

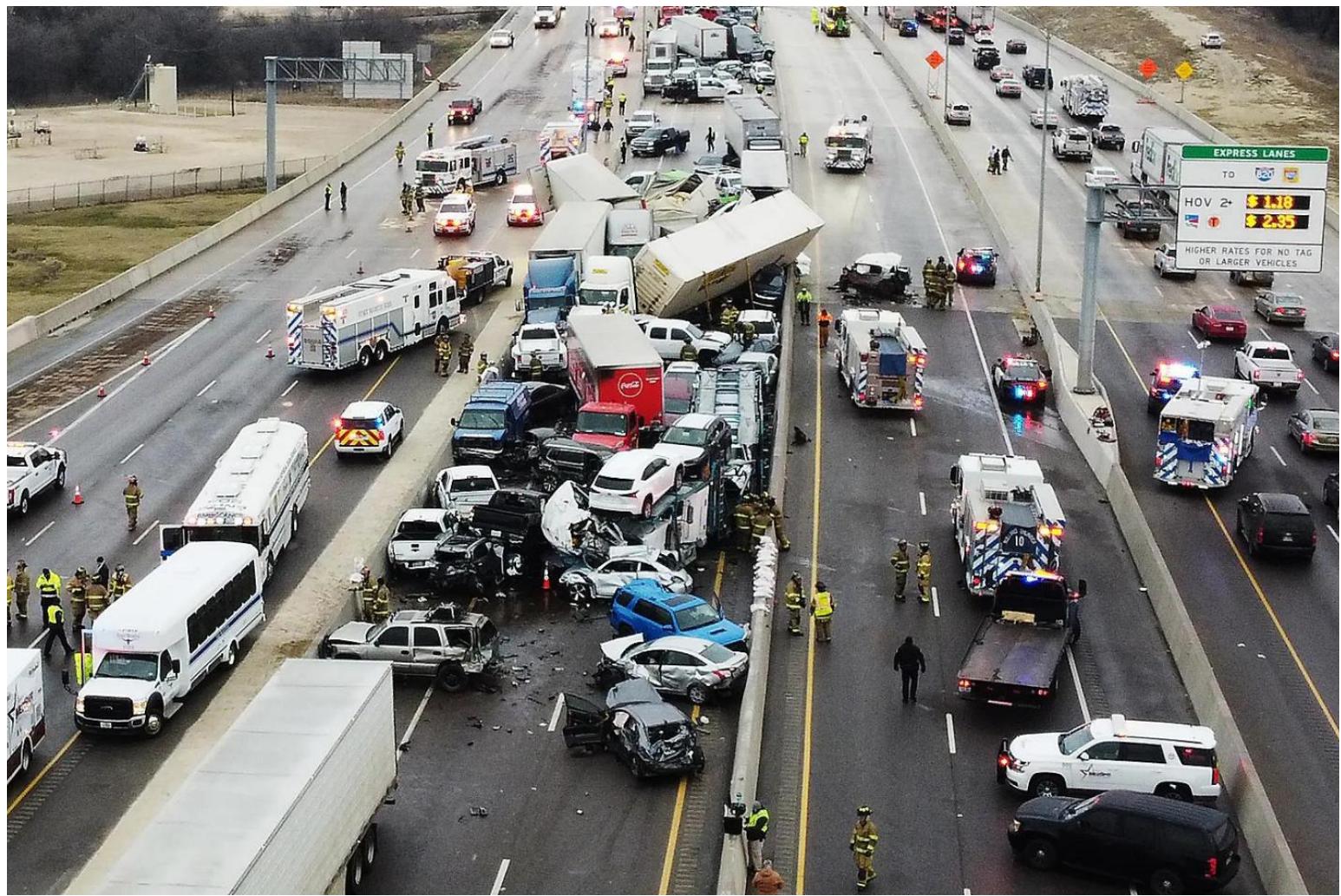
The Reign of the Roundabout

How an innovative traffic intersection
is making American roads safer

Sam Leibowitz

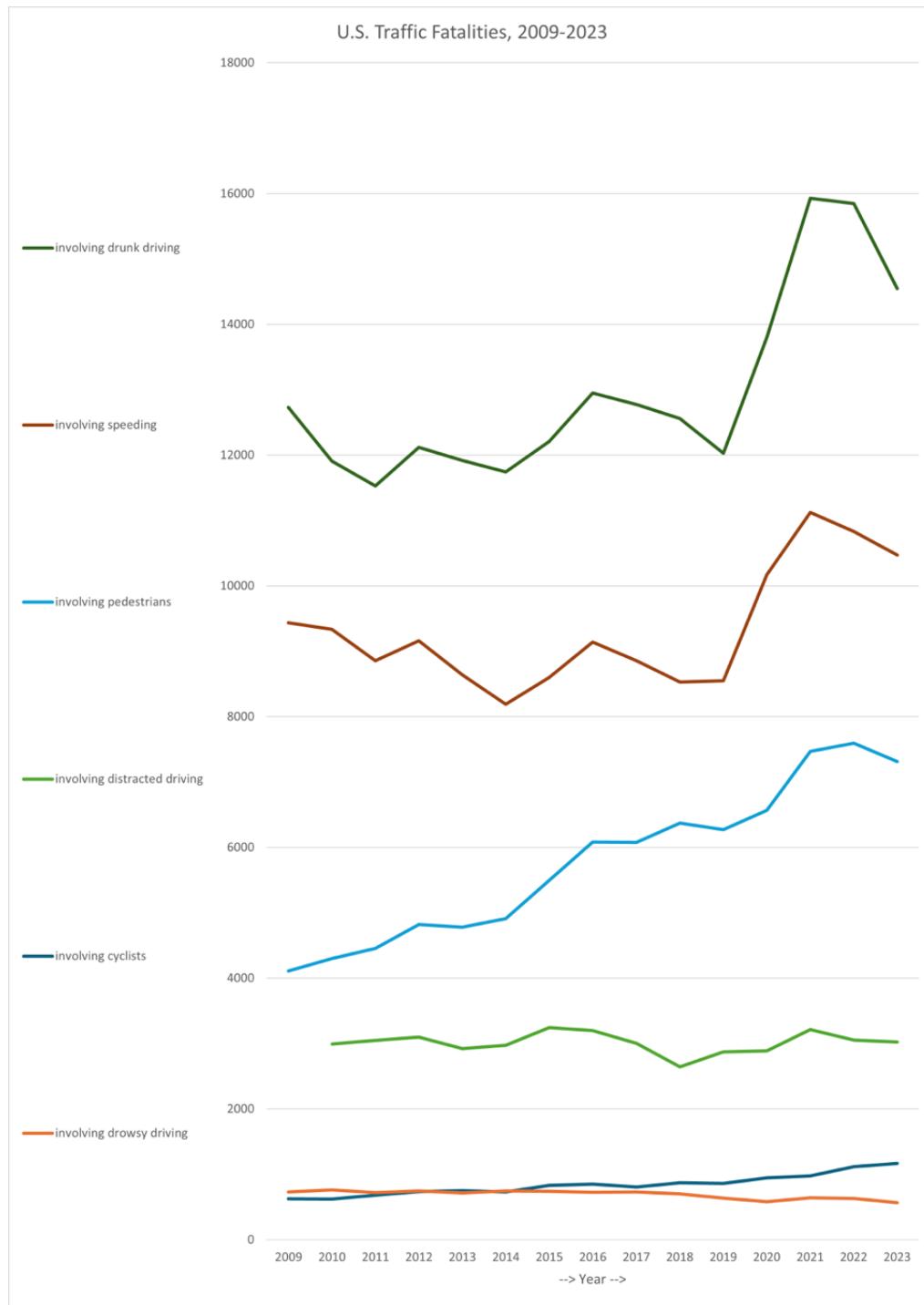
October 4, 2025





In the past 10 years, fatal crashes have become more frequent across the United States.

So, just how dangerous are our roads?



U.S. traffic fatalities from 2009-2023, showing accidents involving drunk driving (dark green), speeding (maroon), pedestrians (light blue), distracted driving (light green), cyclists (navy blue), and drowsy driving (orange).

Over the decade 2013 to 2022, there was a 29% increase in the

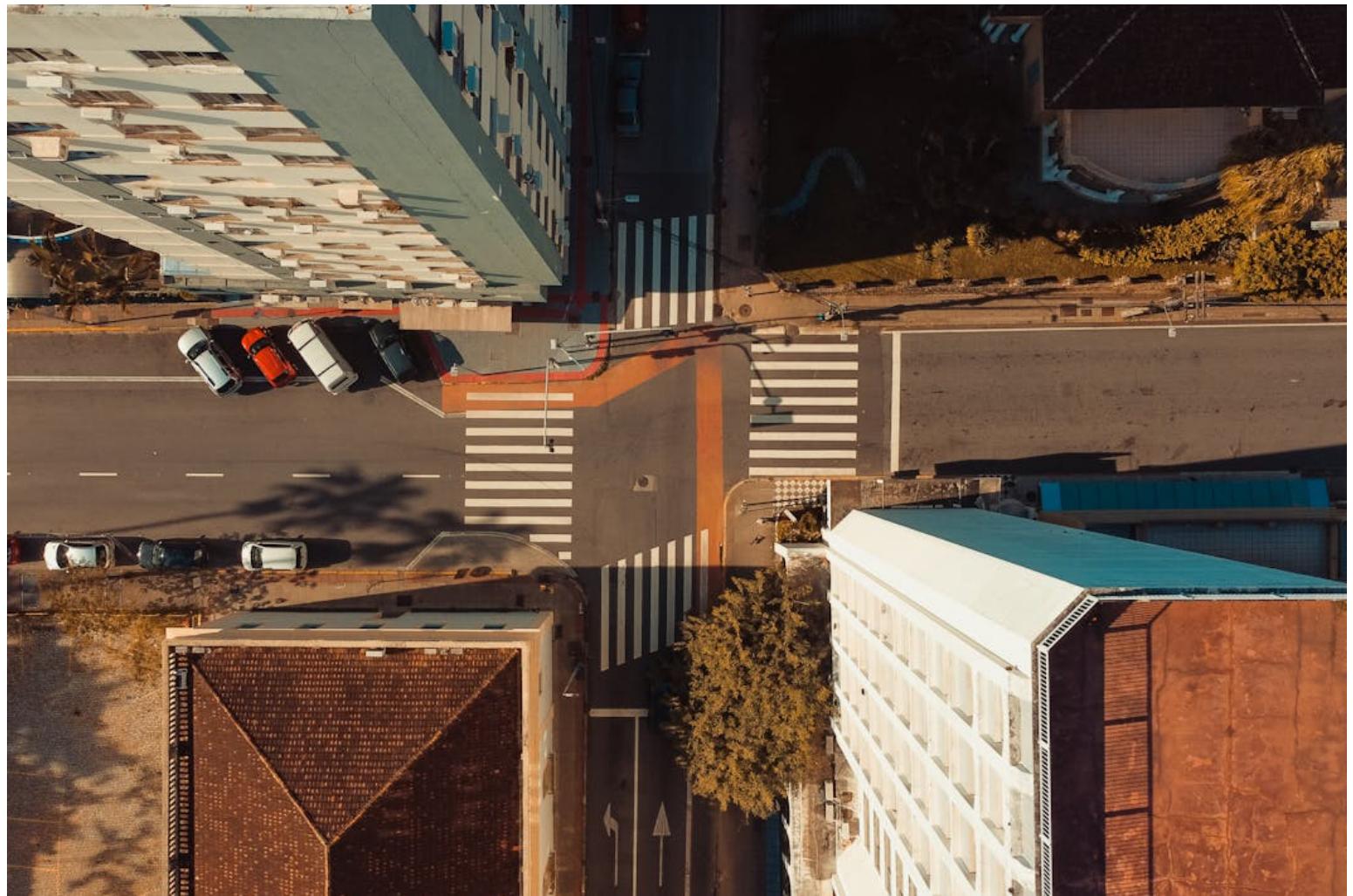
number of those killed in traffic crashes.

Pedestrian traffic fatalities have seen one of the most dramatic increases.

In 2022, there were an estimated 5,930,496 police-reported traffic crashes, in which 42,514 people were killed.

2.6% (~ 1,100) of these fatalities were cyclists, and 18% (~ 7,650) were pedestrians.

This means that on average, a pedestrian was killed every 70 minutes and injured every 8 minutes in traffic crashes.



Intersection layout matters.

About 21% of all road accidents in the U.S. occur at intersections.



Stop signs installed at intersections can reduce crash rates by about 20%.



Dedicated turn lanes can reduce crash rates by up to 30%.



Protected bike lanes can reduce crash rates by 28% or more.



And roundabouts can decrease injury-causing crashes by more than 50%!

How did roundabouts emerge in the U.S.?

In the early 20th century, **rotaries** became popular in the U.S. and Europe, particularly in France. Rotaries were larger than modern roundabouts and allowed high-speed entry and circulation. While rules varied, drivers entering the rotary usually had right-of-way, causing potential for crashes with vehicles already in the circle.

In the 1930s, the **traffic circle** (later termed "traffic-calming circle")—a fairly small, round, raised obstacle—was adopted



in urban areas across U.S. and Europe. They could be placed in the middle of already-existing intersections, including ones with stop signs or traffic lights, and could host a decorative statue or vegetation. While traffic circles forced drivers to slow down, they lacked consistent rules, which led to confusion.

In the 1960s and 1970s, British traffic engineer Frank Blackmore produced and popularized the **modern roundabout**, making these intersections significantly safer.



A traffic circle, Seattle, WA



How do modern roundabouts work?



Yield signs allow vehicles to not idle as long compared to traditional intersections with traffic lights. This decreases tailpipe emissions, saving drivers money and causing less harm to the environment.

As a bonus, building a roundabout is similar in cost to building a traffic light-operated intersection, but roundabouts require no electricity and less maintenance. This significantly lowers long-term costs.



Wider entrance points accommodate large vehicles and allow vehicles to pass through more efficiently.



Splitter islands separate entering and exiting traffic, reducing the risk of sideswiping and providing safe spaces for pedestrians while crossing.



Sharp curvature to enter forces vehicles to slow down by about 30%, reducing risk of speeding-related crashes.



Traffic only moves in one direction, so drivers can only continue around the circle or head "straight" to exit the circle. This reduces mental load and makes it easier to yield to oncoming traffic when entering the circle.



Where could more roundabouts work?

**Alaska and Hawaii not to scale.*

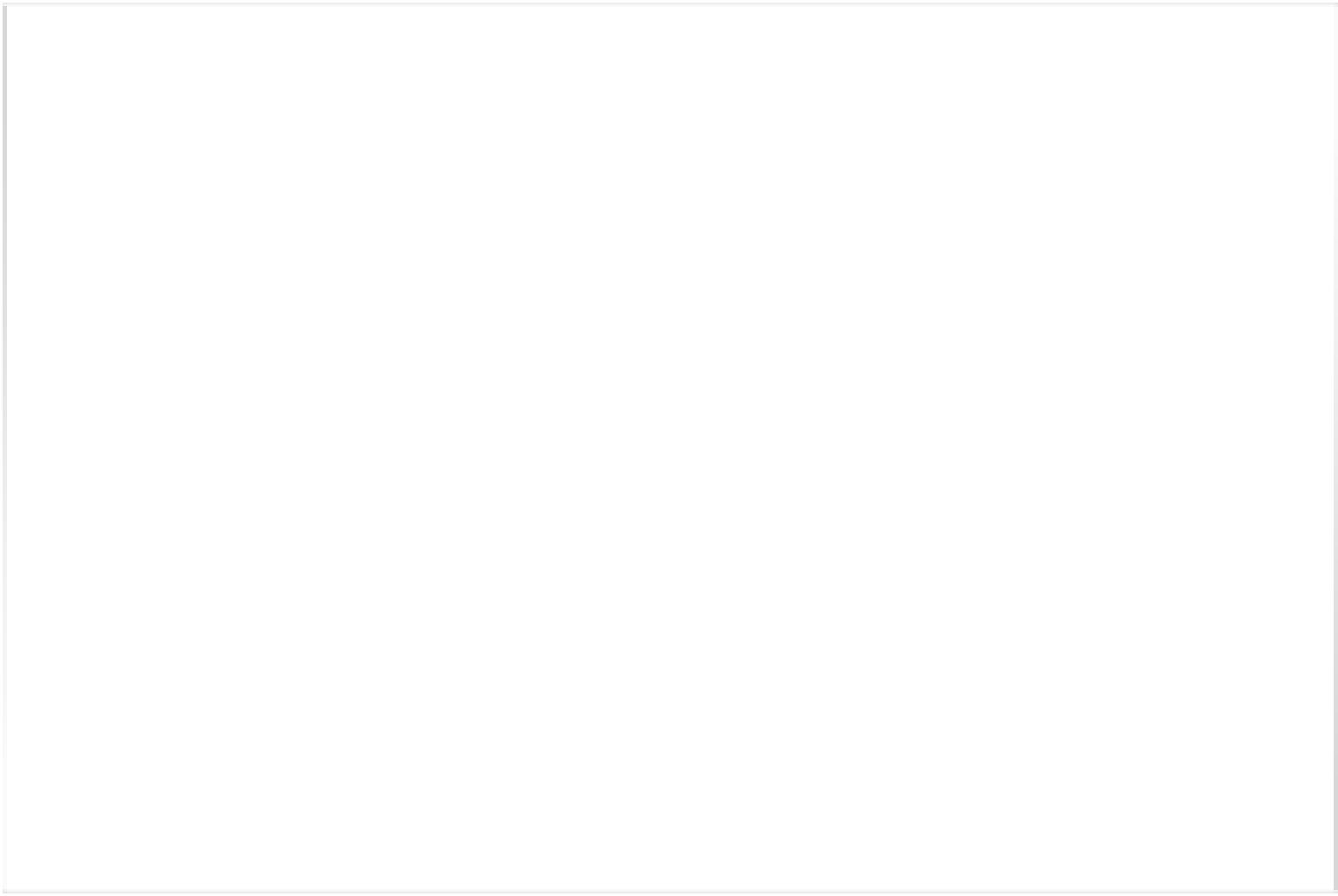
The U.S. already has a lot of roundabouts.

We can see certain hotspots throughout the country, mainly in urban counties.

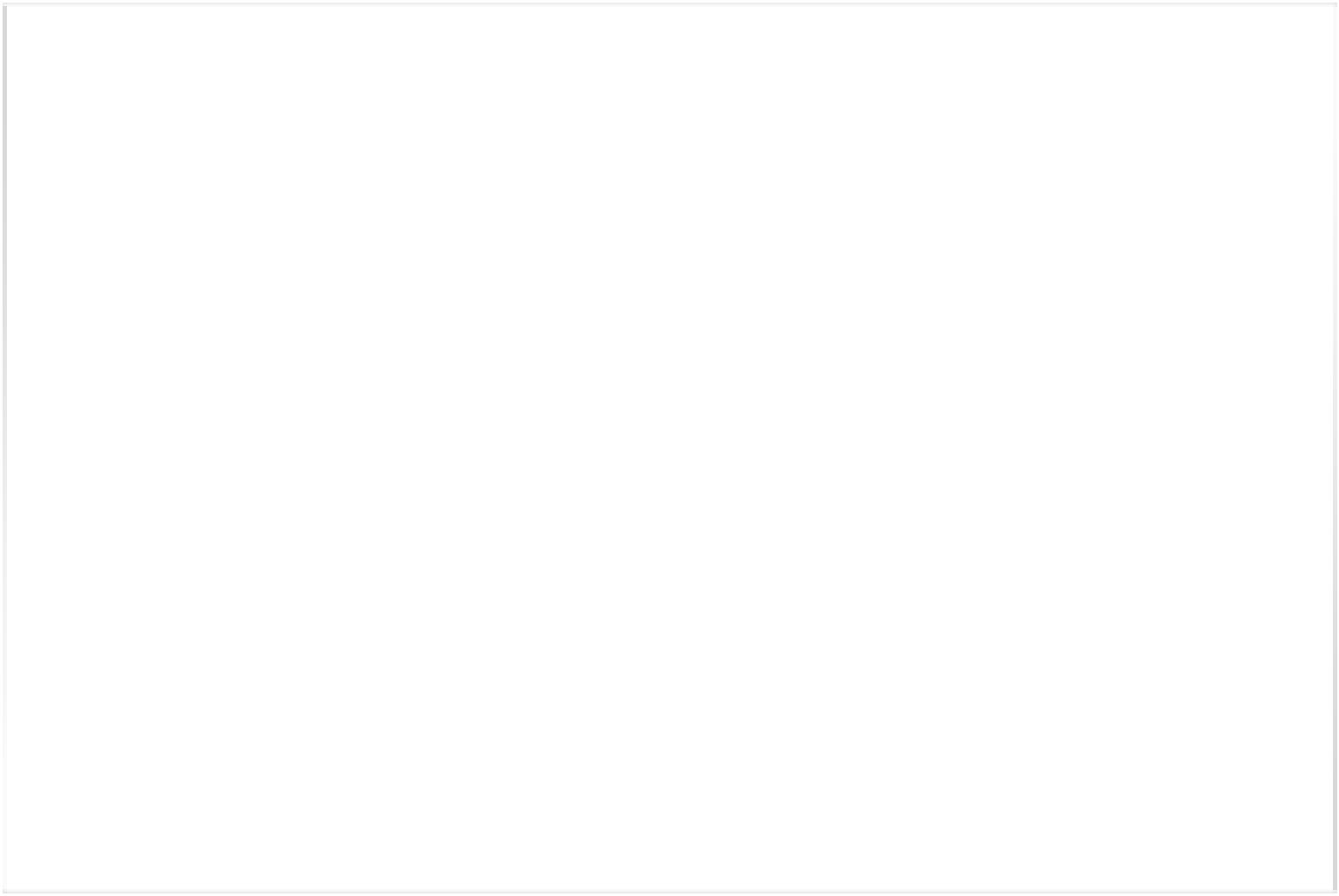
Ten counties with the highest number of roundabouts are shown.

By combining the number of roundabouts in each county (2023)

with traffic fatalities per 100 million vehicle miles driven in each state (2023),

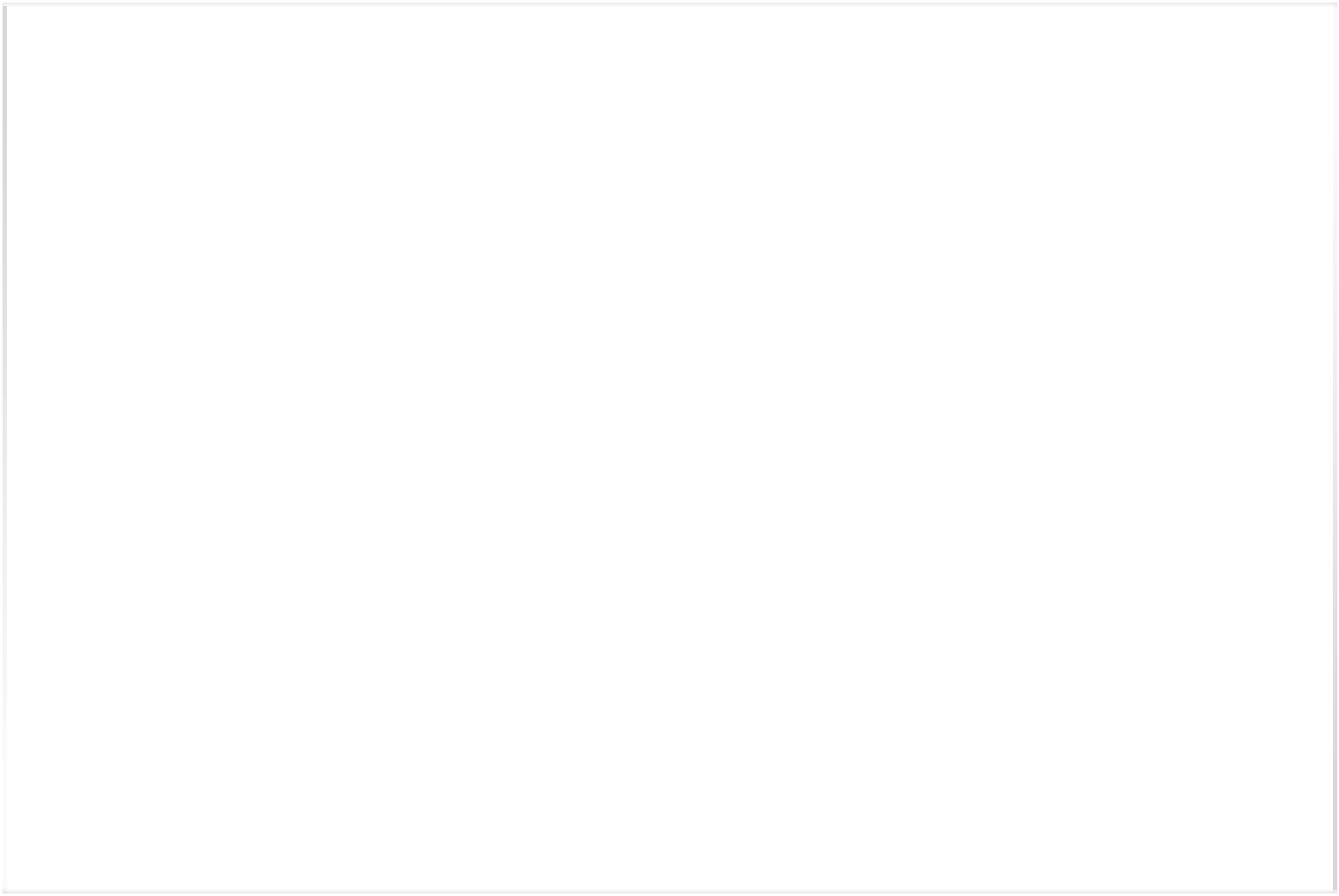


fascinating patterns emerge.



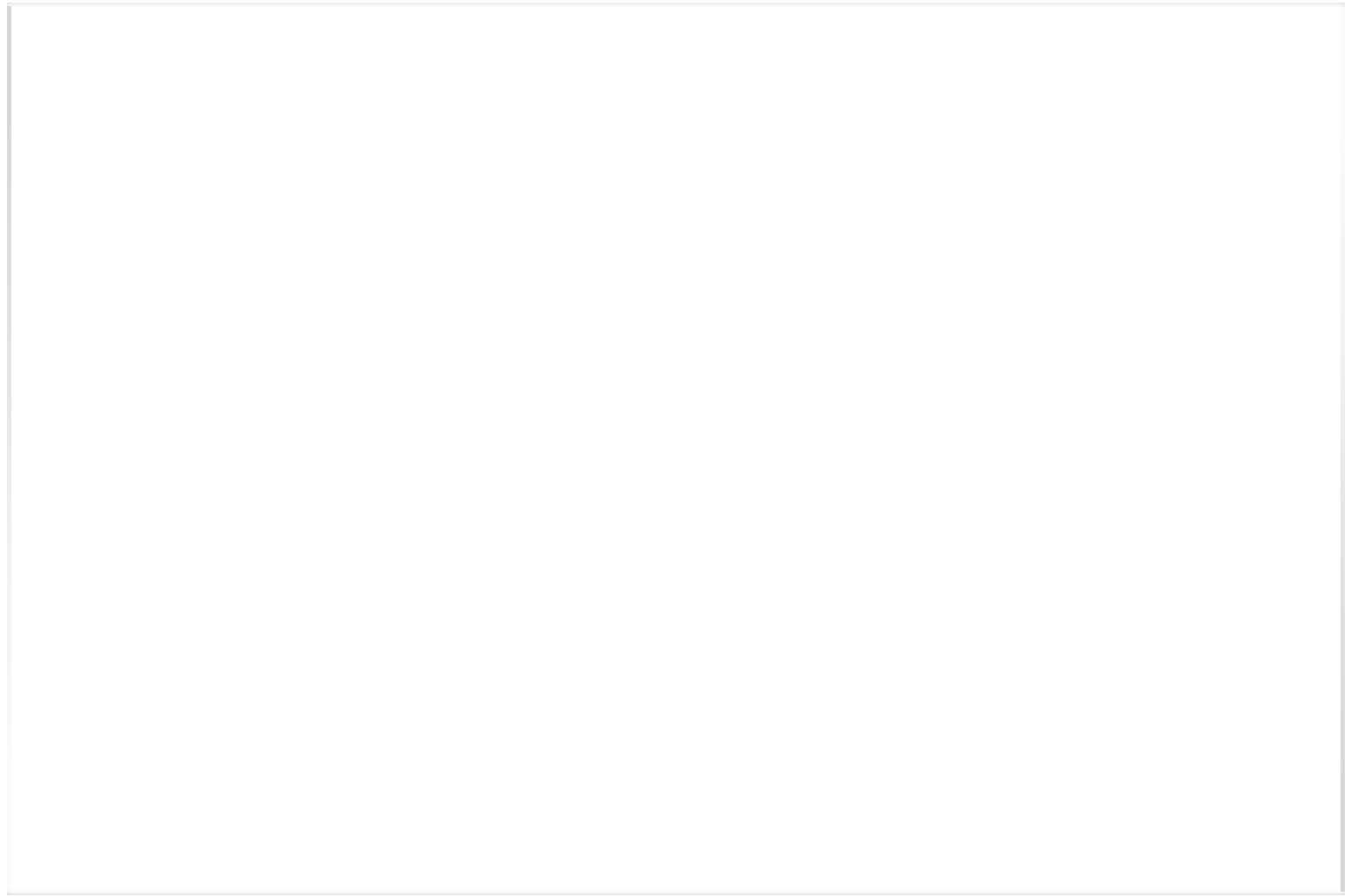
Areas with **fewer** roundabouts and **fewer** traffic fatalities (colored off-white): mainly in Alaska, Virginia, Utah, the Northeast, Midwest, and along the Rust Belt.

This indicates that roundabouts have not made a significant impact on traffic infrastructure in these regions, but there is potential to install more (in appropriate areas).



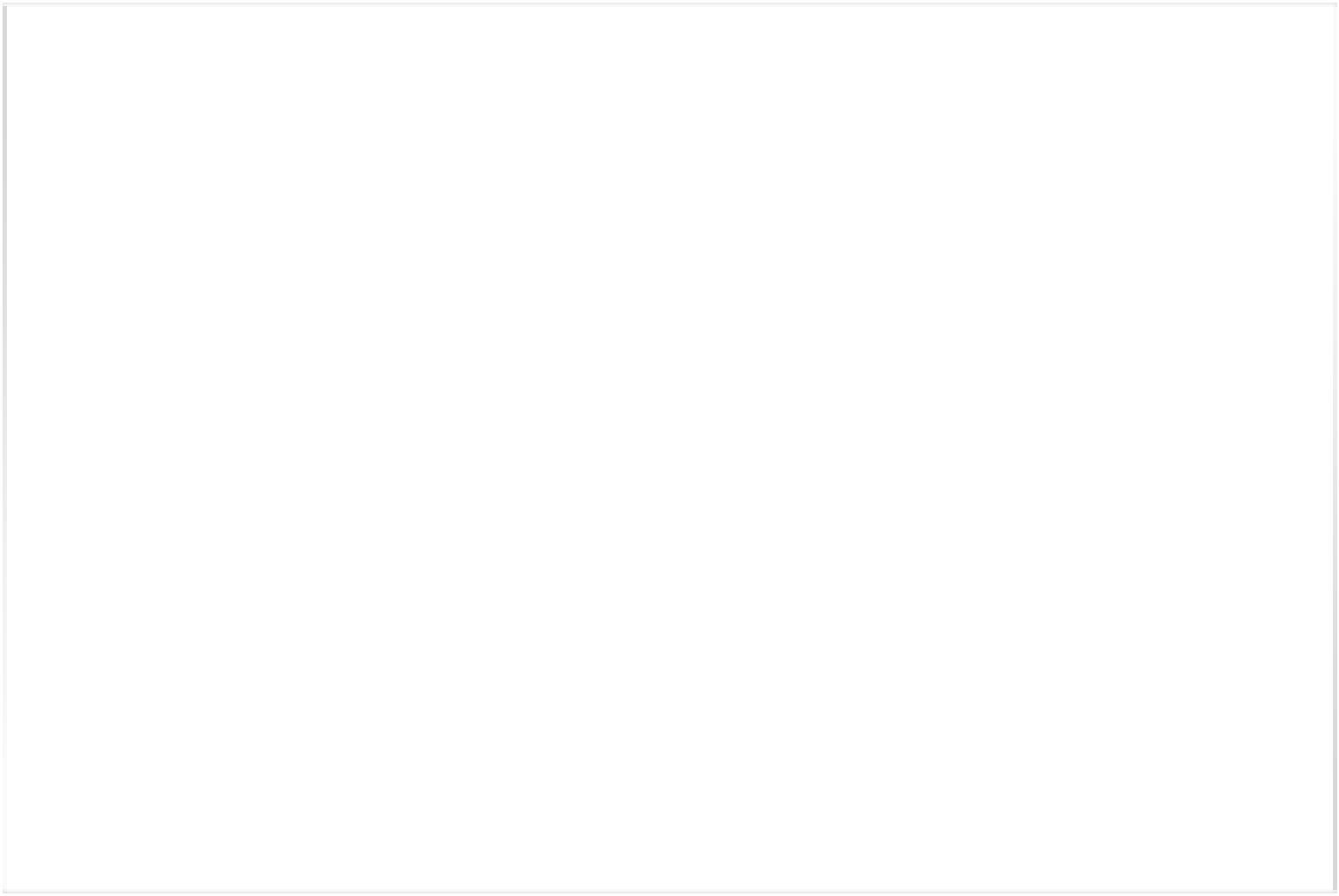
Areas with **fewer** roundabouts and **more** traffic fatalities (colored bright blue): Appalachia and parts of the South and Northwest U.S.

These areas may benefit the most from installing more roundabouts, particularly in suburban areas.



Areas with **more** roundabouts and **fewer** traffic fatalities (colored bright orange): parts of the Northeast, Mid-Atlantic, Midwest, Utah, and Hawaii, among various other metro areas.

This suggests that roundabouts have made a positive impact on traffic safety in these regions.



Areas with **more** roundabouts and **more** traffic fatalities (colored dark brown): Oregon, Montana, the Southwest, and the Southeast.

This suggests that there may be other issues in traffic infrastructure that roundabouts have not improved.

In what types of neighborhoods should more roundabouts be built?

Dense urban areas are generally not feasible for roundabouts. Roundabouts take up more land than traditional intersections and drastically increase the distance that pedestrians must cross.

Sparse rural areas are not feasible for roundabouts either. Low pedestrian AND vehicle traffic means that reconstruction of traditional intersections is unnecessary.

Roundabouts are typically a valuable choice in moderately built-up neighborhoods with low to moderate pedestrian density (i.e., most suburbs).

Many U.S. cities have already begun using roundabouts to a significant extent—the flagship example being **Carmel, Indiana**.

Carmel is known as the "Roundabout Capital of the United States".

It is located in Hamilton County—the county with the highest number of

roundabouts in the country (approximately 300!).

In 1996, newly elected mayor Jim Brainard advanced a radically innovative redevelopment plan, aiming to create a more livable, walkable, and sustainable city. He took inspiration from neighborhood designs while traveling in Europe, as well as New Urbanism, a movement focused on counteracting rampant post-WWII urban sprawl and the car-dependent suburbs that resulted. With funding from local, state, and federal sources, the city began replacing signalized intersections with roundabouts to improve traffic safety. As of 2025, it boasts over 155 roundabouts, with only 8 traffic light-operated intersections remaining.

An infographic on the City of Carmel website

Injury-causing crashes in Carmel have dropped by 80%, and overall crashes have dropped by 40%. The city has grown by over 70,000 people since its redevelopment efforts, is now regularly ranked one of the safest and most livable cities in America.



Earthstar Geographics

5 km

Powered by [Esri](#)

Zoom around to see Carmel's variety of roundabouts!

While roundabouts are a valuable tool in traffic engineering,
intersections themselves are not always to blame for fatalities.

10%

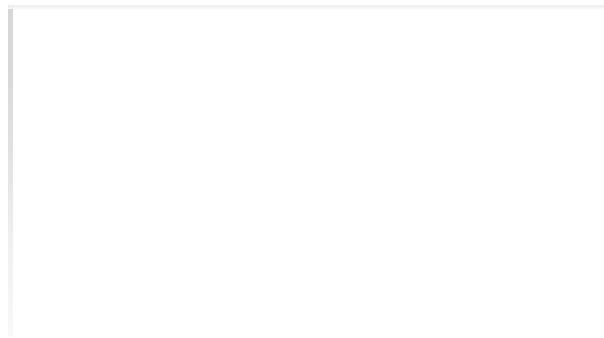
of traffic fatalities involve
running red lights.

12%

of traffic fatalities involve
distracted driving.

25%

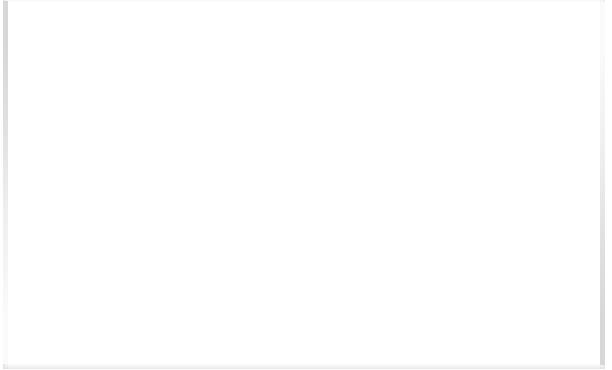
of traffic fatalities
involve drunk driving.



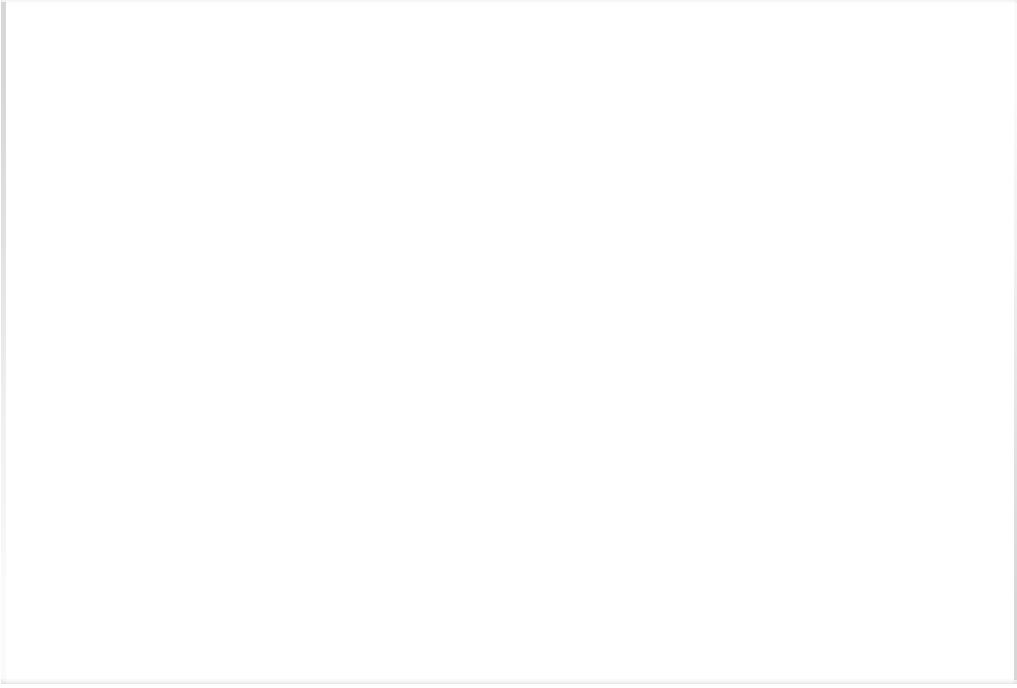


30%

of traffic fatalities involve
speeding (in urban areas).



*With or without roundabouts, accidents and fatalities can be prevented
by the choices drivers make.*



Could you envision a future of more roundabouts in the place
you call home?

Data Sources and Credits

Web Images	Bing Image Search
2009-2023 road fatality statistics	National Highway Traffic Safety Administration
2022 road fatality statistics	National Transportation Library
Intersection accident statistics	zipdo.co
Bike lane information	govfacts.org
U.S. roundabouts shapefile	Kittelson & Associates, Inc.
U.S. states shapefile	U.S. Census Bureau

Roundabout information	<u>Mileage Mike Travels</u>
Roundabout information	<u>asce.org</u>
Carmel, IN information	<u>Carmel Monthly Magazine</u>
Carmel, IN information	<u>eastgrmi.gov</u>
Carmel, IN roundabout information	<u>City of Carmel</u>
Carmel, IN roundabout information	<u>realtor.com</u>