

## PREDICTIVE SAFETY ANALYSIS - EXECUTIVE SUMMARY

Between 2015 and 2019, there were over 59,000 crashes in Montgomery County, resulting in over 1,200 severe injuries and nearly 150 fatalities. There is an element of randomness to where these individual crashes occur, but there is much less randomness to the types of streets and intersections where these crashes occur. As part of Montgomery County's Vision Zero goal to eliminate traffic deaths and severe injuries by 2030, Montgomery Planning is using a new strategy to improve road safety for drivers, bicyclists and pedestrians called the Predictive Safety Analysis. This proactive data-driven approach works to prevent severe and fatal crashes before they happen.

The Predictive Safety Analysis estimates the expected number of crashes at a given roadway segment or intersection through Safety Performance Functions (SPFs). Safety Performance Functions (SPFs) are equations (or models) that predict the number of crashes on roadway segments and at intersections based on exposure, roadway characteristics, and other variables. This analysis then allows the county to prioritize where and how to most effectively invest in safety improvements through capital projects, development approvals, and master planning.

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### KEY FINDINGS

Through this analysis, a few key findings emerged:

- **Prioritization needs to look beyond crash history.** In the past, Montgomery County has sometimes taken a reactionary approach to transportation safety, implementing site-specific improvements in the aftermath of a fatal crash. The results of this analysis show that prioritizing safety treatments based solely on locations with a history of severe injury and fatal crashes could result in unmitigated crash risk. From 2015 to 2019, only 55% of fatalities and 46% of severe injuries occurred in top 200 locations identified in the Predictive Safety Analysis.
- **As a suburban county, much of Montgomery County's crash risk is in the suburbs.** The county's suburban areas and the high-speed, high-volume suburban Boulevards that run through them have the highest concentration of crash risk in the county for most crash types. To reach Vision Zero, safety improvements must address these locations.
- **Yet Downtowns and Town Centers have the highest average crash risk.** On a per-intersection or per-roadway segment basis, crash risk is highest in the county's urban areas, particularly for pedestrian and bicycle crash types. Systemic improvements on Downtown Boulevards and Town Center Boulevards – and more broadly in Downtown and Town Center areas – would yield the greatest benefits per location improved.
- **Safety improvements in Equity Emphasis Areas (EEAs) should be prioritized.** Across all metrics, crash risk is disproportionately concentrated in EEAs. More than half of the top 200 locations for pedestrian crash types are located within EEAs (even though only 16% of county intersections are in EEAs), and the average crash risk in EEAs far exceeds that for non-EEAs for five of the six crash types. Focusing investments in EEAs can mitigate this disparity and balance crash risk in the county.

Based on these findings, this report does not provide a prescriptive recommendation of capital improvements to address the areas and street types with high crash risk; it does not recommend which safety treatments should be implemented at which locations. Instead, the project provides a countermeasure evaluation tool for planners, engineers, and decisionmakers to assess different investment scenarios based on their goals and priorities. The tool can be used to determine which countermeasures to implement and how many locations to improve, and it evaluates the effectiveness of different countermeasures in several ways: potential crash reduction, potential crash reduction per location, cost per crash reduced, and percent of locations in Equity Emphasis Areas.

Each countermeasure is associated with a ranked list of locations for systemic implementation.

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## APPLICATIONS

**The Predictive Safety Analysis is the first step towards implementing a proactive approach to safety. It is now incumbent upon planners, engineers, and decisionmakers to apply the findings of this analysis.** There are several uses of the results of the Predictive Safety Analysis:

- **Apply Data-Driven Planning:** The Predictive Safety Analysis provides the data, analysis, and tools to shift the county’s approach and implement improvements where they are needed and more equitably. This data can combat the “squeaky wheel” by distributing resources equitably and to where they are most needed. In addition, the data can support funding requests, both as part of the local or state budgeting process as well as through grant applications.
- **Identify Locations with High Crash Risk:** The results can be used to identify location types that are likely to experience a high number of crashes. This data can be used to inform Capital Improvement Program (CIP) project prioritization, prioritization of off-site mitigation for new development, a focus for transportation improvements within master planning areas, and Mandatory Referral comments.
- **Prioritize Safety Improvements:** The tools allow implementing agencies to prioritize where to implement systemic safety treatments as well as to assess which safety treatments may be the most effective at reducing crashes. This information can make the case for additional funding for CIP level-of-effort programs, inform master plan recommendations, and support updates to the Growth and Infrastructure Policy.
- **Determine Locations with Similar Conditions:** The databases developed include hundreds of variables related to the transportation, land use, and demographic context in which the crash occurred. In the wake of future severe or fatal crashes, these data can help identify other locations similar to the crash location and inform a more systemic response to the incident.

The Planning Department, Montgomery County Department of Transportation, and the County Council can use this information in a variety of ways to inform future recommendations, priority projects, and funding allocations. Taking a more proactive, data-driven approach to transportation safety impacts all facets of the transportation planning process.