



Chapter 8: Safety and Security

Federal transportation planning regulations specifically mandate that attention be given to safety and security in metropolitan transportation plans. These issues are costly to individuals, communities, and all levels of government when they are not properly addressed in plans. Metro Mobility 2040 addresses these requirements primarily by identifying existing safety issues and incorporating them into the transportation recommendations and prioritization process. Chapter 8 evaluates safety and security, analyzing vehicular, pedestrian, and rail statistics. GIS maps provide a geographic overview of crashes throughout the region and aid in identifying high accident locations. The chapter concludes with recommended safety and security improvements.

Crashes Involving Vehicles, Pedestrians, and Bicycles

Prior to the passage of MAP-21, states were required to prepare an annual report to FHWA describing public road locations exhibiting the most severe safety needs (the top 5.0%) in order to receive Highway Safety Improvement Program (HSIP) funds. The legislation required that these “5 percent” reports also include an assessment of potential remedies at the locations identified, the estimated costs of the remedies, and impediments to their implementation other than cost. Using the 2009-2011 State Crash Records Database (published by WVDOT), several facilities/locations were identified within the Kanawha-Putnam region. The most severe 2011 locations are summarized in Table 17 below. While MAP-21 will not require states to submit a transparency report describing state highway locations exhibiting the most severe safety needs, the historical reports can still be used to help indicate crash locations, remedies, and anticipated costs. A complete list of locations from 2009 to 2011 is in Appendix C.

TABLE 17: FHWA “5 PERCENT” LOCATIONS

County	Route	Potential Remedies	Year	Estimated Costs
Kanawha	US 60 WB Chesapeake to Pratt	<ul style="list-style-type: none"> ▪ Upgrade Pavement Markings ▪ Review Signal Phasing 	2011	\$575,000
Putnam	WV 25, Nitro	<ul style="list-style-type: none"> ▪ Upgrade Signals ▪ Review Signal Phasing 	2011	\$100,000
Putnam	CR 35/8	<ul style="list-style-type: none"> ▪ High Friction Surface Treatment ▪ Add Curve Warning Signs 	2011	\$40,000

Source: 2011 FHWA "5 Percent Report" <http://safety.fhwa.dot.gov/hsip/fivepercent/>

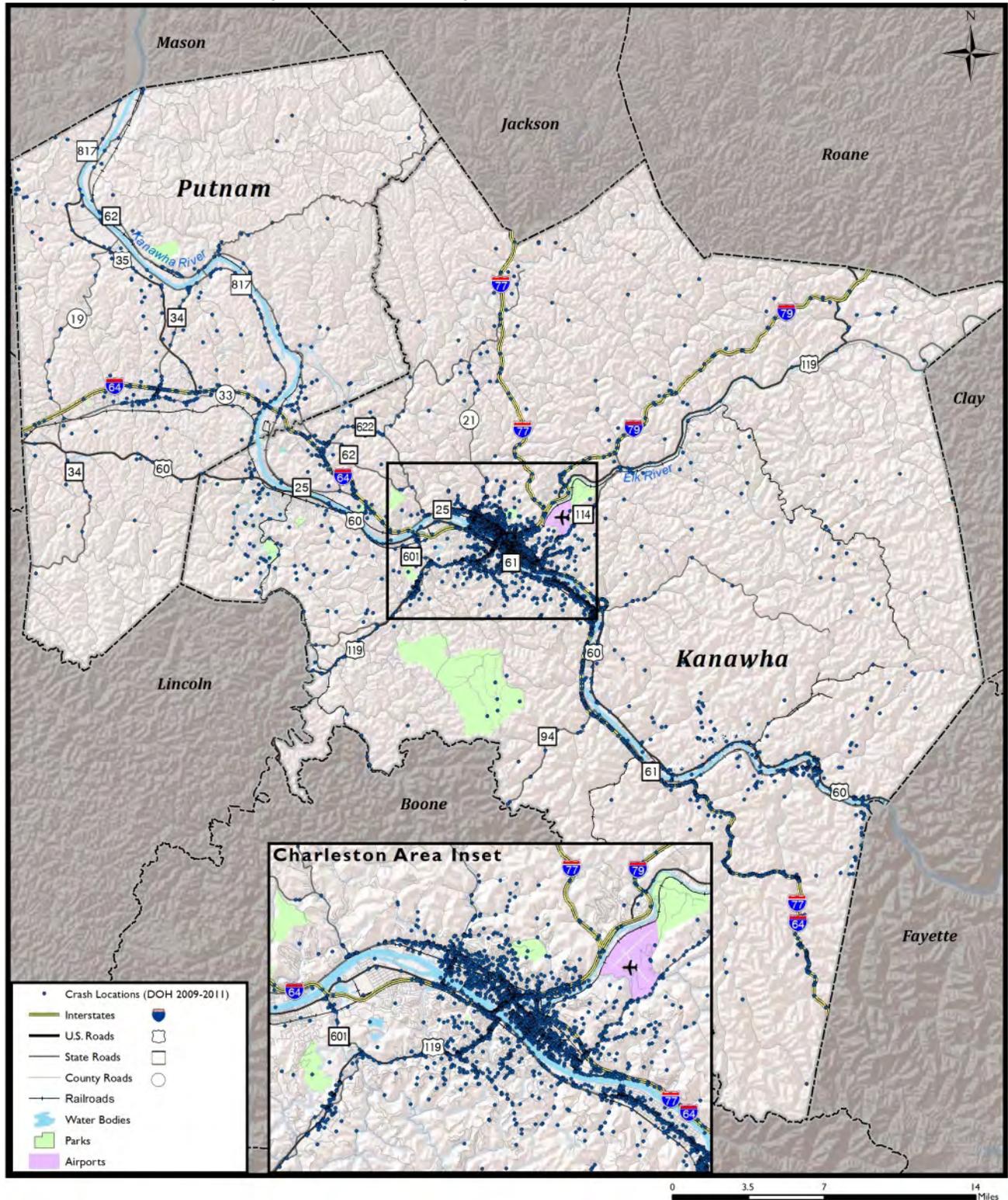
Crash Trends, Locations, and Frequency

According to WVDOT data, 20,258 vehicle-related crashes occurred in the region from 2009 to 2011, representing a 19.0% reduction in total accidents from the 2004 to 2006 period. The data contain geospatial coordinates (latitude and longitude) for 6,000 of the crash locations (Figure 34).

While crashes occurred all through the region, the highest concentrations generally existed at downtown intersections and along key commercial corridors – most often at the entrances to malls, restaurants, convenience stores, and gas stations. The following intersections represent examples of commercial locations with high crash frequencies.

- Teays Valley: a high frequency of crashes occurred on WV 34, south of the I-64 interchange (near McDonalds and the TA Travel Center).
- Downtown Charleston: crashes occurred throughout downtown, with high concentrations at the intersection of Pennsylvania Avenue and Lee Street, Washington Street East and Court Street, Washington Street East and Brooks Street, Washington Street East and Ruffner Street, and Washington Street East and Greenbrier Street.
- Kanawha City: crashes appeared to be most prevalent at MacCorkle Ave. and 35th Street (the site for the new CAMC Cancer Center) and at MacCorkle Ave. and 57th Street (the entrance to the Shops at Kanawha Shopping Center).

FIGURE 34: CRASH LOCATIONS (WVDOT 2009-2011)

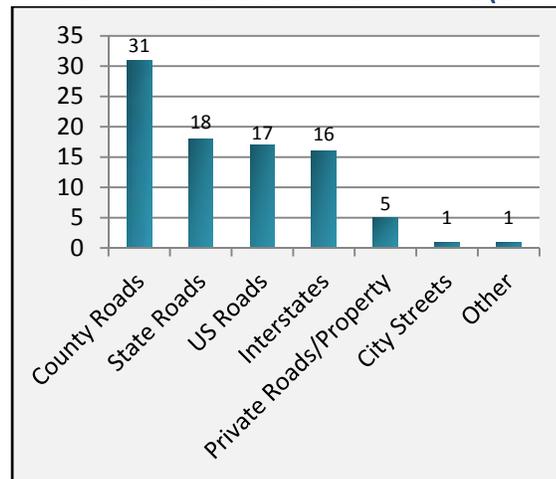


While, Metro Mobility 2040 does not offer specific recommendations for each of these locations (that level of analysis is beyond the scope of a regional transportation plan), the study team recommends that local governments consider signal improvements and access management strategies when evaluating these corridors and intersections.

Fatalities

89 roadway fatalities occurred in Kanawha and Putnam counties from 2009 to 2011, a slight increase from the 76 fatalities recorded between 2004 and 2006. Of the 89 fatalities recorded, 73 occurred in Kanawha County, while 16 occurred in Putnam County. Single-car accidents accounted for the majority (63) of the fatalities; head-on collisions accounted for nine fatalities. While the majority of these accidents occurred on interstates, US routes or West Virginia routes, over one-third (34.8%) of the fatalities occurred on county roads (Figure 35). When analyzed in GIS, it appears as though most of the fatalities occurred outside of downtown Charleston in areas where speeding is likely more prevalent and emergency services are less accessible.

FIGURE 35: FATALITIES BY ROADWAY TYPE (2009-2011)



Injuries

Fatality statistics alone do not convey a complete depiction of vehicular safety. From 2009 to 2011, 7,326 vehicle-related injuries occurred in the region. GIS data identify 1,558 injury locations. Unlike fatalities, vehicular injuries appear to be concentrated in the higher density areas, notably in downtown Charleston, along US 119 (Corridor G), and in Kanawha City. WV 34 (Teays Valley, near the I-64 interchange), the intersection of WV 622 and WV 62 (Cross Lanes), and I-77 (near Marmet and Chesapeake) also represent high injury locations.

In addition, GIS data identify the locations of 144 incidents involving bicyclists and pedestrians as the “first harmful event” – the first event during a traffic accident that causes an injury (fatal or nonfatal) or property damage. Not surprisingly, 85.0% (122) of these incidents occurred in Charleston or the immediate vicinity where walking and bicycling are more customary.

Public Input

Key stakeholders and members of the public also voiced concerns about safety and security in the region. In general, the public emphasized the need for additional bicycle and pedestrian facilities, expressing that sidewalks and designated bicycle lanes would improve safety and enhance connectivity. These groups specifically mentioned safety concerns about the following locations:

- **I-64:** Stakeholders indicated that the I-64/I-77 interstate split (Charleston) is a high crash location. The GIS crash data support this assertion, showing that 75 crashes occurred at the split (or in close proximity to the split) from 2009 to 2011. One-third (33.0%) of the crashes involved one vehicle, 31.0% involved rear-end collisions, and 28.0% involved sideswipe collisions where vehicles were moving in the same direction. Safety issues are potentially compounded when drivers (often trucks) abruptly change lanes from the I-64/I-77 eastbound/southbound lanes (at the interstate split) to the I-77 northbound through lanes.
- **MacCorkle Avenue (through Kanawha City):** Stakeholders indicated that this corridor is particularly hazardous for pedestrians. GIS data highlighted 14 bicycle and pedestrian crashes along this stretch of roadway; three occurred at MacCorkle Avenue and 31st street, near the entrance to CAMC Memorial Hospital.
- **King Street (Institute):** Members of the public expressed concerns about pedestrian safety and recommended that King Street be widened to accommodate shoulders and/or sidewalks. However, right-of-way limitations present a challenge for widening King Street. The street is wedged between residential parcels with small setbacks (to the east) and Shawnee Park (to the west), offering limited space. According to 2009-2011 GIS crash data, the only accident on King Street occurred in 2010 when a single vehicle encountered a ditch. Please see the recommendations section of this chapter for more on this project.



Stakeholders indicated that the I-64/I-77 interstate split (Charleston) is a high crash location. Source: Google Maps.



King Street is narrow, lacks sidewalks, contains truck traffic, and is considered a hazardous street for pedestrians.

Rail Safety

In 2011-2012, the RIC conducted the **St. Albans Railroad Crossing Study**, evaluating existing deficiencies at thirty-nine (39) intersections, seven (7) at-grade rail crossings, and six (6) grade-separated rail crossings. Following a thorough analysis of existing conditions of highway traffic, train volumes, travel times and crash data, the study team proposed three alternatives. Alternative 1 recommended improving the approach grades at the B Street at-grade crossing by raising the roadway profile and shifting the 4th Avenue/3rd Street intersection southward away from the railroad tracks. Alternative 2 proposed to eliminate horizontal and vertical clearance restrictions at the existing 3rd Street underpass. Alternative 3 recommended replacing the Walnut Street at-grade crossing with an underpass. The 3rd Street underpass (Alternative 2) was selected as the preferred choice for improvements and has since been included in the Metro Mobility 2040 fiscally constrained plan.

The West Virginia State Rail Plan, discussed in the previous chapter, recently incorporated a study of grade crossing incidents throughout the state. The study identified the following locations of grade crossings with multiple incidents in the study area from 2003 to 2012 (Table 18).

TABLE 18: GRADE CROSSINGS WITH MULTIPLE INCIDENTS – KANAWHA AND PUTNAM COUNTIES (2003 TO 2012)

City	Location	Railroad	Crossing Device	Dates	Fatalities	Injuries	Cause
St. Albans	B Street	CSX	Gates	12/12/2012	N/A	N/A	N/A
				2/21/2010	1	0	Pedestrian struck by train
				11/13/2006	0	0	Auto moved around gates
				12/12/2003	0	0	Auto struck by train
Dunbar	16th Street	NS	Flashers	8/18/2006	0	0	Auto struck by train
				9/9/2005	0	0	Auto struck by train
				4/15/2005	1	0	Auto struck by train
St. Albans	Drumheller Drive	CSX	Cross Bucks	10/9/2009	0	0	Auto stalled on Xing
				6/6/2009	0	0	Auto struck by train
Charleston	Ruffner Avenue	NS	Gates	4/26/2003	0	0	Auto stopped on Xing
				4/14/2003	0	0	Auto struck by train

Source: West Virginia State Rail Plan



Recommendations

The vast majority of the Metro Mobility 2040 fiscally constrained projects should help improve vehicular and pedestrian safety. In prioritizing projects, the study team processed crash locations in GIS to determine how many crashes occurred (per mile, per year) on the proposed project segments. This approach accounts for weighting since some projects cover as much as 11 miles, while others only cover a few hundred feet. The study team awarded higher scores to those proposed projects that correspond to high accident locations, with the reasoning being that those roadway improvements can potentially help reduce the frequency and/or severity of crashes. The following recommended projects shown Table 19 have a particularly high geographic correlation to high crash locations.

TABLE 19: HIGHWAY RECOMMENDATIONS ALONG CRASH PRONE CORRIDORS

ID	Facility	Description
KC-4	US 119 (Corridor G)	From Cantley Road to MacCorkle Avenue: Add third lane to US 119 northbound and improve operations
KC-5	US 119 (Corridor G)	From Lawndale Ln. to MacCorkle Ave: Add lane northbound and southbound; add lane to I-64 connector; install new Cantley Flyover; develop Lucado Road/Oakwood Road underpasses and; improve operations
KC-6	US 119 (Corridor G)	From WV 601 (Jefferson Road) to Emerald Road: Add third lane to US 119 northbound and improve operations
PC-1	New US 35 (new road)	From Buffalo Bridge to the Mason County line: Construct 4-lane, median divided highway
PC-5	Teays Valley area improvements	Develop right stacking turn lane into West Teays Elementary School; upgrade and widen Mt. Vernon Rd. and Sleepy Hollow Rd. to full two-lane local collector classification; add a dedicated right turn lane from WV 34 northbound onto I-64 eastbound

King Street, Institute Area

As mentioned in Chapter 8, the public expressed concerns about pedestrian safety on King Street. Given King Street’s small setbacks and right-of-way limitations, the study team recommends a thorough analysis to examine the potential constraints posed by Shawnee Park. Currently, the park parallels the street’s western edge and is separated by a high, chain-linked fence. A juvenile detention center, surrounded by barbed wire, also resides within the park boundaries and is approximately 0.2 miles north of the King Street/Charles Avenue intersection.



Shawnee Regional Park abuts King Street and is likely considered a 4(f) resource. Source: Bing.com.

Given Shawnee Park’s role as a public space, it is likely considered a 4(f) resource. According to the FHWA, Section 4(f) states that land from a publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site can be used for a transportation project only if:

- There is no feasible and prudent alternatives to the use of these resources; and
- All possible planning has been undertaken to minimize the harm to the resource.

When considering sidewalks along King Street, a future study must evaluate other alternatives. If alternatives are not feasible, the study must examine the net effect of sidewalks on the public park, including any practical mitigation measures. For more information on 4(f) evaluation, visit the FHWA site at:

<http://www.environment.fhwa.dot.gov/4f/4feval.asp>.