Pedestrian Overpasses and Tunnels: A Controversy among Walkability Advocates

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In 2050, perhaps two thirds of the world's population will be living in cities (Ritchie & Roser, 2018). Residents will need practical, efficient, affordable, and sustainable modes of mobility. However, in the United States, for almost a century, engineering standards, laws, and public transportation budgets have favored motor vehicles over other street users, especially pedestrians. According to Furth (2016), standard traffic engineering software prioritizes "minimizing auto delay" and "doesn't even calculate pedestrian delay." On busy roads, crosswalks are typically few and far between. Pedestrians may have to wait for a stoplight or step out into traffic and hope oncoming drivers notice them. Such conditions make driving to be the generally preferred mode of travel. According to Richter (2022), "76% of American commuters use their own car to move between home and work."

To better accommodate pedestrians, policymakers and city planners can restrict driving, slow vehicles down, and prioritize walking. Without such policies, however, the options are limited. Horizontal growth does not serve pedestrians well because practical walking distances are short. Vertical accommodations, however, can help. Much like skyscrapers, pedestrian overpasses and tunnels can serve cities' needs through vertical growth. Advocates of safer and more convenient mobility for pedestrians want to improve walkability, but they are divided over the place of pedestrian overpasses and tunnels as a means of doing so. Some favor them as a way to protect pedestrians from motor vehicles; others argue that they perpetuate car domination by getting pedestrians out of vehicles' way. Participants in the struggle include state departments of transportation, structural engineering firms, motorists and walkability advocates.

Review of Research

There has been much research surrounding walkability and the infrastructure that can be implemented to help or deter walkability, including analyses of the effect of pedestrian bridges and tunnels. However, there is limited information about how the rival groups within walkability advocacy congregations interact to campaign for their desires. Research needs to be expanded to encompass evaluation of these two groups to determine how to best go about finding solutions that appease both sides.

Volunteers from the town of Duck, North Carolina executed a study that was aimed at finding where to implement crosswalks in the town because the busy two-lane road was difficult to cross for most pedestrians (FHWA, 2013). The town interviewed residents to find the most walked parts of the road, and completed a road safety audit in hopes that they could "identify enhanced crossing treatments" to make the road safer for pedestrians (FHWA, 2013). The research shows a good example of evaluation of the users of the bridge and their desires, but does not recognize pedestrian bridges or underpasses as a possible solution. Studies such as this need to be carried out in heavily populated areas to gain feedback from community members. People advocating for or against pedestrian overpasses and tunnels can be identified and common ground may be found. From these studies, infrastructure that appeases both sides can be implemented.

Similarly, Mankato/North Mankato Area Planning Organization (MAPO) conducted a feasibility study surrounding the possibility of installing a pedestrian bridge over Highway 14 in Mankato, Minnesota (MAPO, 2021). The purpose of the bridge is to "provide safe and efficient pedestrian connectivity for North Mankato." Considerations such as pedestrian utilization, future expansion of the highway and minimal property impacts were evaluated when deciding what

kind of infrastructure to implement. MAPO ultimately decided upon a pedestrian bridge because they wanted something that wouldn't be affected by "upgrades or expansions to facilitate efficient flow of traffic." During the study, the organization did seek out public input but only 54% of participants supported the bridge (MAPO, 2021). They didn't give the participants an option to suggest alternative options or list values that were important to them. This research comes up short in getting detailed, useful feedback about what bridge advocates and opponents value.

The Institute for Transportation and Development Policy (ITDP, 2019) looked at the impacts that pedestrian bridges have on the pedestrians that have access to them. The institute argues that pedestrian bridges make cities less walkable. They indicate that the typical pedestrian bridge spans 103 meters, while an average street crossing is just 11 meters, making a street crossing more appealing. The institute goes on to heavily suggest against pedestrian bridges and instead advocates for "improving existing crosswalks and intersections" (ITDP, 2019). It is worth looking into the benefits of pedestrian bridges, such as maximized safety, and interviewing advocates for them to find what is important. After research of both sides is conducted, factors that appease those who support pedestrian overpasses and underpass and those who don't can be synthesized and new infrastructure can be agreed upon.

The Root of the Problem

Groups that advocate for better walkability are so widespread today because travelling by foot has been made so inefficient and unsafe by the Department of Transportation (DOT) and its agencies. On the DOT's home page is an "Explore DOT" section where users can click on a link to explore initiatives related to one of many modes of transportation including automobiles,

public transit, railroads and trucking; however, there are no buttons that lead directly to pedestrians or walking by foot (DOT, 2023). The utter neglect of walking as a mode of transportation compared to the attention to the various other modes of transportation show where the DOT's priorities lie. Most of these governmental agencies are focused on filling up roadways with motor vehicles and finding ways to improve those roadways to better the experience for drivers. This way, people will be encouraged to drive their car or take public transportation wherever they go without fear of getting stuck in traffic or behind a stoplight.

The reason why the government is motivated to do this is outlined in part of the Arizona Department of Transportation's (ADOT) mission statement, "ADOT is funded by the people who purchase fuel, drive or own private and commercial vehicles, or use transportation services" (ADOT, 2023). The government would much rather spend money on services that will increase the number of cars on the road so that they can be used more and earn a greater profit. From a financial standpoint, the government couldn't care less about pedestrians because they don't contribute any money to the DOT, aside from general taxes. Charles Zeeger of UNC Highway Safety Research Center remarked that "many cites don't spend the money on sidewalk installations" (FHWA, 2017). Money gained by the DOT from taxes on transportation is rarely and reluctantly spent on pedestrians because investments in infrastructure that aids them hurts the efficiency of roadways and the ability for vehicles to move quickly. If money was spent there and traffic efficiency was decreased, drivers may be discouraged from driving through such areas, thus decreasing the number of people buying gas causing a cut in payment to the DOT. Florida Department of Transportation's state bicycle and pedestrian coordinator Dan Burden observed that, "when faced with traffic problems, engineers solve them. When it's just sidewalk and pedestrian problems, they tend to let them slide" (FHWA, 2017).

Implementing pedestrian bridges and overpasses is a way for the government to make it seem like they're improving walkability while they're really just making the roads more efficient for vehicles. Some advocates for better walkability recognize this effort and dislike pedestrian bridges because of it. Joe Cortright who runs the City Observatory blog remarks that these pieces of infrastructure are "remedial and performative and their real purpose is to serve faster car traffic" (Cortright, 2020). By putting in crosswalks or installing stoplights that allow for pedestrians to cross at-grade, further bottlenecks and backups would surface because cars would have to stop for those pedestrians. The Department of Transportation would rather take pedestrians off the street to allow cars to flow freely at faster speeds. One such example lies within project T-REX, a transportation expansion project that was aimed at solving "severe congestion" on I-25 and "moderate congestion" on I-225 (FHWA, 2017). The project included adding multiple lanes to stretches of I-225, widening numerous bridges, and adding and improving shoulders, which all contribute to an ability for cars to travel at faster speeds making it a dangerous area for pedestrians. The project also included an improvement to the pedestrian/bike path that ran under I-25 (Chartock, 2006). This project shows the DOT's favoritism toward traffic efficiency through the act of pushing pedestrians to a degrading underground path, rather than allowing them to cross at-grade.

The Role of the Engineer

Both the inherent purpose of pedestrian overpasses and underpasses, as well as the way they are designed by engineers cause a dilemma between advocates for walkability. While they are designed to take pedestrians away from traffic by suspending people above or below

roadways, they are very inconvenient for pedestrians because they are forced to take many extra steps.

U.S. Bridge, a designer of steel pedestrian bridges takes the view of most other bridge design firms that "building a pedestrian bridge rather than a crosswalk can keep pedestrians safe for years to come" (U.S. Bridge, 2020). Being that this quote is on a page that is meant to promote their products, it makes sense that they are advocating that bridges are the most beneficial option for pedestrians, with safety as their focal point. These companies rely on the DOT expanding roadways and increasing speeds so they can be called upon to build pedestrian bridges to appease the calls for intermodal transportation systems. The people that want equality in transportation are among the advocates for better walkability who are okay with the slight inconvenience pedestrian overpasses and underpasses cause. The ideals these people have are represented by Mighk Wilson, a smart growth planner and advocate for pedestrians, who approves of the Maitland pedestrian bridge over bustling I-4 because "it takes a huge obstacle – I-4 – out of play for bikers and walkers" (Tracy, 2015). These advocates are just happy to see communities being connected across stretches of highway such that pedestrians can safely cross without fear of being hit by a car. Their beliefs surrounding pedestrian bridges coincide with those of engineers because they, like most engineers, value safety first and are fine with going a few steps out of their way.

On the other end of the spectrum are the advocates for better walkability who think the engineering and design of these workarounds are a detriment to the pedestrian. Although Mighk Wilson is a proponent for the previously mentioned Maitland pedestrian bridge, he makes a concession that aligns with the ideals of these advocates, "the length of the trip – likely 1.5 miles or more to get over the highway and to a neighborhood or office complex – would be too long

for most walkers" (Tracy, 2015). Indeed, this trek is anything but convenient as pedestrians must begin their journey far before getting to the actual interstate. The bridge that allows cars to freely flow at high speeds beneath it is designed such that the approach ramp used to suspend pedestrians and connect them with the bridge starts hundreds of feet before the overpass. Inefficient design of pedestrian bridges isn't the fault of engineers; rather, it is an inherent requirement of the design of such infrastructure itself. In order to accommodate people with disabilities "the design of all pedestrian overpasses and underpasses must include ramps that do not exceed 1:12 grade" (FHWA, 2017). While this characteristic would seem to be beneficial to those in wheelchairs or mothers who have to push strollers, "pedestrian bridges can be difficult to climb depending on the grade of the incline," says Paul Holland of the Washington Area Wheelchair Society (Hutchinson, 2010). This, oftentimes, steep descent in combination with the extra distance needed to be travelled discourages less able pedestrians from using these structures. This is one of the reasons why Alex Hutchinson, of the Third Place Blog which advocates for walkability, believes that "removing pedestrians from the equation altogether is heading in the wrong direction" (Hutchinson, 2010). Rather than forcing pedestrians to go out of their way to make the roads more convenient for cars, Hutchinson is a proponent of Barnes Dance intersections and other horizontal roadway changes which would put the pedestrian first. However, such changes would cause bottlenecks in traffic, something that opponents of walkability would not approve of.

"Road Safety" Advocacy Impact

The opponents of better walkability, who are known as fast-driving advocates, call themselves road safety advocates in order to keep their actual purpose under disguise. According

to R. A. Siy (2022), this group's movement is actually about getting pedestrians "out of the way so that cars can drive fast without having to use their brakes." While the walkability advocates who favor the implementation of these pedestrian structures to improve their safety agree with the opponents of walkability on the need for this infrastructure, urbanists who argue against the infrastructure see through the deceptive agenda.

The intersection of Flatbush Avenue and Avenue U in Brooklyn, New York, that is "impossible to cross," is causing a conflict between the two groups of walkability advocates about how to improve the intersection (Cuba, 2016). The intersection has caused accidents which have injured 71 pedestrians since 2009 and some walkability advocates are calling for a Barnes Dance intersection. Robin Sherman-Epstein, who is an urbanist and in favor of an intersection transformation, says, "a Barnes Dance is very simple, it makes all the traffic stop" (Cuba, 2016). All this stopping causing congestion is exactly what the opponents of walkability do not want. Eric Jaffe remarks, "while most pedestrians loved the scramble, most drivers hated it" (Jaffe, 2012). A study done by NYC DOT (2017) reveals why the drivers and fast-driving advocates despise the intersection design. The Department of Transportation looked at five intersections that have high pedestrian volumes and evaluated delays that would be caused by implementing Barnes Dance. It found that all five of the intersections would see an increase in vehicle delay of at least 30 seconds, while one intersection would see a vehicle delay increase of 580 seconds. Although the study found that pedestrian wait times could increase by as much as 9 seconds at these intersections, urbanist walkability advocates would, in most cases, take the small wait over backtracking hundreds of steps and expending extra energy to go over a pedestrian bridge to appease drivers, who already have an advantage (NYC DOT, 2017). Other walkability advocates would rather not take the risk of getting hit.

These advocates are the previously mentioned people that recognize that cars will always rule the streets, otherwise known as pragmatists. Stella Panzarino, who uses the aforementioned intersection in Brooklyn, New York, is evidently very accustomed to the driver behavior in the area and at the intersection and recognizes that even a change in the intersection cycles that prioritizes pedestrians will not help slow down the dominant drivers. She exclaims that, "they need a bridge. People drive like maniacs. You can't take for granted they are going to stop there" (Cuba, 2016). The fast-driving, "road safety" advocates who oppose walkability would agree with Panzarino. Although they aim to make it seem like they want to see pedestrian bridges implemented near intersections for the same reason, to make it safer for pedestrians, they are taking advantage of the support they get from the pedestrians who just want walking to be safer. Sherman-Epstein, who is in favor of the Barnes Dance intersection, argues that installing a pedestrian bridge would be too expensive and that, "the Barnes Dance is the cost-effective way to go" (Cuba, 2016). When pedestrian bridge costs get expensive, organizations can step in and pay for funding, essentially teaming up with advocates of walkability to build the bridge. This is exactly what happened with a proposed pedestrian bridge in Palo Alto, California which saw construction costs rise to $17 million. Most of the cost to build this bridge was covered by grants and a general fund; however, The Santa Clara Valley Transportation Authority (VTA) stepped in and provided $350,000 to help construct the bridge (Lee, 2015). Even though one of VTA's core values is safety, their main interests lie in making roads more efficient for cars. The Santa Clara Valley Transportation Authority is, "the county's congestion management agency" (VTA, 2019), so it stands to reason that the organization would want to help install a pedestrian bridge here to reduce congestion that could be caused by pedestrians walking on the street. This situation portrays a unique relationship between the pragmatic walkability advocates and the fast-driving

advocates and organizations. They, in a way, form a team in search of the same thing: a pedestrian overpass or underpass. The shared interest between these groups increases the chances of pedestrian overpasses and underpasses getting built because the advocacy for them, as well as money that can be contributed to them getting built, is increased. In this situation, those in favor of roadway features that prioritize pedestrians are outnumbered and the rivalry between advocates of better walkability continues.

Conclusion and Next Steps

The disagreement between walkability advocates about the place of pedestrian overpasses and underpasses in providing better walkability for pedestrians is based on convenience vs safety. Pedestrian bridges provide pedestrians with an inconvenient but very safe option to cross traffic, while at-grade enhancements, such as a Barnes Dance intersection, provide a less safe but much more convenient option for pedestrians. Governmental institutions like the DOT, regulations and engineering of bridges, and opposition of walkability all have an impact on the implementation of pedestrian infrastructure and a resultant impact on the rivalry between the walkability advocacy groups. Because the rivalry between walkability advocates is likely holding the group from reaching decisions on what they would like to lobby for and ultimately see implemented in their communities, it is necessary to find solutions for pedestrian bridges or other walkability infrastructure that they can collaborate on advocating. Because of the increasing need for improvements in walkability due to over crowdedness and other factors, the participant groups mentioned need to focus on ways to make the walking experience better for the pedestrian.

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