Crash Analysis Studio

Session 14: San Antonio, Texas
Held on February 23, 2024

Session Participants:

- **Joey Pawlik**, Executive Director of ActivateSA; native San Antonian, bike commuter, transit user, and walker; Dwight David Eisenhower Transportation Fellow; holds a Master of Science in Urban and Regional Planning from The University of Texas at San Antonio
- **Alex Cereuceta**, Fraud analyst for a large bank; Filmmaking and audiovisual arts student; traffic safety enthusiast; concerned local resident
- **Yamini Karandikar**, process improvement strategist in the utility industry; concerned local resident; Strong Towns member; Leader of San Antonio Urbanists
- **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 5:59pm Central Time (CT) on May 12, 2023.

- The crash report states the following:
    - Vehicle A, a Toyota Highlander, was driving north on Old Grissom Road and prepared to take a left turn to head west on Grissom Road.

    - The driver of the Highlander believed that Vehicle B was preparing to turn onto Old Grissom.

    - Vehicle B, a Lexus IS, was actually traveling east on Grissom Road and hit the Highlander as it pulled out into the intersection.

    - There were no fatalities and no injuries.

    - The damage severity for each car ranked at a 4 out of 7.

    - The primary causal factor is listed as failure to yield during a left turn.

- The crash report did not indicate if witness statements were gathered.

- San Antonio weather reports indicate it was cloudy in the mid-80s on the evening of May 12, 2023.

- The speed limit on Grissom Road is 45 miles per hour (mph); the speed limit on Old Grissom Road is 35 mph.

Primary Contributing Factors

Grissom Road and its intersection with Old Grissom Road are impacted by several crucial design deficiencies that heighten the likelihood of collisions.

The design of Grissom Road in particular illustrates inadequate concern for motorists by prioritizing speed and volume above all else. Transportation professionals and designers have elected to use design standards such as wide passing lanes and a continuous center turn lane to achieve higher travel speeds disregarding the intersection local streets providing the only access to adjacent land uses.

Transportation professionals and designers have elected to use one stop sign to facilitate the flow of motorists from Old Grissom Road as they travel both eastbound and westbound on Grissom Road. Motorists' margin for error is slim when they are expected to maneuver their vehicles from a complete stop into traffic with a 45 mph speed limit; this margin is even slimmer for left-turning westbound motorists who must travel across two lanes of oncoming traffic.

Designers recognize some motorists make mistakes–while denying the fallibility of other drivers and non-motorists–through select features. A primary example of this is the excessive width of the five lanes across Grissom Road. The outer through traffic lanes and the center turn lane all exceed the twelve foot width that is considered typical on highways and high-speed roadways. These lanes make some motorists comfortable traveling at a design speed higher than the posted limit and encourage passing, while overall lane width variance may confuse some drivers and lead to unpredictable movements.

Along Grissom Road and at its intersection with Old Grissom Road, transportation systems for motorists have been planned and implemented with dangerous levels of incompatibility; this incompatibility may make non-motorist travel in this area dangerous enough for cyclists and pedestrians to rationalize avoiding the location altogether.

Transportation and design professionals have chosen to expose motorists to unnecessary, sizable risk by placing them in an environment that, despite its adjacency to multiple community destinations like churches and schools, has been constructed to prioritize high-speed traffic flow over all other objectives. At intersections like the one between Grissom Road and Old Grissom Road, demonstrable safety improvements and further preventative measures still need to occur. Substantive, incremental changes to Grissom Road and similar residential area roadways are necessary to reduce traumatic injuries and fatalities.

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

1. **Both the documented travel speed and the design speed of Grissom Road are incompatible with automobile traffic from Old Grissom Road.**
    a. The stop sign on Old Grissom Road at this intersection often creates a bottleneck of traffic and necessitates motorists to rush onto Grissom Road–an environment with a lethal speed limit and an even higher design speed.
    b. The current speed limit on Grissom Road is 45 mph.
        i. A speed study indicated that 46% of motorists exceeded the posted limit.
        ii. This study stated the 85th percentile speed, or the speed which 85% of drivers were traveling or below, to be 48 mph.
        iii. Of the 293 motorists tracked during the study, Though only five of the 293 motorists tracked during the study were driving at or above 55 mph, 131 motorists were traveling between the posted limit and 55 mph. This data distribution suggests that this space is communicating to drivers that speeding is a low-risk behavior in this environment.
        iv. Data from the Insurance Institute for Highway Safety (IIHS) illustrates there is a direct relationship between higher speed limits resulting in higher travel speeds and, in turn, an increase in collision-related fatalities. According to crash tests conducted by IIHS, Humanetics, and the AAA Foundation for Traffic Safety, a slight speed increase from 40 mph to 50 mph can substantially raise risk of injury and fatality for motorists in car-on-car collisions.
            1. Given the posted speed limit of 45 mph on Grissom Road, many of the speeds documented in this area either approach–or surpass 40 mph; fifteen percent (44) of the 293 cars tracked during the study were traveling at or above 50 mph.
            2. Side-impact collisions can also be more deadly at lower speeds than head-on collisions due to the fact the side of the vehicle offers less protection than the rear or the front.
            3. Vehicle travel speeds on Grissom Road subject motorists and non-motorists to substantial danger and risk.

2. **The motorist driving the Toyota Highlander failed to yield to oncoming traffic during their left-hand turn onto Grissom Road.**
    a. The crash report and media sources indicate this crash would have been prevented if this driver had yielded to oncoming traffic.
    b. This failure to yield may be attributable to other contributing factors, specifically the roadways' travel speed incompatibilities and possible sight line obstructions.

3. **Both Grissom Road and its intersection with Old Grissom Road feature design components that demand motorists engage in complex decision-making; minimal margin for error means these decisions may result in high-risk behavior.**
    a. Grissom Road is a five-lane roadway that permits southbound left turns onto Old Grissom Road; Old Grissom Road allows eastbound and westbound turns (right and left turns) onto Grissom Road.

i. These turns may induce stress for motorists as they attempt to estimate clearance across multiple lanes of traffic.
ii. Exposure to environmental stresses while driving may psychologically impact motorists' and influence their risk management practices.

b. Grissom Road facilitates high speed motor vehicle travel due to the widths of its five travel lanes, which range from eleven feet to fifteen and a half feet.
i. The Federal Highway Administration (FHA) and the American Association of State Highway and Transportation Officials (AASHTO) indicate neighborhood streets should adhere to standard lane widths between nine and twelve feet.
ii. The widths of both outer through traffic lanes and the center turn lane surpass twelve feet and may make drivers comfortable enough to drive beyond a safe speed.
iii. The present width variation on Grissom Road is irregular enough to affect the ability of drivers to judge safe merging and turning movements.

c. Grissom Road's varying lane widths and the overall geometry of the intersection, including Grissom Road's curve, may create blind spots and heighten motorist uncertainty or confusion.
i. The road curve may obstruct sight lines for motorists occupying the Old Grissom curb lane as they try to assess eastbound oncoming traffic.
ii. Grissom's continuous center turn lane with painted left arrows may be confusing for drivers when there are no existing driveways or streets.
iii. Large profile vehicles–such as large trucks exiting the Grissom Concrete Plant–may be driving at a slower speed and obstruct the visibility of a passing vehicle.

4. **Communities surrounding the crash location lack alternative east-west connections and thus remain dependent on Grissom Road and its many access points for travel, including local trips.**
a. There is a lack of interconnectivity of local streets amongst surrounding neighborhoods that, in many circumstances, may make car trips via Grissom Road unavoidable; this increases the likelihood of similar crashes in the future on Grissom Road.
b. While some neighborhoods have the benefit of a signal to at least one community entrance, the Golden Harvest neighborhood and Grissom Concrete Plant do not.
c. The lack of interconnectivity using sidewalks and bikeways between community establishments and neighborhoods may make travelers more likely to use their car; infrastructure built to prioritize automobile travel over all other objectives increases reliance on privately operated vehicles over other transit modalities.

5. **Specialized traffic moving through this intersection and the surrounding area makes transit patterns reliant on the existing road network less predictable.**
a. A daycare, two elementary schools, and two or more churches are all within a few minutes drive of this intersection.

b. A cement quarry and an industrial power station are accessible from Old Grissom Road and frequented by large trucks and tractor trailers.
c. All of these destinations affect traffic flow, variability, and–by extension–how drivers interact with one another and the built environment; motorist expectations for navigating this space may vary significantly between non-peak times and high traffic volume periods.

6. **Grissom Road has been characterized as a loud and distracting environment, which may impact motorist mentality and decision-making.**
    a. High speed traffic along Grissom Road creates noise that–according to local motorists and residents–is comparable to noise levels along highways.
    b. Some residential housing backs up directly to Grissom Road and is only separated from traffic by a fence; these residents also suffer from noise pollution created along Grissom.

7. **Old Grissom Road is characterized as a "short-cut" for trips that could otherwise be made on Timber Path**.
    a. The traffic signal and dedicated turn lanes on Culebra Road encourage drivers to use Old Grissom Road.
    b. Old Grissom Road provides access to two destination businesses, an automobile salvage yard and a shed shop, which are low trip generators.
    c. Local experts describe Old Grissom Road as a short-cut, but explained that it takes the same amount of time and is easier to make turns at the intersection of Grissom and Timber Path.

8. **Grissom Road is a thoroughfare that is a mix between a street and a road, a type of hybrid road design commonly referred to as a stroad[1].**
    a. Common in the United States and Canada, stroads are wide arterials that often provide access to strip malls, suburban subdivisions, drive-throughs, and other automobile-oriented businesses.
    b. The geometric design of Grissom Road encourages high-speed, fluid connectivity to move people from one productive location to another.
    c. The adjacent land uses, intersection of local streets, and multiple private driveways encumber the design intent of a road, because drivers are required to unexpectedly stop to make turns.
    d. The mixing of speeds and land uses along Grissom Road result in drivers describing the experience as scary and unpredictable.

Recommendations

City leadership, technical staff, and community members should agree upon the desired user behavior along Grissom Road–particularly at its intersection with Old Grissom Road–as the first step toward improving safety at the collision location for motorists and all road users. This policy

[1] The Stroad (October 2017); What is a Stroad (March 2024)

decision on street character needs to be made with the acknowledgement that Grissom Road is the only access route for multiple residential neighborhoods and commercial destinations.

If Grissom Road is to be treated as a roadway that prioritizes high-speed traffic flow, significant and costly infrastructure modifications need to be made. Multiple private driveways and streets will need to be closed so that drivers cease unexpected stops to make turns. Left-turn movements that expose motorists to multiple lanes of oncoming traffic will need to be restricted. Highway style acceleration and deceleration lanes will need to be added to the existing infrastructure; signals will need to be limited to only the most critical locations so they do not impede traffic flow. This approach–one that prioritizes traffic flow–will increase speed and volume at the cost of overall safety.

If Grissom Road is to be treated like an urban street, the safety of all users at the crash location and along Grissom Road must be prioritized above high speed, free-flow traffic. Policy-level decisions need to be made to shift the current approach.

Old Grissom Road serves two to three destination businesses with limited traffic generation, and duplicates turn movements that can be made at nearby intersections that are already signalized, such as Grissom Road and Misty Way Street. Community members and city staff may be interested in redirecting traffic on–or altogether removing traffic from–Old Grissom Road toward nearby intersections that are already signalized. Further financial investments for signals and controlled intersections may be better spent providing access to Harvest Meadow Street and to the Cemex Concrete Plant where access is currently limited and there are existing productive land uses.

Following any policy decisions, city departments should coordinate with the clear objective of taking necessary actions within their respective scopes, using their available resources, to undertake immediate improvements. An urgent and immediate action might include revisiting the plan to construct a traffic signal at the Grissom Road and Old Grissom Road intersection. Municipal staff should be encouraged to attend to any intersection upkeep items, such as sign maintenance and replacement, to help prevent any further serious injuries or fatalities at this intersection and other intersections along Grissom Road.

If Grissom Road is to be treated as an urban street, there are multiple ways to address the outlined factors and minimize the likelihood of future collisions, fatalities, and traumatic injuries. At the intersection of Grissom Road and Old Grissom Road, the following practices should be adopted:

Immediate:

1. Review the plans prior to the installation of a traffic signal at this intersection and review if this investment will actually address the underlying factors that are causing crashes in the first place.

    a. During this review period, implement any feasible, low-cost immediate and near-term recommendations to heighten safety at this location and along Grissom Road.
    b. If it is determined that this signal does not address the underlying factors resulting in crashes at this intersection, do not be afraid to halt the installation.
2. Utilize temporary barriers, signage, and paint, to eliminate all left turns from and onto Old Grissom Road.
    a. The primary contributing factor to this crash was a left-hand, westbound turn onto Grissom Road; local experts identified that this same turn can be made safely at Timber Road where there is an existing signal.
    b. Utilize temporary barriers and signage on Old Grissom Road and in the center turn lane on Grissom Road to eliminate the need for this intersection
        i. This temporary measure will eliminate the conflict identified as a primary contributing factor to this crash and will encourage drivers to use other existing signalized intersections.
        ii. Close the center turn lane on Grissom Road to prevent left-hand, southbound turns onto Old Grissom Road; this will eliminate high-risk decision-making likely to cause future crashes similar to the one analyzed in this studio session.
3. Utilize temporary barriers to close Old Grissom Road to through traffic:
    a. Add temporary barriers and signage on Old Grissom Road at its intersection with Grissom Road and at the driveway of the last active user on Old Grissom Road to eliminate the need for this intersection.
    b. This temporary measure will eliminate the conflicts identified as the contributing factors to this crash and will encourage drivers to use other existing signalized intersections.
4. Implement quick, low-cost traffic calming measures like painted narrow lanes, rumble strips, or visual optical narrowing cues to encourage motorist speed reduction.
5. Utilize barrels, cones, and barriers to construct a temporary roundabout that encourages speed reduction at this intersection.
6. Form an interdisciplinary team of staff from multiple city departments to act as rapid responders[2] to automobile collisions. This team should be responsible for documenting contributing factors of a crash; grant them agency to immediately implement short term or temporary improvements to the street. For this crash, charge the team with immediate recommendations from this report as well as recommendations for systematic, long-term changes.

Near Term (within the next 12 months):

7. Plant street trees along both sides of Grissom Road to support optical narrowing and travel at slower speeds.
8. Utilize paint and temporary materials to create a continuous center median or islands within the Grissom Road center turn lane area that stretches between Harvest Meadow

[2] For more information on rapid response models, see Pedestrian Safety Gets Big Boost From New Cincinnati Initiative (January 2023).

Street and Misty Way Street; these islands will break up accumulated traffic and increase optical narrowing for through traffic.

9. Initiate a community engagement campaign to solicit feedback from local residents willing to be involved in decision-making for long-term changes to Grissom Road, Old Grissom Road, and other intersecting streets or roadways along Grissom.

Long Term and Systematic:

10. Implement a road diet on Grissom Road by:
    a. Narrowing the existing lanes and standardizing widths to reduce the speed of through traffic, heighten visibility for northbound motorists on Old Grissom Road that are turning either east or west onto Grissom Road, and lower the likelihood of future collisions.
    b. Reducing the number of lanes from five to three or two, depending upon the vision for traffic flow into and out of this intersection.
    c. Implementing a protected multi-use path (MUP) by utilizing bollards, barrels, or temporary barriers to encourage safer travel outside of privately owned vehicles.
    d. Making provisions for a more permanent roundabout if a temporary roundabout is deemed a success.
11. Overhaul the infrastructure at this location and along Grissom Road by:
    a. Permanently closing or significantly modifying access to Old Grissom Road.
    b. Reducing the number of lanes for automobiles at this intersection to two or three and repurposing additional space for a protected MUP, bike lane, or permanent median.
    c. Better connecting Grissom Road into the existing public transportation system and any of its upcoming expansions, such as new rail stops.

Concluding Statement

The series of design flaws present along Grissom Road and at the collision location are dangerous and common, both within San Antonio and in other locations. Design emphasis that prioritizes traffic flow at high speeds over motorist usability has caused injuries and deaths in communities across Texas and in areas throughout North America.

By evaluating the numerous factors that contribute to a crash, we believe that decision-makers, designers, 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 developed and cared for. In San Antonio, we believe substantive changes to this intersection should prioritize road user accessibility and safety over high-speed traffic flow.