2021 ANNUAL POLIS CONFERENCE

Al-Driven Intersection safety diagnostics and proven countermeasures using retroreflective materials – A Case Study in Austin, TX, USA

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CITIES AND REGIONS FOR TRANSPORT INNOVATION

Top 3 Challenges Every City Cares About

Solutions to urban safety and accessibility problems will evolve in tandem with cities

Improving Safety

01



Improving roadway safety is a top priority, driven by the trend for sustainable urban mobility

02

Congestion and Air Quality



Traffic congestion and limited urban space create major strain on existing infrastructure.

03

Transportation Equity



Access to safe and sustainable mobility for all age groups, gender and income groups

Challenges to Cities

Cities are challenged to meet these transportation revolutions

Improving roadway safety for vulnerable road users in urban areas is a top priority.



Good progress for car passenger safety, no improvements in cyclist safety in past 10 years.

Increasing urbanization leads to more conflict between vulnerable road users and motorized transport.



In urban areas 70% of fatalities are vulnerable road users.

Pedestrians and cyclists account for 29% of all road deaths in the EU.



It is expected that almost 84% of all Europeans will live in cities by the year 2050.



Integrated Space management

New and integrated approaches of using and managing urban space, as expressed in policies such as placemaking, access regulation or kerbside management

Power Metrics 5527

Pedestrian deaths in EU in 2017¹

70%

in urban areas¹

33%

of traffic fatalities in urban areas happen at dawn or darkness²

Source: 1 <u>Road Safety Facts & Figures | Mobility and transport (europa.eu)</u> 2 <u>Verkehrsunfälle in Deutschland - Statistisches Bundesamt (destatis.de)</u>

38% of traffic related fatalities happen inside urban areas

Source: CARE (EU road accidents database)



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Improving Intersection & Traffic Signal Safety in Response to Video Based Near Miss Analysis: City of Austin Smart Mobility Pilot

Pilot Sponsor:

- Jason JonMichael, Assistant Director Austin Transportation
 Department / Head of Smart Mobility Office
- Joseph McKenzie, Project Manager Smart Mobility Office



City of Austin - Smart Mobility Office

How We Got Here

Austin Strategic Mobility Plan



Austin Strategic Mobility Plan (ASMP)

- Adopted in 2019
- The Austin Strategic Mobility Plan is a comprehensive multimodal transportation plan for the future of our transportation network - and it is needed for Austin to achieve the mobility outcomes that will help to improve and sustain the quality of life for all community members.



ASMP Challenge #1 - Safety

- Challenge #1 How might we lower the risk of travel-related injury and protect and promote public health?
- Safety Culture Policy 4 states:

"Testing and piloting technologies will give us the opportunity to examine and analyze how new technology is integrated into the transportation network and the chance to identify necessary safety precautions"



Public/Private Partnerships Pilot Program

Smart mobility involves utilizing new technologies to move people and goods through our city in faster, safer, cleaner, more affordable and more equitable ways.



- Visit Austintexas.gov/smart-mobility
- Complete the online "Expression of Interest" form to start the process



3M / MicroTraffic Pilot Project



Locations Selected:

• Part of Vision Zero's High Injury Network

Project's Municipal Purpose:

- Vision Zero Reduce risks to health and increase public safety
- Testing the viability of a new technologies
- Improve partnership development and systems development testing

Testing of Emerging Technology

- AI Detection and Tracking of Near Misses
- Uses Existing Transportation Management Cameras

Test Effectiveness of Various Urban Safety Solutions Three Phase Pilot

- Current Conditions Analysis & Reporting
- Safety Improvements Implementation
- Post Improvements Analysis & Reporting

VISIONŻZER

Vision Zero is the Austin community's goal to reduce people hurt or killed by crashes to zero with street improvements, policy changes and education. Austin Transportation works to achieve that goal through planning and building a safe multi-modal transportation network in collaboration with City and community partners.



AI based video analytics by MicroTraffic

conventional crash-based analysis is reactive



- video analytics to predict crashes **proactively** from conflicts at intersections
- The conflicts are then classified into risk levels
- contribution of conflicts to the risk of crashes varies based on speed





Location #01 Lamar Blvd & Morrow St

N Lamar Blvd is a major N S arterial running parallel to I 35 and providing access to downtown Austin. Just north of the intersection is a grade separation for US 183 and related frontage roads.

Morrow St is a minor E W collector serving residential land use to the west and residential, commercial, and educational to the east. It is a designated medium comfort bike route.





EBR vs PED W Side T2 = 0.4s ; V = 2 mph

Note this conflict occurs during EB RTOR –driver attention is to the left for gap search task.



Southbound left vs northbound through conflict details



3,0

High Visibility Intersections & Bike Lane



- Currently installing improvements
- Post Improvement Analysis to be

conducted in early 2022





Reflective Sheeting

- 3M[™] Diamond Grade Reflective Sheeting for traffic signs
- 3M[™] Diamond Grade Reflective Sheeting for pedestrian & micromobility signs

AFTER







Pavement Markings

- 3M[™] Stamark Durable Tape 380 Series for stop bars, solid line at turning lanes
- 3M[™] Stamark Durable Tape 380 Series for bike lane symbols and legends

High Visibility Intersections & Median Hardening



AFTER



Artist renderings





Reflective Sheeting

- 3M[™] Diamond Grade Reflective Sheeting for traffic signs
- 3M[™] Diamond Grade Fluorescent Reflective Sheeting for pedestrian & micromobility signs
- 3M[™] Diamond Grade Flexible Work Zone Sheeting for delineators/bollards



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- 3M[™] Stamark Durable Tape 380 Series for bike lane symbols and legends

