

TRAFFIC SAFETY IN APPALACHIA

The goal of the **Traffic Safety in Appalachia Project** was to address several key issues:

1. **What is the existing traffic safety culture of Appalachia?**
2. **What common problems contribute to traffic fatalities in the Region?**
3. **How do drug and alcohol usage affect traffic safety in the Region?**
4. **Does the Appalachian Development Highway System (ADHS) address these traffic safety issues?**

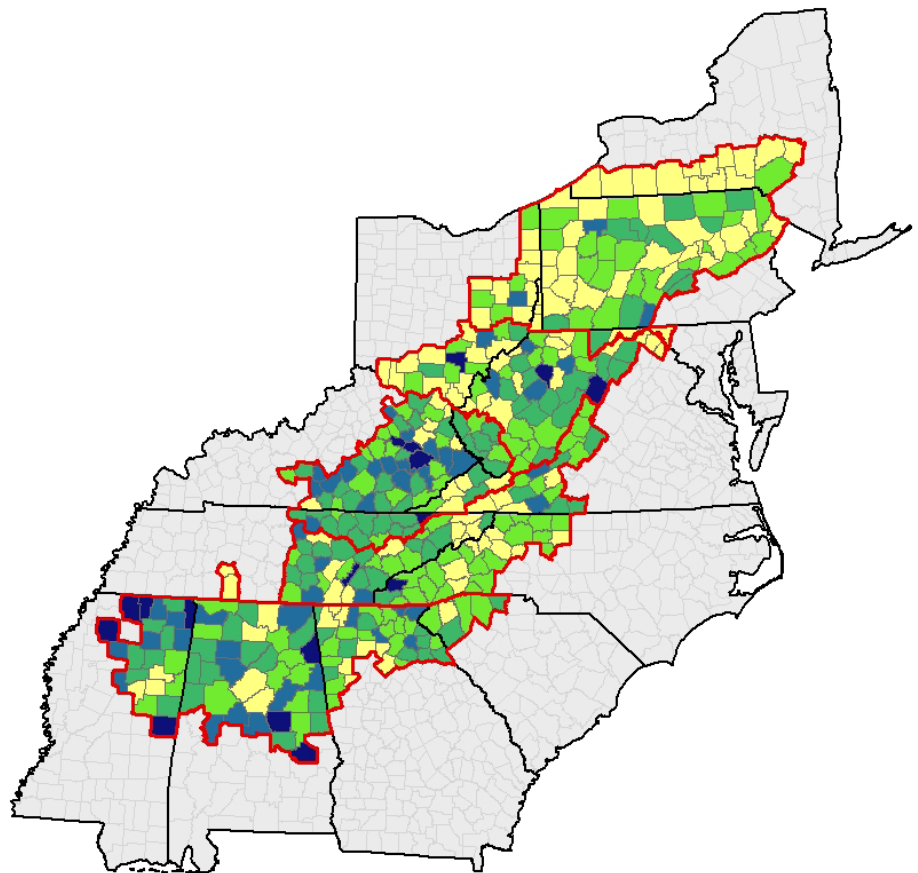
To answer these questions, HSRC synthesized research literature, collected and analyzed fatal crash data, compared drug test results in fatal traffic crashes to the rest of the United States, observed crash trends in one Appalachian state, and evaluated the safety performance of ADHS facilities.

TRAFFIC SAFETY CULTURE

Traffic safety culture in Appalachia is the **collective force of social norms, behaviors, and values** that determine the average person's posture toward engaging in positive road use behaviors (like helmet use or not drinking and driving) or negative road use behaviors (like not wearing restraints) while navigating older (on average) vehicles on (frequently rural) roadways (often) characterized by two-lane, curved alignments with minimal lighting.

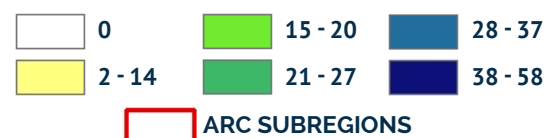
FATAL CRASHES

Since 1994, 103,292 persons lost their lives on Appalachian traffic ways. The Central Subregion had the highest traffic fatality rate per 100,000 person-years for motor vehicle operators. In Appalachia, a majority of traffic fatalities occurred in rural areas, although this varies by subregion and is most pronounced in the Central Subregion. Over one-half (54.9%) of all Appalachian motor vehicle occupant fatalities were not restrained at the time of crash.

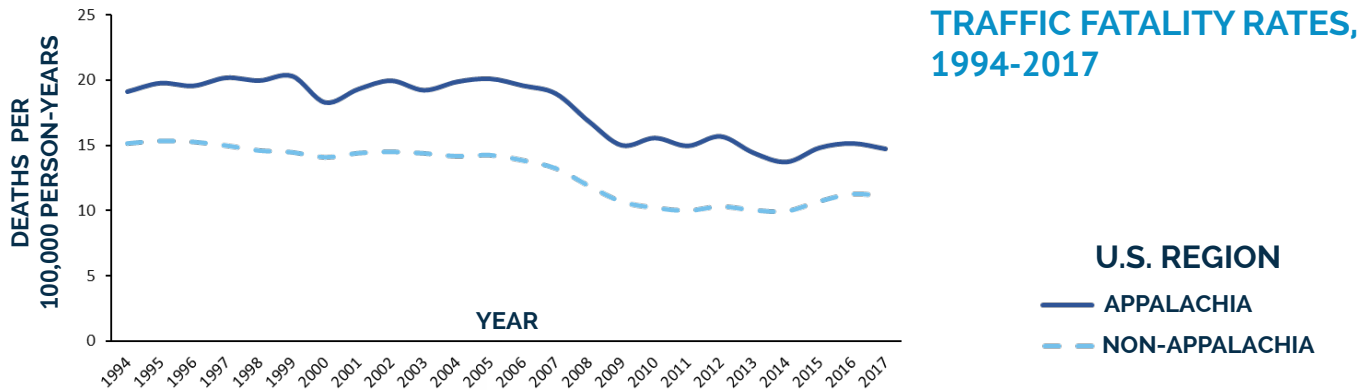


FATALITY RATES BY COUNTY, 2013-2017

COUNTY RATE



TRAFFIC SAFETY IN APPALACHIA



CASE STUDY FOR SEVERE CRASHES

- In Appalachian North Carolina, **the odds of having a fatal or severe injury crash in darkness in rural setting were two times that in urban settings** (OR=2.06, 95% CI = 1.91–2.21).
- The proportion of drivers involved in fatal or severe injury crashes operating vehicles older than five years was greater** in Appalachian North Carolina than in non-Appalachian North Carolina.

DRUG AND ALCOHOL IMPAIRMENT

- 18% of all Appalachian drivers involved in fatal traffic crashes were alcohol impaired** at the time of crash, but this was lower than the non-Appalachian proportion (20%).
- Appalachian drivers were less likely to test positive for marijuana (13%) as compared to non-Appalachian drivers (17%), but **12% of Appalachian drivers tested positive for tranquilizers and other non-narcotic central nervous system depressants** as compared to non-Appalachian drivers (8%).
- 11% of Appalachian drivers tested positive for narcotics** as compared to non-Appalachian drivers (8%).
- Drugged driving data is still limited in scope, so more research is needed.**

APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

This project produced Crash Modification Factors (CMFs) that indicate safety benefits for the ADHS upgrade.

- Total Crashes: 23.6% reduction**
- Injury Crashes: 29.8% reduction**
- Multi-vehicle Crashes: 36.1% reduction**

CMFs can be used, with proper calibration based on local traffic volume and operational data, to make project-level decisions about roadway design alternatives, but the safety performance of the ADHS will change over time as operational characteristics change. These CMFs may be more appropriate for rural areas than for urban areas.