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Adding Faculty in the Areas of Transportation – Engineering Management

by

Brian Smith



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R232**

**A National University Transportation Center
at Missouri University of Science and Technology**

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USING HISTORICAL CRASH DATA AS PART OF TRAFFIC WORK ZONE SAFETY PLANNING AND PROJECT MANAGEMENT STRATEGIES

BY

BRIAN SMITH, PH.D.

**Assistant Professor Of Engineering Management And Systems Engineering
Missouri University Of Science & Technology**



Project Introduction

- Evaluates current organizational strategies with respect to work zone management
- Identifies factors that improve work zone safety for both work zone personnel and general public.
- Statistical Analysis of Historical Crash Data

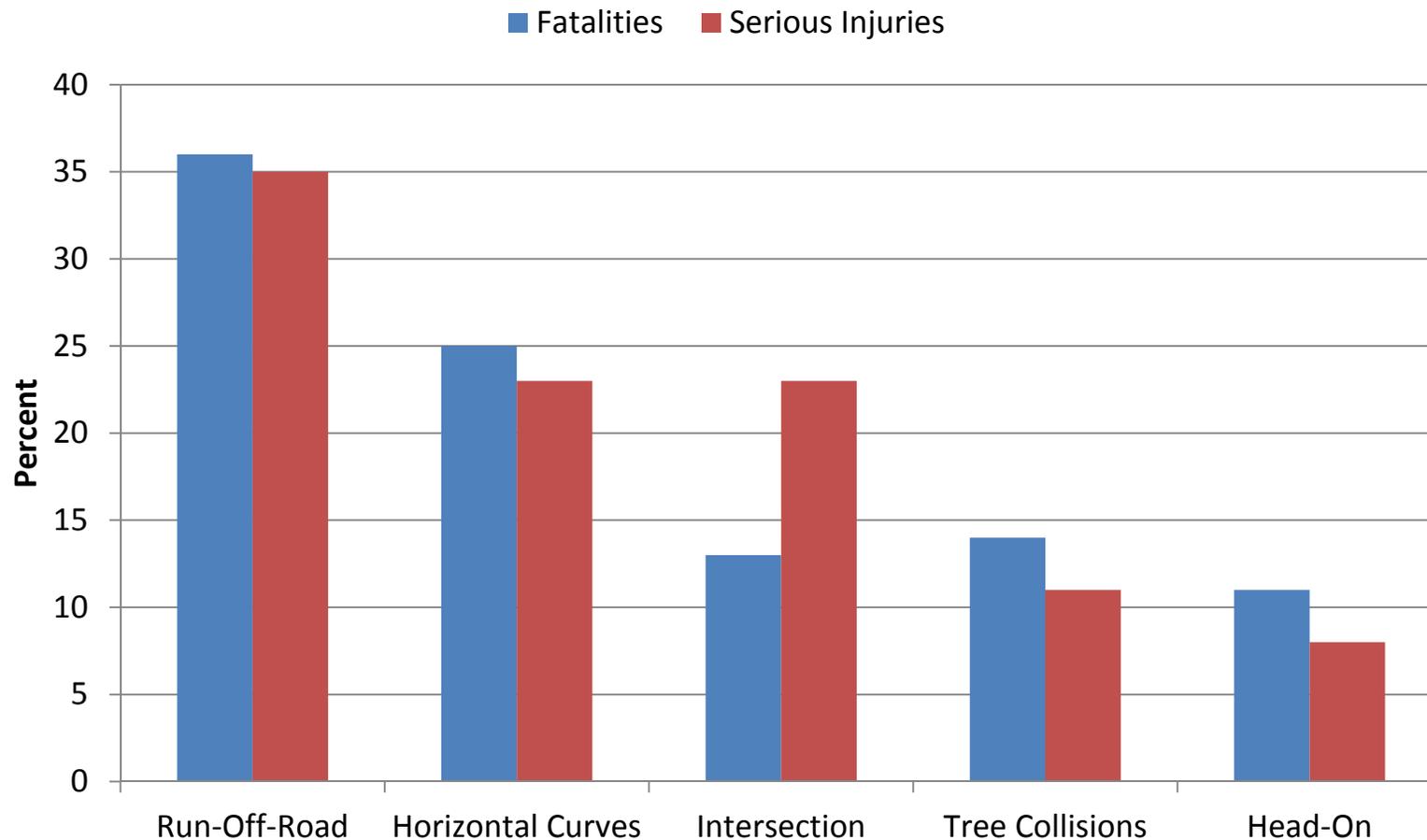
Project Task Presented

- Hazard and risk analysis using historical data
 - Analysis of crash records from 2009 - 2011
 - Descriptive statistics and ANOVA
- Integrated with other tasks to create organizational management strategy for MoDOT and other transportation management agencies

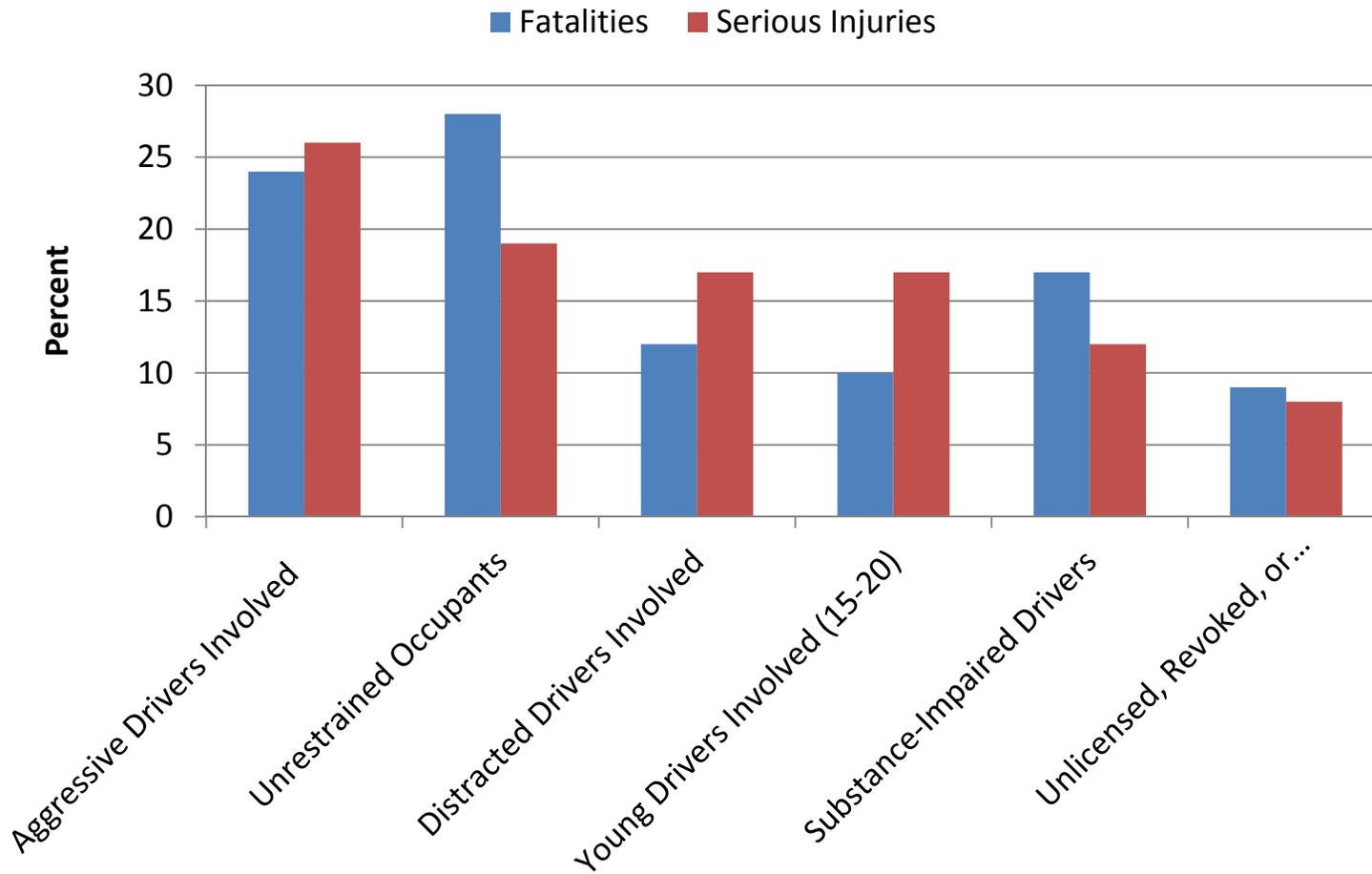
Work Zone Safety in Missouri

- From 2009 to 2011
 - 40 work zone crashes resulting in fatalities
 - 239 work zone crashes resulting in disabling injuries

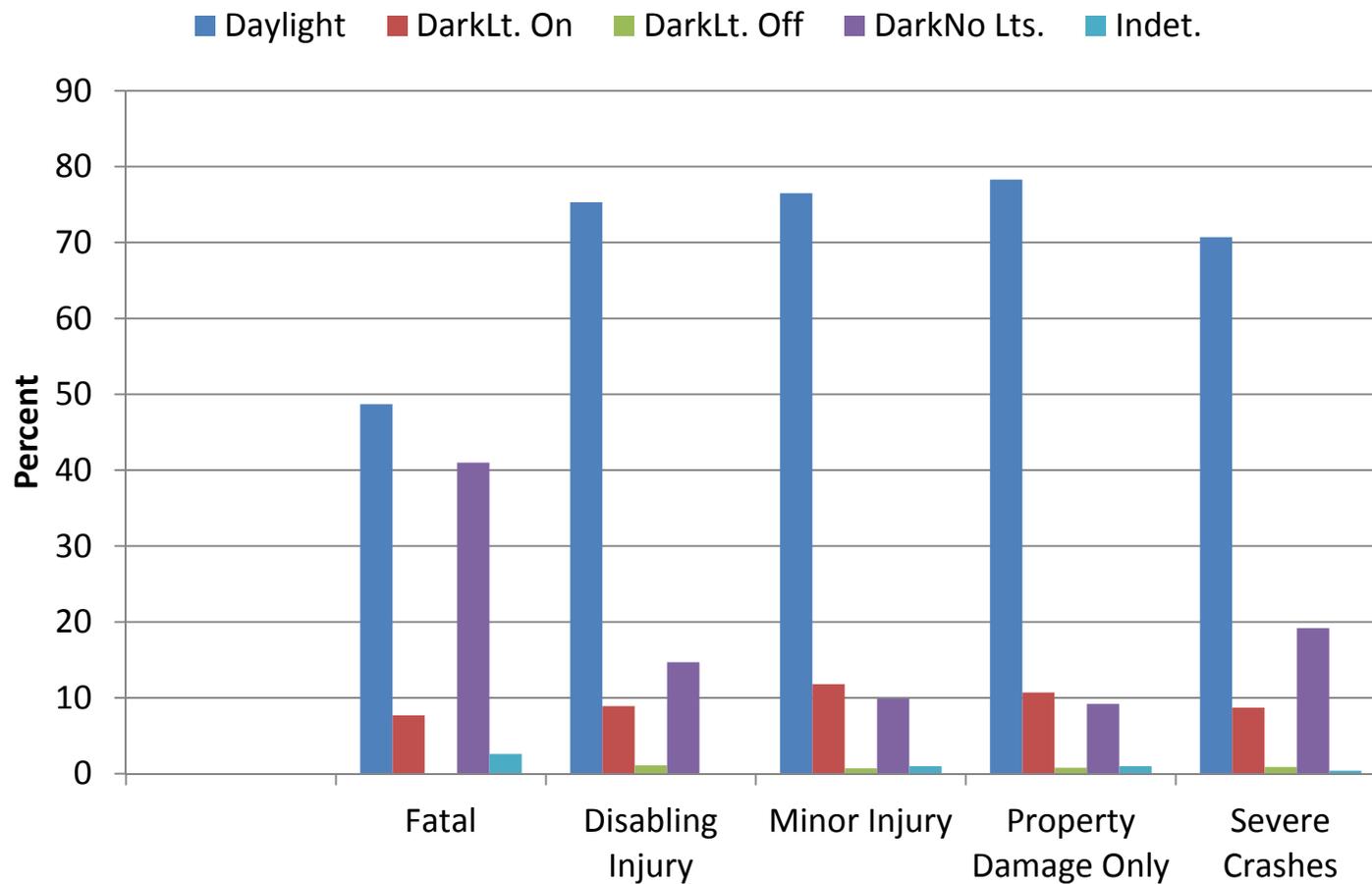
Greatest Contributing Factors to Work Zone Crashes Involving Fatalities and Serious Injuries in Missouri



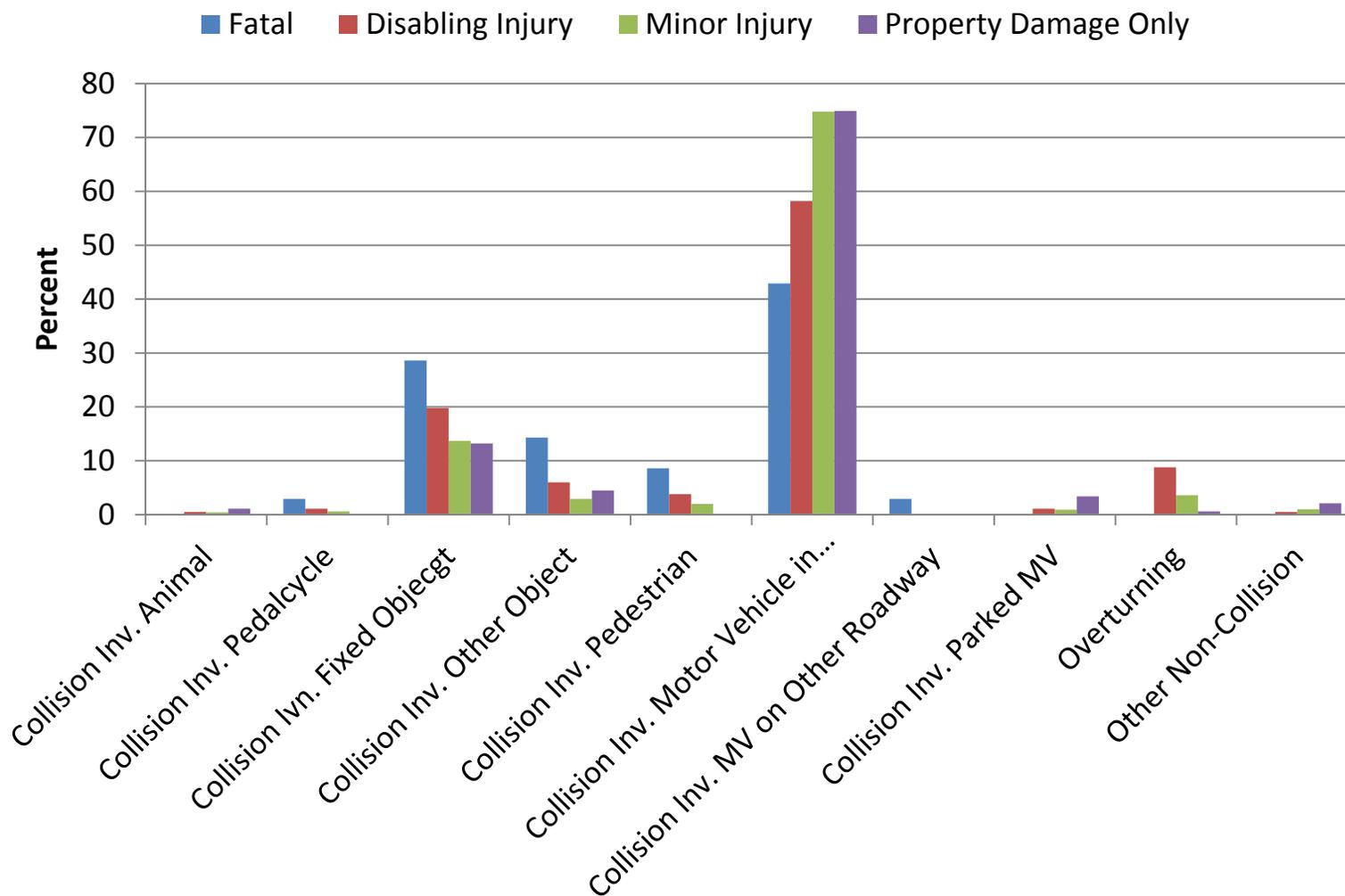
Driver Characteristics of Work Zone Crashes Involving Fatalities and Serious Injuries in Missouri



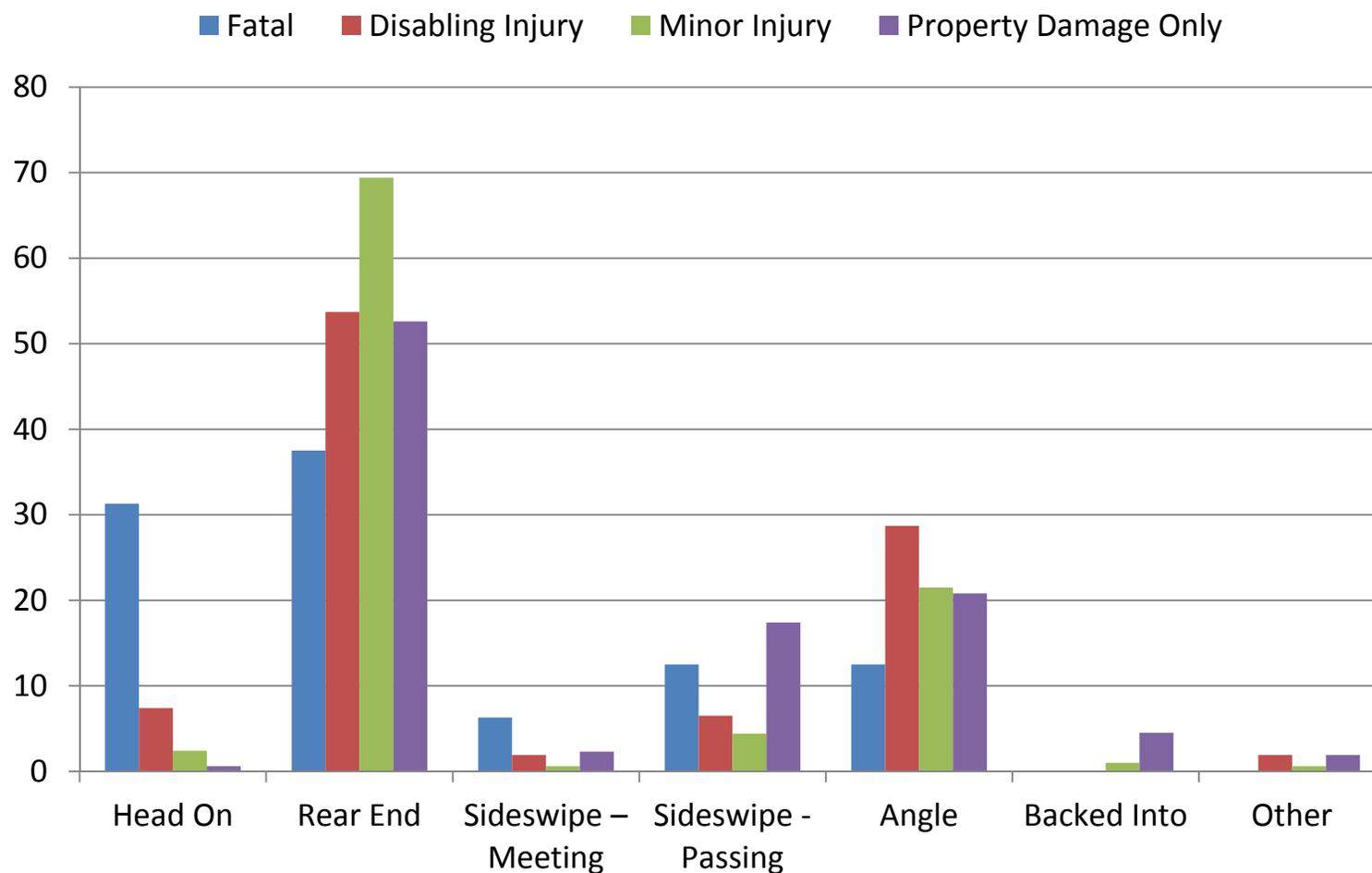
Lighting Conditions of Work Zone Crashes in Missouri



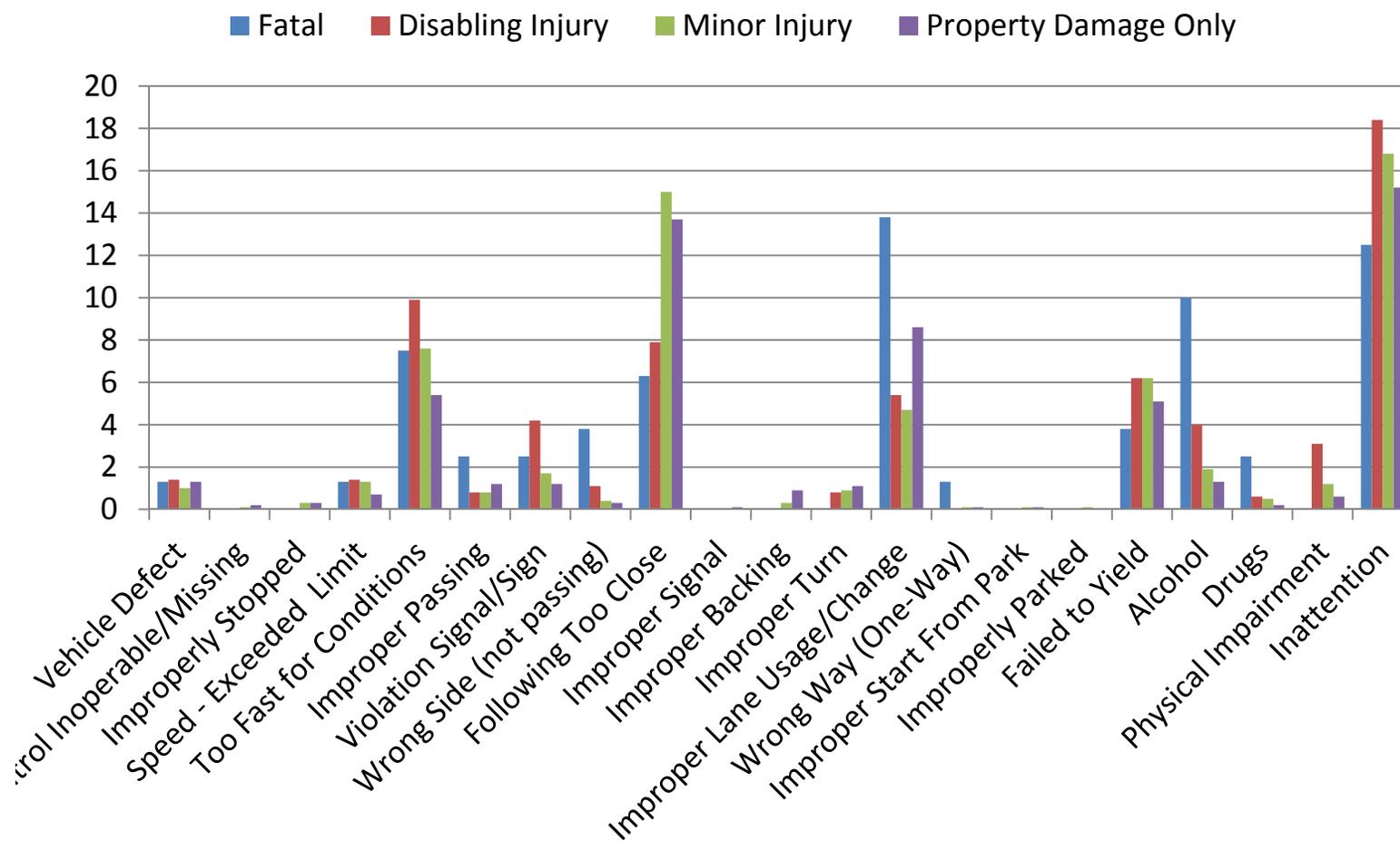
Type of Work Zone Crashes in Missouri



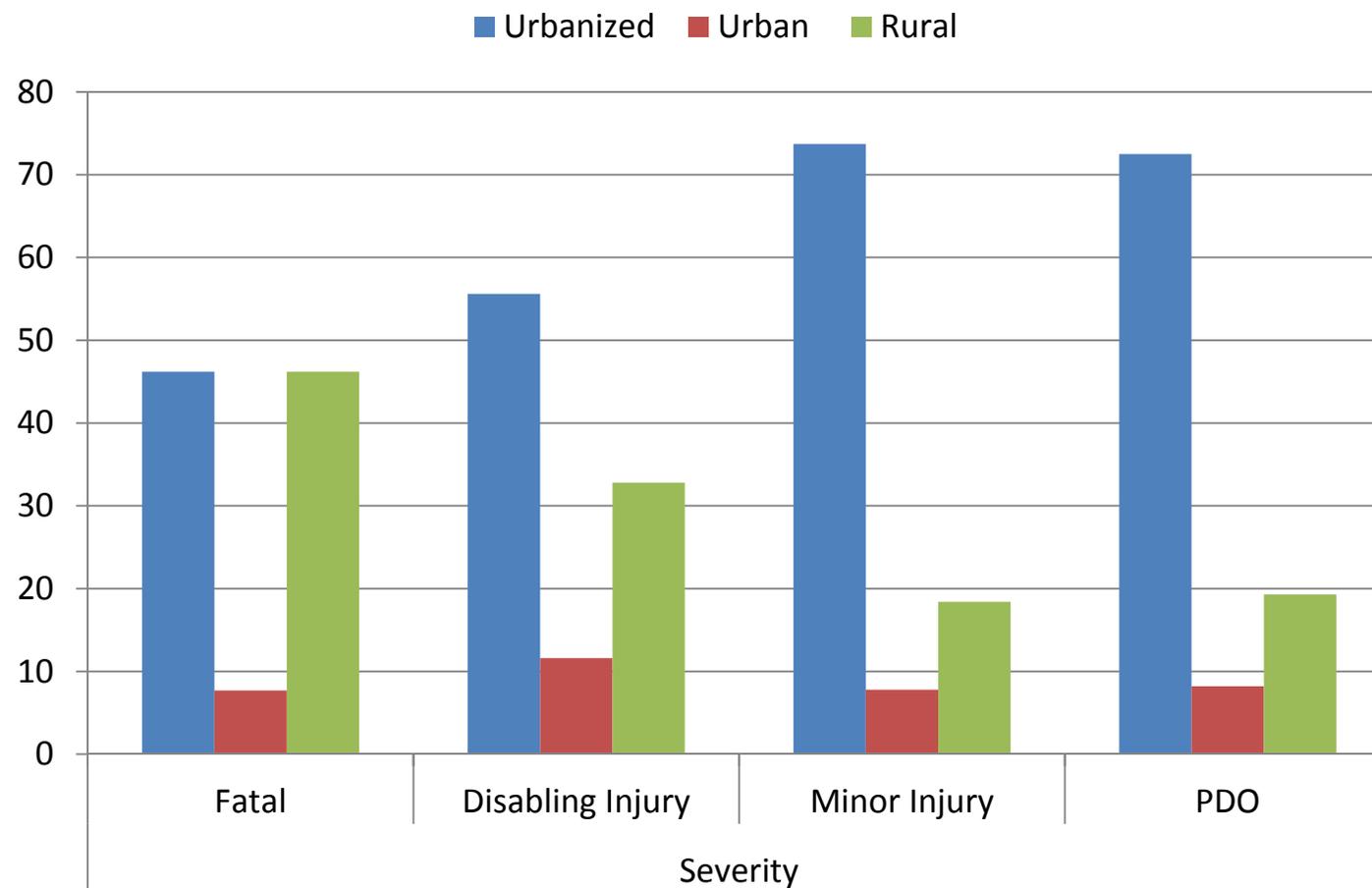
Type of Collisions in Work Zone Crashes in Missouri



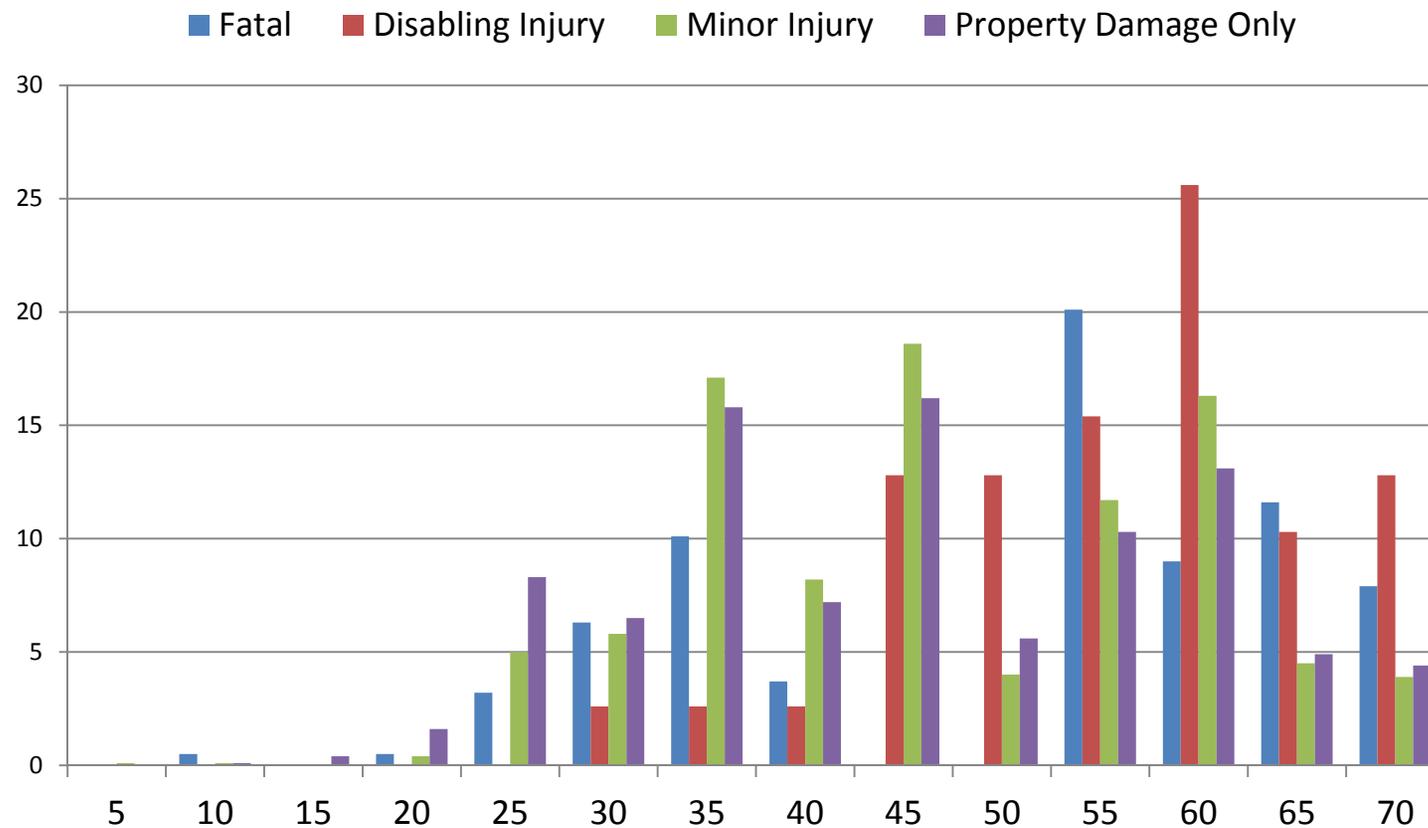
Circumstance Leading to Work Zone Crashes in Missouri



Population Area of Work Zone Crashes in Missouri



Vehicle Speed in Work Zone Crashes in Missouri



Next Steps

- What strategies can we suggest to reduce work zone crashes?
- Focus on the characteristics of the work zones
- Regression analysis to determine significant factors for crash type
 - Fatality
 - Serious injury
 - Minor injury
 - Property damage only

Initial ANOVA

- Work zone characteristics coded as independent variables
 - On or Off Road
 - Road Alignment (straight or not)
 - Road profile (level or not)
 - Light Condition (daylight or other)
 - Weather Condition (clear or other)
 - Road condition (dry or other)
 - Traffic Condition (level of congestion)
 - Vision Obscured (level of obscurity)
 - Accident Type
 - Road Surface

Conclusions

- It is possible to determine causal relationships between crash types and crash severity in work zones
- These causal relationships can be used to develop work zone management strategies designed to mitigate driver behaviors
- These findings can be used as criteria for future MoDOT tracker measures and project selection