

City of Alexandria, Virginia

MEMORANDUM

DATE: 03/11/2022

TO: YON LAMBERT, DIRECTOR, DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES

THRU: GREG USEEM, DIRECTOR, OFFICE OF PERFORMANCE ANALYTICS

FROM: JAMES BRYANT, PRINCIPAL GIS ANALYST

SUBJECT: UPDATED CITYWIDE CRASH ANALYSIS FOR VISION ZERO

INTRODUCTION

On January 24, 2016, the City of Alexandria adopted a Vision Zero resolution, which set a goal of eliminating traffic deaths and serious injuries by 2028. In an on-going effort to support this resolution, the Office of Performance Analytics (OPA) and Information Technology Services (ITS) has performed an updated citywide crash analysis. This analysis was completed in partnership with the Department of Transportation and Environmental Services (TES) and the Alexandria Police Department (APD). Details of the analysis can be found below and within the analysis attachments.

DATA

Traffic crashes from CY 2011 to CY 2020 were used to observe high-level ten-year crash trends. For the detailed analysis, crashes from CY 2016 to CY 2020 were used. Data was extracted by APD from their Record Management System (RMS). RMS crash data was compared with data captured in the State's Traffic Records Electronic Data System (TRENDS). Data discrepancies were evaluated and resolved by the analysis team as needed. Data quality and availability were noted as challenges in the 2016 crash analysis report. However, since 2016, the overall quality and accuracy of the crash data has improved substantially.

Crash data includes information such as location, time, weather, intersection type, crash type, roadway conditions and surface, persons involved, and vehicle information. Crashes were mapped spatially using location information such as address or latitude and longitude coordinates. A small percentage (<1%) of crashes were unable to be mapped due to data inaccuracies or lack of location information. However, they were still included in the non-spatial components of the analysis. Only those crashes that occurred on city streets were used. Crashes that occurred on major highways (e.g. I-395, I-495) were excluded.

This reporting period includes the first year of the COVID-19 pandemic. No formal study has been conducted regarding the Alexandria-specific travel impacts of COVID-19. However, regional

studies have shown that travel patterns changed drastically due to public health lockdown measures in 2020 which resulted in lower overall traffic volumes and public transit ridership, and higher rates of walking and biking [1,2]. The impacts of the COVID-19 pandemic (lockdowns, work from home mandates etc.) should be considered when evaluating crash trends and insights associated with 2020.

10-YEAR CRASH TRENDS FOR 2011-2020

Crash totals from 2011-2020 show a downward trend for all crashes, including those that resulted in fatal or severe injury. The 2016-2020 annual crash averages across all modes (vehicle-only, pedestrian, bicyclist) and crash type (all crashes, and fatal or severe crashes) are less than those seen during 2011-2015. Vehicle-only crashes saw the biggest drop in annual crash averages by mode for 2016-2020 compared to 2011-2015. Additional ten-year trend details are provided in Attachment 1.

KEY FINDINGS FOR 2016-2020

The analysis resulted in the following findings regarding crash trends or high-risks conditions for crashes in which a person was killed or seriously injured (KSI). Detailed figures and tables are available in Attachment 2.

- **Key Finding 1: Crashes are trending downward**

This downward crash trend is driven primarily by pedestrian and vehicle-only crashes. From 2019 to 2020, there was a 37% decline in crashes – the largest in this reporting period. Vehicle-only crashes account for the largest drop by mode from 2019 to 2020. Even when crash totals from 2020 are excluded, the overall downward trend persists for 2016-2019 and is driven primarily by vehicle-only and pedestrian crashes. (Attachment 2 slides 4-7)

- **Key Finding 2: KSI crashes are trending slightly upwards, while KSI risk varies by mode**

Despite the anomalies with 2020, the proportion of crashes that are fatal or severe remained somewhat consistent throughout the reporting period, hovering around 3%. Vehicle-only crashes had the highest number of KSI crashes annually, followed by pedestrian then bicyclist crashes. From 2016-2020, vehicle-only crashes had the lowest proportion of KSI crashes, while pedestrian and bicyclist crashes alternated having the highest. (Attachment 2 slides 8-12)

- **Key Finding 3: Crash volume and KSI risk varies by hour, day, and month**

During the weekday, high crash frequencies are seen during the evening commute. Early spring months had the highest proportion of KSI crashes for bicyclists, while the late summer months were the highest for pedestrians. (Attachment 2 slides 13-16)

- **Key Finding 4: Most KSI crashes occur at intersections**

58% of KSI crashes occurred at an intersection. Five point or more intersections had the highest proportion of KSI crashes; however, the number of crashes is low. (Attachment 2 slides 17-19)

- **Key Finding 5: Most KSI bicyclist crashes occur where there is no bike infrastructure**

Out of the 8 KSI bicyclist crashes, 7 had no presence of bike infrastructure. (Attachment 2 slides 20-21)

- **Key Finding 6: Not using a safety restraint while in a vehicle increases the risk of KSI crashes**
Most vehicle occupants wore their safety restraint (e.g., seat belt) during crashes; however, those individuals that didn't were at a higher risk of a KSI crash (16%) than those who did (0.8%). (Attachment 2 slides 22-23)
- **Key Finding 7: Drinking while driving increases the risk of KSI crashes**
6% of crashes that involve drinking result in death or severe injury, compared to 2% for crashes where drinking was not involved. Certain locations have higher concentrations of drinking related crashes than others. December had the highest number of drinking related crashes. Most drinking related crashes occurred on the weekend during the evening or early morning hours. (Attachment 2 slides 24-26)
- **Key Finding 8: Children, Teens, and Seniors are at higher risk of fatal or serious injury**
Children, teens and seniors had the highest proportion of fatalities or serious injuries compared to other groups. (Attachment 2 slides 27-28)
- **Key Finding 9: Certain actions or maneuvers carry higher risk of fatal or severe injury for pedestrians**
Pedestrian crashes where the driver is going straight ahead account for over half of all fatal and severe pedestrian crashes. Crashes where the driver is making a left turn account for over 20% of fatal and severe pedestrian crashes. Pedestrian crossing types such as crossing at an intersection with a signal, crossing at an intersection without a signal, and crossing not at an intersection (urban) occurred most frequently. (Attachment 2 slides 29-33)
- **Key Finding 10: Certain crash types have higher crash frequencies and KSI risk**
Angle, rear end and sideswipe (same direction) accounted for 80% of crashes. Pedestrian and angle crashes account for over 50% of all fatal and severe crashes. (Attachment 2 slides 34-37)
- **Key Finding 11: Certain street characteristics and environmental conditions have higher KSI risk**
Road types such as two-way not divided (unprotected median) and two-way divided (positive median) had the highest proportion of KSI crashes. Roads with a 35 MPH speed limit had the highest KSI crash rate per mile at 0.98. Certain environmental conditions such as presence of light, wet weather, and roads with holes or bumps have an increased KSI proportion. (Attachment 2 slides 38-41)
- **Key Finding 12: Crashes involving speeding vehicles are concentrated in certain areas**
Crashes involving speeding vehicles are concentrated in areas near Seminary Road near I-395, Landmark area, Telegraph Road, and Old Town. (Attachment 2 slides 42-43)
- **Key Finding 13: Certain road segments have a higher concentration of KSI risk**
Notable corridors where KSI risk is elevated include (1) Seminary Road near I-395 interchange to Dawes Avenue, (2) Duke Street, and (3) Old Town along Henry Street, Patrick Street, and N Washington Streets. (Attachment 2 slides 44-45)

REFERENCES

- [1] *Voices of the Region – Final Report*. 03/11/21. ICF. National Capital Region Transportation Planning Board. <https://www.mwcog.org/documents/2021/03/16/voices-of-the-region-survey-visualize-2045/>
- [2] *COVID-19 Traffic Trend Update for CTB. Volume, Speed and Crashes*. 01/19/21. Mena Lockwood, P.E. VDOT Traffic Engineering Division. https://www.ctb.virginia.gov/resources/2021/jan/pres/5_covid-19_traffictrends_011921_1.pdf

ATTACHMENTS

Attachment 1: 10-Year Crash Trends, 2011-2020

Attachment 2: Vision Zero Crash Analysis Findings, 2016-2020