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Riding transit to parks in Utah: Motivations, constraints, negotiations, and policy recommendations

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ABSTRACT

In this paper, we studied the motivations, constraints, negotiations, and policy changes for riding transit to parks in Utah's Wasatch Front region, exploring how these factors vary between disadvantaged and non-disadvantaged individuals. This is one of the first studies to explore transit-to-parks experiences in large urban regions. We conducted interviews with 25 diverse transit riders. Motivations for riding transit to parks included environmental concerns and the convenience of avoiding parking and traffic. Constraints involved excessive travel time due to limited service, transit frequency and reliability issues, and last-mile connection issues. The main negotiation strategy was to plan trips to limit travel time. People in low-income neighborhoods had limited transit-to-parks services, and available services were adequate for fit and non-disabled people. Policy changes that would help participants address constraints included new or modified routes, improved last-mile connections, information and marketing campaigns, and better service for low-income communities and people with disabilities.

1. Introduction

Time spent in nature, and especially the great outdoors, has significant benefits for physical and mental health (Li et al., 2023; Markevych et al., 2017). Recognizing these benefits, millions of visitors travel to outdoor recreation destinations every year, boosting the economy of communities surrounding parks and protected areas (National Park Service, 2020; Walls et al., 2020). Beyond tourism, small towns and urban regions located near outdoor recreation destinations in the Western U.S. have seen a significant influx of new residents who could work remotely during the COVID-19 pandemic (Sodja, 2021).

As their popularity grows, parks and protected areas have experienced significant capacity issues, especially related to the serious environmental impacts of the overuse of automobiles to access such open spaces (Monz et al., 2016; Newton et al., 2020). To address these issues, parks and protected area managers have partnered with transportation agencies to create public transit options (e.g., buses, shuttles) to enable visitors to access and move within parks (Manning et al., 2014; National Park Service, 2020). Here, we use the term "transit to parks" to describe transit service (e.g., buses, shuttles, trains) to active or passive outdoor recreation sites (Park et al., 2021b). These sites can include urban parks, trails for hiking and cycling, winter recreation settings like ski resorts, and blue

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spaces such as lakes and rivers.

Transit-to-parks services have been implemented in Global North and South countries, such as the U.S., Canada, Germany, Australia, England, Iceland, Norway, Austria, and Kenya (Gühnemann et al., 2021; Hassan et al., 2020; Herford, 1989; Holding & Kreutner, 1998; Høyem, 2020; Kassily, 2008; Lumsdon et al., 2006; Manning et al., 2014; Thórhallsdóttir et al., 2021; Wang et al., 2024). Transit-to-parks services mainly aim to relieve traffic congestion and limit the environmental impacts of outdoor recreation in environmentally sensitive areas, as high traffic volumes in these areas have been associated with negative impacts on wildlife, higher air pollution and noise, lower soil quality, and soil loss (Holding & Kreutner, 1998; Manning et al., 2014; Martín-Cejas, 2015; Monz et al., 2016).

Beyond environmental considerations, transit-to-parks initiatives also have equity motivations and need to be seen within the broader contexts of inequities in access to parks, other opportunities, and mobility justice. People with lower socioeconomic status and people of color have worse access to parks via transit than less disadvantaged groups (Chang et al., 2019; Park et al., 2021b), echoing similar disparities in walking access to neighborhood parks (Rigolon, 2016). Given these issues, some non-governmental organizations in the U.S. have advocated for equity-oriented transit-to-parks initiatives that seek to connect disadvantaged communities to nature (Swanteson-Franz et al., 2020). Yet mobility justice research shows that individuals in disadvantaged populations face specific barriers to riding transit, and their transit experiences can be negative (Lubitow et al., 2020; Park & Chowdhury, 2018; Shaker et al., 2022).

The growing international literature about transit to parks covered the rates and determinants of public transit use (Collum & Daigle, 2015; Hassan et al., 2020; Lumsdon et al., 2006; Nelson et al., 2008; Pettebone et al., 2011; Wilson et al., 2018), attitudes toward transit services in parks and protected areas (Ferguson et al., 2022; Holding & Kreutner, 1998; Kassily, 2008; Mace et al., 2013), experiences of riding transit (Taff et al., 2013), and motivations to ride transit (Høyem, 2020; Lumsdon et al., 2006). Yet, this literature primarily focuses on tourists' experiences (Holding & Kreutner, 1998; Manning et al., 2014; Monz et al., 2016), and limited work has explored similar experiences for urban residents accessing outdoor recreation locations nearby (Kassily, 2008; Nelson et al., 2008). Further, studies on transit experiences to reach open spaces have mostly been quantitative and have generally not considered differences between disadvantaged individuals and non-disadvantaged ones.

Given these gaps, the purpose of this study is to explore motivations, constraints, negotiations, and policy changes that can help address constraints for people to ride transit to parks in Utah's Wasatch Front region, and how such factors differed for individuals experiencing disadvantage (e.g., low-income people, women, people with disabilities). We conducted semi-structured interviews with 25 transit riders living in the Wasatch Front region (comprising Salt Lake City), using purposive and snowball sampling to recruit participants. We used a framework including motivations, constraints, and negotiations regarding leisure activities (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993) to study these different factors related to the choice of taking transit to access outdoor recreation. Here, motivations describe what motivates individuals' decision to use transit to go to parks, constraints depict which factors limit such decisions, and negotiations describe how individuals overcome such constraints and use transit to go to parks (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993). In our study, in addition to focusing on negotiations, we also examine what policy changes could help individuals address their constraints to riding transit to parks, which can specifically help policymakers plan and implement transit-to-parks initiatives. Here, we use "policy changes" as a comprehensive term, including service changes (e.g., routes, frequency, costs), improvements to physical infrastructure (e.g., vehicles, last-mile connections), implementation of information and marketing campaigns, and relevant regulations.

Based on the motivations-constraints-negotiation framework, we developed four research questions (see Table 1), containing some inquiries about disadvantaged individuals, as we recognize that disadvantaged individuals might experience different motivations, constraints, and negotiations (Lubitow et al., 2020; Park & Chowdhury, 2018; Shaker et al., 2022). For example, we examined which additional constraints disadvantaged individuals face to riding transit to parks.

By answering these research questions, this paper makes several contributions to the literature on transit and outdoor recreation. A key contribution of the paper is to focus on residents who live in a large urban region (rather than tourists in a resort town). Focusing on urban residents (including disadvantaged individuals) allowed us to cover more frequent nature experiences than studies on tourism, and it is important because the benefits of nature for physical health might be stronger in metro areas than in rural areas (Browning et al., 2022). Also, the motivations-constraints-negotiations framework enabled us to link our findings (see section 6.1), and we directly asked participants which policy changes could help address constraints, whereas much previous research only inferred those changes based on the constraints analyzed (see section 6.3). Further, we integrated mobility justice issues in research about transit to outdoor recreation, as previous research on transit to parks had rarely considered the specific motivations, constraints, and negotiations of disadvantaged individuals. We do so by using qualitative methods, relying on open-ended questions that allowed participants to describe their experiences in their own words, whereas most previous research on transit to parks used quantitative surveys.

Table 1
Research questions.

Groups	Question
Motivations	1. What are the motivations for people to ride transit to parks, especially for disadvantaged individuals?
Constraints	2. How do people, especially disadvantaged individuals, describe their constraints to riding transit-to-parks services?
Negotiations	3. How do people, especially disadvantaged individuals, describe their negotiations to ride transit-to-parks services?
Policy changes that can help address constraints	4. What policy changes would remove or limit constraints to riding transit to parks, especially for disadvantaged individuals?

2. The leisure constraints framework

As noted earlier, we used the leisure constraints framework that includes motivations, constraints, and negotiations (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993) to capture the different factors influencing whether people choose to ride transit when accessing outdoor recreation settings. We consider recreation in outdoor settings as leisure (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993). In this context, we also consider the choice of taking transit to parks as part of one's leisure behavior, as the act of taking transit to reach a recreation site is part of one's leisure time.

In this framework, motivations describe the various factors that contribute to an individual's decision to participate in a leisure activity (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993) – in this study, we focus on motivations to take transit to participate in such an activity. Constraints include the intrapersonal, interpersonal, and structural factors that limit an individual's decision to engage in leisure. Intrapersonal constraints are individual-level factors (e.g., anxiety), interpersonal constraints relate to groups and society (e.g., lack of a travel companion), and structural constraints describe external factors such as weather, costs, and availability of leisure settings. Finally, negotiations involve the strategies that individuals use to reduce the negative effects of constraints to participate in and enjoy leisure activities. In this paper, we also focus on the policy changes (e.g., transit routes and frequency, bike/pedestrian infrastructure) that can help riders address the constraints they face when accessing parks and open spaces via transit. We use this framework to review the relevant literature and guide our study (see research questions in Table 1).

3. Literature: Transit, outdoor recreation, and mobility justice

Our study builds on the growing streams of literature describing transit access to outdoor recreation and mobility justice on the transit experiences of disadvantaged groups, based on which we present a conceptual framework.

3.1. Transit access to outdoor recreation

Researchers in outdoor recreation, transportation, and other disciplines have increasingly studied the experiences of visitors riding transit to access parks and protected areas in multiple countries (Lumsdon et al., 2006; Manning et al., 2014; Monz et al., 2016). The main motivations for riding transit to reach outdoor recreation destinations are related to avoiding the inconveniences of parking and traffic congestion, and environmental reasons are a secondary motivator (Høyem, 2020; Lumsdon et al., 2006; Nelson et al., 2008; Pettebone et al., 2011). Additionally, riding transit to parks is linked to lower stress related to parking and driving on congested roads (Taff et al., 2013; Wilson et al., 2018).

The literature about constraints to riding transit to parks is limited, but studies show that parks and protected area managers have had mixed success in shifting transportation modes from private vehicles to public transit (Collum & Daigle, 2015; Hassan et al., 2020; Nelson et al., 2008; Pettebone et al., 2011). One barrier that such managers have sought to address is limited information about transit, and research showed that the promotion of transit options seemed important in shifting modes, especially real-time information (Collum & Daigle, 2015; Lumsdon et al., 2006; Nelson et al., 2008; Wilson et al., 2018). Additionally, some research suggests that additional travel time needed to navigate national parks via transit limits the use of transit among park visitors (Pettebone et al., 2011). Finally, to our knowledge, studies in this area have not examined negotiation strategies that recreationists use to overcome barriers to riding transit to parks. Some studies explore negotiation strategies to participate in outdoor recreation trips, regardless of travel modes, and find that travellers negotiate their constraints through careful planning, searching for information, staying away from crowds, and modifying leisure goals (Hubbard & Mannell, 2001; Humagain & Singleton, 2021; Jackson et al., 1993).

This stream of literature has some gaps that this study begins to address. Few papers have investigated transit-to-parks experiences for city residents accessing parks and protected areas nearby, with most work focusing on tourists' experiences (Kassilly, 2008; Nelson et al., 2008). Although research has shown that older adults are less likely to shift from private vehicles to public transit (Pettebone et al., 2011), to our knowledge, no study on transit to parks has focused on the experiences of disadvantaged groups, especially low-income racial/ethnic minority people, who face inequities in local park provision and transit access to larger parks (Park et al., 2021b; Rigolon, 2016).

3.2. Mobility justice

A stream of literature has focused on the experiences of riding transit among disadvantaged groups (Lubitow et al., 2020; Park & Chowdhury, 2018; Shaker et al., 2022). This body of literature provides important context for our study because it highlights specific constraints and motivations to ride transit among disadvantaged groups. Here, we define disadvantaged groups as those who tend to be discriminated against and at a higher risk of negative life outcomes, including but not limited to low-income people, racial/ethnic minority people, women, LGBTQ+ people, older adults, and people with disabilities (Lubitow et al., 2017b). This "mobility justice" literature generally examines how sociodemographic identities (e.g., race/ethnicity, gender) affect the use and experiences of transit systems (Lubitow et al., 2020). Studies shed light on the constraints that women, transgender people, low-income people of color, people with disabilities, and religious minorities face when riding transit (Lubitow et al., 2017a,b; Lubitow et al., 2020; Park & Chowdhury, 2018; Shaker et al., 2022). The constraints that these populations face are problematic, as many of these groups are considered *transit-dependent* due to physical difficulties or cost (Lubitow et al., 2017b).

The constraints to riding transit faced by various disadvantaged groups generally present as physical barriers or negative experiences discouraging riders. Constraints include physical barriers around transit stops, overcrowding, and unclear information (e.g.,

people with disabilities), affordability (e.g., low-income people), harassment (e.g., women, transgender people, religious minorities, people with disabilities), discrimination (e.g., women, people of color, religious minorities), and even violence (e.g., women, people of color, transgender people) (García et al., 2022; Lubitow et al., 2020; Lubitow et al., 2017a,b; Park & Chowdhury, 2018; Shaker et al., 2022). Studies show that disadvantaged groups negotiate these constraints by planning trips to avoid places and times of the day where they experienced harassment, changing the way they dress, ignoring riders who harass them, skipping transit trips, and fighting against aggressors (García et al., 2022; Lubitow et al., 2017a; Lubitow et al., 2020; Park & Chowdhury, 2018; Shaker et al., 2022). Participants in some studies further suggested the need for better training of transit operators and more supportive built environments for people with disabilities (Lubitow et al., 2017a; Park & Chowdhury, 2018).

These studies made important scholarly contributions to the transit experiences of disadvantaged groups, but few have specifically focused on trips to leisure spaces (Pyer & Tucker, 2017), and none have centered on trips to outdoor natural environments.

4. Methods and data

We conducted a qualitative study of transit-to-parks experiences in the Wasatch Front, a region located in northern Utah. We draw from semi-structured interviews with a diverse sample of 25 transit riders with some experience of riding transit to parks and open spaces in the region. We used a qualitative research design, as opposed to a quantitative survey, to ask in-depth, open-ended questions about transit riders' motivations, constraints, negotiations, and policy changes that would help address constraints to ride transit to parks. Also, research on people's experiences of riding transit to parks is very limited, and therefore a qualitative inductive approach seemed more effective to answer our research questions.

4.1. Study site

The Wasatch Front is a region located in the state of Utah, USA, housing approximately 2.6 million people, corresponding to about 80 % of the state's population. Wasatch Front residents have significant access to outdoor recreation options year-round. Cities like Salt Lake City, Ogden, and Provo are all located at the foothills of the Wasatch Mountains, which offer opportunities for hiking, skiing and

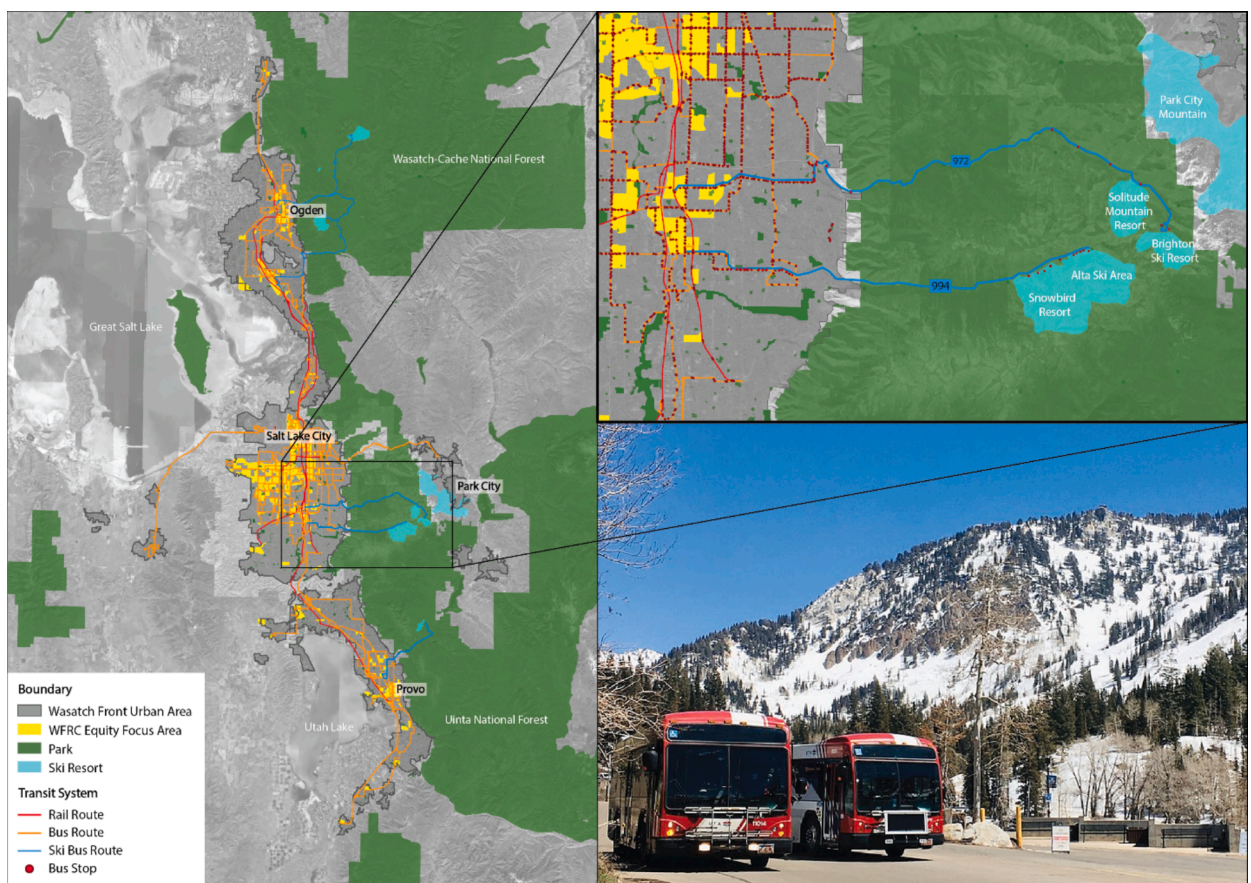


Fig. 1. Study site: the Wasatch Front region, Utah. (Notes: WFRC (Wasatch Front Regional Council) Equity Focus Areas denote neighborhoods with more than 20% low-income residents and more than 40% racial/ethnic minority residents. Photo credit: Utah Transit on Wikimedia Commons).

snowboarding, road cycling and mountain biking, and many other sports (Park et al., 2021b). Yet many roads and outdoor recreation settings in the Wasatch Mountains face significant overcrowding and parking issues during summers and winters (AECOM, 2023; Smith et al., 2023). Road congestion and parking issues are particularly severe in the winters, as recreationists seek to access ski resorts to enjoy what Utah has marketed as the “Greatest Snow on Earth” (AECOM, 2023). Also, the Wasatch Front is a very car-dependent region, as only approximately 2 % of households did not own a car in 2022, and nearly 80 % of workers commuted to work by car that year (while 15 % worked from home) (U.S. Census Bureau, 2024).

Parts of the Wasatch Front region, such as Salt Lake County, include cities and neighborhoods with very different physical and economic constraints to accessing outdoor recreation (Park et al., 2021b). In Salt Lake County, the wealthier East side has easy access to the Wasatch Mountains (see Fig. 1). The West side, which houses larger shares of low-income and racial/ethnic minority people, is located further from the Wasatch Mountains and has fewer recreation opportunities nearby.

Transit options to access outdoor recreation in the Wasatch Front region are limited. The Utah Transit Authority (UTA), the main transit agency in the region, provides seasonal ski buses to several resorts and backcountry trailheads (Utah Transit Authority, 2022b). This service started in 1976, currently operates between November and early April at 30-minute headways, and fares are higher than regular UTA fares (\$5 vs. \$2.50). In the 2023–2024 winter season, ski bus services recorded nearly 390,000 boardings, for an average of 2,805 boardings per day (Utah Transit Authority, 2024). One ski bus route connects with the region’s light rail (TRAX), but at least in Salt Lake County, most stops are located on the East side, which tends to be wealthy and predominantly white.

A few other UTA routes are not marketed as transit-to-parks initiatives but provide good walking (<800 m) or biking (<3000 m) access to trails, including the eastern terminus of the TRAX Red Line and the southern terminus of the TRAX Blue Line. Starting in 2021, a free transit-to-trails on-demand shuttle has operated in Park City for both summer and winter recreation, run through a partnership between the city and a nonprofit (Utah Open Lands, 2021). Beyond these limited services, most of the trails and mountain open spaces located to the east (Wasatch Mountains) and west (Oquirrh Mountains) of cities in the Wasatch Front region are not accessible via transit (see Fig. 1). Additionally, UTA’s Free Fare February implemented in 2022 suggests that demand for transit options for leisure activities on weekends seems high in the region (Utah Transit Authority, 2022a).

Overall, the Wasatch Front region makes a compelling study site for our research given its proximate access to outdoor recreation, its demographic variations across the region, its limited availability of transit-to-parks services and car dependency (similar to many other U.S. regions), and congestion issues in outdoor recreation settings.

4.2. Data collection

We conducted interviews with 25 residents living in the Wasatch Front region between February and May 2022. Eligibility criteria included the following: being at least 18 years old, living in the region, being transit riders (currently or in the past), and having experience or interest in taking transit to parks. Whereas talking to 25 transit riders might not reflect the variety of experiences of riders in UTA’s service area (1.8 million people), our sample size is more than sufficient to achieve theoretical saturation (Hennink & Kaiser, 2022). In other words, we reached a point in the data collection process when subsequent interviews stopped revealing new content about motivations, constraints, negotiations, and policy changes to overcome constraints to riding transit to parks.

4.2.1. Sampling and recruitment

We combined purposive and snowball sampling to recruit participants. The purposive strategy involved seeking to diversify our sample based on gender, race/ethnicity, physical abilities, and city/neighborhood of residence. The snowball sample involved asking interviewees to refer us to other potential participants.

To recruit interviewees, we asked nonprofit partners to share this research opportunity among their networks. We also advertised this research opportunity via the social media platform named X (formerly known as Twitter). To reach more diverse individuals, we attended meetings of community-based organizations and reached out to volunteer groups focusing on outdoor recreation for disadvantaged groups. All participants received a \$25 online gift card as a recognition of their time.

These recruitment efforts resulted in significant diversity in the sample. Specifically, 13 (52 %) of the 25 interviewees identified as women and 12 (48 %) as men. Also, 15 (60 %) identified as white, whereas 10 (40 %) identified as part of other racial/ethnic groups, including Latinx, Asian American, and African American. The percentage of people of color in our sample (40 %) is larger than that percentage in Salt Lake County (30 %). Also, 19 (76 %) participants lived in neighborhoods with a median household income below the median of their county. Most of our participants lived in Salt Lake County. In terms of age, 20 (80 %) of our participants were in their 20 s or 30 s, with the remainder being in their 40 s and 60 s. Finally, five (20 %) participants did not own a car.

4.2.2. Interview procedures

We used semi-structured interviews including several main questions and follow-up questions. The main topics of our questions included demographics of the participant, general transit use, use of transit to reach parks, motivations to take transit to parks, and potential service change that would facilitate taking transit to parks. These groups of questions covered motivations, constraints and negotiations (current experiences of transit to parks), and policy changes that can help address constraints to taking transit to parks. Specifically, questions about motivations, constraints, and negotiations focused on specific transit-to-parks trips that participants experienced, whereas questions on potential policy changes asked participants to think hypothetically about potential future situations where many constraints are removed. The interview questions we used can be found in the [Supplementary Materials](#).

We conducted all interviews via Zoom or phone (due to COVID-19-related guidance), and these conversations lasted between 45 and 60 min. Two researchers conducted all 25 interviews. We audio-recorded each interview and used [otter.ai](#), an artificial intelligence

program, to transcribe the recording. To enhance the credibility of our results, we conducted member checking either after specific questions or at the end of interviews (Korstjens & Moser, 2018): This involved summarizing what we heard from the interviewees to double-check that we understood their answers accurately. Further, asking follow-up probing questions also enabled us to enhance the credibility of our findings, as these in-depth questions provided a richer description of participants' experiences (Korstjens & Moser, 2018).

4.3. Data analysis

We analyzed the interview transcripts using constant comparative analysis, a technique that results in the formulation of themes to describe complex phenomena (Leech & Onwuegbuzie, 2007). We used a coding process that involved labeling chunks of text as representing a particular construct (e.g., constraints related to gender). This analytical approach enabled us to use deductive codes (i.e., constructs from the conceptual framework and other relevant literature) and inductive codes (i.e., constructs emerging from the data). As we coded the transcript, we focused on topics that could help us answer our four research questions. Two researchers conducted the coding process recursively so that the codes assigned by one researcher were read and vetted by another researcher, which increases the dependability of the results (Korstjens & Moser, 2018). Given our research design, the findings regarding specific motivations, constraints, negotiations, and policy changes for disadvantaged individuals derive from a qualitative evaluation of responses depending on participants' demographics. We used Taguette, an open-access qualitative data analysis software, for the coding process (Rampin et al., 2021).

5. Results

Interviewees showed interest in transit-to-parks opportunities in the Wasatch Front region. Participants mentioned a few common destination types including foothill trails above Salt Lake City, the Cottonwood Canyons, regional trails such as the Jordan River Parkway Trail, Park City and its mountains, and large city parks like Liberty Park (see Fig. 1). The most common activities related to these trips included hiking, mountain biking, road biking, skiing/snowboarding, and picnicking. Thus, most of our findings pertain to accessing the great outdoors at the edge of or outside of cities rather than large regional parks within cities.

All participants have experience using transit to reach parks, with most using it as their main mode of travel to reach outdoor recreation destinations when considering people who owned and did not own a car. Among participants who owned a car, people tended to use transit and cars (sometimes in combination, other times separately) to reach recreational destinations, depending on whether transit was available and convenient. Although we did not ask systematic questions about mode choice, about half of car owner participants reported using transit as their main mode to travel to open spaces, whereas the other half seemed to use transit and cars about equally. Two interviewees specifically stated that they still owned a car mostly to access the many recreation destinations in the region that are inaccessible via transit. One noted, "The only reason I have my car is to access the outdoors here, otherwise, I would love to sell it".

Participants who did not own a car almost exclusively used transit to access the outdoors and, on rare occasions, got rides from friends or family who owned a vehicle. One explained, "When I do hike, I sometimes go with friends, and at least one person will have a car." However, accessing many outdoor recreation destinations without a personal vehicle was difficult, as noted by another car-free



Fig. 2. Word cloud with the most frequently used words in interviews.

participant, “I feel a little bit restricted because many of these recreational opportunities aren’t really easily accessible without a car.” In some cases, car-free participants used bicycles in combination with transit to reach some outdoor destinations (e.g., hiking trails in Salt Lake City’s foothills). Overall, most participants expressed enthusiasm for riding transit to parks and sought to use transit as often as possible, but several constraints limited their ability to use that mode for some outdoor recreation trips (see [section 5.2](#)).

[Fig. 2](#) shows a word cloud generated from the interview transcripts, which provides an overall picture of the words used by participants about riding transit to parks in the Wasatch Front region.

In the next four sub-sections, we present the findings for each research question. Throughout these sub-sections, we also discuss connections among the findings for different research questions. Specifically, both negotiations and policy changes are framed in relation to the constraints they seek to address (see [Tables 3 and 4](#) for the constraints and [Tables 5 and 6](#) for negotiations and policy changes). For example, we found that most negotiation strategies and suggested policy changes are aimed at addressing the excessive time it takes to travel to parks via transit. Additional interview quotes are included in the [Supplementary Materials](#).

5.1. Motivations to ride transit to parks (Research question 1)

[Table 2](#) summarizes the main motivations for riding transit to parks among interviewees. Specifically, participants shared two main reasons: environmental concerns associated with driving and concerns related to traffic congestion and parking.

Environmental concerns. Environmental concerns related to driving were among the most commonly shared reasons that encouraged participants to take transit to parks – regardless of how frequently they took transit to parks vs. drove. Concerns about the environmental impacts of driving were particularly strong when participants talked about destinations in ecologically sensitive areas. For example, an interviewee who owns a car stated, “I don’t want to drive to go hiking. I feel really bad about driving to go be out in nature; and using all that fuel and also the chaos that is the canyons”. Other participants stated that they took transit to help improve air quality in the Wasatch Front region or to limit the impact of their travel on climate change. One noted, “And then living in this valley, where [...] in the wintertime, it’s horribly smoggy. I feel a sense of responsibility [to take transit when recreating]”.

Traffic congestion and parking. Several participants mentioned traffic congestion and parking issues. For places where transit-to-parks services were available and parking spaces were scarce, interviewees noted that riding transit to parks was a convenient alternative because they did not have to worry about finding parking and could relax while on the bus. For example, one interviewee noted, “not having to park and not dealing with the stress of driving is really great.” Another participant stated the following regarding taking the ski bus to a Cottonwood Canyon resort, “I’m not worrying about parking. I’m not worrying about having to haul all of my gear from the car. It’s actually quite nice to get on a bus after you’re done skiing, because ... I’m tired.” This motivation was mentioned about equally by participants who take transit as their main mode to reach open spaces and those who also drive to such destinations, signaling that excessive congestion and parking issues might encourage some drivers to shift to transit in some circumstances.

Cheaper cost. Participants noted that taking transit to parks can be cheaper than driving. Some mentioned that some resorts and trailheads charge for parking, whereas others noted the high cost per mile of operating and maintaining a car. For example, one participant noted, “\$10 to go to Park City and back [by bus] is fine, because that’s exactly what I would pay for gas. And no wear and tear on my car.” And another commented, “If you drive up the Cottonwood Canyons to go to a hike and come back, you don’t think of that as being \$25 because of how we pay for the costs of driving.” Participants who did not own a car did not mention this motivation for riding transit to parks, but they mentioned that saving money motivated them to not own a car. One noted, “I don’t have a car. ... So I’d rather ride my bike and take transit everywhere. And I have no issue with it, because it’s very cheap. And I save a lot of money”.

Safety. Participants perceived taking transit to parks as a safer option than driving, especially in snowy conditions. One noted, “When I take the bus, I don’t really worry about all the curves and rocks in the road. Let somebody else worry about that”.

Social experience. For some participants, riding transit to parks provides a positive social experience. They can meet like-minded individuals and learn about interesting outdoor recreation settings. One participant noted, “There is something nice about being on a bus with other people going skiing. Everybody can talk to each other about going skiing and what runs they’re going to hit and what lifts are open and the conditions. And when you’re driving in a car alone, you definitely don’t get that”.

Differences in motivations and values based on demographics. We did not note demographic variations in reasons to ride transit to parks among our participants, and specifically, disadvantaged individuals did not provide different motivations than those of other interviewees. Yet one participant noted that environmental values might particularly resonate with younger people, stating, “Millennials and younger without kids absolutely would take this [transit-to-parks] service. They want to find more ethical and more honestly fun and safer ways to get outdoors”.

Table 2
Motivations to ride transit to parks.

Motivation	Description
Environmental concerns	Riding transit is an environmentally friendly way to access ecologically sensitive areas such as parks and protected areas
Traffic congestion and parking	Driving a car to a trailhead or park can be difficult due to traffic congestion and limited parking availability
Cheaper cost	Riding transit to parks is generally cheaper than driving one’s car, especially considering the cost of car ownership
Safety	Riding transit to parks is seen as safer than driving one’s car, especially in the winter
Social experience	Riding transit to parks can be a social experience where one meets like-minded individuals and learns about interesting trails and ski runs

5.2. Constraints to riding transit to parks (Research question 2)

Table 3 summarizes the main constraints shared by interviewees across all demographic groups, all of which are structural constraints.

Overall travel time. Participants noted that a major constraint to taking transit to parks is an excessive amount of time to reach a desired outdoor recreation destination via transit (up to two to three times more than driving). Participants across the board – car owners vs. non car-owners and frequent riders vs. occasional riders – mentioned this constraint. One interviewee stated, “But getting to the ski bus from downtown Salt Lake City, there’s no direct route.” Another pointed out the excessive travel time to reach ski resorts via transit, “The two-hour bus ride to get to the places where you could ski just sounds too long. [...] You have to take TRAX [light rail] to this bus stop and then take one bus. Too many transfers”.

Participants also lamented that many trailheads and city parks are located excessively far from transit stops (e.g., more than one mile; see also *Last-mile connections* below). Walking between transit stops and trailheads or parks would make the length of trips excessive. One noted, “I was looking at trying to do [Mount] Olympus, but then it was adding four miles to the trip [2 miles each way] for this”.

Limited frequency, especially during weekends when people recreate most often, also contributed to excessively long travel times. For example, one participant noted, “I think frequency is a big one. When I went to Millcreek [Canyon to hike], I took the 3 bus to the 4. But the 3 only runs once an hour, which means if you miss it, you have to wait 58 min or however much you’ve missed it by”.

Unreliable transit service also led to long waits and travel times, especially in bad weather. Some interviewees identified specific reliability issues with the ski bus service in the Cottonwood Canyons. One noted, “Parking fills up all the time, the bus is not reliable at all”.

Stops and stations. Participants identified concerns about transit stops and stations. A key issue is the lack of shelter at many transit stops, which deters some people from taking transit to parks. One participant explained, “I’m probably willing to sit out next to the bus stop for a while. But if I have to wait more than 30 min during bad weather [at a bus stop without a shelter], I’m not going to want to do it, for sure.” Interviewees explained how insufficient facilities at ski resorts might de-incentivize bus ridership. One noted, “[...] at the end of the day, everybody’s tired from skiing, and you’re all waiting to get on the bus. And basically, there’s no sheltered, heated waiting area with seats to sit on while you’re waiting.” These issues were raised by participants of different demographics and across the spectrum in terms of frequency of ridership.

Cost. The cost of some transit services deterred some participants from taking transit to parks. Interviewees were aware of higher costs (where a normal fare is \$2.50) for bus services to recreation areas and commuter rail (often used to access biking trails). Interviewees also reported that some transit-to-parks services require a different ticket, which can create barriers. For example, when asked about the ski bus, one participant noted, “If I’m looking at how I plan my route, I will definitely ask, ‘Do I need to have another ticket? Is there a way to avoid that?’” Participants living in low-income neighborhoods and higher-income neighborhoods mentioned the cost of some transit-to-parks services as a deterrent, suggesting that individuals from various socioeconomic groups might not like to pay much money for transit fares.

Gear on board. Participants shared struggles related to carrying bikes and ski gear on buses and trains, especially the first time the gear is carried on board. This constraint was particularly raised by interviewees who ride transit to parks less often, which might signal a lack of familiarity with how to carry gear on board. One noted, “Luckily, I haven’t had issues finding bike spots on buses. But ... it’s not easy to load and unload a bike onto a bus. Especially quickly and efficiently.” Other participants reported uncomfortable experiences carrying their gear on transit when trains or buses are crowded. A participant carrying their mountain bike on a train noted, “If the [TRAX] cars are full, it’s a little complicated. [...] Sometimes, it seems to stress out the other people in the car if I have a bike”.

Last-mile connections. Interviewees reported several concerns about the “last-mile” connection between transit stops and destinations. Among participants lamenting the length of those connections, one noted, “I don’t think that most people are going to be willing to do the last-mile connection to a trailhead, but I think people would take advantage of if the stop was at the trailhead.” Another participant echoed similar sentiments, “You pay for a bus, and they drop you off on the highway. You have to walk especially longer distances, especially most humiliating through and frustrating is when you have to walk through the very parking lot that you were trying to avoid”.

Participants also raised concerns about the safety of these “last-mile” connections. For pedestrians, safety issues included the lack of sidewalks and subpar intersections, whereas safety issues for cyclists comprised the lack of bike lanes and high speed limits. One participant noted the following regarding biking, “Man, this is really hard for me to do. I feel kind of sketchy biking around some of these roads, [...] if it’s unfriendly to me [a young, able-bodied cyclist], or if it’s barely possible for me, it’s not a good threshold”.

Table 3
Constraints to taking transit to parks experienced by riders of all demographics.

Constraint	Type	Description
Overall travel time (including service frequency and reliability)	Structural	The excessive time needed to access trails and parks via transit due to service coverage, frequency, and reliability issues
Cost	Structural	The cost of some transit-to-parks services is seen as too high
Stops and stations	Structural	Unsafe and/or uncomfortable transit stops and stations
Gear on board	Structural	It can be difficult to carry gear on board (e.g., skis, bikes)
Last-mile connections	Structural	Unsafe, inconvenient, and/or unclear last-mile connections

Table 4
Constraints to taking transit to parks experienced by disadvantaged riders.

Constraint	Type	Description
Geographic disparities	Structural	Taking transit to parks from disadvantaged neighborhoods is much harder and takes longer
Physical abilities	Structural and intrapersonal	Participants with limited physical abilities faced more constraints to taking transit to parks (mostly related to the last mile)
Gender and race/ethnicity	Interpersonal and intrapersonal	Women and people of color mentioned more constraints to taking transit (mostly related to fears for personal safety)

In the rest of this section, we cover the additional specific constraints to riding transit to parks experienced by disadvantaged individuals (see Table 4).

Geographic disparities. Participants noted that low-income neighborhoods, like the West side of Salt Lake County, have much worse access to parks and trails via transit than other parts of the region, including downtown Salt Lake City. This is because the West side is located relatively far from most outdoor recreation destinations and has more sporadic transit service. Here, geographic disparities reflect socioeconomic and racial/ethnic disparities, wherein the West side has lower socioeconomic status and has higher shares of people of color than the East side. Thus, transit riders living on the West side face more significant *Overall travel time* constraints than riders living on the East side. One participant living on the West side stated,

There isn't one bus that picks people up from the West side and goes all the way up to the mountains. It's kind of assuming, which is racist, that most of the recreation people live on the East side. [...] But people on this side of the city [the West side] deserve access to everything that the valley has to offer.

Physical abilities. Participants also noted that the limited physical abilities of some residents can hinder their use of transit-to-parks services because of a lack of transit stops at parks or trails. As such, people with limited physical abilities are particularly affected by *Last-mile connections* constraints. If distances between transit stops and parks can be excessive for young, non-disabled individuals, such distances and the lack of adequate pedestrian infrastructure can constitute an insurmountable barrier for people with limited mobility. One interviewee with a physical disability noted,

It would make it easier for me if [the bus] actually goes to the park and has a stop at the park. If it stops two or three blocks away, I will still have to walk there, I use a walker. A lot of sidewalks have holes or are cracked, and they would make it hard.

Participants also reported that current transit-to-parks services might not work for older adults, as the current distances between transit stops and parks and/or trails might be too long. One young and fit participant who has friends in the disability community noted, “[To reach a park via transit] that's half a mile [of walking]. For anybody a little older, a little handicapped, and has difficulty walking uphill, there's no way”.

Gender. Women reported some constraints to riding transit in general due to experiences of or fears of harassment. Women were concerned about waiting at poorly-lit bus stops, especially at night, and reported being harassed while riding transit. No specific concerns related to gender were raised regarding taking transit to parks.

Race and ethnicity. As for gender, some people of color we interviewed reported constraints related to their race and ethnicity. We heard about experiences of discrimination and harassment while riding transit among Latinx and Asian riders, including perceptions that they were being targeted for their appearance or the language they spoke. Similar to gender, we did not hear concerns related to race or ethnicity that were specific to riding transit to parks.

5.3. Negotiation strategies to ride transit to parks (Research question 3)

Interviewees shared three sets of strategies they use to negotiate constraints to riding transit to parks in the Wasatch Front region (see Table 5). Most of these negotiation strategies address the *Overall travel time* constraint, suggesting that such a constraint might be the most salient for participants. Also, through our analysis, we did not identify specific negotiation strategies that are only used by individuals experiencing disadvantage, as individuals across several demographic groups mentioned the negotiation strategies listed in Table 5. Further, as we report below, some participants use several negotiation strategies for the same transit-to-parks trip, such as *Planning trips in advance* and *Engaging in activities while waiting and riding*.

Table 5
Negotiation strategies to ride transit to parks.

Negotiation	Description	Constraint addressed
Planning trips in advance	Transit riders need to plan transit-to-parks trips in advance to make trips doable, save time, not miss critical transit connections, and find safer last-mile connections.	Overall travel time and Last-mile connections
Engaging in activities while waiting and riding	Transit riders engage in a variety of pleasant or productive activities while riding transit or waiting for it: reading, listening to podcasts, talking with others, and more.	Overall travel time
Integrating transit with personal vehicles	Transit riders drive to park-and-rides (alone or in friends' cars) and then take transit-to-parks services to their destinations; riders also rely on friends/family or ride-hailing services when they get stranded by transit.	Overall travel time

Planning trips in advance. Several interviewees explained that they needed to plan their transit-to-parks trips in advance and carefully, and such planning helped them navigate the *Overall travel time* constraint, and to some extent the *Last-mile connections* constraint. These planning activities involved examining transit routes, schedules, and last-mile connections on Google Maps, including whether such connections were doable for people with mobility limitations. For example, a participant stated, “And [when you take transit to parks] you have to plan a lot more carefully. And [the weekend is] when I have more time to go do recreational activities.” Another stated similarly, “I do very consciously try to plan the destination [of my recreation trips] with transit. [Without planning], it could often be a road that I wouldn’t want to bike on, necessarily. ... I haven’t had a lot of those experiences because I’m so intentional with planning transit in coordination with a destination”.

Also, several interviewees chose specific transit-to-parks trips based on the availability and convenience of transit they discovered while gathering information about routes. One noted, “Then I would maybe look into the details of what are the bus connections ... I end up using transit based on schedules and availability”.

Engaging in activities while waiting and riding. A few interviewees noted that they do not mind the extra time it takes to travel to parks via transit because they occupy their time by reading books or listening to podcasts. One participant noted, “But I’m never waiting for the train. I’m always reading my book, or listening to a podcast. And I’m not waiting in traffic, you know. So for me, it’s all upsides.” Similarly, another participant noted the following regarding riding the ski bus on days with long traffic delays: “That would be a time when I would be spending a lot of time in the [Cottonwood] canyons, and I could read or listen to a podcast, and actively focus on the podcast.” Some interviewees also mentioned two negotiation strategies at the same time. For example, one noted,

But I think a lot of people value their time and have a lot of difficulty planning [transit-to-parks trips] into their schedule, because they’re not something in their routine, and you just turn on your car and you go. And with transit, you have to be precise, or you have to have a book or some sort of backup when things take a little bit longer.

Other participants socialized with friends, family, or strangers to negotiate longer travel times involved with riding transit to parks. One noted, “You just hop on the bus, and you get to enjoy sitting there and talking together.” Another mentioned talking with strangers while waiting for transit on their way to recreation destinations, “I constantly interact with people when I’m waiting for the bus”.

Integrating transit with personal vehicles. When asked about how they deal with long travel times via transit to reach mountain destinations, many responded they integrate transit with cars, for example, by driving to park-and-rides. One noted, “The easiest one for me is the park and ride to the ski resorts up in Big Cottonwood or Little Cottonwood Canyons. I will drive there in the morning and try to get a spot and one of the lots.” Another participant who does not own a car reported using a similar strategy, but they had to rely on friends to drive to the park-and-ride lot: “Sometimes I will carpool to a park and ride. And we’ll take the ski bus up from there.” Thus, people who do not own a car might not be able to drive to park-and-ride lots to cut travel times unless friends or families give them a ride.

Some participants also mentioned that had to resort to calling friends, family, or ride-hailing service to pick them up, as transit had left them stranded at recreational sites due to delays or cancellations. For example, one noted, “I can’t tell you the number of times I’ve gotten stuck somewhere and then I have no way home and I’m doing Uber”.

5.4. Policy changes that would help riders address constraints (Research question 4)

Participants provided several ideas about potential policy changes that would help address many constraints. Table 6 describes those policy changes and connects them with the types of constraints that they would help address. As for the negotiations described in Table 5, most of the suggested policy changes suggested by participants (see Table 6) aim to address the *Overall travel time* constraint, reinforcing the idea that excessive travel time is a substantial barrier to riding transit to parks. Several of the suggested policy changes also seek to address another structural constraint, *Last-mile connections* (see Table 6).

New transit-to-parks services or reroutes. Participants suggested several transit-to-parks services that would help negotiate the constraints of *Overall travel time* and *Last-mile connection*. Interviewees suggested new transit lines, seasonal shuttles, added services in certain seasons (e.g., a summer service in the Cottonwood Canyons), or small reroutes of existing lines. This suggested change was the most popular and similarly common among more frequent and less frequent transit riders.

Participants suggested a few destination types that future transit-to-parks initiatives could target: Mountains and canyons, the

Table 6
Suggested policy changes to address constraints and improve transit-to-parks services.

Policy change idea	Description	Constraint(s) addressed
New transit-to-parks services or reroutes	New transit lines, seasonal shuttles, new services in certain seasons (e.g., summer), or small reroutes to access parks or trails.	Overall travel time, Last-mile connections
Increased frequency	Increased frequency on lines that give access to parks or trails	Overall travel time
Improved last-mile connections	Make the connection between transit stops and parks/trails safer, shorter, more pleasant, and easier	Last-mile connections
Cheaper cost	Lower or streamline the cost of specific services used to access parks or trails	Cost
Information and marketing	Create informational materials and marketing campaigns about transit-to-parks initiatives	Overall travel time, Last-mile connections
Limits to car use	Implement congestion pricing or parking fees to reduce the use of cars in highly-congested mountain areas	Overall travel time, Last-mile connections

foothills around Salt Lake City and other cities, and urban regional parks. Regarding mountain access, one interviewee noted, “I think there’s a need for transit to trails especially with the congestion that has been such an issue in the canyons, even in the summers, and the parking issues”.

Participants also suggested creating better transit access to the Salt Lake City foothills, noting the short distance between where people live/work and trailheads. Suggestions included re-routing existing bus lines to access key trailheads and creating dedicated shuttles. For example, one resident noted, “There’s a huge opportunity with our foothills trails to have a smaller line running from downtown”.

Increased frequency. Participants suggested that increased frequency for transit-to-parks routes would help address *Overall travel time* constraints. A common suggestion was increasing the frequency of weekend service, as several participants noted that weekends are the times when people engage the most in outdoor recreation. One stated, “And the weekend is when I have more time to go do recreational activities. So, I think more weekend service would be helpful.” A few participants elaborated on the frequency suggestion, ranging between 3–4 buses per day in each direction to 15-minute headways.

Improved last-mile connections. Interviewees also suggested enhancing the “last-mile” connections between transit stops and parks/trails. This suggestion included making such connections safer, shorter, more pleasant, and easier to navigate. One interviewee noted, “In terms of the parks, bus access is an afterthought, even for Liberty Park and Sugar House Park. [...] Other cities I’ve been to actually route right through their park and have a stop right in the park. So that people can safely get off inside the park.” Other interviewees talked about the need to improve last-mile connections for canyon service. One noted, “Making sure that if you are dropped off a quarter-mile, half-mile away from the trailhead, that you can actually get to the trailhead safely. And oftentimes, walking along the road, there are cars that are driving 40–50 miles per hour down the canyon.” Perhaps because this proposed change can improve safety, participants who used transit more frequently and less frequently mentioned this change quite often.

Cheaper cost. Interviewees mentioned that the cost of specific services used to access parks or trails (e.g., ski bus) could be lowered or streamlined to incentivize ridership. One interviewee noted, “I think that any buses that go up to the canyons need to be on the same fare structure as the rest of the system. So that means that you’re not paying an additional separate fare to use the canyon buses.” Other people note that making transit free during temporary events, like Free Fare February, would greatly incentivize transit-to-parks adoption.

Information and marketing. Another set of suggestions involved creating informational material about transit-to-parks initiatives, including maps, webpages, and wayfinding signage at transit stops. Informational materials could help people plan for transit-to-trail trips, thus potentially reducing the *Overall travel time*, and wayfinding signage could facilitate *Last-mile connections*. An interviewee explained, “If you search transit trails in other cities, you can get a handful of news articles, if not directly from the transit agency website saying, ‘Hey, this is where you can go to go hiking using transit.’ I think that would be good base level information.” Even the most seasoned transit-to-parks riders mentioned this proposed change, suggesting that riders with different levels of familiarity with the transit system might benefit from more information about transit-to-parks services.

Participants suggested creating targeted marketing campaigns to promote transit-to-parks services, especially touting their environmental benefits, which might particularly resonate with younger generations. One noted, “I think people my age [young people] are very concerned about the environment. Trying to talk about the benefits of reducing emissions and air quality.” Another suggestion related to information and marketing was to create initiatives to help people try transit-to-parks services for the first time as part of organized groups.

Limits to car use. Interviewees – especially those who did not own cars and who rode transit more often – suggested implementing measures such as congestion pricing or parking fees to reduce the use of cars in highly-congested mountain areas or urban parks. These ideas would help riders negotiate constraints such as *Overall travel time* and *Last-mile connections*. One participant noted, “I think that’s one of the reasons why having a congestion charge on drivers in the canyons would be a really great way to use the stick instead of the carrot, and it’s a good way to very quickly educate people about the alternatives”.

Policy changes to address constraints among disadvantaged individuals. Participants provided suggestions that could help negotiate some constraints affecting disadvantaged individuals. Regarding constraints related to geographic disparities, participants suggested that transit-to-parks initiatives should target the West side of Salt Lake County with poor parks and transit access. One participant who identifies as a low-income person of color noted,

I think I would actually prioritize transit connections to parks over canyons, especially for access for low-income families who don’t have much of an opportunity to get outdoors. Parks are obviously the best way to spend time outdoors.

Regarding constraints related to physical abilities, participants suggested creating materials that provide information about the accessibility of bus stops and last-mile connections near parks. One interviewee with physical disabilities noted,

When it comes to the apps [...] Maybe if you’re choosing your stop having a link that directs you to Google Street View, being able to see where you’re going to get off, I think that would be huge. [...] I don’t know if it’s going to be on a sidewalk that’s all cracked and it’s broken.

Policy changes to address safety concerns for women included investing in on-demand services that can be taken to parks and trails as well as organized social hikes for women via transit. One woman participant noted,

It would be really great to have the on-demand shuttle especially if we were all going to like a similar place. [...] I think that would be a great social experience. And it’s also a more comfortable experience. As a woman who gets around via public transit,

sometimes it can be uncomfortable, but I feel like these on-demand services, from my experience so far, don't attract creepy people.

Finally, policy changes to address barriers related to race/ethnicity mostly included the opportunity to provide transit-to-parks information in Spanish and other non-English languages. For example, one interviewee who identifies as Latinx noted, "I think I have seen one or two ads by UTA in Spanish. So perhaps more YouTube ads or social media ads in Spanish can be helpful. The language barrier is a big thing. [...] It can be difficult to figure out routes".

6. Discussion and conclusion

6.1. Summary of findings

In this qualitative study, we investigated the motivations, constraints, negotiations, and policy changes that could help address barriers to taking transit to parks among transit riders in Utah's Wasatch Front region, an area characterized by limited transit-to-parks services and high car dependency. We also studied whether disadvantaged individuals had a different set of motivations, constraints, negotiations, and suggested policy changes to address constraints than non-disadvantaged individuals. We studied transit-to-parks initiatives due to their important environmental and equity implications (Monz et al., 2016; Swanteson-Franz et al., 2020), and our findings about riders' experiences of such initiatives can help transit agencies make the initiatives more effective and equitable. Based on semi-structured interviews with a diverse sample of 25 transit riders in the Wasatch Front region, we found that although dedicated transit-to-parks services in the region are limited, many participants found ways to use transit access to hiking trails, ski resorts, and regional parks. Most participants talked about taking transit to the great outdoors to hike, mountain bike, and ski/snowboard, and only a few talked about accessing urban regional parks. As noted above, our findings need to be interpreted in light of the high car dependency of the Wasatch Front region and of the limited transit-to-parks services, as most great outdoor destinations cannot be accessed via transit.

The main motivations, constraints, negotiations, and suggested policy changes shared by participants are summarized in Tables 2 through 6. Below, we summarize the main findings for each research question, compare these findings to relevant literature, and connect some of the findings across various research questions. Specifically, Fig. 3 shows connections between various findings, highlighting key policy recommendations that address multiple motivations and constraints, such as new transit-to-parks services, improved last-mile connections, and information and marketing.

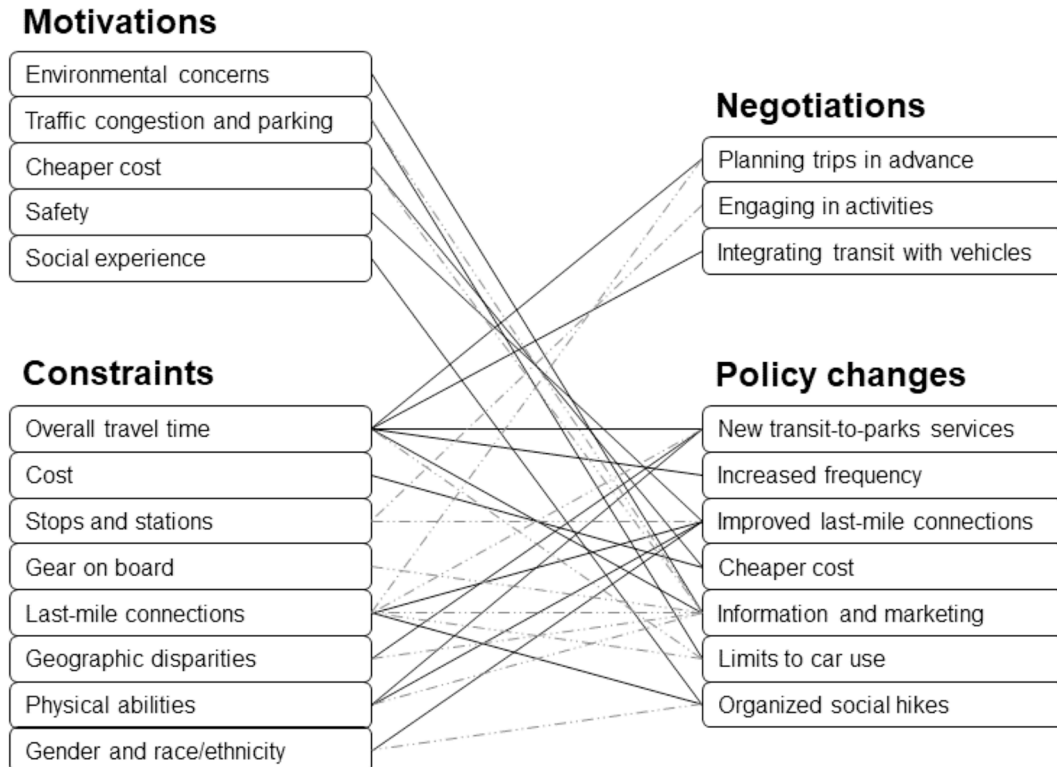


Fig. 3. Connections among findings related to the four research questions. (Note: solid lines indicate stronger relationships and more direct implications while dotted lines indicate potential connections).

The primary motivations to ride transit to parks included environmental concerns related to driving to open spaces, the convenience of not having to park and getting stuck in traffic, and the cheaper cost compared to driving. These results well correspond with the major reasons for choosing transit to national parks over driving found in earlier studies, including not wanting to deal with traffic and parking (Lumsdon et al., 2006; Nelson et al., 2008) and pro-environmental attitudes (Bamberg et al., 2007; Gronau & Kagermeier, 2007; Ingvardson & Nielsen, 2019). The lower environmental impact of transit and the avoidance of traffic and parking issues are motivations that could be highlighted in information and marketing campaigns about transit-to-parks services. Motivations such as lower costs, safer travels, and better social experiences can be enhanced through corresponding policy changes, such as reduced transit fares, enhanced last-mile travel safety, and organized social hikes, respectively.

The main constraints to taking transit to parks were excessive time to reach destinations due to limited or absent service, issues with transit frequency and reliability (especially on weekends), unsafe or confusing last-mile connections to parks and trailheads, and the higher cost of some transit services. The significant travel time it takes to reach outdoor recreation destinations via transit seemed like the most salient constraint for participants, as most negotiation strategies and policy changes suggested by participants focused on addressing such a constraint (see Fig. 3). Lack of information and the additional travel time often involved with transit were identified as significant constraints in other studies on transit to parks (Nelson et al., 2008; Pettebone et al., 2011), but the other constraints we found in this study did not emerge in previous literature in this area. Other research on transit experiences not focused on outdoor recreation highlighted that first- and last-mile connections are significant barriers for transit riders (Park et al., 2021b). Relatedly, one of the key policy changes suggested by participants in our study is to improve the last-mile connections near parks and trailheads.

We found that disadvantaged individuals, such as people living on the West side of Salt Lake County and people with disabilities, suffer additional constraints to riding transit to parks. People living on the West side of Salt Lake County reported having limited transit access to outdoor recreation via transit, echoing the results of a recent quantitative study (Park et al., 2021b). Some of the suggested policy changes involve creating new transit-to-parks initiatives that deliberately connect the West side with outdoor recreation destinations (see Fig. 3). Regarding disabilities, we found that most current services only work for young, fit, and non-disabled people who can cover often significant distances between stops/stations and trailheads, and who can navigate generally dangerous last-mile routes to access trailheads or parks. These barriers seem more severe than those faced by people with disabilities to ride transit to other destinations (Park & Chowdhury, 2018). We also found that women and people of color faced additional constraints to riding transit, *in general*, similar to other studies (García et al., 2022; Lubitow et al., 2020), but no specific constraints emerged for these two groups regarding riding transit to parks. Yet some participants suggested that organized social hikes that rely on transit, such as those by groups like Latino Outdoors (Flores & Kuhn, 2018), can help women and people of color negotiate constraints. In addition, new transit-to-parks services (e.g., paratransit, on-demand services) and last-mile improvements (e.g., sidewalk connectivity and maintenance) can ameliorate the travel-related constraints of vulnerable populations, as shown in previous studies (Park & Chowdhury, 2018; Park et al., 2023).

The main negotiations that our participants use to address constraints include planning trips in advance, engaging in several activities (e.g., reading a book) while waiting or riding transit, and integrating transit with personal vehicles (e.g., driving to a park-and-ride lot). All these negotiation strategies primarily aim to address the excessive travel time to reach outdoor recreation destinations via transit, which is the most significant constraint faced by this study's participants. Also, the idea of planning trips carefully was identified as a negotiation strategy in previous related research (Humagain & Singleton, 2021; Livengood & Stodolska, 2004; Metcalf et al., 2013).

In terms of policy changes to address constraints, participants suggested that transit agencies and their partners can create new or modified routes, improved last-mile connections, and information and marketing campaigns. As for the negotiations, many of these policy changes aimed to address both the excessive travel time constraint and unsafe, inconvenient last-mile connection issues (see Fig. 3). Information and marketing campaigns can also help address numerous constraints, including providing more information for people with disabilities and other mobility limitations as they plan their trips (see Fig. 3). Previous research found that marketing, real-time information, and better last-mile connections might improve transit-to-parks ridership (Collum & Daigle, 2015; Nelson et al., 2008). Participants also suggested that limiting car use via congestion pricing could be a solution, and they acknowledged that this would be politically controversial, as emerged in other studies (Holding & Kreutner, 1998).

A key contribution of this study is making the connection between the concepts of leisure constraint theory (motivations, constraints, and negotiations) and policy implications by listening to transit riders' experiences. Previous studies have called for incorporating in-depth qualitative methods into research on leisure constraints and investigating short-term and long-term strategies (Humagain & Singleton, 2021; Jackson, 2000). Our conceptual framework highlights policy changes that can address multiple motivations and constraints. In particular, new transit-to-parks services, improved last-mile connections, and enhanced information and marketing can be effective as they speak to multiple motivations and ameliorate diverse constraints, aligned with findings from previous studies (Collum & Daigle, 2015; Flores & Kuhn, 2018; Nelson et al., 2008; Park et al., 2021a,b).

Relatedly, while our research specifically explores trips to parks and natural areas via public transit, the conceptual framework and findings could be relevant and extendable to various types of social and recreational trips (e.g., indoor recreation, shopping, and social activities). The public transit literature emphasizes the critical role of first-mile and last-mile environments (Lu et al., 2024; Park et al., 2021a), information and technology support (Frag & Lyons, 2012), and social factors (Livengood & Stodolska, 2004; Park et al., 2023) in facilitating access to and the use of public transportation, especially for disadvantaged, transit-dependent populations. Applying the motivations-constraints-negotiation framework from our study could offer valuable insights into research about other types of transit travel and cater to specific target groups' needs.

6.2. Limitations and future research

This study has a few limitations that future research can address. First, even though we reached theoretical saturation and our sample was diverse, the number of people we interviewed was relatively small and located only in one region. Future studies on transit to parks could include larger samples of people across several regions, including disadvantaged groups, and more comprehensively compare motivations, constraints, negotiations, and policy changes to help address constraints based on demographics, including between groups experiencing disadvantaged and non-disadvantaged groups. Second, although the Wasatch Front region is quite similar to the geography of other mountain-adjacent regions in the U.S. West, more studies on residents' experiences of riding transit are needed in different contexts, including for example, Europe (e.g., Innsbruck, Zurich) and Canada (e.g., Vancouver, Calgary).

Third, the limited transit-to-parks services and the high car dependency of the Wasatch Front region, our case study, might have affected our results. Many U.S. regions are highly car-dependent (Saeidizand et al., 2022), so our findings can be extended to other places in the country; however, it is reasonable to think that some of our results describing motivations, constraints, negotiations, and policy recommendations might have been different had we studied a region with better transit-to-parks services and lower car dependency. Thus, future studies could particularly focus on regions with better transit options and lower car dependency than the Wasatch Front region. Fourth, we did not collect complete information about the frequency of transit use vs. car use to reach outdoor destinations among our participants, and thus we could not compare the experiences of frequent and occasional riders systematically. Future research could examine those differences.

Fifth, a significant limitation of our study is that we did not focus on the constraints faced by residents who choose not to ride transit to parks, especially individuals who experience disadvantage. Future research in this area could include disadvantaged populations who do not take transit to parks and rarely visit parks, and it could examine whether having access to a car improves access to the great outdoors for low-income households, as it does for access to employment (Klein, 2024). Sixth, although we did not elicit responses about certain open space types, most participants talked about taking transit to the great outdoors (e.g., foothill trails, Cottonwood Canyons), and few participants talked about riding transit to urban regional parks. Thus, our findings predominantly apply to transit to outdoor recreation destinations at the edge of and outside of cities, and future research could deliberately focus on transit-to-parks experiences within cities.

6.3. Policy and planning implications

Our findings suggest four sets of strategies to increase transit-to-parks ridership in large urban regions located near outdoor recreation destinations, especially those like the Wasatch Front region with limited transit-to-parks services and high car dependency: improved transit services, information and marketing, partnerships, and initiatives centering on disadvantaged groups. Most of the strategies described below are program-level, relatively affordable options that agencies can implement in the short term (e.g., identifying demand, schedule changes, small-scale promotional activities, collaboration with community groups, and new parking fees). But other strategies require more financial and resource investments with longer-term planning (e.g., new services, large-scale marketing campaigns, improving stops and last-mile connections). These investments would likely be popular among recreationists, as research shows general support for transit-to-parks initiatives (Holding & Kreutner, 1998; Kassilly, 2008; Mace et al., 2013).

Regarding improved transit service, we noted that participants seemed very knowledgeable about which new transit-to-parks services would be likely to increase ridership. This suggests that transit agencies and their partners need to engage residents (including riders and non-riders) to identify key transit-to-parks services that would be in high demand. Previous studies underscore that community engagement in the design of transit services can boost ridership (Neog & Brown, 2022; Wang et al., 2024). Also, increased frequency and reliability, especially during weekends, seem paramount to maximize the use of existing transit lines to access parks and trails on days when people recreate the most. Expanding transit frequency and coverage according to demand can be an effective short-term strategy to increase ridership (Chi, 2022; Kashfi et al., 2015). Yet, it might be financially hard for transit agencies to operate longer-distance transit routes, such as those to reach mountain destinations, with somewhat infrequent and irregular demand. As such, weekend service to popular destinations could be prioritized.

Regarding information and marketing, interviewees noted that marketing campaigns about available transit-to-parks services are cheap initiatives to make residents more aware of existing opportunities. Interviewees suggested actionable strategies, including webpages, signage near transit, social media campaigns, and targeted outreach to outdoor adventure groups. These strategies are in line with previous findings on similar programs indicating increased ridership, including positive social media campaigns adding exposure to the services, and real-time transit information accessible via webpage and signage (Mendoza et al., 2020; Tang et al., 2012; Tang & Thakuriah, 2011). Further, such marketing efforts could focus on the main motivations for riding transit to parks, such as convenience and environmental impacts.

Implementing transit-to-parks initiatives generally involves partnerships with transit agencies, other transportation agencies managing roads, and park agencies. Specifically, our results suggest that transit agencies could partner with other transportation agencies to use both a *stick* and *carrot* approach to promote transit-to-parks adoption (Gronau & Kagermeier, 2007). Whereas most of the strategies listed above constitute a carrot approach, the stick involves charging for parking in congested recreation areas or tolling roads that give access to recreation areas. Other partnerships may involve transit agencies working with park agencies to improve stops and last-mile connections.

Finally, our results suggest that disadvantaged individuals face additional constraints to riding transit to parks, and thus transit agencies could pay particular attention to their needs when planning transit-to-parks initiatives. Similar to a quantitative study (Park et al., 2021b), reports from this study's participants suggest that people in low-income and racial/ethnic minority communities have

limited access to mountain destinations and regional parks via transit. In urban regions where such inequities exist, transit agencies should work with disadvantaged communities to plan transit-to-parks initiatives that meet their needs. Further, because we found that current transit-to-parks options in the Wasatch Front region only cater to young, fit, and non-disabled people, future initiatives could serve a diverse range of physical abilities.

CRediT authorship contribution statement

Alessandro Rigolon: Writing – review & editing, Writing – original draft, Supervision, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Keunhyun Park:** Writing – review & editing, Writing – original draft, Funding acquisition, Conceptualization. **Dong-ah Choi:** Writing – review & editing, Conceptualization. **Yiyang Wang:** Writing – review & editing, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.trd.2024.104297>.

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