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Sustaining Multimodal Choices: Examining Travel Behavior Beyond COVID-19

Yizhao Yang, Ph.D.
Rebecca Lewis , Ph.D.

UNIVERSITY OF OREGON

SUSTAINING MULTIMODAL CHOICES

EXAMINING TRAVEL BEHAVIOR BEYOND COVID-19

Final Report

NITC-RR-1504

by

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16. Abstract

Increasing the usage of sustainable travel modes requires changes in both environmental and psychological dimensions. A knowledge gap exists concerning the mechanism via which various factors interact to shape travel decision. Gaining such knowledge requires our ability to examine people's behavioral adjustment in reaction to environmental and psychological changes or interventions. This project uses COVID-19 as a natural experiment, treating the significant disruption induced by the pandemic as an intervention to study changes in travel behaviors and adoption of different travel choices following the COVID pandemic. This project builds upon a 2020 study conducted by the PI's. It adopts a mixed-method, longitudinal research plan that takes advantage of the earlier study's research output about sustainable travel during the 2020 COVID-19 lockdown period. Findings from this project indicate that people resumed their travel and generally anticipated continuous increase in travel activities by all options (driving, transit, and walking/biking) as society emerges out of the pandemic. The perceived health threat connected to COVID will likely have a persistent influence over people's future travel choices, especially driving. Some findings indicate that the pandemic experience may make driving less habitual to some people as they started recognizing the feasibility and benefits of using other travel choices, such as walking and biking, to reach some destinations (e.g., parks). The study shows a clear negative impact from COVID on transit users during the emergency period. The inability to use transit appears to cause significant stress to this group and resulted in people switching to other travel modes. These pandemic experiences may lead to people using less transit in the future. Overall, the environmental factor's impact on future travel behaviors is weak compared with one's perceptions, attitudes, and experiences. These findings suggest that a built- environment approach has limited effectiveness for travel behavior modifications. The greater level of walking or biking in one's neighborhood produces clear benefits that people can enjoy. These benefits increase people's likelihood to use more active travel. The experience of reduced driving, however, may not be able to generate a similar level of enjoyment, thus failing to lead to a significant change in driving behavior. Social programs and public campaigns may focus on letting people understand and experience the social and individual benefits associated with less driving.

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TABLE OF CONTENTS

EXCUTIVE SUMMARY **6**
1. INTRODUCTION **8**
1.1 RESEARCH CONTEXT 8
1.2 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS 9
2. LITERATURE REVIEW **9**
3. METHODS **11**
3.1 SURVEY DESIGN AND ADMINISTRATION 13
3.1.1 Target population and sample 13
3.1.2 Survey instrument design and administration 13
3.2 INDIVIDUAL INTERVIEWS AND FOCUS GROUPS 14
3.2.1 Pre-survey Interviews 14
3.2.2 Post-survey Focus Groups 14
4. RESULTS **15**
4.1 SUMMARY OF PRE-SURVEY INTERVIEW RESEARCH 15
4.2 SUMMARY OF FOCUS GROUP RESEARCH 17
4.3 SUMMARY OF SURVEY DATA ANALYSIS 19
4.3.1 Sample Representativeness 19
4.3.2 Descriptive Analysis 21
4.3.3 Regression Analysis 30
5. CONCLUSIONS AND DISCUSSIONS **36**
5.1 SUMMARY OF FINDINGS 36
5.2 LIMITATIONS 37
5.3 POLICY IMPILICATIONS 38
REFRENCES **39**
APPENDIX A: SURVEY INSTRUMENT **41**
APPENDIX B: THEMES AND ASSOCIATED QUOTES FROM FOCUS GROUPS **60**

LIST OF TABLES

Table 1. Data Collection Activities – Surveys and Interviews 12
Table 2. Region and Sample Distribution Comparison by ZIP Code 19
Table 3. Sample Representativeness Assessment 21
Table 4. Changes in Travel Behaviors in Different Phases of COVID Pandemic 23
Table 5. Perceived Health Threat in Different Phases of COVID Pandemic 24
Table 6. Reaction to Travel Behavior Changes During COVID Emergency Period 27
Table 7. Perception and Attitudes by Travel Behavior Change During COVID Emergency Period 28
Table 8. Percentage of Respondents Anticipate Increase in Travel Behaviors in the Future 30
Table 9. Logistic Regressions Predicting Future Increase in Travel Behaviors 33

LIST OF FIGURES

Figure 1. A Conceptual Framework of the Impact of COVID Emergency on Travel Behavior and Physical Activities 11
Figure 2. Distribution of Survey Respondents by Zip Code 20

EXCUTIVE SUMMARY

Travel by sustainable modes, such as public transit, biking, and walking, provides positive outcomes for urban residents related to the environment and health. Integrating these mode choices into regular travel trips, especially for commuting, has been challenging for many Americans for varied reasons. The low adoption of sustainable travel modes has been attributed to environmental factors, and to attitudinal and habitual tendencies rooted in an individual's beliefs and experiences. While there is strong agreement that increasing the usage of sustainable travel modes requires changes in both environmental and psychological dimensions, a lack of knowledge exists of the mechanism about the ways in which various factors interact to shape travel decisions. Gaining such knowledge requires examining people's behavioral adjustment in reaction to environmental and psychological changes or interventions. This project uses COVID-19 as a natural experiment, treating the significant disruption induced by the pandemic as an intervention to study changes in travel behaviors and adoption of different travel choices following the COVID pandemic.

This project builds upon a 2020 study conducted by the PI's. It adopts a mixed-method, longitudinal research plan that takes advantage of the earlier study's research output about sustainable travel during the 2020 COVID-19 lockdown period. Using interviews, a survey, and focus groups to follow up with residents in the same study area as the 2020 project, covering neighborhoods in the Eugene-Springfield region (Oregon), the project examines the following trends: 1) changes in people's travel mode choices as a reaction to the COVID disruption; 2) changes in cognitive/psychological status in relation to the travel behavior change and the intervention; and 3) the combined effects of environmental and cognitive/psychological factors on people's tendency to increase sustainable travel choices in the future. Data collected in this project includes survey responses from 311 people and information from 8 individual interviews and 4 focus groups.

Our findings show that people resumed their travel and generally anticipated continuous increase in travel activities by all options (driving, transit, and walking/biking) as society emerges out of the pandemic. The perceived health threat connected to COVID was an evident factor affecting the choice to use private automobiles during the pandemic. This factor will likely have a persistent influence over people's future travel choices, especially driving. Some findings indicate that the pandemic experience may make driving less habitual to some people as they started recognizing the feasibility and benefits of using other travel choices, such as walking and biking, to reach some destinations (e.g., parks). People quickly recognized and enjoyed the benefits from more walking or biking for various purposes. Those positive reactions seem to lead people to want to increase the use of active travel in the future.

The study shows a clear negative impact from COVID on transit users during the emergency period. The inability to use transit appears to cause significant stress to this group and resulted in people switching to other travel modes. These pandemic experiences may lead to people using less transit in the future. This trend may be

particularly strong for the non-white group, indicated by the finding that being non-white is associated with a much stronger propensity to increase active travel (but not transit use) in the future. Additional evidence suggests that the uncertainty of transit service availability is an important reason for people's hesitation to anticipate an increase in transit use in the future.

Overall, the impact of environmental factors on future travel behaviors is weak compared with one's perceptions, attitudes, and experiences. Similar to the previous study of travel behaviors during COVID lockdown time, environmental indicators such as population or housing density do not exhibit the typical positive effects on using transit and active travel. It is possible that the pandemic has led people to perceive the more compact environment to be less safe and adjust their travel choices to automobile travel. On the other hand, good accessibility to parks seems to reduce people's tendency to increase driving in the future. This may be a silver lining effect of the COVID pandemic – people may be more willing to walk or bike to those sites thanks to the activities undertaken during the COVID lockdown time.

These findings suggest that an approach focused on modifications to the built environment will have limited effectiveness for travel behavior modifications. Mixed-use and higher density neighborhoods are still important for walking and biking even during the pandemic. But the impact of mixed-use and higher density on reducing driving is unclear. Since positive experience and enjoyment associated with behavioral changes could lead to more adoption of such change, social programs and public campaigns may focus on letting people understand and experience the social and individual benefits associated with less driving. Public transit is an important travel option for many people, particularly the disadvantaged (minority and lower-income). The frustration with understanding availability and safety of this travel mode can be enhanced by using real-time smart technology to provide needed service information (e.g., when and where to catch the bus or bikeshare). Transit agencies should bring back the normal transit services and communicate with the public to gain trust within the system. This is important to achieving policy goals related to transportation and overcoming fear of transit. People need clear and current information about shifts in service. Consistency in services is critical to retaining transit uses.

1. INTRODUCTION

1.1 RESEARCH CONTEXT

Travel by sustainable modes, such as public transit, biking, and walking provides positive outcomes for urban residents related to the environment and health. Integrating these mode choices into regular travel trips, especially for commuting, has been challenging for many Americans for varied reasons. These include job-housing separation, time pressure and rigidity, incomplete networks for transit, walking, and biking, infrequent transit service, and infrastructural inadequacy for multimodal connection and design. Private single-occupancy automobiles also dominate non-commuting trips. Trips for grocery shopping and leisure activities are an example. Compared with commuting trips, these types of travel have greater flexibility in time and route choices, shorter distances, and higher frequencies (Ding et al., 2017). The NHTS data shows that about 60-65% of those trips are fulfilled by private vehicle travel (McGuckin & Fucci, 2018). The low adoption of sustainable travel modes is not only blamed on environmental factors, but also on the attitudinal and habitual tendencies rooted in an individual's beliefs and experiences.

The low adoption of sustainable travel modes in the U.S. is influenced by factors in the built environment, such as low walkability and inadequate public transportation infrastructure. Attitudinal and habitual factors rooted in individuals' beliefs and experiences also play a role. To increase sustainable travel usage, changes in both environmental and psychological dimensions are necessary. However, there is a lack of knowledge regarding how these factors interact to shape travel decisions. Gaining this knowledge requires examining people's behavioral adjustments in response to environmental and psychological changes or interventions. Integrating rigorous research into existing interventions targeting the environment or psychology can be challenging.

COVID -19 offers an opportunity to use a natural experiment to study the impacts on travel behavior from an unprecedented intervention. The COVID-19 pandemic resulted in strict lockdowns in many communities and disruption of pre-lockdown travel habits, for varying lengths of time. There is a possibility that those changes (i.e., behavioral and psychological) could allow people to gain new perspectives and experiences, which could result in new tendencies for travel mode choices. A group of researchers at the University of Oregon conducted a project during the 2020 COVID lockdown period, which seems to provide evidence that the pandemic has caused/encouraged/enabled new perspectives and attitudes about travel behavior (see Lewis et al., 2021). The current project expands upon the earlier 2020 project to increase our understanding of the effects of those behavioral and psychological changes on future sustainable travel choices.

Specifically, we study the impact of a number of factors on anticipated post-pandemic increase in three transportation behaviors: driving, transit, and active travel (walking and/or biking). These factors include travel behavior change during the COVID

emergency period and the continuous post-emergency travel behavior adjustment, as well as perceptional and attitudinal changes associated with those behavioral modifications. The goal is to explore environmental and psychological factors that could increase the likelihood of people using more sustainable travel choices, expanding the solutions to overcoming barriers to sustainable travel in both physical and social realms.

1.2 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

This project builds upon the 2020 project's research design and serves as the second phase of a longitudinal study. Its objective is to understand people's adoption of different travel choices following the COVID-19 pandemic. The project aims to achieve the following objectives:

1. Study changes in people's travel behaviors as pandemic restrictions and threats recede and examine their reactions to these behavioral changes.

2. Evaluate the prevalence of people's desire to increase travel options in the future, considering any attitudinal and perceptual transformations resulting from the pandemic.

3. Explore the support for policies that promote multimodal travel, particularly in light of new travel experiences unexpectedly afforded by the pandemic.

Furthermore, this project aims to investigate how vulnerable populations, such as minorities and low-income individuals, adjusted their travel during the pandemic and predict their likely travel choices in the future. These populations experienced significant disruptions to their travel options during the lockdown period. By shedding new light on the challenges faced by these populations in the post-COVID era, this research will contribute to a better understanding of their specific needs and circumstances.

2. LITERATURE REVIEW

A review of the literature revealed multiple factors that affect travel mode choices, which we summarize into two main dimensions of travel mode decision making that has policy implications: environmental and cognitive/psychological. Overall, comprehensive research of these factors in the context of sustainable travel for specific non-commuting trips is still limited. The summary below draws from a wide range of travel behavior studies.

Existing research primarily focuses on the environmental dimension of sustainable travel, examining contextual factors across different spatial scales and social environments. These factors include characteristics of the physical environment like density, accessibility, road design, and walkability (Ding et al., 2016), as well as qualities of the social environment such as safety, social/family support, and social norms (Ababio-Donkor et al., 2020; Gliebe et al., 2005; Zhao et al., 2018). This research

highlights the connection between low usage of sustainable travel and barriers in the environment. However, it acknowledges that while removing these barriers is necessary, it is often insufficient to induce the desired shift in travel modes (Bergman et al., 2017).

Research that includes the cognitive/psychological dimension brings individual-level factors such as perception, motivation, attitude, and habits into the decision-making process. Inclusion of these subjective factors not only improves those studies' explanation power but also offers a more nuanced understanding of the relationship between the contextual factors and modal choices (Hunecke et al., 2007; Willis et al., 2015;). Studies have revealed that perceptions can filter many objective environmental characteristics' effects on sustainable travel, such as biking (Ma et al., 2014; Ma & Dill 2015); Pro-environment attitudes can strengthen the effects of positive contextual factors (e.g., good accessibility) and minimize those of negative factors (e.g., bad weather) on sustainable travel choices (Hamidi & Zhao, 2020; Li et al., 2018; Lind et al., 2015; Yang and Markowitz, 2012), while positive car attitudes dampen people's desire to use public transit (Chu et al., 2018). Factors influencing an individual's agency (e.g., skills, competence, and perceived control) were also found to be determinants of sustainable mode choice (Hamidi & Zhao, 2020; Lind et al., 2015). Policy recommendations derived from these studies stress the need to utilize psychological interventions to encourage people walk/bike more and drive less (Hamidi & Zhao, 2020; Zhao et al., 2018).

Gaps exist in current literature. Specifically, research is lacking on 1. how those factors (i.e., perception, attitudes, agency) from the cognitive/psychological dimension can be molded, 2. what level of changes in them can bring about a shift in travel modes, and 3. what conditions and processes are necessary to allow the desired mode shift to persist. Answering these questions often requires studies of experimental and longitudinal design and analyses of both quantitative and qualitative representation of travel behavior and decision making, which is often difficult to achieve in applied research.

This project overcomes some of these methodological issues by leveraging a recently completed project to implement a mixed-method, longitudinal study. The recently completed project, funded by the University of Oregon's Resilience Initiative pilot grant (Phase 1 of this project), studied behavioral changes in travel of Eugene-Springfield residents during Oregon's COVID-19 lockdown between March to May 2020. Research findings show that, for leisure activities, many residents walked or biked more in their neighborhoods initially as a direct response to the lockdown order, which translated into a growing interest in using the neighborhood as a viable setting for leisure activities. There was a discernible shift to online grocery shopping and changes in shopping frequencies and location choices driven by health and safety concerns. These changes in travel demand and behavior were correlated with people's newly gained awareness of their neighborhood environments, recognition of environmental consequences of driving less, and identification of various social and health benefits of walking and/or biking (Lewis et al., 2021).

3. METHODS

This project adopts a mixed-method, longitudinal research plan that takes advantage of the research output of a project completed during the 2020 COVID-19 lockdown period. The current research involves follow-up interviews, a survey, and focus groups targeting residents in the same study area as the 2020 project, covering neighborhoods in the Eugene-Springfield region, Oregon. This longitudinal research lets us treat the significant disruption induced by the COVID-19 pandemic as an intervention, which allows us to examine the following changes: 1. changes in people's travel mode choices as a reaction to the intervention; 2. changes in cognitive/psychological status in relation to the travel behavior change and the intervention; and 3. the combined effects of environmental and cognitive/psychological factors on people's tendency to increase sustainable travel choices in the future. Figure 1 presents the conceptual framework depicting the relationships among the variable factors, both environmental and psychological, where the red arrows indicate the three pathways.

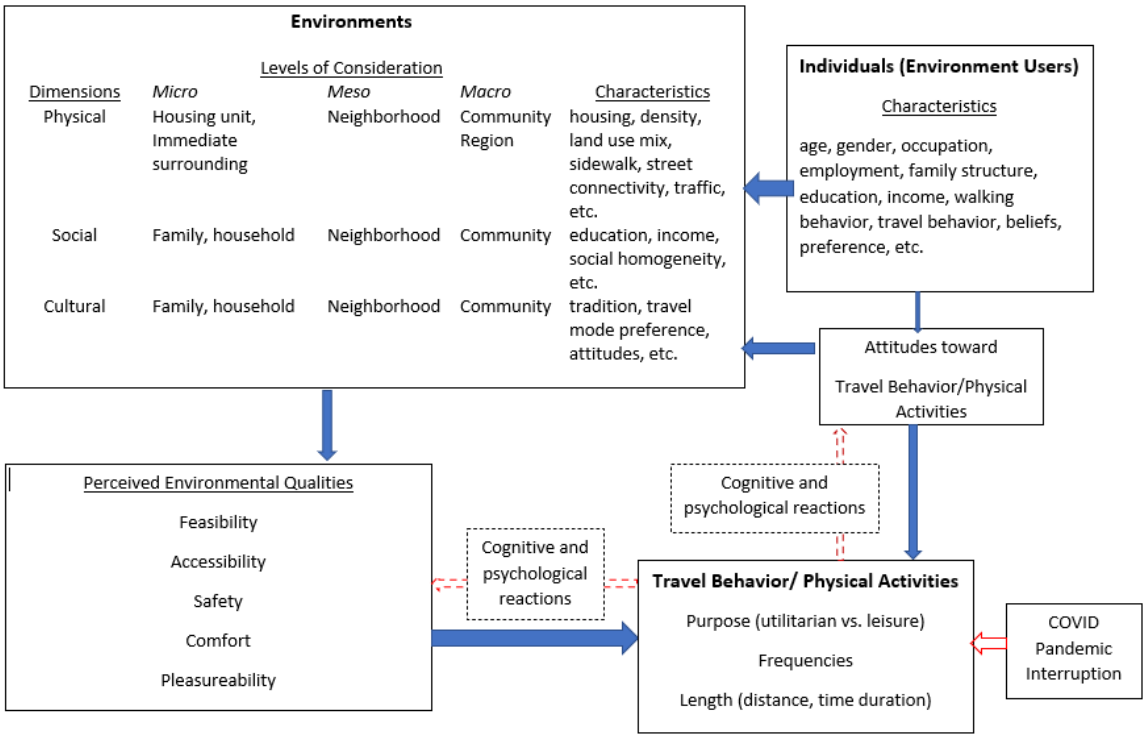

Figure 1. A Conceptual Framework of the Impact of COVID Emergency on Travel Behavior and Physical Activities

Both retrospective and prospective study methods are utilized in the research design, which allows this project to compare travel mode choices and factors affecting those decisions across several periods defined by COVID-related interventions and health threats. For the purpose of this research, we define the three periods relative to the pandemic: 1. Before COVID Emergency Period - this period refers to the time prior to March 8, 2020, when Oregon entered a state of emergency for COVID-19 declared by Oregon Governor. 2. COVID Emergency Period - this period refers to the time span when the COVID-19 Emergency was in place between March 8, 2020, and March 31, 2022. 3. Post COVID Emergency - this period began on April 1, 2022, when Oregon's COVID emergency was lifted. We examine how behavioral and perceptional changes from those periods may affect travel choices in the future, which is defined as when COVID-19 is no longer a threat.

The quantitative data collected from surveys and the qualitative data from interviews/focus groups inform each other and help reveal travel behavior trends and the impact of environmental and psychological factors on those trends. The research team worked with a technical advisory group including professionals from cities of Eugene and Springfield to inform interview questions and survey design and distribution, as well as interpretation of analysis results and extrapolation of policy recommendations. Table 1 summarizes the data collection activities carried out during the project time span.

Table 1. Data Collection Activities – Surveys and Interviews

	Timeframe	Population	Number of responses or participants
Survey 1	June-July, 2020	Lane County residents since Jan. 2020 who are older than 18	686
	NITC Project Data Collection Activities		
Pre-survey 2 Interviews	Feb.-Apr. 2022	Willing Survey 1 participants	8
Survey 2	June - July 2022	Lane County residents since Jan. 2020 who are older than 18; Or willing survey 1 participants; Additional Spanish speaking residents	311 responses from online survey; 20 responses via intercept surveys
Post survey 2 focus groups	Aug. 2022	Willing Survey 1 participants	24

3.1 SURVEY DESIGN AND ADMINISTRATION

3.1.1 Target population and sample

Our target audience is adults (18 and over) living in Eugene-Springfield from January 2020 through June 2022. Our respondent pool includes two groups: prior respondents from the 2020 survey and new respondents. This online survey targeted previous participants as well as the general population. It was distributed via Facebook ads to the general population and then to targeted populations including high school education, male, and under 24.

3.1.2 Survey instrument design and administration

The survey instrument includes many of the same questions from the 2020 travel survey. Informed by the interviews conducted during Fall of 2021, a new set of questions was added to collect information about relevant changes in experience, perceptions, and attitudes. The instrument is available in Appendix A.

The survey was administered via two methods during the months between June and July 2022, a similar time frame used by the previous 2020 survey (June – July). First, personal email addresses were used to distribute the survey link to repeat participants, a total of 384 from the previous survey[1]. Of these 384, we received 186 responses. To boost our number of responses, we elicited responses from the general population via social media. We used Facebook ads to target the general population of adults living in Eugene/Springfield. Then we did follow-up recruitment on target groups with low response rates relative to the population: under 24, male, high school education, and Spanish speaking. We elicited 125 additional responses from the follow-up distribution to a wider population via Facebook ads.

We used a different method to boost participation of the Spanish speaking population after experiencing very low response rate from this group. Instead of relying on the online method, we used intercept surveys to collect information. A revised, simplified version of the survey instrument was created based on the input from Spanish speaking community members. The short Spanish intercept survey was created by selecting a subset of questions from the original survey that could be completed within 10 minutes. A Spanish speaking research assistant conducted the in-person survey in late October 2022 and early November 2022 at two Carniceria's (grocery/meat stores) and a local Dia de Los Muertos event in the Eugene area. The research assistant was equipped with an iPad that participants could use to fill out the survey to help eliminate any technological barriers. Out of the 150 people approached, 20 people (13%) agreed to participate.

[1] These respondents indicated that they'd be willing to participate in a follow-up survey and provided email addresses for this purpose.

3.2 INDIVIDUAL INTERVIEWS AND FOCUS GROUPS

3.2.1 Pre-survey Interviews

Prior to the survey instrument design and implementation, we conducted interviews with participants selected from those who have completed a 2020 survey and indicated a willingness to participate in an interview. The goal of conducting these interviews was to assess the patterns/themes in behavior and attitude changes that have emerged during the COVID lockdown period and may have continued. Findings from the interviews were then used to support survey instrument design.

To recruit interview participants, we employed a method that involved sending a bilingual (English and Spanish) recruitment survey to 315 willing participants from the 2020 survey. We utilized respondents' transportation modes and sociodemographic characteristics to create a diverse target group in terms of age, gender, and transportation modes. From the survey, we received 95 responses in a pre-interview questionnaire, and based on that, we conducted 8 interviews. The interviews were conducted on Zoom from February 21 to April 7, 2022. Each interview typically lasted between 40 minutes to an hour and was attended by a team of two researchers, with one leading the interview and the other taking notes. We recorded the interviews on Zoom and later transcribed them using the "Otter AI" application. These transcriptions facilitated the coding of data based on the interviewees' responses. As a token of appreciation for their participation, each participant received a $25 gift card.

3.2.2 Post-survey Focus Groups

A series of focus groups of a subset of the survey respondents were conducted to generate additional, qualitative information. The objectives of these focus groups were to 1. Support our interpretation of survey research outputs; 2. Enhance our understanding of people’s future travel needs; 3. Explore strategies aimed at improving policy solutions to meeting people’s travel needs. Participants in three of the focus groups excluded those who previously participated in an interview or focus group related to this project. A fourth focus group was set up for repeat interview participants.

Participants from the 2022 survey were given the opportunity to indicate their willingness to participate in a focus group, and to provide their contact information for that purpose. Of the 311 survey respondents, 197 indicated a willingness to participate in a follow up interview or focus group. Those who indicated their interest were sent a follow-up questionnaire to assess their primary mode of transportation and availability for future participation, as well as demographic information including age, gender, city, and available technology for the remote interviews/focus groups. In total, this follow-up questionnaire received 61 responses. Ultimately 24 participants were selected based on schedule availability and modal information. These participants formed 3 focus groups where group members share similar primary transportation modes, including 7 participants in the Bike group, 4 participants in the Drive/Multi-Modal group, and 7

people in the Drive Only group. The fourth focus group of 6 repeat interview participants represented Drive/Multi-Modal forms of transportation.

Focus groups were conducted over Zoom or, for a few participants without internet access, over the phone or using a phone to dial into the Zoom focus group. Each focus group was set up with a team of two researchers who kept their cameras on to facilitate interaction. Similar to the pre-survey interviews, one researcher (moderator) engaged with informants, asked questions, and followed up on informant responses, while the other researcher (co-moderator) took notes and helped with any technical support. The moderator gave a presentation on the basics of Zoom at the beginning of the focus group. The co-moderator monitored the chat for any technical issues that arose. The co-moderator also kept track of themes and monitored additional comments contributed by focus group members via the chat. Chat comments with time stamps were also saved after the focus groups.

A majority of informants kept their microphones on as well, although those in noisier situations would mute themselves when not speaking. Largely, informants were able to simply unmute themselves when they wanted to speak, but informants also made use of raising their hand on camera or using the Zoom “raise hand” or “chat” features to add to the conversation. The focus groups were recorded with permission of the informants, and later transcribed to include both informants’ verbal and non-verbal responses throughout (e.g., nodding head, giving “thumbs-up” signal on camera). Participants were given a choice of $25 gift cards from businesses after their participation.

4. RESULTS

4.1 SUMMARY OF PRE-SURVEY INTERVIEW RESEARCH

Both the recruitment pre-Interview survey and the interviews provide valuable data that was analyzed to study the shifts in travel behavior and the subsequent adjustment as people live through the COVID-19 pandemic. Overall, we observed a change in travel behaviors and neighborhood perceptions. Strategic planning in the form of trip-chaining increased at the onset of COVID-19, although we began to see trip chaining diminishing as individuals felt more comfortable traveling and visiting businesses more regularly during the pandemic. As time went on, interviewees expressed less strategic planning and more comfort with a quick run to the store for a one-off item. Another finding was that people’s commutes were an opportunity for them to decompress and have alone time. COVID forced individuals to stay at their homes, increasing time spent with their roommates and partners and time in the car allowed for alone time.

As COVID-19 measures moved away from Shelter-in-place orders, people began leaving their house more for exercise. The increased traffic led to congestion of Eugene/Springfield’s multi-use paths (MUPs). The switch to working from home also increased their awareness of the neighborhoods. Several interviewees mentioned

increased walking through the neighborhood as a means of exercise. One interviewee would walk through the neighborhoods and expand their “mental map” of safe and dangerous places, or places where the street design was unsafe for their children. Several interviewees mentioned that due to their time home, they gained a better understanding of their community which in turn helped them to feel more grounded in the community.

Changes to bus lines or schedules at the onset of the pandemic forced individuals to stop going downtown, and they continued to stay away due to feeling unsafe in the downtown area. One woman we spoke with, who primarily rides the bus, stated that the varying conditions (e.g., lighting, shelter) of bus stops affected her travel decisions. These conditions were relevant to travel behavior before the pandemic, but their impact may have been exacerbated with the additional changes due to the pandemic.

Findings of the interview data analyses are presented in a total of 12 themes and categorized in two main areas: travel behavior and neighborhood environment.

Major Themes in Travel Behavior

1. Change in Functional Trips. Initially, people significantly restricted their functional trips and adopted a more cautious approach. However, as additional information about COVID-19 emerged and vaccinations became available, individuals began to feel more at ease and comfortable venturing outside their homes.
2. Perception of Travel. COVID forced individuals to slow down and make situational decisions for traveling.
3. Trip Chaining. During the pandemic, people had to adjust their grocery shopping habits by combining trips or reducing the frequency of visits, resulting in many individuals’ grocery-shopping only once a week or even once a month. This behavior, initially driven by safety concerns, has persisted and transformed into a convenient practice for many individuals.
4. Change in Recreational Trips. Similarly, to Functional Trips, as more information about COVID came out, people's recreational trips became more frequent due to feeling safer with the mask mandates and availability of vaccinations. People generally shifted recreation outside or at home and moved away from populated areas (such as bike paths and playgrounds) to find more isolated recreational activities. This change of behavior wasn’t sustained, especially for the more social people or the interviewees who had younger children as they wanted to be able to socialize as soon as it was safe to do so.
5. Relation to Commute. For several individuals, as work moved into working-from-home, individuals used car time as a means of alone time. As individuals returned to work, they cited a 20-minute commute as relaxing.
6. Travel Safety. Cyclists often cited aggressive driving behaviors. Individuals felt the least safe at night, moving through neighborhoods. Safety of buses and bus stations at night varied.

7. Change in Transportation. Individuals feel public transportation isn't safe, due to the decreased ridership and sense of safety. Riders also expressed concern about catching COVID-19 on public transportation. Changes in bus schedules forced people to change their routines and schedules to meet new bus schedules.
8. COVID-19 caused many individuals to begin working from home if their jobs allowed it.

Major Themes in Neighborhood Environment

9. Neighborhood Safety. Neighborhood safety largely depends on where you are. Downtown Eugene was perceived as unsafe during the earlier stages of the pandemic. Individuals tended to feel safer the less pedestrians were around.
10. Street Design. COVID-19 pushed more people outside for recreation. Challenges arose over pedestrian-car interfaces.
11. Accessibility. Accessibility is recognized more when it directly affects the individual; Restrictions of COVID helped push individuals to recognize the accessibility or inaccessibility in general--with regards to neighborhoods, infrastructure, built environment, etc.
12. Perception of Neighborhood. COVID-19 brought about a shift in individuals' behavior, prompting them to explore their neighborhoods more frequently and expand their mental map. Exploring neighborhoods on foot allows for a better understanding of the neighborhood's conditions compared to other modes of transportation. This perception of the neighborhood directly impacts one's perception of travel, as people's lifestyles determine their choice of transportation and their connection to the neighborhood.

4.2 SUMMARY OF FOCUS GROUP RESEARCH

Focus groups revealed some interesting trends and explanations to support survey findings. Generally, we observed that participants reported returning to pre-COVID modes of transportation. Some participants shared interest in maintaining some recreational transportation behavior changes such as casual gathering with neighbors, walking or biking with friends for social, recreational, and health reasons. Most participants who reported transportation behavior changes tended to drive more often or used multiple modes of transportation before COVID-19. Participants whose primary mode of transportation was biking reported the most stability in transportation behaviors before, during, and after COVID-19. In fact, biking participants found ways to continue their behaviors throughout the COVID-19 period by biking with friends or even continuing "to commute" to their workplace and return home when their jobs had moved temporarily to remote work. Many participants have begun to travel further out of their city but primarily use their private vehicles for these trips. Nonetheless, a number of participants continued to be uncomfortable in enclosed spaces with strangers for long periods of time and have yet to take plane or train trips. Some had taken the opportunity to travel through the state and purchased recreational trailers to do so.

Safety remains a constant concern for travel regardless of mode choices. But this concern appears to have become a greater deterrent to those who walk and bike. Many participants noted feeling unsafe on bike paths, the downtown bus transfer station, and occasionally in their neighborhoods, regardless of preferred mode of travel. The resurgence of traffic on the roads, the speed of e-bikes on shared walking paths, and reported interactions with the houseless population all contributed to a common perception of lack of safety and reduced pleasure in the activity. Participants reported this perception had some influence on their participation in and desire to walk and bike. Several participants noted they are more cautious when walking or biking to locations and now carry pepper spray. Other sources of perceived safety risk included conflicts from certain behaviors, such as mask-wearing and exhibiting symbols indicative of people's political orientation (e.g., signs on one's t-shirt or bumper sticker).

Additional barriers that presented challenges to choosing sustainable transportation modes for recreational and functional trips included access to clean restrooms, secure bike or equipment storage, and reliable and efficient public transit. Many participants noted their frustration and confusion with the local bus system schedules and route changes but expressed great satisfaction with high frequency transit lines (EmX). The bus system was discussed by several participants as a critical option for recreational bike rides or walks, particularly for families with children who were too tired to make the return trip. Participants with small children and those who are over 65 also emphasized how public restrooms were an issue during COVID when many businesses were closed or did not allow restroom access.

Remote working offers more opportunities for respondents to engage in active travel and physical activities. Several participants experienced a job change during the last two years with several changing to jobs that offered remote work opportunity. These participants reported behavior changes in recreational walking, biking, and public transportation had become a common practice. Those that now permanently work from home are much more deliberate with trip-chaining errands and functional trips. We anticipated changes in behavior post-COVID, including increased availability and acceptance of working remotely which was the case with many of the focus group participants.

The COVID pandemic-induced behavioral changes have led to changes in people's perceptions of their neighborhood. An increase in walking and biking for recreation during the shelter-in-place period (March 2020) led many respondents to discover new parts of town such as parks and trails they had never visited before. Comparing these behaviors and activities to today (October 2022), participants admitted they found it challenging to retain them as in-person work had resumed, in-person school activities and in-person exercise classes had restarted leaving people with less unstructured time in general. Also, several participants noted that they saw fewer people walking in their neighborhoods and that most people had returned to pre-COVID routines. One participant noted their perception of distance by walking had changed significantly after the shelter-in-place period and continued to choose walking to nearby destinations if they had the time to do so. Many participants commented on their increased awareness

of the environmental impact of transportation behaviors like driving and spoke of transitioning to electric cars, electric bikes, and the desire to utilize public transit that supported their commute.

The detailed findings of focus group research are summarized in four themes, including reflections on behaviors during shelter-in-place, maintaining behavioral change, barriers to perception of biking and walking, and barriers to and perceptions of public transportation. Appendix B provides specific quotes from focus group participants corresponding to the theme-based summary of findings presented above.

4.3 SUMMARY OF SURVEY DATA ANALYSIS

4.3.1 Sample Representativeness

The online survey received 311 responses, including 186 from participants of the 2020 survey and 126 from the general population. The majority of respondents were located in the City of Eugene (or 7 Zip code areas, see Figure 2 and Table 2). It is important to note that the least represented zip code – 97403 – includes the University of Oregon and student populations, many of whom left the region during COVID-19, disqualifying them from responding to our survey. The geographic representation appears to be reasonably good for the urban areas; but significant over-representation or under-representation seem to occur in several rural zip code areas. Nevertheless, the rural vs. urban representation in our survey responses is close to the regional population makeup (See Table 3).

Sample biases exist for several sociodemographic characteristics, which is not unusual for online survey results reported in past studies (see Lewis et al., 2021, Yang et al., 2022). Individuals who were female, had higher education levels (i.e., bachelor's degree and above), were older than 35, and were homeowners were overrepresented in the survey responses. representation in the sample by race/ethnicity (white vs. non-white), income, and employment status (See Table 3). Further examination reveals underrepresentation of Hispanic/Latino residents. We attempted to address this problem by conducting additional intercept surveys of this particular group (see Section 3.1), which generated an additional 20 responses. Information collected from these respondents allow us to better understand Hispanic/Latino population's transportation needs.

Table 2. Region and Sample Distribution Comparison by ZIP Code

	Region and Sample Distribution Comparison by ZIP Code													
	97401	97402	97403	97404	97405	97477	97478	97408	97424	97426	97437	97448	97487	97431
Region	16%	20%	5%	13%	18%	15%	15%	5%	27%	15%	4%	19%	13%	4%
2022 Survey	18.8%	13.5%	4.3%	11.5%	24.0%	13.0%	5.3%	3.4%	1.0%	1.0%	1.0%	1.0%	0.0%	0.0%

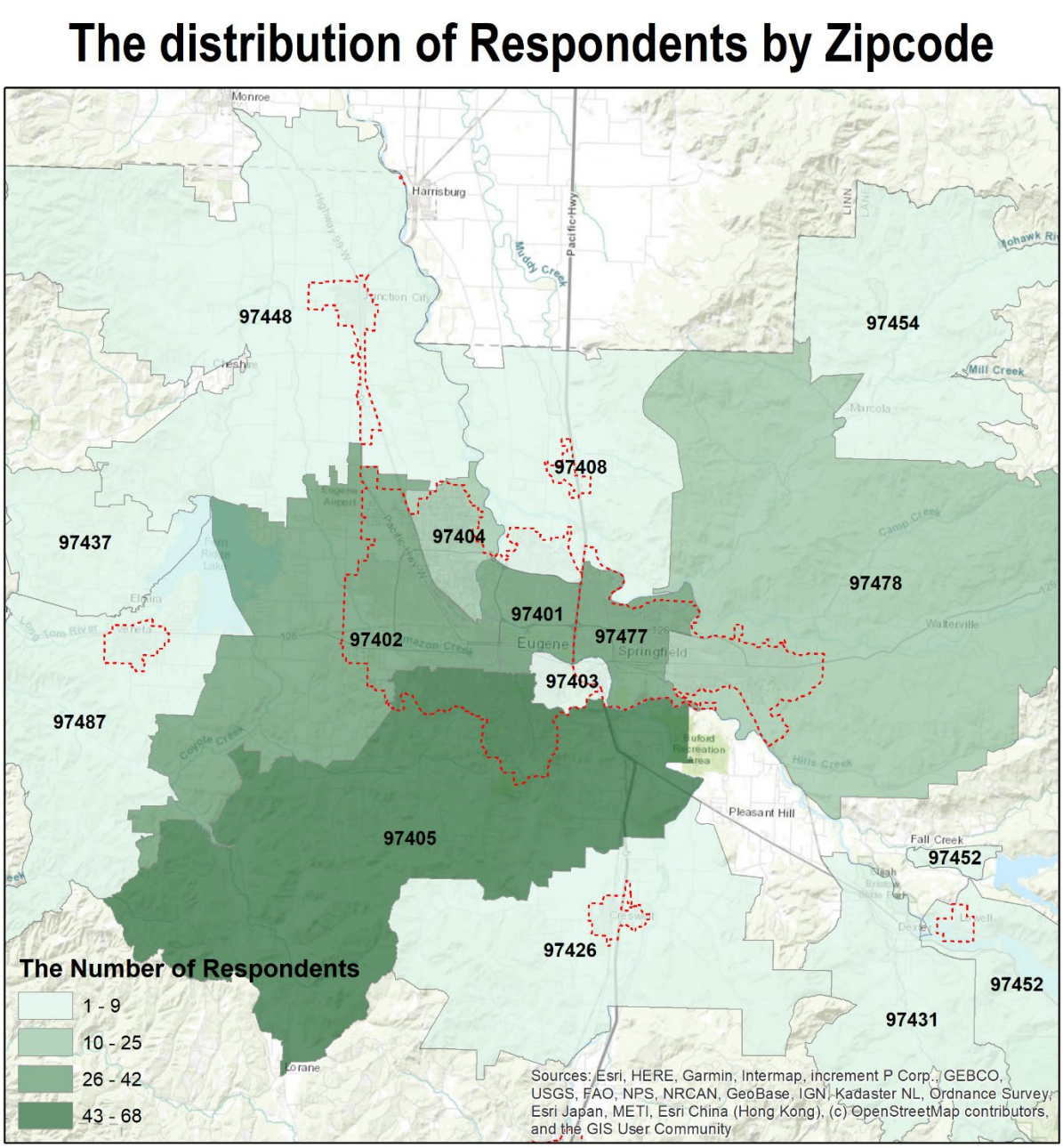

Figure 2. Distribution of Survey Respondents by Zip Code

Table 3. Sample Representativeness Assessment

		Region	*2022 Survey Sample*
Gender			
Male		49%	20.0%
Female		51%	74.3%
Race/ethnicity			
White (non-Latino/Hispanic)		**79%**	82.2%
Latino/Hispanic		**10%**	3.9%
Other		11%	13.9%
Education			
Population 25 Years and Over:			
Less than High School		8%	0.0%
High School Graduate or More (Includes Equivalency)		21%	3.8%
Some College or More		36%	22.9%
Bachelor's Degree		20%	30.5%
Graduate Degree		14%	42.9%
Age			
18 to 24 Years		20.7%	3.3%
25 to 34 Years		18.2%	12.4%
35 to 44 Years		15.0%	19.5%
45 to 54 Years		13.3%	21.9%
55 to 64 Years		14.4%	17.6%
65 to 74 Years		10.9%	20.0%
75 to 84 Years		4.9%	4.3%
85 Years and Over		2.7%	0.5%
Income			
Less than $15,000		15.3%	6.7%
$15,000 to $24,999		11.3%	8.5%
$25,000 to $34,999		11.6%	7.1%
$35,000 to $49,999		14.2%	11.4%
$50,000 to $74,999		18.5%	19.4%
$75,000 to $149,999		22.2%	28.4%
$150,000 to $199,999		3.7%	4.7%
$200,000 or more		3.5%	3.3%
Prefer not to say			10.4%
	N	382,971	311

Data source: US 2020 Census data for Lane County

4.3.2 Descriptive Analysis

Initial univariate and bi-variate analyses offer us insights into the behavioral and perceptional changes people may have experienced in the two periods at the center of

our study: during the COVID emergency and after the emergency is lifted. The analyses help us develop regression models for predicting people's future behavior change in three travel options: driving, transit use, and active travel. Given the reported increase in physical activities (PA) in the form of recreational walking during the COVID emergency period (see Hunter et al., 2021), the survey research focuses on understanding changes in PA as opposed to just active travel per se.

Travel and physical activity changes, from pre-, to during-, and immediate post-COVID

Table 4 shows the percentages of respondents who experienced changes in activities in two periods, 1. during COVID Emergency period compared with pre-COVID and 2. post COVID Emergency (within a few months) compared with during COVID period.
For driving behavior, about 76% of the respondents report a decrease in their driving during COVID, compared with pre-COVID time. A small fraction of the drivers experienced an increase in their driving during the COVID emergency period. When asked to consider their driving after the emergency period, 45.3% of the respondents think their driving quantities will remain the same, about 16% anticipate a decrease, and about 38% think their driving in general will increase, including 30% who will increase driving significantly. It is a 2-to-1 ratio when it comes to the number of respondents who expect an increase in driving vs. those who anticipate a decline after the emergency period.

About a third of respondents never used public transit. Among those who did, close to 80% experienced a decrease in transit use during COVID, including 67% who had a significant decrease in transit use. Close to 30% reported that their transit use is expected to increase after the COVID emergency period and in the subsequent few months, although only 10% of those anticipate the increase will be "significant". Again, it is a 2-to-1 ratio when it comes to number of respondents who anticipate their transit use will increase vs. those who anticipate a decline.

Respondents who reported a decrease in PA during the COVID emergency period account for about 47%, while those who experienced an increase account for about 27%. About 43% of respondents anticipate their PA will increase in the next few months immediately after the COVID emergency status was lifted, about 10 times than those who anticipate a decline in PA.

Table 4. Changes in Travel Behaviors in Different Phases of COVID Pandemic

	Percentage of respondents experienced changes	
	During COVID Emergency vs. Pre-COVID	*Post COVID Emergency (within a few months) vs. during COVID*
Driving		
decrease significantly	60.3%	4.9%
decrease somewhat	16.4%	11.8%
become about the same	14.5%	45.3%
increase somewhat	4.7%	29.6%
increase significantly	4.2%	8.4%
N=250	100%	100%
Transit Use		
decrease significantly	67.4%	11.0%
decrease somewhat	12.1%	2.5%
become about the same	18.9%	56.8%
increase somewhat	0.8%	27.1%
increase significantly	0.8%	2.5%
N=250	100%	100%
Active Travel (walking/biking)		
decrease significantly	21.9%	0.9%
decrease somewhat	25.4%	3.2%
become about the same	26.3%	52.8%
increase somewhat	13.2%	31.0%
increase significantly	13.2%	12.0%
N=250	100%	100%

Behavior changes in relation to perceived COVID threat

Table 5 shows the average ratings of perceived COVID threat by travel and PA changes during the COVID period. People who decreased their driving significantly during the COVID period perceived COVID's health threats to be considerably higher than those who didn't change their driving as much. The average COVID threat rating from 0 to 10 was 7.4 for this group, compared to below-7 average threat ratings for all other groups. This pattern doesn’t appear to be evident when we look at behavior changes in other behaviors (i.e., transit use and physical activities) in relation to the perceived COVID threats. Specifically, respondents who experienced significant decrease in transit use

and physical activities don't seem to have a higher level of COVID concerns, compared with those whose behaviors were unchanged or event increased.

Respondents' perceived COVID threat after the COVID emergency was lifted is on average lower than the perceived threat reported for during the COVID period. It seems the COVID concern after the COVID emergency has ended is no longer affecting any of the travel behaviors. The finding is consistent with what we have found from the post-survey focus groups.

Table 5. Perceived Health Threat in Different Phases of COVID Pandemic

Average COVID Threat Ratings by Travel Behavior Change

	During COVID Emergency Period		
	Driving	*Transit*	*PA*
decrease significantly	7.4 (n=151)	6.84 (n=169)	6.98 (n=55)
decrease somewhat	6.54 (n=41)	6.19 (n=30)	7.21 (n=63
become about the same	6.19 (n=36)	6.48 (n=47)	6.63 (n=66)
increase somewhat	-	-	7.07 (n=33)
increase significantly	-	-	6.33 (n=33)

	After COVID Emergency		
	Driving	*Transit*	*PA*
decrease significantly	-	-	-
decrease somewhat	-	-	-
become about the same	5.63 (n=113)	6.29 (n=142)	6.11 (n=132)
increase somewhat	6.17 (n=74)	5.62 (n=68)	5.41(n=77)
increase significantly	-	-	5.48 (n=30)

Note: mean value is only reported for cells with more than 30 cases

Reaction to changes in travel and physical activities

Table 6 summarizes respondents' reaction to changes they experienced during the COVID period. When asked whether they liked the changes in their driving behavior, people who experienced a significant decrease showed a clear favorable reaction – more than 43% liked the change. In contrast, those who had driving behavior increase were more likely to express neutral opinions.

People's reactions to changes in transit use follow a similar trend, albeit in the opposite direction. More than half (55%) of individuals who experienced a significant decrease in

transit use expressed their dislike for this change. It seems that there is a stronger negative emotional response (55% dislike) among those who experienced a decline in transit use compared to the positive response (43% like) expressed by those who experienced a decline in driving. Individuals who experienced a lesser decline in transit use or no change were more likely to express neutral opinions.

Changes in active travel (walking/biking) appear to trigger much greater responses than changes in the other two behaviors examined here. There was an overwhelming negative reaction - 60% disliked it very much, 28% disliked it somewhat - among those who experienced significant active travel decline; the opposite is true for those who increased active travel significantly - 78% liked it very much, 17% liked it somewhat.

Perceptual and Attitudinal changes in relation to Behavioral Changes

We use two sets of questions to gauge changes in a respondent's perception of their neighborhood environments and their attitudes toward public interventions on travel behaviors. The first set includes five questions asking respondents' agreement levels with statements about observations such as "I got to know more neighbors during the COVID emergency period", "I found more interesting places in my neighborhood", "I saw more people being physically active in my neighborhood", etc. The second set of questions evaluates respondents' self-awareness of travel behavior's environmental impacts and their agreement with the need to use public policies to reduce driving's environmental consequences.

Table 7 shows mean-comparison of respondents' observations and beliefs by the types of behavioral change reported for the COVID emergency period. Changes in one's driving and transit usage don't seem to correlate with neighborhood observations and experiences. Increases in one's physical activities, however, exhibit a strong relationship with neighborhood experiences and observations. Respondents who had increased their physical activities during the COVID emergency period were more likely to agree that they saw more people in the neighborhood, got to know more neighbors, and found more interesting places in their neighborhoods. Greater levels of PA were associated with a higher level of agreement with "became more engaged" in one's neighborhood. However, most responses were in the "disagreement" or "neutral" categories, suggesting that meaningful engagement in one's neighborhood requires more than just walking or biking around. Respondents' beliefs and attitudes do not appear to show clear correlation with their travel behavior change. It's possible that mobility-restriction policies during the COVID emergency period were the main reasons for changes in driving and transit usage, which helps explain the lack of correlation of personal environmental attitudes and beliefs with behavioral changes.

Overall, respondents reported the highest level of agreement with the COVID lockdown's positive impact on air quality (mean = 4.53), followed by "support for e-bike promoting policies" (mean = 4.25), "government policies are necessary" (mean= 3.91), and "it's individual responsibility to reduce driving (mean = 3.85). The two items that received lowest level of agreement are "Driving less is good for the environment" (mean

= 3.04) and “increase in support for government interventions” (mean = 2.44). The responses to these two items were overwhelmingly in the “disagreement” categories.

Anticipated Behavioral changes in the Future

Table 8 shows the anticipated travel behavior changes in relation to respondents’ demographic characteristics, focusing on comparing the propensity to increase three travel behaviors among different population groups. Among the three age groups, the youngest (millennials, age 18-35) has the highest percentage indicating an increase in future transit use and active travel. In contrast, the two older groups, Gen X (35-55) and Boomer (55 and above), reported much higher propensity to increase driving and less propensity to increase transit use and active travel. In terms of the racial categories, the non-white group is much more likely to anticipate increasing active travel (e.g., walking or biking), compared with the white group. Respondents with higher education are more likely to expect an increase in their transit use and walking/biking. Compared with those who are in the lowest-income group, respondents in the higher-income groups are more likely to anticipate increases in future driving. The lowest-income group has the highest propensity to increase their use of transit in the future.

Table 6. Reaction to Travel Behavior Changes During COVID Emergency Period

	I disliked the changes very much	*I disliked the changes somewhat*	*Neutral/no opinion*	*I liked the changes somewhat*	*I liked the changes very much*	*N/A (no changes or never had this behavior)*
Driving						
decrease significantly (n=151)	17.83%	19.38%	19.38%	17.83%	25.58%	0.00%
decrease somewhat (n=41)	8.57%	11.43%	45.71%	22.86%	8.57%	2.86%
become about the same (n=36)	12.90%	0.00%	67.74%	6.45%	0.00%	12.90%
increase somewhat (n=12)	10.00%	20.00%	70.00%	0.00%	0.00%	0.00%
increase significantly (n=10)	22.22%	22.22%	22.22%	11.11%	11.11%	11.11%
Transit Use						
decrease significantly (n=168)	29.21%	25.84%	32.58%	1.12%	7.87%	3.37%
decrease somewhat (n=30)	12.50%	25.00%	56.25%	0.00%	0.00%	6.25%
become about the same (n=47)	0.00%	8.00%	72.00%	0.00%	4.00%	16.00%
increase somewhat (n=2)	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
increase significantly (n=2)	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
Physical Activities						
decrease significantly (n=55)	60.00%	28.00%	10.00%	0.00%	0.00%	2.00%
decrease somewhat (n=64)	32.76%	46.55%	17.24%	1.72%	1.72%	0.00%
become about the same (n=65)	5.00%	15.00%	51.67%	1.67%	1.67%	25.00%
increase somewhat (n=33)	0.00%	0.00%	13.33%	60.00%	26.67%	0.00%
increase significantly (n=33)	3.33%	0.00%	3.33%	16.67%	76.67%	0.00%

Table 7. Perception and Attitudes by Travel Behavior Change During COVID Emergency Period

1.Neighborhood Observations and Experiences (Mean Agreement Level)

		saw more people	*got to know more people*	*found more interesting places*	*became more engaged*
	Mean (N=202)	*3.30*	*3.00*	*2.88*	*2.41*
Driving					
decrease significantly	N=123	3.35	3.02	2.9	2.38
decrease somewhat	N=33	3.36	2.88	2.76	2.52
become about the same	N=28	3.21	2.82	2.89	2.46
increase somewhat	N=9	3.11	3.56	3.11	2.33
increase significantly	N=9	2.67	2.44	2.44	2.11
Transit Use					
decrease significantly	N=85	3.27	2.98	2.93	2.42
decrease somewhat	N=14	3.71	3.43	3.21	3.14
become about the same	N=25	3.32	2.92	3	2.6
increase somewhat	N=1	3	3	1	1
increase significantly	N=1	4	3	2	1
Physical Activities					
decrease significantly	N=47	2.85	2.21	1.96	1.6
decrease somewhat	N=56	3.21	**3.13*** **	**2.91*** **	**2.45*** **
become about the same	N=58	3.14	**2.95*** **	**2.79*** **	**2.59*** **
increase somewhat	N=29	**4.07*** **	**3.62*** **	**3.69*** **	**3*** **
increase significantly	N=27	**3.74*** **	**3.56*** **	**3.78*** **	**2.78*** **

Mean comparison by behavior change category, reference group = “decrease significantly”: ***(p<0.001), ** (p<0.05), *(p<0.1)

2.Beliefs and Attitudes toward Reducing Driving and its Environmental Impact (Mean Agreement Level)

		Governme-nt policies are necessary	It is individual responsi bility	Environmental protection is supported by community	Driving less as is good for the environment	Air quality improved because of COVID lockdown	Support policies promoti ng EVs	Support policies promoting E-bikes	Increase in support for government interventions
	(N=202)	*3.84*	*3.91*	*3.69*	*3.04*	*4.53*	*3.72*	*4.25*	*2.44*
Driving									
decrease significantly	N=123	3.74	3.9	3.65	3.11	4.51	3.76	4.3	2.58
decrease somewhat	N=33	4	3.58	3.82	2.91	4.61	4.03	4.42	2.61
become about the same	N=28	4	3.86	3.43	**2.71***	4.46	3.39	4.11	**2.04***
increase somewhat	N=9	4.11	**4.56***	4	3.44	4.56	3.89	4.44	**1.67***
increase significantly	N=9	3.22	**3.56***	3.22	3.22	4.11	3.44	**3.44***	2
Transit Use									
decrease significantly	N=85	4.22	4.15	3.95	3.02	4.76	3.84	4.33	2.86
decrease somewhat	N=14	4.21	4.29	4.29	3.5	4.71	4.21	4	2.5
become about the same	N=25	3.92	3.8	3.36	2.8	4.52	3.36	4.12	2.28
increase somewhat	N=1								
increase significantly	N=1								
Physical Activities									
decrease significantly	N=47	3.81	3.87	3.72	3.3	4.68	3.6	4.36	2.49
decrease somewhat	N=56	3.59	3.93	3.54	3.05	4.52	3.84	4.29	2.32
become about the same	N=58	3.79	4	3.48	**2.64****	4.47	3.52	4.21	2.43
increase somewhat	N=29	4.17	3.76	4.07	3.28	4.55	3.83	4.34	2.59
increase significantly	N=27	4.19	3.96	3.96	3.19	4.44	3.93	4.07	2.63

Mean comparison by behavior change category, reference group = “decrease significantly”: ***(p<0.001), ** (p<0.05), *(p<0.1)
Results not reported for cell with very low case numbers.

Table 8. Percentage of Respondents Anticipate Increase in Travel Behaviors in the Future

	Driving	*Transit Use*	*Active Travel (Walking, Biking, etc)*
Age			
Boomer (55 & above) (n=99)	58.59%	31.31%	24.24%
Gen X (35-55) (n=91)	58.24%	39.56%	19.78%
Millennials (18-35) (n=32)	43.75%	53.13%	37.50%
Race			
White (n=192)	56.25%	38.54%	4.69%
non-White (n=74)	22.97%	13.51%	60.81%
Education			
no-college degree (n=68)	70.59%	33.82%	20.59%
college degree (n=69)	52.17%	37.68%	20.29%
post-college degree (n=85)	49.41%	41.18%	31.76%
Income			
Less than $25000 (n=37)	59.46%	59.46%	24.32%
$25,000 to $50,000 (n=45)	62.22%	40.00%	13.33%
$50,000 or more (n=118)	64.41%	37.29%	33.90%

4.3.3 Regression Analysis

We consider the lived experience in behavioral change during the COVID, respondents' reactions, and attitudinal/perceptional adjustment help explain the likelihood of people anticipating increase in the three types of behavior, controlling for any changes in one's environmental conditions. We run logistic analysis using the following functional form.

Odds ratio (Increase Bi) = f (ChangeBi_COVID, ChangeBi_PostCOVID, ReactionBi_COVID, PerceptionBi_COVID, ATTITUDE, DEM, MOVE, ENV)

Where:

The dependent variable is Increase in Bi: Anticipated increase in behavior Bi in the long run (i = Driving, Transit Use, and Active Travel)

The independent variables include the following groups:

1. *ChangeBi_COVID: experienced change in Behavior i during COVID Emergency*
2. *ChangeBi_PostCOVID: experienced/anticipated change in Behavior i in the immediate several months post COVID Emergency.*

3. *ReactionBi_COVID: reaction toward experienced behavioral i change during COVID Emergency*
4. *PerceptionBi_COVID: perception about the social and physical environments pertaining to one's neighborhood.*
5. *ATTITUDE:* Attitudes and beliefs about policies and individual responsibility
6. *DEM: sociodemographic characteristics*
7. *ENV: neighborhood environment characteristics*

Table 9 Part 1 displays the results of logistic regression analysis, aiming to predict whether individuals will increase their driving habits in the future, once the threat of Covid-19 subsides. The findings indicate that respondents who initially began driving more immediately after the end of the Covid-19 emergency are more inclined to further increase their driving in the future compared to those whose driving levels decreased or remained unchanged. Additionally, individuals who anticipate higher levels of Covid-19 threat in the future are also likely to increase their driving behavior. Furthermore, residing in areas with limited access to parks and transit stops enhances the likelihood of driving more in the future.

Part 2 shows the results of logistic regression for whether respondents will increase the use of transit in the future. The findings reveal that individuals who initially began increasing their use of transit immediately after the Covid-19 emergency are more likely to continue and further enhance their reliance on this mode of travel in the future. Moreover, those who experienced a greater level of enjoyment by reducing their transit usage during the Covid-19 period are less likely to increase their future transit usage. It is plausible that individuals who switched to alternative modes of transportation during the Covid-19 emergency found them preferable and have decided not to revert to transit in the future. Additionally, individuals who perceive their current transit usage as exceeding their preference, possibly due to a lack of alternative transportation options, are less likely to anticipate an increase in their future transit usage.

In Table 9 Part 3, the results of logistic regression are presented, which aimed to predict whether individuals would increase their walking, biking, or other active travel modes in the future. The findings suggest that positive experiences within one's neighborhood are associated with a higher likelihood of engaging in greater active travel in the future. Interestingly, in this particular model, factors such as the perception of important neighborhood qualities conducive to walking (such as walkability and safety) do not seem to predict a higher likelihood of increasing future active travel. This observation implies that personal experiences within the neighborhood, such as interacting with neighbors and exploring the environment, may play a more significant role in encouraging walking and biking behavior compared to the neighborhood's intrinsic qualities alone. Furthermore, the evaluation of the future threat of COVID appears to decrease the likelihood of engaging in active travel, which is the opposite effect observed for driving.

Additionally, the younger population group, specifically millennials (age<35), demonstrates a greater propensity for participating in active travel compared to older age groups, including generation X and baby boomers. On the other hand, it seems that white individuals are less likely to utilize active transportation, potentially because this particular group is more inclined to increase their driving behavior.

Table 9. Logistic Regressions Predicting Future Increase in Travel Behaviors

1. Logistic Regression Output (predicting increase in driving in the future)

		Beta	Exp(beta)	p-value	Sig
During COVID driving change	decrease significantly (ref)				
	decrease somewhat	-0.65	0.521	0.197	
	no decrease	-0.64	0.529	0.213	
Post COVID driving change	decrease (ref)			.	
	no-change	0.17	1.186	0.747	
	increase	1.14	3.138	0.041	**
Reaction to driving change	level of enjoyment	-0.03	0.971	0.841	
	Driving exceeds one's preference	-0.15	0.862	0.564	
Perception	Increased experience of neighborhood	0.54	1.714	0.303	
	Future threat level of COVID	0.25	1.279	0.065	*
	Neighborhood walkability	-0.01	0.993	0.839	
	Neighborhood safety	0.02	1.019	0.899	
Attitudes and beliefs	Support policy solutions to reducing driving	-1.44	0.238	0.175	
Sociodemographic characteristics	Millennials (below 35)				
	Gen X (36 - 55)	0.01	1.006	0.989	
	Boomer (above 55)	-0.66	0.517	0.279	
	Education (No college, ref)		1		
	some college and college	-0.83	0.437	0.105	
	graduate degree	-0.62	0.54	0.253	
	Household income (less than 25K, ref)		1		
	25 - 50K	-0.57	0.567	0.41	
	above $50K	-0.87	0.417	0.156	
	Gender (Male, ref)		1		
	Female	0.16	1.178	0.735	
	Race (White, ref)		1		
	non-white	-0.21	0.809	0.692	
Neighborhood environment	Population density	0.06	1.059	0.473	
	median year structure built	0.96	2.609	0.171	
	% of renter occupied housing	-2.62	0.073	0.695	
	Num. of grocery stores w/in .5mile	0.18	1.197	0.266	
	Num. of bus stops w/in .5mile	-0.03	0.969	0.127	
	Num. of parks w/in .5mile	-0.19	0.831	0.071	*
	Constant		4.533	0.813	
Pseudo r-squared		0.229			
Chi-square		60.25			
Akaike crit. (AIC)		255.242			

2. Logistic Regression Output (predicting increase in transit use in the future)

		beta	Exp(beta)	p-value	Sig
During COVID Transit use change	decrease significantly (ref.)				
	other changes	0.23	1.259	0.735	
Post COVID Transit use change	decrease (ref.)				
	no-change	0.94	2.561	0.267	
	increase	1.53	4.602	0.093	*
Reaction to Transit use change	level of enjoyment	-0.58	0.558	0.045	**
	Transit exceeds one's preference	-0.90	0.406	0.019	**
Perception	Increased experience of neighborhood	-0.46	0.63	0.619	
	Future threat level of COVID	0.11	1.113	0.605	
	Neighborhood walkability	0.04	1.043	0.445	
	Neighborhood safety	0.11	1.117	0.646	
Attitudes and beliefs	Support policy solutions to reducing driving	1.02	2.774	0.594	
Sociodemographic characteristics of respondent	Millennials (below 35)				
	Gen X (36 - 55)	0.48	1.615	0.457	
	Boomer (above 55)	1.39	4.034	0.13	
	Education (No college, ref)				
	some college and college	-0.23	0.797	0.791	
	graduate degree	-0.29	0.748	0.721	
	Household income (less than 25K, ref)				
	25 - 50K	-0.45	0.635	0.592	
	above $50K	-0.45	0.636	0.602	
	Gender (Male, ref)			.	
	Female	0.05	1.055	0.933	
	Race (White, ref)				
	non-white	-1.11	0.328	0.191	
Neighborhood environment	Population density	0.08	1.083	0.406	
	median year structure built	-1.25	0.287	0.77	
	% of renter occupied housing	1.50	4.47	0.869	
	Num. of grocery stores w/in .5mile	0.16	1.173	0.499	
	Num. of bus stops w/in .5mile	-0.03	0.966	0.299	
	Num. of parks w/in .5mile	0.14	1.146	0.401	
	Constant		12.833	0.773	
Pseudo r-squared		0.262			
Chi-square		34.064			
Akaike crit. (AIC)		145.899			

3. Logistic Regression Output (predicting increase in Active Travel in the future)

		beta	Exp(beta)	p-value	Sig.
During COVID PA change	decrease (ref.)			.	
	no change	0.20	1.222	0.68	
	increase	-0.16	0.856	0.781	
Post COVID PA change	decrease (ref.)				
	no-change	0.23	1.256	0.729	
	increase	0.94	2.557	0.151	
Reaction to active travel change	level of enjoyment	-0.09	0.914	0.534	
	PA exceeds one's preference	-0.08	0.925	0.749	
Perception	Increased experience of neighborhood	0.91	2.479	0.064	*
	Future threat level of COVID	-0.20	0.817	0.099	*
	Neighborhood walkability	-0.01	0.987	0.672	
	Neighborhood safety	0.02	1.017	0.908	
Attitudes and beliefs	Support policy solutions to reducing driving	-1.16	0.315	0.234	
Sociodemographic characteristics of respondent	Millennials (below 35)				
	Gen X (36 - 55)	-1.39	0.249	0.001	***
	Boomer (above 55)	-0.49	0.613	0.352	
	Education (No college, ref)				
	some college and college	-0.23	0.797	0.622	
	graduate degree	-0.30	0.738	0.529	
	Household income (less than 25K, ref)				
	25 - 50K	-0.62	0.536	0.29	
	above $50K	0.57	1.777	0.252	
	Gender (Male, ref)				
	Female	-0.25	0.778	0.528	
	Race (White, ref)				
	non-white	1.00	2.724	0.037	**
Neighborhood environment	Population density	0.02	1.023	0.603	
	median year structure built	-0.96	0.382	0.17	
	% of renter occupied housing	-7.68	0.001	0.217	
	Num. of grocery stores w/in .5mile	0.06	1.059	0.676	
	Num. of bus stops w/in .5mile	0.00	1.002	0.928	
	Num. of parks w/in .5mile	0.13	1.134	0.143	
	Constant		2.204	0.875	
Pseudo r-squared		0.172			
Chi-square		48.253			
Akaike crit. (AIC)		284.333			

**** p<.01, ** p<.05, * p<.1*

5. CONCLUSIONS AND DISCUSSIONS

5.1 SUMMARY OF FINDINGS

This project follows a previous study conducted by the same researchers in 2020. While the earlier study depicts a picture of how people changed travel behaviors during the COVID lockdown period, this follow-up research adds insights into people's reactions and experiences. It explores the possible internalization of those experiences and examines whether those experiences could affect people's future travel choices. The findings from this project are summarized in the following points:

1. Overall, the study shows that, as society emerges out of the pandemic, people resumed their travel and generally anticipated continuous increase in travel activities by all options (driving, transit, and walking/biking). The escalation may be greater in travel by driving and transit.

2. Similar to the findings in our prior survey, the perceived health threat connected to COVID was an evident factor affecting people's choice of private automobiles during the pandemic. This factor will likely have a persistent influence over people's future travel choices, especially driving.

3. Travel behavior changes can have an impact on people's perceptions and attitudes, which may affect their future travel choices. These chain effects, however, seem to depend on the magnitude of experienced change and the type of travel behavior. For driving, only a significant drop in this behavior seems to generate a discernible level of positive reaction in people. While our analyses do not show that reduction in driving experienced during the pandemic affect perceptions about lowering driving in the future, some findings indicate that the pandemic experience may make driving less habitual to some people as they started recognizing the feasibility and benefits of using other travel choices, such as walking and biking, to reach some destinations (e.g., parks).

   The chain effects from "behavior change, to perception/experience transformation, and to decision for future behavior" seems to be much clearer for active travel. Findings from both interview and survey research point to the fact that people quickly recognized and enjoyed the benefits from more walking or biking for various purposes. Those positive reactions seem to lead people to increase the use of this active travel in the future.

4. The study shows a clear negative impact from COVID on transit users during the emergency period. The inability to use transit appears to cause significant stress to this group and resulted in people switching to other travel modes. These pandemic experiences may lead to people using less transit in the future. This trend may be particularly strong for the non-white group, indicated by the finding that being non-white is associated with a much stronger propensity to increase active travel (but not transit use) in the future. The additional research we

conducted with a small group of Spanish-speaking residents suggests that the uncertainty of transit service availability is an important reason for people's hesitation to anticipate an increase in transit use in the future.

5. Overall, the environmental factor's impact on future travel behaviors is weak compared with one's perceptions, attitudes, and experiences. Similar to the previous study of travel behaviors during COVID lockdown time, environmental indicators such as population or housing density do not exhibit the typical positive effects on using transit and active travel. It is possible that the pandemic has led people to perceive the more compact environment to be less safe and adjust their travel choices to automobile travel. On the other hand, good accessibility to parks seems to reduce people's tendency to increase driving in the future. This may be a silver lining effect of the COVID pandemic – people may be more willing to walk or bike to those sites thanks to the activities undertaken during the COVID lockdown time.

5.2 LIMITATIONS

We recognize the limitation posed by a small sample size and sample bias to the generalizability of our research findings. This speaks to challenges connected to conducting online surveys and reaching out to certain population groups, including the younger populations and the minority groups. For example, we have an underrepresentation of the Hispanic/Latino population within our sample. Language barrier was partly to blame. Qualtrics translated the survey word for word into Spanish and then edited by a fluent Spanish speaker, but the survey was still lengthy and confusing, as not all English phrases translate directly to Spanish. Considering cultural differences in the survey translation allowed the questions to be interpreted in the same way as the English version. Another challenge is that people were hesitant to participate due to lack of trust. Some of the Latinx population may be working illegally within the United States and fear deportation. In the future, connecting with local community organizations like "Centro Latino Americano, Downtown Languages, and Huerto de la Familia" could also be beneficial as they are trusted and well-established organizations that aid the Latinx community.

Future research could also improve upon the measurement of several psychological constructs such as attitudes and perceptions, as well as the methods to better investigate the relationship between behavior change and attitudinal transformation. Our research findings appear to suggest a strong elasticity in people's endurance for driving behavior change. It seems that an intervention to reduce driving has to be significant enough to generate meaningful and positive reactions. But it remains unclear how much magnitude the intervention needs to be of. Future work should also consider how social programming and messaging can improve people's positive reaction to behavioral changes and can strengthen effectiveness of physical environment-based interventions.

5.3 POLICY IMPILICATIONS

This project aims to inform the approaches that the public sector can take to reduce driving and increase use of sustainable modes of travel. Policy implications include:

- It is clear that a built- environment approach has limited effectiveness for travel behavior modifications. Mixed-use and higher density neighborhoods are still important for walking and biking even during the pandemic. But the impact of mixed-use and higher density on reducing driving is unclear. Providing good accessibility of parks may have greater effects on reducing driving by encouraging more non-automobile trips to those destinations.

- COVID's health risk will still play a role in people's travel behaviors. This perceived risk reduces people's desire to use transit and adopt active transportation modes. People choose to drive in a private automobile for safety reasons. People want access to public spaces that aren't crowded, so there is a need for a variety of different types of public spaces for walking and biking. It is important for policymakers to build trust by communicating the science behind risks.

- The greater level of walking or biking in one's neighborhood produces clear benefits that people can enjoy. These benefits increase people's likelihood to use more active travel. The experience of reduced driving, however, may not be able to generate a similar level of enjoyment, thus failing to lead to a significant change in driving behavior. Social programs and public campaigns may focus on letting people understand and experience the social and individual benefits associated with less driving.

- People's express frustration with understanding availability and safety of various modes of transportation, especially the unreliability of public transit services. Real-time smart technology can help residents understand neighborhood and transportation options (e.g., when to catch the bus or bikeshare and where). Transit agencies should bring back the normal transit services and communicate with the public to gain trust within the system. This is important to achieving policy goals related to transportation and overcoming fear of transit. People need clear and current information about shifts in service. Consistency in services is critical to retaining transit uses.

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APPENDIX A: SURVEY INSTRUMENT

English

Introduction

You are being asked to participate in a research study. This is a follow-up survey to one you took in June of 2020. We are studying the impact of COVID-19 on everyday travel behavior (travel for work, school, errands, and recreation) – before, during, and after the COVID Emergency Period. We are interested in how your travel and how your use of public space (e.g., streets, paths and sidewalks) for functional and recreational transportation changed during the COVID Emergency Period. We are particularly interested in hearing how new habits and activities began during this period and may have continued into the future. We'd like to hear from residents of the Eugene/Springfield region who lived in the Eugene/Springfield region from January 2020 to the present.

This survey should take between 20 and 30 minutes to complete. At the end of the survey, you can win one of 10 x $50 gift cards to a regional or national business. Respondents must complete at least 75% of the survey to be eligible to win a gift card.

This survey was developed by a team of researchers at the University of Oregon. Your answers are and will be completely confidential. Any personally identifying information will not be tied to any product this research produces. We will not share or sell your personally identifying information. By completing and submitting this survey you provide consent in allowing the UO research team to use these findings for research. You may choose not to participate in this survey without penalty. If you have any questions regarding the survey, please email Yizhao Yang at the University of Oregon School of Planning, Public Policy and Management: yizhao@uoregon.edu.

Do you agree to participate in this survey? By clicking "Yes", you are consenting to participate in this survey and you are also informing us that you are age 18 or older. If you do not consent, or are not age 18 or older, please click "No" to navigate away from the survey

Key Definitions & Periods used in this Survey:

Functional trips include traveling to work, school, religious events, social events, errands, sports, and organized activities.
Recreational trips include walking, hiking, running or biking for the purpose of exercise, physical activity, walking a pet, or other recreational activities like bird-watching or flower-admiring.

For the purpose of this survey, we are interested in your travel and physical activity behavior during these periods:
1. **Before COVID Emergency Period** - This period refers to the time prior to March 8, 2020 when Oregon entered a state of emergency for COVID-19 declared by Oregon Governor.
2. **COVID Emergency Period** - This period refers to the time span when the COVID-19 Emergency state was in place between March 8, 2020 and March 31, 2022.
3. **Post COVID Emergency and Future** - This period began on April 1, 2022 when Oregon's COVID emergency was lifted and will last into a future when COVID-19 is no longer a threat.

Opening Block

Does the following statement apply to you?
I currently live in Lane County **and** I have lived in Lane County continuously in the last two and half years (i.e., since January 2020).

Yes
No

Which of the following statement describes your status now?

I am a non-student resident
I am a student (full time or part time)

Do you live on campus?

Yes
No

What is the closest intersection to your current residence?

Street 1: (e.g., 13th Ave.)

Street 2: (e.g., Patterson street)

Have you experienced any major life changes during the COVID Emergency Period (March 8, 2020 to March 31, 2022)? (select all that apply)

No major life changes

Housing status (moved, unhoused, etc.)

Transportation means (gained or lost access to a motor vehicle, bicycle, etc.)

Working status (changed jobs, resignation, retirement, etc.)

Other (please specify):

You mentioned there has been change to the transportation means you have access to. Has anyone in your household gained access to a motor vehicle?

Yes

No

Has anyone in your household sold or donated a motor vehicle?

Yes

No

Has anyone in your household acquired a bicycle?

Yes

No

What are the reasons for acquiring a motor vehicle (check all that apply)

We feel safer in a private vehicle now

We replaced a vehicle

We moved and needed another vehicle

Someone changed jobs and now needs a vehicle

We got a good deal on a vehicle

Other. Please specify

What are the reasons for selling, donating, or losing access to a motor vehicle (check all that apply)

Financial reasons

We replaced a vehicle

No longer needed the vehicle for a job or commute

The vehicle was in a crash or broke down

Environmental reasons

Other. Please specify

What are the reasons for acquiring a bike (check all that apply)

Get exercise

For commuting purpose

Replace a motor vehicle use

Environmental reasons

Other. Please specify

You answered that your residence has changed in the past two and half years. What was the reason for changing your residence? (check all that apply)

Moved because job change

Moved to reduce housing cost

Moved to a house recently purchased

Moved to allow a household member to attend a college

Moved to let child to attend a school

Other

What is the closest intersection to your previous residence? (the most recent one prior to your current residence.)

Street 1: (e.g., 13th Ave.)

Street 2: (e.g., Patterson street)

I lived on campus (please type the school name)

You answered that you had working status change in the past two years. Please check the following statements that match your experience as the result of this working status change. Check all that apply.

My new work schedule is more flexible

My new workplace is closer to my residence

My new work hours is shorter

I can do more remote working at my new job

I stopped working

Other. Please provide more details here

Pre-COVID General Travel Pattern

We'd like to ask you about your transportation and physical activities before the COVID Emergency Period. Please try your best to answer these questions as accurately as possible. We understand the answers are based on somewhat distant memories.

Before the COVID Emergency Period, during a typical week, what was the primary travel mode you used to go to the following destinations? If you often used more than one travel mode to go to a destination, choose the one that you used for the longest portion of the trip.

	Personal vehicle (drive alone or ride with others)	Taxi or Rideshare	Walk	Bike, non-motorized scooter, or skateboard	Public transportation (LTD bus, ridesource or paratransit	n appli (i.e., trav the destin

	Personal vehicle (drive alone or ride with others)	Taxi or Rideshare	Walk	Bike, non-motorized scooter, or skateboard	Public transportation (LTD bus, ridesource or paratransit	appli (i.e., trav the destin
Work place(s)	○	○	○	○	○	
Grocery stores	○	○	○	○	○	
Recreational sites supporting exercises (e.g., parks, gym, etc)	○	○	○	○	○	
General social sites (e.g., public spaces, entertainment establishments, restaurants)	○	○	○	○	○	
Campus (college or university) if you are a student	○	○	○	○	○	

Before the COVID Emergency Period, how often did you walk or bike (including run, jog, hike, etc) in your neighborhood as a recreational activity during your leisure time? Do not include walking or biking for the purposes of going to workplace, shopping, or other intended destinations.

I did not walk or bike in my neighborhood for exercises, or did so less than once a month

Once or more a month but not every week

Once a week

2-3 times a week

Between 4-6 times a week

Every day

More than once a day

Before the COVID Emergency Period, which place was the setting where you got your physical exercises (e.g., dance, yoga, weightlifting, walking, biking, or running)?

The most used place

COVID period travel

Please tell us about your perceptions, travel volume and patterns for different trips, and your physical activities during the Oregon COVID Emergency Period (between March 8, 2020 and March 31, 2022).

During the COVID-19 Emergency Period, what was your perceived level of health threat from the COVID-19? Please rate the threat level on a scale from 0 to 10, 0 being no threat at all and 10 being an extremely high-level of threat.

0	1	2	3	4	5	6	7	8	9	10
0	1	2	3	4	5	6	7	8	9	10

Compare your travel or physical activity volumes during the COVID Emergency Period with those before the COVID Emergency. What changes did you experience?

	From Pre-COVID Emergency to COVID Emergency Period					
	Decreased significantly	Decreased somewhat	About the same	Increased somewhat	Increased significantly	Not applicable, I never had this behavior
My driving in general	○	○	○	○	○	○
My use public transportation in general	○	○	○	○	○	○
My physical activities in general (e.g., walking, running, biking, workout including dance, yoga, weightlifting, etc).	○	○	○	○	○	○
Recreational walking, running, or biking in my neighborhood	○	○	○	○	○	○

How did you feel about those behavioral changes from pre-COVID Emergency to during the COVID Emergency Period?

	I disliked the changes very much	I disliked the changes somewhat	Neutral/no opinion	I liked the changes somewhat	I liked the changes very much	N/A (no changes in my behavior, or I never had this behavior)
Changes in my driving in general	○	○	○	○	○	○
Changes in my use of public transportation in general	○	○	○	○	○	○
Changes in my physical activities and exercise in general	○	○	○	○	○	○
Changes in recreational walking or biking in my neighborhood	○	○	○	○	○	○

Think about those behavioral changes' causes and effects. Please check all statements that are applicable to you.

I think the changes in my driving from pre-COVID Emergency to during the COVID Emergency Period...

- [ ] Saved me money and/or time
- [ ] Affected the environment
- [ ] Affected where I can visit and/or where I can work
- [ ] Were made for safety reasons
- [ ] Were due to changes in my work place or residence (location change, work schedule change, availability of parking, etc)
- [ ] Not applicable - I didn't experience changes in this behavior, or none of the above causes or effects is applicable to me. Please provide more information below if you'd like.

I think the changes in my use of public transportation from pre-COVID Emergency to during the COVID Emergency Period...

- [ ] Were made for safety reasons
- [ ] Affected the environment
- [ ] Affected where I can visit and/or whare I can work
- [ ] Were due to changes in my work place or residence (location change, work schedule change, availability of parking, etc)
- [ ] Were due to changes in LTD bus services
- [ ] Not applicable - I didn't experience changes in this behavior, or none of the above causes or effects is applicable to me. Please provide more information below if you'd like.

I think the changes in my physical activities/exercises in general from pre-COVID Emergency to during the COVID Emergency Period...

- [ ] Affected my health (physical and/or mental)
- [ ] Were due to the changes in the availability of places where I can exercise
- [ ] Were made for safety reason
- [ ] Were due to health issues of myself or someone in my family
- [ ] Were due to changes in my work place or residence (location change, work schedule change, availability of parking, etc)
- [ ] Not applicable - I didn't experience changes in this behavior, or none of the above causes or effects is applicable to me. Please provide more information below if you'd like.

I think the changes in my walking or biking in my neighborhood for recreational purpose from pre-COVID Emergency to during the COVID Emergency Period...

Affected the level of my physical activities and exercises in general

Were due to unavailability of other places where I can exercise

Affected my knowledge about my neighborhood

Affected my relationship with neighbors

Affected my opinions about my neighborhood

Not applicable - I didn't experience changes in this behavior or none of the above causes or effects is applicable to me. Please provide more information below if you'd like.

Current and future travel

We'd like to ask you about your recent travel patterns and physical activities post-COVID Emergency Period and into the future. Oregon's COVID Emergency state was lifted on April 1, 2022.

What is your assessment of the current health threat from the COVID-19? Please rate the threat level on a scale from 0 to 10, 0 being no threat at all and 10 being an extremely high-level of threat.

0 1 2 3 4 5 6 7 8 9 10

Would you say your current schedule of work or school is...

Still random, unpredictable

Regularized and is identical to pre-COVID pattern

Regularized but is different from the pre-COVID pattern

Is the transportation model for your current travel to work or school the same as pre-COVID time?

Yes

No

On an average week and over the last 7 days, how frequently did you use each of the following modes of transportation for functional trips like work, errands, and other trips (not including walks or bike rides for recreation)?

	Never	Once a week	2-3 times a week	Between 4-6 times a week	Every day	Multiple times per day
Personal vehicle (drive alone or with others)	○	○	○	○	○	○
Taxi or Rideshare	○	○	○	○	○	○
Public transportation(LTD bus, EmX, Ridesource, etc)	○	○	○	○	○	○
Walk	○	○	○	○	○	○
Bike, non-motorize scooter, skateboard, etc	○	○	○	○	○	○

In an average week and over the last 7 days: How many times did you walk, run, or bike in your neighborhood for recreation/physical activity? (e.g., a walk, run or bike that began and ended at your house)

In an average week since the COVID Emergency Status is lifted on April 1, 2022	▾
The last 7 days:	▾

Think about your behaviors listed below in the NEXT few months. Comparing them with the same behaviors during the COVID Emergency Period, which statement would most likely match your prediction?

	will decrease significantly	will decrease somewhat	will become about the same	will increase somewhat	will increase significantly	Not applicable (e.g., never had this behavior)
My driving in general	○	○	○	○	○	○
My use of public transportation in general	○	○	○	○	○	○
My physical activities and exercises in general (e.g., walking, running, biking, or workout).	○	○	○	○	○	○
Recreational walking or biking in my neighborhood	○	○	○	○	○	○

Think about the future after COVID-19 is no longer a threat. Which mode do you expect to use for the following types of trips? Choose all that apply.

	Personal vehicle (drive alone or ride with others)	Taxi or Rideshare	Walk	Bike, non-motorized scooter, or skateboard	Public transportation (LTD bus, ridesource or paratransit) if available	no applic (i.e., not tr to th site
To workplace	☐	☐	☐	☐	☐	☐
For grocery shopping	☐	☐	☐	☐	☐	☐
To recreational sites (e.g., parks, gym, etc)	☐	☐	☐	☐	☐	☐
For general social sites (e.g., public spaces, entertainment establishments, restaurants, etc)	☐	☐	☐	☐	☐	☐
To school campus (college or university) if you are a student	☐	☐	☐	☐	☐	☐

Think about the future after COVID-19 is no longer a threat. Which modes of transportation do you think your usage will likely increase? Choose all that apply.

Personal vehicle (drive alone or ride with others)

Taxi or Rideshare

Walking

Bike, non-motorized scooter, or skateboard

Public transportation (LTD bus, ridesource or paratransit) if available

Attitudes and Perceptions

What is your agreement level with the following statements?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
In the past two years, I saw more people being physically active in my neighborhood, compared with pre-COVID Emergency Period.	○	○	○	○	○
I got to know more neighborhoods during the COVID Emergency Period.	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I became more engaged in my neighborhood activities during the COVID Emergency Period.	○	○	○	○	○
I found more interesting places in my neighborhood during the COVID Emergency Period.	○	○	○	○	○
As of now, I have enough free time (e.g., not working or occupied) to engage in physical activities such as walking, biking, or exercising as much as I want.	○	○	○	○	○

Given that many U.S. cities showed improvements in air quality during stay-at-home orders, to what extent has your support for public interventions that would reduce driving (e.g. telecommuting, increased public transportation, fees, or bicycle infrastructure) been STRENGTHENED?

A great deal

A lot

A moderate amount

A little

Not at all

Indicate your agreement with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe government should adopt policies to reduce driving.	○	○	○	○	○
I believe it's individuals' responsibility to reduce driving.	○	○	○	○	○
I believe government should adopt policies to increase the share of Electric Vehicles (EVs).	○	○	○	○	○
I believe government should adopt policies to increase the share of electric bicycles.	○	○	○	○	○
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe people in my community care more about environmental protection than economic growth.	○	○	○	○	○
I believe that people driving less is good for the environment.	○	○	○	○	○
I believe that air quality has improved in many U.S. cities during the stay-at-home period.	○	○	○	○	○
The health threat from COVID-19 will disappear in the next couple of years.	○	○	○	○	○

Please indicate your agreement level with the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know
Many shops, stores, markets or other places to buy things I need are within easy walking distance of my home.	○	○	○	○	○	○
It is within a 10-15 minutes walk to a transit stop (such as bus or EmX) from my home.	○	○	○	○	○	○
There are sidewalks on most of the streets in my neighborhood.	○	○	○	○	○	○
There is bicycle infrastructure in or near my neighborhood, such as special lanes, separate paths or trails, shared use paths for cycles and pedestrians.	○	○	○	○	○	○
My neighborhood has several free or low cost recreation facilities, such as parks, walking trails, bike paths, recreation centers, playgrounds, public swimming pools, etc.	○	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know
The crime rate in my neighborhood makes it unsafe to go on walks during the day or at night.	○	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Do not know
There is so much traffic on the streets that it makes it difficult or unpleasant to walk or bike in my neighborhood.	○	○	○	○	○	○
There are many interesting things to look at while walking in my neighborhood.	○	○	○	○	○	○
There are many places to go within easy walking distance of my home.	○	○	○	○	○	○

COVID-19 has required most of us to make significant changes to our daily lives. Would you like to continue any of these new living experiences in the future, after COVID-19 is no longer a threat?

	No	Maybe	Yes	Not applicable
Working from home, at least some of the time	○	○	○	○
Commuting less	○	○	○	○
Driving less	○	○	○	○
Taking more walks	○	○	○	○
	No	Maybe	Yes	Not applicable
Shopping online more	○	○	○	○
Conducting business meetings online	○	○	○	○
Keeping in touch with family and friends using video conferencing	○	○	○	○
Spending more time on home-related things (e.g., yard work, home improvement, cooking, etc)	○	○	○	○

Please provide more details about other things or experiences you'd like to continue after COVID Emergency Period.

COVID-19 has prompted us to change the environment we live in. Would you like to continue any of these changes after COVID-19 is no longer a threat?

	No	Maybe	Yes	Not applicable
Converting sidewalk space into additional outdoor dining	○	○	○	○
Converting parking spaces in to additional outdoor dining	○	○	○	○
Closing streets to vehicles entirely for people to use as walking/biking space.	○	○	○	○
Designating parking spaces near business (e.g., grocery stores) as short-term parking only (e.g., 15-minute pickup)	○	○	○	○

Compare your current activity levels with the level that you'd like to have. Choose the statement that you agree with.

	Compared with your prefered or desired level (for yourself)				
	Much less than I'd like to have	Somewhat less than I'd like to have	About the same as I'd like to have	Somewhat more than I'd like to have	Much more than I'd like to have
My driving in general now is	○	○	○	○	○
My physical activities in general are	○	○	○	○	○
The amount of my walking or biking that takes place in my neighborhood is	○	○	○	○	○
My use of public transportation is	○	○	○	○	○

Demographic background

Do you consider the Eugene/Springfield region your permanent home?

Yes

No

How many motorized vehicles does your household currently have access to? Please enter a number below

Do you rent or own the housing unit that you live in currently?

Own
Rent
Other

How many pets does your household own?

In what year were you born?

Indicate the number of people in your household (including yourself) that are:

Age 0-4	0
Age 5-10	0
Age 11-13	0
Age 14-17	0
Age 18 or older	0

What is the highest degree/level of school you have completed?

Less than high school graduate
High school graduate (or equivalency)
Some college or associate degree
Bachelor's degree
Graduate degree or higher

How do you identify your gender? (Select all that apply)

Female
Male
Gender nonconforming
Other not listed
Prefer not to say

Are you currently employed?

Yes - full time

Yes - part time

No

No - but I am looking for work

I am retired

What is your job sector? (select all that apply)

Education (Pre-K, K-12, Higher Education)

Financial Activities (Finance, Insurance, Real Estate/Rental)

Information

Leisure and Hospitality (Arts, Entertainment and Recreation; Accommodation and Food Services)

Other Services

Producing Goods (Natural Resources, Mining, Construction, Manufacturing)

Professional and Business Services (Professional, Scientific, Technical Services; Management; or Administration and Support, Waste Management and Remediation)

Public Administration (Local, State, Federal Government)

Health Care and Social Assistance

Retail or Wholesale Trade

Transportation and Utilities

Student

Other

How do you identify your race / ethnicity(ies)? (Select all that apply)

White

Black or African American

Native Hawaiian or Pacific Islander

Hispanic and/or Latin(o/a/x)

American Indian or Alaska Native

Asian

Other

Prefer not to say

What is your Zip Code?

What was your annual household income in 2019?

Less than $15,000
$15,000 to $24,999
$25,000 to $34,999
$35,000 to $49,999
$50,000 to $74,999
$75,000 to $149,999
$150,000 to $199,999
$200,000 or more
Prefer not to say

Would you be interested in participating in a focus group or personal interview? If selected, you will be compensated for your time with a $25 gift card.

Yes
No

Do you want to be entered in a drawing to win a $50 gift card to a regional or national business?

No
Yes

Please enter your email address so we can contact you regarding focus groups or drawings for $50 gift card for completing the survey. (We cannot enter you into the drawing if you do not provide an email address.)

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APPENDIX B: THEMES AND ASSOCIATED QUOTES FROM FOCUS GROUPS[A1]

Reflections on behavior during shelter-in-place		
Section 1	**Quote**	**Participant Description**
Community connection & increased recreational walking	"I did a lot of walking on the trail with my wife, in the neighborhood and it was actually nice because there were people in the neighborhood that I rarely saw and we would go for a walk and see these people. It was really nice. And now, it's pretty much over and we don't see those people anymore."	66-yr old man, Eugene resident. Primary mode of transportation is biking.
	"I became more cognizant of who my neighbors were, and I have a couple of elderly neighbors, and I was concerned about them… And even when things have gotten better, I still check in on them and make sure they had what they need to avoid going into the stores and being in crowded places."	41-yr old woman. Eugene resident. Primary mode of transportation is biking.
	"One thing we did during the pandemic, someone was sitting outside having a drink in the late afternoon and we were across the street, my wife and I, in our chairs,. ..so we have a little median in our street and someone suggested that we just do this over there. So we have 10-15 people, 4 o-clock in the afternoon… and hang out for an hour or two. It was really nice, and I think it brought our neighborhood actually closer together...We did it a few times this summer. But yeah, I think there's a tradition that's gonna continue."	66-yr old man, Eugene resident. Primary mode of transportation is biking.
	"I've kept that community connection. I've spent a lot of time walking around my neighborhood looking at people's yards and meeting people. That's been really nice so we still get together and walk around mostly for exercise."	64-yr old woman, Eugene resident. Primary mode of transportation is driving.
Negative perceptions of community	"I'm still angry about the shut-downs. I also quickly realized something about my neighborhood, everybody was really mean. If we went out anywhere, I guess we were supposed stay indoors but I've got three kids who need to get out. I had a lot of anxiety and I would be worried that I would be on Next door "I just saw a family walking without masks" and people would do this! So, we drove a lot more."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"There hasn't been any real change for as far as, or even the neighborhood, for that matter. What has changed for me is my comfort going out and riding with others. That's been very refreshing as opposed to writing by myself all the time."	62-yr old woman, Eugene resident. Primary mode of transportation is biking.

	"I don't drive much to begin with- I'm retired, and I try not to drive very often. When I go out, I do all my errands at one time.at one time I'll go to the gym, the market, and go to the hardware store whatever it is, and sometimes I'll go out just three times a week like I go to the gym and that's it."	66-yr old man, Eugene resident. Primary mode of transportation is biking.
Maintained pre-covid routine	"I usually ride my bike to work and for a period of time at the beginning, I decided "Well I'm still gonna ride to work" so I rode just to school and rode home to then go to work"	52-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"I begged to go back to the office just to get my bike commute back. I was one of the very first people to back. I didn't mind wearing a mask in the office. There was a significant drop in traffic, it was very nice."	62-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"I limit my driving as it is, not a whole lot changed."	35-yr old woman. Eugene resident. Primary mode of transportation is biking.
Maintained pre-covid routine (cont.)	"Not much changed for me, I ride to work and back and don't really use the public transportation system so that didn't affect how I move about around the city."	35-yr old woman. Eugene resident. Primary mode of transportation is biking.
	"I would just walk, it was my exercise and I live close to the bike path so I was on the river all the time. We didn't use our cars much, my wife is a bike commuter so she pretty much stayed on her bike commute."	64-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"We live close to the river path, so I was always on the river. Yeah, we didn't use our cars much. My wife is a bike commuter, so she pretty much stayed on her bike commute.	64-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"The lack of commuting to work [allowed me to] dedicate that [time] towards my running, walking, or biking recreationally. It's like I had suddenly had an extra hour in the day to just dedicate towards that and that's something that I still do, even since I came back to the office."	35-yr old man, Eugene resident. Primary mode of transportation is biking.
Changed perceptions	"One thing [...] I perceive as negative; while riding especially during the pandemic specifically, I know we noticed a lot more garbage in the streets, more so than normal."	35-yr old woman. Eugene resident. Primary mode of transportation is biking.
	"I pay attention more so now than I did prior to the pandemic to my carbon footprint….. a to what I buy and where I buy, especially around materials that don't decompose like plastic and I think that has to do with the change in the air quality during the	35-yr old woman. Eugene resident. Primary mode of transportation is biking.

Changed perceptions (cont.)	first few months of the pandemic when on one was driving and it was just beautiful and amazing."	
	"[I walk] mostly for errands. I often times realize that the most efficient way to do something is not necessarily the most enjoyable or the most worth doing. I can always get their faster by car but it's more fun to take the time to walk and get out of the house."	32-yr old man, Eugene resident. Primary mode of transportation is driving.
	"Something that has changed in that we do a ton of errands in one place. Especially because of gas prices right now."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"I definitely still walk a lot more. I think the distances in my head on where things are a lot more clear especially in a five mile radius around my house."	32-yr old man, Eugene resident. Primary mode of transportation is driving.
	"I really appreciated the river path during the pandemic. Right when the pandemic hit, we had an amazing spring and so appreciated the greenway."	42-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"Everyone seems to be in their own little yards and I knew all my neighbors [where I moved from] and I don't find that in this particular neighborhood. Downtown, people are out walking a lot, and a lot of cyclists, it feels more like a neighborhood."	62-yr old woman, Eugene resident. Primary mode of transportation is biking.

Maintaining behavior change		
Theme	**Quote**	**Participant Description**
Maintaining recreational walking	"Even though I am back to work now, I still make a concerted effort to get out to walk with the people that I used to go to lunch with and used to get happy hour drinks with."	38-yr old woman, Springfield resident. Primary mode of transportation is driving.
	"I had been going to a senior exercise class which was cancelled and so a group of us started walking three times a week and it continues to today, so we kept it going."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"I walked a lot more and […] we went down to one vehicle because we weren't using it and it seemed ridiculous to be pay all those fees."	71-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"We (work colleagues) ride as a form of commuting and then when we weren't doing that we decided to do weekly rides together, have a beverage, ride usually along the river and that's something we still do."	35-yr old woman. Eugene resident. Primary mode of transportation is biking.

	"I definitely started walking a lot more because there was more time to take things slowly."	32-yr old man, Eugene resident. Primary mode of transportation is driving.
Maintaining working from home	"I loved working from home and when my job was back in person, I ended up resigning and took a work from home position specifically to continue."	51-yr old woman, Eugene resident, Multi-modal forms of transportation, primarily walks.
	"I have switched and have a new job and it's completely online and I don't have a commute anymore. I wasn't sure that I would like it but after the pandemic, I thought I'd try it out. I like it."	47-yr old woman, Eugene resident. Multi-modal forms of transportation.
	"The limiting factors are do I have the time and what time of day.	47-yr old woman, Eugene resident. Multi-modal forms of transportation.
Challenges to maintaining behavior changes	"I rode my bike to work most of the time and [when I retired] I stopped riding it and haven't started again. I rode my bike for a purpose and I don't ride my bike to stores because I don't want it stolen."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"One thing I noticed right at the beginning of the pandemic was actually that they put portable toilets all over the city. Especially at bus stops and stations and I noticed a significant decrease in human waste in the streets. I saw a huge benefit in those being available to people either using transit or walking on the street, that includes all people, unhoused or others."	35-yr old man, Eugene resident. Primary mode of transportation is biking.
	"I noticed a significant increase in the number of people living on the streets with all of their belongings. It didn't impact my comfort or willingness to walk but it did change my experience of moving through my community."	42-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"Kids get tired and we'll bike somewhere and they don't want to ride back. We can't bring the trailer onto the bus so we end up driving."	40-yr old woman, outside of Eugene. Multi-modal forms of transportation.
	"I met with a lot of people outside [during the pandemic] and I noticed the lack of benches. We brought our own chairs."	52-yr old woman, Eugene resident. Primary mode of transportation is biking.

	"We actually went down to one vehicle as a result because we just weren't using it (the second car). It just seemed ridiculous to pay all those fees."	71-yr old woman, Eugene resident. Primary mode of transportation is driving.

Barriers to & Perceptions of Biking & Walking		
Theme	**Quote**	**Participant Description**
Affordances	"I just think it's great that the city put in the dedicated bike lane on 13th. [Some of] the lights don't make sense but I wish they would do more of that. The more people in cars see people on bikes whizzing by, I think that would encourage people to bike even more."	66-yr old man, Eugene resident. Primary mode of transportation is biking.
	"During covid I got an electric bike and I've been riding like crazy. I can ride up that hill now. It's great!"	66-yr old man, Eugene resident. Primary mode of transportation is biking.
Affordances (cont.)	"I live just far enough away from work, about six miles each way, and I do need to give my leg a break every once in a while. Walking wouldn't be an option, it's too far and too dark. Biking is really the only option and driving alone."	41-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"I would like to have the bus as an option especially when it's really raining."	62-yr old woman, Eugene resident. Primary mode of transportation is biking.
	"The kids are like "oh we have sidewalks!" and getting to a place where the kids can walk an entire block without walking on a street is really fun – from a safety standpoint."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"So our main mode of transportation right now is the LTD bus. Or if we have to go somewhere on the bus where it doesn't go, we just take a taxi. We did have a car but it just got to be so insanely expensive, we gave that up"	48-yr old woman, Eugene resident. Primary mode of transportation is bus.
	"I can go anywhere by foot, nothing is more than 2 blocks away in any direction. That's my favorite thing."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
Barriers: weather, distance	"One of the things that stops my walking and being outside is the really hot weather and the smoke and that's been really frustrating."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"The weather and smoke, you aren't going to go walk or bike."	32-yr old man, Eugene resident. Primary mode

		of transportation is driving.
Perceptions: Feeling unsafe around others	"In the past couple of years, I've had a few incidents [walking]. I also carry pepper spray which I never used to do."	32-yr old man, Eugene resident. Primary mode of transportation is driving.
	"That's something I think about all the time with kids, cars don't see pedestrians or bicyclists."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"I don't feel as secure along as I used to. On a bike it's different, you have a way of getting away. I do walk alone but now I carry pepper spray which I never used to do. "	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"Part of the fear of being around people and safety issues was definitely driven by understanding that a significant number of our 'neighbors' might be willing to physically hurt us because of a t-shirt we're wearing or a bumper sticker on our vehicle or bike. I think in many cases the presence or absence of a mask represented that deeper level of divisiveness."	65-yr old woman, Eugene resident. Primary mode of transportation is driving.
Perceptions	"I've really noticed a lot of glass in the bike lanes in the last two years."	41-yr old woman, Eugene resident. Primary mode of transportation is biking.
Barriers: E-bikes & speed	"The bike path has seriously changed, I've lived here for 32 years. It doesn't work as a multi-use path anymore and it's not pleasurable for me. It's gotten really crazy with people not following any of the etiquette and the weekends are awful. I do go with birding groups and we're constantly almost being run over by bikes."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"Walking on the bike path isn't as enjoyable with the E-bikes. They go too fast and walking on the river path isn't as enjoyable. *[three additional participants agreed]"*	64-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"I won't ride a bike anymore, I'm very intimidated. We don't have sidewalks around us and we are about a half mile from the bike path and I get really intimidated by the cars now, I never used to."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
Barriers: Theft,	"A friend's husband had their E-bike stolen in the middle of the day at Target and they have cameras and it hasn't been found."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.

	"I have very few barriers to riding my bike but similar to [others], I worry about my bike trailer being stolen."	42-yr old woman, Eugene resident. Primary mode of transportation is biking.

Barriers to & Perceptions of Public Transportation		
Theme	**Quote**	**Participant Description**
Positive perceptions of public transit	"The bus system we have here is amazing. They ride everyday, they are on time."	51-yr old woman, Eugene resident, Multi-modal forms of transportation, primarily walks.
	"I absolutely agree that LTD is an amazing bus system."	47-yr old woman, Eugene resident. Multi-modal forms of transportation.
	"I've lived in a lot of university towns and this is crazy bad. Except for the EmX, I'll give you that, it's spot on."	35-yr old man, Eugene resident. Primary mode of transportation is biking.
	"My husband takes [the bus] to work, it takes him over an hour and he actually takes three buses on his route but we only have one car and I think it saves us a lot of money on gas."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"I would take a bus more often. When I moved here the 52 bus came down my road and it doesn't anymore. I would have to go to River Rd and park in the parking lot and then take the bus that takes 45 minutes to get anywhere."	65-yr old woman, Eugene resident. Primary mode of transportation is driving.
Perceptions of local bus system	"For the downtown Eugene station and the downtown Springfield station, the bathrooms close early and if you are waiting for a bus for 45 minutes... it's sometimes these other things that help make sustainable transportation easy."	40-yr old woman, outside of Eugene, Multi-modal forms of transportation.
	"They had one route, and they changed it and then changed it again, so I'm kind of confused as to where the bus goes. And they stop after 6:00. If I get to the point that I can't drive then I'm concerned because now they are talking about stopping the bus to our neighborhood completely. It's just a mess."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"It would probably take me 45 minutes to 1 hour to walk to work but the bus... I'd have to take it downtown and then transfer and it takes longer. Somedays it's been snowy and I've had to walk to work instead of biking."	52-yr old woman, Eugene resident. Primary mode of transportation is biking.

	"If we had more developed corridors, kind of like a "moving sidewalks" like the EmX, it would significantly reduce car use."	47-yr old woman, Eugene resident. Multi-modal forms of transportation.
	"The big part has been the efficiency of the bus and it being able to get to UO in less than an hour. It takes longer than walking to UO."	64-yr old woman, Eugene resident. Primary mode of transportation is driving.
	"I bike to the office year-round and on really rainy days I walk because it takes me almost a half hour or less time to walk to work that it does to catch the bus."	35-yr old man, Eugene resident. Primary mode of transportation is biking.
Perception of riding the bus	"We used to always take the train and we still haven't ventured to take the train yet. We still are just not comfortable in that type of environment."	47-yr old woman, Eugene resident. Multi-modal forms of transportation.
	"I have had some strange interactions on the bus, nothing too scary but at the same time it's just people I would prefer not to have to give off the message by wearing my headphones that I'm minding my own business."	38-yr old woman, Springfield resident. Primary mode of transportation is driving.
	"Buses? I have a very negative connotation of buses. I have a mental block about buses and I think more people are getting that same block. They never are where you want them, never go where you want them to go and I hate to say this but cheap transportation and a lot of crazy people ride the bus."	69-yr old woman, Eugene resident. Primary mode of transportation is driving.