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FRONT PAGE

Arizona aims to improve safety of rural roads

Arizona's highways are safer than ever, but when Arizona families hit the road over Labor Day weekend, they will confront one of the state's most nagging traffic-safety problems - deadly rural roads.

Every year, more people die on rural roads and highways than on urban ones. The state's rural fatal-crash rate, the number of deaths per miles traveled, ranks among the highest in the nation, according to a national report released Thursday.

State and federal crash data reveals that the most pressing problem is single-car crashes on non-interstate highways.

Nearly twice as many people die in Arizona's rural areas in single-vehicle accidents as in multivehicle ones. In 2010, 205 people were killed in one-car crashes, compared with 107 in multicar ones, according to data released earlier this week by the Arizona Department of Transportation

On state-managed highways, about six in 10 deaths were in solo-car crashes, an analysis of federal data by *The Arizona Republic* found.

Five highways accounted for two-thirds, or 225, of the deaths in solo crashes statewide from 2004 to 2009. Stretches of those highways, both winding and straight roads around the state south of Interstate 40, have fatality rates dozens of times above the state average.

"I'm amazed, beyond surprised. It means there is something going on with those roads," said Alberto Gutier, executive director at the Arizona Governor's Office of Highway Safety.

He cited 2010 figures showing most drivers of single-car crashes hit pedestrians or fixed objects such as trees, or they overturn.

To address the problem of road fatalities, Arizona is participating in a federal experiment to systematically predict future trouble spots rather than react to crash reports.

Arizona also has joined Nevada and Utah in a regional campaign that promotes the goal of reducing highway fatalities to zero by 2050.

In recent years, ADOT engineers also have pioneered their own safety improvements.

This week, ADOT reported a 5 percent drop in the overall fatality rate and a 20 percent drop in that rate on rural roads from 2009 to 2010, continuing a six-year downward trend. Here and nationally, highway fatal-crash rates are at their lowest in 60 years.

The numbers are no solace for Mary Dutton of Green Valley.

On Oct. 27, 2009, she and her husband, Jack, were headed up U.S. 191, the Coronado Trail, on a scenic drive destined for the Hannagan Meadow Lodge. The stretch is among the five with high fatal-crash rates identified by *The Republic*.

Just before 2 p.m., a gust of wind came up as their pickup rounded a hairpin curve just south of Rose Peak. The truck fishtailed as Jack overcorrected, and it tumbled several times down a 400-foot cliff.

Two days later, an ADOT snow-plough operator came up on the scene, and his wife noticed a steel memorial roadside cross had been bent. There were fresh tire marks and no guardrail.

Jack Dutton, 63, was dead. Mary, then 59, suffered broken bones but had survived freezing, snowy weather. Both had been ejected. Neither wore a seatbelt, state patrol officers concluded.

Their truck had come to rest on top of another wrecked vehicle.

Terry Corrigan, an editor at the *White Mountain Independent*, said the road is one of the curviest, scariest in the area.

The problem

A national research advocacy group for highway investment, The Road Information Program, or TRIP, released a report Thursday ranking Arizona's rural crash rate the eighth worst in the nation. TRIP researchers found the crash rate was 20 percent higher on rural roads and highways, not including interstates, than the national rate. And the rural rate is triple the average.

The study looked at all rural roads, including county and tribal roads.

On roads that ADOT maintains, six in 10 crashes involved single vehicles.

Five highways in particular highlight the issue. On those roads, the number of fatal solo crashes remained unchanged at between 35 and 40 a year from 2004 to 2009.

The roads include Arizona 87, 86 and 260, plus U.S. 191 and 60, covering everything from flat desert to rugged mountains. Fatality rates on the roads are anywhere from 27 to 548 deaths per 100 million miles traveled. The state average is 1.27.

The worst: a 25-mile stretch of U.S. 191 where Jack Dutton died.

"There are many places like this where the roads are narrow and the weather can come up on you out of nowhere: wind, snow, sleet, dust, anything. You have to be extremely vigilant," Arizona Department of Public Safety spokesman Bart Graves said.

Engineers at ADOT caution against reading too much into the figures.

"Traffic crash or fatality rate can be utterly misleading," said ADOT safety engineer Kohinoor Kar, citing causes such as speeding, fatigue, inattention or distractions. "The crash or fatality rate alone cannot give us the actual safety performance of the facilities concerned," he said.

ADOT has its own method for isolating hot spots. ADOT typically looks at one-mile stretches and identifies those with high numbers of serious crashes over three years. Based on its data, for example, the agency determined that vehicles stray off the road at certain spots along two of the five deadliest rural roads for single-car crashes. One was Arizona 260, just east of Camp Verde. The other was on Arizona 87, the Beeline Highway, south of Gisela.

ADOT state safety engineer Mark Poppe says he can't explain Arizona's high rural crash rates but says areas of concern include long stretches of empty road, the mountainous terrain and particularly hairpin curves in rim country. Each road has to be analyzed case by case, he says.

Statistically, there appears to be no pattern in the type of roadway where solo crashes occur.

On the five deadliest roads, more than a third of the 225 crashes occurred on flat straightaways and more than a quarter on hillside curves.

Attacking problem

ADOT's traffic-safety efforts can only tackle part of problem. Better-designed cars, stronger enforcement of road-safety laws, improved driver's education and better driver habits have been shown over decades of research to save lives.

Arizona's highway-safety plan highlights five areas: impaired driving, seatbelt compliance, teen driving, speeding, and intersections and lane departures.

ADOT can only control one, by designing safer roads.

"If we don't get to the soft stuff, behavioral issues, we won't get to zero," ADOT engineer Michael Manthey said.

Instead, Arizona highway engineers have turned to three new approaches, a combination of their own initiatives and work on the federal experiment, which involves five states:

- Predictive modeling. ADOT examines road conditions, predicts common crashes and estimates how many can be eliminated with specific improvements.

One instance of the new approach is the use of a rumble strip, a series of grooves cut into the pavement like an alligator's back, to jar drowsy drivers when they stray off the side of the road. Shoulder rumble strips have been found to reduce run-off crashes by as much as 43 percent. ADOT made them standard on all highways.

Each engineering approach has its own effectiveness ratings. For instance: Median barriers reduce crashes by at least 65 percent, guardrails at least 50 percent, extra lanes at least 40 percent paved shoulders 10 percent and wider lanes 8 percent.

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These ratings help ADOT predict how many deaths and injuries can be avoided. From this, officials assign a value, at $5.8 million per life and $400,000 per serious injury. Then they tally the cost of the improvements. If the savings outweigh the costs, ADOT will put the improvement on the priority list.

Rumble strips

Engineers also study the result. ADOT compared the safety on roads before and after centerline rumble strips and found they cut crashes by nearly a third.

- Safety assessments. Arizona conducts recommended road-safety assessments, in which local authorities ask state engineers to analyze problem spots.

ADOT will send a team of experts to the field for two days to examine the roadway, local complaints and experiences of emergency responders. Then they make specific recommendations. ADOT has done about 20 of these a year for the last three years, Manthey said.

- Innovative designs. ADOT is pioneering a series of designs to make roads safer.

These include wider lane markings that are easier to see and keep cars apart, centerline rumble strips, more-reflective and visible signs, and shock-absorbing and more survivable end caps on guardrails.

ADOT is also developing new flexible reflector poles on the sides of highways. Because the poles are made of plastic, a car will survive hitting one. ADOT has calculated the correct spacing on curves, so drivers can gauge the arc of a road, and has added red reflectors to the back of the poles so people know when they are driving the wrong way.

ADOT has set the goal of each enhancement reducing crashes at 12 percent a year and the overall crash rate at 15 percent a year, Manthey said.

Gutier praised ADOT's effort but said improving driving habits remains a challenge. "On rural highways, people just aren't paying attention."