Crash Analysis Studio

Session 10: Huntsville, Alabama
Held on October 27, 2023

Session Participants:

- **Melany Alliston**, PE, Civil Engineering Practice Director at Toole Design
- **Dario Gonzalez**, Traffic engineer; Huntsville local; concerned transportation safety advocate
- **Ben Payment**, Co-founder and board member of Huntsville Urban Bike Share Coop (HUBS Coop); Founder of Bikes & Brews; Engaged local & safety advocate
- **Edward Erfurt**, Director of Community Action at Strong Towns
- **Tony Harris** (moderator), Action Team Coordinator at Strong Towns

Summary of Crash Event

- The crash occurred at 4:41 p.m. (EDT) on June 7, 2021 at the intersection of University Drive[1] and Julia Street.

- A westbound motorist struck 37-year-old Joshua Gurley as he was cycling across University Drive, headed southbound onto Julia Street.
    - According to the crash report, Gurley was pronounced dead at the scene.

    - The report does not state the time of death, but it does state that emergency medical services arrived at the crash location at 4:46 p.m.

- The crash report also indicates the following:
    - Gurley failed to obey traffic signs or signals at the time of the collision.

    - The motorist was unable to react in time when Gurley passed in front of their vehicle.

    - There was no evidence to support filing charges when the collision happened.

- The crash report does not dictate if witness statements were gathered or if any surveillance of the crash was ascertained.

- Local sources dictate that the speed limit on University Drive was 45 miles per hour (mph) at the time of the crash and has not changed since.
    - University Drive is a highway corridor that travels across the northern counties of Alabama.

[1] Also known as Highway 72.

- This highway stretches across Bridgeport, Scottsboro, Huntsville, Athens, and the Shoals area[2].

Primary Contributing Factors

The design of University Drive includes no bike lanes and only partial sidewalks; this design demonstrates minimal concern for the safety of cyclists, pedestrians, and other non-motorists traveling outside of a privately-owned and operated automobile.

Designers acknowledge the existence of pedestrians and cyclists at this location by constructing incomplete sidewalks and including push buttons for pedestrian crossings. Lane width, the overall road design that lacks pedestrian refuge areas, and quick pedestrian crossing times indicate that non-motorist safety, accessibility, and usage are not priorities.

Designers have recognized that motorists are fallible and have provided ample margin for error through forgiving design features like dedicated left turn lanes and wide through traffic lanes. These elements illustrate designers' recognition that University Drive is indeed a highway and that concern for automobile-on-automobile crashes is worthwhile.

When evaluating collisions between motorists and cyclists or pedestrians, designers did not elect to create a similar margin for error. Incomplete sidewalks along the south side of the intersection and the absence of mid-crossing refuge areas do not support non-motorist accessibility or safety. Short crossing times may encourage or force risky behavior, even by users that may prefer to exercise higher levels of caution.

Along University Drive and its intersection with Julia Street, transportation systems for motorists and non-motorists have been planned and implemented with dangerous levels of incompatibility. This conflict is one underlying cause of the collision that killed Joshua Gurley.

Design and transportation professionals have intentionally chosen to expose non-motorists to unnecessary major risk by placing them in an atmosphere constructed to prioritize high-speed traffic flow. Substantive changes to University Drive and other highways designed to run through the middle of residential areas are necessary to reduce fatalities and traumatic injuries.

Session participants identified the following primary factors that contributed to this crash:

1. **University Drive is designed to facilitate and prioritize high speed motor vehicle travel in a manner that is incompatible with non-motorist safety and accessibility.**
    a. Each of the six through traffic lanes on the east side of the intersection where the crash occurred are 12' wide; the additional center turn lane is 16' wide. Though these widths may be typical for highways, they are incompatible with the expectation that cyclists and pedestrians will safely navigate this environment on a regular basis.

[2] Additional information about this highway is available here.

b. Three through traffic lanes in each direction of travel allow fast-moving vehicles to pass slow-moving traffic, even during brief periods of congestion.
    i. The only source of friction that reduces traffic speed is motorists making right turns into numerous private drives off of University Drive.
c. Pedestrians and cyclists are unreasonably expected to maintain sightlines of automobile traffic across seven lanes while making decisions and judgment calls to preserve their own safety; this may be even more difficult if motorists are speeding.
    i. University Drive traffic signals for vehicle lanes remain green for 120+ seconds during a typical signal rotation.
    ii. Pedestrians are required to press the pedestrian signal button to trigger the pedestrian lights. Pedestrians are granted a 31 second crossing interval; there is zero leading pedestrian interval for University Drive west/east signals.
    iii. With 88 feet of roadway to cross, this would require a pedestrian to move 2.8 feet per second; the 84 foot side of the intersection would require a pedestrian to move at 2.7 feet per second.
    iv. The speed at which non-motorists are expected to cross may present navigational difficulties or dangers for certain pedestrians, or result in them getting stuck in the intersection during short lights.
d. At the crash location, eastbound traffic has access to a dedicated left turn lane to access retail establishments on the north side of University Drive. At this same location, westbound traffic has access to a dedicated left turn lane to go south on Julia Street. These lanes are designed to remove turning automobiles from the stream so they do not impede through traffic.

2. **Poor visibility and acute visual cues along University Drive and near its intersection with Julia Street impact driving behavior and motorist decision-making.**
    a. Given the speed limit of 45 mph, a driver needs to make a decision on whether to slow down at approximately 480 feet from the intersection; this accounts for 360 feet of sight distance and the additional 120 feet the signal is placed from the stop bar.
        i. From 480 feet away, neither the traffic signal nor pedestrians are guaranteed to be adequately visible.
    b. At the time of the crash, the sun would have been shining west to east. This would have backlighted the traffic signal and made it even more difficult to see.
    c. Multiple driveways, poles, and signs from businesses along University Drive create visual clutter that may distract motorists from focusing on the road.
        i. The large green signs that signal highway and interstate access are also visual cues that this is an automobile-only, high-speed space.

3. **The design speed and the documented travel speed of University Drive is incompatible with people traveling on foot or by bike.**

a. The current 45 mph speed limit on University Drive facilitates high speed motor vehicle travel.
    i. A speed study indicated that 61% of tracked motorists exceeded the posted limit.
    ii. The study also illustrated that the 85th percentile speed, or the speed which 85% of drivers were traveling at or below, to be 52 mph.
    iii. The Insurance Institute for Highway Safety states that fatality rates climb for automobile collisions involving pedestrians at 25 mph. When automobile speeds exceed 40 mph, pedestrian collisions are likely to be fatal. Approximately 90% of drivers tracked during this speed study were traveling at or beyond 40 mph.
b. Travel lanes are wide enough to make motorists comfortable traveling at a design speed higher than the posted 45 mph limit.
c. A motorist obeying the 45 mph speed limit would still travel the entire sight distance of 360 feet within five and a half seconds as they approach the intersection.

4. **Communities surrounding the crash location lack alternative east-west connections and thus remain dependent on University Drive for travel, even for local trips.**
    a. Huntsville GIS[3] database maps illustrate there are few alternative connections for bike routes and roads for east-west travel in the area nearby the University Drive and Julia Street intersection.
    b. There is a lack of interconnectivity between similar land uses that requires every car trip in this corridor to access University Drive.
    c. The lack of interconnectivity of sidewalks and bikeways among neighborhoods and retail establishments forces every non-motorist trip to utilize infrastructure that prioritizes automobile travel over all other objectives.

5. **Pedestrian infrastructure essentials and refuge areas necessary for safe non-motorist navigation are incomplete, difficult to find, or completely absent along University Drive, particularly at its intersection with Julia Street.**
    a. On the southwest side of this intersection at the end of its only high visibility crosswalk, there is no sidewalk or refuge area; this design decision and the lack of crosswalks on major commercial driveways may give motorists the mistaken impression that they–and not pedestrians–have priority.
    b. On both the west and east sides of the intersection, there is no refuge area in the middle of the road; this forces non-motorist users to navigate either an 84 foot crossing on the west–or an 88 foot crossing on the east–all at once.
    c. Pedestrian push buttons and signage are small and located on the back sides of poles; since they are not accessible from the landings of the curb ramps, they are neither ADA[4]-compliant nor in alignment with accepted standards.

[3] Geographic Information System
[4] Americans with Disabilities Act

        i. Additionally, pedestrians and cyclists are allotted 31 seconds of crossing time to navigate across University Drive at this intersection, and 27 seconds to cross Julia Street where north/south signals are present.
        ii. Though there is no leading pedestrian interval for the University Drive crossing, there is a seven second leading pedestrian interval at the north/south signal crossings.
        iii. Given the lack of mid-crossing refuge areas, the allotted time may create safety concerns for certain users–especially those crossing University Drive.
    d. There are bus stops on both the north and south sides of the intersection of University Drive and Julia Street. Transit riders are required with no other option than to cross these streets either on the start or the conclusion of their journey as a pedestrian.

6. **Multiple redundant driveways along University Drive at and around this intersection influence traffic flow and motorist decision-making.**
    a. Multiple businesses and commercial developments have separated entry and exit paths onto and off of University Drive.
        i. Olive Garden–located on the north side of this intersection–has two driveways; one at the signalized intersection, and one just east of the signal.
        ii. The two automobile dealerships on the south side of the intersection have driveways on University Drive in close proximity to the intersection and on Julia Street.
    b. These driveways create additional conflict points for through traffic and increase risk accrued by motorists joining traffic flow.

Recommendations

To make sufficient provisions for the safety of people walking and biking near the crash location, policy-level decisions need to be made regarding the intent and goals of the area. Elected officials need to provide direction and guidance on whether University Drive is to be treated as a high-speed highway, or treated as an urban road amidst residential neighborhoods and commercial destinations where community members are expected to routinely walk and bike.

If it is determined that University Drive should be treated as a highway that prioritizes high-speed traffic flow, infrastructure modifications must be made. Current sidewalks would need to be removed from University Drive and the intersection where the crash occurred. Barriers could be constructed to block these paths almost immediately, though more permanent provisions would need to be provided and implemented in the long-term. The bus stops would need to be relocated to other intersections, side streets, or alternate locations within adjacent developed parcels. In this scenario, pedestrians and cyclists would need robust alternative options in the surrounding area. One option could be widening the existing sidewalk on the northside of University Drive into a multi-use path (MUP).

If the expectation is that University Drive and its intersection with Julia Street will accommodate pedestrians, public transit, cyclists, and vehicles, the following practices should be adopted:

Immediate:

1. Deploy a multidisciplinary team of city staff to act as rapid responders to automobile crashes. For this collision, charge the team to review and rework modifications to the intersection, particularly those concerned with pedestrian infrastructure and safety. To start, this team should:
    a. Reduce visual clutter by working with commercial representatives to back business signs away from the curbside.
    b. Work with willing commercial representatives to erect temporary driveway barriers or blockades to reduce the number of conflict points along University Drive. One example would be closing the redundant drive east of the signal used by Olive Garden.
2. Review and revise training protocols with law enforcement officers to ensure crash report diagrams are drawn as accurately as possible.[5]
3. Build out a complete sidewalk on the south side of the intersection, even if it requires using asphalt or temporary materials at first.
4. Place push buttons in ADA compliant locations that are 18 inches from the landings on the curb ramps.
5. Install lighting to fully illuminate pedestrian and cyclist waiting areas along both the north and south sides of University Drive.
6. Replace any existing crosswalks with high-visibility crosswalk markings.
7. Use temporary measures to reduce the lane width of the center turn lane to accommodate a pedestrian refuge.
8. Evaluate the warrant for six lanes of travel and lanes widths in excess of 12 feet.

Near Term (within the next 12 months):

9. Insert a receiving curb ramp onto the southwest corner of the intersection where the crosswalk currently leaves users in the grass.
10. Ensure the curb ramps on the commercial driveways feature ADA-compliant truncated domes.
    a. Secure resources to make any successful, temporary driveway blockades into permanent closures.
11. Review and revise any public transportation stops to happen in front of crosswalks rather than behind them, as this will increase both non-motorist safety and public transit efficiency.
12. Replace any temporary measures to build out a sidewalk on the south side of the intersection with permanent materials.

[5] The diagram for this crash only depicts three westbound lanes; the center turn lane and eastbound lanes were fully omitted from the visual.

13. Gather support from elected officials and community organizations to open up alternate routes between communities, specifically pedestrian and cyclist connections, as alternatives to traveling on University Drive.

Long Term and Systematic:

14. Redesign University Drive by:
    a. Reducing the widths of the center-turn lane and travel lanes and using the extra space to build a pedestrian refuge in the center of the intersection.
    b. Tightening up turning radii at access points along University Drive.
15. Replace any existing crosswalks with high-visibility crosswalk markings; integrate these markings into any new crosswalks introduced at the intersection.
16. Support city-led initiatives like the University-Medical Bus Rapid Transit (BRT) project to help make University Drive safer and more accessible.

Concluding Statement

The series of design flaws present along University Drive and at the crash location are dangerous and common, both within and beyond Huntsville. Design emphasis that prioritizes traffic flow at high speeds over non-motorist safety and usability has caused injuries and deaths in communities across Alabama and in locations throughout North America.

By evaluating the numerous factors that contribute to a crash, we believe that designers, decision-makers, and the general public can move beyond the current approach, which seeks only to assign blame to involved parties, to a model that helps change the way these spaces are designed, developed, and cared for. In Huntsville, we believe substantive changes to this intersection should prioritize cyclist safety and non-motorist accessibility alongside motorist roadway usage.