



Final Report

AI-Powered Community Insights for Strategic Physical Transportation Infrastructure Management

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May 5, 2026

ACKNOWLEDGMENT

This research was supported by the Safety and Mobility Advancements Regional Transportation and Economics Research Center at Morgan State University and the University Transportation Center(s) Program of the U.S. Department of Transportation. GPT-4o-mini was used to aid in proofreading the manuscript.

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1. Report No. SM09	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle AI-Powered Community Insights for Strategic Physical Transportation Infrastructure Management		5. Report Date September 2025	
		6. Performing Organization Code	
7. Author(s) Kathryn A. Kennebeck, Graduate Student Researcher, 0000-0001-5188-0595 Mason Smetana, Graduate Student Researcher, 0009-0009-4130-3781 Igor Sukharev, Graduate Student Researcher, 0009-0006-6732-1986 Lev Khazanovich, Anthony Gill Chair Professor, 0000-0002-8422-9181		8. Performing Organization Report No.	
9. Performing Organization Name and Address University of Pittsburgh 4200 Fifth Ave, Pittsburgh, PA 15260		10. Work Unit No.	
		11. Contract or Grant No. 69A3552348303	
12. Sponsoring Agency Name and Address US Department of Transportation Office of the Secretary-Research UTC Program, RDT-30 1200 New Jersey Ave., SE Washington, DC 20590		13. Type of Report and Period Covered Final	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract			
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19. Security Classif. (of this report): Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 176	22. Price

Table of Contents

Abstract.....	1
1 Introduction.....	2
2 Literature Review	3
2.1 Principles of Human-Centered Transportation Infrastructure.....	3
2.2 The Overlooked Role of Physical Infrastructure in Addressing Community Needs	4
2.2.1 Highways	4
2.2.2 Pavements	5
2.3 Gaps in Literature.....	9
2.4 Public Participation to Address Infrastructure Gaps	9
2.4.1 Public Participation and Community Engagement.....	9
2.4.2 Identifying Infrastructure Deficiencies Through Public Feedback.....	10
2.4.3 The Limits of Existing Public Engagement Practices.....	10
2.4.4 Collection Methods and Data Challenges.....	11
2.5 Automating Public Feedback Analysis: From Statistical Methods to the Generative A.I. Era .	11
2.5.1 Statistical Methods for Feedback Analysis.....	11
2.5.2 The Shift Towards Machine and Deep Learning.....	11
2.5.3 Early Applications of Large Language Models (LLMs) for Feedback Analysis	12
2.6 Linking Public Feedback to Population Characteristics	12
3 Methodology.....	13
3.1 Research Design and Process Overview	13
3.2 Data Acquisition and Spatial-Demographic Integration	14
3.3 Topic Modeling and Text Clustering Overview	18
3.3.1 BERTopic Framework and NLP Pipeline.....	18
3.3.2 Validation Strategy	19
3.3.3 Initial Clustering and Analysis.....	20
3.3.4 Final Clustering and Analysis.....	22
3.4 Public Participation Analysis by Census Tract Groupings	23
4 Results and Discussion	23
4.1 Clustering of Public Comments	23
4.2 Subtopic Modeling for Thematic Refinement.....	32
4.3 Geographic-Based Differences in Public Infrastructure Feedback	39
4.3.1 Roadway Repair Feedback by Census Tract Group	42

4.3.2	Bridge Feedback by Census Tract Group	43
4.3.3	Sidewalk Feedback by Census Tract Group	44
4.3.4	Assessment of Roadway Surface Roughness Across Census Tract Groups.....	45
4.3.5	Pavement Conditions, Safety, and Traffic Flow	47
5	Conclusion	48
	References.....	50

List of Figures

Figure 2.	Map of Pennsylvania with counties comprising Southwestern Pennsylvania (SWPA)	15
Figure 3.	Feedback Count by Census Tract throughout the entire SWPA (Left), and Allegheny County only (Right)	16
Figure 4.	Word clouds for the final 14 clusters	27
Figure 5.	Distribution of physical infrastructure-related comment topics	32
Figure 6.	Number of responses for each cluster from census tract Groups A, B, and C.	39
Figure 7.	Distribution of feedback counts for Cluster 1 Road Repairs based on census tract (a) Group A, (b) Group B, and (c) Group C.	40
Figure 8.	Distribution of feedback counts for Cluster 5 Bridges Repair based on census tract (a) Group A, (b) Group B, and (c) Group C.	41
Figure 9.	Distribution of feedback counts for Cluster 11 Sidewalk Access and Safety based on census tract (a) Group A, (b) Group B, and (c) Group C.	42
Figure 10	Average International Roughness Index (IRI) values by census tract based on census tract (a) Group A, (b) Group B, and (c) Group C.	47

List of Tables

Table 1.	Public Comments by Census Tract Groups.....	17
Table 2	Initial clusters of public comments	23
Table 3.	Merging and Reassignment of Clusters	26
Table 4	Descriptions of Physical Infrastructure-Related Topic Clusters	29
Table 5	Descriptions of Clusters related to Traffic Flow, Intersection, and Transit	30
Table 6	Descriptions of Non-Motorized User Infrastructure and Safety Related Topic Clusters.	31
Table 7.	Descriptions of Subtopics of a Road Repair Cluster.....	34
Table 8	Descriptions of Subtopics of Sidewalk ADA Cluster	36

Abstract

This study examines how community feedback can inform transportation asset management, a field that has traditionally relied on physical condition metrics such as pavement age and roughness. Using 925 public comments collected by the Southwestern Pennsylvania Commission, the study applies a semi-automated workflow combining generative AI, natural language processing, and topic modeling to transform unstructured feedback into actionable themes. The comments were geolocated, linked to census tract income data, and analyzed with BERTopic to identify recurring concerns. Of the 925 comments, 864 were successfully geolocated and used in the tract-level analysis. The analysis produced 14 thematic clusters organized into three broad categories: Physical Infrastructure, Traffic Flow and Transit, and Non-Motorized User Safety. Approximately 30% of the comments focused directly on physical infrastructure concerns, including pavement condition, roadway design, and repair needs. A comparison with International Roughness Index data shows that community sentiment complements traditional performance measures by capturing concerns not visible in engineering metrics alone. The results also indicate differences in the type and urgency of concerns across census tracts. Overall, this study demonstrates that AI-assisted analysis can help transportation agencies process public input at scale and integrate community priorities more effectively into infrastructure decision-making.

Keywords: Transportation Infrastructure, Artificial Intelligence, Natural Language Processing, Large Language Models, Pavements

1 Introduction

The state of a community's transportation infrastructure system has far-reaching impacts on economic development, quality of life, and public health (Khalife et al., 2023). Given these wide-ranging effects, it is critical to adopt practical and data-driven strategies that help ensure that maintenance and repair efforts are balanced and responsive to community needs (France-Mensah et al., 2019). When such needs are deliberately accounted for, the foundation can be laid for a more human-centered asset management framework—one that prioritizes not only system efficiency and durability but also the lived experiences of residents who depend on these networks.

Contemporary urban planners often analyze how transportation services and resources are distributed among stakeholders in the context of limited financial resources and widespread mobility challenges (Cantilina et al., 2021; Chen & Wang, 2020). Periodic rebalancing of funds among stakeholders is often necessary, but decision-makers must have a deep understanding of community needs to effectively address the complexity of such challenges (Liu & Meidani, 2023; Lewis et al., 2021). To that end, having clear, measurable ways to assess how transportation infrastructure affects residents' lives is also critical (Bills, 2022; Lyons & Choi, 2021). One example of this approach would be to evaluate how effectively residents in different neighborhoods are able to access essential goods and services. Such an approach could evaluate how suboptimal roadway conditions and frequent short-term rehabilitation strategies on critical corridors impact residents' daily trips.

It is important to recognize that while this more human-centered approach to transportation planning has received considerable attention, its application to physical infrastructure, such as roads, bridges, and particularly pavements and highways, remains understudied. Extending community-focused principles to the realm of infrastructure management highlights how decisions about roadway maintenance, rehabilitation, and investment directly shape social and economic opportunities where residents live. Applying existing human-centered transportation principles to pavement engineering can help us better understand these impacts and support more responsive planning. Balanced pavement planning and financing play a critical role by ensuring that resources are allocated effectively (Gandy, Armanios, & Samaras, 2023; Erfani, Mahmoudi, & Cui, 2024).

More actively considering the lived experiences of residents has significant implications for safety and community well-being in pavement asset management. Doing so reduces the economic impacts of poor pavement conditions and improves access to essential services for all residents (Kothari, France-Mensah, & O'Brien, 2022; Kothari, O'Brien, Jiao, & Khwaja, 2023). Achieving these outcomes, however, requires not only technical planning and financing strategies but also a deeper understanding of lived experiences within affected communities.

Public feedback is broadly acknowledged as pivotal in transportation planning and maintenance, serving as a valuable framework for research on public services. It is an often-overlooked domain of pavement infrastructure management, however. While many planning models utilize performance metrics and asset inventories, public feedback provides crucial community insight, highlighting the serviceability of its infrastructure. However, the collection of public feedback is

typically in the form of open-ended comments, which require labor-intensive review. As a result of this time-consuming process, public feedback is often underutilized or has limited scalability. These limitations prevent planners, engineers, and local officials from leveraging such feedback to identify physical infrastructure service gaps, prioritize physical infrastructure maintenance needs, and inform more community-responsive physical infrastructure decisions. As a result, many traditional asset management strategies rely on quantitative data, such as the International Roughness Index (IRI), to guide their decision-making. While these metrics are important, they fail to capture intangible qualities of the infrastructure gained through public participation. Addressing this challenge requires innovative approaches that can process community input at scale while preserving the importance of local perspectives. Recent advancements in Artificial Intelligence (AI), specifically in Natural Language Processing (NLP) and Large Language Models (LLMs), enable rapid analysis of unstructured text data. LLM-supported clustering techniques can detect the semantic content of comments, group similar concerns, and identify emergent themes. Agencies can utilize this technology to integrate public input regarding transportation improvement needs more efficiently and detect variation amongst them.

This investigation explores the development of a methodology for semi-autonomously analyzing such feedback. It utilizes these LLMs to assist in identifying physical infrastructure-related concerns in public comments, as well as to assess geographic variation in the priorities and urgency of these infrastructure improvement needs. While the concept of human-centered transportation has received growing attention in areas like service delivery, its application to physical infrastructure decision-making remains relatively understudied. This study directly responds to that gap by connecting existing principles of human-centered transportation with decisions about roadway and asset management, emphasizing how such integration can better address the needs of under-resourced areas. A large dataset of public comments collected by the Southwestern Pennsylvania Commission (SPC) was analyzed using a multi-step approach that included topic modeling, geospatial analysis, and correlation with demographic data.

2 Literature Review

This literature review synthesizes research on human-centered transportation infrastructure, focusing on how access, safety, and condition shape physical asset decisions. It then examines literature on highway and pavement management, community engagement, and public feedback analysis to show how transportation research has treated physical infrastructure and resident input as related but often separate concerns. The review concludes by identifying the gap that this study addresses: limited work connecting community feedback, AI-assisted text analysis, and physical infrastructure management in a way that supports more responsive asset decisions.

2.1 Principles of Human-Centered Transportation Infrastructure

Human-centered transportation infrastructure centers around providing consistent and safe access to essential goods and services for all residents. In many transportation systems, geographic variation in mobility needs and infrastructure conditions has been documented across census tracts (Tammaru et al., 2023). Some areas face insufficient transit services, high transit fares, and

deteriorating infrastructure (El-Geneidy et al., 2016). These challenges are often shaped by urban land use patterns, such as high housing costs, median income level, and displacement pressures that push households in certain areas to outlying areas with limited transit service (Tammamaru et al., 2023; Arellana et al., 2021), which may be further exacerbated by inadequate physical infrastructure. Traditionally, metrics like median household income have been used to categorize income levels (Coppola and Marshall, 2020; Jin and Sui, 2024).

2.2 The Overlooked Role of Physical Infrastructure in Addressing Community Needs
Human-centered planning in transportation cannot be achieved without a physical infrastructure system that supports connectivity, including roads, bridges, and utilities. Much of the current research looks to public transportation and walkability to achieve these goals, but devotes significantly less attention to the topic of resource allocation.

2.2.1 Highways

Highways are integral to human-centered transportation, serving as vital links that connect communities, drive economic growth, and influence regional development (Cantilina et al., 2021). The literature explores highways on a network-wide scale, addressing topics such as roadway asset management, funding mechanisms, and development.

Asset management is essential to maintaining highway quality and prioritizing repairs and upgrades uniformly and effectively. Traditional funding mechanisms face increasing challenges as traditional sources like fuel taxes decline (Agbelie et al., 2021). Innovative funding models and multi-source revenue streams are necessary to sustain highway systems in ways that preserve both mobility and safety.

2.2.1.1 *Highway Funding*

The funding of highway projects involves analyzing costs, user groups, and benefits, which are essential for making informed financing decisions (Agbelie et al., 2021). Many states have evaluated taxes and fees across highway users with the aim of developing balanced funding mechanisms (Cunha et al., 2023), as many existing funding mechanisms make use of functionally regressive taxes like tolls or prioritize funding for neighborhoods with comparatively little need for maintenance and repairs.

In addition, the financial viability of highway funding has become increasingly urgent. As states face the looming insolvency of the federal Highway Trust Fund and declining fuel tax revenues, they are exploring various revenue strategies to adapt to evolving vehicle technologies and travel patterns (Agbelie et al., 2021). For instance, Oregon's State Highway Trust Fund combines gas taxes, vehicle registration fees, and weight-mile taxes on trucks, with a significant portion allocated to regional projects like those in metropolitan areas (Margerum, 2012). This model reflects the broader trend toward state-driven funding mechanisms, as federal contributions cover only a fraction of the total miles traveled on the interstate system (Agbelie et al., 2021; Durantón et al., 2020).

Rising construction costs, which escalated from \$20 million per mile in 2016 to \$70 million per mile in 2020, further strain traditional funding models and underscore the need for innovative

solutions (Duranton et al., 2020). While federal financial support for interstate construction and maintenance remains vital, a more comprehensive approach is needed to address increasing expenditures. By integrating traditional funding sources with new revenue mechanisms, states can meet the demands of modern highway infrastructure while ensuring balanced access for all users.

2.2.1.2 Asset Management

Effective asset management of highway infrastructure ensures efficient and balanced allocation of resources across regions (France-Mensah et al., 2019). State and local authorities are tasked with prioritizing maintenance needs and projects, making tradeoffs between safety, congestion management, and other goals to optimize mobility across the network (Gandy et al., 2023). Asset management in U.S. highway infrastructure has become increasingly essential as aging roads and limited traditional funding sources struggle to meet the rising depreciation costs (Novak et al., 2020). This gap has led to adopting strategic disinvestment, a deliberate reduction in asset investment to focus resources on the most critical areas for network functionality rather than simply underfunding maintenance due to budget shortfalls (Novak et al., 2020). Other innovative approaches, such as municipal turn backs, public-private partnerships, and flexible performance standards, provide practical ways to manage and optimize limited resources. For example, transferring certain roads to municipal control or selectively closing low-traffic assets helps balance maintenance needs with available funds. Additionally, modifying performance standards enables agencies to adapt to changing infrastructure conditions, ensuring that prioritized highways maintain operational standards even as less essential assets receive lower priority (Novak et al., 2020; Duranton et al., 2020).

2.2.2 Pavements

Pavement infrastructure's broad impact on the transportation network requires unique considerations, with surface quality directly affecting the safety and long-term resilience of roads, sidewalks, and other assets. Given that much of the pavement infrastructure in the U.S. suffers from delayed repairs and inadequate upkeep (Khalife et al., 2023; Erfani et al., 2024), particularly in certain geographic areas, effective management, maintenance, and rehabilitation (M&R) strategies are essential for minimizing service disruptions and ensuring reliability (Rahimi-Golkhandan et al., 2022).

Effective pavement practices also emphasize stakeholder engagement in planning and decision-making processes, often requiring transparent coordination structures (Doran et al., 2021). Engaging local participants not only ensures that infrastructure projects address varied needs but also leads to more effective solutions, enhancing mobility and safety for residents (Seyedrezaei et al., 2023). Residents affected by roadway projects offer valuable insights into local needs, helping to ensure that pavement projects consider practical quality of life concerns. As needs-responsive pavement practices evolve, they must adopt a holistic approaches that prioritize technical performance and broad usability.

2.2.2.1 High-Quality Pavements

High-quality pavement infrastructure is vital for supporting public and active transportation, as it facilitates access to essential services, cultural activities, and community resources, all of which are foundational to community well-being (Henke et al., 2020; Behbahani et al., 2019).

Introducing micro transit options and active mobility features, such as cycling lanes and walking paths, into urban roadway planning can expand access to these resources, especially for areas with limited infrastructure investment (Sanguinetti and Alston-Stepnitz, 2023). However, the effectiveness of these features depends on maintaining high-quality pavements. Poor pavement conditions not only pose safety hazards but also create mobility challenges, particularly for individuals who do not own private vehicles (Gil-Alonso et al., 2022).

In regions with high public transport usage, such as the central Puget Sound region in Washington, where nearly 367,500 residents rely on buses daily, the durability of a pavement plays a critical role in sustaining efficient transit systems (Margerum, 2012). Degraded pavement undermines the efficiency of public transport and restricts opportunities for social engagement, underscoring the importance of continuous investment in infrastructure quality. Without such investment, these communities risk further isolation due to declining mobility options and diminished connectivity.

The concept of the “20-minute city” provides a compelling example of how durable pavements contribute to balanced urban development. This model prioritizes pedestrian-friendly spaces and low-traffic neighborhoods, encouraging walking and cycling as part of everyday life (Gil-Alonso et al., 2022). Achieving this vision requires well-maintained pavements that create open and safe environments, particularly in certain geographic areas where pavement quality often falls short.

Similarly, policies promoting active transportation rely heavily on the availability of safe, resilient pavements. For example, discounted transit fares for cyclists or incentives for employees who walk or bike to work aim to increase participation in active transit modes (Okosun et al., 2023). These initiatives cannot reach their full potential without adequate infrastructure. Unsafe or deteriorated pavements compromise both safety and mobility, restricting residents’ ability to access essential resources and participate in economic and social activities (Henke et al., 2020; Behbahani et al., 2019).

Thus, ensuring the availability of durable and high-quality pavements is essential for building broadly effective transportation networks. By supporting public and active transportation options, well-maintained pavements strengthen mobility, reinforce social connection, and enhance quality of life for all residents.

2.2.2.2 Urban Pavement Conditions

Regional differences in the quality of transportation systems are often reflected in pavement conditions. Traditional planning methods, such as road pricing, frequently result in regressive taxation models, as was evident in the road pricing system adopted by Madrid, Spain (Ciommo and Lucas, 2014; Guzman et al., 2013). These outcomes underscore the need for infrastructure policies that prioritize the balanced provision of pavement assets.

2.2.2.3 Quality and Maintenance

Pavements face constant wear, especially under the action of heavy vehicular traffic, with trucks contributing disproportionately to deterioration due to the damage associated with axle weight. Overloading and intensive construction activities further exacerbate this damage, highlighting the need for comprehensive pavement management strategies. While maintaining pavements is crucial for infrastructure development, determining which sections require prioritized repair remains a complex challenge.

Departments of Transportation (DOTs) rely on pavement management systems (PMS) for maintenance and rehabilitation planning, aiming to optimize and prioritize road maintenance schedules. Even with theoretical advancements, many agencies face budgetary limitations that constrain proactive maintenance programs. Structured decision-making methodologies, such as the Analytic Hierarchy Process (AHP) and MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique), further support the prioritization of maintenance efforts under financial constraints. The integration of advanced analytical techniques, robust data management, and optimization models provides a comprehensive framework for addressing pavement quality and maintenance needs. By focusing on balanced resource distribution, transportation agencies can strengthen pavement infrastructure across a broad range of communities, promoting well-maintained roadways and enhancing overall infrastructure outcomes.

2.2.2.4 Planning and Financing

Balanced pavement planning and financing play a critical role by ensuring that resources are effectively mobilized to improve road conditions. Doing so means identifying the unique needs of different neighborhoods to address broader transportation issues through investment strategies, funding flexibility, public participation, project prioritization, and policy development.

To that end, local stakeholders often struggle to secure adequate funding through processes like Transportation Improvement Programs (TIP), where current structures tend to prioritize highway expansion over multimodal projects (Margerum, 2012). One promising strategy to deal with funding differences is participatory budgeting, which aligns resources with community-identified needs (Karner and Marcantonio, 2018). While this approach shows potential, further research is necessary to assess its effectiveness in achieving 40 balanced outcomes. Complementary funding options, such as those introduced under the SAFETEA framework, offer opportunities to maintain aging pavements and environmental resilience (Esmalian et al., 2022; Zhang et al., 2013). Balanced investments in pavement M&R also depend on effective project prioritization. Behbahani et al. (2019) proposed an entropy-based framework to guide project prioritization, ensuring that varied community needs are factored into decision-making. Additionally, comprehensive approaches like TJTIF (Beiler and Mohammed, 2016) and the DTN (FranceMensah and O'Brien, 2018), as discussed previously, further enable targeted support for areas with especially low-quality pavement.

These frameworks not only support balanced investment strategies but also inform policy and tax structures for urban pavement infrastructure. For instance, to account for ongoing changes in

vehicle types, tax structures for gasoline, special fuels, and electric vehicles may require adjustments to maintain balanced resource allocation.

Public participation is another vital component of effective infrastructure planning. Traditional “decide, announce, defend” models often limit meaningful engagement (Karner and Marcantonio, 2018), neglecting the needs of residents and resulting in unintended consequences like displacement. By contrast, models like the Transportation 2040 initiative, have demonstrated the value of engaging hundreds of residents through workshops to develop a regional vision (Margerum, 2012). Further research could explore the participatory methods that yield the most effective local input and explore the long-term impacts of such engagement on pavement quality and community welfare.

2.2.2.5 Community Involvement

Many studies are recognizing the importance and advantages of community input in the planning process (Boisjoly and Yengoh, 2017; Ahmed et al., 2008). These studies tend to focus on developing strategies to optimize the collection and incorporation of public feedback (Cantilina et al., 2021; Doran et al., 2021).

Community involvement is crucial for achieving balanced pavement design and funding, as it seeks to address the needs of different populations based on actual usage patterns and priorities (Karner and Marcantonio, 2018). Meaningful participation improves decision-making processes and aligns resource allocation accordingly. This participatory approach garners transparency and trust, strengthening public support for funding measures. When community members feel heard, they are more likely to promote necessary investments (Erfani et al., 2024).

Incorporating systematic evaluation techniques ensures that projects attend to local needs effectively. Tools like social impact assessments (SIAs) can help to evaluate the effects of pavement infrastructure on local populations, while standardized indicators can inform a social life cycle inventory (SLCI) to guide project planning and execution (Blaauw et al., 2021). These methods operationalize community involvement, providing actionable insights to shape pavement management plans (PMPs). PMPs, which often begin with identifying pavement sections needing urgent attention, ultimately depend on collaborative efforts between stakeholders and local communities (France-Mensah and O'Brien, 2018).

To further enhance these collaborative efforts, the MACBETH approach offers a systematic way to prioritize M&R interventions based on community needs and project benefits (Marcelino et al., 2019). By tying maintenance strategies to community input, transportation agencies can ensure that pavement infrastructure not only meets technical requirements but also reflects the aspirations and concerns of the populations it serves. This alignment of technical and social goals underscores the importance of a participatory approach. Finally, actively engaging residents in the decision-making process through public forums, workshops, and surveys ensures that pavement projects are designed with local priorities in mind (Margerum, 2012). These engagement strategies build on the foundation of trust and transparency established through community involvement, stimulating resilience and well-being. By garnering community input

and employing systematic evaluation methods, pavement projects can achieve functional improvements at scale.

2.3 Gaps in Literature

Although the literature on transportation asset management, and public participation is substantial, it still tends to treat physical infrastructure, community input, and analytical methods as separate topics. Existing studies often address mobility outcomes without fully connecting resident concerns to physical infrastructure decision-making (Ahmed et al., 2008; Gil-Alonso et al., 2022; Henke et al., 2020). The result is a clear gap in work that links residents' concerns about roads, sidewalks, bridges, and related assets to systematic, scalable analysis.

In particular, safe pavement infrastructure receives less attention than transit, walkability, or other mobility topics, even though pavement conditions shape pedestrian, bicycle, and vehicle safety. Prior research on active transportation and high-quality pavements shows that surface conditions are closely tied to access, comfort, and safety, especially where residents depend on walking, biking, or public transportation (Gil-Alonso et al., 2022; Henke et al., 2020). These findings suggest that pavement quality is not simply a maintenance issue, but a central component of transportation access.

The literature is also limited in its treatment of how agencies can identify and prioritize these concerns across neighborhoods using combined text, spatial, and performance data. Pavement management research has advanced methods for prioritization and maintenance planning, but these approaches still tend to emphasize engineering indicators and resource allocation rather than resident-reported needs (France-Mensah et al., 2019; Marcelino et al., 2019; Erfani et al., 2024). As a result, public feedback remains underused as a source of evidence for identifying where infrastructure deficiencies are most urgent.

Together, these gaps motivate the present study, which examines whether AI-assisted analysis of public comments can reveal infrastructure needs and geographic variation that traditional asset metrics may miss. By combining public input with spatial and demographic context, this study extends prior work on pavement management toward a more integrated, human-centered approach to infrastructure decision-making.

2.4 Public Participation to Address Infrastructure Gaps

2.4.1 Public Participation and Community Engagement

Community engagement is required for broad usability in transportation planning (Anciaes et al., 2016). Karner and Marcantonio (2018) stress that public involvement ensures that community needs are met and resources are allocated uniformly, emphasizing the Arnstein Gap between public expectations and actual participation. Despite the recognized importance of public input, transportation planning has traditionally focused more on technical aspects than social ones, often excluding genuine community involvement and leading to adverse outcomes like forced relocations (Boisjoly and Yengoh, 2017; Ahmed et al., 2008). Strategies such as cross-

organization collaboration and incorporating non-transportation data have been suggested to ensure that relevant perspectives are adequately considered in the planning process (Cantilina et al., 2021). Ongoing collaboration between researchers and practitioners will be key to developing frameworks that support meaningful public participation and assess their effectiveness, helping create transportation systems that effectively serve residents.

2.4.2 Identifying Infrastructure Deficiencies Through Public Feedback

Several studies have been conducted that successfully identified differences in infrastructure by analyzing publicly submitted feedback.

Seto and Sekimoto (2019) analyzed over 40,000 citizen reports submitted via the Chiba-repo platform in Chiba City, Japan, over a two-year period. This study utilized text mining and categorization methods to analyze the public feedback. They found that 93.8% of the reports related to road conditions. Other reoccurring trends such as lighting repairs, general maintenance and traffic signaling were also detected.

A study in Tampa, Florida detected issues related to transit infrastructure, pedestrian and bike access, and specific bus stop amenities over a 6-month period (Barbeau, 2018). Feedback was collected through a mobile app called OneBusAway, and reports were gathered using the Open311 standard.

These studies show the utility of public comments to detect areas where physical and non-physical infrastructure assets are lacking in their serviceability. They also demonstrate innovative analysis methodologies and data collection that indicate a shift towards more autonomous approaches.

2.4.3 The Limits of Existing Public Engagement Practices

Public engagement has the potential to reveal real-time differences in service levels and infrastructure conditions that might otherwise go unnoticed, but only if the involvement is carried out in a meaningful, and timely manner.

The implementation of meaningful public involvement faces many hurdles due to the lack of clear definitions, ineffective approaches and fundamental limitations in data collection. There also exists an even more fundamental challenge in defining what constitutes as “meaningful effective participation” (Wu et al., 2019). Without clear definitive consensus, implementing consistent and meaningful strategies becomes extremely difficult.

Current methods for collecting feedback present their own obstacle. Another difficulty is presented in current feedback collection methods. Most often, agencies rely on public comments submitted voluntarily, which can lead to skewed or small samples that do not provide an accurate representation of the population. Skewed data can occur due to one demographic participating substantially more than others. Broader issues, such as tight project timelines frequently limit the scope and effectiveness of public participation efforts (Xiao, 2024).

2.4.4 Collection Methods and Data Challenges

Public input enriches infrastructure planning by identifying specific concerns and uncovering overlooked priorities, yet the methods for gathering and analyzing this feedback require careful consideration. Typically, feedback is gathered through in-person meetings, online surveys, email submissions, and digital engagement platforms and stored as unstructured text (Severin, Gokhale, & Konduri, 2017). Traditional analytical tools are not able to process this type of data and as a result public comments often require manual review to identify common themes or concerns—an approach that is labor-intensive and difficult to scale. In fact, some studies have found that some agencies do not integrate any public input into their planning process and only collect it to satisfy procedural obligations (Quick & Feldman, 2011). The inherent challenge of scalability has thus led to calls for new analytical tools to better manage this textual data, thereby ensuring that valuable insights are not overlooked and that planners can adapt swiftly to community needs (Chua & Banerjee, 2013).

2.5 Automating Public Feedback Analysis: From Statistical Methods to the Generative A.I. Era

2.5.1 Statistical Methods for Feedback Analysis

Some studies sought to address the limitations in manually reviewing public feedback through statistical based classification. One study for instance used a Naive Bayes classifier that categorized feedback with an average accuracy of 75–80%, which they determined was about 10–20% lower than that of human reviewers (Severin et al., 2017). However, this methodology required predefined themes to organize the feedback making it limited to any sort of exploratory research. Other areas for improvement identified in this study were the design of survey instruments and the use of keyword frequency analysis to enhance interpretability (Severin, Gokhale, & Konduri, 2017). While statistical approaches like this are a step toward automation, they remained limited in flexibility and interpretability, constraints that echoed earlier generations of rule-based natural language systems, whose historical development laid the groundwork for modern Natural Language Processing (NLP).

2.5.2 The Shift Towards Machine and Deep Learning

Machine Learning (ML) techniques are proving to be powerful tools across various civil engineering disciplines, consistently outperforming traditional methods and offering new capabilities for analysis and prediction.

In the realm of transportation, techniques such as Random Forests, Gradient Boosting Decision Trees, and XGBoost have demonstrated superior performance compared to conventional econometric approaches for predicting transportation-related variables. This suggests that ML models can capture complex, non-linear relationships within transportation data more effectively, leading to more accurate forecasts and insights.

For urban planning and land use analysis, studies have effectively utilized Random Forests, Convolutional Neural Networks, and Support Vector Machines for classification and pattern

analysis (Chaturvedi & de Vries, 2021). These applications highlight the ability of ML to process and interpret spatial data.

Sentiment analysis, a subset of text mining aimed at detecting subjective content such as opinion or emotions, in public transport infrastructure feedback has also benefited significantly from ML (Ahlgren, 2016). Support Vector Machines, for instance, have shown their capability in this area. This allows for a more nuanced understanding of public perception and can inform improvements in transport services.

Beyond these specific applications, ML is becoming a key tool in civil engineering for asset management across disciplines, including water resources. García et al. (2023) demonstrated the utility of ML techniques in water resources for tasks such as detecting contaminants, forecasting water levels, and evaluating water quality. These applications underscore the potential of ML to enhance infrastructure resilience, optimize resource management, and improve public safety.

2.5.3 Early Applications of Large Language Models (LLMs) for Feedback Analysis

Generative AI Large language models (LLMs) are neural networks trained on vast text to predict and generate language. These models, such as the Generative Pre-trained Transformer (GPT), have shown potential in public feedback analysis, particularly in identifying recurring trends amongst unstructured text data (Fu et al., 2024). GPT models could help bring more voices into transportation planning.

LLMs offer advantages in comment classification, including semantic understanding and interpretable descriptions of identified trends. LLMs can also be directed to identify specific assets, structural damage type, severity, and urgency conveyed throughout the comments (Bui et al., 2024). These abilities allow for an analysis of how these risk factors and incident characteristics vary across different groups, helping to uncover potential differences. This feature helps to ensure that human centered transportation asset management frameworks do not overlook core physical infrastructure, such as roadway conditions.

However, challenges in applying LLMs like GPT in public feedback remain, and include sensitivity to prompt phrasing, data quality, and artificial hallucination (Zheng et al., 2023; Fu et al., 2024). Other concerns such as data privacy and model bias still remain unaddressed. For real-world use, agencies need clear rules on data and procurement, as well as repeatable pipelines with version control (Fu et al., 2024). Such applications should also include human review, transparent prompt/model documentation, and regular audits for accuracy and fairness (Zheng et al., 2023).

2.6 Linking Public Feedback to Population Characteristics

Developing and implementing human centered transportation infrastructure planning and maintenance cannot be achieved solely through reported comments. Transportation infrastructure management must also evaluate how these concerns are distributed across communities with differing demographics. GIS based spatial analysis is a powerful tool that can visualize the reported infrastructure concerns or conditions throughout an entire geographic region. GIS spatial analysis can also map the distribution of population characteristics like income when such data is linked to public comments. This GIS informed approach can be utilized to identify areas

with insufficient or unevenly distributed infrastructure (Kothari, O'Brien, Jiao, & Khwaja, 2023; Kaplan, S. et al., 2014; Oswald Beiler & Mohammed, 2016).

3 Methodology

3.1 Research Design and Process Overview

This study implemented AI techniques to analyze public feedback and used GIS spatial analyses to identify the effect of geographic location on transportation infrastructure needs. Public feedback data was compiled and provided by the Southwestern Pennsylvania Commission (SPC), the region's designated Metropolitan Planning Organization (MPO), and Pennsylvania's Department of Transportation (PennDOT). SPC is responsible for developing and adopting the region's Long Range Transportation Plan (LRP), SmartMoves, and a short-range Transportation Improvement Program (TIP). The organization aims to enhance mobility in a safe, efficient, and effective manner throughout the Southwestern Pennsylvania region.

The extracted dataset contained 925 public comments regarding transportation infrastructure across Southwestern Pennsylvania (SWPA), along with GPS coordinates of the assets each comment referred to.

Comments were analyzed by clustering them into similar themes using the topic modeling framework Bidirectional Encoder Representations from Transformers (BERT), a groundbreaking natural language processing (NLP) model developed by Google in 2018 (Grootendorst, 2022). A Large Language Model (LLM), specifically the GPT-4o-mini model, was then used to summarize and convey these topics in an interpretable manner (OpenAI, 2024). The topic clusters underwent both automated evaluation and manual review to gauge performance and mitigate hallucinations and bias. Additionally, subtopic modeling was performed to capture specific trends within each primary topic cluster, providing a hierarchical understanding of the topics discussed by residents. Manual review of the primary and subtopic cluster descriptions was used to assess their relevance to physical infrastructure.

Using the provided GPS coordinates, each comment was linked to a census tract using Geographic Information System (GIS) tools. Once a census tract was identified, geospatial data such as population, area, feedback counts, and median household income at the tract level was integrated into the dataset. Based on the distribution of all census tracts in SWPA, comments were grouped into three distinct geographic categories (Groups A, B, and C). Comparisons of the topic clusters and their demographic characteristics across geographic groups were conducted to identify any differences in community feedback patterns. Of the 925 public comments, 864 (93.4%) were successfully matched to a U.S. census tract and its corresponding demographic data (U.S. Census Bureau, American Community Survey 5-Year Estimates, 2022).

Clusters of comments related to physical transportation infrastructure, such as pavements, sidewalks, and bridges, were further analyzed using the GPT-4o-mini model. By combining community input with demographic data, this process provides a framework for better understanding the transportation needs and concerns of local populations. The analysis supports

more human-centered planning and helps determine whether specific types of feedback are more prevalent in different geographic areas.

To complement resident-reported infrastructure concerns, this study incorporated PennDOT's Roadway Management System – SEGments (RMSSEG) data, which provides detailed information on roadway characteristics across the state. Roadway segments and their corresponding International Roughness Indices (IRI) were spatially linked to census tracts, and tract-level average IRI values were computed. These averages were then compared across the census tract Groups (A, B, and C) and matched with public feedback clusters related to road repairs. This design enabled us to assess whether objective roadway condition measures aligned with the concerns expressed in citizen comments.

3.2 Data Acquisition and Spatial-Demographic Integration

The public feedback database used in this study contains comments related to transportation infrastructure assets across Southwestern Pennsylvania (SWPA). Southwestern Pennsylvania is a mix of urban, suburban, and rural communities occupying an area of more than 7,000 square miles with a population of 2.5 million people. This region encompasses 10 counties and 786 census tracts shown in Figure 2. At the center of SWPA is Allegheny County, home to the City of Pittsburgh, which serves as the region's population and economic hub. The other nine counties are:

- Armstrong
- Beaver
- Butler
- Fayette
- Greene
- Indiana
- Lawrence
- Washington
- Westmoreland

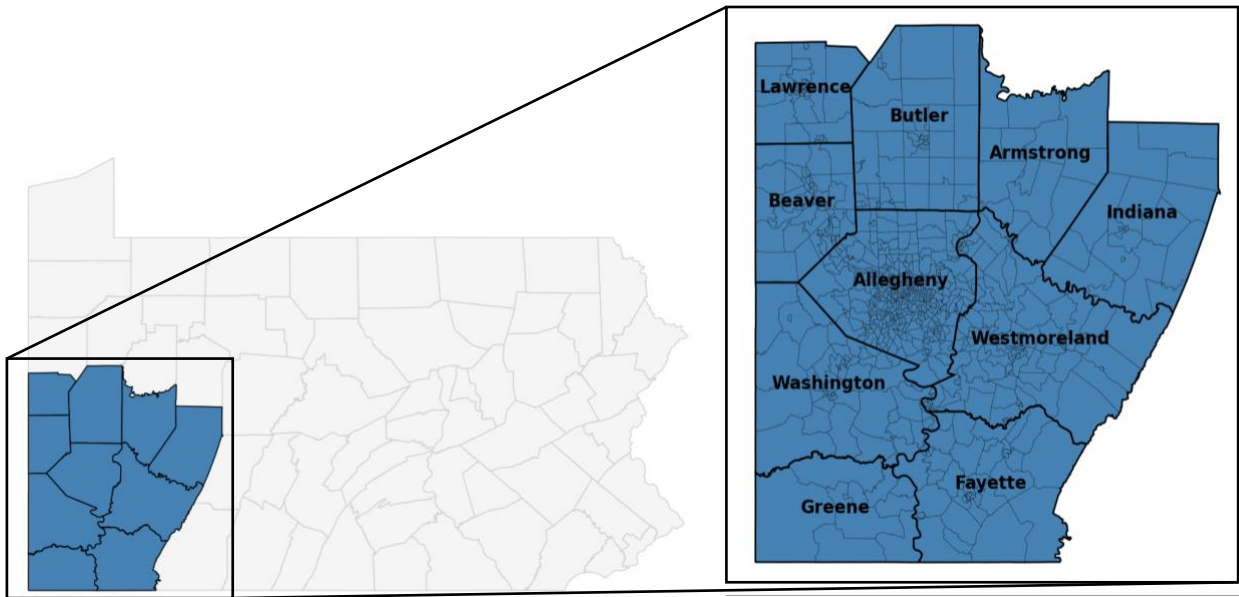


Figure 1. Map of Pennsylvania with counties comprising Southwestern Pennsylvania (SWPA)

The following information was extracted from the SPC public feedback database:

- Comments and suggestions for improvement: The database contained 925 comments regarding transportation infrastructure throughout Southwestern Pennsylvania (SWPA). Feedback ranges from specific route issues to broader concerns. Some residents identify precise infrastructure gaps, such as: “There is no sidewalk to get from Timberbrook Dr to Jeremiah Dr. This missing link would allow many people to walk to Main St.” Others highlight network-level problems: “Rail service between Pittsburgh and Philadelphia is abysmal. It is infrequent slow expensive and impractical for nearly everyone including someone like me who really likes the train and wishes he could take it.” Pavement conditions were frequently mentioned: “Herman Road 1.91 miles located southeast portion Clearfield Township beginning Clearfield Road enters Summit Township. main thorough fare traffic. deteriorating potholes abrupt dropoffs crumbling shoulders.” Many examples of public comments can be found in Appendix A.
- County and Municipality: For each comment, SPC determined if the comment can be addressed with a project located in a certain county and municipality.
- GPS coordinates: For each comment, SPC determined GPS coordinates as well as a potential project addressing a comment where possible.

In addition, demographic data at the Census Tract level was collected from the American Community Survey (ACS) 5-Year Estimates for 2016–2020. Using the U.S. Census Bureau’s Application Programming Interface, median household income (Table B19013) and population (Table B01003) data were merged with the public feedback database. Geospatial integration was

conducted using TIGER/Line shapefiles provided by the U.S. Census Bureau (2022 vintage). This tract-level mapping enabled the subsequent linkage of neighborhood-level demographic characteristics.

Of the 925 public comments, 864 (93.4%) were successfully matched to U.S. census tracts and their corresponding median household incomes using the U.S. Census Bureau's 2022 American Community Survey 5-Year Estimates. These matched records represent approximately 1.13 million residents across 2,750 square miles. This subset of 864 comments with valid tract-level demographic data was retained for further analysis.

Figure 2 (left) shows the distribution of public feedback at the census tract level. Comments are heavily concentrated in Allegheny County, including the City of Pittsburgh (Figure 3 right), while rural areas contributed relatively few submissions. A small number of tracts within Pittsburgh's urban core generated disproportionately high volumes of feedback, indicating either localized infrastructure concerns or stronger patterns of civic engagement in those areas.

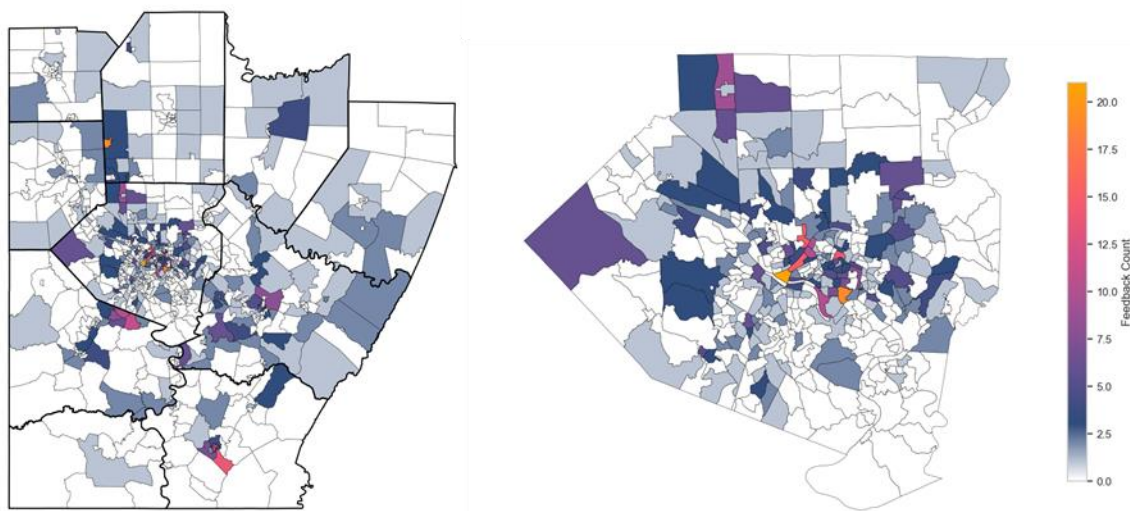


Figure 2. Feedback Count by Census Tract throughout the entire SWPA (Left), and Allegheny County only (Right)

Census tracts were sorted into three groups (A, B, and C) by median household income tercile. Comments were then assigned to the group containing the referenced infrastructure asset. Table 1 presents data comparing these three geographic areas across several key metrics. It can be observed that the census tracts in Group B have the largest geographic footprint and population, while those in Group A are the most geographically compact. Interestingly, census tracts in Group A show the highest rate of public engagement per capita (9.9 comments per 10,000 residents), suggesting potentially higher civic participation rates relative to population size. The census tracts in Group B, despite having the largest population and a number of comments greater than those from the areas in Groups A and C, show the lowest per-capita comment rate at 6.4 per 10,000 residents. It should also be noted that the ranges of median household income increase in order of Group A, B, and C.

Table 1. Public Comments by Census Tract Groups

	Group A	Group B	Group C
Number of census tracts	68	162	95
Population	179,676	566,050	388,972
Area, sq. miles	190	2,110	450
Comments	177	361	326
Comments per 10,000 residents	9.9	6.4	8.4
Median Household Income Range	Below \$46,132	\$46,132-\$76,139	Above \$76,139

This classification will be used to compare the thematic content of comments across different geographic communities. It is important to note, however, that census group assignments were not based on the individual commenter's location. Instead, comments were classified according to the census tract or neighborhood where the referenced infrastructure asset requiring improvement is located. For example, if an individual living in census tract Group A submitted a comment about road conditions in an area within Group C, the comment would still be categorized under the census tract Group C.

Roadway condition assessments utilized PennDOT's Roadway Management System (RMS) data. The Roadway Management System Segments (RMSSEG) provides an inventory of the physical characteristics of state road segments (PENNDOT GIS PENNSHARE).

Each record in RMSSEG corresponds to a road segment and carries attributes such as:

- Road identifiers: state route numbers, segment numbers, district codes
- Physical properties: segment length, width, number of lanes, divider type, pavement condition, friction index, International Roughness Index
- Administrative details: jurisdiction, maintenance responsibility, urban/rural designation, access control
- Traffic and functional data: traffic route numbers, AADT (annual average daily traffic), highway classification (NHS, HPMS), toll codes
- Condition & cycle data: pavement condition ratings, drainage cycle, guardrail cycle, resurfacing year, surface type
- Geospatial data: coordinates (X/Y values), beginning/ending descriptions, geometry length

This study utilized RMSSEG's reported International Roughness Indices (IRI) as an objective characteristic of pavement condition. The IRI is defined as "the deviation of a surface from a true planar surface with characteristic dimensions that affect vehicle dynamics and ride quality", and ranges between 0 to 1267 in/mile with higher values indicating rougher pavements (ASTM International 2020, ASTM E867-06). The Federal Highway Administration (FHWA) considers an IRI of 170 inches/mile to be acceptable, but it is generally considered that an IRI around 125 inches/mile is when a roadway begins to feel rough and impacts the quality of the ride. To assess roadway conditions across census tracts, IRI values were extracted from RMSSEG for roadway segments within census tracts. A census tract's average IRI was then compared across census

tract Groups A, B, and C and linked with road-related public comments. This data was then used to validate community-identified concerns.

3.3 Topic Modeling and Text Clustering Overview

To classify the comments, this study employed a semi-automated approach using artificial intelligence (AI) and natural language processing (NLP) techniques, specifically topic modeling and large language models (LLMs). First, BERTopic, the core topic modeling tool which identifies recurring themes by clustering semantically similar comments was used (Grootendorst, 2022). A factorial parameter optimization procedure was carried out to determine the optimal configuration for producing the most meaningful and well-defined topics. Then, the top keywords from each topic were input into a Generative Pre-Trained Transformer (GPT) model to obtain concise topic labels and narrative summaries, providing additional insight into dominant themes. For this study, OpenAI's GPT, specifically its GPT-4o-mini model, was selected for its convenience and powerful summarization capabilities. However, lack of control over model updates means generated labels and summaries are potentially version-dependent and susceptible to bias.

This section details the implementation of BERTopic, GPT integration, and the evaluation process. Also described are the measures taken to improve reproducibility, mitigate bias, and detect hallucinations.

3.3.1 BERTopic Framework and NLP Pipeline

BERTopic analyzes word patterns in unstructured text and extracts coherent topics, producing topic assignments and corresponding keyword sets. Its modular architecture supports tailored integration and optimization of each component, which include:

- Sentence embeddings
- Dimensionality reduction
- Clustering
- Class-based Term Frequency-Inverse Document Frequency (c-TF-IDF)

Sentence embeddings is a numerical representation of information (such as texts or images) into a lower-dimensional, continuous vector space. In this study a BERTopic transformer-based model, *all-MiniLM-L6-v2*, were used to create embeddings for individual public comments. (Reimers & Gurevych, 2019). *All-MiniLM-L6-v2* was selected for its balance between semantic accuracy and computational efficiency (Reimers & Gurevych, 2020; Wang et al., 2020).

To improve computational efficiency of clustering efficiency, embeddings were projected into a lower-dimensional space using Uniform Manifold Approximation and Projection (UMAP). The UMAP configuration included the following parameters:

- The number of neighboring data points UMAP considers when constructing its internal graph (nearest neighbors) was set to 1
- The desired number of dimensions for the reduced data (output dimensions) was set to 5
- A minimum distance in terms of cosine similarity was set to 0.1. Cosine similarity measures the cosine of the angle between two non-zero vectors in a multi-dimensional space. It is defined as follows:

$$\text{Cosine Similarity } (A, B) = \frac{A \cdot B}{\|A\| \|B\|}$$

Where $A \cdot B$ represents the dot product of vectors A and B, and $\|A\|$ and $\|B\|$ denote Euclidean norms of vectors A and B, respectively

- A fixed random state value was used to ensure reproducibility of the UMAP projection, i.e. the same input will always yield the same output mapping (McInnes, Healy, & Melville, 2018).

3.3.2 Validation Strategy

Topic modeling and GPTs have documented limitations, including hallucinations and bias. This study implemented a multi-stage validation procedure.

1. Random Manual Evaluation: After the initial clustering, 50 randomly selected comments were sampled for validation. For each comment, the human reviewer read it in full and determined whether its assigned cluster was accurate. This procedure and its results are documented in Appendix B1 of this report.
2. Cluster Cohesion and GPT Alignment: The initial clusters underwent a thorough, systematic review, in which each topic was evaluated manually based on cohesion, internal consistency, and similarity to other clusters. This was a critical step that cross-examined both the topic modeling results and the GPT-generated labels and summaries. Any hallucinations in the GPT responses were identified by comparing them to the topic models' keywords and representative comments. The cluster descriptive elements compared to one another were:
 - a. Keywords Generated by BERTopic
 - b. Randomly Selected Representative Comments
 - c. GPT-Generated Cluster Label
 - d. GPT-Generated Cluster Summary

This process is outlined in further detail in section 3.3.3 Initial Clustering and Analysis, and Appendix B2 of this report.

3. Iterative Refinement: Based on manual review findings, the initial clusters were refined and consolidated. For example, Cluster 6 (originally containing mixed content) was manually reviewed comment-by-comment, with portions reassigned to more appropriate clusters (see Table 3). Details regarding the initial cluster reassignments and the rationale are provided in Appendices B2.5 and B3 and described later in the report.
4. Word Cloud Visualization: For each of the 14 final clusters, word clouds were generated to provide immediate visual verification of topic coherence and thematic consistency (see

Figure 3). These visualizations enabled rapid identification of any anomalous or irrelevant terms that might indicate model hallucination.

5. Consistent and Neutral GPT Prompts: To improve this methodology's reproducibility and mitigate bias, this study consistently used the same standardized prompts for generating cluster labels and summaries. These prompts are provided in Appendix F. Furthermore, when analyzing public engagement patterns amongst designated census tract groups, geospatial demographics such as population, area, and, especially, median household income were intentionally omitted from the GPT prompt to mitigate bias.

By combining automated topic modeling with rigorous manual review, word cloud visualization, neutral prompting, and bias assessment, this approach enabled the study to remain rigorous while benefiting from AI's computational strengths. Human researchers validated all final cluster assignments and interpretations to ensure accuracy and prevent hallucinations.

3.3.3 Initial Clustering and Analysis

First, HDBSCAN (Campello, Moulavi, & Sander, 2013) clustering was conducted, resulting in 32 clusters. Subsequently, K-Means (McQueen, 1967) clustering was performed with the number of clusters also set to 32. For each cluster, the following analysis was performed:

- BERTopic applied CountVectorizer to tokenize the comments and construct a bag-of-words matrix for all comments within a single cluster.
- A class-based TF-IDF weighting scheme (c-TF-IDF) was used to identify keywords that best distinguished each cluster (Spärck Jones, 1972; Grootendorst, 2022).
- The GPT-4o-mini model generated a cluster name and a concise summary describing the comments within the cluster (See Appendix F for related prompts).

For example, Cluster 1 contains 59 comments, including the following as recorded in the database:

- “Herman Road is 1.91 miles located at the southeast portion of Clearfield Township beginning at Clearfield Road and enters into Summit Township. It is a main thoroughfare for traffic. It is deteriorating with potholes abrupt dropoffs crumbling shoulders.”
- “The roadway took serious damage during a flooding event in August. Unfortunately the road is restricted to one lane and is causing traffic flow problems on Route 258. The damage is too much for our small municipality to deal with.”
- “This section of US 19 was left out of the last two paving projects and is in terrible condition”

According to the TF-IDF analysis, the keywords are: Road, potholes, pavement, need, repair, needs, resurfacing, surface, roadway, lane. GPT assigned the title “Infrastructure Deterioration and Maintenance Challenges in Roadways” and provided the following summary: “Public complaints about transportation and infrastructure primarily focus on the poor condition of roads, highlighting issues such as potholes, crumbling pavement, and the need for resurfacing and

repairs. Many roads are described as unsafe due to deteriorating surfaces, inadequate maintenance, and damage from weather events, resulting in traffic disruptions and safety hazards for drivers and cyclists.” Full cluster descriptions like this one are available for all initial clusters in Appendix A.

A preliminary evaluation of each cluster was then conducted. The initial clusters were evaluated based on the following characteristics:

- Cluster Cohesion: the thematic consistency of the comments within the cluster.
- Internal Consistency: the alignment between the cluster’s keywords, summary, and representative comments.
- Similarity to other Clusters: The degree of overlap with other clusters, to identify opportunities for merging or redistribution.

Cluster cohesion was assessed by analyzing randomly selected comments from each cluster, using the following rating scale:

- Good (G): Comments are focused on the same issue or aspect of infrastructure, with minimal variation.
- Mixed (M): Comments share a general theme but include unrelated tangents or edge cases.
- Bad (B): Comments are scattered or only loosely related; the topic lacks clear internal logic.

Internal consistency was evaluated by assessing the alignment between keywords, GPT-generated summaries, and randomly selected comments. It was graded as follows:

- Good (G): Keywords, summary, and representative documents all support the same core theme.
- Mixed (M): Some comments align well, but others appear off-topic or overly vague.
- Bad (B): Keywords and summary do not match the comments; comments are inconsistent.

Similarity to other clusters was determined by comparing keywords and summaries across clusters. Additionally, comments were identified that could be more suitably reassigned to a thematically appropriate cluster.

Each cluster then received an overall rating on a four-point scale:

- Good (G): High topical coherence; keywords and comments align well; the summary is accurate and descriptive.

- Mixed (M): Generally coherent, but with minor issues in keyword relevance, document match, or summary clarity.
- Revisions Needed (R): Multiple issues present; the topic is difficult to interpret or only partially useful.
- Abandon (A): Incoherent or fragmented; not usable without substantial revision or reassignment.

Based on this assessment, the following actions were assigned to each cluster:

- Maintain: Clusters with strong internal consistency and a clear thematic focus were kept for further analysis.
- Merge: Clusters with substantial thematic overlap (e.g., addressing similar infrastructure concerns using different language or perspectives) were combined.
- Redistribute: Individual comments were manually reassigned to other clusters if they better aligned with those clusters' themes, language, or keyword profiles.
- Abandon: Clusters were discarded if they lacked internal coherence, contained mostly noise, or addressed topics outside the study's scope.

The results of these manual evaluations are available in Appendices B2 and B2.5.

3.3.4 Final Clustering and Analysis

As a result of this consolidation, 14 clusters were selected for the subsequent analysis, for each of the clusters, the following analysis was performed

- BERTopic applied CountVectorizer to tokenize the comments and construct a bag-of-words matrix for all comments within a single cluster.
- A class-based TF-IDF weighting scheme (c-TF-IDF) was used to identify keywords that best distinguished each cluster (Spärck Jones, 1972; Grootendorst, 2022).
- The GPT-4o-mini model generated a cluster name and a concise summary describing the comments within the cluster.

To gain a more detailed understanding of the public feedback, 13 of the 14 final clusters were further divided into 5 subclusters each, using the K-means method. One cluster with a small number of comments was not subjected to sub-clustering. The same modeling parameters and sentence embedding model used for the primary clustering were retained for this subtopic analysis.

This subtopic modeling approach reinforced the study's central objective: extracting infrastructure-specific insights from a large and diverse body of public feedback. In the Results section, subtopics derived from Primary Topic 10 are presented as illustrative examples due to their strong evaluation metrics.

3.4 Public Participation Analysis by Census Tract Groupings

Comparative analyses across census tract groups were conducted to examine whether the characteristics of the census tract surrounding a transportation asset influences public participation. Specifically, the analysis aimed to determine whether the volume of public feedback varies by census tract group, to evaluate participation patterns as it relates to median income level across census tracts, and to identify trends in topic areas within each group. Additionally, comments concerning pavement conditions were analyzed to evaluate how poor roadway conditions impacted safety and traffic flow across census tract groups. This analysis provides insight into the volume, thematic focus, and spatial distribution of citizen engagement with transportation infrastructure issues across different geographic areas.

4 Results and Discussion

4.1 Clustering of Public Comments

As discussed in Section 3 of this report, 864 public comments were initially grouped using the topic modeling framework Bidirectional Encoder Representations from Transformers (BERT) and the K-means method. Table 2 presents the GPT-4o-mini model-generated names of these initial clusters and the number of comments in each. It can be observed that the comments cover a wide range of public concerns, from the condition of physical infrastructure to transportation safety issues. Detailed information in these clusters can be found in Appendix A.

Table 2. Initial clusters of public comments

Initial Cluster Number	GPT-Generated Cluster Name	Number of Comments
1	Issues of narrow and missing sidewalks impacting pedestrian safety and accessibility	48
2	Enhancements needed for left turn traffic flow and safety improvements	47
3	Unsafe conditions for pedestrians at busy intersections	47
4	Enhancing connectivity and safety of bike and pedestrian trails along riverfronts and critical pathways	45
5	Safety concerns regarding insufficient length and poor visibility at on-ramp merging points	41
6	Safety improvements for sidewalks and bike lanes on local roads	41
7	Urgent need for a bypass to alleviate heavy truck traffic and improve safety in a congested borough	37
8	Traffic infrastructure improvement proposals for enhanced roadway capacity and congestion mitigation	36
9	Critical concerns surrounding a perilous and congested intersection	35
10	Urgent concerns over deteriorating bridge conditions and impending replacement needs	34
11	Enhancing commuter rail and bus services to alleviate transportation challenges in the region	31
12	Urgent repairs needed for long-neglected roads suffering from structural failures and traffic issues	30
13	Urgent repairs needed for pothole-ridden bike lanes impacting bikers' safety and roadway conditions	29

Initial Cluster Number	GPT-Generated Cluster Name	Number of Comments
14	Severe traffic congestion and inefficient intersection flow during peak times	29
15	Traffic light issues: inefficiencies and delays in traffic flow	29
16	Enhancing pedestrian safety and traffic management in high-traffic corridors	27
17	Concerns and recommendations for enhancing safety at sheepskin trail crossings	24
18	Safety and accessibility concerns for pedestrians on a high bridge with inadequate walkways	24
19	Lack of public bus services impacting transportation accessibility for residents in surrounding areas	20
20	Addressing congestion and improving transit connectivity in Pittsburgh's road infrastructure	17
21	Urgent need for traffic calming measures to protect pedestrians in high-speed areas	17
22	Urgent traffic safety improvements needed for residential roads with high speeds and pedestrian traffic	15
23	Enhancing fayette street and west main street for pedestrian and cyclist safety through road diets and improved sidewalk infrastructure	15
24	Traffic challenges and infrastructure solutions at major tunnels and routes	15
25	Assessment of poor pavement and drainage conditions leading to winter hazards and driveway access issues	14
26	Enhancing bicycle safety and traffic signage integration for improved urban mobility	13
27	Challenges in local transit operations and connectivity issues	13
28	Concerns and proposals for intersection traffic management and safety improvements	12
29	Improving traffic safety and flow through enhanced speed monitoring and roadway design techniques	12
30	The perils and challenges of roundabouts: a focus on traffic management and safety concerns	11
31	Discrepancies between design speed and posted limits affecting crosswalk safety	7
32	Improving bicycle safety and connectivity along Penn avenue	49

For example, Cluster 1 contains 48 comments, including the following as recorded in the database:

- “There is no sidewalk to get from Timber brook Dr to Jeremiah Dr. This missing link would allow many people to walk to Main St.”
- “The sidewalk on Browns Hill Rd is very narrow and only exists on one side of the road. If the sidewalk was wider and was on both sides of the road pedestrians would feel safer and be able to get to the businesses on Browns Hill Rd much easier.”
- “This roadway is already iffy for cars people travel at 60mph the speed limit is 35mph there are potholes when it rains ppl hydroplane but the sidewalk is atrocious it is unsafe for walkers and bikers to get from Bloomfield to downtown this way.”

According to the TF-IDF analysis, the keywords are: sidewalk, sidewalks, walk, pedestrian, narrow, unsafe, missing, park. GPT assigned the title "Issues of Narrow and Missing Sidewalks Impacting Pedestrian Safety and Accessibility" and provided the following summary: "Public comments highlight significant concerns about narrow and missing sidewalks, which compromise pedestrian safety and mobility. Many residents express frustration over incomplete pathways that hinder safe travel to essential destinations, while inadequate sidewalk width and placement leave pedestrians feeling vulnerable, especially in areas with high-speed traffic and poor road conditions.

After preliminary clustering, a manual re-clustering was conducted. A detailed evaluation of these clusters resulted in splitting and merging of some clusters. The clusters were consolidated into 14 clusters.

For example, Cluster 7, which contained comments requesting a dedicated truck traffic route to bypass local residential and small-town streets, was a highly distinctive theme that did not overlap with any other clusters. It also demonstrated good cohesion and internal consistency. For these reasons, this cluster required no modifications.

Cluster 12: "Urgent Repairs Needed for Long-neglected Roads Suffering from Structural Failures and Traffic Issues" was merged with Cluster 13: "Urgent Repairs Needed for Pothole-Ridden Bike Lanes Impacting Bikers' Safety and Roadway Conditions" because both addressed concerns about pavement condition.

Cluster 6: "Safety Improvements for Sidewalks and Bike Lanes on Local Roads" is an example of a cluster with a "Redistribute" designation. This cluster contained comments related to three distinct themes: sidewalk safety, bike lanes, and merging lanes. The GPT-generated summary for this cluster broadly indicated that it grouped comments discussing "any kind of lane" (excluding left-turn lanes, which were under Preliminary Topic 2: "Enhancements Needed for Left Turn Traffic Flow and Safety Improvements") along with general sidewalk infrastructure comments.

Cluster 6's comments were distributed among three groups:

- Comments describing sidewalks and sidewalk safety were grouped with comments in Cluster 1: "Issues of Narrow and Missing Sidewalks Impacting Pedestrian Safety and Accessibility;"
- Comments about bike lanes in Cluster 6 were grouped with comments in Cluster 32: "Improving Bicycle Safety and Connectivity Along Penn Avenue," and
- Roadway lane widening-focused comments were combined with Cluster 8: "Traffic Infrastructure Improvement Proposals for Enhanced Roadway Capacity and Congestion Mitigation."

These reassignments were done by manually reviewing each individual comment in Cluster 6. As a result of this consolidation, 14 clusters were selected for the subsequent analysis. Table 3

presents the results of these re-assignments. It can be seen that out of the 14 finalized clusters, 3 of them – clusters 5 (Drainage and Erosion Risk), 7 (Truck Route), and 8 (Congested/Dangerous Intersection) – directly correspond to an initial or preliminarily cluster. The remaining finalized clusters contain comments from 2 or 3 preliminary clusters, except for final cluster 14 (Bicycle Safety on Penn Ave), which contains comments from 4 preliminary clusters. See Appendices B3 and B4 for more information on the reassignment procedure.

Table 3. Merging and Reassignment of Clusters

Final Cluster Number	Final Cluster Short Title	Original Cluster Number(s)	Number of Comments
1	Ramps and Merging Lanes	5, 14 (partially)	43
2	Road Widening	8, 6 (partially)	51
3	Bridge Repair	10, 18	58
4	Road Repair	12, 13	59
5	Drainage and Erosion Risk	25	14
6	Left Turn Flow and Safety	2, 14 (partially)	49
7	Truck Route	7	37
8	Congested/Dangerous Intersection	9	35
9	Rail Services	11, 20, 19	68
10	Traffic Flow and Signal Timing	15, 14 (partially)	54
11	Sidewalk Gaps	1, 6 (partially)	52
12	Pedestrian Crossing Danger	3, 17	71
13	Pedestrian Safety in Corridors	16, 21, 22	59
14	Bicycle Safety on Penn Ave	4, 6 (partially), 26, 32	129

As a result of the consolidation, 14 clusters were created for further analysis. Figure 3 depicts a 14 “word clouds,” or visual representations of text data from the 14 final clusters. These clouds quickly highlight the main themes of comments within each cluster by displaying the most frequent words. They offer an immediate visual summary of key terms: the more often a word appears in the text, the larger it will be displayed in the word cloud. This allows for a rapid assessment of comment themes without needing to read through all the text.

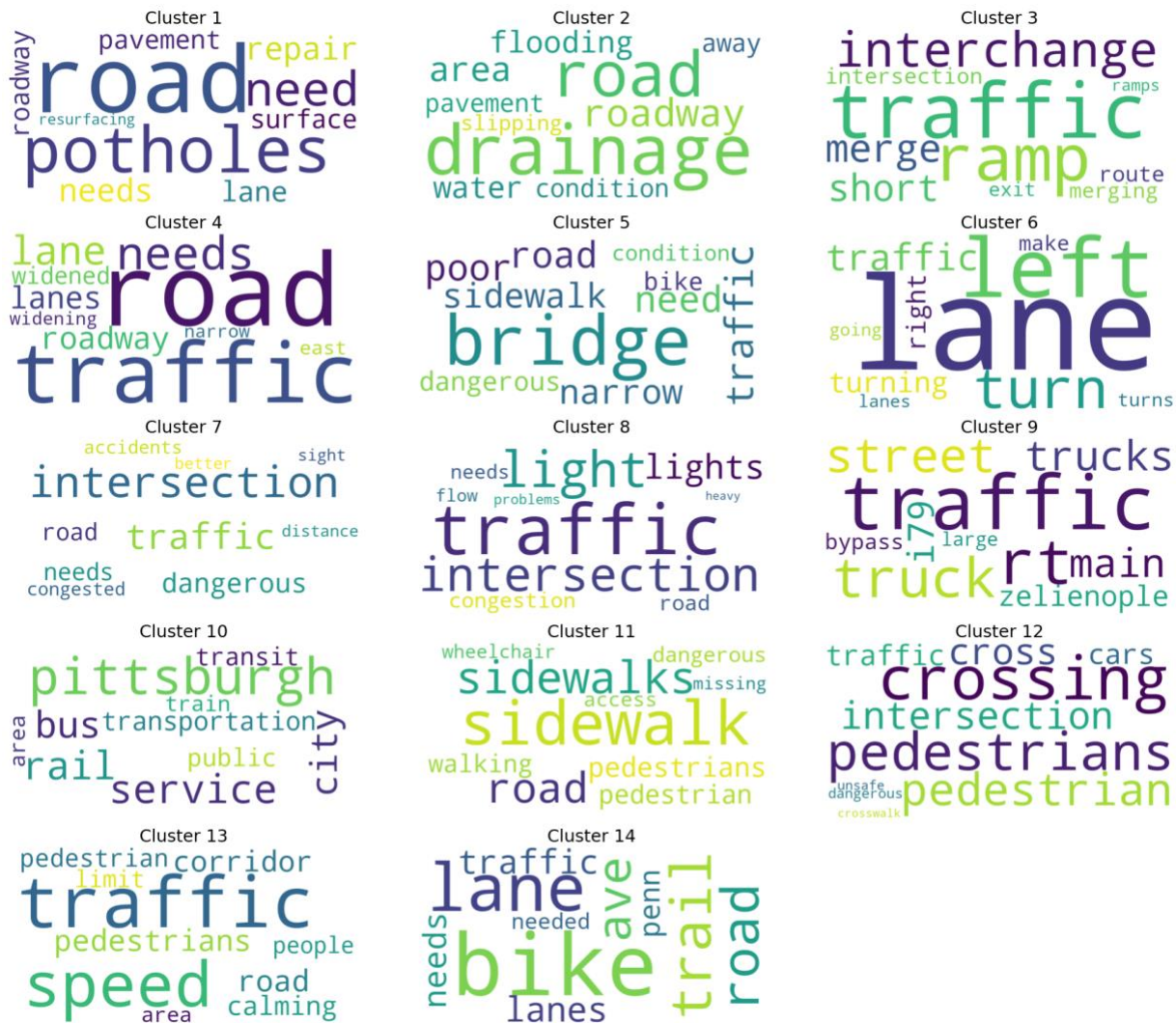


Figure 3. Word clouds for the final 14 clusters

The final clusters can be grouped in three major categories:

- Physical Infrastructure
- Traffic Flow, Intersection, and Transit Access
- Non-Motorized User Infrastructure and Safety

Group 1: Physical Infrastructure. This group includes 225 comments related to the need for rehabilitation, maintenance, or new construction of physical transportation infrastructure assets. These comments are represented in the first five clusters, with short titles: Ramps and Merging Lanes, Road Widening, Bridge Repair, Road Repair, and Drainage and Erosion Risk. Table 4 provides more detailed information on the clusters in this group.

Group 2: Traffic Flow, Intersection, and Transit. This group contains 243 comments reflecting public concerns about delays and congestion, with suggestions such as improved traffic signaling and expanded public transportation networks. These comments correspond to clusters titled Truck Route, Congested/Dangerous Intersection, and Transit Expansion. Table 5 provides more detailed information on the clusters in this group.

Group 3: Non-Motorized User Infrastructure and Safety Centers. This is the largest group, focusing on the needs of pedestrians, cyclists, and wheelchair users. It includes calls for infrastructure such as bike lanes, crosswalks, and pedestrian signals, as well as for stricter enforcement of speed limits—all aimed at protecting non-motorized road users from motorized traffic. Detailed information about the clusters in this group is provided in Table 6.

Comparison of Tables 4, 5, and Table 6 with Figure 3 indicates that the key words for each cluster agree with the GPT-generated titles and summaries. Overall, these results show the value of larger thematic topic groupings in improving clarity and conveying results.

Although a majority of comments pertain to non-physical transportation assets, physical infrastructure, particularly pavement infrastructure, still captures a significant portion of feedback. Approximately 30% of all comments are related to the physical infrastructure group (Group 1).

Upon closer examination of clusters within Thematic Group 1, Cluster 1 (Road Repair) accounts for the largest proportion of all comments at 7.6%, closely followed by Cluster 5 (Bridge Repair) at 7.4%. Other significant roadway-based topics include Cluster 4 (Road Widening) at 6.5% and Cluster 3 (Ramps and Merging Lanes) at 5.5%. Smaller but notable is Cluster 2 (Drainage and Erosion Risk) at 1.8%.

Figure 5 further illustrates the relative size of these topic clusters within Group 1. It should also be noted that addressing many comments related to the needs of pedestrians, cyclists, and wheelchair users (found in Group 3) also requires the construction or improvement of physical infrastructure, such as building new sidewalks or making existing ones ADA-compliant. Full descriptions of all 14 final topic clusters are provided in Appendix C.

Table 4. Descriptions of Physical Infrastructure-Related Topic Clusters

Cluster Number	Short Title	GPT-generated Title	GPT-generated summary
1	Road Repair	Infrastructure Deterioration and Maintenance Challenges in Roadways	Public complaints about transportation and infrastructure primarily focus on the poor condition of roads, highlighting issues such as potholes, crumbling pavement, and the need for resurfacing and repairs. Many roads are described as unsafe due to deteriorating surfaces, inadequate maintenance, and damage from weather events, resulting in traffic disruptions and safety hazards for drivers and cyclists.
2	Drainage and Erosion Risk	Infrastructure Deterioration and Drainage Challenges Affecting Roadway Safety and Condition	Public complaints highlight significant issues with drainage and roadway conditions, leading to frequent flooding and erosion. Many roads are poorly maintained, resulting in safety hazards like slipping and icy spots. Residents express concerns over clogged drains, inadequate drainage systems, and the overall deterioration of pavement, impacting accessibility and safety during rainstorms.
3	Ramps and Merging Lanes	Traffic Congestion and Safety Issues in Interchange and Ramp Design	Public complaints about transportation and infrastructure primarily focus on safety and congestion issues at various interchanges and ramps. Many drivers express concerns about short merging lanes, inadequate visibility, and poorly designed intersections that lead to hazardous conditions and traffic backups. Suggestions for improvements include redesigning ramps, adding dedicated lanes, and enhancing bicycle connectivity.
4	Road Widening	Infrastructure Challenges and Solutions for Roadway Widening and Traffic Management	Public complaints about transportation and infrastructure focus on the need for road widening and improvements to manage increasing traffic. Many residents express concerns about narrow roadways, inadequate lanes, and unsafe intersections, emphasizing the importance of enhancing accessibility and safety for vehicles and pedestrians. There is a strong call for upgrades to accommodate growing populations and commercial activity.
5	Bridge Repair	Infrastructure Challenges and Safety Concerns of Aging and Narrow Bridges in High-Traffic Areas	Public complaints about transportation and infrastructure highlight urgent concerns regarding the poor condition of bridges and roads, emphasizing safety risks for vehicles, pedestrians, and cyclists. Many bridges are deemed structurally unsound, narrow, or lacking proper walkways and bike lanes, leading to dangerous traffic situations and calls for urgent repairs and upgrades.

Table 5. Descriptions of Clusters related to Traffic Flow, Intersection, and Transit

Cluster Number	Short Title	GPT-generated Title	GPT-generated summary
6	Left Turn Flow and Safety	Traffic Congestion and Safety Improvements through Enhanced Turn Lane Infrastructure	Public complaints about transportation and infrastructure highlight significant issues related to left turn lanes, traffic congestion, and safety concerns at intersections. Many respondents call for dedicated left turn lanes, improved signal timing, and better lane configurations to alleviate traffic backups and enhance safety for all road users, including cyclists and pedestrians.
7	Congested/Dangerous Intersection	Intersection Safety and Traffic Management Challenges	Public complaints about transportation and infrastructure highlight significant concerns regarding dangerous intersections that often experience heavy traffic and poor visibility. Many intersections are described as congested and confusing, leading to frequent accidents. Residents call for better signage, redesigns, and improved traffic management to enhance safety for both vehicles and pedestrians.
8	Traffic Flow and Signal Timing	Traffic Congestion and Intersection Safety Improvements	Public complaints about transportation and infrastructure highlight significant issues with traffic congestion, particularly at intersections. Many intersections lack adequate traffic lights or signal timing, leading to unsafe conditions and frequent backups. Residents express concerns about heavy traffic, insufficient road design, and the need for improvements to enhance safety and traffic flow.
9	Truck Traffic Bypass	Heavy Truck Traffic and Infrastructure Challenges in Urban Areas	Public complaints about transportation and infrastructure highlight concerns over heavy truck traffic in towns like Zelienople and Connellsville. Residents express safety issues, pollution, and congestion caused by large trucks navigating narrow streets. Many advocate for dedicated truck bypass routes to alleviate these problems and improve safety for pedestrians and local traffic.
10	Rail Services	Challenges and Opportunities in Public Transportation and Rail Services	Public complaints about transportation and infrastructure in Pittsburgh highlight significant concerns regarding inadequate rail and bus services, particularly between key cities and neighborhoods. Residents express frustration over infrequent and unreliable transit options, the need for improved connections to the airport, and the absence of public transportation in economically depressed areas, emphasizing the necessity for expanded and more efficient public transit solutions.

Table 6. Descriptions of Non-Motorized User Infrastructure and Safety Related Topic Clusters

Cluster Number	GPT-generated Title	Short Title	GPT-generated summary
11	Sidewalk Access and Safety	Pedestrian Safety and Accessibility Challenges Due to Inadequate Sidewalk Infrastructure	Public complaints about transportation and infrastructure highlight significant concerns regarding the lack of sidewalks, dangerous walking conditions, and inadequate accessibility for pedestrians and wheelchair users. Many areas have missing or poorly maintained sidewalks, forcing pedestrians to walk in traffic, creating unsafe situations, especially near schools and busy roads.
12	Pedestrian Crossing Danger	Pedestrian Safety and Traffic Calming Measures in High-Risk Intersections and Crosswalks	Public complaints about transportation and infrastructure highlight significant safety concerns for pedestrians at various intersections and crossings. Issues include a lack of marked crosswalks, malfunctioning signals, and high vehicle speeds, making it dangerous for pedestrians to navigate. Many drivers disregard traffic laws, further exacerbating the risks for those on foot.
13	Pedestrian Safety in Corridors	Urban Traffic Calming and Pedestrian Safety Enhancement in High-Density Corridors	Public complaints about transportation and infrastructure highlight significant safety concerns for pedestrians and cyclists due to high vehicle speeds and traffic volume. Many areas are perceived as hostile to non-motorists, with calls for traffic calming measures like speed bumps, raised crosswalks, and lane reductions to enhance safety and accessibility.
14	Bicycle Safety on Penn Ave	Urban Bicycle Infrastructure and Traffic Safety Improvements	Public complaints highlight significant concerns regarding the lack of safe and continuous bike lanes and trails throughout the region, particularly on major thoroughfares like Penn Avenue. Issues include obstructed bike lanes, dangerous intersections, and inadequate infrastructure that fails to accommodate cyclists and pedestrians, leading to unsafe conditions and calls for improved connectivity and protected routes.

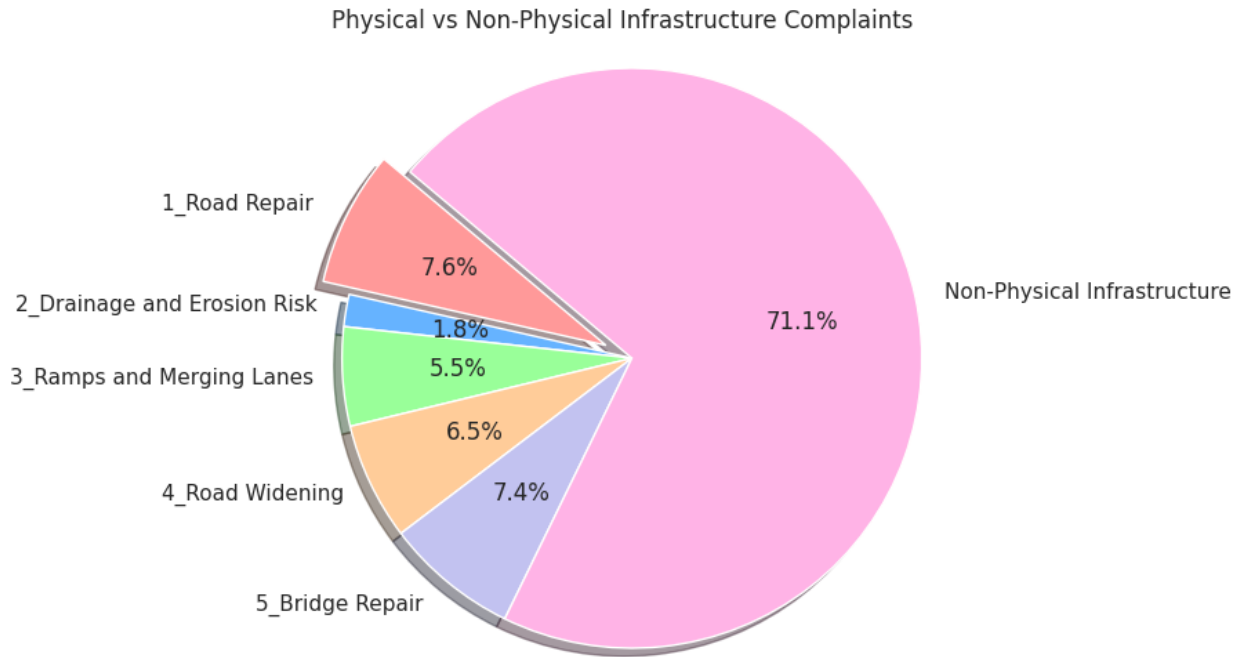


Figure 4. Distribution of physical infrastructure-related comment topics

4.2 Subtopic Modeling for Thematic Refinement

Analysis of Tables 4, 5, and 6 shows that the identified clusters of public comments cover various needs for transportation infrastructure improvements. Approximately 30 percent of these comments were directly concerned with the need for improvements to physical infrastructure, such as maintenance, repair, or upgrading roads and bridges. However, even comments primarily concerned with other transportation issues still call for an improvement of the physical infrastructure.

Since the primary focus of this study was the evaluation of physical infrastructure issues important to the public, sub-clusters of the final clusters were evaluated. Only Cluster 5, titled "Drainage and Erosion Risk," was not sub-clustered due to its small size (14 comments), which was insufficient to produce meaningful sub-clusters. Subtopic modeling was performed on the remaining 13 primary topics, generating five subtopics for each, resulting in a total of 65 subtopics that clustered 765 comments. The results of this analysis can be found in Appendix D.

The results of Road Repair (Cluster 1) subtopic modeling are presented in Table 7 below and serve as an illustrative example. The descriptions of the subtopic clusters, as provided in Table 7 include the subtopic number, comment count, and GPT-generated subtopic labels and summaries.

While all subtopics underscore the urgent need for pavement repair, they articulate various underlying causes and sometimes refer to distinct geographic contexts.

- Broad concerns about road conditions, linking damage to flooding and general wear and tear.
- Specifically highlights potholes in bike lanes and roadways, with a strong emphasis on their impact on bikers.
- Concentrated on issues within Clearfield Township, particularly Herman Road.
- Broad concern about neglected road surfaces across various counties, emphasizing lack of maintenance/resurfacing over years.
- Describes the tactile experience of poor road conditions – "bumpy and uneven," "crumbling shoulders," and damaged road bases. Some comments within this cluster attribute the damage to that caused by horses and horse-powered wagons.

This example shows more detailed patterns in the public feedback that weren't obvious at first glance. It reveals specific needs for different types of users, communities (like rural vs. city areas), and reasons for pavement damage.

Another important observation from the sub-clustering is that, as can be observed from Table 8, although Cluster 11 concerns were focused on the needs of pedestrians, they actually require an upgrade of physical infrastructure, specifically sidewalks. This could involve either constructing new sidewalks or repairing and upgrading existing ones. The number of comments regarding the need for sidewalks was comparable to the number of comments seeking improved roadway infrastructure.

Table 7. Descriptions of Subtopics of “Road Repair” Cluster

Short Title	Number of Comments	GPT-generated Title	GPT-generated summary
Road Repair and Maintenance	17	Urgent Road Repair and Maintenance Needs on Major Routes and Highways	Public complaints regarding transportation and infrastructure highlight a pressing need for road repairs and resurfacing across various areas. Many roads, including Route 30 and PA 68, are suffering from significant damage due to weather, flooding, and inadequate maintenance, leading to dangerous driving conditions and traffic disruptions. Residents express frustration over long-standing issues, such as potholes, crumbling infrastructure, and the impact of construction projects that fail to address existing problems. Additionally, concerns about encroaching trees and the effects of utility work on road conditions further exacerbate the situation, emphasizing the urgent need for comprehensive repairs and maintenance to ensure safety and accessibility.
Paving and Resurfacing	10	Deteriorating Road Conditions and Urgent Need for Paving and Resurfacing Solutions	Public complaints regarding transportation and infrastructure highlight significant issues with the condition of road surfaces across various counties. Many residents express frustration over neglected roads, often describing them as being in terrible or horrible condition, with specific mentions of potholes and rough pavement. There are calls for complete repaving of certain roads, as well as concerns about safety due to poor road conditions, particularly at intersections where speeding is a problem. Additionally, the complaints point out differences in road maintenance, with some areas receiving attention while others, like Washington County, seem to be overlooked. Overall, there is a strong demand for improved road maintenance and resurfacing to enhance safety and driving conditions.
Pavement Deterioration	10	Road Infrastructure Challenges: Addressing Potholes, Collapsing Shoulders, and Traffic Hazards Over Time	Public complaints about transportation and infrastructure in Clearfield Township highlight significant issues with deteriorating roads and shoulders. Residents report problems such as potholes, low shoulders, and areas where the road is collapsing or sinking, particularly on high-traffic routes. Many roads have not been adequately repaired for years, leading to safety hazards like blind spots and flooding during heavy rains. Additionally, there are calls for improvements, including the addition of bike paths and better drainage systems. Overall, the community expresses frustration over the lack of maintenance and the need for urgent repairs to ensure safe travel.

Short Title	Number of Comments	GPT-generated Title	GPT-generated summary
Bike Lane Potholes	15	Urgent Need for Roadway Repairs: Addressing Potholes and Hazards for Bikers and Drivers	Public complaints regarding transportation and infrastructure highlight significant concerns about potholes, particularly in bike lanes and roadways. Many bikers report frequent flat tires due to the numerous and increasingly large potholes, which pose safety risks for both cyclists and drivers. The condition of the roads is described as extremely uneven, with calls for urgent repairs and repaving. Complaints also mention that construction activities contribute to the deterioration of road surfaces, resulting in poor drainage and further pothole development. Overall, there is a strong demand for maintenance and improvement of road conditions to ensure safer travel for all users.
Pavement Damage from Horses	7	Deteriorating Road Conditions Due to Amish Horses: Community Impact of Uneven and Crumbling Pavement	Public complaints about transportation and infrastructure highlight significant concerns regarding the deteriorating condition of roadways. Many residents describe roads as bumpy and uneven, comparing them to farm paths or cow paths, which suggests a lack of proper maintenance. Issues such as potholes, crumbling shoulders, and damaged road bases contribute to unsafe driving conditions, with some roads becoming dangerous due to their warping and weak spots. Additionally, the impact of local activities, such as Amish horses creating large holes, exacerbates the problem. Overall, the community expresses frustration over the poor state of the roads, emphasizing the need for urgent repairs and improvements.

Table 8. Descriptions of Subtopics of “Sidewalk ADA” Cluster

Short Title	Number of Comments	GPT-generated Title	GPT-generated summary
Urban Safety Redesign	12	Traffic Safety and Urban Design Challenges on Multi-Lane Roads	Public complaints about transportation and infrastructure highlight significant concerns regarding safety and accessibility for pedestrians and cyclists. Many roads have high speed limits, with vehicles often exceeding them, creating dangerous conditions for people walking or biking. Sidewalks are frequently described as narrow, crumbling, or blocked by parked cars, making it difficult for pedestrians to travel safely. Additionally, blind corners and steep hills contribute to hazardous situations for both drivers and non-motorized users. There is a strong call for traffic calming measures, such as road diets and designated bike lanes, to improve safety and promote more accessible urban environments.
School Sidewalks and Bus Stops	12	Safety Concerns Surrounding School Commutes and Public Transportation Access	Public complaints regarding transportation and infrastructure highlight significant safety concerns for pedestrians, particularly children walking or biking to school. Many roads lack adequate sidewalks, making routes unsafe as vehicles often speed by. Specific areas, such as Verona Road and Craig Street, are noted for their dangerous conditions, with some bus stops being discontinued due to safety issues. Residents express frustration over the absence of pedestrian-friendly infrastructure, which forces individuals to navigate hazardous roads. The need for improved sidewalks and safer bus stops is a recurring theme, emphasizing the urgency for better planning to ensure safe travel for all, especially near schools.

Short Title	Number of Comments	GPT-generated Title	GPT-generated summary
Pedestrian Safety and Accessibility	11	Improving Pedestrian Safety and Accessibility in Urban Areas with Narrow Sidewalks and Disconnected Trails	Public complaints regarding transportation and infrastructure highlight significant issues related to pedestrian access and sidewalk conditions. Many sidewalks are reported as narrow, in disrepair, or abruptly ending, which creates safety hazards for pedestrians trying to navigate areas near parks and trails. Specific locations, such as Herron Avenue and Frank Curto Park, have been noted for their inadequate pedestrian pathways. Additionally, the lack of proper pedestrian crossings and steep ramps raises concerns about accessibility, particularly for individuals with disabilities. Incidents involving pedestrian fatalities further underscore the urgent need for improved infrastructure, including better bike and pedestrian access and reduced vehicle speeds in these areas.
ADA Access	8	Accessibility Challenges for Wheelchair Users on Sidewalks and Public Routes	Public complaints regarding wheelchair access highlight significant concerns about missing or inadequate sidewalks in various locations, particularly on Timberbrook Drive, Jeremiah Drive, and Oxford Drive. Many individuals express frustration over the lack of accessible pathways, which impedes mobility for wheelchair users and those with difficulty walking. Issues include obstructed sidewalks due to lawn erosion and utility poles, as well as poorly designed ramps that resemble half-pipes, making navigation difficult. The absence of continuous and accessible sidewalks creates barriers for individuals trying to reach businesses and navigate their neighborhoods safely. Overall, these complaints emphasize the urgent need for improved infrastructure to enhance accessibility for all.

Short Title	Number of Comments	GPT-generated Title	GPT-generated summary
Sidewalk Widening	9	Challenges and Improvements for Pedestrian Safety in Urban Areas	Public complaints regarding transportation and infrastructure highlight significant concerns about pedestrian safety and the condition of sidewalks. Many areas, particularly along Browns Hill Road and McKnight Road, feature narrow or overgrown sidewalks that force pedestrians to walk in the gutter, creating dangerous situations. Complaints also mention poorly maintained bridge decks and the need for wider sidewalks to accommodate foot traffic safely. Additionally, the presence of panhandlers in high-traffic areas adds to the discomfort for pedestrians. Overall, there is a strong call for improved sidewalk conditions and safer walking environments to ensure pedestrian safety in these communities.

4.3 Geographic-Based Differences in Public Infrastructure Feedback

Despite a shared concern for deteriorating infrastructure, differences in priorities shaped by local context and perceived urgency were observed across census tract groups. This section summarizes these differences.

Comparative analyses across census tract groups were conducted to examine whether the geographic characteristics of the census tract surrounding a transportation asset influence public participation. Specifically, the analysis aimed to determine whether the volume of public feedback varies by census tract group and to identify trends in topic areas within each group. This analysis provides insight into the volume, thematic focus, and spatial distribution of citizen engagement with transportation infrastructure issues across different geographic areas.

As observed in Figure 5, the absolute and relative number of comments from census tract Groups A, B, and C highlight variations in transportation needs. One of the key objectives of this study was to evaluate how perspectives on traffic infrastructure improvement vary across census tract groups. To examine this, comments within each cluster from census tracts in Groups A, B, and C were compared using GPT-4o-mini model. To ensure objectivity, comments from these geographic groups were labeled as Group A, Group B, and Group C, without specifying the underlying census tract characteristics to the AI tool. The LLM was asked to summarize each group's key needs, concerns, and focus areas regarding road repairs and compare the groups based on shared themes as well as differences in concern or tone and urgency of need.

The following subsections present the results of this comparison for the "Roadway Repairs", "Bridges", and "Sidewalk Access and Safety" clusters. The reports closely follow the GPT outputs. See Appendices E1: Cluster 1 (Road Repair), E2: Cluster 5 (Bridge Repair), and E3: Cluster 11 (Sidewalk Access and Safety) for the full GPT responses.

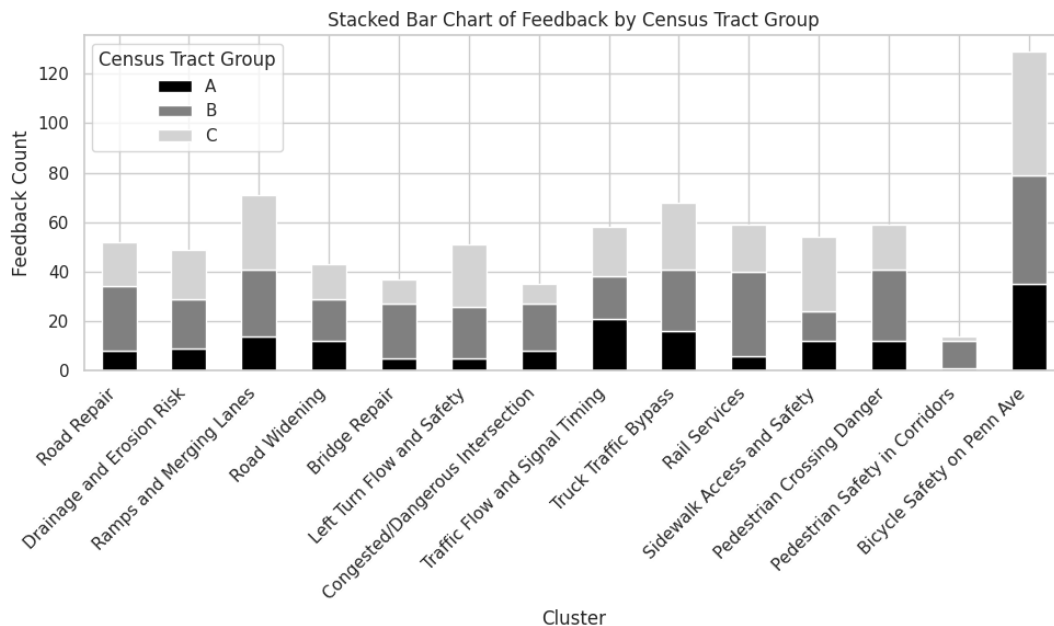


Figure 5. Number of responses for each cluster from census tract Groups A, B, and C.



Figure 6. Distribution of feedback counts for Cluster 1 Road Repairs based on census tract (a) Group A, (b) Group B, and (c) Group C.



Figure 7. Distribution of feedback counts for Cluster 5 Bridges Repair based on census tract (a) Group A, (b) Group B, and (c) Group C.



Figure 8. Distribution of feedback counts for Cluster 11 Sidewalk Access and Safety based on census tract (a) Group A, (b) Group B, and (c) Group C.

4.3.1 Roadway Repair Feedback by Census Tract Group

A cluster with comments related to Road Repair consisted of 59 comments, including 6 comments for Group A, 34 for Group B, and 19 for Group C locations. Figure 6 shows the locations of these census tracts along with the number of comments for each group.

Comments regarding infrastructure in all three census tract groups share a common theme of widespread dissatisfaction with the deteriorated condition of roadways, particularly the

prevalence of potholes, uneven surfaces, and insufficient long-term maintenance. However, their focus areas and primary concerns differ in emphasis.

- Group A census tracts comments primarily focus on the urgent need for road resurfacing and a perception of regional neglect. They express significant concern over differences in maintenance, particularly persistent potholes, especially after utility work (e.g., water line replacements) or state road maintenance failures. This group also highlights the lack of resurfacing after infrastructure work, which leaves roads in dangerous, unfinished states, and notes the deterioration of bike lanes.
- Group B census tracts comments provide broad and detailed documentation of widespread roadway degradation, especially on high-traffic routes and rural connectors. They express serious concerns about critical infrastructure failures, including subgrade collapse, stormwater erosion, shoulder crumbling, flood-related damage, and neglected bridges and ramps. This group frequently complains about maintenance delays, some spanning years, and expresses frustration over patchwork repairs and missed opportunities to coordinate upgrades with adjacent projects.
- Group C census tracts comments lament that roads are left unrepaired or closed for years, resulting in long detours and increased travel costs. They describe roads as uneven, warped, or "like a cow path," implying severe long-term degradation that leads to repeated inconvenience and physical damage (e.g., flat tires, unsafe driving conditions). These comments also emphasize the urgent need for improved bike safety and curb visibility.

It's interesting to note that the LLM evaluation indicates an escalation of urgency regarding traffic infrastructure, moving from moderate in Group A to high in Group B, and reaching a critical level in Group C. While access and mobility impacts are observed across all groups, their severity differs. The comments regarding census tracts in Group A primarily report degraded bike access. Group B comments highlight broader regional safety and freight implications. In contrast, the census tracts in Group C face more immediate challenges like direct road closures and connectivity breakdowns. Regarding recommendations, Group A emphasizes the need for balanced maintenance and improved follow-up after utility work. Group B advocates for systemic reinvestment and integrating repairs into long-term planning. Meanwhile, Group C urges immediate emergency interventions.

Despite these differences in urgency and specific impacts, all groups converge on the fundamental need for durable, well-coordinated repair efforts that prioritize safety, mobility, and long-term functionality.

4.3.2 Bridge Feedback by Census Tract Group

Comments from all three census tract groups share concerns about deteriorating bridge conditions, safety risks, and inadequate pedestrian and cyclist infrastructure. Common themes include the critical role bridges play in community connectivity, visible structural damage, and

the need of improved pedestrian and cyclist infrastructure, including safer sidewalks and dedicated bike lanes.

- Group A census tracts express the highest urgency and a deeply alarmed tone, citing imminent collapse, rust, potholes, visible holes, and falling debris. Narrow or nonexistent sidewalks, broken railings, and fake or inadequate bike lanes are also frequent concerns. Some comments express distrust regarding safety reports or note lack of documentation on inspections. The removal or deterioration of key bridges has isolated communities and affected local economies. Closed or weight-restricted bridges impede transit, including school buses and emergency vehicles.
- Group B census tracts share the urgency but emphasizes poor design, aging infrastructure, and overuse by large trucks. The comments reports of rot, potholes, and weight limits, especially on historic or wooden bridges, with excessive truck traffic not suited for these bridges accelerating their deterioration. Their tone is more pragmatic, highlighting crash risks, bottlenecks, and the need for redesign—especially to accommodate modern traffic and protected bike/pedestrian lanes.
- Group C census tracts present a more measured tone, focusing on preventative maintenance, safe multimodal connections, and improving access to essential services like hospitals and transit. Though still concerned about deterioration, their emphasis is on long-term planning and infrastructure integration as well as noise and unsafe merge patterns, especially near hospitals and neighborhoods.

All groups report significant negative impacts of bridge conditions on access and mobility. These range from economic disruption and restricted essential services in Group A, to accident-prone bottlenecks and dangers for public transit users in Group B. Group C, meanwhile, highlights impassable routes for pedestrians and cyclists, severely limiting their safe movement. In spite of some differences, the comments from all three groups call for prioritized repairs, enhanced inspections, and multi-modal planning.

4.3.3 Sidewalk Feedback by Census Tract Group

A cluster with comments related to Sidewalk Access and Safety consisted of 32 comments, including 8 comments from Group A, 26 from Group B, and 18 from Group C census tracts. Figure 8 shows the locations of these census tracts along with the number of comments for each group.

Public comments from all three groups reflect widespread concern over inadequate sidewalk infrastructure. Shared themes include missing or unsafe sidewalks, high-speed traffic, poor ADA compliance, and pedestrian exposure to dangerous conditions. However, each group emphasizes different priorities.

- Group A census tracts focus on site-specific hazards: absence of sidewalks on busy, high-speed, or narrow roads; dangerous road geometry (blind corners, steep hills) impeding pedestrian safety; difficulty accessing transit due to hilly terrain and unsafe paths; narrow or poorly designed sidewalks that cannot support two-way pedestrian traffic or force

unsafe vehicle maneuvers; and difficulty accessing transit due to hilly terrain and unsafe paths. The tone is reactive and rooted in lived danger, with a high urgency for improvements like sidewalk expansions for workers in car-oriented areas, road design changes, and safer access to transit stops.

- Group B census tracts comments tone is critical and advocacy-driven, reflecting serious safety risks for children, people with disabilities, and transit users. The comments highlight that multiple areas lack sidewalks entirely, especially near schools and key transit corridors; many areas have unsafe walking conditions due to high-speed traffic, narrow sidewalks, potholes, and cars making children and families unable to safely walk or bike to school. Some areas exhibit infrastructure design flaws including sidewalk-ramp geometry that threatens ADA compliance as well as missing or unusable wheelchair access. Lack of pedestrian access makes many bus stops unusable.
- Group C census tracts comments emphasize sidewalk discontinuity and obstructions—utility poles, parked cars, and poor design—that make walking unsafe, especially near parks and community destinations due to pedestrians being forced into roads. Some sidewalks have poor ADA compliance due to structural and spatial constraints. The tone is more observational, pointing to longstanding design neglect. Urgency is moderate to high, with mobility impacts affecting both commuters and recreational users.

In summary, while all groups call for better sidewalk infrastructure, Group A census tracts centers on localized danger, Group B census tracts on structural failures, and Group C census tracts on network gaps and obstructions. Together, they reveal a need for both targeted safety upgrades and comprehensive, connected pedestrian networks that support safe mobility.

4.3.4 Assessment of Roadway Surface Roughness Across Census Tract Groups

Using PennDOT’s roadway management system segments database, comments from the cluster “road repairs” were supplemented with their corresponding census tracts’ average International Roughness Index. Of the 59 comments, 54 were regarding roadway conditions in census tracts where International Roughness Index data was available. Figure 10 illustrates how this feedback and its IRI are distributed across census tract Groups A, B, and C.

The number of comments and their average IRI for each group are as follows:

- Group A Census Tracts:
 - 6 comments
 - Average IRI: 185.89 in/mile
- Group B Census Tracts:
 - 31 comments
 - Average IRI: 158.79 in/mile
- Group C Census Tracts:
 - 17 comments
 - Average IRI: 169.81 in/mile

Based on these averages and feedback volume, it appears that Group A census tracts' roadway conditions are poorer, yet are the least frequently reported group. However, these findings should be interpreted with caution given the small number of comments and that the IRI is a measurement of roughness and cannot represent every aspect of a pavement's condition.

Nonetheless, the data proves particularly valuable for site-specific analysis. For example, Bebout Road, located in Peters Township in Washington County (census tract 42125746302), received 4 comments regarding its poor condition. Examples of this feedback are “Bebout road between Valley Brook and Venetia road has multiple points where the shoulders are giving out along with the increase in traffic that has caused the road to start to crumble and need repaved in some areas.” and “Needs complete overhaul NOT spreading tar and rocks.. TOTAL RESURFACING required.” This Group C census tract has an average IRI of 176.47, which is above the threshold to be considered rough and is higher than its group's average IRI of 169.81. In this scenario the feedback and indices validate one another and present a strong case that Bebout Road's pavement condition requires rehabilitation.

This procedure can be replicated for the remaining census tracts and demonstrates how public participation, and quantitative data can be used together to provide a more holistic understanding of infrastructure conditions.

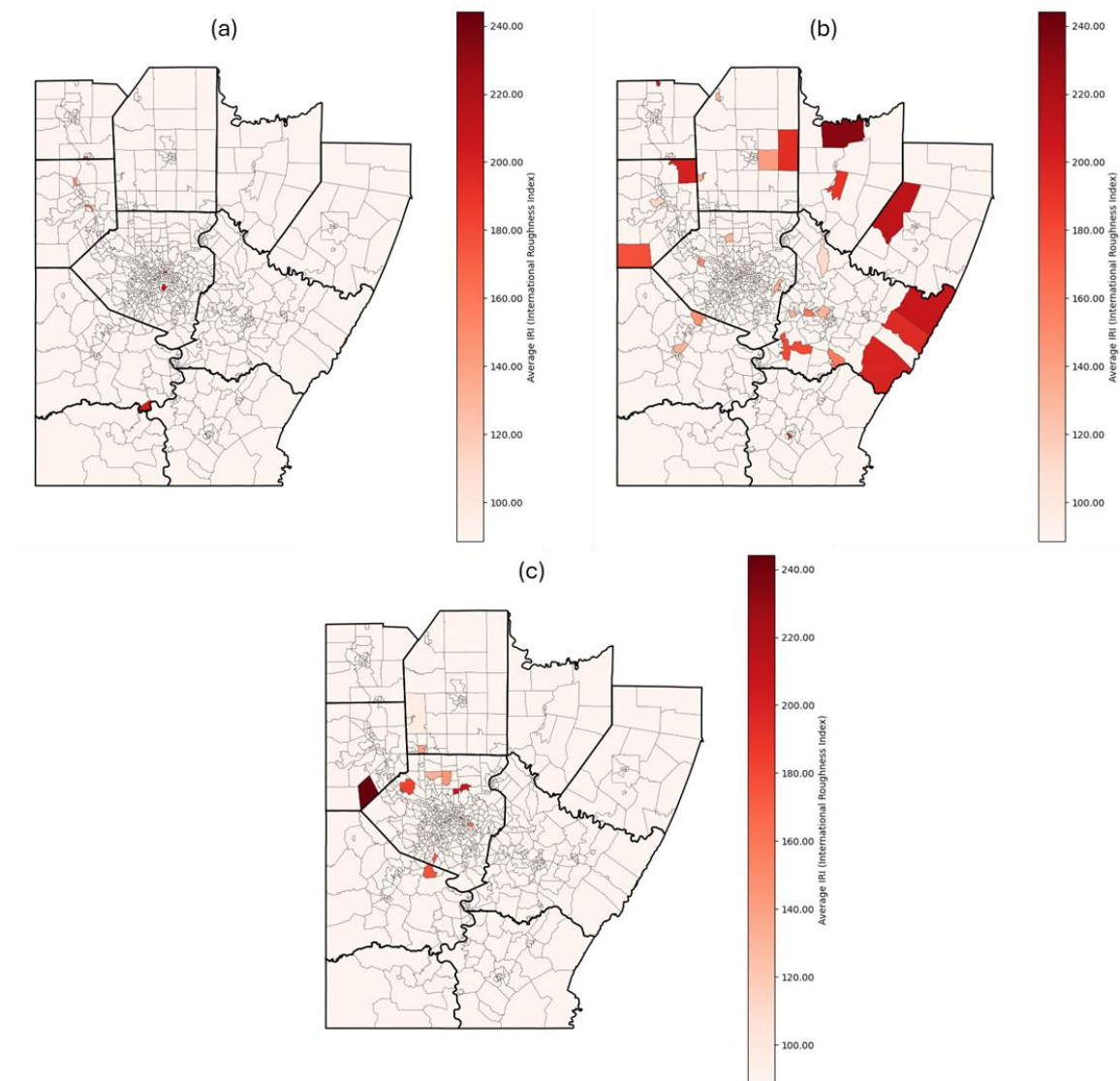


Figure 9 Average International Roughness Index (IRI) values by census tract based on census tract (a) Group A, (b) Group B, and (c) Group C.

4.3.5 Pavement Conditions, Safety, and Traffic Flow

Pavement conditions are more than just a nuisance; they represent serious safety and congestion concerns. The results presented in sections 4.3.1 Roadway Repair Feedback by Census Tract Group and 4.3.3 Sidewalk Feedback by Census Tract Group illustrated that pavement conditions, including roadways and sidewalks, are a central theme in the public feedback database, where issues such as potholes, crumbling surfaces, and uneven pavements were frequently reported. In addition to reporting the infrastructure conditions, many comments related these conditions to safety hazards and traffic congestion. Below is a summary of the specific pavement conditions and their corresponding safety and traffic impact within census tract Groups A, B, and C.

The roadway and dedicated bike lane pavement conditions in Group A census tracts, specifically the presence of potholes, were cited as a particular concern for cyclists, both in terms of their safety and the frequent occurrence of flat tires. Sidewalk conditions were a specific concern for pedestrians, especially near schools and high-volume roadways. Navigating narrow, uneven, crumbling, and discontinuous sidewalks forced pedestrians into dangerous situations. Comments here were focused more on the effect of poor pavement conditions on mobility than on traffic congestion.

Group B census tracts reported the most critical roadway conditions, including shoulder collapse, crumbling pavement, and frequent flooding due to inadequate drainage systems. Concerns presented included increased chances of hydroplaning and ice patches in winter conditions. Traffic congestion was also a widely cited concern, as these roads are frequently closed due to flooding, increasing travel time.

Pavement distress, such as unevenness and roughness, are often cited in Group C census tracts. Discontinuity and poor design of sidewalks, which led pedestrians onto roadways and created unsafe situations were a recurring theme. Group C census tracts often invoke comments describing how roadways are frequently closed, rather than receiving the rehabilitation and maintenance they need. These road closures, which have spanned several years, require residents to take detours, thereby increasing their travel time and contributing to local traffic congestion.

These results demonstrate how the public experiences roadway issues in relation to geographic characteristics of the surrounding census tract. While all groups had reported problems, Group A communities primarily described immediate safety hazards that affected mobility for pedestrians and cyclists. The infrastructure in Group B received feedback focused on critical placement distresses and failures, as well as resulting in traffic congestion. Group C communities, in contrast, were more concerned with nuanced pavement issues and the long-term mobility impacts of extended road closures and detours. This indicates that pavement quality has real and specific implications for safety and mobility, which vary significantly across areas with different geographic areas.

5 Conclusion

This study shows that AI-assisted analysis can help transportation agencies interpret large volumes of public comments more efficiently while preserving the value of community input. Applied to transportation feedback from Southwestern Pennsylvania, the workflow identified a substantial share of comments focused on physical infrastructure, especially pavement condition, roadway geometry, sidewalks, and related safety concerns. The analysis also showed that these concerns varied across census tract groups, suggesting that geographic and socioeconomic context shape how residents experience transportation deficiencies. By combining topic modeling, geospatial analysis, and roughness data, the study demonstrates that public feedback can complement traditional asset management metrics rather than replace them. In practice, this means agencies can use community input to better identify where maintenance, redesign, or safety interventions may be most urgent.

The study is limited by its regional scope and by the voluntary nature of the comment dataset, which may not fully represent the broader community. Future work should test the workflow in other regions, compare open-source and proprietary language models, and develop clearer metrics for linking public concerns to travel time, user burden, and infrastructure investment priorities.

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Appendix A: Topic Modeling Results – Kmeans Prior to Reassignment

This appendix provides the results of the K-Means topic clustering analysis performed on the 864 comments successfully linked to a census tract.

Topic Cluster Descriptions

This appendix provides a full record of all the initial topic clusters identified by BERTopic using the K-Means algorithm. Topic Cluster Descriptions include BERTopic's outputs, keywords and comment count, the GPT-generated topic labels and summaries, and 3 representative comments. The GPT-generated topic labels and summaries help to improve the interpretability and understanding of a cluster beyond its keywords.

Each topic was also assigned an arbitrary topic number for organizational purposes. For details on how topic labels and summaries were generated, refer to Appendix F: Prompts for Topic Labeling.

Topic 1: Issues of Narrow and Missing Sidewalks Impacting Pedestrian Safety and Accessibility

Comment Count: 48

Top Keywords: sidewalk | sidewalks | walk | walking | pedestrians | pedestrian | narrow | unsafe | missing | park

Summary:

Public comments highlight significant concerns about narrow and missing sidewalks, which compromise pedestrian safety and accessibility. Many residents express frustration over incomplete pathways that hinder safe travel to essential destinations, while inadequate sidewalk width and placement leave pedestrians feeling vulnerable, especially in areas with high-speed traffic and poor road conditions.

Representative Comments:

- There is no sidewalk to get from Timber brook Dr to Jeremiah Dr. This missing link would allow many people to walk to Main St.
- The sidewalk on Browns Hill Rd is very narrow and only exists on one side of the road. If the sidewalk was wider and was on both sides of the road pedestrians would feel safer and be able to get to the businesses on Browns Hill Rd much easier.
- This roadway is already iffy for cars people travel at 60mph the speed limit is 35mph there are potholes when it rains ppl hydroplane but the sidewalk is atrocious it is unsafe for walkers and bikers to get from Bloomfield to downtown this way.

Topic 2: Enhancements Needed for Left Turn Traffic Flow and Safety Improvements

Comment Count: 47

Top Keywords: left | turn | lane | left turn | turn lane | turning lane | turning | right | traffic | turns

Summary:

Public comments highlight the need for improvements in left turn traffic flow and safety at various intersections. Many drivers report that existing left turn lanes are insufficient, causing congestion and dangerous situations during peak hours. Requests include the addition of dedicated left turn lanes to enhance traffic movement and safety for all road users.

Representative Comments:

- Need individual left turning lane in both directions instead of right turning lane . traffic backs up and dangerous when people try to turn left
- The southbound left turn lane is over capacity fills up in the morning rush hour and spills into the through lane. The intersection needs dual left turn lanes.
- Need to have a left turn lane for traffic going west on 910

Topic 3: Unsafe Conditions for Pedestrians at Busy Intersections

Comment Count: 47

Top Keywords: pedestrians | crossing | pedestrian | crosswalk | cross | cars | pedestrian crossing | dangerous | intersection | trying

Summary:

Public comments highlight unsafe conditions for pedestrians at busy intersections, particularly due to a lack of marked crosswalks and non-functional signals. Drivers often disregard traffic laws, and enforcement is minimal, leading to dangerous situations for pedestrians who must navigate these hazards, sometimes resorting to jaywalking to cross safely.

Representative Comments:

- The Ross Park and Ride attracts many pedestrians but there is not a marked crosswalk at 19/Center Ave. Most drivers are unfamiliar with unmarked crosswalks. Dangerous situations occur when pedestrians cross 19. a marked crosswalk stop sign or light
- Stop signs and other traffic laws in the Stanton heights neighborhood are regarded as optional. It is openly known that there is ABSOLUTELY ZERO enforcement by authorities for traffic violations not only in this neighborhood but throughout the entire city
- All four crosswalk signals are unfunctional. None of them change from the stop hand to walk during any of the stoplight cycles making it so pedestrians have to essentially wait for an opening to jaywalk.

Topic 4: Enhancing Connectivity and Safety of Bike and Pedestrian Trails along Riverfronts and Critical Pathways

Comment Count: 45

Top Keywords: trail | connection | heritage trail | heritage | bike | connect | safe | route | river | access

Summary:

Public comments highlight the need for improved connectivity and safety of bike and pedestrian trails, particularly along riverfronts and key pathways. Concerns include inadequate connections to essential locations, dangerous conditions for cyclists, and the necessity for linking existing routes to enhance access and promote safer travel between communities.

Representative Comments:

- Bike trail needs to be connected to the far side of the railroad so that its possible to get from one side of the map to downtown
- This is marked as a bicycle route but cannot safely accommodate bicyclists. It is unbelievably dangerous and frightening.
- This bike lane does not connect to anything. It is needed to connect McKees Rocks with Coraopolis and avoid the terrain of PA51. It would also be useful to connect to the Montour Trail.

Topic 5: Safety Concerns Regarding Insufficient Length and Poor Visibility at On-Ramp
Merging Points

Comment Count: 41

Top Keywords: ramp | short | merge | interchange | merging | exit | route | 30 | traffic | route 30

Summary:

Public comments highlight significant safety concerns regarding on-ramp merging points, particularly due to their insufficient length and poor visibility. Many drivers experience hazardous conditions, including backups onto the interstate and challenging merges, prompting calls for improvements or even the removal of certain ramps to enhance overall safety.

Representative Comments:

- Cars backup onto interstate from ramp unsafe they have another ramp further down that is safer to use. Remove ramp.
- Merging and people getting off... too short... whole interchange of Summit Park Drive need moved.
- Hazardous curve and limited interchange ramps and merge lane issues.

Topic 6: Safety Improvements for Sidewalks and Bike Lanes on Local Roads

Comment Count: 41

Top Keywords: lane | bike lane | bike | road | sidewalk bike | needs sidewalk | road needs | 22 | sidewalk | widening

Summary:

Public comments highlight a need for safety improvements on local roads, specifically advocating for dedicated bike lanes and additional traffic lanes to facilitate smoother merging. Concerns focus on enhancing cyclist safety, particularly on uphill routes, and ensuring that infrastructure supports safe and efficient travel for all road users.

Representative Comments:

- Add a additional right lane from Churchill eastbound onramp to Monroeville Bus. 22 Exit to allow more time to merge. Lane would then become EXIT ONLY for Business 22.
- NEED DEDICATED BIKE LANE.
- A bike lane would be very helpful particularly northbound when going uphill.

Topic 7: Urgent Need for a Bypass to Alleviate Heavy Truck Traffic and Improve Safety in a Congested Borough

Comment Count: 37

Top Keywords: rt | truck | main street | i79 | trucks | bypass | main | 19 | rt 19 | street

Summary:

Residents are expressing urgent concerns about heavy truck traffic in their boroughs, highlighting safety issues, particularly near schools. They call for the creation of bypass routes to reroute trucks away from congested areas, which would improve safety and reduce pollution, ultimately enhancing the quality of life for local residents.

Representative Comments:

- We would like to reroute Rt 989 to a new proposed Access road that we reference as 19th St. This would wMove Rt 989 block west on Rt 65. This will detour all of this heavy truck traffic from traveling in front of our school zone.
- Too many large trucks coming through the City of Connellsville at the above location. This is very unsafe and dirty for the residents in this area. A separate truck route bypass would be great.
- Zelienople is truck congested and desperately needs an EastWest Bypass for route 68 to keep through truck traffic out of the borough.

Topic 8: Traffic Infrastructure Improvement Proposals for Enhanced Roadway Capacity and Congestion Mitigation

Comment Count: 36

Top Keywords: needs widened | widened | 228 | needs | widening | east | roadway | lanes | entrance | road needs

Summary:

Public comments highlight a pressing need for improvements in traffic infrastructure, specifically calling for roadway expansions and better connectivity. Residents emphasize the necessity of widening roads to accommodate increased traffic and reduce congestion, particularly between key areas like Cranberry Township and Mars, to enhance overall roadway capacity and alleviate long-standing traffic issues.

Representative Comments:

- Needs to be widened and made into a 4 lane roadway. Has been a traffic nightmare for 50 years
- Need to widen 228 to align with Cranberry Twp to the west and Mars to the east
- Need to create a full connection between Cranberry Woods Dr and Freeport Rd. This would alleviate substantial congestion on Franklin Rd in the area.

Topic 9: Critical Concerns Surrounding a Perilous and Congested Intersection

Comment Count: 35

Top Keywords: intersection | intersection intersection | dangerous | traffic | sight distance | intersections | light | congested | traffic light | pike

Summary:

Public comments highlight critical safety issues at a congested intersection, particularly regarding insufficient signage and confusing traffic patterns. Residents express concern over speeding vehicles and the danger posed by the intersection, noting a recent fatality. Calls for redesigning the area aim to improve safety and reduce traffic congestion.

Representative Comments:

- This intersection needs better signs
- Two areas. Along Washington Pike where it backs up crossing over the creek near the Home Depot store. What a mess. Then continuing down Washington Pike, I-79 Route 50 traffic backs up and is dangerous.
- Dangerous and confusing 5 way intersection where vehicles drive too fast. A woman was just killed at this intersection. This intersection needs to be redesigned to slow cars down.

Topic 10: Urgent Concerns Over Deteriorating Bridge Conditions and Impending Replacement Needs

Comment Count: 34

Top Keywords: bridge | poor condition | falling | weight | trucks | holes | deck | poor | condition | local

Summary:

Public comments highlight urgent concerns about the deteriorating conditions of local bridges, emphasizing safety risks due to narrow designs, age, and inadequate infrastructure. Many bridges are not eligible for federal funding, leading to calls for immediate replacements and reconstructions to prevent accidents and ensure safe passage for vehicles, especially larger trucks.

Representative Comments:

- Old bridge narrow at the bottom of a steep grade causes lots of serious accidents needs replaced
- This road is in the need of reconstruction due to its age and it is not on the NHS map that would allow funding for total reconstruction. It is a main link between SR0048 and the Patton Street Bridge
- Lots of local bridges like this one... falling apart recent crashes not safe too large of trucks on roads cars over the speed limit.

- Old bridge narrow at the bottom of a steep grade causes lots of serious accidents needs replaced
- This road is in the need of reconstruction due to its age and it is not on the NHS map that would allow funding for total reconstruction. It is a main link between SR0048 and the Patton Street Bridge
- Lots of local bridges like this one... falling apart recent crashes not safe too large of trucks on roads cars over the speed limit.

Topic 11: Enhancing Commuter Rail and Bus Services to Alleviate Transportation Challenges in the Region

Comment Count: 31

Top Keywords: pittsburgh | rail | service | train | commuter | travel | city | passenger | rail service | transit

Summary:

Public comments highlight significant dissatisfaction with current commuter rail and bus services in the region, particularly between Pittsburgh and Philadelphia. Concerns include infrequency, high costs, and slow travel times, with calls for improvements such as high-speed rail options and more frequent routes to enhance connectivity and convenience for passengers.

Representative Comments:

- Rail service between Pittsburgh and Philadelphia is abysmal. It is infrequent slow expensive and impractical for nearly everyone including someone like me who really likes the train and wishes he could take it.
- Need high speed rail transportation from Pittsburgh to the Airport
- I realize this is Norfolk Southern RR line but the addition of passenger rail service to and from Latrobe Greensburg Pittsburgh etc. is interesting as long as there are frequent routes. Could start small and add more stops over time.

Topic 12: Urgent Repairs Needed for Long-neglected Roads Suffering from Structural Failures and Traffic Issues

Comment Count: 30

Top Keywords: road | repair | need repair | need | repaired | years | roads | 30 | county | repairs

Summary:

Public comments highlight urgent needs for repairs on long-neglected roads suffering from structural failures and traffic issues. Specific concerns include deteriorating conditions, such as potholes and crumbling shoulders, exacerbated by flooding events. Inadequate maintenance has led to traffic flow problems, particularly on key thoroughfares that have been overlooked in recent paving projects.

Representative Comments:

- Herman Road is 1.91 miles located at the southeast portion of Clearfield Township beginning at Clearfield Road and enters into Summit Township. It is a main thoroughfare for traffic. It is deteriorating with potholes abrupt dropoffs crumbling shoulders.
- The roadway took serious damage during a flooding event in August. Unfortunately the road is restricted to one lane and is causing traffic flow problems on Route 258. The damage is too much for our small municipality to deal with.
- This section of US 19 was left out of the last two paving projects and is in terrible condition

Topic 13: Urgent Repairs Needed for Pothole-Ridden Bike Lanes Impacting Bikers' Safety and Roadway Conditions

Comment Count: 29

Top Keywords: potholes | pavement | road | path | holes | bikers | surface | damaged | rough | repair

Summary:

Public comments highlight the urgent need for repairs on bike lanes plagued by numerous potholes, which pose safety risks for cyclists. Many users report flat tires and overall poor roadway conditions, emphasizing the impact on the biking community, particularly near local bike collectives. Immediate action is requested to improve safety and accessibility.

Representative Comments:

- Pavement is in poor condition.
- Road surface needs paved
- This roadway specifically the bike lane has a million potholes. I have personally gotten 3 flat tires last season on this road. This is especially illfated because there is a bike collective at Lexington Thomas Blvd so many bikers use this road.

Topic 14: Severe Traffic Congestion and Inefficient Intersection Flow During Peak Times

Comment Count: 29

Top Keywords: congestion | flow | intersection | traffic | problems | traffic flow | heavy | heavy traffic | traffic congestion | causes traffic

Summary:

Public comments highlight severe traffic congestion and inefficient intersection flow during peak times. Residents express concerns about narrow roadways causing premature slowing, which exacerbates delays. Specific areas, such as the intersection near BJs and Starbucks, are noted for significant congestion, with ongoing projects failing to alleviate the traffic issues.

Representative Comments:

- The intersection needs improvements to improve traffic flow and safety.
- They cause a lot of congestion because they are narrow inside causing people to prematurely slow down prior to entering them.
- From the BJs development to the intersection with starbucks up to Chartiers Creek and down to Sheetz Serious congestion no traffic flow the projects that are going on dont help.

Topic 15: Traffic Light Issues: Inefficiencies and Delays in Traffic Flow

Comment Count: 29

Top Keywords: light | lights | red | mcmurray | traffic light | green | traffic | sign | times | stop sign

Summary:

Public comments highlight significant issues with traffic light management and infrastructure, leading to inefficiencies and delays in traffic flow. Concerns include inadequate signage and visibility at intersections, hazardous speed conditions in residential areas, and dangerous driving behaviors exacerbated by poorly timed traffic signals, all of which jeopardize pedestrian safety and overall traffic efficiency.

Representative Comments:

- There are no lines no lights no reflectors nothing at this intersection. On my way to work yesterday morning the person in the car in front of me almost turned into the hillside instead of the millenium drive roadway and its near our HIGHSCHOOL.
- The speed of travel through the residential and business district along Route 30 through Forest Hills is hazardous. The DOT timing of the lights to expedite movement at speed from Turtle Creek area to the interstate highway poses significant disincentives
- The multilane oneway Forbes Ave from Magee to Bellefield is plagued by high vehicle speeds even in the context of afternoon congestion. People are speeding to catch lights change lanes and turning rightleft without taking notice of pedestrians.

Topic 16: Enhancing Pedestrian Safety and Traffic Management in High-Traffic Corridors

Comment Count: 27

Top Keywords: corridor | traffic | speed | pedestrians | parking | pedestrian | automobile traffic | fifth | ave | hill

Summary:

Public comments highlight significant safety concerns for pedestrians and cyclists in high-traffic corridors, where dense retail and pedestrian activity clash with automobile traffic. Many residents call for design changes, such as lane reductions and elevated crosswalks, to enhance safety without impeding traffic flow, suggesting that some areas may be better suited for reduced vehicle access.

Representative Comments:

- Density of retail business and pedestrians is incompatible with automobile traffic. Unsafe for automobile traffic at almost any speed. Area would be safer without automobile traffic. Liberty Ave is better suited and immediately parallel
- This corridor is extremely hostile to pedestrians and cyclists. It is difficult to either cross or to travel along. And it doesn't look particularly safe for motorists either.
- Fifth Ave is dangerous for pedestrians in its current configuration. Lane reductions as well as elevated crosswalks are critical for pedestrian safety in this area. These features do not limit peak throughput but do protect against offpeak speeding.

Topic 17: Concerns and Recommendations for Enhancing Safety at Sheepskin Trail Crossings
Comment Count: 24

Top Keywords: crossing | trail | sheepskin trail | sheepskin | saxonburg | cross | unsafe | safer | crossings | butler

Summary:

Public comments highlight significant safety concerns at Sheepskin Trail crossings, particularly regarding the poor condition of an at-grade railroad crossing with loose timber boards and a lack of a sidewalk. Additionally, there is a call for a crosswalk on W. Chestnut St. to enhance pedestrian safety near a busy bus stop.

Representative Comments:

- 100 Freeport Rd. Butler PA 16001 Butler Township to 410 West Main Street Saxonburg PA. 16056 Saxonburg Borough
- This atgrade railroad crossing is in terrible condition and needs upgradedreplaced. The timber boards are loose and pop up when people drive across them. There is also a missing sidewalk crossing on the north side.
- The bus stop near Shop n Save is highly trafficked by pedestrians residents from the Canterbury Courts and students from Wash High. Itd be nice if there was a crosswalk crossing W.Chestnut St. to make crossing safe similar to ones on WJs campus.

Topic 18: Safety and Accessibility Concerns for Pedestrians on a High Bridge with Inadequate Walkways

Comment Count: 24

Top Keywords: bridge | ohio | sidewalk | use | narrow | access | millvale | dangerous | walk | path

Summary:

Public comments highlight significant safety and accessibility issues for pedestrians and cyclists on a high bridge. Concerns include inadequate and deteriorating walkways, rusty railings, and a narrow roadway that cannot accommodate two vehicles without one pulling over. Additionally, the poor road surface poses challenges for safe biking.

Representative Comments:

- Bridge is raised up 60 feet in the air over water and so biking and walking are difficult to cross the bridge. The steel railing and steps are also very rusty and broken in places so unsafe for pedestrians
- This is a roadway that is not even wide enough for 2 cars to pass without one of them having to pull over and wait yet we allowed Douglas school to use it as a training route for their cdl program. Its destroyed our bridge that is weight restricted
- Road surface is poor and difficult to bicycle across due to significant breaks in concrete seams.

Topic 19: Lack of Public Bus Services Impacting Transportation Accessibility for Residents in Surrounding Areas

Comment Count: 20

Top Keywords: transportation | bus | public | public transportation | transit | service | surrounding | bus service | available | ride

Summary:

Public comments highlight a significant lack of bus services and transit facilities, which negatively affects transportation accessibility for residents in surrounding areas. Issues include inadequate infrastructure, such as missing benches at bus stops and the absence of park and ride options, particularly near growing locations like UPMC Mercy Hospital.

Representative Comments:

- There are no benches at any of the bus stops around South Side.
- Please provide park and ride facility for UPMC Mercy Hospital. This is getting new buildings and facilities so it is going to be crowded. Currently there are no transit or park and ride facilities to this place.
- Lack of bus transit or light rail transit to this city and surrounding areas in Westmoreland County.

Topic 20: Addressing Congestion and Improving Transit Connectivity in Pittsburgh's Road Infrastructure

Comment Count: 17

Top Keywords: pittsburgh | route | airport | 30 | point | city | pittsburgh street | route 30 | city pittsburgh | connections

Summary:

Public comments about Pittsburgh's transportation infrastructure highlight issues of congestion and inadequate transit connectivity. Concerns include the lack of dedicated highway ramps that complicate traffic flow, forcing vehicles through congested surface streets. Additionally, residents emphasize the need for more connections and increased frequency of transit services to improve overall mobility.

Representative Comments:

- The lack of dedicated highway ramps between Veterans Bridge I579 and Bigelow Blvd PA 380 unnecessarily complicates traffic flow between Parkway North and Pittsburghs East End by forcing all traffic through surface streets near PPG Paints Arena.
- Colloquially known as Pittsburghs autobahn. For some reason it also has a weird random park that can only be accessed by automobile.
- Pittsburgh needs more more connections and more frequent service.

Topic 21: Urgent Need for Traffic Calming Measures to Protect Pedestrians in High-Speed Areas
Comment Count: 17

Top Keywords: calming | traffic calming | measures | calming measures | pedestrians | lights | andor | corner | peds | traffic

Summary:

Public comments highlight the urgent need for traffic calming measures in high-speed areas to enhance pedestrian and cyclist safety. Residents express concerns about conflicts between pedestrians, cyclists, and vehicles, particularly trucks, emphasizing the necessity for warning signs and infrastructure improvements to reduce speed and protect vulnerable road users.

Representative Comments:

- This area is terrible for bikes and pedestrians yet there are many.
- So many bikes and peds so many trucks. See lots of conflict with peds and traffic here
- Need signs to warn of narrow roadway and slower speed.

Topic 22: Urgent Traffic Safety Improvements Needed for Residential Roads with High Speeds and Pedestrian Traffic

Comment Count: 15

Top Keywords: speed | limit | speed limit | mph | 25 | people speed | 25mph | people | road | church st

Summary:

Public comments highlight urgent concerns about traffic safety on residential roads where high speeds and pedestrian traffic coexist. Many residents report that speed limits are frequently ignored, with drivers exceeding the posted limits, creating dangerous conditions, especially for children crossing to school. Calls for design changes to improve safety are growing.

Representative Comments:

- This road is marked as 25mph but it is designed for much higher speeds. This road should have its design changed if the 25mph limit is expected to be followed
- Its a residential two lane street that students cross to get to school yet its treated like a highway. The speed limit is 25 and people go 45 regularly.
- Too many people going faster than the posted speed limit

Topic 23: Enhancing Fayette Street and West Main Street for Pedestrian and Cyclist Safety
Through Road Diets and Improved Sidewalk Infrastructure

Comment Count: 15

Top Keywords: fayette | fayette st | sidewalks | st | west main | road diet | corridor | diet | paths | walking

Summary:

Public comments highlight the need for enhancements to Fayette Street and West Main Street to improve safety for pedestrians and cyclists. Concerns include the necessity of road diets, better sidewalk infrastructure, and addressing visual and safety issues posed by overhead power lines, which can hinder access to local businesses and important community locations.

Representative Comments:

- SR 201 Corridor from the Vance Dei Cas to Fayette Street
- SR 51 from the Liberty Tunnel to Brownsville Rd needs major improvements to provide better access to businesses as well as to make it safer for pedestrians. Overhead powerlinestelephone poles pollute the landscape creating an eyesore and safety issue.
- This is an important location. By improving walking and bike safety here it could make walking to Mt Royal cemetery and Scott elementary school possible for a lot of people.

Topic 24: Traffic Challenges and Infrastructure Solutions at Major Tunnels and Routes

Comment Count: 15

Top Keywords: squirrel hill | squirrel | hill | rte | 376 | smoothly | pittsburgh | carson | tunnel | west

Summary:

Public comments highlight significant traffic challenges and inadequate infrastructure around major tunnels and routes, particularly the Squirrel Hill Tunnel and Route 376. Issues include poor road conditions, lack of pedestrian and bicycle facilities, and ineffective traffic management strategies, despite substantial financial investments in these areas.

Representative Comments:

- Entire roadway in both directions in poor condition from squirrel Hill Tunnel to second Monroeville exit.
- Missing pedestrian and bicycle facilities. This segment divides West View from the City of Pittsburgh.
- Its should be simple enough to move traffic smoothly through this tunnel. Despite the millions of dollars spent on this section of 376 Penn Dot has failed to use commonly used methods that other states use to get traffic to move through tunnels.

Topic 25: Assessment of Poor Pavement and Drainage Conditions Leading to Winter Hazards and Driveway Access Issues

Comment Count: 14

Top Keywords: drainage | water | flooding | roadway | steep | area | away | pavement | issues | condition

Summary:

Public comments highlight serious issues with poor pavement and drainage conditions, which are exacerbating winter hazards and affecting driveway access. Residents express concerns about eroded roadways, particularly on steep hillsides, due to inadequate maintenance of drainage systems, leading to safety risks and potential damage to vehicles and property.

Representative Comments:

- The drainage ditch that PennDOT has maintained in the past is in dire condition. Because of lack of maintenance the water has started to erode the roadway.
- Pavement and drainage are in poor condition.
- The roadway located on a steep hillside seem to be slipping away

Topic 26: Enhancing Bicycle Safety and Traffic Signage Integration for Improved Urban Mobility

Comment Count: 13

Top Keywords: lane | bike lane | bike | right | signage | needs | complicated | opposing | faded | solve

Summary:

Public comments highlight significant issues with bicycle safety and traffic signage in urban areas. Concerns include poorly designed bike lanes, confusing or inadequate signage for both cyclists and motorists, and dangerous intersections that lack clear pathways for cyclists. These factors contribute to unsafe interactions between vehicles and bicycles, compromising urban mobility.

Representative Comments:

- Nearly immediately after the signage indicating the right lane to go to Washington County the lane stops Move the freaking sign a half a mile down the road. So when you get in the right hand lane you stay in the right hand lane so you can get on I 79 S
- This is a REALLY poorly designed bike lane with meaningless stop lights overly complicated and unused pavement markings unsafe interactions with cars missing bike lane entrances and lack of signage for motorists.
- Northbound bike lane which exits onto Forbes abruptly ends in a dangerous intersection with no obvious way to safely continue.

Topic 27: Challenges in Local Transit Operations and Connectivity Issues

Comment Count: 13

Top Keywords: light rail | airport | freight | rail | transit | bus | prt | stop | light | run

Summary:

Public comments highlight significant challenges in local transit operations, particularly regarding the increasing freight traffic that strains existing infrastructure. Additionally, there is a call for improved connectivity, such as the introduction of light rail services to areas like the AK Valley, to enhance transportation options for residents.

Representative Comments:

- Freight issue constantly growing.
- Freight continues to grow and create an issue
- Need light rail service to AK Valley among other areas

Topic 28: Concerns and Proposals for Intersection Traffic Management and Safety Improvements
Comment Count: 12

Top Keywords: roundabout | intersection | proposed | stop signs | signs | location | signal | improve traffic | location roundabout | traffic

Summary:

Public comments regarding intersection traffic management highlight concerns about ineffective traffic signals that contribute to congestion. Many residents propose alternatives like converting signals to four-way intersections or implementing roundabouts to enhance traffic flow and redirect vehicles away from residential areas, ultimately aiming to improve safety and efficiency.

Representative Comments:

- Traffic signal is unnecessary and just backs up traffic to next intersection. Would be nice to convert to a 4 way intersection.
- The entire signal configuration is messed up. This area would benefit from a series of roundabouts.
- This intersection needs to have a roundabout to improve traffic flow and divert travel toward the freeway rather than through residential community spaces.

Topic 29: Improving Traffic Safety and Flow through Enhanced Speed Monitoring and Roadway Design Techniques

Comment Count: 12

Top Keywords: accidents | collisions | tunnel | traffic | end | traffic flow | speeds | flow | better | section

Summary:

Public comments highlight concerns about traffic safety and flow, particularly in tunnels where speeding and rear-end collisions are common. Suggestions include implementing scrolling speed indicators to guide drivers and improve awareness. Additionally, issues such as debris from accidents and road maintenance, including the presence of dead animals, contribute to unsafe driving conditions.

Representative Comments:

- Tunnel traffic would flow much smoother if scrolling arrows similar to construction zone signs were added to interior of tunnel scrolling at 55 mph to show drivers the speed they need to maintain. There are MANY rear end collisions when traffic slows.
- Lots of accidents
- Inundated with trash garbage broken car parts from accidents and numerous DEAD DEER carcasses

Topic 30: The Perils and Challenges of Roundabouts: A Focus on Traffic Management and Safety Concerns

Comment Count: 11

Top Keywords: roundabouts | terrible | roundabout | location | perfect | extreme | week | time day | higher speed | owns

Summary:

Public comments about roundabouts highlight a divide in opinions regarding their necessity and effectiveness. Some individuals argue that certain locations do not require roundabouts, while others express strong dissatisfaction, labeling them as problematic. The central themes revolve around traffic management, safety concerns, and the overall appropriateness of roundabouts in specific areas.

Representative Comments:

- Roundabout here is not needed
- Good location for roundabout
- Roundabouts are TERRIBLE

Topic 31: Discrepancies Between Design Speed and Posted Limits Affecting Crosswalk Safety
Comment Count: 7

Top Keywords: 25mph limit | posted 25mph | design speed | 25mph | posted | design | makes | line | difficult | allegheny

Summary:

Public comments highlight a significant issue regarding the mismatch between the design speed of certain roads, such as ARB and Allegheny Ave, and their posted speed limits of 25 mph. This discrepancy raises safety concerns for pedestrians, making it challenging for them to cross these streets safely.

Representative Comments:

- The design speed of ARB is not in line with its posted 25mph limit which makes crossing here difficult.
- The design speed of Allegheny Ave is not in line with its posted 25mph limit which makes crossing here difficult.
- The design speed of Allegheny Ave is not in line with its posted 25mph limit which makes crossing here difficult.

Topic 32: Improving Bicycle Safety and Connectivity Along Penn Avenue

Comment Count: 49

Top Keywords: bike | penn | bike lanes | ave | lanes | lawrenceville | liberty | bike lane | penn ave | protected bike

Summary:

Public comments highlight significant concerns about bicycle safety and connectivity along Penn Avenue. Issues include obstructed bike lanes due to parked cars, inadequate space between cyclists and vehicles, and challenges related to increased traffic from university students. Additionally, access problems stemming from road closures have negatively impacted local businesses.

Representative Comments:

- The student traffic makes life in town unbearable during the months that school is in. There have been talks with the university about possible park and rides or additional routes to the university but that would require PennDOT approvalhelp.
- PennDOT shut down a proposed road that would lead to the hotel in town. Unfortunately now the hotel is floundering because of lack of access. On top of this issue the University has plans to make that intersection their new main entrance.
- Bike lane from Bigelow to Beeler is often obstructed by parked cars. The bike lane is so narrow in places that you are often only a few inches from cars despite being in the bike lane. Buses have to pull in front of you to pick up passengers.

Appendix B: Manual Cluster Evaluation Summary – Kmeans Prior to Reassignment

B1: Random Manual Evaluation

This appendix provides the manual review results for each of the 50 randomly selected database comments. This review was one of the several methods implemented to assess the accuracy of the topic clustering analysis.

Table B1 below summarizes the cluster assignments and if they are considered corrected. The following columns are included:

- “ISSUE ID” is the unique identifying number assigned to a comment by the SPC
- “COMMENT” contains the full text of the public comment or issue submitted.
- “KMEANS Topic No.” is the arbitrary topic cluster number that the K-Means clustering algorithm assigned the given “COMMENT” to (See Appendix A for topic cluster descriptions and numbers)
- “KMEANS Match?” contains either “N” for no or “Y” for yes, indicating if the reviewer agreed with the clustering algorithm’s assignment for this “COMMENT”. The topic cluster’s descriptive information, specifically its keywords and GPT-generated labels/summaries, were used to guide this assessment.
- “Why? (Brief Reason)” provides a short explanation for the reviewer’s decision in the “KMEANS Match?” column. For non-matches, this includes a note about what the topic is actually about (e.g., pedestrian safety, drainage, bridge design), and why the current assignment is inappropriate. For some entries, it may also include suggestions on where the comment should have been assigned instead.

Table B1: Summary of Manual Review for Randomly Selected Public Comments

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
657	The student traffic makes life in town unbearable during the months that school is in. There have been talks with the university about possible park and rides or additional routes to the university but that would require PennDOT approval help.	32	N	MISC
789	The southbound left turn lane is over capacity fills up in the morning rush hour and spills into the through lane. The intersection needs dual left turn lanes.	2	Y	
878	Density of retail business and pedestrians is incompatible with automobile traffic. Unsafe for automobile traffic at almost any speed. Area would be safer without automobile traffic. Liberty Ave is better suited and immediately parallel	16	N	MISC
1098	Highway construction taking place on Route 28 and the Highland Park Bridge. There was a On Ramp to the bridge from Sharpsburg. But with this construction that ramp is being closed a Traffic Light installed and Traffic force to make a Left turn to acces	2	Y	
1148	This interchange is designed for speeds that are grossly inappropriate for the connecting roads. This intersection is inefficient and inhospitable unless traveled in an automobile.	5	N	NOT ABOUT HIGHWAY RAMPS/MERGING - ABOUT INTERCHANGE DESIGN SPEEDS
1151	Northern sidewalk has been closed.	1	Y	
1176	Northbound bike lane which exits onto Forbes abruptly ends in a dangerous intersection with no obvious way to safely continue.	26	Y	
1230	Worst Highway Merging I have ever encountered so many near misses and congestion due to the stop signto45mph highway	5	Y	
1299	This ramp is dangerous and unsafe especially during peak times	5	Y	

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
1352	This is an extremely dangerous intersection to cross. Complete disregard to pedestrians. More policing needed. State should have zero tolerance for drivers endangering pedestrians. Drivers ignoring Yield to Pedestrians is also another massive problem.	3	Y	
608	Herman Road is 1.91 miles located at the southeast portion of Clearfield Township beginning at Clearfield Road and enters into Summit Township. It is a main thoroughfare for traffic. It is deteriorating with potholes abrupt dropoffs crumbling shoulders.	12	Y	ABOUT ROAD COND.
795	Need to create a full connection between Cranberry Woods Dr and Freeport Rd. This would alleviate substantial congestion on Franklin Rd in the area.	8	Y	ABOUT ROAD NETWORK CONNECTION
1014	This is a roadway that is not even wide enough for 2 cars to pass without one of them having to pull over and wait yet we allowed Douglas school to use it as a training route for their cdl program. Its destroyed our bridge that is weight restricted	18	N	NO PED. MENTIONED. - ABOUT ROAD WIDENING AND BRIDGE
1384	Unsafe for pedestrians to cross when they are given a walk signal and rightturning cars simultaneously have a green light. Cars are typically going 20mph when they make the turn. Are you actively trying to kill pedestrians here	3	Y	
1447	Traffic back up causing delays and issues with adequate and safe travel into the city	14	Y	
1232	After the 31st street bridge Penn avenue doesnt have a bike lane and the road is too narrow for two lanes of car traffic. The road should be one lane and the sidewalks should be widened.	6	N	FAILD CLUSTER

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
1465	More direct access from this trail head to the Junction Hollow trail possibly alongside the rail line without having to go onto second avenue through the 2nd ave Saline St Greenfield Ave Irvine Sts intersection would greatly improve rider safety.	4	Y	
1303	Congested area with bad intersection geometry. In addition the typical section for I70 is deficient as are all of the interchange remaps for this particular interchange	7	N	NOT ABOUT HEAVY TRUCK - ABOUT ROAD GEO AND DESIGN - ROAD NETWORK DESIGN
1575	The road needs widened. There is barely any shoulder space and oncoming lanes are not divided well.	8	Y	
1558	Starting at Siebert Road and heading down Babcock to Haun Nursery people walk this road on both sides every day a lot of cars trying to avoid McKnight Road and using Babcock as an alternate route they pass on the shoulder and nearly kill the walkers	3	Y	
1716	The design speed of Allegheny Ave is not in line with its posted 25mph limit which makes crossing here difficult.	31	Y	
2151	Road is UNEVEN from warping. It is like driving on rumble strips. Road is dangerous in this area because of uneven pavement	13	N	NOT ABOUT BIKE LANE POTHOLES - ABOUT ROAD WARPING (SHOULD BE 12)
1717	The design speed of Allegheny Ave is not in line with its posted 25mph limit which makes crossing here difficult.	31	Y	
1989	Bridge has been falling apart according to local residents. Although the bridge has been inspected and deemed safe we are unsure how much to trust that.	10	Y	

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
2019	Bolivar is a tiny town that has no bus service. I reside in nearby New Florence that has a bus that travels through twice a day. This bus could easily include Bolivar and help a lot of people that dont have reliable transportation.	19	Y	
2237	Congestion on SR 228 Between Franklin Rd and Mars	8	N	MISC
2234	Once you are on the parkway if there is an accident you are stuck with no exit until the greenfield exit.	5	Y	
2490	The road needs widened even a few inches through Wilkinsburg east Liberty and on.	8	Y	
2593	Dormont is a densely populated area and Rt. 19 creates too many risks. Rt. 19 should be changed to a single lane in each direction to improve safety for pedestrians and to allow for bike infrastructure to be added.	7	N	NOT ABOUT HEAVY TRUCK - ABOUT ROAD LANES AND PED/BIKE INFR.
2359	Eliminate the s bends along I79 with improved alignment and improved interchange with SR 51	7	N	NOT ABOUT HEAVY TRUCK - ROAD NETWORK DESIGN
2710	Hazardous intersection with heavy traffic.	14	Y	
2821	This area is a nightmare for pedestrians cyclists. East Street is supposed to be a bike route but the bike lanes end abruptly and traffic moves 20mph above the speed limit. The alternate pedestrian bridge route comes out at a blind turn.	32	Y	
2814	Protected bike lanes please or dont bother. Make them so that when not if WHEN a car makes a mistake they cannot kill me with their car. Bollards make it so cars go to repair shops instead of people to the hospital or morgue.	32	Y	

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
2919	Missing sidewalk along smallman street from lawrenceville to the strip district. Slow development of restaurants and bars back here with sketchy walking situation and lots of traffic traveling fast and aggressively using road as shortcut.	32	N	NOT ABOUT BIKE INFR/SAFETY - ABOUT PEDESTRIAN SIDEWALKS
2855	Roundabouts are TERRIBLE	30	Y	
3314	Potholes everywhere. Pavement is bumpy throughout the road.	13	N	NOT ABOUT BIKE LANE POTHOLES - ABOUT ROAD POTHOLES (SHOULD BE 12)
3156	Traffic congestion on Route 50 into Bridgeville. Widening Project proposed by Borough from Collier Line to Prestley Road	8	Y	
3344	Heavy traffic and 90 percent of traffic speeds.	29	N	FAILD CLUSTER
3270	Very unsafe high volume road with little active transportation infrastructure. Would love a bike lane and conversion of old rail routes along Painters Run converted to bike trails	6	N	FAILD CLUSTER
3650	This is a well used bridge between Greentree Rd and Vanadium Rd. The bridge connects both Vanadium and Old Bower Hill to Scrubgrass Rd an important link to St Clair Hospital. The bridge is showing signs of wear on the deck and on the bearing points.	18	N	NOT ABOUT PED. - ABOUT BRIDGE COND.
3317	Unsafe intersection cars speed by often don't stop for pedestrians even though there's a yellow pedestrian crossing sign and crosswalk	3	Y	
3761	Bring the light rail to the airport	27	Y	
3998	The crossing of Derrick Ave is dangerous. Craig St sidewalks are absent or are in very poor condition and this is a main route for many kids to go to walkbike to school at Ben Franklin. Derrick Ave also needs sidewalks the entire length.	1	Y	

ISSUE ID	COMMENT	KMEANS Topic No.	KMEANS Match?	Why? (Brief Reason)
3557	Improve the safety and heavy traffic backup at this intersection by adding a ramp SW of the intersection between these roads.	14	Y	
3880	This segment connects Regent Square to Squirrel Hill which is twolane through both of these business districts fourlane high speed through the park which isnt safe and has had repeated accidents in this area and dangerous to bikers and pedestrians.	1	N	NOT ABOUT SIDEWALK - ABOUT SPEEDING ENDANGERING PED/BIKE
3995	West Main St and Fayette St are in need of a road diet and need to be more pedestrianbiker friendly. We have desire paths sidewalks are missing or in need of repair. Fayette St should be twoway. Difficult crossing of Rotary walk at Marshall Plaza.	23	N	FAILD CLUSTER
4001	Multiple crashes occur at this site as people speed on Barnes Lake Road especially those heading east trying to beat the red light at the intersection of Barnes Lake and Caruthers. Make this a 4 way stop and lower the speed limit inthis residential area	15	Y	
4249	Gennessee Wyoming Railroad has let the underside of their bridge terribly deteriorated. This is seriously negatively impacting the pedestrian and vehicular facilities underneath.	10	Y	
4285	The Sheepskin Trail Redstone Furnace Rd. crossings biggest problem is a blind turn west of crossing. Traffic calming from this direction and more clearstandardized crossing designs would make this intersection much safer.	17	Y	
4288	The Derrick Avenue corridor experiences ridiculously excessive vehicle speeds 50mph. It would benefit from traffic calming measures to increase the livability of the adjoining residential areas. Please DO NOT consider widening this corridor for autos.	16	Y	

B2: Topic Cluster Description, Cohesion, and Internal Consistency Evaluation

This appendix presents the manual evaluation of topic clusters generated by the K-Means clustering algorithm (See Appendix A for these topic clusters' descriptions). Each cluster was assessed for quality and coherence based on the criteria outlined in Section 3.3.3 of the report. This evaluation was conducted to investigate the accuracy of the topic clustering and to identify which clusters were coherent, well-defined, or in need of revision.

Table B2 below summarizes the descriptive qualities and evaluations for each topic cluster. The following columns are included:

- “Topic” is the arbitrarily assigned topic cluster number
- “Count” is the number of comments assigned to a given “Topic” cluster
- “Topic Cohesion” is the assessment on a cluster’s thematic consistency among representative documents in a cluster. (See Topic Cohesion rubric in Section 3.3.2 of the report)
- “Internal Consistency” is the assessment of a cluster’s keywords, summary, and representative documents alignment. (See Internal Consistency rubric in Section 3.3.3 of the report)

All quality ratings use the following scale:

- G = Good
- M = Mixed
- B = Bad

Table B2: K-Means Topic Cluster Quality Assessment Results

Topic	Count	Topic Cohesion	Internal Consistency
1	48	G	G
2	47	G	G
3	47	G	G
4	45	G	G
5	41	G	G
6	41	M	B
7	37	G	G
8	36	G	G
9	35	G	G
10	34	G	G
11	31	G	G
12	30	G	G
13	29	G	G
14	29	B	B
15	29	G	G
16	27	G	G
17	24	G	G
18	24	M	M
19	20	M	G
20	17	G	M
21	17	G	G
22	15	G	G
23	15	B	B
24	15	M	M
25	14	G	M
26	13	M	M
27	13	B	B
28	12	G	G
29	12	B	B
30	11	M	M
31	7	B	B
32	49	G	G

B2.5: Overlapping Between Topic Clusters

The following table (Table B2.5) provides manual evaluations performed on the preliminary clusters to identify any overlap between them. This information helped guide decisions on any topic cluster merging or splitting.

- “Topic” is the arbitrarily assigned topic cluster number
- “Count” is the number of comments assigned to a given “Topic” cluster
- “Topic Parent” is the broader, overarching theme or category that the topic belongs to, useful for hierarchical organization.
- “Topic Distinctiveness” is the description on how unique or separate a topic is from others.
- “Overlap w/ Other Topics” is the other topics determined to be topic's thematically similar

Table B2.5: Manual Evaluation of Thematic Overlap Between Topic Clusters

Topic	Count	Topic Parent	Topic Distinctiveness	Overlap w/ Other Topics
0	49	Bicyclist Safety	Protected Bike Lanes Continuity of bike lanes	
1	48	Pedestrian Safety	sidewalks	
2	47	Traffic Flow	Turn Lanes	14
3	47	Pedestrian Safety	Intersections crosswalks	
4	45	Bicyclist & Pedestrian Infr.	Connectivity of Trails -> Topic 0	0, 20
5	41	Physical Infr.	Highway Ramps Interchange	
6	41	Bicyclist Safety Pedestrian Safety Physical Infr.	Bike lane -> Topic 0 side walk -> Topic 1 lane widening - > Topic 8	0, 1, 8
7	37	Physical Infr.	Truck Traffic Bypass	
8	36	Physical Infr.	Road/Lane Width	

9	35	Traffic Flow	Intersection Congestion Speeding	
10	34	Physical Infr.	Bridge Condition	
11	31	Public Transit	Bus Rail	19, 27
12	30	Physical Infr.	Road Condition	
13	29	Physical Infr.	Road Condition -> 12 Bike Lane Condition	12
14	29	Traffic Flow	Intersections -> 15 turning lanes -> 2 ramps -> 5 signaling -> 15	2, 5, 15
15	29	Traffic Flow	Signal Timing	
16	27	Pedestrian Safety Traffic Flow	speeding	
17	24	Pedestrian Safety	Crosswalks -> Topic 3	
18	24	Physical Infr.	Ped/Bike on Bridge -> 10	10
19	20	Public Transit	Bus -> Topic 11	11, 27
20	17	Public Transit	Rail -> Topic 11 Connectivity	11, 19, 27, 4
21	17	Pedestrian Safety Traffic Flow		16, 21
22	15	Pedestrian Safety Traffic Flow	Speeding Residential Roads	16, 21
23	15			
24	15			
25	14	Physical Infr.	Road Drainage	12, 13

26	13	Bicyclist Safety	Bike Lanes -> 0 Vehicle Signaling	0
27	13	Public Transit Freight	Rail Bus	
28	12		Roundabouts intersection signal/signage congestion	
29	12			
30	11	Physical Infr.	Roundabouts	
31	7	Pedestrian Safety	crosswalks Speeding	

B3: Topic Cluster Reassignment Action Tracker

This appendix documents the choices made and the reasoning behind them for reassigning the topic clusters described in Appendix A. The topic cluster's determined quality, as shown in Appendix B2, greatly informed these decisions. Another key item for consideration here was any overlapping amongst the clusters. All actions were guided by the Decisions Criteria for Cluster Actions provided in Section 3.3.1 BERTopic Framework and NLP Pipeline of the report.

Table B3 summarizes the reassignment actions and rationale behind those decisions. The following columns are included:

- “Original Topic #” is the arbitrary topic cluster number as provided in Appendix A
- “Original Topic Name” is a shortened, temporary label summarizing the topic cluster's content. These names were derived based on the GPT-generated labels/summaries and BERTopic keywords provided in Appendix F1 to assist with reassignment decisions.
- “Action Type” is the decision made about how to treat the topic cluster after qualitative evaluation, following the criteria outlined in Section 3.3.3 of the report (e.g., MAINTAIN, MERGE, REDISTRIBUTE, ABANDON, SPLIT).
- “New Topic(s)” is the ID(s) of the topic cluster(s) to which the documents were assigned following the action. If maintained, the ID remains the same; if merged or redistributed, one or more new topic IDs are listed.

- “New Name(s)” is the name(s) of the topic cluster(s) the original topic was mapped to. These are the existing names of the destination topics, not revised or renamed labels. Some of the topic’s that were maintained received updated topic names
- “Rationale / Notes” is a concise justification for the selected action, informed by evaluations in Appendix B2 (“Topic Cohesion” and “Internal Consistency”) and any observed thematic overlap with other clusters. This column reflects the application of the decision criteria specified in Section 3.3.3

Table B3: Topic Cluster Reassignment Actions and Rationale

Original Topic #	Original Topic Name	Action Type	New Topic(s)	New Name(s)	Rationale / Notes
32	Bicycle Safety on Penn Ave	MAINTAIN	32	Bicycle Safety on Penn Ave	High-quality cluster, focused on Penn Ave bike issues
1	Narrow/Missing Sidewalks	MAINTAIN	1	Sidewalk Gaps	Strong focus, pedestrian safety themed
2	Left Turn Lanes	MAINTAIN	2	Left Turn Flow & Safety	Clear traffic ops theme
3	Intersection Pedestrian Safety	MAINTAIN	3	Pedestrian Crossing Danger	Strong and coherent
4	Trail Connectivity	MERGE	32	Bicycle Safety & Trail Access	Overlaps with 32, similar infrastructure concerns
5	Ramp Merge Safety	MAINTAIN	5	On-ramp Visibility & Merge Length	Focused on Route 30 issues
6	Mixed: Sidewalk + Merge + Bike	REDISTRIBUTE	32, 1, 8	Sidewalk Safety; Bike Lanes; Merge	Mixed infrastructure themes linked only by the term 'lane.'
7	Truck Bypass	MAINTAIN	7	Truck Route	Specific and well-scoped

8	Widening Roadways	MAINTAIN	8	Roadway Capacity Needs	Coherent cluster on expansion
9	Dangerous Intersection	MAINTAIN	9	Congested/Dangerous Intersection	Strong overlap with 3, but more on vehicles
10	Bridge Conditions	MAINTAIN	10	Bridge Repair Needs	Infrastructure-specific, coherent
11	Rail Service	MAINTAIN	11	Transit Expansion: Rail	Transit-specific cluster
12	Road Repair	MAINTAIN	12	Road Repair (General)	General road condition issues
13	Bike Lane Potholes	MERGE	12	Road Repair (General)	Merged with road repair cluster due to shared focus on pavement deterioration.
14	Intersection Congestion	REDISTRIBUTE	2, 5, 15	Traffic Flow + Signal Timing	Mixed theme: redistributed to 15, 2, and 5
15	Traffic Light Delays	MAINTAIN	15	Traffic Flow + Signal Timing	Anchor cluster for congestion & signal complaints
16	Ped Corridor Safety	MAINTAIN	16	Pedestrian Safety in Corridors	Multimodal safety theme
17	Sheepskin Trail Crossing	MERGE	3	Trail Crossing Safety	Split into sidewalk safety (1) and intersection/crosswalks (3) for thematic clarity.
18	Pedestrian Bridge Access	MERGE	10	Trail/Bridge Ped Safety	Merged with bridge safety cluster for shared infrastructure issues.

19	Bus Service Gaps	MERGE	11	Transit Access Gaps	Shared transit access theme; merged for alignment
20	Congestion in Pittsburgh	MERGE	11	Traffic Flow + Signal Timing	Shared transit access theme; merged for alignment
21	Traffic Calming	MERGE	16	Traffic Calming for Ped Safety	Protect peds from speeding vehicles with traffic calming and ped infrastructure.
22	25mph Speeding	MERGE	16	Traffic Calming for Ped Safety	Focus on speed reduction in residential areas aligns with Topic 16.
23	Fayette Rd Diet	ABANDON			Clustered around place names without thematic coherence. Some comments just have a location and nothing else
24	Tunnel Congestion	ABANDON			Clustered around differing locations without thematic coherence.
25	Drainage Issues	MAINTAIN	25	Drainage and Pavement Risk	Focused and distinct
26	Bike Signage Confusion	MERGE	32	Bicycle Safety on Penn Ave	Overlaps thematically with 0
27	Light Rail + Freight	ABANDON			more complaint driven; non-actionable statements like "Freight issue constantly growing" and "Freight continues to grow and create an issue"
28	Roundabout Proposals	ABANDON			Too fragmented with weak relation amongst them

29	Tunnel Speed & Debris	ABANDON			many non-actionable statements like "Lots of accidents" and complaints for debris
30	Roundabout Opinions	ABANDON			opinion based and complaints. not comments
31	Design Speed vs. Posted	ABANDON			appears to be mostly if not entirely submitted by a singal individual as numerous comments are the exact same

B4: Updated Topic Cluster Numbers

This appendix provides the updated topic cluster arbitrary topic number and temporary names following the reassignment actions outlined in Appendix B3. These topic clusters form the basis for all analyses moving forward.

Table B4 summarizes this new cluster structure. The following columns are included:

- “New Topic #” refers to the final topic cluster ID assigned after all reassignment actions were completed. These numbers represent the updated clustering structure following the consolidation of original topics through merging, redistribution, or retention.
- “New Name(s)” is a temporary name assigned to the updated topic cluster for use during internal review. These names are typically based on the dominant or most coherent contributing topic. They are placeholders and will be replaced with more accurate names generated by GPT, based on the full set of comments within each updated cluster.
- “Original Topic #(s)” lists the original topic IDs that contributed to the formation of each new topic cluster. This may include full or partial inclusion of a topic’s documents. If only a subset of comments from an original topic was reassigned, the entry is marked with “(partially)” to indicate partial contribution.
- “New Comment Count” is the total number of comments now assigned to each final topic cluster.

Table B4: Final Topic Cluster Structure and Comment Counts

New Topic #	New Name(s)	Original Topic #(s)	New Comment Count
1	Road Repair (General)	12, 13	59
2	Drainage and Pavement Risk	25	14
3	On-ramp Visibility & Merge Length	5, 14 (partially)	43
4	Roadway Capacity Needs	8, 6 (partially)	51
5	Bridge Repair Needs	10, 18	58
6	Left Turn Flow & Safety	2, 14 (partially)	49
7	Congested/Dangerous Intersection	9	35
8	Traffic Flow + Signal Timing	15, 14 (partially)	54
9	Truck Route	7	37
10	Transit Expansion: Rail	11, 20, 19	68
11	Sidewalk Gaps	1, 6 (partially)	52
12	Pedestrian Crossing Danger	3, 17	71
13	Pedestrian Safety in Corridors	16, 21, 22	59
14	Bicycle Safety on Penn Ave	4,6 (partially), 26, 32	129

Appendix C: Topic Modeling Clusters Description – Kmeans

This appendix provides the results of the K-Means topic clusters, after reassignments were performed (see Appendix B4). Descriptions of these newly grouped comments are provided below.

This appendix provides a full record of all the topic clusters following the manual reassignments described in detail in Appendix B. It complements the results 4.1 Clustering of Public Comments in the report by including descriptions for all topic clusters, not just those related to physical infrastructure. Topic Cluster Descriptions include BERTopic’s outputs, keywords and comment count, the GPT-generated topic labels and summaries, and 3 representative comments. The GPT-generated topic labels and summaries help to improve the interpretability and understanding of a cluster beyond its keywords. The keywords, GPT-generated labels and summaries, and representative comments were re-generated to reflect the newly grouped comments resulting from reassignment.

For details on how topic labels and summaries were generated, refer to Appendix F: Prompts for Topic Labeling and Section 3.3.1 BERTopic Framework and NLP Pipeline of the main report.

Topic Cluster Descriptions

Topic 1: Infrastructure Deterioration and Maintenance Challenges in Roadways

Document Count: 59

Top Keywords: road | potholes | pavement | need | repair | needs | resurfacing | surface | roadway | lane

Summary:

Public complaints about transportation and infrastructure primarily focus on the poor condition of roads, highlighting issues such as potholes, crumbling pavement, and the need for resurfacing and repairs. Many roads are described as unsafe due to deteriorating surfaces, inadequate maintenance, and damage from weather events, resulting in traffic disruptions and safety hazards for drivers and cyclists.

Representative Comments:

- Herman Road is 1.91 miles located at the southeast portion of Clearfield Township beginning at Clearfield Road and enters into Summit Township. It is a main thoroughfare for traffic. It is deteriorating with potholes abrupt dropoffs crumbling shoulders.
- The roadway took serious damage during a flooding event in August. Unfortunately the road is restricted to one lane and is causing traffic flow problems on Route 258. The damage is too much for our small municipality to deal with.
- This section of US 19 was left out of the last two paving projects and is in terrible condition

Topic 2: Infrastructure Deterioration and Drainage Challenges Affecting Roadway Safety and Condition

Document Count: 14

Top Keywords: drainage | road | roadway | area | water | condition | flooding | pavement | away | slipping

Summary:

Public complaints highlight significant issues with drainage and roadway conditions, leading to frequent flooding and erosion. Many roads are poorly maintained, resulting in safety hazards like slipping and icy spots. Residents express concerns over clogged drains, inadequate drainage systems, and the overall deterioration of pavement, impacting accessibility and safety during rainstorms.

Representative Comments:

- The drainage ditch that PennDOT has maintained in the past is in dire condition. Because of lack of maintenance the water has started to erode the roadway.
- Pavement and drainage are in poor condition.
- The roadway located on a steep hillside seem to be slipping away

Topic 3: Traffic Congestion and Safety Issues in Interchange and Ramp Design

Document Count: 43

Top Keywords: traffic | ramp | interchange | short | merge | exit | merging | intersection | route | ramps

Summary:

Public complaints about transportation and infrastructure primarily focus on safety and congestion issues at various interchanges and ramps. Many drivers express concerns about short merging lanes, inadequate visibility, and poorly designed intersections that lead to hazardous conditions and traffic backups. Suggestions for improvements include redesigning ramps, adding dedicated lanes, and enhancing bicycle connectivity.

Representative Comments:

- Cars backup onto interstate from ramp unsafe they have another ramp further down that is safer to use. Remove ramp.
- Merging and people getting off... too short... whole interchange of Summit Park Drive need moved.
- Hazardous curve and limited interchange ramps and merge lane issues.

Topic 4: Infrastructure Challenges and Solutions for Roadway Widening and Traffic Management

Document Count: 51

Top Keywords: road | needs | traffic | widened | roadway | lane | lanes | widening | east | narrow

Summary:

Public complaints about transportation and infrastructure focus on the need for road widening and improvements to manage increasing traffic. Many residents express concerns about narrow roadways, inadequate lanes, and unsafe intersections, emphasizing the importance of enhancing accessibility and safety for vehicles and pedestrians. There is a strong call for upgrades to accommodate growing populations and commercial activity.

Representative Comments:

- Add a additional right lane from Churchill eastbound onramp to Monroeville Bus. 22 Exit to allow more time to merge. Lane would then become EXIT ONLY for Business 22.
- This is a community business district that should not have a fourlane road through it. It needs to be narrowed to expand the economic viability of the area.
- To many homes and not enough roads to handle traffic

Topic 5: Infrastructure Challenges and Safety Concerns of Aging and Narrow Bridges in High-Traffic Areas

Document Count: 58

Top Keywords: bridge | poor | condition | need | traffic | road | narrow | sidewalk | dangerous | bike

Summary:

Public complaints about transportation and infrastructure highlight urgent concerns regarding the poor condition of bridges and roads, emphasizing safety risks for vehicles, pedestrians, and cyclists. Many bridges are deemed structurally unsound, narrow, or lacking proper walkways and bike lanes, leading to dangerous traffic situations and calls for urgent repairs and upgrades.

Representative Comments:

- Old bridge narrow at the bottom of a steep grade causes lots of serious accidents needs replaced
- This road is in the need of reconstruction due to its age and it is not on the NHS map that would allow funding for total reconstruction. It is a main link between SR0048 and the Patton Street Bridge
- Lots of local bridges like this one... falling apart recent crashes not safe too large of trucks on roads cars over the speed limit.

Topic 6: Traffic Congestion and Safety Improvements through Enhanced Turn Lane Infrastructure

Document Count: 49

Top Keywords: lane | left | turn | traffic | turning | right | going | lanes | turns | make

Summary:

Public complaints about transportation and infrastructure highlight significant issues related to left turn lanes, traffic congestion, and safety concerns at intersections. Many respondents call for dedicated left turn lanes, improved signal timing, and better lane configurations to alleviate traffic backups and enhance safety for all road users, including cyclists and pedestrians.

Representative Comments:

- need individual left turning lane in both directions instead of right turning lane . traffic backs up and dangerous when people try to turn left
- The southbound left turn lane is over capacity fills up in the morning rush hour and spills into the through lane. The intersection needs dual left turn lanes.
- Need to have a left turn lane for traffic going west on 910

Topic 7: Intersection Safety and Traffic Management Challenges

Document Count: 35

Top Keywords: intersection | traffic | dangerous | needs | road | distance | sight | congested | accidents | better

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding dangerous intersections that often experience heavy traffic and poor visibility. Many intersections are described as congested and confusing, leading to frequent accidents. Residents call for better signage, redesigns, and improved traffic management to enhance safety for both vehicles and pedestrians.

Representative Comments:

- This intersection needs better signs
- Two areas. Along Washington Pike where it backs up crossing over the creek near the Home Depot store. What a mess. Then continuing down Washington Pike, I-79 Route 50 traffic backs up and is dangerous.
- Dangerous and confusing 5 way intersection where vehicles drive too fast. A woman was just killed at this intersection. This intersection needs to be redesigned to slow cars down.

Topic 8: Traffic Congestion and Intersection Safety Improvements

Document Count: 54

Top Keywords: traffic | congestion | intersection | light | flow | road | needs | lights | problems | heavy

Summary:

Public complaints about transportation and infrastructure highlight significant issues with traffic congestion, particularly at intersections. Many intersections lack adequate traffic lights or signal timing, leading to unsafe conditions and frequent backups. Residents express concerns about heavy traffic, insufficient road design, and the need for improvements to enhance safety and traffic flow.

Representative Comments:

- The intersection needs improvements to improve traffic flow and safety.
- They cause a lot of congestion because they are narrow inside causing people to prematurely slow down prior to entering them.
- From the BJs development to the intersection with starbucks up to Chartiers Creek and down to Sheetz Serious congestion no traffic flow the projects that are going on dont help.

Topic 9: Heavy Truck Traffic and Infrastructure Challenges in Urban Areas

Document Count: 37

Top Keywords: traffic | truck | rt | street | main | i79 | trucks | zelienople | bypass | large

Summary:

Public complaints about transportation and infrastructure highlight concerns over heavy truck traffic in towns like Zelienople and Connellsville. Residents express safety issues, pollution, and congestion caused by large trucks navigating narrow streets. Many advocate for dedicated truck bypass routes to alleviate these problems and improve safety for pedestrians and local traffic.

Representative Comments:

- We would like to reroute Rt 989 to a new proposed Access road that we reference as 19th St. This would wMove Rt 989 block west on Rt 65. This will detour all of this heavy truck traffic from traveling in front of our school zone.
- Too many large trucks coming through the City of Connellsville at the above location. This is very unsafe and dirty for the residents in this area. A separate truck routebypass would be great.
- Zelienople is truck congested and desperately needs an EastWest Bypass for route 68 to keep through truck traffic out of the borough.

Topic 10: Challenges and Opportunities in Public Transportation and Rail Services

Document Count: 68

Top Keywords: pittsburgh | service | bus | rail | transportation | city | public | transit | area | train

Summary:

Public complaints about transportation and infrastructure in Pittsburgh highlight significant concerns regarding inadequate rail and bus services, particularly between key cities and neighborhoods. Residents express frustration over infrequent and unreliable transit options, the need for improved connections to the airport, and the absence of public transportation in economically depressed areas, emphasizing the necessity for expanded and more efficient public transit solutions.

Representative Comments:

- Rail service between Pittsburgh and Philadelphia is abysmal. It is infrequent slow expensive and impractical for nearly everyone including someone like me who really likes the train and wishes he could take it.
- Need high speed rail transportation from Pittsburgh to the Airport
- I realize this is Norfolk Southern RR line but the addition of passenger rail service to and from Latrobe Greensburg Pittsburgh etc. is interesting as long as there are frequent routes. Could start small and add more stops over time.

Topic 11: Pedestrian Safety and Accessibility Challenges Due to Inadequate Sidewalk Infrastructure

Document Count: 52

Top Keywords: sidewalk | access | sidewalks | pedestrian | wheelchair | pedestrians | missing | road | walking | dangerous

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding the lack of sidewalks, dangerous walking conditions, and inadequate accessibility for pedestrians and wheelchair users. Many areas have missing or poorly maintained sidewalks, forcing pedestrians to walk in traffic, creating unsafe situations, especially near schools and busy roads.

Representative Comments:

- There is no sidewalk to get from Timberbrook Dr to Jeremiah Dr. This missing link would allow many people to walk to Main St.
- The sidewalk on Browns Hill Rd is very narrow and only exists on one side of the road. If the sidewalk was wider and was on both sides of the road pedestrians would feel safer and be able to get to the businesses on Browns Hill Rd much easier.
- This roadway is already iffy for cars people travel at 60mph the speedlimit is 35mph there are potholes when it rains ppl hydroplane but the sidewalk is atrocious it is unsafe for walkers and bikers to get from Bloomfield to downtown this way.

Topic 12: Pedestrian Safety and Traffic Calming Measures in High-Risk Intersections and Crosswalks

Document Count: 71

Top Keywords: crossing | pedestrians | pedestrian | intersection | cross | unsafe | cars | dangerous | crosswalk | traffic

Summary:

Public complaints about transportation and infrastructure highlight significant safety concerns for pedestrians at various intersections and crossings. Issues include a lack of marked crosswalks, malfunctioning signals, and high vehicle speeds, making it dangerous for pedestrians to navigate. Many drivers disregard traffic laws, further exacerbating the risks for those on foot.

Representative Comments:

- The Ross Park and Ride attracts many pedestrians but there is not a marked crosswalk at 19/Center Ave. Most drivers are unfamiliar with unmarked crosswalks. Dangerous situations occur when pedestrians cross 19. a marked crosswalk stop sign or light
- Stop signs and other traffic laws in the Stanton heights neighborhood are regarded as optional. It is openly known that there is ABSOLUTELY ZERO enforcement by authorities for traffic violations not only in this neighborhood but throughout the entire city
- All four crosswalk signals are unfunctional. None of them change from the stop hand to walk during any of the stoplight cycles making it so pedestrians have to essentially wait for an opening to jaywalk.

Topic 13: Urban Traffic Calming and Pedestrian Safety Enhancement in High-Density Corridors
Document Count: 59

Top Keywords: traffic | speed | pedestrians | corridor | road | calming | pedestrian | limit | people | area

Summary:

Public complaints about transportation and infrastructure highlight significant safety concerns for pedestrians and cyclists due to high vehicle speeds and traffic volume. Many areas are perceived as hostile to non-motorists, with calls for traffic calming measures like speed bumps, raised crosswalks, and lane reductions to enhance safety and accessibility.

Representative Comments:

- Density of retail business and pedestrians is incompatible with automobile traffic. Unsafe for automobile traffic at almost any speed. Area would be safer without automobile traffic. Liberty Ave is better suited and immediately parallel
- This corridor is extremely hostile to pedestrians and cyclists. It is difficult to either cross or to travel along. And it doesn't look particularly safe for motorists either.
- Fifth Ave is dangerous for pedestrians in its current configuration. Lane reductions as well as elevated crosswalks are critical for pedestrian safety in this area. These features do not limit peak throughput but do protect against offpeak speeding.

Topic 14: Urban Bicycle Infrastructure and Traffic Safety Improvements

Document Count: 129

Top Keywords: bike | lane | trail | road | needs | ave | lanes | traffic | needed | penn

Summary:

Public complaints highlight significant concerns regarding the lack of safe and continuous bike lanes and trails throughout the region, particularly on major thoroughfares like Penn Avenue. Issues include obstructed bike lanes, dangerous intersections, and inadequate infrastructure that fails to accommodate cyclists and pedestrians, leading to unsafe conditions and calls for improved connectivity and protected routes.

Representative Comments:

- The student traffic makes life in town unbearable during the months that school is in. There have been talks with the university about possible park and rides or additional routes to the university but that would require PennDOT approvalhelp.
- PennDOT shut down a proposed road that would lead to the hotel in town. Unfortunately now the hotel is floundering because of lack of access. On top of this issue the University has plans to make that intersection their new main entrance.
- Bike lane from Bigelow to Beeler is often obstructed by parked cars. The bike lane is so narrow in places that you are often only a few inches from cars despite being in the bike lane. Buses have to pull in front of you to pick up passengers.

Appendix D: Subtopic Modeling Clusters Description – Kmeans

This appendix provides the results of the K-Means subtopic clusters of the primary topic clusters (see Appendix C). Descriptions of these subtopic clusters and their evaluations are provided below.

Subtopic Clusters Descriptions

This appendix provides a full record of all the subtopic clusters generated for the Primary Topic Clusters in Appendix C. These descriptions are given to expand the information presented in Section 4.2 Subtopic Modeling for Thematic Refinement. Subtopic Cluster Descriptions include BERTopic's outputs, keywords and comment count, the GPT-generated subtopic labels and summaries, and 3 representative comments. The GPT-generated topic labels and summaries help to improve the interpretability and understanding of a cluster beyond its keywords. The keywords, GPT-generated labels and summaries, and representative comments were re-generated to reflect the newly grouped comments resulting from reassignment.

See Section 3.3.1 BERTopic Framework and NLP Pipeline in the report for further explanation regarding the purpose of subtopic modeling and justification for Primary Topic 2 exclusion in this analysis. Additionally, for details on how subtopic labels and summaries were generated, refer to Appendix F: Prompts for Topic Labeling.

Primary Topic 1

Subtopic 1: Urgent Road Repair and Maintenance Needs on Major Routes and Highways

Document Count: 17

Top Keywords: road | need | 30 | need repair | repair | work | roads | needs | trucks | resurfacing

Summary:

Public complaints regarding transportation and infrastructure highlight a pressing need for road repairs and resurfacing across various areas. Many roads, including Route 30 and PA 68, are suffering from significant damage due to weather, flooding, and inadequate maintenance, leading to dangerous driving conditions and traffic disruptions. Residents express frustration over long-standing issues, such as potholes, crumbling infrastructure, and the impact of construction projects that fail to address existing problems. Additionally, concerns about encroaching trees and the effects of utility work on road conditions further exacerbate the situation, emphasizing the urgent need for comprehensive repairs and maintenance to ensure safety and accessibility.

Representative Comments:

- roadway took damage flooding event August. Unfortunately road restricted lane causing traffic flow problems Route 258. damage small municipality deal with.
- section PA 68 needs completely rebuilt. brick base rutting potholes year. left recent curve widening project. Missed opportunity easily complete project.
- Highland ParkMorningside roads desperate need repair. weather wearandtear PWSA destroying large swathes pipe repairs roads mess.

Subtopic 2: Deteriorating Road Conditions and Urgent Need for Paving and Resurfacing Solutions

Document Count: 10

Top Keywords: surface | road | needs | road surface | county | condition | pavement | terrible condition | condition road | horrible

Summary:

Public complaints regarding transportation and infrastructure highlight significant issues with the condition of road surfaces across various counties. Many residents express frustration over neglected roads, often describing them as being in terrible or horrible condition, with specific mentions of potholes and rough pavement. There are calls for complete repaving of certain roads, as well as concerns about safety due to poor road conditions, particularly at intersections where speeding is a problem. Additionally, the complaints point out differences in road maintenance, with some areas receiving attention while others, like Washington County, seem to be overlooked. Overall, there is a strong demand for improved road maintenance and resurfacing to enhance safety and driving conditions.

Representative Comments:

- section 19 left paving projects terrible condition
- road ground 2016 neglected since. needs resurfaced. difficult understand Greene County nice roads end Washington County gets ignored.
- entire road needs torn completely paved. horrible road Beaver County

Subtopic 3: Road Infrastructure Challenges: Addressing Potholes, Collapsing Shoulders, and Traffic Hazards Over Time

Document Count: 10

Top Keywords: road | shoulder | years | shoulders | traffic | clearfield | twp | ago | sinking | low

Summary:

Public complaints about transportation and infrastructure in Clearfield Township highlight significant issues with deteriorating roads and shoulders. Residents report problems such as potholes, low shoulders, and areas where the road is collapsing or sinking, particularly on high-traffic routes. Many roads have not been adequately repaired for years, leading to safety hazards like blind spots and flooding during heavy rains. Additionally, there are calls for improvements, including the addition of bike paths and better drainage systems. Overall, the community expresses frustration over the lack of maintenance and the need for urgent repairs to ensure safe travel.

Representative Comments:

- Herman Road 1.91 miles located southeast portion Clearfield Township beginning Clearfield Road enters Summit Township. main thoroughfare traffic. deteriorating potholes abrupt dropoffs crumbling shoulders.

- Half road collapsed 4 years. getting worse. Plz repair.
- road frequently floods heavy rains close intersection down. detour miles worth tracking way.

Subtopic 4: Urgent Need for Roadway Repairs: Addressing Potholes and Hazards for Bikers and Drivers

Document Count: 15

Top Keywords: potholes | bike | road | roadway | lane | bike lane | bikers | repair | huge potholes | huge

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about potholes, particularly in bike lanes and roadways. Many bikers report frequent flat tires due to the numerous and increasingly large potholes, which pose safety risks for both cyclists and drivers. The condition of the roads is described as extremely uneven, with calls for urgent repairs and repaving. Complaints also mention that construction activities contribute to the deterioration of road surfaces, resulting in poor drainage and further pothole development. Overall, there is a strong demand for maintenance and improvement of road conditions to ensure safer travel for all users.

Representative Comments:

- roadway specifically bike lane million potholes. personally gotten 3 flat tires season road. especially illfated bike collective Lexington Thomas Blvd bikers use road.
- road service wavy potholes need repair. rough drivers dangerous bikers.
- Pothole

Subtopic 5: Deteriorating Road Conditions Due to Amish Horses: Community Impact of Uneven and Crumbling Pavement

Document Count: 7

Top Keywords: road | like | bumpy | roadways | uneven | holes | crumbling | path | pavement | road deteriorating

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding the deteriorating condition of roadways. Many residents describe roads as bumpy and uneven, comparing them to farm paths or cow paths, which suggests a lack of proper maintenance. Issues such as potholes, crumbling shoulders, and damaged road bases contribute to unsafe driving conditions, with some roads becoming dangerous due to their warping and weak spots. Additionally, the impact of local activities, such as Amish horses creating large holes, exacerbates the problem. Overall, the community expresses frustration over the poor state of the roads, emphasizing the need for urgent repairs and improvements.

Representative Comments:

- Heman Road deteriorating pot holes crumbling shoulders. road base subgrade damaged resulting weak spots.
- road like farm path
- Road UNEVEN warping. like driving rumble strips. Road dangerous uneven pavement

Primary Topic 3

Subtopic 1: Safety Concerns Regarding Rush Hour Traffic Flow on Exit Ramps

Document Count: 9

Top Keywords: ramp | dangerous | rush hour | hour | unsafe | backup | rush | shoulder | creates dangerous | creates

Summary:

Public complaints regarding transportation infrastructure highlight significant safety concerns related to interstate ramps, particularly during rush hour. Many drivers describe these ramps as unsafe due to their short lengths, which contribute to traffic backups and create hazardous conditions for lane changes. Complaints emphasize that the design of these ramps often leads to dangerous situations, especially during peak traffic times when vehicles are moving at high speeds. Additionally, inadequate timing of traffic lights and insufficient acceleration and deceleration lengths exacerbate the risks, prompting calls for improvements and upgrades to enhance safety for all road users.

Representative Comments:

- Cars backup interstate ramp unsafe ramp safer use. Remove ramp.
- ramp dangerous unsafe especially peak times
- ramp short. Traffic lines shoulder rush hour. Creates dangerous zone cars changing lanes resulted accidents year.

Subtopic 2: Improving Traffic Flow and Safety at Merging Intersections and Congested Roadways

Document Count: 9

Top Keywords: merging | route 30 | 30 | road | south | congestion | highway | route | interchange | merge

Summary:

Public complaints about merging and congestion on Route 30 highlight significant concerns regarding the design and functionality of interchanges and merging areas. Many drivers express frustration with poorly designed intersections that lead to excessive congestion and difficult merging conditions, particularly at locations like Summit Park Drive and Freeport Road. Complaints emphasize the need for dedicated merge lanes to improve traffic flow and reduce near-misses. Additionally, some areas are described as outdated and in urgent need of redesign to accommodate increasing traffic, with specific mentions of issues such as lane reductions and inadequate space for merging vehicles. Overall, there is a strong call for infrastructure improvements to enhance safety and efficiency on Route 30.

Representative Comments:

- Merging people getting off... short... interchange Summit Park Drive need moved.
- interchange merging mess. Eastbound necks 3 2 lanes merging sides. Fix please.

- Worst Highway Merging encountered nearmisses congestion stop sign to 45mph highway

Subtopic 3: Traffic Safety Improvements for Challenging Merge Points on Key Routes

Document Count: 9

Top Keywords: merge | limited | traffic | lane | curve | onramp | limited visibility | unable | center | visibility

Summary:

Public complaints regarding transportation and infrastructure highlight significant safety concerns related to merging lanes, particularly at onramps and curves with limited visibility. Many respondents describe hazardous conditions where short onramps and poor sightlines make it difficult for drivers to merge safely into fast-moving traffic. Issues include the inability to see oncoming vehicles until it's too late, leading to dangerous situations. Additionally, some areas are congested, prompting calls for improved traffic management, such as adding lanes, installing barriers, and optimizing traffic light timing. Overall, the need for better design and visibility at merging points is a recurring theme in these complaints.

Representative Comments:

- Hazardous curve limited interchange ramps merge lane issues.
- ramp short safely merge unless traffic slowed tunnel traffic
- Short onramp limited sight distance lead difficult merges fast moving traffic

Subtopic 4: Traffic Congestion and Safety Challenges at Parkway Exits and Intersections

Document Count: 6

Top Keywords: exit | traffic | stop | lane | exiting | stop sign | short | sign | ramps | lanes

Summary:

Public complaints regarding transportation and infrastructure highlight significant issues with exit ramps and traffic management. Many individuals express frustration over traffic congestion at exit lanes, where merging vehicles often come to a complete stop, causing delays and accidents. Complaints also mention the need for clearer signage and better traffic signal timing, particularly at intersections with short turning lanes. Additionally, the condition of exit ramps is a concern, with reports of potholes and road fissures requiring maintenance. Overall, the complaints reflect a desire for improved traffic flow, clearer guidance for drivers, and better infrastructure maintenance to enhance safety and efficiency.

Representative Comments:

- ramp traffic stop sign. Traffic merging join immediate exit lane complete stop 2 lanes order lane tunnel. Merging traffic consistently stops exiting traffic.
- Traffic backs freeway traffic lane stop sign exit.
- parkway accident stuck exit greenfield exit.

Subtopic 5: Comprehensive Analysis of Safety and Connectivity Issues at Intersections and Interchanges with Focus on Bicycling Infrastructure and Motorist Compliance

Document Count: 10

Top Keywords: intersection | interchange | sound | bicycling | poor | study | expansion | route | rd | left

Summary:

Public complaints about transportation and infrastructure focus on issues related to intersections and interchanges. Many express concerns about poor bicycle connectivity and safety, particularly at the California Avenue interchange, which is perceived as hazardous for cyclists. There are calls for clearer markings and better design at intersections, such as Route 28 and Cameron Road, to improve navigation and safety. Complaints also highlight inadequate traffic control measures, like low compliance at three-way stops, and the need for sound barrier studies in relation to expansion projects. Overall, the themes revolve around safety, efficiency, and the need for better infrastructure for both vehicles and cyclists.

Representative Comments:

- Intersection capacity issues backs left turn lanes. going worse freedom road completed.
- poor bicycle connectivity continuing California Ave interchange. efficient route bicycling interchange incredibly frightening hazardous. options poor few.
- interchange designed speeds grossly inappropriate connecting roads. intersection inefficient inhospitable unless traveled automobile.

Primary Topic 4

Subtopic 1: Widening Narrow Roadways to Enhance Traffic Management and Improve Mobility

Document Count: 16

Top Keywords: needs | widened | road | needs widened | road needs | travel | roadway | narrow | traffic | lanes

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about narrow roadways and inadequate travel lanes. Many residents express that roads need to be widened to better accommodate increasing traffic, particularly due to population growth and commercial activity. Issues such as tight turns, insufficient shoulder space, and dangerous pinch points create safety hazards and congestion. The lack of proper roadway maintenance, including poor bridge conditions and inadequate shoulders for incident management, further exacerbates these problems. Overall, there is a strong demand for improvements to enhance road safety, traffic flow, and overall infrastructure quality.

Representative Comments:

- homes roads handle traffic
- Consider Main St. improvements alternative previously proposed new road alignment Irwin Boroughs park.
- Narrow Roadway tight turns. Try meeting true School Bus road. road needs widened.

Subtopic 2: Traffic Improvement Proposals for Onramps and Exits to Alleviate Congestion and Enhance Safety

Document Count: 10

Top Keywords: add | lanes | lane | 22 | exit | business 22 | business | bridge | eastbound | merge

Summary:

Public complaints about transportation and infrastructure highlight the need for additional lanes and improved merging options, particularly on the eastbound onramps and exits related to Business 22 and the MonFayette Expressway. Many respondents express concerns about dangerous lane changes due to unclear road designations, especially near busy intersections like the Bigelow Boulevard bridge. There are calls for expanded roadway capacity, such as adding lanes on key routes and creating overpasses to alleviate congestion. Suggestions also include converting certain corridors for light rail to enhance public transit and better manage traffic flow during peak hours.

Representative Comments:

- Add additional right lane Churchill eastbound onramp Monroeville Bus. 22 Exit allow time merge. Lane EXIT Business 22.
- Add lane right eastbound Churchill onramp business 22 exit

- Stop final leg MonFayette Expressway motorists continue use Thompson Run Road alternative Business 22.

Subtopic 3: Addressing Congestion and Infrastructure Needs for Route 228 Widening and Connectivity Improvements

Document Count: 8

Top Keywords: need | 228 | franklin | rd | east | franklin rd | mars | sr | west | sr 228

Summary:

Public complaints regarding transportation and infrastructure in the area surrounding Route 228 highlight a pressing need for road improvements, particularly the widening of SR 228 and Franklin Road. Residents express concerns about significant congestion, especially in the Franklin Road area, and emphasize the necessity for better connections, such as linking Cranberry Woods Drive to Freeport Road. Many complaints indicate that current projects are stalled due to funding issues, and there is an urgent call for repairs and enhancements to alleviate traffic problems. Overall, the community is seeking immediate action to address these infrastructure challenges.

Representative Comments:

- Need widen 228 align Cranberry Twp west Mars east
- Need create connection Cranberry Woods Dr Freeport Rd. alleviate substantial congestion Franklin Rd area.
- need repair andor widening

Subtopic 4: Infrastructure and Traffic Safety Concerns on State Routes 30 and 982: Erosion, Roadway Condition, and Vehicle Interaction Issues

Document Count: 13

Top Keywords: route | road | 982 | lane | traffic | north | roadway | needs | trucks | vacant

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about the condition and design of roadways, particularly along Route 982 and other major roads. Many residents emphasize the need for roadway upgrades, including widening to accommodate large trucks and improve safety at intersections. Issues such as excessive speeds, limited ADA access, and traffic congestion are frequently mentioned, with calls for measures like road diets and dedicated truck lanes. Additionally, the deterioration of roads and inadequate repairs have raised frustrations about the effective use of tax dollars. Overall, there is a strong desire for improvements to enhance safety, traffic flow, and economic viability in the community.

Representative Comments:

- community business district fourlane road it. needs narrowed expand economic viability area.

- Intersections character desires neighborhood roadway speeds far exceed posted limit 25 mph. ADA access limited. multimodal road diet municipalities City PGH Dormont Mt. Lebanon needed.
- Complete upgrade roadway.

Subtopic 5: Strategies for Improving Traffic Flow in Urban Tunnels: Addressing Dilemmas and Enhancing Access for Employees

Document Count: 4

Top Keywords: tunnel | tunnels | traffic | employees | stopping traffic | stopping | site | im | way | reason

Summary:

Public complaints regarding tunnels and traffic highlight significant concerns about congestion and accessibility in urban areas. Many residents express frustration over the widening of highways that eliminate existing tunnels, exacerbating traffic issues. There is a consensus that the current traffic flow through tunnels is often hindered, particularly during peak hours when employees are commuting to and from work sites. Suggestions for improvement include implementing strategies to prevent traffic stoppages, ensuring safe access for employees, and exploring alternative routes to ease congestion. Overall, the need for effective solutions to enhance tunnel traffic flow and improve the commuting experience is a central theme in these complaints.

Representative Comments:

- Widening highways eliminating tunnels
- tunnels city miserable. impossible understand solutions dilemma. Im sure Im say tunnels reason wife dont patronize work downtown area
- Identify multiple strategies improving tunnel traffic flow. easy step cease stopping traffic time employees come leave site alternate safe way tunnel employees access site stopping traffic.

Primary Topic 5

Subtopic 1: Deteriorating Bridge Conditions: Risks of Structural Integrity and Safety Concerns

Document Count: 14

Top Keywords: bridge | poor | condition | poor condition | holes | posted | holes bridge | surface | condition posted | pot holes

Summary:

Public complaints regarding transportation infrastructure, particularly bridges, highlight significant concerns about their deteriorating conditions. Many residents describe bridges as being in poor shape, with issues such as severe dips, potholes, and structural unsoundness. Complaints indicate fears of potential collapses, with some bridges rated as unsafe despite inspections. The condition of bridge surfaces is often criticized, making them difficult for vehicles and bicycles to navigate safely. Additionally, there are calls for repairs and modernization to accommodate increasing traffic and reduce accidents. Overall, the public expresses a lack of trust in the safety and maintenance of these critical structures.

Representative Comments:

- deck severe dips expansion points. bridge needs repaired.
- Bridge surface terrible
- Pretty sure bridge going collapse. pot holes bridge. ramps. ramps. Randomly middle bridge.

Subtopic 2: Challenges of Weight-Restricted Bridges and Traffic Management in Narrow Passages

Document Count: 13

Top Keywords: trucks | bridge | cars | lot | road | traffic | including | turn | noisy | underneath

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding the condition and safety of local bridges, particularly in relation to heavy trucks and traffic flow. Many bridges are described as deteriorating, with issues like falling debris and structural weaknesses, posing risks to pedestrians and vehicles. Noise from large trucks, especially when using engine brakes, adds to community disturbances. Complaints also mention the challenges posed by narrow roads and weight restrictions, which can lead to traffic congestion, especially during rush hours. Overall, there is a call for urgent repairs and better management of traffic to ensure safety and improve the quality of life for residents.

Representative Comments:

- Lots local bridges like one... falling apart recent crashes safe large trucks roads cars speed limit.
- Noise tractor trailers using engine brake
- Narrow bridge steep road straightened widened.

Subtopic 3: Assessment and Urgent Needs for Bridge Infrastructure and Economic Connectivity
Document Count: 11

Top Keywords: bridge | need | critical | rd | old | needs | old bower | vanadium | ave | link

Summary:

Public complaints regarding bridges highlight urgent concerns about aging infrastructure and safety. Many bridges, including the Old Bower Hill and Lincoln Avenue bridges, are described as narrow, steep, and in need of replacement due to their critical role in local traffic and economic stability. Weight restrictions on several bridges limit their use, impacting public transportation and community access. The removal of historic bridges has also led to economic decline in surrounding areas. Residents emphasize the necessity for long-term planning and funding for repairs and replacements to ensure safe passage and support local businesses, particularly around essential links to facilities like St. Clair Hospital.

Representative Comments:

- Old bridge narrow steep grade causes lots accidents needs replaced
- road need reconstruction age NHS map allow funding total reconstruction. main link SR0048 Patton Street Bridge
- historic bridge taken away years ago plans replace it. Removal bridge brought economic failure communities sides.

Subtopic 4: Enhancing Bicycle Safety and Accessibility on Challenging Urban Bridges
Document Count: 11

Top Keywords: bike | bridge | ohio | lane | bike lane | protected | east ohio | east | use | dangerous

Summary:

Public complaints regarding bike lanes and bridges in Ohio highlight significant safety concerns for cyclists and pedestrians. Many bridges, currently under restoration or redesign, lack adequate protection for bike lanes, making them feel dangerous to users. Issues such as narrow paths, high traffic, and insufficient separation from vehicles contribute to a sense of insecurity. Complainants advocate for the creation of protected bike tracks and safer passageways, especially on bridges like the 40th Street and Neville Island Bridge, emphasizing the need for better infrastructure to ensure safe and comfortable travel for cyclists and pedestrians.

Representative Comments:

- bridge currently undergoing complete restoration. needed course major artery cars pedestrians cyclists think completion project high priority quick completion.
- Neville Island Bridge I79 marked bicycle access just possible use northern terminus. shared bikepedestrian path valuable connect Emsworth Neville Island Coraopolis.
- absurd bridge considered bike lane. fantasy. needs upgraded protected bike track.

Subtopic 5: Safety Concerns and Accessibility Issues for Pedestrians and Cyclists at Urban Walkways and Bridges

Document Count: 9

Top Keywords: sidewalk | bridge | walk | access | dangerous | pedestrians | safely | way | cross | people

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding pedestrian safety and access, particularly related to bridges and sidewalks. Many bridges are described as dangerous due to inadequate or poorly maintained walkways, rusty railings, and abrupt ends that leave pedestrians without safe paths. Issues such as narrow sidewalks, debris-covered routes, and insufficient crosswalks make it difficult for people to walk or bike safely. Additionally, the lack of proper infrastructure for both pedestrians and cyclists creates hazardous conditions, particularly at busy intersections. Overall, there is a strong call for improvements to ensure safe and accessible routes for all users.

Representative Comments:

- Bridge raised 60 feet air water biking walking difficult cross bridge. steel railing steps rusty broken places unsafe pedestrians
- exists sidewalk bridge just ends bridge ends meaning way pedestrians walk safely north
- width intersection angles make dangerous pedestrians cross northsouth. Sidewalk leading Herron bridge busway stop poor condition.

Primary Topic 6

Subtopic 1: Dangerous Left Hand Turns and Traffic Concerns at Intersections

Document Count: 15

Top Keywords: left | turns | turn | sign | left turn | traffic | stop | rt | left turns | 30

Summary:

Public complaints regarding left turns highlight significant safety concerns at various junctions and intersections. Many drivers report poorly designed road layouts that hinder visibility and make left turns particularly dangerous. Issues such as narrow bridges and inadequate signage exacerbate the risks, leading to frequent accidents and near-misses. Specific locations, like Braddock and Veterans Bridge, are noted as hazardous for both vehicles and cyclists. Additionally, increased traffic from new housing developments has worsened the situation, making left turns more challenging. There are calls for improved traffic signals and signage, such as left turn arrows, to enhance safety for all road users.

Representative Comments:

- poorly angled junction making turns poor sightlines
- Poor junction layout left turns roadways.
- Bridge narrow difficult make left turn onto.

Subtopic 2: Traffic Safety Improvements for Turning Lanes and Backups at Quarries and Schools

Document Count: 10

Top Keywords: turning | turning lane | lane | turn | left | left turn | need | turn lanes | dangerous | lanes

Summary:

Public complaints about turning lanes highlight significant safety and traffic flow issues. Many residents express the need for dedicated left turn lanes to alleviate congestion, as current setups often lead to dangerous situations where drivers attempt to turn left amidst heavy traffic. Complaints also mention insufficient lane lengths and the need for better safety measures, such as center barriers, to protect drivers. Additionally, some suggest incorporating dedicated right turn lanes to reduce backups, especially near schools and quarries. Overall, the concerns center on enhancing safety and efficiency for vehicles making left turns and improving overall traffic management.

Representative Comments:

- need individual left turning lane directions instead right turning lane . traffic backs dangerous people try turn left
- Need left turn lane traffic going west 910
- Need better safety measure center barrier turning lane dangerous stretch highway.

Subtopic 3: Traffic Congestion and Difficult Left Turns at Key Intersections During Peak Times
Document Count: 14

Top Keywords: lane | traffic | turn | turn lane | left | intersection | rd | broughton | toll | 88

Summary:

Public complaints about transportation and infrastructure highlight significant congestion issues, particularly concerning left turn lanes at various intersections. Many residents express frustration over insufficient capacity during peak traffic hours, leading to backups and aggressive driving. Specific locations, such as the intersection of Broughton Road and Highway 88, are frequently mentioned as problematic due to inadequate turn lanes. Complaints also emphasize the need for improved signal timing and the potential benefits of dedicated turn lanes to enhance traffic flow. Additionally, some residents advocate for the removal of tolls to facilitate smoother traffic movement on toll roads. Overall, the concerns reflect a desire for better traffic management and infrastructure improvements.

Representative Comments:

- southbound left turn lane capacity fills morning rush hour spills lane. intersection needs dual left turn lanes.
- Heavy traffic middle turn lane. causes traffic right lane avoid traffic unable left lane.
- toll road needs updated remove toll make toll fast paced lane dont slow pay toll

Subtopic 4: Improvements and Safety Enhancements for Turning Lanes and Traffic Signals
Document Count: 7

Top Keywords: lane | turning | route | turning lane | arrow | turn | construction | past | flashing | flashing yellow

Summary:

Public complaints regarding transportation and infrastructure primarily focus on the need for improved turning lanes and signal systems. Many individuals express concerns about construction projects, particularly on Route 28 and Route 30, which have affected access and traffic flow. There is a strong demand for the addition of left turn lanes and the installation of flashing yellow arrows to enhance safety and efficiency. Complaints also highlight issues with existing turning lanes being too short, causing backups and dangerous conditions for drivers. Overall, the community seeks better-designed turning lanes and clearer signaling to ensure safer and more manageable traffic conditions.

Representative Comments:

- Highway construction taking place Route 28 Highland Park Bridge. Ramp bridge Sharpsburg. construction ramp closed Traffic Light installed Traffic force make Left turn acces
- Add turning lane.
- ADD LEFT TURN ARROW NB LEFT TURN LANE RIGHT TURN LANE SB 711

Subtopic 5: Ineffectiveness and Potential Improvement of HOV Lane Utilization in Urban Traffic Management

Document Count: 3

Top Keywords: hov lane | hov | lane | access | direction | limited | way | traffic | projects | little

Summary:

Public complaints regarding HOV lanes highlight significant concerns about their limited access and effectiveness in alleviating traffic congestion. Many users feel that the current direction of HOV lanes offers little benefit compared to their potential, as barriers have been removed and additional lanes added without improving traffic flow. Furthermore, there are suggestions to allow EZPASS users to access HOV lanes for a fee, especially in high-congestion areas like Northern Virginia near Washington, D.C. Commuters express frustration that the existing HOV lanes do not adequately address the worst traffic issues, often functioning in only one direction and failing to relieve congestion effectively.

Representative Comments:

- HOV lane direction extremely limited access. access limited little benefit relative potential. barriers removed extra lane added direction use times.
- HOV lane rarely used traffic flow horrendous. let EZPASS utilize HOV lane charge fee based traffic congestion Northern VA near DC. funds additional projects.
- Make HOV Lane Tline. exits right north shore station way utilized HOV lane doesnt relieve worst traffic city. uses HOV lane 1 way.

Primary Topic 7

Subtopic 1: Urgent Redesign Needed for Dangerous and Confusing Intersection to Prevent Pedestrian Strikes and Enhance Safety

Document Count: 7

Top Keywords: intersection | needs | dangerous | confusing | intersection intersection | intersection needs | cars | killed intersection | just killed | woman

Summary:

Public complaints highlight significant concerns regarding the safety and design of certain intersections, particularly those described as dangerous and confusing. Many residents express the need for improved signage and better traffic management to slow down vehicles, especially in high-traffic areas like five-way intersections. Tragic incidents, including the recent death of a woman at one of these intersections, underscore the urgency for redesigning these spaces to enhance safety. Additionally, frustrations arise over construction plans that are perceived as unnecessary, diverting attention from addressing critical infrastructure needs that affect local businesses and community safety.

Representative Comments:

- intersection needs better signs
- Dangerous confusing 5 way intersection vehicles drive fast. woman just killed intersection. intersection needs redesigned slow cars down.
- construction plan intersection horrible unnecessary. mention allowing robocall facility large company stay taking small business so. Fantastic job Bravo.

Subtopic 2: Traffic Congestion and Infrastructure Challenges at Critical Intersections

Document Count: 7

Top Keywords: traffic | road | pike | turning | light | intersection | dangerous | thomas | turning lanes | backs

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about traffic congestion and dangerous intersections, particularly at locations like Washington Pike and Thomas Road. Residents report that traffic often backs up, creating hazardous conditions, especially near major stores like Home Depot. Many express frustration with the current infrastructure, noting that turning lanes are inadequate to manage the volume of vehicles, leading to gridlock and cars blocking intersections. The presence of malfunctioning traffic lights, such as flashing yellow and red signals, exacerbates the situation, making these intersections particularly perilous for drivers and pedestrians alike.

Representative Comments:

- areas. Washington Pike backs crossing creek near Home Depot store. mess. continuing Washington Pike, I-79 Route 50 traffic backs dangerous.

- entire area disaster. traffic current infrastructure. turning lanes handle traffic frequently intersections gridlock cars waiting light blocking intersection
- road intersects Thomas Road. dangerous intersection flashing yellow red traffic light traffic light turn lane control traffic turning Waterdam Thomas Rd.

Subtopic 3: Critical Visibility Challenges at High-Risk Intersections Leading to Serious Vehicular Accidents

Document Count: 6

Top Keywords: 108 | sight distance | drivers | sight | distance | accidents | stop | intersection | intersection sight | visibility

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding poor sight distance at intersections, which is leading to an increased risk of accidents. Many drivers report difficulty seeing oncoming traffic due to inadequate visibility, particularly at busy crossings like the 4-way stop at Cleland and Columbiana Road. Complaints emphasize that fast-moving vehicles exacerbate the danger, with some intersections described as “horrific” due to frequent crashes. Residents are calling for improvements such as larger signs and traffic lights to enhance safety and reduce the likelihood of accidents at these critical points.

Representative Comments:

- bad intersection sight distance short accidents.
- intersection dangerous Visibility terrible. accidents time needs traffic light 4 way stop. Drivers fast crossing Cleland risk struck 108 drivers heading west.
- intersection horrific crashes week stop sign Columbiana Rd visibility poor vehicles drive fast. 4 way stop LARGE SIGNS. died here.

Subtopic 4: Redesigning Congested Intersections for Safer Bike and Pedestrian Access

Document Count: 8

Top Keywords: intersection | bikeped | millvale | bike | better | intersections | lanes | cars | needs | millvale shop

Summary:

Public complaints about transportation and infrastructure in Millvale focus on the challenges faced at key intersections, particularly concerning bike and pedestrian safety. Residents express frustration over congested and poorly designed intersections where vehicles often run red lights and block bike lanes, creating hazardous conditions for cyclists and pedestrians. The need for redesigning these intersections is emphasized, as they are seen as chaotic and unfriendly to non-motorized users. Additionally, there is a concern about the prioritization of cars over the needs of those walking or biking, especially at critical access points to routes like Rt 28 and the Lawrenceville Riverfront Trail.

Representative Comments:

- intersection Wild West. merging people routinely run red lights block intersections cars parked bike lanes buses stopping having merge lanes etc.
- intersection needs redesigned. congested nightmare. Additionally impossible walk bike here.
- major intersection vehicles entering Millvale accessing Rt 28 North BikePed moving Millvale Lawrenceville Riverfront Trail. priority given cars apparent lack yielding high speeds.

Subtopic 5: Enhancing Pedestrian Connectivity and Traffic Safety in Urban Areas

Document Count: 7

Top Keywords: traffic | pedestrian | speed | lots | hulton | oakmont | connection | cap | parking | traffic area

Summary:

Public complaints about transportation and infrastructure in the Hulton and Oakmont areas highlight significant concerns regarding traffic congestion, pedestrian safety, and connectivity. Many residents express frustration with the current state of Hulton Road, noting that the area experiences heavy traffic, especially near the I-76 crossing. Complaints also mention that the design speed of vehicles is often faster than the posted limits, creating hazardous conditions for pedestrians. Additionally, there are calls for improved pedestrian facilities and better traffic signalization to enhance safety and accessibility, particularly in areas where development is limited. Overall, there is a strong desire for better planning and infrastructure to support both vehicle and pedestrian traffic.

Representative Comments:

- monstrosity. Limits development Northside horrible pedestrian access. cap like 579 cap park constructed here.
- traffic previously congested Harmar Township Hulton Road positioned Oakmont Hulton Bridge. sought funding study update signalization sequencing.
- Hulton Road Plum Oakmont near I76 crossing design speed faster posted speed limit. Vehicle speed carries inbound Oakmont lots pedestrian facilities.

Primary Topic 8

Subtopic 1: Critical Analysis of Traffic Congestion and Proposed Intersection Improvements for Enhanced Mobility and Community Benefit

Document Count: 11

Top Keywords: intersection | traffic | heavy | congestion | intersection traffic | improvements | heavy traffic | going | traffic congestion | peak

Summary:

Public complaints about intersections highlight significant concerns regarding traffic congestion and safety. Many individuals express frustration over heavy traffic, particularly during peak hours, which leads to delays and hazardous conditions. Specific intersections, such as those near shopping centers and developments, are often cited for their poor design and inadequate traffic flow, exacerbating congestion. Residents call for improvements, including better traffic management and pedestrian crosswalks, to enhance safety and accessibility. Overall, there is a strong demand for infrastructure upgrades to alleviate persistent traffic issues and improve the overall functionality of these critical areas.

Representative Comments:

- intersection needs improvements improve traffic flow safety.
- BJs development intersection starbucks Chartiers Creek Sheetz congestion traffic flow projects going dont help.
- shopping center needs exit gets congested. work going currently doesnt look like addresses issue.

Subtopic 2: Addressing Intersection Congestion: Flow Management and Traffic Volume Challenges

Document Count: 10

Top Keywords: congestion | flow | flow congestion | volume | road handle | handle traffic | handle | traffic volume | road | traffic

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about traffic congestion and flow. Many individuals express frustration with congested intersections that hinder smooth traffic movement, making turns difficult and increasing the risk of accidents. There are repeated mentions of roads struggling to handle the existing traffic volume, leading to daily congestion and safety issues. Additionally, some complaints point to environmental factors, such as ponding and flooding, further exacerbating traffic flow problems. Overall, the central theme revolves around the inadequacy of current road systems to manage traffic effectively, resulting in delays and increased danger for drivers.

Representative Comments:

- congestion

- Traffic flow
- Congestion turns

Subtopic 3: Enhancing Intersection Safety: Addressing Traffic Light Durations and Stop Sign Visibility to Prevent Accidents

Document Count: 8

Top Keywords: sign | stop | stop sign | accidents | there | light | needs | right | sign traffic | ive

Summary:

Public complaints regarding transportation and infrastructure highlight significant safety concerns at various intersections and traffic signals. Many drivers report frequent accidents due to inadequate signage, such as missing or poorly positioned stop signs and traffic lights. Specific issues include trucks colliding with light poles and insufficient time for vehicles to pass through intersections, leading to rushed and dangerous maneuvers. There are calls for better visibility and longer traffic light durations to enhance safety. Additionally, some areas lack proper rehabilitation, with waiting areas being dark and deteriorating, further contributing to the unsafe conditions for drivers and pedestrians alike.

Representative Comments:

- Trucks having problems hitting light poles there. Accidents happen pretty there.
- intersection right right only. traffic sign required. waste electricity bizarre.
- traffic light eliminated drivers make right inout turns. accidents here.

Subtopic 4: Traffic Safety Concerns and Signal Timing Issues in Residential Areas

Document Count: 19

Top Keywords: traffic | light | lights | red | road | green | mcmurray | speed | mcmurray road | east

Summary:

Public complaints regarding traffic and infrastructure highlight several key issues, particularly concerning traffic lights and speeding. Many residents express frustration with the timing and synchronization of traffic signals, which often lead to prolonged red lights and inefficient traffic flow, especially during peak hours. Complaints also emphasize the dangers posed by speeding drivers who frequently run red lights, creating hazardous conditions at intersections. Additionally, there are concerns about inadequate lighting, both in terms of missing fixtures and poor visibility, which further complicates safe navigation for pedestrians and cyclists. Overall, these issues point to a need for improved traffic management and infrastructure adjustments to enhance safety and efficiency.

Representative Comments:

- lines lights reflectors intersection. way work yesterday morning person car turned hillside instead millenium drive roadway near HIGH SCHOOL.

- speed travel residential business district Route 30 Forest Hills hazardous. DOT timing lights expedite movement speed Turtle Creek area interstate highway poses significant disincentives
- multilane oneway Forbes Ave Magee Bellefield plagued high vehicle speeds context afternoon congestion. People speeding catch lights change lanes turning rightleft taking notice pedestrians.

Subtopic 5: Analyzing Factors Contributing to Traffic Congestion and Safety Hazards in Urban Areas

Document Count: 6

Top Keywords: slow | problems | signal | crossing | traffic | causes | causing | congestion | issues adequate | timings need

Summary:

Public complaints about transportation and infrastructure highlight significant issues related to traffic congestion and inadequate signal timings. Many residents express frustration over narrow roads that lead to slow traffic flow, particularly at intersections and highway access points. This congestion not only causes delays but also raises safety concerns, especially at dangerous crossings where traffic slows down, creating hazards for pedestrians. There is a strong call for adjustments to signal timings and improvements to turning lanes and interchanges to facilitate smoother traffic movement and ensure safer travel within the city. Overall, these complaints reflect a need for better management of traffic flow and infrastructure enhancements.

Representative Comments:

- cause lot congestion narrow inside causing people prematurely slow prior entering them.
- Street access offon interstate highway causes traffic slow flow interrupted.
- Traffic causing delays issues adequate safe travel city

Primary Topic 9

Subtopic 1: Urgent Need for an Efficient Bypass to Alleviate Truck Traffic Congestion in a Downtown Area

Document Count: 10

Top Keywords: traffic | bypass | zelienople | truck | truck traffic | 68 | rt | need | route | rt 40

Summary:

Public complaints regarding transportation and infrastructure in Zelienople highlight significant concerns about increasing truck traffic, particularly along Main Street and Route 68. Residents express a desperate need for a bypass to alleviate congestion caused by commercial trucks, which contribute to noise and pollution in the downtown area. Suggestions include constructing an East-West Bypass and improving connectivity to I-79 to reduce traffic in Zelienople. Additionally, there are calls for infrastructure improvements, such as paving roads and realigning intersections, to enhance safety and efficiency for motorists. Overall, the community seeks solutions to manage heavy truck traffic and improve local transportation.

Representative Comments:

- Zelienople truck congested desperately needs EastWest Bypass route 68 truck traffic borough.
- Truck traffic increasing bypass Route 68 I79 needs route built Trucks follow avoid downtown traffic
- desperately need bypass downtown Zelienople commercial traffic.

Subtopic 2: Improving Traffic Flow and Access at I79 Interchange with Enhanced Coordination and Infrastructure for the Wexford Community

Document Count: 9

Top Keywords: i79 | interchange | traffic | 910 | access | exit | wexford | 279 | 79 | help

Summary:

Public complaints regarding the I-79 interchange highlight significant traffic congestion and poor intersection design, particularly around the Wexford area and Route 910. Many residents express frustration with the current exit and access points, suggesting that the existing interchange geometry is inadequate for the growing traffic demands. Concerns include the need for improved alignment and realignment of I-79 to facilitate better connections with local roads, especially for larger trucks. Additionally, there are calls for enhanced access to the Thorn Hill Industrial Park and better coordination of traffic signals to alleviate backups on Route 910 and improve overall traffic flow in the region.

Representative Comments:

- Congested area bad intersection geometry. addition typical section I70 deficient interchange remaps particular interchange
- exit 279 N Rochester rd. alleviate lot traffic going 910 Wexford exit. miles 279N exits.

- Traffic disaster way I79

Subtopic 3: Hazards of Large Vehicles on Main Streets: Navigating Dangerous Roads and Pedestrian Risks

Document Count: 7

Top Keywords: trucks | large | dangerous | vehicles | trucks large | main | street | traffic | main street | drive

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding large trucks on Main Street in Zelienople. Residents express that the presence of these oversized vehicles creates dangerous conditions for pedestrians and motorists alike, particularly at pedestrian crossings. The difficulty large trucks face in navigating narrow roads leads to traffic congestion and poses risks to safety. Complaints also mention the challenges posed by potholes and sinkholes, which further complicate driving conditions for all vehicles. Overall, there is a strong sentiment that the current infrastructure is inadequate for accommodating the volume and size of modern trucks, resulting in hazardous driving conditions.

Representative Comments:

- Large trucks make walking driving main street dangerous
- Pedestrian crossings right away extremely dangerous Main Street Zelienople. streets WIDE ACCOMMODATE modern trucks tractor trailers box trucks large extended cab pick trucks.
- Large truck traffic difficulty maneuvering Main Street Zelienople.

Subtopic 4: Concerns Over Heavy Truck Traffic's Impact on Safety and Community Livability

Document Count: 6

Top Keywords: street | truck | main street | main | truck traffic | traffic | traffic dangerous | heavy truck | town | heavy

Summary:

Public complaints about heavy truck traffic highlight significant safety and environmental concerns in various towns. Residents express frustration over large trucks, particularly 18-wheelers, using main streets, which creates dangerous conditions for drivers and pedestrians. The presence of these vehicles leads to issues such as diesel fumes negatively impacting air quality and the physical condition of the roads. Many residents advocate for the establishment of separate truck routes or bypasses to divert heavy traffic away from residential and business areas, emphasizing the need for safer and cleaner environments in their communities.

Representative Comments:

- large trucks coming City Connellsville location. This unsafe dirty residents area. separate truck route bypass great.
- Truck traffic dangerous going town turning Route 19 Main Street New Castle Street

- 18wheelers come Main Street Rt 19 Rt 68 other. diesel fumes size trucks negatively affect condition Main Street safety drivers pedestrians. Bypasses suggested

Subtopic 5: Infrastructure Improvements for Traffic Safety and Vehicle Movement in Densely Populated School Zones

Document Count: 5

Top Keywords: rt | rt 19 | 19 | school | road | davis school | 19 creates | school rt | merge | 989

Summary:

Public complaints regarding transportation and infrastructure center around the challenges posed by Route 19 and its interaction with Davis School. Concerns include the need to reroute Route 989 to alleviate heavy truck traffic in school zones, which poses safety risks in densely populated areas. Residents advocate for changes to Route 19, suggesting a shift to a single lane to improve pedestrian safety and accommodate bike infrastructure. Additionally, confusion arises from the existing traffic patterns at the intersection with Davis School, prompting calls for realignment to enhance vehicle movement. There are also suggestions for utilizing tunnels and merging strategies to improve traffic flow on nearby routes.

Representative Comments:

- like reroute Rt 989 new proposed Access road reference 19th St. wMove Rt 989 block west Rt 65. detour heavy truck traffic traveling school zone.
- Dormont densely populated area Rt. 19 creates risks. Rt. 19 changed single lane direction improve safety pedestrians allow bike infrastructure added.
- movement vehicles Davis School Rt 19 confusing existing connection Davis School Rt. 19. Creates confusion oncoming traffic intersection. Realignment facilitate improved traffic movement.

Primary Topic 10

Subtopic 1: Improving Public Transportation Services for Small Towns and Residents in Need

Document Count: 21

Top Keywords: bus | transportation | city | public | transit | public transportation | area | lot | people | new

Summary:

Public complaints about transportation and infrastructure highlight significant issues with the city's public transit system. Many residents express frustration over limited bus and light rail services, particularly in smaller towns like Bolivar and Robinson, where access is minimal. There is a clear demand for increased frequency of existing routes and the creation of new ones to better connect various areas, especially for seniors and those without cars. Additionally, concerns about the availability of park-and-ride facilities, inadequate transit connections to healthcare and shopping, and unreliable service, such as infrequent buses and cancellations, further complicate residents' mobility and access to essential services.

Representative Comments:

- great commuter train established city. help bring new people direction make easier people city increasing city city commerce.
- benches bus stops South Side.
- provide park ride facility UPMC Mercy Hospital. getting new buildings facilities going crowded. Currenty transit park ride facilities place.

Subtopic 2: Enhancing Passenger Rail Connectivity and Service in Late Night and Early Morning Hours

Document Count: 16

Top Keywords: train | rail | trains | station | passenger | amtrak | harrisburg | service | travel | passenger rail

Summary:

Public complaints regarding passenger rail service in Pennsylvania highlight significant dissatisfaction with the current state of train travel, particularly between cities like Pittsburgh and Harrisburg. Many users express frustration over infrequent, slow, and expensive service, with calls for more regular and timely train options. There are requests for improved Amtrak stations and increased service frequency, as current schedules make travel planning challenging. Additionally, suggestions include expanding passenger rail options in western Pennsylvania and enhancing connections to nearby cities. Overall, there is a strong desire for better rail infrastructure and more efficient service to meet passenger needs.

Representative Comments:

- Rail service Pittsburgh Philadelphia abysmal. infrequent slow expensive impractical nearly including like really likes train wishes it.

- realize Norfolk Southern RR line addition passenger rail service Latrobe Greensburg Pittsburgh etc. interesting long frequent routes. start small add stops time.
- need regular passenger rail service Harrisburg Pittsburgh. trips 35day rider travel round trip cities single day similar travel Harrisburg Philly.

Subtopic 3: Traffic Congestion and Access Challenges in Pittsburgh's Road Network

Document Count: 15

Top Keywords: pittsburgh | route | road | traffic | point | route 30 | north | 30 | congestion | east

Summary:

Public complaints regarding transportation and infrastructure in Pittsburgh highlight significant traffic congestion and inadequate road design. Key issues include bottlenecks at major points like the Fort Pitt Bridge and tunnel, which complicate access to the airport and contribute to stressful commutes. The lack of dedicated highway ramps and the predominance of car-focused roadways are criticized for making navigation difficult for pedestrians and cyclists. Additionally, there are calls for improved public transit routes to the airport and better planning for construction projects to minimize disruptions. Overall, residents express a need for more efficient traffic flow and safer, more accessible transportation options.

Representative Comments:

- Traffic Bridgevilles north end addressed.
- lack dedicated highway ramps Veterans Bridge I579 Bigelow Blvd PA 380 unnecessarily complicates traffic flow Parkway North Pittsburghs East End forcing traffic surface streets near PPG Paints Arena.
- Colloquially known Pittsburghs autobahn. reason weird random park accessed automobile.

Subtopic 4: Enhancing Public Transportation Connectivity and Affordability in Urban and Surrounding Areas

Document Count: 9

Top Keywords: pittsburgh | indiana | indiana county | gas | county | service | rail | commuter | needs | airport

Summary:

Public complaints regarding transportation and infrastructure in the Pittsburgh and Indiana County areas highlight a strong demand for improved transit options. Residents express the need for high-speed rail connections to Pittsburgh International Airport and better commuter bus services between Pittsburgh and Johnstown, especially as rising gas prices make travel increasingly unaffordable. There are calls for expanded public transit routes to foster connectivity and support local development. Additionally, concerns about excessive long-term parking fees at the airport and the lack of frequent service options reflect a desire for more efficient transportation solutions that enhance accessibility and livability in the region.

Representative Comments:

- Need high speed rail transportation Pittsburgh Airport
- Commuter bus service Pittsburgh Johnstown important need Indiana County. gas prices hit 5gallon year Indiana County residents afford price gas travel Pittsburgh work school.
- Commuter bus service Pittsburgh Johnstown important need Indiana County. gas prices hit 5gallon year Indiana County residents afford price gas travel Pittsburgh work school.

Subtopic 5: Enhancing Public Transit Connectivity for Economic Opportunities in Underutilized Commuter Regions

Document Count: 7

Top Keywords: greensburg | commuter rail | commuter | work need | transit allegheny | public | valley | latrobe | westmoreland | rail

Summary:

Public complaints about transportation in the Greensburg and Westmoreland area highlight a pressing need for improved commuter rail services connecting Latrobe, Greensburg, and Pittsburgh. Residents express frustration over limited public transportation options, particularly in economically depressed regions where access to jobs is crucial. The existing transit system in Allegheny County is seen as underutilized and complicated, making it difficult for people to travel between neighborhoods. Additionally, there are concerns about the reliability of local taxi services and the lack of weekend bus routes. Many advocate for a restored commuter rail network similar to SEPTA's system to enhance connectivity and support local economies.

Representative Comments:

- Add commuter rail service Westmoreland connect Latrobe Greensburg Pittsburgh
- Greensburg Mon Valley Pittsburgh. access public transportation. economically depressed area large business sector sustainable jobs. Folks travel work. Need public transpo
- Regional transit Allegheny County severely underutilized commuter rail neighborhoods southern suburbs complex geographic features make travel surrounding communities overly complicated carbound.

Primary Topic 11

Subtopic 1: Traffic Safety and Urban Design Challenges on Multi-Lane Roads

Document Count: 12

Top Keywords: cars | sidewalk | street | traffic | speed | lane | road | people | parking | makes

Summary:

Public complaints about transportation and infrastructure highlight significant concerns regarding safety and accessibility for pedestrians and cyclists. Many roads have high speed limits, with vehicles often exceeding them, creating dangerous conditions for people walking or biking. Sidewalks are frequently described as narrow, crumbling, or blocked by parked cars, making it difficult for pedestrians to travel safely. Additionally, blind corners and steep hills contribute to hazardous situations for both drivers and non-motorized users. There is a strong call for traffic calming measures, such as road diets and designated bike lanes, to improve safety and promote more accessible urban environments.

Representative Comments:

- roadway iffy cars people travel 60mph speedlimit 35mph potholes rains ppl hydroplane sidewalk atrocious unsafe walkers bikers Bloomfield downtown way.
- Blind corner steep hill makes dangerous pedestrians bikes drivers alike. People slow corner Im surprised arent accidents.
- Stroad safe walk sidewalk. Speed limit high road wide. Needs road diet traffic calming landscaped verge painted parking chicanes bump outs etc.

Subtopic 2: Safety Concerns Surrounding School Commutes and Public Transportation Access

Document Count: 12

Top Keywords: bus | walk | sidewalks | stop | school | unsafe | road | dangerous | bus stop | lack

Summary:

Public complaints regarding transportation and infrastructure highlight significant safety concerns for pedestrians, particularly children walking or biking to school. Many roads lack adequate sidewalks, making routes unsafe as vehicles often speed by. Specific areas, such as Verona Road and Craig Street, are noted for their dangerous conditions, with some bus stops being discontinued due to safety issues. Residents express frustration over the absence of pedestrian-friendly infrastructure, which forces individuals to navigate hazardous roads. The need for improved sidewalks and safer bus stops is a recurring theme, emphasizing the urgency for better planning to ensure safe travel for all, especially near schools.

Representative Comments:

- house mile high school dont feel like safe walk bike adult let children. school road does sidewalk cars speed there.
- road shoulder making unsafe wishes walk. Additionally issue speeders drivers passing vehicles right schools.

- collector street doesn't have sidewalk. mile popular elementary school unsafe walking biking. dangerous pedestrians.

Subtopic 3: Improving Pedestrian Safety and Accessibility in Urban Areas with Narrow Sidewalks and Disconnected Trails

Document Count: 11

Top Keywords: sidewalk | pedestrian | park | ave | access | narrow | trail | curto | frick | frank curto

Summary:

Public complaints regarding transportation and infrastructure highlight significant issues related to pedestrian access and sidewalk conditions. Many sidewalks are reported as narrow, in disrepair, or abruptly ending, which creates safety hazards for pedestrians trying to navigate areas near parks and trails. Specific locations, such as Herron Avenue and Frank Curto Park, have been noted for their inadequate pedestrian pathways. Additionally, the lack of proper pedestrian crossings and steep ramps raises concerns about accessibility, particularly for individuals with disabilities. Incidents involving pedestrian fatalities further underscore the urgent need for improved infrastructure, including better bike and pedestrian access and reduced vehicle speeds in these areas.

Representative Comments:

- Northern sidewalk closed.
- Sidewalk disrepair narrow Herron Ave Frank Curto Park.
- narrow sidewalk extends Frank Curto Park abruptly ends Bigelow approaches I579. way safely exit sidewalk. walk park Herron Ave leave sidewalk.

Subtopic 4: Accessibility Challenges for Wheelchair Users on Sidewalks and Public Routes

Document Count: 8

Top Keywords: wheelchair | missing | missing wheelchair | wheelchair access | access | access sidewalks | dr | sidewalk | dr missing | sidewalks oxford

Summary:

Public complaints regarding wheelchair access highlight significant concerns about missing or inadequate sidewalks in various locations, particularly on Timberbrook Drive, Jeremiah Drive, and Oxford Drive. Many individuals express frustration over the lack of accessible pathways, which impedes mobility for wheelchair users and those with difficulty walking. Issues include obstructed sidewalks due to lawn erosion and utility poles, as well as poorly designed ramps that resemble half-pipes, making navigation difficult. The absence of continuous and accessible sidewalks creates barriers for individuals trying to reach businesses and navigate their neighborhoods safely. Overall, these complaints emphasize the urgent need for improved infrastructure to enhance accessibility for all.

Representative Comments:

- sidewalk Timberbrook Dr Jeremiah Dr. missing link allow people walk Main St.
- Missing Wheelchair access sidewalks
- Missing Wheelchair access sidewalks Oxford Drive entrance business drives

Subtopic 5: Challenges and Improvements for Pedestrian Safety in Urban Areas

Document Count: 9

Top Keywords: pedestrians | gutter | walking gutter | walking | sidewalk | road | sidewalks | rd | hill | hill rd

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about pedestrian safety and the condition of sidewalks. Many areas, particularly along Browns Hill Road and McKnight Road, feature narrow or overgrown sidewalks that force pedestrians to walk in the gutter, creating dangerous situations. Complaints also mention poorly maintained bridge decks and the need for wider sidewalks to accommodate foot traffic safely. Additionally, the presence of panhandlers in high-traffic areas adds to the discomfort for pedestrians. Overall, there is a strong call for improved sidewalk conditions and safer walking environments to ensure pedestrian safety in these communities.

Representative Comments:

- sidewalk Browns Hill Rd narrow exists road. sidewalk wider sides road pedestrians feel safer able businesses Browns Hill Rd easier.
- sidewalk accommodate pedestrians recent years overgrown.
- sidewalk stretch McKnight rd. Pedestrians frequently walking gutter road.

Primary Topic 12

Subtopic 1: Hazardous Pedestrian Crossing Conditions at Urban Intersections

Document Count: 19

Top Keywords: pedestrians | intersection | pedestrian | traffic | crossing | dangerous | accidents | cars | cross | school

Summary:

Public complaints about pedestrian safety at intersections highlight significant concerns regarding dangerous conditions for walkers, especially near schools and busy traffic areas. Many intersections lack proper signage, signals, and enforcement of traffic laws, leading to high speeds and frequent accidents involving vehicles and pedestrians. Residents report feeling unsafe due to drivers ignoring yield signs and stop signs, creating a hostile environment for those trying to cross streets. The need for improved pedestrian infrastructure, such as marked crosswalks and traffic calming measures, is emphasized to enhance safety and reduce the risk of accidents, particularly in areas with heavy foot traffic.

Representative Comments:

- Stop signs traffic laws Stanton heights neighborhood regarded optional. openly known ABSOLUTELY ZERO enforcement authorities traffic violations neighborhood entire city
- pedestrian school crossing Bower Hill Road location lit marked. Cars stop speeds road high. child going die isnt done.
- oneblock strip dangerous scene numerous accidents involving cars bikes pedestrians limited visibility speeding particularly Liberty Ave approaching 16th St Bridge Penn Ave.

Subtopic 2: Intersection Safety for Pedestrians: The Importance of Respecting Crosswalks and Signals Amid Vehicular Traffic

Document Count: 17

Top Keywords: pedestrians | crosswalk | crosswalks | signals | cars | cross | pedestrians cross | marked | speed | dangerous

Summary:

Public complaints regarding pedestrian safety at crosswalks highlight several key concerns. Many drivers are unfamiliar with unmarked crosswalks, leading to dangerous situations when pedestrians attempt to cross busy streets. Issues with malfunctioning crosswalk signals further exacerbate the problem, forcing pedestrians to wait excessively or resort to jaywalking. Long crosswalks and high vehicle speeds contribute to unsafe conditions, especially when right-turning cars do not yield to pedestrians. Additionally, inadequate signage, poor lighting, and the lack of proper crosswalk maintenance make intersections hazardous. The need for better enforcement of pedestrian laws and improved road design is emphasized to enhance safety for those crossing streets.

Representative Comments:

- Ross Park Ride attracts pedestrians marked crosswalk 19/Center Ave. drivers unfamiliar unmarked crosswalks. Dangerous situations occur pedestrians cross 19. marked crosswalk stop sign light
- crosswalk signals unfunctional. change stop hand walk stoplight cycles making pedestrians essentially wait opening jaywalk.
- people cross street getting bus marked crosswalk.

Subtopic 3: Enhancing Safety and Clarity at Sheepskin Trail Crossings for Trail Users and Drivers

Document Count: 14

Top Keywords: trail | crossing | sheepskin trail | sheepskin | traffic | barton | ave | south | cross | safer

Summary:

Public complaints regarding transportation and infrastructure highlight significant safety concerns at various crossings along the Sheepskin Trail, particularly at intersections like Barton Road and South Union Township. Many users report dangerous conditions due to poor visibility, fast-moving traffic, and unmarked or confusing crosswalks. Specific areas, such as the crossings at Marlborough and Aylesboro, are noted for sudden driver turns and gaps in traffic, making pedestrian navigation perilous. Residents advocate for traffic calming measures, including standardized crossing designs and curb extensions, to enhance safety for both pedestrians and cyclists using these trails and crossings.

Representative Comments:

- Taking Eliza furnace trail Swinburne Second Ave Second Ave Greenfield blind areas turning Second Ave portion trail. Difficult opposing bike foot traffic navigate narrow space.
- Crossing braddock ave common pathways worn grass unmarked unsafe
- cross walk popular brewery year park going in. great safer crossing area.

Subtopic 4: Enhancing Safety and Infrastructure for Neighborhood Pedestrian Crossings Amid Dangerous Traffic Conditions

Document Count: 11

Top Keywords: crossing | pedestrian | making | pedestrian crossing | cars | dangerous | important | neighborhood | cross | stretch

Summary:

Public complaints about pedestrian crossings highlight significant safety concerns in various neighborhoods. Many residents describe existing crossings as dangerous due to speeding cars and inadequate infrastructure, particularly during peak traffic hours. There are calls for improved pedestrian facilities, such as stop lights, elevated crosswalks, and dedicated crossings, especially near busy roads and transit stops. The need for traffic calming measures is emphasized to protect families, children, and pets crossing streets. Overall, the community seeks safer and more

accessible pedestrian pathways to enhance safety and encourage walking and biking in their areas.

Representative Comments:

- area dangerous pedestrians current configuration offpeak hours. Traffic calming elevated crosswalks center islands installed address this. major pedestrian focused development site PGH needs help.
- dangerous pedestrian crossing. Westbound cars making left Centre Highland dont pedestrians especially trying beat eastbound car yellow light. use crossing daily.
- Car traffic Old Ehrman frequently speeds area making pedestrian crossing dangerous neighborhood residents. Lots children neighborhood cross street utilize neighborhood park facilities

Subtopic 5: Concerns Over Road Safety and Pedestrian Welfare in Municipal Areas

Document Count: 10

Top Keywords: saxonburg | road | butler | crossing | unsafe | people | babcock | station | street | st

Summary:

Public complaints regarding transportation and infrastructure in the Saxonburg and Butler areas highlight significant safety concerns for pedestrians and commuters. Many residents express frustration over unsafe conditions along Babcock and Siebert Roads, where pedestrians are frequently at risk due to impatient drivers. Complaints also mention the Wood Street rail station, which is seen as unsafe due to the presence of homeless individuals and drug users. Additionally, there are calls for improvements at at-grade railroad crossings, including the need for better signage and sidewalks. The need for crosswalks and other safety measures at busy intersections, particularly around schools, is also emphasized to protect pedestrians, especially children.

Representative Comments:

- Starting siebert road heading Babcock Haunnursery people walk road sides day allot cars trying avoid McKnight Road using Babcock alternate route pass shoulder nearly kill walkers
- Police need patrol section Babcock Siebert Road Hans nursery. lot people walking road cars getting impatient passing shoulder. going killed.
- Wood street rail station unsafe. Police dont mediate issue riders trying utilize station. homeless people drug users hang station.

Primary Topic 13

Subtopic 1: Urgent Implementation of Traffic Calming Measures to Enhance Safety for Pedestrians and Children at High-Risk Road Areas

Document Count: 15

Top Keywords: calming | traffic calming | traffic | calming measures | measures | needed | lights | speed | pedestrian | fast

Summary:

Public complaints regarding traffic calming highlight a significant concern about speeding vehicles and pedestrian safety in various areas. Residents express the need for measures such as speed bumps, better signage, and enhanced lighting at crosswalks to protect pedestrians, especially children. Many complaints point out that existing traffic calming efforts, such as stop signs and faded crosswalks, are ineffective, as drivers continue to exceed speed limits. There is a call for more visible pedestrian warning lights and improved infrastructure, including bicycle facilities, to create a safer environment for both pedestrians and cyclists in busy neighborhoods.

Representative Comments:

- Need signs warn narrow roadway slower speed.
- Needs bicycle facilities automobile traffic calming.
- Traffic calming needed here. Drivers speed stop signs threat pedestrians area especially children.

Subtopic 2: Enhancing Urban Corridor Safety Through Traffic Calming Measures and Improved Pedestrian Infrastructure

Document Count: 14

Top Keywords: corridor | road | speed | traffic | ave | diet | needs | lanes | wide | extensions

Summary:

Public complaints about transportation and infrastructure highlight concerns regarding road safety, particularly for pedestrians. Many residents feel unsafe due to high vehicle speeds and poorly designed corridors that prioritize traffic flow over pedestrian safety. Suggestions include implementing road diets to reduce lanes, adding landscaped verges, and creating visual friction through curb extensions and pinch points. These changes aim to slow down traffic and improve walkability, especially in areas with elderly residents or high pedestrian activity. Overall, there is a strong call for prioritizing pedestrian safety and enhancing the livability of neighborhoods by rethinking road designs.

Representative Comments:

- Fifth Ave dangerous pedestrians current configuration. Lane reductions elevated crosswalks critical pedestrian safety area. features limit peak throughput protect offpeak speeding.
- corridor stroad speed fast. Pedestrians feel unsafe walking sidewalk here. People consistently speed limit. road wide needs landscaped verge painted lines road diet etc.

- start designing roads pedestrian safety traffic calming PRIORITY needs large trucks SUVs. corridor horrible walk reduced single lane side.

Subtopic 3: Inadequate Infrastructure and Hostile Conditions for Pedestrians and Cyclists in Urban Corridors

Document Count: 11

Top Keywords: pedestrians | traffic | automobile | poor | automobile traffic | transit | corridor | cyclists | pedestrians cyclists | hostile

Summary:

Public complaints regarding transportation and infrastructure highlight significant concerns about the safety and compatibility of pedestrian and cyclist traffic with automobile traffic. Many areas are described as hostile environments for pedestrians and cyclists, with high volumes of car traffic leading to dangerous conditions, excessive speeding, and frequent accidents. The lack of adequate pedestrian facilities and poor roadway design contributes to the feeling of insecurity for those traveling on foot or by bike. Additionally, there are calls for better transit accessibility and clearer signage to support safe navigation for all travelers, including those with disabilities. Overall, the need for improved infrastructure that prioritizes safety for all road users is a central theme.

Representative Comments:

- Density retail business pedestrians incompatible automobile traffic. Unsafe automobile traffic speed. Area safer automobile traffic. Liberty Ave better suited immediately parallel
- corridor extremely hostile pedestrians cyclists. difficult cross travel along. doesnt look particularly safe motorists either.
- corridor extremely dangerous. high volume pedestrian traffic constantly conflicts high volume car traffic. room handle pedestrians adequate infrastructure support transit

Subtopic 4: Urgent Call for Traffic Calming Measures and Speed Regulation in High-Pedestrian Areas

Document Count: 11

Top Keywords: speed | limit | road | speed limit | 25 | mph | people | 25mph | posted | street

Summary:

Public complaints about speed limits and road safety highlight concerns regarding inadequate enforcement and road design in residential areas. Many roads marked with a 25 mph speed limit are frequently treated as high-speed thoroughfares, with drivers often exceeding the limit, sometimes reaching 45 mph. This poses significant dangers, especially near schools and neighborhoods where pedestrians, including children, frequently cross. Residents are calling for traffic calming measures, such as speed humps, stop signs, and improved signage, to enhance safety. The need for better monitoring by law enforcement and adjustments to road designs is emphasized to address aggressive driving and ensure safer conditions for all road users.

Representative Comments:

- road marked 25mph designed higher speeds. road design changed 25mph limit expected followed
- residential lane street students cross school treated like highway. speed limit 25 people 45 regularly.
- people going faster posted speed limit

Subtopic 5: Traffic Calming Strategies for Aggressive Car Areas and Pedestrian Safety Enhancements in Urban Environments

Document Count: 8

Top Keywords: traffic | hill | cars | seton | seton hill | parking | pedestrian | speed | hill drive | bumps traffic

Summary:

Public complaints regarding transportation and infrastructure around Seton Hill focus on issues of traffic speed, pedestrian safety, and parking. Residents express concerns about the high volume of cars on roads like Seton Hill Drive, making it difficult for pedestrians to cross safely. Many suggest implementing speed bumps, traffic circles, and lower speed limits to calm traffic and enhance safety. The presence of off-street parking is also highlighted, with complaints about cars mixing with pedestrian traffic. Additionally, the anticipated increase in traffic due to new developments, such as townhouses and schools, raises fears about worsening congestion and safety in the area.

Representative Comments:

- speed number cars great street given parking. Car traffic slowed raised crosswalks speed bumps traffic circles lowered speed limits sidewalk widening.
- pedestrian street. offstreet parking lots parking garage right Walnut lots pedestrian traffic bad mix cars driving through.
- cars section clear alternatives traffic. love traffic restriction pedestrianization section historic southside. streetcar rail connection station square help

Primary Topic 14

Subtopic 1: Improving Bicycle and Pedestrian Safety Through Traffic Calming and Infrastructure Redesign

Document Count: 30

Top Keywords: bike | ave | safe | unsafe | penn | road | traffic | dangerous | route | routes

Summary:

Public complaints highlight significant safety concerns for cyclists and pedestrians on major roads, particularly Penn Avenue, which is perceived as extremely dangerous due to high traffic speeds and inadequate bike infrastructure. Many residents advocate for the addition of protected bike lanes and traffic calming measures to enhance safety. Issues such as poor visibility at crosswalks, lack of designated bike routes, and the design of roads that encourage high-speed driving contribute to the feeling of unsafety among cyclists. Additionally, there is a call for better connectivity between neighborhoods and safer routes for active transportation, emphasizing the need for comprehensive redesigns of existing roadways.

Representative Comments:

- student traffic makes life town unbearable months school in. talks university possible park rides additional routes university require PennDOT approvalhelp.
- PennDOT shut proposed road lead hotel town. Unfortunately hotel floundering lack access. issue University plans make intersection new main entrance.
- Braddock Avenue W Hutchinson St Edgewood Ave especially dangerous bikers area. bike lane traffic calming needed.

Subtopic 2: Enhancing Road Safety Through Sidewalk and Bike Lane Widening for Improved Traffic Flow and Accessibility

Document Count: 30

Top Keywords: bike | bike lane | lane | road | safety | cars | lanes | sidewalk | bike lanes | road needs

Summary:

Public complaints about bike lanes and related infrastructure highlight significant safety concerns for cyclists and pedestrians. Many respondents report that existing bike lanes are obstructed by parked cars, making them hazardous to use. There is a strong demand for dedicated and protected bike lanes, especially in high-traffic areas and near dangerous intersections. Commuters express frustration over narrow paths and abrupt lane endings, which compromise safety. Additionally, there is a call for wider sidewalks and bike lanes to accommodate increased cyclist traffic and improve overall accessibility. The need for better infrastructure is emphasized to reduce accidents and enhance the biking experience.

Representative Comments:

- Bike lane Bigelow Beeler obstructed parked cars. bike lane narrow places inches cars despite bike lane. Buses pull pick passengers.
- Cars trucks parked bike lanes N Negley daily multiple locations
- bike lane needed Hamilton especially 5th ave dangerous intersection.

Subtopic 3: Enhancing Connectivity and Accessibility of Bike and Pedestrian Trails for Recreational Use

Document Count: 30

Top Keywords: trail | connection | connect | river | access | heritage trail | heritage | allegheny | st | mountain

Summary:

Public complaints regarding transportation and infrastructure highlight a strong desire for improved connections between trails, particularly in relation to the Allegheny River and surrounding areas. Many residents emphasize the need for safe, accessible bike and pedestrian paths that link various neighborhoods and recreational spots, such as the Great Allegheny Passage and heritage trails. Concerns include gaps in existing trails, the need for dedicated bike lanes, and the safety of routes for cyclists and pedestrians. There is a call for better access to parks and community resources, as well as the integration of trails with public transportation options to enhance overall mobility.

Representative Comments:

- Route 130 reasonable shoulder way Allegheny River Trafford. Penn DOT does maintain shoulder. bike friendly maintained paved swept usable length 130.
- Bike trail needs connected far railroad possible map downtown
- bike lane does connect anything. needed connect McKees Rocks Coraopolis avoid terrain PA51. useful connect Montour Trail.

Subtopic 4: Enhancing Bicycle Connectivity and Safety in Urban Areas

Document Count: 26

Top Keywords: bike | ave | lawrenceville | liberty | strip | penn | bike lanes | blvd | lanes | way

Summary:

Public complaints regarding transportation and infrastructure in the Lawrenceville and Strip District areas highlight significant concerns about bike safety and connectivity. Many residents express the urgent need for protected bike lanes, as existing bike routes are often abrupt, dangerous, or non-existent, particularly on streets like Penn Avenue and Liberty Avenue. Commuters feel unsafe sharing roads with fast-moving traffic, and there are calls for dedicated bike paths that connect neighborhoods to downtown and other key areas. Additionally, the lack of sidewalks and the presence of obstructed bike lanes further complicate safe travel for cyclists and pedestrians, indicating a pressing need for improved infrastructure.

Representative Comments:

- offstreet bike path Bakery Sq Blvd abruptly ends E Liberty Boulevard quick direct connection Penn Avenue Shady Centre East Liberty activity center.
- contiguous trail Lawrenceville Downtown Pittsburgh absolutely necessary. Streets Strip District proven dangerous fatal cyclists. river trail provide safe access cyclists pedestrians
- bike lanes downtown continue Penn Avenue way Lawrenceville. dont feel safe taking Liberty Ave strip district.

Subtopic 5: Challenges and Solutions for Safe Bicycle Integration in Urban Traffic Systems

Document Count: 13

Top Keywords: lane | right | bike | needs | bike lane | traffic | left | lanes | light | signage

Summary:

Public complaints about transportation and infrastructure focus on the inadequacies of bike lanes and related signage. Many cyclists express concerns over poorly designed bike lanes that abruptly end or lack clear markings, making it difficult and unsafe to navigate intersections. Issues such as faded paint, confusing traffic signals, and insufficient signage contribute to unsafe interactions between cyclists and motor vehicles. Additionally, there are calls for better integration of bike lanes with traffic flow, including the need for dedicated bike traffic lights and clearer indications of lane usage. Overall, the complaints highlight a pressing need for improved safety measures and clearer guidance for both cyclists and drivers.

Representative Comments:

- oneways area turned way carbike shared lanes contraflow bike lanes allow bikes easier access
- Nearly immediately signage indicating right lane Washington County lane stops freaking sign half mile road. right hand lane stay right hand lane 79 S
- REALLY poorly designed bike lane meaningless stop lights overly complicated unused pavement markings unsafe interactions cars missing bike lane entrances lack signage motorists.

Appendix E: Census Tract Group Comparisons for Primary Clusters 1 (Road Repair), 5 (Bridge Repair), and 11 (Sidewalk Access and Safety)

This appendix provides the evaluation results of feedback patterns across census tract groups for the primary clusters 1 (Road Repair), 5 (Bridge Repair), and 11 (Sidewalk Access and Safety).

The analysis was performed using the ChatGPT-4o-mini model, which was prompted to compare responses across the census tract groups using the same neutral labels as the report (Group A, Group B, and Group C) to prevent any bias. This classification approach emphasizes census tracts as the primary geographic units of analysis, with information regarding the census tract groups such as income, population, and spatial area omitted.

This appendix supplements Section 4.3 Geographic-Based Differences in Public Infrastructure feedback of the report by providing the full GPT responses organized here in the following fashion:

- E1: Cluster 1 (Road Repair)
- E2: Cluster 5 (Bridge Repair)
- E3: Cluster 11 (Sidewalk Access and Safety)

The prompt provided the model with each cluster's summary, keywords, and comments. It requested that the model summarize each group's key needs, concerns, and focus areas, and then compare their tone, urgency, access and mobility implications, and actionable policy recommendations.

Editorial Note: The GPT-generated responses presented in this appendix have been reviewed and redacted by human researchers to ensure terminology consistency with the revised manuscript. However, the original structure and formatting of the responses have been preserved.

Appendix E1: Cluster 1 (Road Repair)

Corresponding to section 4.3.1 Geographic Differences in Public Infrastructure Feedback on Roadway Repairs

ChatGPT - Full Response

“Group-Level Summaries of Road Repair Concerns

Group A – Uneven Maintenance and Local Neglect

Key Needs & Concerns:

- Persistent potholes, especially after utility work (e.g., water line replacements) or state road maintenance failures.
- Concerns over **regional ...** maintenance attention (e.g., Washington County vs. Greene County).

- **Lack of resurfacing** after infrastructure work, leaving roads in dangerous, unfinished states.
- **Frustration with recurring issues** like potholes on high-speed roads and insufficient repair follow-up.
- Deteriorated bike lanes and concern for **non-motorized users**.

Focus Areas:

- Road resurfacing and patching following underground work.
- ... service delivery across regions.
- Speed-related damage and road safety.
- Bike lane usability.

Group B – Systemic Deterioration and Infrastructure Collapse

Key Needs & Concerns:

- Broad and detailed documentation of **widespread roadway degradation**, especially on high-traffic routes and rural connectors.
- **Critical infrastructure failures**: subgrade collapse, stormwater erosion, shoulder crumbling, flood-related damage, and neglected bridges/ramps.
- **Maintenance delays**, in some cases spanning years.
- Community frustration over **patchwork repairs** and missed opportunities to coordinate upgrades with adjacent projects.
- Concern about infrastructure neglect near schools, hospitals, and redevelopment areas.

Focus Areas:

- Complete roadway reconstruction, not just repaving.
- **Safety threats** from collapsing shoulders and blind spots.
- Coordination of maintenance and capital planning.
- Callouts of inefficiencies in public spending priorities.

Group C – Persistent Hazards, Neglect, and Active Danger

Key Needs & Concerns:

- Roads left **unrepaired or closed for years**, leading to **long detours and increased travel costs**.
- Flood-prone segments and **infrastructure instability**, such as crumbling retaining walls and collapsing roadbeds.
- Repeated **inconvenience and physical damage** (e.g., flat tires, unsafe driving conditions).

- Roads described as **uneven, warped, or “like a cow path”**—implying severe degradation over time.
- Urgent attention needed for **bike safety**, curb visibility, and **increased traffic strain**.

Focus Areas:

- **Complete overhauls** and not superficial fixes (tar and chip).
- Drainage, slope stabilization, and wall reinforcement.
- Snow removal neglect and intersection safety.
- **Mixed-use impacts**: bike lanes, neighborhood access, and pedestrian safety.

Cross-Group Comparison

Shared Themes

- All groups emphasize the **deteriorated state of roadways**, with potholes and surface issues being universal concerns.
- Frustration with **incomplete or delayed repairs** is common across all.
- Desire for **long-term solutions** (e.g., repaving instead of patching) rather than stopgap fixes.

Differences in Concern or Tone

- **Group A** expresses frustration rooted in **neglect ...**, with a more localized tone.
- **Group B** is the most **technically detailed**, pointing to structural failures and systemic issues. The tone is often urgent and policy-aware.
- **Group C** carries the strongest tone of **active distress and personal impact**, citing **physical danger** and prolonged access disruption.

Urgency of Need

- **Highest urgency: Group C**, where roads are closed or collapsing, causing detours and safety risks.
 - **Moderate to high urgency: Group B**, with documented infrastructure failures and high-traffic impacts.
 - **Moderate urgency: Group A**, with resurfacing needs and frustration over inconsistent service.
-

Access or Mobility Implications

- **Group C:** Major mobility disruptions (e.g., long detours, poor snow removal), increased cost burdens, and bike safety issues.
- **Group B:** Safety hazards from structural failures, poor drainage, and narrow or crumbling shoulders; affects both residents and commercial traffic.
- **Group A:** Reduced bike accessibility, safety concerns from potholes and speeding, and limited regional mobility due to uneven maintenance.

Actionable Policy Recommendations

1. **Prioritize structurally at-risk and closed roads** (Group C) with emergency repair funding and improved inspection protocols.
2. **Integrate stormwater and utility coordination into repaving schedules** to avoid post-construction deterioration (Groups A & B).
3. **Reallocate funding to maintenance over new construction**, particularly in regions with repeated neglect (Group B).
4. **Implement a regional ... audit** to track service delivery gaps (Group A).
5. **Enhance bike and pedestrian infrastructure resilience**, including resurfacing and protection from vehicle-induced damage (Groups A & C).
6. **Accelerate repairs following weather-related disasters and ensure accountability for long delays** (Groups B & C).

Summary Comparison

Table E1: Summary of each Group's sentiment towards the themes regarding Cluster 1 (Road Repair)

Group	Main Concern	Urgency	Access Impact	Tone	Key Recommendation
A	... neglected resurfacing	Moderate	Bike lane usability, local neglect	Frustrated	Audit maintenance ... and resurface post-utility work
B	Structural degradation and poor coordination	High	Regional connectivity, safety hazards	Technical, policy-aware	Rebuild damaged roads and integrate repair into planning
C	Dangerous roads and prolonged inaction	Very High	Major detours, increased travel costs, biker safety	Distressed	Emergency intervention for closures and collapsing segments

Each group reflects a piece of the broader road maintenance crisis—ranging from ... maintenance (A), structural failure (B), to critical safety and access threats (C). Addressing these requires both urgent repairs and systemic reform.

ChatGPT Summary:

All three groups share a common theme of widespread dissatisfaction with the deteriorated condition of roadways, particularly the prevalence of potholes, uneven surfaces, and insufficient long-term maintenance. However, their focus areas and primary concerns differ in emphasis. Group A centers on resurfacing needs and regional neglect, especially following utility work, with attention to bike lanes and perceived ... in maintenance. Group B highlights structural failures, poor coordination in capital projects, and degraded high-traffic corridors, offering the most technically detailed concerns. Group C focuses on prolonged inaction, road closures, collapsing infrastructure, and the resulting disruptions to everyday mobility. In tone, Group A expresses frustration over localized neglect; Group B is more formal and policy-focused, while Group C conveys personal distress and urgency due to dangerous conditions. Urgency escalates from moderate in Group A to high in Group B, and reaches critical in Group C, where infrastructure failures cause major detours and safety threats. Access and mobility impacts are noted across all groups but differ in severity: Group A reports degraded bike access, Group B cites regional safety and freight implications, and Group C faces direct road closures and connectivity breakdowns. In terms of recommendations, Group A calls for ... maintenance and better follow-up after utility work, Group B advocates for systemic reinvestment and integration of repairs into long-term planning, and Group C urges immediate emergency interventions. Despite these differences, all groups converge on the need for durable, well-coordinated repair efforts that prioritize safety, accessibility, and long-term functionality.”

Appendix E2: Cluster 5 (Bridge Repair)

Corresponding to section 4.3.2 Geographic Differences in Public Infrastructure Feedback on Bridges

ChatGPT- Full Response

“Group A – Key Needs, Concerns, and Focus Areas

Primary Concerns:

- **Severe structural degradation:** Many comments express fear of imminent collapse, citing rust, potholes, visible holes, and falling debris.
- **Bridge closures and weight restrictions:** Multiple bridges are closed or weight-restricted, impeding transit, including school buses and emergency vehicles.
- **Economic and social disruption:** The removal or deterioration of key bridges has isolated communities and affected local economies.
- **Pedestrian and cyclist safety:** Narrow or nonexistent sidewalks, broken railings, and fake or inadequate bike lanes are frequent concerns.
- **Distrust of inspections and oversight:** Some residents distrust safety reports or lack of documentation on inspections.

Focus Areas:

- Urgent structural repair and replacement
- Restoring community connectivity
- Enhancing multimodal access (bike/pedestrian)
- Accountability and transparency in inspections

Group B – Key Needs, Concerns, and Focus Areas

Primary Concerns:

- **Old, deteriorating infrastructure:** Reports of rot, potholes, and weight limits, especially on historic or wooden bridges.
- **Overuse by large vehicles:** Excessive truck traffic not suited for these bridges is accelerating deterioration.
- **Crashes and safety:** Multiple comments reference frequent accidents due to narrow lanes or inadequate signage.
- **Lack of pedestrian/bike infrastructure:** Frequent calls for safe pedestrian walkways and separated bike paths.
- **Bottlenecks and poor design:** Dangerous intersections and single-lane tunnels are common pain points.

Focus Areas:

- Structural updates, especially on older or historic bridges
- Truck route enforcement and design for heavy loads
- Safety upgrades and traffic calming
- Reconfiguring car space for protected non-motorized use

Group C – Key Needs, Concerns, and Focus Areas

Primary Concerns:

- **Bridge condition and maintenance:** Many bridges need preservation, deck repair, or general upkeep.
- **Noise and traffic stress:** Complaints about truck noise and unsafe merge patterns, especially near hospitals and neighborhoods.
- **Multimodal access issues:** Bicyclists and pedestrians face narrow paths, debris, and insufficient protection.
- **Critical access needs:** Some bridges serve as key links to hospitals, busways, or regional trail networks.

Focus Areas:

- Bridge preservation and preventative maintenance
- Noise mitigation and traffic safety redesign
- Sidewalk and bike lane improvements, especially near essential services
- Better design integration with public health and transit access

Cross-Group Comparison

Table E2: Summary of each Group's sentiment towards the themes regarding Cluster 5 (Bridge Repair)

Category	Group A	Group B	Group C
Shared Themes	Poor bridge conditions; urgent repair needs; pedestrian/cyclist risks	Same as A, with more truck overload concerns	Same as A/B, with more focus on access and noise
Differences in Tone/Concern	Highly urgent and distrustful; vivid warnings of collapse	Frustrated but more policy-oriented	More pragmatic and future-looking (proactive tone)
Urgency of Need	High – Collapsing bridges, economic impacts	High – Safety and crash risks; heavy traffic	Moderate–High – Key connections at risk, but more maintenance-based
Access/Mobility Impacts	Community isolation, loss of transit routes, unsafe crossings	Dangerous for cars and pedestrians; detour confusion	Connectivity barriers to hospitals, busways, trails
Policy Recommendations	- Immediate inspections and repairs		

- Reopen or replace closed bridges
- Transparency in inspection records
- Add/upgrade sidewalks and bike lanes
- Prioritize high-traffic, high-impact locations

| - Fund replacements for weight-restricted/historic bridges

- Enforce truck restrictions
- Redesign narrow or crash-prone structures
- Reallocate car lanes for protected bike/ped use

| - Preserve and proactively maintain critical structures

- Improve multimodal access with protected bike/ped paths
- Reduce noise and improve safety at key crossings
- Consider integration with hospitals and trail systems |

Final Summary Comparison

All three groups share concerns about deteriorating bridge conditions, safety risks, and inadequate pedestrian and cyclist infrastructure. Common themes include visible structural damage, lack of safe multimodal access, and the critical role bridges play in community connectivity.

Group A expresses the highest urgency and a deeply alarmed tone, citing imminent collapse, closed or weight-restricted bridges, and severe community impacts—including isolation and economic decline. Their focus is on emergency repair, inspection transparency, and reopening critical links.

Group B shares the urgency but emphasizes poor design, aging infrastructure, and overuse by large trucks. Their tone is more pragmatic, highlighting crash risks, bottlenecks, and the need for redesign—especially to accommodate modern traffic and protected bike/pedestrian lanes.

Group C presents a more measured tone, focusing on preventative maintenance, safe multimodal connections, and improving access to essential services like hospitals and transit. Though still concerned about deterioration, their emphasis is on long-term planning and infrastructure integration.

Access and mobility challenges appear across all groups. Group A highlights loss of service; Group B points to unsafe and outdated layouts; Group C emphasizes missing or narrow sidewalks and unsafe crossings.

Policy recommendations vary: Group A calls for urgent repairs and transparency; Group B advocates for redesign, truck enforcement, and multimodal space; Group C supports proactive maintenance and integrated access planning.

In sum, while all groups share safety and accessibility concerns, they differ in tone, urgency, and emphasis—ranging from crisis response (Group A) to design reform (Group B) to future-focused connectivity (Group C).”

Appendix E3: Cluster 11 (Sidewalk Access and Safety)

Corresponding to section 4.3.3 Geographic Differences in Public Infrastructure Feedback on Sidewalks

Group A – Safety Hazards, Connectivity, and Topographical Challenges

Key Concerns & Focus Areas:

- Absence of sidewalks on busy, high-speed, or narrow roads
- Dangerous road geometry (blind corners, steep hills) impeding pedestrian safety
- Fatal incidents due to lack of pedestrian infrastructure
- Difficulty accessing transit due to hilly terrain and unsafe paths
- Narrow or poorly designed sidewalks that cannot support two-way pedestrian traffic or force unsafe vehicle maneuvers

Mobility Challenges:

- Health-related limitations make sidewalk access to transit stops particularly difficult
- Limited pedestrian options for ... workers in car-oriented areas

Group B – Systemic Gaps, ADA Barriers, and School Access Risks

Key Concerns & Focus Areas:

- Multiple areas lack sidewalks entirely, especially near schools and key transit corridors
- Repeated mention of missing or unusable wheelchair access
- Unsafe walking conditions due to high-speed traffic, narrow sidewalks, potholes, and cars blocking paths
- Bus stops rendered unusable due to lack of pedestrian access
- Infrastructure design flaws including sidewalk-ramp geometry that threatens ADA compliance
- Children and families unable to safely walk or bike to school

Mobility Challenges:

- Numerous explicit concerns about ADA non-compliance
- Unsafe or nonexistent pedestrian access to essential services and transit
- Discontinued bus stops and constrained service due to pedestrian safety failures

Group C – Incomplete Infrastructure, Physical Barriers, and Park Access

Key Concerns & Focus Areas:

- Sidewalks that abruptly end or are missing on major roads

- Narrow, damaged sidewalks with obstructions like utility poles or cars
- Lack of pedestrian connections to popular parks, trails, and schools
- Inaccessibility for wheelchair users due to slope, erosion, or obstructions
- Unsafe walking conditions due to pedestrians being forced into roads

Mobility Challenges:

- Disconnect between infrastructure and public destinations (e.g., parks, grocery stores)
- Barriers disproportionately affect commuters and recreational users on foot
- Poor ADA compliance due to structural and spatial constraints

Comparative Analysis

Shared Themes:

- All groups express frustration with **missing, unsafe, or unusable sidewalks**
- Each group identifies **high-speed traffic** as a threat to pedestrian safety
- Pedestrian fatalities or risk of severe injury is a repeated concern
- **ADA inaccessibility** appears in all groups but is emphasized in Group B and C

Differences in Concern or Tone:

- **Group A** emphasizes *site-specific danger zones* and *connectivity challenges*, often with a sense of immediate danger due to road design.
- **Group B** is *systematic and comprehensive*, raising structural gaps, ADA issues, school safety, and transit access—delivering a more policy-relevant tone.
- **Group C** focuses on *infrastructure incompleteness* and *physical obstructions*, often in scenic, suburban, or park-adjacent environments—tone is urgent but highlights longer-term infrastructure neglect.

Urgency of Need:

- **Group A: High** – Presence of fatalities, unsafe topography, and compromised transit access.
- **Group B: Very High** – Repeated mentions of inaccessible school routes, ADA violations, bus service impact, and pedestrian deaths.
- **Group C: Moderate to High** – Clear risks and infrastructure gaps, though context is more suburban or recreational.

Access or Mobility Implications:

- **Group A:** Walking and transit access constrained by physical danger and hill grade.

- **Group B:** Severe access issues for wheelchair users, schoolchildren, and those without cars.
- **Group C:** Walkability disrupted by abrupt terminations, obstacles, and disconnects from public amenities.

Actionable Policy Recommendations:

Group A:

- Expand sidewalks on high-speed roads
- Install pedestrian safety features at blind corners and steep grades
- Add bus stops at topographical pinch points
- Reallocate vehicle lanes to protected sidewalks or trails where feasible

Group B:

- Prioritize ADA-compliant upgrades (curb ramps, wider sidewalks)
- Add sidewalks and calming features on school and transit routes
- Restore and redesign bus stops with safe pedestrian access
- Enforce sidewalk clearance (e.g., prevent vehicle blocking)

Group C:

- Complete sidewalk networks near parks, schools, and trailheads
- Remove sidewalk obstructions and repair crumbling paths
- Design safer pedestrian exits and transitions
- Implement parking regulations to prevent sidewalk obstruction

Summary Comparison

Public comments from Groups A, B, and C reflect widespread concern over inadequate sidewalk infrastructure. Shared themes include missing or unsafe sidewalks, high-speed traffic, poor ADA accessibility, and pedestrian exposure to dangerous conditions. However, each group emphasizes different priorities.

Group A focuses on site-specific hazards—blind curves, steep hills, narrow roads—and dangerous walking conditions that impede transit access and daily travel. The tone is reactive and rooted in lived danger, with a high urgency for improvements like sidewalk expansions, road design changes, and safer access to transit stops.

Group B presents the most urgent and policy-oriented concerns. It highlights systemic sidewalk failures, especially near schools and transit corridors, and repeatedly cites missing wheelchair access. The tone is critical and advocacy-driven, reflecting serious safety risks for children,

people with disabilities, and transit users. Urgency is highest here, with strong calls for ADA upgrades, sidewalk expansion, and traffic calming.

Group C emphasizes sidewalk discontinuity and obstructions—utility poles, parked cars, and poor design—that make walking unsafe, especially near parks and community destinations. The tone is more observational, pointing to long-standing design neglect. Urgency is moderate to high, with mobility impacts affecting both commuters and recreational users.

In summary, while all groups call for better sidewalk infrastructure, Group A centers on localized danger, Group B on structural accessibility failures, and Group C on network gaps and obstructions. Together, they reveal a need for both targeted safety upgrades and comprehensive, connected pedestrian networks that support safe, inclusive mobility.”

Appendix F: Prompts for Topic Labeling and Topic Summaries

This appendix provides the excerpts of the exact prompts implemented in generating topic/subtopic cluster's labels and summaries. It is included so that this approach can be replicated especially since variations from these prompts can impact the results.

Topic Labeling Prompt:

```
# === Prompt Template ===
prompt_template = """
You are an expert in natural language understanding and contextual analysis.

I have a topic that contains the following documents:
[DOCUMENTS]

The topic is described by the following keywords: [KEYWORDS]

Based on the context provided in the documents [DOCUMENTS] and keywords
[KEYWORDS], abstract a highly descriptive title without specific geolocations.

Make sure it is in the following format:
topic: <topic label>
"""
```

- [DOCUMENTS] includes every comment associated with the topic.
- [KEYWORDS] includes the set of top keywords identified for the topic.

Topic Summarization Prompt:

```
summary_prompt = f"""You are summarizing a topic extracted from public
complaints about transportation and infrastructure. The topic is represented by
the following keywords:

{keywords}

Here are some representative public complaints about this topic:
{truncated_text}

Write a clear and objective summary of approximately {word_target} words
describing the central themes and concerns of this topic. Do not use bullet
points. Aim to explain the main ideas in plain English.
"""
```

- {Keywords} refers to the list of representative keywords for the topic.

- {truncated_text} contains all comments assigned to the topic (truncated if necessary).
- {word_target} specifies the desired summary length in words.