Critique of 2021 Reverse Lanes Study

The 2021 Phoenix Reverse Lanes Traffic Study falls short in several critical areas, particularly when measured against the "Safer 7's Study Overview." The significant omissions and methodological flaws within the 2021 study weaken its conclusions and recommendations.

High Crash Rate

The 2021 study fails to compare the crash rates on 7th Street and 7th Avenue with those on non-reverse lane corridors such as 19th Avenue and 16th Street. According to the "Safer 7's Study Overview," the crash rate on the 7's is double that of non-reverse lanes, even after adjusting for traffic volume. This contradicts the 2021 study's assertion that reversible lanes are safe.

Severe Impact on Non-Motorists

While the 2021 study briefly mentions pedestrian and bicycle crashes, it does not adequately address the disproportionate impact on non-motorists. The "Safer 7's Study Overview" indicates that non-motorists, although involved in only 1% of crashes during reverse hours, account for 82% of fatalities. This critical safety issue is overlooked in the 2021 study.

Significant Negative Economic Impact

The 2021 study does not quantify the economic impact of crashes on the 7's. The "Safer 7's Study Overview" states that crashes have cost taxpayers over $316 million in the last 20 years and have had negative effects on local businesses. This substantial economic impact is not addressed in the 2021 study.

Little to No Benefits

The 2021 study focuses on the operational benefits of reversible lanes but fails to acknowledge the time delay costs associated with additional injury crashes. According to the "Safer 7's Study Overview," these crashes cost commuters 15 minutes of travel time daily.

By omitting these crucial data points, the 2021 Phoenix Reverse Lanes Traffic Study presents an incomplete and potentially misleading picture of the reversible lanes' impact. The "Safer 7's Study Overview" fills these gaps, revealing the significant safety risks, economic costs, and lack of benefits associated with the reversible lanes. This additional information challenges the 2021 study's conclusions and calls for a more comprehensive and balanced assessment of the reversible lanes' overall impact.

Failure to Compare

The study's failure to compare the 7th Avenue and 7th Street reversible lanes to the nearly identical 16th Street and 19th Avenue corridors is a glaring omission. 16th Street and 19th Avenue serve as ideal comparison groups due to their similar roadway characteristics, traffic patterns, and proximity to the reversible lane corridors. By neglecting this comparison, the study missed a crucial opportunity to assess the unique impact of reversible lanes on traffic flow, safety, and overall transportation efficiency.

This omission is particularly irresponsible given the study's stated goal of identifying strategies to improve traffic operations and safety. Without a proper comparison to similar corridors, it is

impossible to isolate the effects of reversible lanes and determine whether they are truly the most effective solution. The study's recommendations, therefore, lack a solid empirical foundation and may not be the most appropriate or cost-effective measures for addressing the identified issues.

Furthermore, this omission raises concerns about potential biases within the study. By not comparing the reversible lanes to similar corridors, the study avoids a direct assessment of their effectiveness, potentially favoring a predetermined outcome or agenda. This lack of transparency and rigor undermines the study's credibility, and casts doubt on its conclusions and recommendations.

Incorrect Traffic Counts

The 2021 Phoenix Reverse Lanes Traffic Study reports existing annual average daily traffic (AADT) volumes ranging between 35,000 and 62,000 vehicles per day on 7th Avenue (pg. 15) and between 46,000 and 65,000 vehicles per day on 7th Street (pg. 27). However, an independent review of 49 traffic studies in the area found no study supporting these figures, with the highest observed AADT closer to 45,000.

Confused by traffic counts over 60,000, the search for the source did not take long. A single traffic study (PHX-A107) showing an AADT of 65,000 vehicles on 7th Street was identified using Maricopa Association of Government's ("MAG") repository.. A traffic engineering degree was not needed to determine the count was an error. A cursory review of that study's data reveals a simple mistake where traffic counts were counted twice during data entry.

Despite being a simple mistake, the impact of this error ripples throughout all of the 2021 study including their conclusions which were also reached in error. The fact that the 2021 study used this inflated figure without further investigation or verification is a significant methodological flaw. It demonstrates a lack of due diligence in data collection and analysis, raising concerns about the overall rigor and reliability of the study's findings.

This discrepancy raises serious concerns about the validity of the study's traffic volume data. If the actual traffic volumes are indeed much lower than reported, it would have profound implications for the study's conclusions and recommendations. Specifically, the study's claim that reversible lanes are necessary to accommodate high traffic volumes would be unfounded. Lower traffic volumes would suggest that the existing infrastructure might be sufficient to handle the traffic demand even without the reversible lanes. This could lead to a reassessment of the need for reversible lanes and potentially different recommendations for improving traffic flow and safety in the area.

Impact on Simulations: Garbage In; Garbage Out

Using incorrect traffic counts in the simulation models leads to several significant issues:

Inaccurate Representation of Reality: The simulation models are designed to replicate real-world traffic conditions. Incorrect input traffic counts mean the models will not accurately represent the actual traffic flow and patterns on 7th Avenue and 7th Street, leading to flawed conclusions about the effectiveness of the reversible lanes and the impact of potential improvements.

Misleading Results: The simulation results, such as travel times, delays, and levels of service, would be unreliable and misleading. For example, if the traffic counts are overestimated, the models might show higher congestion levels than what actually exists, leading to the false conclusion that reversible lanes are more necessary than they truly are.

Ineffective Recommendations: Recommendations derived from flawed simulation results would likely be ineffective or counterproductive. If the model suggests adding more lanes or

extending the hours of reversible lane operation based on inflated traffic counts, these measures might not be justified and could lead to unnecessary costs and disruptions.
Wasted Resources: Basing decisions on inaccurate simulation results could lead to the misallocation of resources. Investments in infrastructure improvements or traffic management strategies might be directed towards areas where they are not needed while neglecting other areas that require attention.
Negative Impacts on Public Trust: If the public becomes aware that the study's findings are based on flawed data, it could erode trust in the study's conclusions and recommendations, hindering future efforts to improve transportation infrastructure and traffic management in the city.

Misinterpretation of Percentages

The 2021 Phoenix Reverse Lanes Traffic Study's misinterpretation of percentages is evident in its comparison of crash distributions between reversible lane operation and standard operation on 7th Avenue and 7th Street. The study presents these distributions as percentages, which inherently sum to 100%. This creates a misleading impression because a decrease in one crash type percentage necessarily leads to an increase in another, even if the total number of crashes remains constant or increases.

For example, the study highlights a lower proportion of injury crashes during reversible lane operation (16.8%) compared to standard operation (17.3%) on 7th Avenue. However, this decrease is a mathematical artifact of the higher percentage of property damage only (PDO) crashes during reversible lane operation (73.8% vs. 69.7%). The study fails to acknowledge that the absolute number of injury crashes could still be higher during reversible lane operation if the total number of crashes has increased.

This misinterpretation of percentages can lead to a false sense of security regarding the safety of reversible lanes. A decrease in the percentage of a certain crash type does not necessarily equate to improved safety if the overall crash risk remains the same or increases. To accurately assess safety, it is crucial to consider the absolute number of crashes and normalize the data by traffic volume.

The study's flawed approach is further exemplified by its comparison of crash distributions to statewide averages. For instance, it highlights that 7th Avenue experiences a higher proportion of PDO crashes than the statewide average. However, this comparison is misleading because it does not account for potential differences in traffic volume and road characteristics between 7th Avenue and the statewide average. A higher percentage of PDO crashes could simply reflect a lower overall crash rate on 7th Avenue due to lower traffic volume or other factors.

To avoid these pitfalls, the study should have focused on crash rates per vehicle mile traveled (VMT) instead of relying solely on percentages. This would have provided a more accurate and meaningful comparison of safety between different road segments and operating conditions.

Conclusion

The 2021 Phoenix Reverse Lanes Traffic Study is marred by significant methodological flaws and omissions that undermine its conclusions and recommendations. By failing to adequately compare the crash rates on reverse lanes to non-reverse lanes, misinterpreting traffic counts, relying on flawed simulation models, and misrepresenting crash data percentages, the study presents an incomplete and potentially misleading picture of the impact of reversible lanes. A more

comprehensive and balanced assessment is necessary to accurately evaluate the safety, economic impact, and overall effectiveness of reversible lanes in Phoenix.