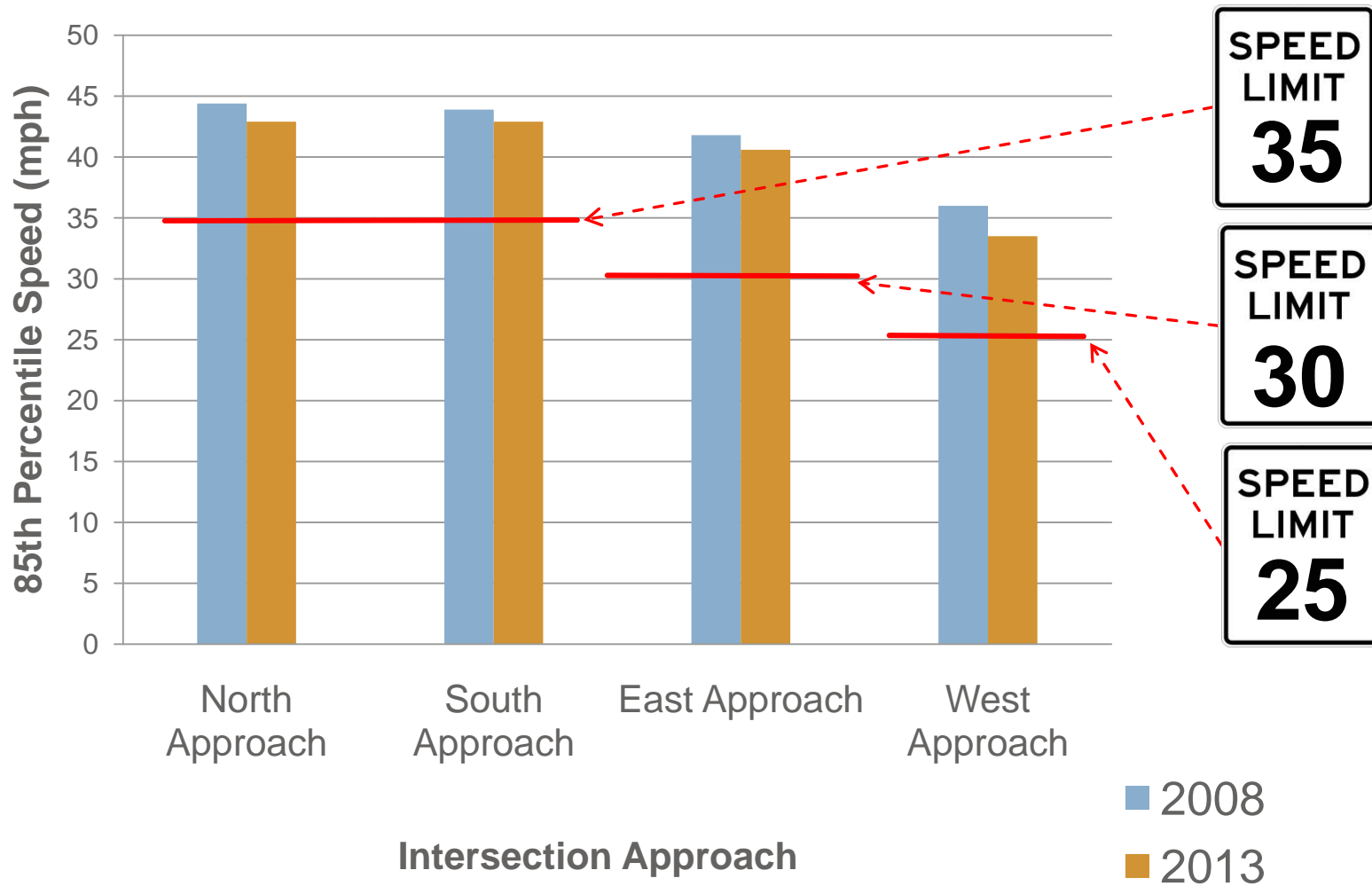
- Collected speed data using two methods...
 - pneumatic tubes
 - radar gun





Speed Analysis Findings

Speed Analysis Findings





Benefit / Cost Analysis

- Multiple methods available to calculate benefit / cost
- Basis of comparison is existing condition
- For this analysis, the methods from three sources were used:
 - Highway Safety Manual (national guidance)
 - NCHRP Reports 572 and 672

Benefit / Cost Analysis



- Benefit Factors Used
 - Safety improvements; cost savings from reduced crashes
 - Cost of time savings from reduced delay
 - Fuel costs

Benefit / Cost Analysis



- Cost factors used
 - Cost to study, design, and construct
 - Annual operational and maintenance costs

Benefit / Cost Analysis



- Three strategies compared...
 - Doing nothing (leaving the intersection as is)
 - Implementing a permissive/protected left turn signal phase (WB to SB movement)
 - Reconstructing the intersection as a roundabout

Benefit / Cost Analysis



- Findings
 - Benefit / cost ratio of both build options is less than 1
 - Low benefit / cost is because the existing intersection...
 - Operates well
 - Has a relatively low number of crashes
 - Has a low crash severity

Conclusions / Recommendations



Conclusions

- Current data shows improvement compared to the 2008 study
- Existing Signalized Intersection
 - Does not have a high crash rate
 - Does not have high crash severity
 - Does function at acceptable levels of service
 - Travel Speeds have dropped a bit
 - Westbound Left-Turn Movement could be improved; add a protected-permissive signal phase

Conclusions / Recommendations



- Current data shows improvement compared to the 2008 study
- Existing Signalized Intersection
 - Does not have a high crash rate
 - Does not have high crash severity
 - Functions at acceptable levels of service
 - Travel speeds have dropped marginally
 - Westbound left-turn movement could be improved; add a protected-permissive signal phase

Conclusions and Recommendations



Rebuilding the intersection as a roundabout

- Would likely reduce the number of crashes
- Reduce travel speeds through intersection
- Would function at acceptable levels of service, although would have a queuing problem for the northbound approach during peak periods
- Would require a “break-in” period while drivers get accustomed to the change

Conclusions and Recommendations



- Other considerations for a roundabout approach
 - Speed reductions would be limited to the intersection influence area
 - Additional modifications to the corridor would be necessary to cause a speed reduction beyond the intersection

Conclusions and Recommendations



- Modify the existing signalized intersection by adding a protected-permissive phase for the westbound to southbound left-turn movement.
- Request additional periodic enforcement by APD on Rio Grande Boulevard and Candelaria Road.
- Continue to monitor the intersection for a period of two years to determine the effectiveness of the signal modification.

THANK YOU

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