



**Assessing Sustainable School Transportation Methods
at Stevenson Elementary in Grandview Heights**
EEDS Solicitation #016

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Executive Summary

Our team worked in conjunction with Dr. Jeremy Brooks, a Sustainable Grandview member, to research school transportation at Stevenson Elementary. Traffic flow and heavy congestion were identified as problems that contribute to unsafe conditions for school drop-off and pick-up. The purpose of our research was to better understand school transportation habits and provide recommendations that make walking and biking safer. Prioritizing walking and biking as modes of school transportation contributes to a more sustainable Grandview community. To better understand school transportation our team identified the following three research objectives:

1. Research current infrastructure
2. Conduct key informant interviews
3. Administer survey to Stevenson Elementary parents

First, we conducted research into school infrastructure by examining past infrastructure plans from the City of Grandview. This research also included on-site visits to the school. We found that some important infrastructure changes have been implemented while others have not. Next, our team conducted key informant interviews with representatives from Bexley and Upper Arlington elementary schools to produce a baseline comparison of school transportation. We found that these schools have similar transportation habits and congestion issues. Our team also interviewed Stevenson Elementary principal Lisa Sullivan to gather her insights on transportation at the school. Finally, we administered a survey to Stevenson Elementary parents. This survey included demographic, behavioral, and attitudinal questions. Our results showed that parents are concerned about traffic congestion and the safety of students during school drop-off.

Our results also showed interest from parents in increasing alternative modes of school transportation at Stevenson.

Our recommendations include expanding existing walking initiatives, implementing traffic pattern changes, adding bike racks in front of the school, and implementing a Bike Bus initiative. These recommendations address congestion and traffic pattern issues contributing to unsafe walking and biking conditions.

Introduction

The current transportation system at Stevenson Elementary School has many pressing logistical and safety issues that put students in danger and create an inefficient process that takes more time and resources than necessary. Currently, school drop-off policies lead to high congestion around the school due to a high number of vehicles dropping students off. The space dedicated for drop-off is relatively small, so high vehicle traffic in the area quickly becomes an issue during school drop-off and pick-up times. Reducing the number of vehicles on the road and increasing rates of walking and biking would help improve student health, increase safety, and preserve the environment in the City of Grandview Heights. The goal of this project is to better understand the current transportation at Stevenson Elementary. Our team set out to research current infrastructure that supports walking and biking, current school drop-off policies, similar elementary schools in Central Ohio, current transportation habits, and parent perspectives about transportation at Stevenson Elementary.

Our team identified three objectives to guide our research. These objectives include researching current infrastructure, conducting key informant interviews, and administering a survey to Stevenson Elementary parents. We researched the current infrastructure by using

Google Maps, visiting the school, analyzing previous city plans, and using the information provided by our project partner Dr. Jeremy Brooks from Sustainable Grandview. Sustainable Grandview is a grassroots community action organization focused on making Grandview a cleaner, healthier, and more resilient community. Our group conducted interviews with representatives from Upper Arlington and Bexley school districts to form a comparative analysis with Stevenson Elementary. We also interviewed Stevenson Elementary school Principal, Lisa Sullivan, to gain more perspective on transportation issues. We administered a survey to parents of Stevenson Elementary School students, which provided us with an enhanced view of transportation statistics, opinions, and recommendations from parents. This project utilized policy and infrastructure research, parent engagement, and comparative interviews to make sure we gathered data from multiple perspectives and to connect our research to real people.

Some key findings are that Grandview has made improvements to school transportation infrastructure, at least half of students already walk to school regularly and that safety is a major concern for parents when deciding between different modes of transportation. The research conducted provides Sustainable Grandview with useful insight into school transportation habits and allows them to inform and lead future efforts toward a safer, more sustainable community.

Methods and Results

Infrastructure Research

The first step of our project was to research the infrastructure present in Grandview Heights that supports walking, biking, and driving in the community. Our infrastructure research was focused on areas surrounding Stevenson Elementary but also took into consideration infrastructure along major routes in Grandview. Our team performed this research through the

completion of onsite visits to Stevenson Elementary, by looking at past and present city initiatives and plans, and by utilizing resources created by the elementary school pertaining to pick-up and drop-off routines. The three major resources from the city that we used for this were the 2016 *Draft Traffic Advisory Plan*, the 2016 *Draft Bikeway Pilot Plan* set forth by the city, and the 2011 *Safe Routes to School Engineering Study*. Our on-site visits and online resources from the school helped provide context to the content of these plans and initiatives to provide key background information for our project.

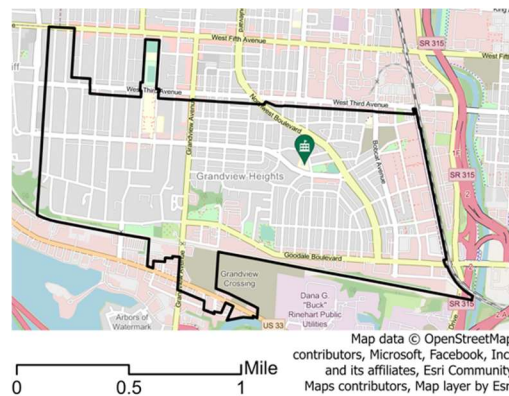
The City of Grandview Heights is just over 1.3 square miles and has a median household income of \$93,367 (U.S. Census Bureau, 2021). Stevenson Elementary School is a part of the Grandview Heights Schools district and has around 338 students in grades K-3 (U.S. News, n.d.). The school district is comprised of an elementary, middle, and high school that start and end their school days at the same time. Despite the city being relatively small, it is important to highlight the position of Stevenson Elementary in relation to Grandview as a whole. As is seen in Figure 1, Stevenson Elementary is situated towards the east side of the city. Early on in this project, the location of the school was identified as a potential issue affecting school transportation habits, especially for those who live on the opposite side of the city.

The school provides a list of procedures that parents are supposed to follow during school drop-off and pick-up processes that highlight relevant traffic restrictions for the area. These restrictions prohibit turning right or left from First Avenue onto Oxley Road. Figure 2 below provides a closer look at the streets surrounding the school. Signage is posted on First Avenue restricting turns during school hours. The school procedures instruct parents to drive south on Oxley Road and turn left onto one-way Hilo Lane. On Hilo Lane, there are six student drop-off spots for parents to briefly stop and let their children out. These are highlighted by red dashes on

the map. During drop-off, grades 1-3 enter through the main school entrance while Kindergarten students enter through a different door. Despite these differences, all students should be dropped off on Hilo Lane. A crossing guard is present at the school every morning starting around 7:45 a.m. (school starts at 8:00 a.m.) to help students safely cross the street from the student drop-off zone.

Figure 1

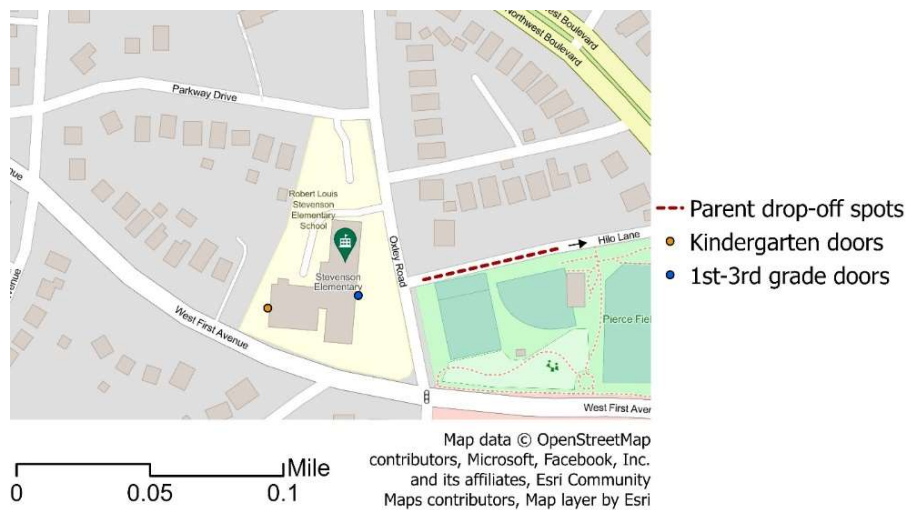
Location of Stevenson Elementary School in Grandview Heights, Ohio



Note: Map created in ArcGIS Pro by Natalie Ruth on November 20, 2022.

Figure 2

Stevenson Elementary and surrounding streets



Note: Map created in ArcGIS Pro by Natalie Ruth on November 20, 2022.

The 2011 *Safe Routes to School Engineering Study* was completed by the Ohio Department of Transportation for the City of Grandview and provides specific recommendations to improve connectivity for pedestrians and bicyclists. Our team found that some recommendations from this study have been implemented and others have not. Some key infrastructure recommendations that have been implemented include the creation of new crosswalks along First Avenue, increased visibility of crosswalks, installment of overhead flashing school zone signs, and the installment of a sidewalk along Hilo Lane. Some recommendations that have not been implemented include creating crosswalks and relevant signage for many other significant intersections. A detailed list of recommendations and their completion status is found in Appendix C. The *Safe Routes to School Engineering Study* also included interesting statistics about transportation habits at Stevenson Elementary. The study reported that around 70% of students walk or bike to middle and high school whereas only 34% of elementary students walk or bike (Ohio Department of Transportation, 2011). The report identified the location of Stevenson and the young age of students to be factors contributing to low percentages of students who walk to school. This data is representative of the infrastructure in place 10 years ago. Based on survey results and our interview with Lisa Sullivan, both discussed in the following sections, our team believes the adoption of many transportation recommendations in this study has contributed to an increased number of students walking.

The draft 2016 *Traffic Advisory Plan* was prepared for the City of Grandview Heights to evaluate the existing roadway network and to create a toolkit to inform the implementation of future transportation infrastructure changes. The goal of the advisory plan is to balance cars, pedestrians, and cyclists on the roadway system. While this plan does not provide specific recommendations, it provides forms for residents to request a traffic calming study from the city.

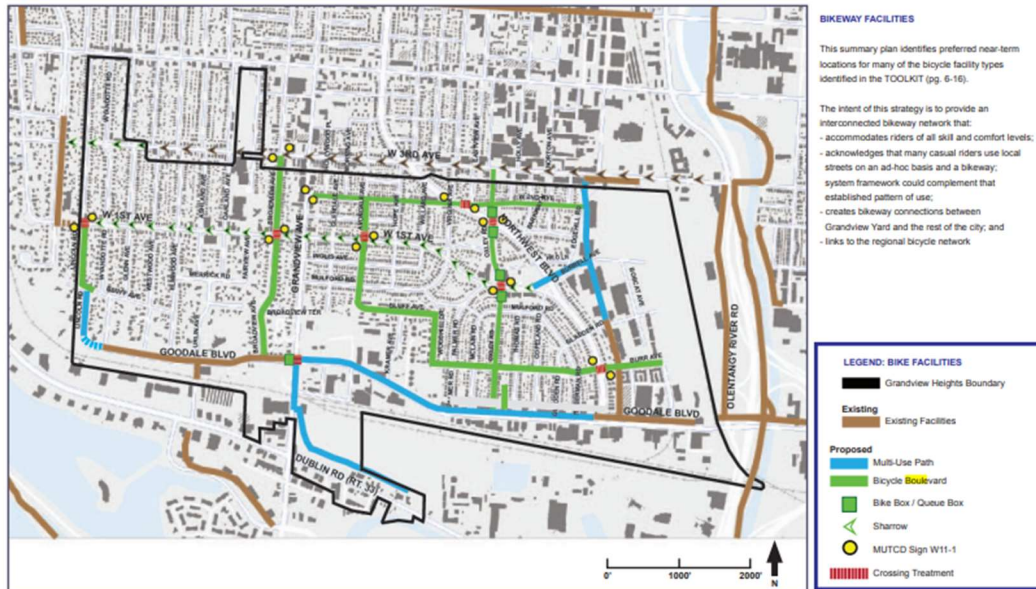
The purpose of these forms is to provide an equitable process for traffic mitigation approaches and require certain levels of community participation (City of Grandview, 2016 July). While our team could not find documentation of this process being utilized, it could be used as an important resource to enact future change.

The draft 2016 *Draft Bikeway Pilot Plan* was prepared for the City of Grandview Heights to provide recommendations to improve biking infrastructure. Many of these recommendations are to implement bicycle boulevards on city streets. Bicycle boulevards are designed to create safe routes for cyclists on residential streets with low traffic speeds and volumes (City of Grandview, 2016 November). Cyclist signage would be painted onto roads to create a road that prioritizes cyclists. The plan proposed for Oxley Road to become a bike boulevard. The proposed bicycle boulevards, highlighted in green in figure 3, would create cycling connections around Grandview. No bicycle boulevards have been implemented in Grandview. One proposed bike infrastructure change that has been implemented around Stevenson Elementary is “sharrows.” These are markings on the road of a bicycle with arrows indicating where drivers can expect cyclists on the road.

The 2016 Draft Traffic Advisory and Bikeway Plans provided descriptions of relevant transportation infrastructure elements and identified key aspects of the current infrastructure that are present in the area. The 2011 *Safe Routes to School Engineering Study* focused on identifying walking and biking infrastructure directly related to the schools in Grandview Heights and highlighted key issues with these elements that could potentially impact transportation decisions. These resources created detailed lists of recommendations and suggestions for the city to implement to address any identified issues.

Figure 3

Map of Bikeway Facilities for the City of Grandview



Note. This map comes from the 2016 Bikeway Plan (City of Grandview, 2016 November).

Key Informant Interviews

Our second objective involved conducting three key informant interviews. The first two interviews conducted were with staff members representing Upper Arlington and Bexley elementary schools. The purpose of this process was to establish a baseline comparison of elementary school transportation at similar Central Ohio school districts. Our third interview was with Stevenson Elementary School Principal Lisa Sullivan. Full interview details are listed in Appendix A.

We identified Upper Arlington as a school district with similar demographics and transportation habits to Grandview. Upper Arlington is not only near Grandview, but they both have similar average household incomes and a lack of biking infrastructure. We specifically looked into Barrington Elementary School, which is similar to Stevenson in that they do not have

a bussing system, and every student lives within a mile of the school. To learn about their transportation system, our team interviewed Kelli Wilcox, a teacher at Barrington Elementary. She estimated that most students walk or bike to school, although they still experience similar traffic and road safety issues as Grandview. Barrington utilizes an incentive program to reward kids for walking or biking to school, which could include recognition or prizes for students. This system appears successful, and it excites students about the idea of more sustainable transportation. Finally, we learned that Upper Arlington has no extra infrastructure for walking or biking beside sidewalks. Most students use the sidewalks rather than the road since in most places there are no bike lanes or lit/reflective crosswalks for walkers.

Our team also identified Bexley as a community similar in demographics to Grandview. Both communities are relatively small with no school bussing and have high median household incomes. Bexley has three elementary schools that host kindergarten through fifth grades whereas Grandview has one elementary with kindergarten through third grades. To gather more information about school transportation habits in Bexley, our team interviewed John Eikenberry. John Eikenberry is the Business Manager for Bexley City Schools and was identified as a knowledgeable contact for this project by Bexley elementary school principals. From our interview, we learned that Bexley elementary schools also have a lot of traffic congestion with high numbers of students who walk or bike to school. John estimated that a majority of kids walk or bike to school. Biking is not as common. Some students participate in walking groups, but details about these groups and incentives are unknown as they are organized by parents. The school district and the City of Bexley collaborate to create high visibility crosswalk paint, flashing lights, and no turns at critical crosswalks. This is similar to the infrastructure present in Grandview.

Our team's interview with Lisa Sullivan provided us with insightful information about pick-up and drop-off procedures at Stevenson Elementary. We learned from her that congestion is a problem at Stevenson Elementary and it is significantly worse for school drop-offs in the morning. Another major problem that Lisa identified is that parent drop-off lines are often congested because drop-off procedures are not closely followed. Lisa also discussed how this issue with congestion impacts teachers' access to the entrance to the administration parking lot located on Parkway Drive. Along with this, all three Grandview schools start at 8:05 am. We discussed how this contributes to increased traffic because parents may need to drop their kids off at multiple schools at the same time in the morning. The morning rush hour traffic from non-Stevenson parents in the area also contributes to increased traffic and congestion on roads surrounding the school. Interestingly, Lisa estimated that 75% of students already walk to school. Even with many students walking, congestion is still a major problem that creates safety issues for the people walking and biking to school. Lisa informed us of a current walking initiative created by parents called Walking Wednesdays. This is a club formed by parents who encourage kids to walk to school on Wednesdays. Students who participate are rewarded through a punch-card system and receive prizes. The school plans on adding more initiatives in the future, starting with a partnership with a local bike store, Roll, to provide bike safety education to students in the spring of 2023. Our interview concluded with Lisa sharing some strategies to address school transportation congestion. One thing we discussed was the possibility of changing Oxley Road to a one-way during school times. Another possibility that was discussed was the creation of a roundabout system for more controlled traffic flow.

Survey

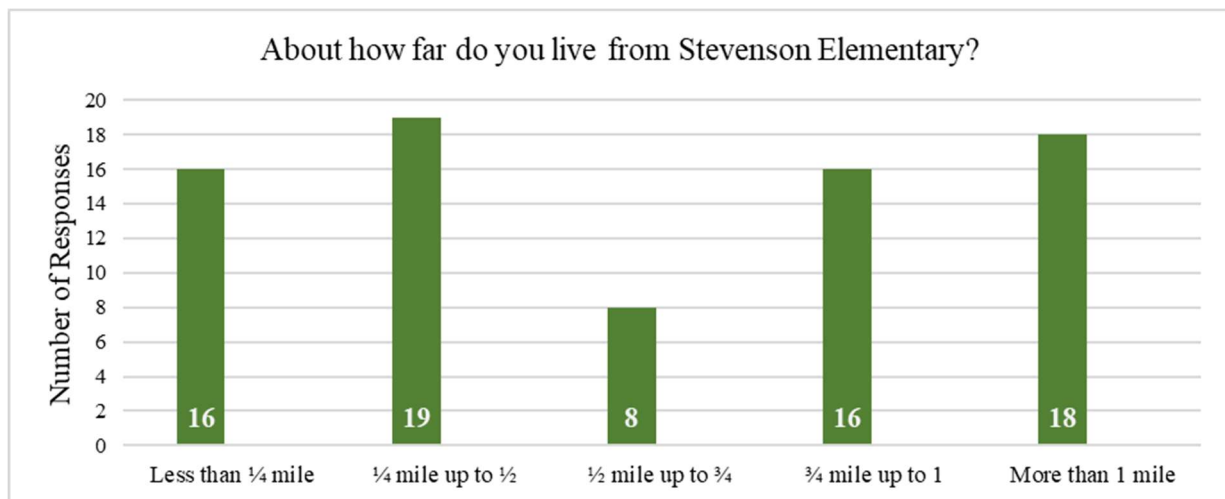
To better understand school transportation our team administered a 17-question anonymous survey to parents of Stevenson Elementary students. Our team created this survey using Qualtrics. We used questions inspired by the Safe Routes to School parent survey about walking and biking to school as well as created questions of our own. Our team altered questions from the Safe Routes to School survey to be relevant to Stevenson Elementary. The survey questions include three question categories: demographic, behavioral, and attitudinal. Our team did not make any questions required in order to acquire as many survey responses as possible. The survey was distributed through the elementary school parent communication app twice by principal Lisa Sullivan in her weekly update to families. Parent notification of these messages varies as they can adjust the notification settings of the app. Some parents may choose to receive email or text notifications for the app while others may not. The survey was also posted in the Grandview Heights K-3 PTO Facebook Group by our project partner Dr. Jeremy Brooks. Our team received 78 responses to the survey. The complete list of questions and responses can be found in Appendix B.

Our team asked five demographic questions to provide context for the remaining survey responses. Our first question asked what grade their child or children are in at Stevenson. We received the most responses from second-grade parents and the least from third-grade parents. We then asked how many of their kids attend school in Grandview or elsewhere. We received responses accounting for 93 Stevenson students which is around 27% of all Stevenson Elementary students. Note that this question only received 74 responses. Assuming the four parents who took the survey but skipped this question all had one kid at Stevenson, we have 97 students accounted for. Question 3 asked if there are children in their household younger than

school age. We asked this to gauge if any parents would be restricted from walking or biking due to having young kids. 29 parents said they did have children younger than school age and 43 responses said no. Our team then asked parents to select approximately how far they lived from the school. Figure 4 shows a fairly even distribution of responses to this question with nearly an identical number of parents living half a mile or less or further than three-quarters of a mile. Our final demographic question asked parents what street intersection is closest to their home. Around 52% of the 65 responses to this question reported that they lived closest to a First Avenue Street intersection.

Figure 4

Graph of responses to survey question 4 asking parents to estimate how far they live from Stevenson Elementary School



Next, our team asked six behavioral questions to better understand current transportation practices. Our first behavioral question asked parents to estimate how many times a week their child used different modes of transportation to get to and from school during a week with reasonable weather. The responses indicate that walking and being driven alone are the two most common modes of transportation as seen in Table 1. This table shows the number of responses

for each mode as well as the average times per week the transportation method is used. This table also shows the differences in transportation methods used going to and from school. More people use walking groups and biking or scootering in the morning going to school, and carpooling is more common going home from school. People who bike to school only do so an average of 1.6 times per week. Although 10 people reported participating in walking groups going to school and only 3 reported using walking groups going home, their averages are nearly the same at around 4 days per week. The people who use walking groups do so consistently.

Table 1

Table of responses to survey question 6 asking parents to estimate how many times a week their child used a given transportation method during a week with reasonable weather

Method	To School		From School	
	Responses	Average	Responses	Average
Walk	38	3.8	40	3.8
Walking group	10	4.1	3	4.3
Bike/ scooter	5	1.6	1	4.0
Golf cart	1	3.0	0	0.0
Driven alone	34	3.9	37	3.4
Carpool	11	4.4	14	4.4
COTA Bus	0	0.0	0	0.0
Other	0	0.0	3	5.0

Our team then asked three questions about carpooling. The first question asked parents who carpool how many other families they carpool with. Nine people said they carpool with one other family and one respondent said they carpooled with two other families. We then asked parents what their obstacles to participating in carpooling are. The top responses are that their child already walks or bikes to school, it is too challenging to organize, or it doesn't work with their family's schedule. Our next question asked if parents would be interested in joining a

regular carpool with other families. The response to this question was that 36 parents are not interested while 19 parents said yes. Overall, carpooling is not a common mode of transportation and parents generally are not interested in carpooling. Despite this, 19 parents joining in carpooling could make noticeable impacts on school drop-off congestion. Reducing 19 cars to 9 or 10 cars could be impactful considering there are only 6 drop-off spots on Hilo Lane.

Our team then asked two questions about walking groups. We first asked parents what the obstacles to participating in walking groups are. The top two responses from parents are that they live too far to walk and that it takes too long to walk. We then asked if they are interested in joining a walking group if they don't already participate in one; 22 parents responded that they are interested and 17 said they are not interested. Parental interest in walking groups could also make a positive impact on car congestion. More kids participating in walking groups may also contribute to a 'walking culture' at Stevenson Elementary where kids would be interested and excited about being involved.

The final section of our survey contained six attitudinal questions. These questions helped us to better understand what motivates and would change transportation habits at Stevenson Elementary. The first attitudinal question asked parents what their top three factors are when deciding to allow or not allow their child to walk or bike to or from school. The top response was that their child already regularly walks or bikes to school. The next highest responses from parents are distance and time. All response choices are listed in Table 2 below.

Table 2

Responses to survey question 12 asking parents to choose the top 3 factors influencing their decision to allow or not allow their child to walk or bike to or from school

Factor	Responses
My child already walks or bikes to school	33
Distance	21
Time	18
Safety- speed and amount of traffic along route	14
Safety at intersections or crossings	14
Convenience of Driving	12
Safety- number of vehicles and congestion at drop-off and pick-up location	8
Our drop-off and pick-up routines are different so leaving a bike at school doesn't work for our family	7
It's not my child's preference and it's not worth the fight	6
School drop-off is on my way to work	6
I have young children that I need to take with me, so I need to drive	5
Child's before or after school activities	4
Other	4

The next question we asked was a two-part question. The first part of this question asked what changes parents think would impact residents' transportation decisions. The top responses were less vehicular traffic along the main walking and biking routes, more children who live nearby walking or biking, and assistance identifying a safer bike route. This shows that vehicular traffic impacts their transportation decisions. The second part of this question asked if parents would encourage their child to walk or bike to and from school if each option was changed. These were the same options from the first part of the question. The top choice for what parents said would impact their transportation decisions was less vehicular traffic along the main walking/ biking routes. Parents were unsure whether or not adding bike racks would impact their decisions. The full list of responses to this question is listed below in Table 3.

Table 3

Responses to survey question 13b asking parents if they would encourage their child to walk or bike to school if the given changes were implemented

Option	Yes	No	Not sure
More bike racks near Stevenson	13	7	18
A bike rack located in triangle park at the top of the hill on First Ave	3	12	14
Assistance identifying a safer bike route	18	8	12
Less vehicular traffic along the main walking / biking routes	26	4	8
Fewer cars along First Ave and Oxley Ave at the main pick-up and drop-off time	18	7	7
More children who live nearby biking or walking	23	6	5
Assistance identifying families to participate in a walking school bus	20	6	7
Assistance identifying families to carpool with	12	13	5
The reinstatement of the COTA bus line on First Ave just before school	11	11	5
Honestly, there aren't really any changes that would affect my position	5	5	9
Other (please explain)	5	2	2

Our team then asked Stevenson Elementary parents what transportation method their child would use most frequently when they entered fourth grade. A majority of the parents that responded said that their child would walk to and from school. The next question asked parents how important it is that more families walk or bike to Stevenson on a scale from 1-5. Of the 66 people that responded, 50% of parents said it was important or very important that more kids walk or bike to school. Our team then asked parents to choose a top reason as to why they think it is important. Around 45% of parents who think it is important said it is important for more kids to walk and bike to school because it is healthier for them and the community. This shows that many parents value the health impacts of walking and biking over car transportation.

The final question our team asked in the survey allowed parents to input their comments and suggestions about school drop-off procedures. These responses were very valuable to us as parents experience the drop-off procedures every day and are the most knowledgeable about the procedures. Many parents expressed their frustrations with drop-off procedures not being closely

followed by parents. A lack of clear direction and flow of traffic was also identified as a concern for many parents. Some parents discussed their thoughts on decreasing the number of cars around the school. These comments suggested that no cars should be allowed on Oxley Road at all, adding no-turn designations to additional crosswalks, and moving drop-off and pick-up locations to be further away from the school to prioritize the safety of people who walk or bike to school.

Recommendations

After conducting our research, we can recommend multiple courses of action for Stevenson Elementary to take to improve school transportation concerns. Our first recommendation is to expand the current Walking Wednesday group. Currently, this walking group is run by parents and only occurs on Wednesdays. We recommend the school collaborate with the parents of this walking group to increase the number of kids participating. This would require heavy involvement from parents to coordinate groups. Expanding the walking club should happen slowly because of this. Adding one other weekly walking day would be a good start, and only adding more days when feasible. The school can take part in this initiative by incentivizing the students who do walk. These incentives could include either candy, prizes, or general recognition similar to how Barrington Elementary conducts its incentives. An example of school recognition could be a photo of the student for “walker of the week.” This would increase the excitement and opportunities children have to walk or bike, which would create a more consistent reduction of traffic in the area, therefore creating a safer community for students to walk or bike through.

Next, we recommend that Grandview Heights consider adding a bike rack on campus. The lack of biking infrastructure does not incentivize biking to school. A bike rack placed near the front of the school and visible to drivers would identify the school as a place where bikers are present. Also, students seeing friends and classmates park their bikes near the school may foster a biking culture at Stevenson.

We also recommend creating changes to traffic patterns on the roads surrounding the school to redistribute school-related traffic. There are multiple ways this could be done. One idea is to make Oxley Road a one-way street during school hours. This could be enforced by public safety officials. Turning Oxley Road into a one-way would reduce the number of cars on the road and make it safer. This idea is supported by Lisa Sullivan and parents. Another idea Lisa mentioned is only allowing school traffic on Oxley Road during school hours. This would be implemented with signage and could not be enforced well. Parkway Drive was also identified as a road of concern in our research. This road could also be turned into a one-way to reduce congestion on the street. Reducing traffic on this road would be ideal considering congestion here causes problems for school staff being able to access the parking lot.

Another possible solution our team recommends is creating a roundabout drop-off system from the administrative parking lot. Rather than waiting in traffic on busy streets, allowing cars to stop, or slowing down the process, a roundabout system would promote a fast-paced but safe process for efficiently dropping students off at school. Although this recommendation would go against the goal of reducing traffic on the road, it does offer an alternative drop-off method for parents than going to Hilo Lane. For this to be effective, Parkway Drive would need to be turned into a one-way with traffic only heading east towards the school. School staff would also need to be present at these doors for the roundabout system to work, which may be difficult. Also, this

could make the problem of staff having difficulty parking even worse. While there are many things to consider with this recommendation, our team believes it is worthy of consideration to help relieve traffic in the area during peak hours to protect the safety of students.

Next, we recommend implementing a Bike Bus initiative. Bike Buses are similar to walking groups where students bike together to school. This would allow students to safely bike with adults and allow for a large enough group to visibly stand out from nearby cars and traffic, therefore creating a much safer form of bike transportation to and from school. Our project partner Jeremy Brooks commented that this Bike Bus program could include an occasional police escort both for safety and the visibility or excitement of students who would like to be involved, as well as building confidence in parents that their children will be safe on the commute to school.

Finally, our team feels that the evidence gathered from our survey provides support for the construction of bike lanes in Grandview Heights. It is evident that parents have safety concerns with biking in Grandview and time impacts their transportation choices. Having designated bike lanes would make biking safer and provide a faster commute than walking. First Avenue would be ideal for bike lanes based on the location of the school and the survey results reporting that over half of respondents live closest to a First Avenue intersection. Currently, First Avenue is a two-way road with a parking lane and a driving lane on each side. To create a bike lane a parking lane would have to be removed to use the space. A protected or unprotected bike lane could be created. The parking lane could act as the protection for the bike lane. For a typical two-way bicycle lane, 12 feet is the desired width with a 3-foot separator from vehicles (Federal Highway Administration, 2015). This includes parked vehicles or moving traffic. Using the Ohio Department of Transportation's Information Mapping System, First Avenue measures from 35 ft

wide to 40 ft wide, depending on where the road is being measured. Ideal traffic width lengths for urban areas are 10 feet for slower speeds and safer roads (Federal Highway Administration, 2015). The absolute minimum space needed for a two-way bike lane with a two-lane road would be 35 feet. This wouldn't allow any on-street parking. To still keep a parking lane, which is 7-8 feet typically, the road would have to be expanded. Driving and parking space have to be compromised to prioritize biking infrastructure. While this would be a large project that would take years to complete, it is worth considering because of the need for safer biking in Grandview.

Limitations and Future Research

There are several limitations of our research. One limitation is that our survey responses do not represent the entire student population at Stevenson Elementary. Of the 338 students, we had 78 survey responses accounting for at least 93 students. In order to get a complete representation of transportation habits, a higher number of respondents would be needed. Additionally, surveying the middle and high schools could be useful to understand school transportation habits for the district as a whole. Surveying the other schools would provide information to compare transportation habits and understand how habits differ among age groups and school location.

Another limitation that our team identified is that the data gathered from informant interviews with Bexley and Upper Arlington schools is not comprehensive. To get a more in-depth analysis of these schools, more people could be interviewed or the schools could be surveyed. Additionally, further research could include cities similar to Grandview that are outside of the Columbus area.

Lastly, our team did not find information about the status of the 2016 Bikeway Plan to create bicycle boulevards and any completed Traffic Advisory Plan forms for traffic calming studies.

Additional research needs to be conducted with local government into the outcomes of these plans. This information would allow for a bigger picture of future transportation plans in Grandview Heights.

Conclusion

After receiving sufficient survey responses accounting for nearly 27% of students, our team is confident that we have a clear understanding of the transportation system and habits at Stevenson Elementary. Many parents reported that their child already walks or bikes to school, but many are still wary of the idea for multiple reasons. Due to existing safety concerns and the age demographics of Stevenson Elementary, our team found through our research that there is more parental interest in walking rather than biking. To address these safety concerns and create a more sustainable system of school transportation both logistically and environmentally, Stevenson Elementary should utilize a combination of incentive programs, education, and infrastructure changes that directly incorporate parent opinions obtained from our survey results to prioritize the health and safety of the children and environment of Grandview Heights. Changing school transportation habits requires fostering a culture that prioritizes walking and biking over driving. This isn't a change that happens overnight, but many steps can be taken to initiate this change and make walking and biking a safer option. Our team believes that taking recommended actions to address congestion and safety concerns at Stevenson Elementary will contribute to a create a safer, more sustainable community.

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Appendix A

Interview Notes

Dataset #1: JohnEikenberryInterview.docx

Source: John Eikenberry, Business Manager for Bexley City Schools. Email:
john.eikenberry@bexley.us

Description: Notes from email communications with John Eikenberry regarding elementary school transportation in Bexley on October 19, 2022. Conducted by Natalie Ruth.

Dataset #2: KelliWilcoxInterview.docx

Source: Kelli Wilcox, Barrington Elementary School Teacher. Email: kewilcox@uaschools.org

Description: Notes from a phone interview with Kelli Wilcox regarding elementary school transportation at Barrington Elementary School on October 25, 2022. Conducted by Emerson Gifford.

Dataset #3: LisaSullivanInterview.docx

Source: Lisa Sullivan, Stevenson Elementary School Principal. Email:

lisa.sullivan@ghschools.org

Description: Notes from a meeting with Lisa Sullivan reviewing survey results and discussing school transportation at Stevenson Elementary. This meeting was in person at Stevenson Elementary with Austin Bryson, Emerson Gifford, and Natalie Ruth on November 7th, 2022.

Appendix B

Survey Results

Dataset #1: Stevenson School Transportation Survey Results.docx

Source: Results gathered from Qualtrics.

Description: This dataset is a word document that includes survey questions and responses that were distributed to parents. There are 17 questions organized into demographic, behavioral, and attitudinal sections.

Dataset #2: Stevenson Transportation Survey Results.xlsx

Source: Results gathered from Qualtrics.

Description: This Excel file displays all numbered results from the Qualtrics survey. Tables and charts used for the project are also in this document.

Appendix C

Completion Status of Safe Routes to School Recommendations

Dataset #1: 2011SafeRoutesRecommendations.docx

Source: Grandview Heights *Safe Routes to School Engineering Study*. Link:

<https://www.grandviewheights.gov/DocumentCenter/View/1106/Safe-Routes-to-School-Engineer-Study-2011>

Description: This document shows all the recommendations from the Ohio Department of Transportation recommended for Stevenson Elementary School in their 2011 *Safe Routes to School Engineering Study*. The status for each of these recommendations is given.

Recommendations were found to be completed or not completed based on on-site visits and using recent street-view images on Google Maps.