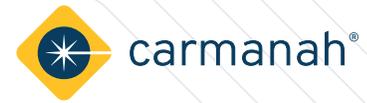


# Wrong-Way Driving (WWD)

## Rapid Facts



### Occurs almost daily:

**359** people in the US die in WWD crashes every year.

*This number has remained stable while overall traffic fatalities have decreased.*

### High fatality rate:

**27x** more likely to result in a fatality than other types of crashes.

*WWD crashes happen at high speed and are more likely to be head-on.*

### Underreported:

**10%** of WWD witnesses report the incident to authorities.

*WWD is more prevalent than indicated by 911 calls or crash data.*

National Transportation Safety Board, [Highway Special Investigation Report – Wrong-Way Driving](#), 2012.



## What causes WWD?

**Poor lighting:** 78% of fatal collisions occur between 6 p.m. and 6 a.m. when visibility is low.

**Problematic roadway design and markings:** Primary origin is exit ramps due to confusion for ramp exit and lack of signage.

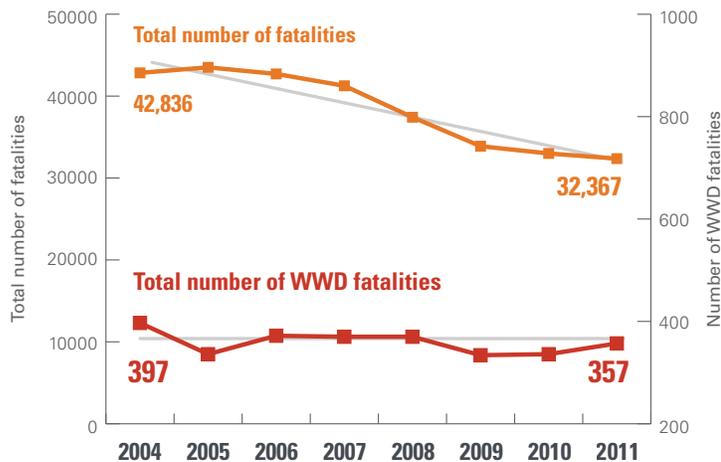
**Driver issues:** 75% of incidents involve alcohol / drug impairment. Others include distracted driving, driver inexperience or cognitive issues.

## Current treatments are ineffective

Treatments include adding WW and DO NOT ENTER signage, raised pavement markings and added retroreflectivity. WWD incidents and fatalities are not decreasing.

## Experimental countermeasures

States have deployed new countermeasures that use a variety of technologies and off-the-shelf components with varying success.



[US overall traffic fatalities vs. WWD fatalities](#)

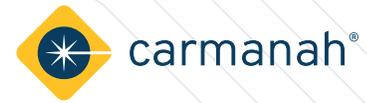
Arkansas' \$3.1 million sign, pavement marking and ramp reflector upgrades had **no effect on the number of crashes.**

Texas' 22-month study of LED enhanced signs found a **38% reduction in WWD events.**

Nevada's project used radar detection, video analytics, LED flashing light bars, and TMC alerts. Preliminary results showed the systems were **80% effective in stopping WW drivers.**

# Wrong-Way Driving (WWD)

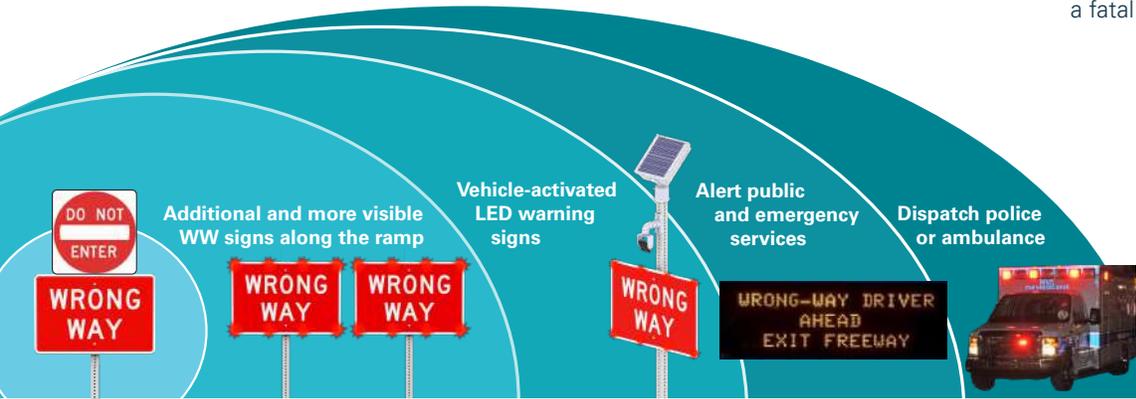
## Rapid Facts



### WWD systems add layers of safety and reduce response times

Relying on wrong-way drivers to self-correct or on other drivers to report them is dangerous and wastes valuable time. Multiple points of safety lower the risk of a fatal crash.

- ✓ Research shows that adding **high-intensity LEDs** to signs improves self-correction.
- ✓ **Detection and alert technologies** that notify authorities can help reduce the time to intercept wrong-way drivers, alert other drivers and deploy first responders.



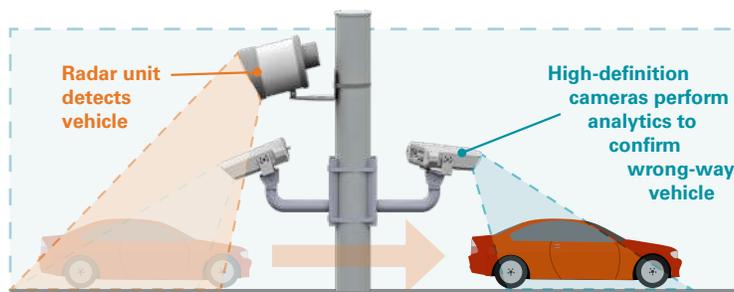
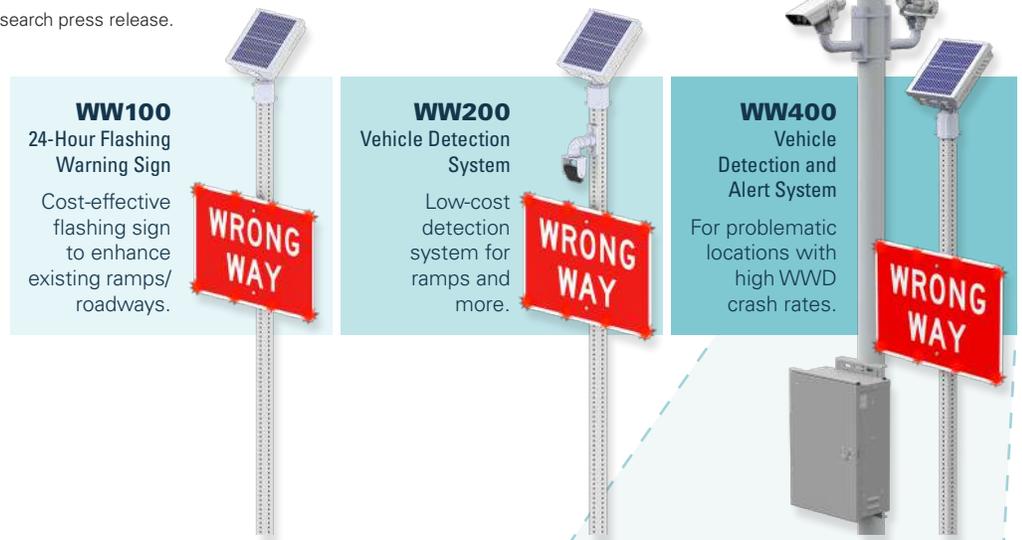
### Vehicle detection systems are up to **80% effective** in stopping wrong-way drivers.

Nevada DOT, [Wrong Way Driver System](#), preliminary research press release.

Carmanah offers a portfolio of reliable, highly visible and compliant WWD systems.

This new advanced solution is based on detection and alert technology from our [Nevada project](#).

While some manufacturers rely on a single type of detection technology, Carmanah uses both radar and video cameras for detection and decision-making analysis. These multiple sources of data and analysis provide a highly accurate determination, **allowing you to respond to the event promptly and with confidence.**



### Superior confirmation technologies and analytics

The WW400 uses a dual technology confirmation system. Distinct, real-time algorithms are performed on the radar and video data to ensure the accuracy of a WWD event.