

Tucson's Pedestrian Safety Crisis

In 2024, Tucson was named the third deadliest city in America for pedestrians, and for good reason (Davis et al. 10). In a five year span, over 200 pedestrians were killed in the Tucson area, a pedestrian fatality rate four times as high as Boston's (Davis et al. 10). Traffic deaths have continued to increase year after year. While local news and many in government blame drivers or pedestrians, Tucson's traffic fatalities are a direct result of the city's infrastructure, which in turn is a result of how the city developed and its current culture and priorities. While it is a complex problem, there are low-cost traffic calming measures with the potential to make an immediate impact and prompt larger changes.

Risky Roads

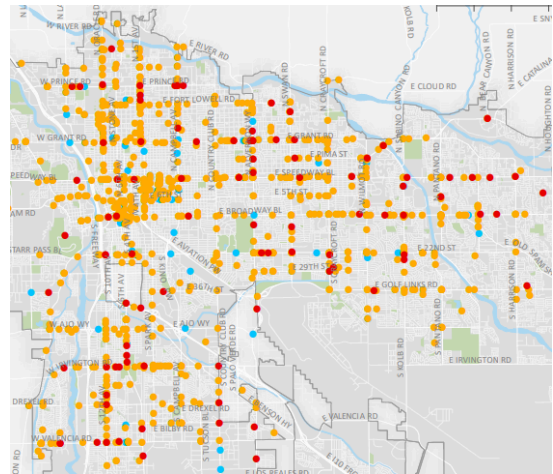
Tucson's pedestrian fatalities aren't random. Nearly 90% of Tucson's severe pedestrian crashes occurred on arterials, which make up just 11% of Tucson's road network (City of Tucson 24). Arterials are non-highway roads designed for high speed and high traffic volume, typically with four to six lanes and speeds of thirty-five to forty miles per hour. The danger of these roads is that they combine pedestrian-hostile infrastructure with reasons for pedestrians to be crossing. Tucson's arterials are lined with pedestrian destinations like bus stops, residential neighborhoods, and stores. Pedestrians, especially transit-dependent people, have to cross these roads. With intersections few and far between, pedestrians are forced to choose between long detours and risky crossings outside of crosswalks. In Tucson, crossing the road to get to a bus stop can sometimes mean a detour of nearly a mile, and predictably, pedestrians are hit and killed at high rates near these bus stops without crosswalks (City of Tucson 25).

The width of arterials increases the amount of time that a pedestrian has to spend in the road to cross. For pedestrians who move slower, such as disabled or elderly people and children, this risk is multiplied. Wide roads are particularly a danger for left turns, because the large intersections allow for a wide turning radius, which means people take the turns at higher speeds (Byrne).

Tucson's arterials typically have posted speed limits of thirty five or forty miles per hour (City of Tucson 25), but people exceed that frequently. High speeds increase the force of impact on a pedestrian, and even small increases in speed dramatically increase the chance of a crash being fatal. At 20mph, a neighborhood street speed, an average pedestrian has less than a 10% chance of being killed if hit. At an arterial speed of 40mph, that risk jumps to nearly 50%. At 50mph, a speed commonly seen on Tucson roads, pedestrians have a 75% likelihood of being killed by a crash (Tefft 9). High speeds also increase the braking distance of cars, making it harder for drivers to react to pedestrians and avert a crash (“Safety Over Speed”).



A bus stop along a 5 lane arterial, with no crosswalk in sight (Google Maps)



Tucson's pedestrian crash map (City of Tucson 74).

Arterials such as Tucson's, with high pedestrian access and limited pedestrian infrastructure, have proven dangerous across the country. The majority of pedestrian fatalities occur on suburban arterial roads (Schmitt 19). City-wide analyses of crash data repeatedly find that a disproportionate amount of traffic deaths occur on a small number of arterial roads (Ferrier). Tucson has high pedestrian fatality rates because this type of high speed arterials, combined with inadequate pedestrian infrastructure, make up the backbone of the city's road network, forming "a grid of death" (Zivarts) across the city.

Arterial Arrangement

Tucson's arterial grid is a result of the amount of growth it underwent in an car-centric planning era. Much of Tucson's expansion happened in the post-WWII era, a time when cars were becoming "the dominant organizing principle in neighborhood and city planning in the United States" (Schmitt 29). Like other post-war city booms, Tucson's expansion took the form of suburbanization and urban sprawl. In Tucson's case, rapid outward expansion was fueled by the zoning regulations, which incentivized developers to build subdivisions further away from the city in order to avoid city building regulations (*Tucson Development* 9). Much of the early growth was large "superblocks", large residential neighborhoods with winding streets that funnel traffic into the arterials that surrounded them (Weber 153). As these new neighborhoods were developed, arterials were set up along the survey lines between subdivision plots at one mile intervals (Weber). The city and its arterials kept expanding, and by 1990 nearly all of the main grid roads were four to six lanes wide (Weber 164). The result is a sprawling, low density city where most transportation has to occur by driving on arterials.

Cities where most construction was done in the pre-car era tend to have narrower roads and be a more fine-grained grid, which splits traffic into several slower and easier to cross roads (Schmitt 30). These older cities have much lower rates of pedestrian fatalities (Schmitt 29) because the streets were built with pedestrians in mind. In contrast, the hierarchical model of road systems, where small local streets funnel into collector and arterial roads, creates the need for wide arterials, which is dangerous for pedestrians.

Traffic Engineering

The creation of the arterials was a product of traffic engineering standards at the time. While a shift away from the arterial grid framework is emerging (Weber 171, Schmitt 30), traffic engineering today continues to design roads in a way that is dangerous to pedestrians. Traffic engineering manuals prescribe minimum lane widths and encourage lanes to be even bigger (Marshall 180). While this is meant to provide buffer room to be forgiving of human mistakes, the actual result is that "when drivers have more room to maneuver, drivers go faster, and when drivers go faster, you tend to find more severe crashes" (Marshall 51). When the roads are simpler and seem more forgiving of driver mistakes, drivers tend to speed up, and pedestrians are put at risk. The same issue occurs with straighter roads, larger clear zones, and long lines of sight (Marshall).

These traffic engineering conventions stem from the priorities of the field. As one former traffic engineer wryly put it, "safety third in traffic engineering might be overly optimistic" (Marshall 32). The priority of traffic engineering is maximizing traffic throughput, a value that has been embedded in traffic engineering manuals and conventions. Guidelines encourage road designers to design roads like arterials to be as fast as practicably possible (Marshall 52), and

discourage adding more crosswalks (Schmitt 100). The result is roads like Tucson's—great for cars, deadly for pedestrians.

A Culture Problem

Tucson prioritizes traffic flow, even when it has deadly consequences for pedestrians, because it is a car-centric culture. Over 90% of households have a car (Pullen), and that makes any change that could inconvenience drivers deeply unpopular. Pedestrian safety issues aren't a pressing political concern, which "has a lot to do with who is being killed" (Schmitt 31). Most of Tucson's high crash areas are in neighborhoods with higher populations of minorities, and low-income, elderly, or disabled people (City of Tucson 93). Low-income people and people of color in Tucson are also less likely to have access to a car (Pullen), and therefore have to walk more often in unsafe areas. These groups have less political power to advocate for their safety.

In Tucson's car-centric culture, pedestrians and drivers are blamed instead of the infrastructure. Local news features headlines such as "Which Arizona cities have the worst drivers?" (O'Connor), and one city council member told the press that it was important that "some of the burden shifts to the pedestrians" (Lapidus). When there isn't someone to blame, traffic deaths are seen as inevitable and accepted as part of life. "A lot of them (traffic fatalities) are simply accidents", said Tucson's mayor (Lapidus). This culture of complacency causes dozens of preventable deaths every year.

Vision Zero

In recent years, there has been a growing movement to stop accepting traffic deaths as inevitable. This mindset, Vision Zero, takes the position that traffic deaths are preventable and

governments should aim for zero traffic deaths or major injuries. It is a "proactive, preventative approach that prioritizes traffic safety as a public health issue" (*What Is Vision Zero?*). It emphasizes systems thinking and infrastructure changes over individual responsibility, recognizing that humans make mistakes and that traffic deaths are a symptom of a structural problem.

In Sweden, where Vision Zero originated, traffic deaths have been halved since the policy was adopted ("Vision Zero"). In more recent years, Vision Zero has begun to spread to the United States, being adopted by cities like New York City, Boston, Portland and even cities in Arizona like Tempe. The Safe Systems Approach, which originated with Sweden's Vision Zero program, has become part of the federal Department of Transportation's approach ("Safe Systems").

At a Crossroads

Declaring Vision Zero or making platitudes towards pedestrian safety, however, does not make change unless cities put in the necessary work. Tucson has a Pedestrian Safety Action Plan and goals of creating safer streets, but simultaneously continues to expand its dangerous arterials. Of Tucson's eleven current road improvement projects, ten of them involve building new road segments or widening existing ones ("Improvement Projects"). The majority of them are widening arterials.

Tucson is increasing the capacity of its roads despite the fact that there is already significant excess capacity in the system. Less than half of the total capacity of the major street network is used during peak traffic hours, and on many streets "entire lanes could be removed with minimal impact on users" (Schwartz). This is the result of roads being designed for traffic

volumes 20-30 years out, based on predictions of endlessly growing traffic (Marshall 175). But traffic does not grow endlessly, and traffic volumes in Tucson have even been decreasing over the past twenty years (Schwartz). Tucson should not repeat the mistakes of the past by continuing to expand roads.

Expanding roads can lead to a phenomenon called induced demand, where increasing capacity leads to easier driving, which in turn increases traffic volumes (*What Is Induced Demand?*). In Tucson, the continual expansion of roads encourages continued residential sprawl, creating more car-dependent residents, which increases the demand for expanding roads, and so forth. As Jane Jacobs wrote, "the more space that is provided cars in cities, the greater becomes the need for use of cars, and hence for still more space for them" (Jacobs 457). As cars take more space, pedestrians are put in more danger by wider and faster roads.

There are plans to add pedestrian crossings, bike lanes, and better sidewalks in some heavy traffic areas (Celaya, "Better Streets, Safe Streets"), but when the roads are also being made wider and faster, these roads are still unsafe for pedestrians. As one resident explained, "It's routine to see cars going 65 down Houghton, and for that reason alone, I'd not use the bike paths along it." ("r/Tucson"). The city is trying to improve safety while still prioritizing driver convenience, but it is simply impossible to "prioritize" everyone (Zivarts).

A Path Forward

The roots of Tucson's problems run deep, but small steps are still vital. Speed is the key danger to pedestrians, and there are a lot of simple ways to reduce speeds. Narrowing lanes, creating traffic circles, and other traffic calming measures can slow down drivers. These steps can be taken with not much more than a bucket of paint and some plastic flex-posts. Many

advocacy groups have taken matters into their own hands to do these interventions themselves—with or without city approval. For example, the Crosswalk Collective in Los Angeles paints crosswalks themselves when the city doesn't respond to their requests, and provides a how-to guide to encourage others to do the same (Ionescu). In Tucson, the Living



Streets Alliance has built low-cost traffic circles with paint and planters to slow down intersections, most notably near schools (“Quick Build 101”).

Road narrowing using painted curb extensions, and a quick-build traffic circle (“Quick-Build 102”)

These solutions won't unilaterally solve pedestrian accidents, but they do make a difference. "If you're slowing people down even 10%, that can be the difference between a fatality and an injury" says Angie Byrne, a DOT transportation safety expert. "People want to wait until they have the ideal solution, but people are dying right now. Get out some paint and flex posts!" (Byrne). This work saves lives, and perhaps it can be the start of a bigger change. Showing residents the results of traffic calming measures can make them more receptive to future improvements, and helps alleviate fears about traffic congestion (Byrne). And in the long term, this might spark greater change. As more people feel safe walking, more people begin advocating for more pedestrian improvements and caring about transit and bike infrastructure.

As less people depend on cars for transportation, they begin preferring denser areas that are navigable without a car, and begin questioning the policies that create urban sprawl.

Tucson's pedestrian safety issue is rooted in structural issues, but incremental changes can begin to fix it. It will take immense political willpower, but perhaps Tucson can reverse the cycle of car dependence and create a new feedback loop. The more safe space we provide for pedestrians, the greater becomes the desire for walkable spaces, and hence more space is created for pedestrians.

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