Executive Summary

Overview

The Addictions, Drug & Alcohol Institute (ADAI) was contracted by the Washington State Hospital (WSHA) to conduct a rural needs assessment. The needs assessment focused on transportation concerns and barriers, and substance use peer support, both from the perspectives of workforce members and patients, for treatment and services related to opioid use disorder (OUD) In North-Central Washington. Eligible counties were: **Grant, Lincoln, Adams**, Okanogan, Chelan, Douglas

Aims

The aims were to understand:

- facilitators and barriers to rural transportation to OUD treatment and services,
- resources needed to address transportation concerns,
- facilitators and barriers to working with OUD peer workforce members, and
- resources needed to further develop a robust peer support network.

Methods

We conducted community surveys in English and Spanish with community members age 18 or older living in an eligible county about transportation barriers. We also conducted surveys and interviews with substance use disorder workforce peers and other professionals about observed transportation challenges experienced by their patients and clients, and challenges and resources needed to support peer workforce members.

Results

- More than 45% of community respondents reported having some degree of transportation insecurity
- Younger community respondents and those outside of Grant County tended to have more transportation insecurity (though not statistically significant)
- When referring to health care organizations, respondents reported the least amount of time getting to pharmacies, hospitals, and doctors' offices
- Peer workforce organizations had integrated some transportation services within their operations to address high demand among clients, but lacked the resources to address all of patients' needs or those of SUD peers
- Peer workforce members pointed to a number of barriers to implementing a more robust peer network including availability of funding and community referral sources, supports for peer workforce members for their own recovery efforts, and stigma within the community and from health care professionals about people who use drugs
- Peer workforce members felt the Peer Recovery Coach Checklist was a useful tool for describing the peer activities and encompassed the scope of their work

Recommendations

Because of the rapid turnaround time for completion of the needs assessment, we were unable to recruit stakeholders for participation, in particular staff and patients being treated for SUD at WSHA

regional hospitals. It is important to gain their perspectives in order to understand infrastructure needs and constraints for any future changes in care delivery. Future efforts would also benefit from a longer lead-in period in order to build support from other stakeholder for a more tailored approach that does more to take rurality in general, and North Central Washington communities in particular, into consideration.

Conclusion

Rural counties in North Central Washington are greatly affected by transportation insecurity, which may have an impact on access to specialty care delivery, such as substance use disorder treatment and mental health care. SUD peer workforce members and organizations are able to provide some transportation support, but demand for services outpaces available resources. Given challenges in the current funding environment for health care, tools such as the peer recovery checklist may be helpful for fruitful discussions on how to best optimize care with peer support, and better support peer workforce members.

Washington State Hospital Association (WSHA) Rural Needs Assessment

Anthony Floyd, PhD and Leilani Dawn, CPC, MA-P
Center for Community-Engaged Drug Education, Epidemiology and Research
University of Washington, Addictions, Drug & Alcohol Institute,
Department of Psychiatry & Behavioral Sciences, School of Medicine

Introduction

Researchers point to the gaps in knowledge about rural areas, the critical role of community partnerships, and problems in studying rural communities by not acknowledging the variations among communities or applying research methods from urban areas that do not fit well for rural ones (Cacari Stone et al. 2021; Kozhimannil and Henning-Smith 2021). Qualitative interviews with healthcare decision makers also identify cultural tensions between the rural identity of patients and healthcare system, and perceived stigma associated with rural identity (Coombs, Campbell & Caringi 2022). Researchers also point explicitly to the need for policy makers and community leaders to be purposeful in addressing the health disparities that exist in rural settings (Sosin & Carpenter-Song, 2024).

While telehealth is a potential option to overcome issues related to transportation, there may be greater interest in using this option among younger adults, necessitating the need for other options for other patients (Kolluri et al. 2022). In Oregon, rural and frontier areas saw longer drive times and greater reliance on non-prescribing clinics for mental health care among Medicaid patients, relative to urban areas (Charlesworth et al. 2024). In qualitative interviews with medical providers in rural Western Pennsylvania, Maganty et al (2023) found three major themes from their analysis: (1) cost and insurance, including co-pay amounts and needing to delay heath care for other financial priorities, (2) geographic dispersion, including distance to health care, lack of public transportation, and burden required to make transportation to health care possible, and (3) provider shortage and burnout, including lack of providers in rural areas and existing ones exiting the area.

Low-barrier community OUD treatment agencies, including those with mobile services and flexible hours of operation may be beneficial for increasing engagement, increasing update of medications for OUD, such as buprenorphine, and lowering mortality rates (Banta-Green et al. 2024). In primary care settings, providers were concerned about lack of training and experience with patients using opioids and the possibility of medication diversion (Harder et al. 2021). Training programs for rural clinicians can be effective in increasing provider awareness and comfort which could increase rates of MOUD prescribing (Zittleman et al. 2022).

Substance use peers also provide valuable support for both patients and clinicians, providing valuable perspective of OUD lived experience, and prior efforts navigating the treatment system (Du Plessis, Whitaker & Hurley 2020; Scannell 2021). Structured training programs for peers in the SUD workforce can also increase their effectiveness for better client outcomes (Hansen et al. 2022). In rural emergency department settings, peers helped with engagement of both post-opioid overdose and other patients which helped with referral to treatment at discharge (Ashford et al. 2019). In a primary care setting, there were reductions in substance use and health care utilization in the 30 days post-intervention (Cos et al. 2020). Peers also derived fulfillment and benefits to their own recovery by being part of the SUD workforce (Scannell 2022).

The Addictions, Drug & Alcohol Institute (ADAI) was contracted by the Washington State Hospital (WSHA) to conduct a rural needs assessment. The needs assessment focused on transportation concerns and barriers, and substance use peer support, both from the perspectives of workforce members and patients, for treatment and services related to opioid use disorder (OUD) In North-Central Washington. The needs assessment covered WSHA regional hospitals in Grant, Lincoln and Adams counties.

Three main questions were proposed for the needs assessment:

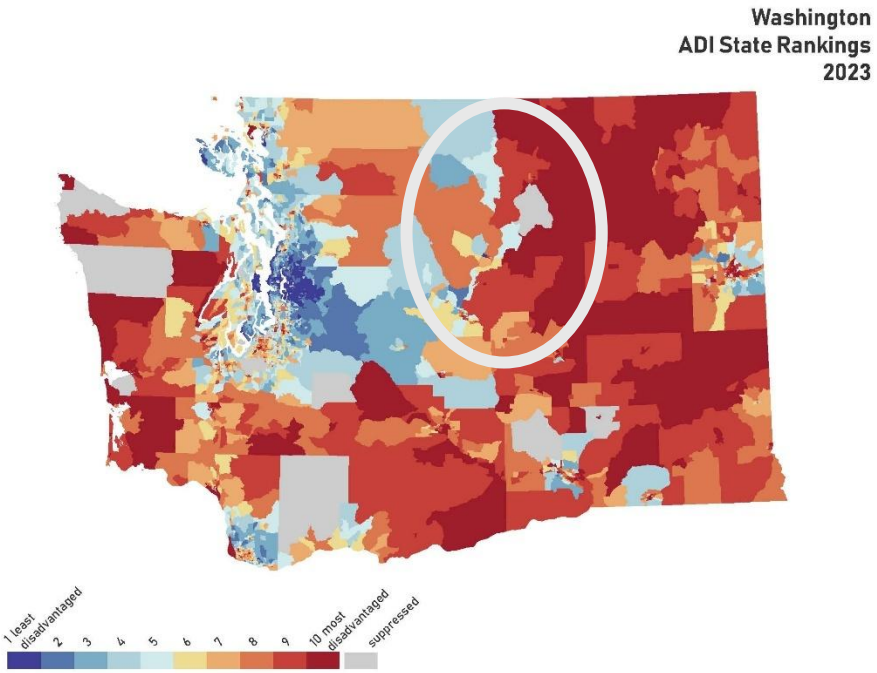
1. How well is the current infrastructure for peer support services meeting the needs of the population?

2. How well is the current infrastructure for transportation to SUD treatment centers meeting the needs of the population?

3. Is there an opportunity to better serve patients and the community by increasing the ability of peer support agencies to provide transportation to SUD treatment?

Barriers to transportation may also be related to other hardships, including food insecurity, unmet medical needs and housing instability (Murphy et al. 2025). Area Deprivation Index (ADI) data from 2023 also shows North Central Washington, the area of the state where the study counties are located, to range from the middle to among the most deprived areas of the state (see Figure 1; Kind 2018). High ADI area is associated with health disparities, including increased rates of heart disease, increased health services usage, and earlier mortality.

Figure 1. North Central Washington Area Deprivation



Methods

The data collection period ran from January 2025 to June 2025. The research was reviewed and determined exempt by the University of Washington Human Subjects Division (Institutional Review Board). In order to address the study questions, we proposed several qualitative data collection methods to obtain the perspectives of patients, peers, community members, and workforce members within WSHA regional hospitals (see Table 1).

Table 1. Proposed data collection methods

	Peer workforce members	**Community members**	**WSHA facility workforce members**	**WSHA facility SUD patients**
Surveys				
Interviews/ Focus groups				

1. Eligibility Individuals were eligible to participate if they met the following criteria:

- 18 years or older
- Living (patients or community members) or working (workforce members) in study counties
    - Eligible counties were **Grant, Lincoln, Adams**, Okanogan, Chelan, Douglas
    - Community members could live outside of those counties if doing seasonal work within those counties
    - Community members could be Spanish speaking for surveys

Grant, Lincoln, and Adams were identified in the needs assessment proposal. Okanogan, Chelan, Douglas counties were added to increase the sample from adjacent counties and respond to interests from stakeholders.

2. Recruitment. Outreach efforts were widespread and ongoing and included meeting presentations, flyers, fact sheets, emails to administrators and colleagues, and warm hand-off to potential participants. Venues and organizations included:

- WSHA regional hospitals
- Grand Columbia Opioid Response Consortium meetings
- Grant County Opioid Task Force Meeting
- Community-based harm reduction agencies
- Local businesses
- County social service offices
- Word of mouth to colleagues
- Facebook sponsored ads (including Spanish translation)

Study Instruments

3. Transportation Security Index (TSI-6). Six-item validated instruments developed to determine causes and consequences of transportation insecurity (Murphy et al. 2024). The instrument asks about 6 potential transportation barriers that may have occurred in the last 30 days. This was administered in English only (see Appendix A).

4. Transportation Burden. This instrument was created to assess the amount of time taken to get to 32 common locations or organizational types in the community. This approach, and the organizational types and categories were informed by the work of Scott and Horner (2008). The time increments were: 0-30 minutes, 30-60 minutes, 1-2 hours, 2 or more hours, Don't know (see Appendix B).

5. Peer workforce questions. Work force surveys and interviews used the same questions. Workforce questions were a mix of open- and closed-ended questions covering patient transportation needs and barriers, and concerns related to SUD peer workforce members (see Appendix C). The question included:

- Observed patient/client transportation difficulties
- Priorities for providing care given available resources
- The types of services or expertise requested from patients/clients and other organizations in the community
- Facilitators and barriers to strengthening the peer workforce network in the region

6. Peer Recovery Coach Checklist. Workforce interviews added a section to discuss Peer Recovery Coach Checklist (Byrne et al. 2023; Dotherow et al. 2025). This is a validated tool which organized and defined peer activities in terms of social and emotional support, informational support, and action-based support (see Appendix D). During interviews participants reviewed the instruments, were asked how well it defined their work, and how it could be improved. The intent was to have a common understanding of what a peer does in order to better understand how peers fit in broader scope of SUD treatment as peer networks are strengthened in the region.

Results

1. Demographic characteristics. We compared demographic characteristics between people completing the community survey who provided a zip code (in addition to county of residence) and found no statistically significant differences in age, sex or Hispanic ethnicity. There were meaningful, though not significant differences in race and sexual orientation (see Table 2). Because Zip Code was not required for eligibility, people without a Zip Code were included in the sample as long as they were from an eligible county or resided in an eligible county for seasonal work.

Table 2. Demographics of community members providing Zip Codes and those who did not

	Zip Code Provided n=122	Zip Code Not Provided n=20
Mean age (SD)	60.6 (14.1)	56.9 (19.9)
% Male	20.5	20.0
% Heterosexual	83.6	30.0
% White	84.4	35.0
% Hispanic	9.0	0

For the larger community survey sample, most respondents resided in Grant County. Because participation from other counties, in some cases, was low, we were unable to conduct county-by-county comparisons. We did, however, compare Grant County to all other counties combined. Table 3 shows the characteristics of the entire combined sample. The mean age was 60 years old, with most participants identifying as White, non-Hispanic, speaking only English, stably housed, with no substance use in the past 12 months, heterosexual, and women.

Table 3. Community Survey Demographics (n=142)

County of residence	
Grant:	89 (67.2%)
Lincoln:	21 (14.8%)
Adams:	16 (11.3%)
Okanogan:	10 (7%)
Douglas:	4 (2.8%)
Chelan:	1(0.7%)
Seasonal residence	1 (0.7%)
Mean age (SD)	60.0 (15.0)
Race (check all that apply)	
White	110 (77.5%)
American Indian/Alaska Native	3 (2.1%)
Other	3 (2.1%)
Asian	1 (0.7%)
Missing or prefer not to answer	25 (17.6%)
Hispanic/Latine ethnicity	
No	107 (75.4%)
Yes	11 (7.7%)
Missing or prefer not to answer	24 (16.9%)

Languages other than English spoken	
No	103 (72.5%)
Yes	17 (12.0%)
Missing or prefer not to answer	22 (15.5%)
Housing status	
Stably housed	116 (81.7%)
Temporarily housed	6 (4.2%)
Unhoused	1 (0.7%)
Missing or prefer not to answer	19 (13.4%)
Substance use (DAST Q1: In the last 12 month have you used drugs other than those required for medical reasons?)	
No	113 (79.6%)
Yes	9 (6.3%)
Missing or prefer not to answer	20 (14.1%)
Sexual orientation	
Heterosexual	108 (76.1%)
Bisexual	5 (3.5%)
Gay	2 (1.4%)
Lesbian	1 (0.7%)
Other	1 (0.7%)
Missing or prefer not to answer	25 (17.6%)
Gender identity	
Woman	93 (65.5%)
Man	29 (20.4%)
Non-binary	1 (0.7%)
Transgender	1 (0.7%)
Missing or prefer not to answer	18 (12.7%)

Demographic characteristics for peer workforce survey and interviews participants are in Table 4. Most were from Grant County with a mean age of 40.8 years. Most were White and non-Hispanic with a split of men and women, serving a variety of organizational roles, with most covering SUD support and counseling.

Table 4. Peer Interview and Survey Demographics (n=10, 6 interviews, 4 surveys)

County of employment	
Grant	5 (50%)
Lincoln	4 (40%)
Okanogan	1 (10%)
Mean age (SD)	40.8 (8.9)
Primary role	
SUD peer support	3 (30%)
SUD counseling	2 (20%)
Medical	2 (20%)
Senior management	1 (10%)
Case management	1 (10%)
Other	1 (10%)
Race (check all that apply)	
White	7 (70%)
Mexican-American	1 (10%)
Prefer not to answer	1 (10%)
Other	2 (20%)
Hispanic/Latine ethnicity	
No	7 (70%)
Yes	2 (20%)
Prefer not to answer	1 (10%)
Gender identity	
Woman	4 (40%)
Man	4 (40%)
Transgender	1 (10%)
Prefer not to answer	1 (10%)

2.Peer observed transportation concerns with clients. Table 5 provides peer workforce responses to transportation barriers or challenges you have observed for patients or clients getting to treatment or services that support their substance use care or recovery. Response categories were collapsed into Very often [Always and Very often], Sometimes, Never [Never and Very rarely). Because agencies had some form of transportation for clients, the responses showed very few transportation related barriers. Responses did, however, show more frequent requests for transportation help from clients

Table 5. Peer observed transportation concerns with clients

Question	Response
In the past 30 days…	
… how often have **patients cancelled** an appointment because they could not get to the clinic or hospital?	Very often (20%) **Sometimes (40%)** **Very rarely (40%)** Don't know (0%)
… how often have **patients been late** to an appointment because they could not get to the clinic or hospital?	Very often (30%) Sometimes (20%) **Very rarely (50%)** Don't know (0%)
… how often have **patients arrived immediately before closing** and been unable to receive services or treatment because of transportation issues?	Very often (20%) Sometimes (10%) **Very rarely (60%)** Don't know (10%)
… how often have **patients asked for help with transportation** (public transportation, ride share, taxi)?	**Very often (70%)** Sometimes (0%) Very rarely (30%) Don't know (0%)
… how often have **other hospitals or other care agencies asked for help with transportation** for their patients (public transportation, ride share, taxi)?	Very often (30%) Sometimes (30%) Very rarely (30%) Don't know (10%)
In the past 30 days, how often have patients been denied agency transportation because…	
… a **vehicle** was in use or not available?	Very often (20%) Sometimes (0%) **Very rarely (70%)** Don't know (10%)
… a **driver** was not available?	Very often (20%) Sometimes (10%) **Very rarely (60%)** Don't know (10%)
… a **required second staff member** was not available?	Very often (20%) Sometimes (10%) **Very rarely (60%)** Don't know (10%)

3. Peer interview and survey open-ended responses. Open-ended responses from workforce interviews and surveys are summarized in Table 6. We did not conduct thematic analyses, but provided the breadth of responses in short form, with any specific mention of person or place removed. Some commonly mentioned concerns were lack of funding, high demand for transportation services and often long travel distances, limited availability of referral sources in the community, stigma for people who use drugs within the community and health care system, and more supports needed for peers to maintain their own recovery while participating in the OUD workforce. Respondents felt that peers could offer a means of providing better care for patients when working with clinicians and providing patients with a better understanding of what to expect in the recovery process based on their experiences.

Table 6. Peer interview and survey open-ended responses

Client Transportation	Peer Workforce
What are the biggest transportation barriers you have observed for patients to get to the recovery resources they need? • Limited transportation availability may make some clients change their minds about beginning care • Agencies cannot commit to providing transportation to all needed appointments • Clients may lack driver's licenses • Lack of public transportation • Lack of agency-owned vehicles • No transportation to self-help meetings • Transportation can be limited to people with Medicaid coverage • Medical transportation for people with disabilities may be difficult to obtain • Clients sometimes cancel on short notice • Some specialty transportation services are available but not desirable to clients • Transportation may be less of an issue than client readiness to begin recovery journey	What's the best way that peer recovery coaches can help with your organization? • Being aware of available resources and actively facilitate connections with clients • Assist clients in completing recovery activities • Partnerships with clinicians to come up with best treatment approaches • Make direct contact with area clinics to find out what services are available • Provide guidance • Brings balance to the kids to support available • Share lived experiences with OUD with clients, so they know they are not alone • Share experiences with overcoming homelessness to provide hope to others
How do you think their treatment outcomes might change if they could get around more easily? • More sessions would lead to higher	What resources will peer recovery coaches need most to be successful? • Quicker turnaround times for training • Quicker turnaround times for peer

treatment success rates • Rides to self-help meeting would help clients develop social support networks outside of treatment • Fewer missed required classes or recovery events • Better for mental health recovery	background checks • Greater funding across the board • Transportation for both peers and patients • Information from both patients and care providers about what services and resources are needed • More access to housing, transportation and employment • Training on different ways to provide peer self-care • More mutual supports from other peers • Skills on how to set healthy boundaries for their own recovery • Better access to detox facilities closer to the community • Support from jails for people releasing • Support from families
What suggestions would you make to help people get to recovery resources more easily? • Increased public transportation • More agency staff • Have hospital or clinics provide vouchers for public transportation • Clients may need to play a bigger role in outreach for services • More resources and less red tape	What challenges could you see come up in implementing a strong peer network at your program? • Lack of funding • Finding enough people who want to work as peers • Stigma, and challenges with "feeling worthy." • Doubt peers may have in their ability to do the work. • Lack of confidentiality • Making contact with staff • Combining services in one location • Some clients have difficulty with cultural shifts from small town to big cities in receiving services • Local politics can be unsupportive of people with SUD or providing treatment for SUD • Belief in communities that people with SUD should just be incarcerated • Medical providers may be unsupportive of MOUD or harm reduction approaches

4. Peer Recovery Coach Checklist. The Peer Recovery Checklist was intended to provide a common, objective understanding of the roles and activities of peer workforce members. There was nearly unanimous agreement with the checklist items and the way it was organized as being a valuable tool for understanding the roles and responsibilities of peer workforce members. A key addition suggested for the checklist was criminal-legal support for people who are leaving jail, and/or in the court system. This suggestion was relayed back to the checklist authors who mentioned that it was included in earlier versions but later removed because it was not broadly relevant among respondents involved in the validation. It would be particularly valuable in cases of court mandated treatment and/or receiving MOUD while incarcerated or upon release.

5. Transportation insecurity. Using the 6-item version of the Transportation Security Index, there were 118 complete (scorable) responses for the community survey. With all counties represented, 46.6% of respondents reported *any* transportation insecurity, with the proportions of low and high insecurity being roughly equal (see Table 7). When split by Grant and other counties, there is greater transportation insecurity, particularly high insecurity (see Table 8). When split by median age (63), younger participants reported greater transportation insecurity (see Table 9). The differences by county and age were not statistically significant. Overall, even the least amount of transportation insecurity was relatively high.

Transportation Security Index – TSI-6 (n=118)

Table 7. Transportation security (all respondents)

Secure	63 (53.4%)
Low insecurity	27 (22.9%)
High insecurity	28 (23.7%)

Table 8. Transportation Security by County Split

	Grant County (n=75)	Other Counties (n=43)
Secure	42 (56.0%)	21 (48.8%)
Low insecurity	18 (24.0%)	9 (20.9%)
High insecurity	15 (20.0%)	13 (30.2%)

Table 9. Transportation Security by Median Age Split

	Age 63 and younger (n=59)	Age 64 and older (n=59)
Secure	28 (47.5%)	35 (59.3%)
Low insecurity	17 (28.8%)	10 (16.9%)
High insecurity	14 (23.7%)	14 (23.7%)

6. *Transportation burden*. Time needed to get to different destinations in the community varied by organizational type. It is important to note that not all participants needed to use these services. We wanted to know the time taken to get to the locations. For the sake of relevance and brevity, retail, leisure service and daily activity destinations are included in Appendix F. Among these destinations, longer times were reported for bookstores, shopping centers, school for oneself, childcare, movie theaters and restaurant. For community services, most respondents were able to get to these destinations within 0-30 minutes. The exception here was social service/welfare in which only 25% of respondents could reach this destination in that time frame, vs. 75% for respondents for food banks in the 0-30 minute range (see Figure 2). For healthcare organizations, pharmacies, ER/hospital and doctors' offices had more respondents in the 0-30 minute range, compared to specialty services including reproductive health, mental health, and SUD care (see Figure 3). Importantly, the number of respondents who did not know the time needed also increased with specialty services. When breaking down health care organizations by Grant vs other counties, there are wider gaps in times to reach reproductive health, substance use services, and syringe services within 30 minutes, pushing up to 2 hours, but rarely exceeding that amount of time (see Figure 4).

Figure 2. Community services (n=142)

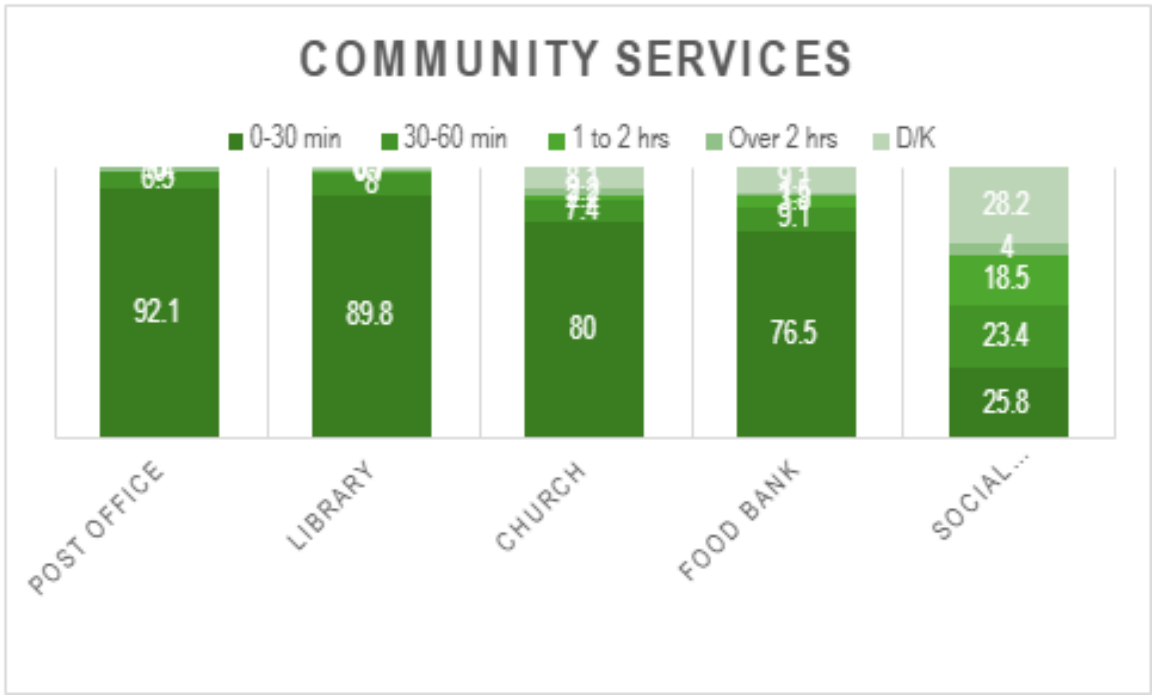


Figure 3. Health care organization (all counties, n=142)

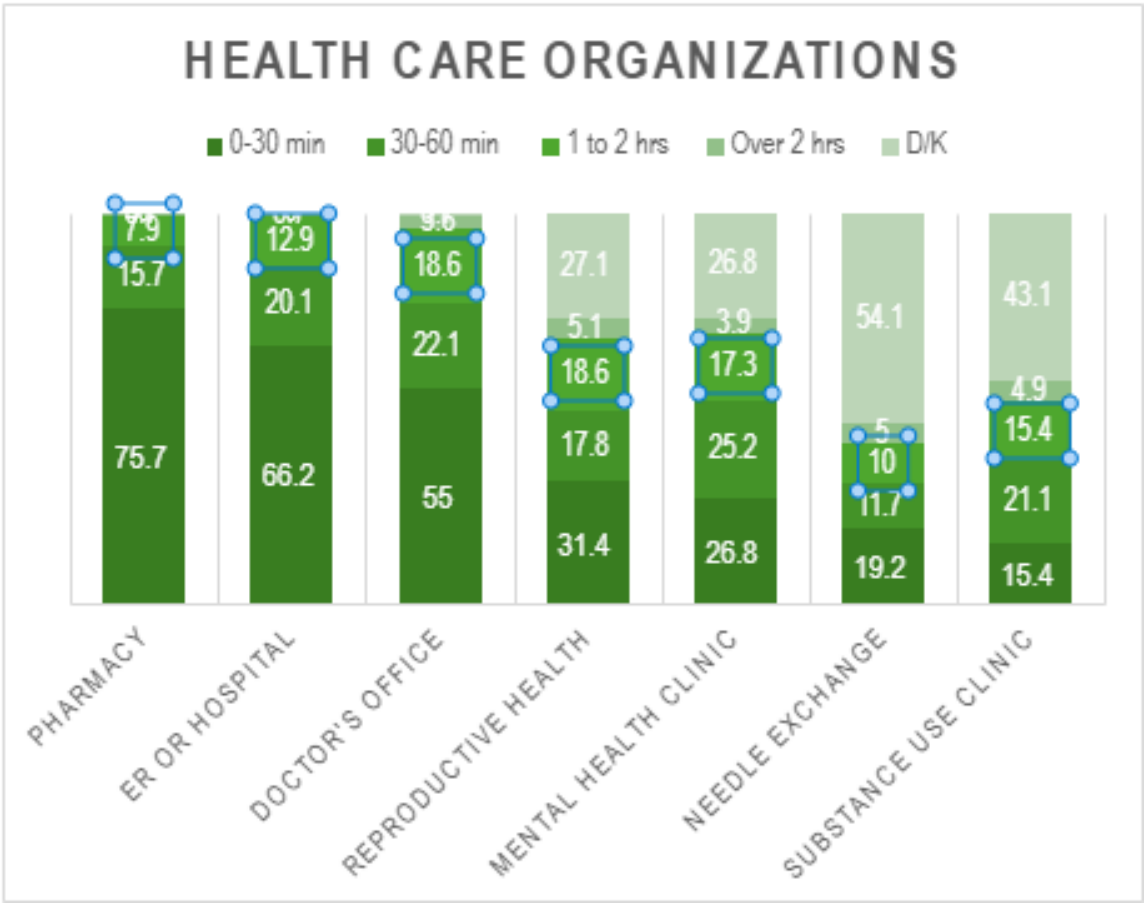


Figure 4. Percent of respondents reporting times to get to health care organizations in Grant (G, n=89) or other (O, n=53) counties

	0-30 min	30-60 min	1 to 2 hrs	Over 2 hrs	D/K
G-Pharmacy	**78.2**	**12.6**	**9.2**	**0**	**0**
O-Pharmacy	71.7	20.8	5.7	1.9	0
G-ER or hospital	**70.1**	**19.5**	**10.3**	**0**	**0**
O-ER or hospital	59.6	21.2	17.3	1.9	0
G-Doctor's office	**61.4**	**20.5**	**14.8**	**2.3**	**1.1**
O-Doctor's office	44.2	25	25	5.8	0
G-Reproductive health	**38**	**15.5**	**14.1**	**4.2**	**28.2**
O-Reproductive health	21.3	21.3	25.5	6.4	25.5
G-Mental health clinic	**28.7**	**21.3**	**13.5**	**5**	**30**
O-Mental health clinic	23.4	31.9	21.3	2.1	21.3
G-Substance use clinic	**20.8**	**16.9**	**13**	**6.5**	**42.9**
O-Substance use clinic	6.5	28.3	19.6	2.2	43.5
G-Syring exchange	**27.3**	**7.8**	**6.5**	**5.2**	**53.2**
O-Syringe exchange	4.7	18.6	16.3	4.7	55.8

Discussion

We were not able to fully address how well the current infrastructure of peer support services met the needs of the population. We obtained data from community members and have a better understanding of their transportation difficulties. Among community survey respondents, any transportation insecurity ranged from 40-50%, roughly similar to the State of Maine at 40%, which conducted a statewide transportation assessment using the TSI instrument (Moving Maine Network 2025). Maine is one of the most rural states in the U.S. For additional context, Detroit, Michigan showed transportation insecurity of 36% (Wileden and Murphy 2005). We do not, however, have data from patients in treatment to understand the demand for peer support or the kinds of support needed.

We were better able to address the question of how well the current transportation infrastructure to SUD treatment facilities meets the needs of the population using peer workforce interviews and surveys. Peer workforce participants indicated that transportation services existed, and for those who are able to make use of them, those patients rarely cancel or delay needed appointments. But respondents also noted that more funding and resources are needed, that there is high demand (from patients and treatment facilities), and not all transportation requests can be accommodated. In some cases, there is also a need for transportation for peers as well as clients, and other supports to maintain wellness and recovery.

We believe there is an opportunity to better serve patients not just through peer support for transportation, but in other ways to support recovery, including sharing their own recovery journeys. However, we were unable to recruit staff at WSHA regional hospitals. It is important to gain their perspectives in order to understand infrastructure needs and constraints for any future changes in care delivery. Furture efforts would also benefit from a longer lead-in period in order to build a more tailored approach that does more to take rurality in general and North Central Communities in particular, into consideration.

Conclusion

Rural counties in North Central Washington are greatly affected by transportation insecurity, which may have an impact on access to specialty care delivery, such as substance use disorder treatment and mental health care. SUD peer workforce members and organizations are able to provide some transportation support, but demand for services outpaces available resources. Given challenges in the current funding environment for health care, tools such as the peer recovery checklist may be helpful for fruitful discussions on how to best optimize care with peer support, and better support peer workforce members.

Acknowledgements

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number GA145991, the Rural Communities Opioid Response-Implementation totaling $1,000,000 with 25% percent financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government.

The REDCap (Research Electronic Data Capture) instance used for this project is supported by the Institute of Translational Health Sciences, which is funded by the National Center for Advancing Translational Sciences of the National Institutes of Health under award number UL1TR002319.

This work could not have been completed without the efforts of Megan Herman, Alberto Saldana, Jody Carona, Joseph Hunter, Thriving Together North Central Washington, Katherine Michelle Peavy at Washington State University, Grand Columbia Opioid Response Consortium, and colleagues at the Center for Community-Engaged Drug Education, Epidemiology and Research at the University of Washington.

Special thanks to Alexandra Murphy at University of Michigan, whose team created and validated the Transportation Security index, and Kaileigh Angela Byrne at Clemson University, whose team created and validated the Peer Recovery Coach Checklist. Both of these instruments were included in the study procedures. Spanish translations of recruitment materials and surveys were provided by Deborah Cohen, Research Coordinator, at the Social Development Research Group, University of Washington. Thanks also to Ann Hironaka and Damien Joseph Bonds at University of California Irvine for invaluable consultation, and help reviewing and testing study instrument versions.

References

Ashford, R. D., Meeks, M., Curtis, B., & Brown, A. M. (2019). Utilization of peer-based substance use disorder and recovery interventions in rural emergency departments: Patient characteristics and exploratory analysis. *Journal of Rural Mental Health*, *43*(1), 17.

Banta-Green CJ, Owens MD, Williams JR, Floyd AS, Williams-Gilbert W, Kingston S. (2024) Community-based medications first for opioid use disorder - Care utilization and mortality outcomes. Substance Abuse and Rehabilitation 2024;15:173-183

Byrne, K. A., Mericle, A. A., & Litwin, A. H. (2023). Development and initial findings from the Peer Recovery Coach (PRC) checklist: a new tool to assess the nature of peer recovery coaching service delivery. *The American Journal of Drug and Alcohol Abuse*, *49*(2), 159–169. https://doi.org/10.1080/00952990.2022.2164504

Cacari Stone L, Roary MC, Diana A., Grady PA. (2021) State health disparities research in Rural America: Gaps and future directions in an era of COVID-19. *Journal of Rural Health*; 37: 460–466. **https://doi.org/10.1111/jrh.12562**

Charlesworth, C. J., Nagy, D., Drake, C., Manibusan, B., & Zhu, J. M. (2024). Rural and frontier access to mental health prescribers and nonprescribers: A geospatial analysis in Oregon Medicaid. *The Journal of Rural Health*, *40*(1), 16-25.

Coombs, N. C., Campbell, D. G., & Caringi, J. (2022). A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. *BMC Health Services Research*, *22*(1), 438.

Cos, T. A., LaPollo, A. B., Aussendorf, M., Williams, J. M., Malayter, K., & Festinger, D. S. (2020). Do peer recovery specialists improve outcomes for individuals with substance use disorder in an integrative primary care setting? A program evaluation. *Journal of Clinical Psychology in Medical Settings*, *27*(4), 704-715.

Dotherow, J. E., Byrne, K. A., Howard, K. A., Rennert, L., & Litwin, A. H. (2025). Development, Validity, and Acceptability of the Peer Recovery Coach (PRC) Service Checklist for Medication for Opioid Use Disorder (MOUD) Support. *Substance Use & Misuse*, 1–8. https://doi.org/10.1080/10826084.2025.2508741

Du Plessis, C., Whitaker, L., & Hurley, J. (2020). Peer support workers in substance abuse treatment services: A systematic review of the literature. *Journal of Substance Use*, *25*(3), 225-230.

Hansen, M. A., Modak, S., MacMaster, S., Zoorob, R., & Gonzalez, S. (2022). Implementing peer recovery coaching and improving outcomes for substance use disorders in underserved communities. *Journal of ethnicity in substance abuse*, *21*(3), 1029-1042.

Harder, V. S., Villanti, A. C., Heil, S. H., Smith, M. L., Gaalema, D. E., Meyer, M. C., ... & Sigmon, S. C. (2021). Opioid use disorder treatment in rural settings: the primary care perspective. *Preventive medicine*, *152*, 106765.

Kind AJH, Buckingham W. (2018) Making Neighborhood Disadvantage Metrics Accessible: The Neighborhood Atlas. *New England Journal of Medicine*. 378: 2456-2458. DOI:

10.1056/NEJMp1802313. PMCID: PMC6051533. AND University of Wisconsin School of Medicine Public Health. 2015 Area Deprivation Index v2.0. Downloaded from https://www.neighborhoodatlas.medicine.wisc.edu/ July 20, 2025.

Kolluri S, Stead TS, Mangal RK, Coffee RL Jr, Littell J, Ganti L. (2022) Telehealth in Response to the Rural Health Disparity. Health Psychol Res. 2022 Aug 20;10(3):37445. doi: 10.52965/001c.37445. PMID: 35999970; PMCID: PMC9392842.

Kozhimannil KB, Henning-Smith C. (2021) Improving Health Among Rural Residents in the US. *JAMA*.;325(11):1033–1034. doi:10.1001/jama.2020.26372

Maganty, A., Byrnes, M. E., Hamm, M., Wasilko, R., Sabik, L. M., Davies, B. J., & Jacobs, B. L. (2023). Barriers to rural health care from the provider perspective. *Rural and remote health*, *23*(2), 1-11. https://www.rrh.org.au/journal/article/7769

Moving Maine Network (2025) How transportation barriers are hurting Maine and how we move forward. Downloaded July 22, 2025. https://static1.squarespace.com/static/65b16bd6dac3ca0970776cf8/t/68014503f5b23411f27694d6/1744913691672/MMN_BarriersReport_2025_Final.pdf

Murphy, A K., Gould-Werth, A, and Griffin, J. 2024. "Using a Split-Ballot Design to Validate an Abbreviated Categorical Measurement Scale: An Illustration Using the Transportation Security Index." *Survey Practice* 17 (January). https://doi.org/10.29115/SP-2023-0030.

Murphy, A.K., Pilkauskas, N.V., Kovski, N. *et al.* (2025) How Does Transportation Insecurity Compare and Relate to Other Indicators of Material Hardship in the U.S.?. *Soc Indic Res* **178**, 435–463. https://doi.org/10.1007/s11205-025-03585-y

Scannell, C. (2021). Voices of hope: substance use peer support in a system of care. *Substance Abuse: Research and Treatment*, *15*, 11782218211050360.

Scannell, C. (2022). By helping others we help ourselves: insights from peer support workers in substance use recovery. *Advances in Mental Health*, *20*(3), 232-241.

Scott, D. M., & Horner, M. W. (2008). The role of urban form in shaping access to opportunities: An exploratory spatial data analysis. *Journal of Transport and Land Use*, *1*(2), 89–119. http://www.jstor.org/stable/26201615

Sosin, A. N., & Carpenter-Song, E. A. (2024). Reimagining Rural Health Equity: Understanding Disparities And Orienting Policy, Practice, And Research In Rural America: Article examines rural health equity. *Health Affairs*, *43*(6), 791-797. https://doi.org/10.1377/hlthaff.2024.00036

Wileden, L. & Murphy, A. (2025) Transportation Insecurity in the Motor City. Downloaded from https://detroitsurvey.umich.edu/wp-content/uploads/2025/02/Transportation-Insecurity-in-the-Motor-City_FINAL.pdfJuly 20, 2025.

Zittleman, L., Curcija, K., Nease, D. E., Fisher, M., Dickinson, L. M., Thomas, J. F., ... & Westfall, J. M. (2022). Increasing capacity for treatment of opioid use disorder in rural primary care practices. *The Annals of Family Medicine*, *20*(1), 18-23.

Appendix A: Transportation Security Index

6-item Validated Transportation Insecurity Index Items:

1. To get to the places they need to go, people might walk, bike, take a bus, train or taxi, drive a car, or get a ride. In the past 30 days, how often did you have to reschedule an appointment because of a problem with transportation? [Often/Sometimes/Never]

2. In the past 30 days, how often did you skip going somewhere because of a problem with transportation? [Often/Sometimes/Never]

3. In the past 30 days, how often were you not able to leave the house when you wanted to because of a problem with transportation? [Often/Sometimes/Never]

4. In the past 30 days, how often did you feel bad because you did not have the transportation you needed? [Often/Sometimes/Never]

5. In the past 30 days, how often did you worry about inconveniencing your friends, family, or neighbors because you needed help with transportation? [Often/Sometimes/Never]

6. In the past 30 days, how often did problems with transportation affect your relationships with others? [Often/Sometimes/Never]

Appendix B: Transportation Burden Destination

Grocery store
Convenience store or mini mart
Mall or shopping center
Favorite restaurant
Bar or tavern
School for yourself
School for someone else (like a child)
Childcare
Library
Book store
Doctor's office or medical clinic
ER or hospital
Pharmacy or drug store
Reproductive health care
Job or worksite
Hardware store
Gas station
Car repair shop
Bus stop
Post office
Church
Barber shop or hair salon
Laundry mat or dry cleaners
Bank or ATM
Check cashing
Movie theater
Gym
Food bank
Substance use clinic
Mental health clinic
Needle exchange or harm reduction location
Social services/welfare
Access to illicit substances or drugs

Appendix C: Peer Workforce Interview and Survey Questions

We would like to know the transportation barriers or challenges you have observed for your patients or clients getting to treatment or services that support their substance use care or recovery.

In the past 30 days, how often have patients cancelled an appointment because they could not get to the clinic or hospital?

In the past 30 days, how often have patients been late to an appointment because they could not get to the clinic or hospital?

In the past 30 days, how often have patients arrived immediately before closing and been unable to receive services or treatment because of transportation issues?

In the past 30 days, how often have patients asked for help with transportation (public transportation, ride share, taxi)?

In the past 30 days, how often have other hospitals or other care agencies asked for help with transportation for their patients (public transportation, ride share, taxi)?

In the past 30 days, how often have patients been denied agency transportation because:
-a vehicle was in use or not available?

-a driver was not available?

- a required second staff member was not available?

What are the biggest transportation barriers you have observed for patients to get to the recovery resources they need?

How do you think their treatment outcomes might change if they could get around more easily?

What suggestion would you make to help people get to recovery resources more easily?

We would like to find out how peer recovery coaches can play a role in the care being provided for substance use. To what extent have you, or staff you work with been asked for the following help:

-Help from someone who can be credible messenger (someone seen as authentic) about the treatment and services the program provides

-Help from someone with lived or living experience with opioid use

-Help from someone who has experience being treated for opioid use

-Help from someone who has survived an opioid overdose

-Help from someone who can better explain treatment plans and goals in simple terms

What's the best way that peer recovery coaches can help with your organization?

What resources will peer recovery coaches need most to be successful?

What challenges could you see come up in implementing a strong peer network at your program?

Appendix D: Peer Recovery Coach Checklist

For the last part of the interview, I'm going to show you a list of services and activities that a peer recovery coach can do. I would like you to indicate how interested or uninterested you would be in receiving that service from a peer recovery coach. When I give you the list, if you could please put an 'X' over any activity or service you would be UNLIKELY to want to use, put a checkmark by any service or activity that you WOULD be LIKELY to want to use, and leave items that you are neutral on blank. Here is the list.

CHECKLIST OF SERVICES AND ACTIVITIES

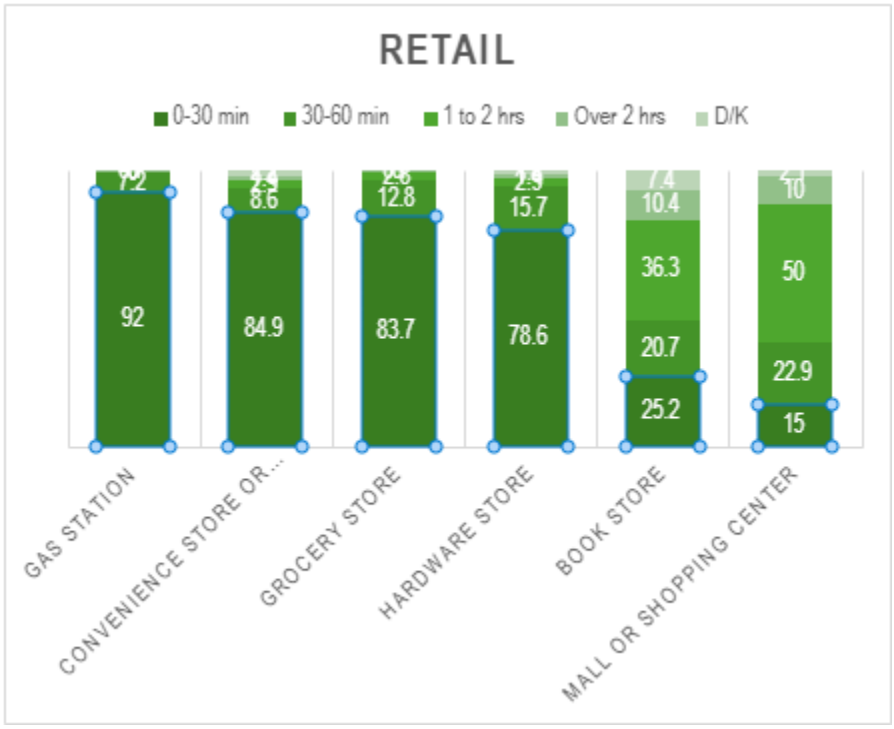
Instructions: Use the following symbols to indicate your likelihood of interest in receiving each activity/service from a peer support checklist.
Unlikely – Mark out activity/service with an "**X**"
Neutral – leave activity/service listed **unmarked**
Likely – Mark activity/service with a **checkmark (✓)**

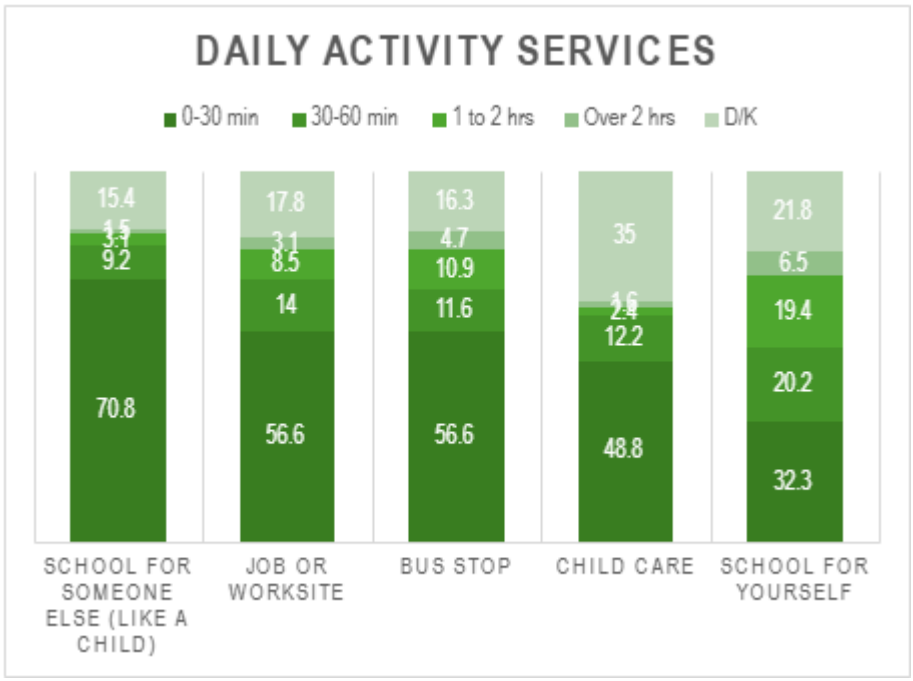
<table>
<tr><th colspan="3">SERVICES CHECKLIST</th></tr>
<tr><th>Social & Emotional Support</th><th>Informational Support</th><th>Action-Based Support</th></tr>
<tr><td>• Discuss progress or challenges with relationships (partner, family, friends)</td><td>• Provide information about local psychosocial support options (e.g., recovery support, counseling, etc.)</td><td>• Work with patient to develop a treatment plan that fits with their needs and preferences</td></tr>
<tr><td>• Discuss progress and challenges on the journey to recovery</td><td>• Provide information about local mental and physical health resources</td><td>• Provide/arrange transportation to meetings, medical appointments, pharmacy, etc.</td></tr>
<tr><td>• Engage in non-judgmental active listening</td><td>• Provide information about medication for opiate use (e.g., suboxone, methadone) options, process, and expectations</td><td>• Secure stable food and/or medication-friendly (e.g., suboxone-friendly) temporary housing (i.e., shelters, sober living)</td></tr>
<tr><td>• Connect to sober contacts or recreational activities</td><td>• Provide recommendations for self-care</td><td>• Help with harm reduction tools (e.g., provide Narcan)</td></tr>
<tr><td>• Share stress and craving management techniques</td><td>• Provide info on employment opportunities or resources</td><td>• Secure mental health counseling</td></tr>
<tr><td>• Provide opportunity for self-reflection</td><td rowspan="3">• Provide info on family support resources, such as how family members can attend their own support meetings or get their own peer recovery coach to support their loved one's recovery</td><td>• Provide in-person support during emergencies or crises</td></tr>
<tr><td>• Discuss emotions and feelings of connectedness and belonging</td><td rowspan="2">• Secure medication-friendly (e.g., suboxone-friendly) inpatient or outpatient rehabilitation treatment</td></tr>
<tr><td>• Provide encouragement</td></tr>
<tr><td>• Offer empathy and concern</td><td></td><td></td></tr>
<tr><td>Other:</td><td>Other:</td><td>Other:</td></tr>
</table>

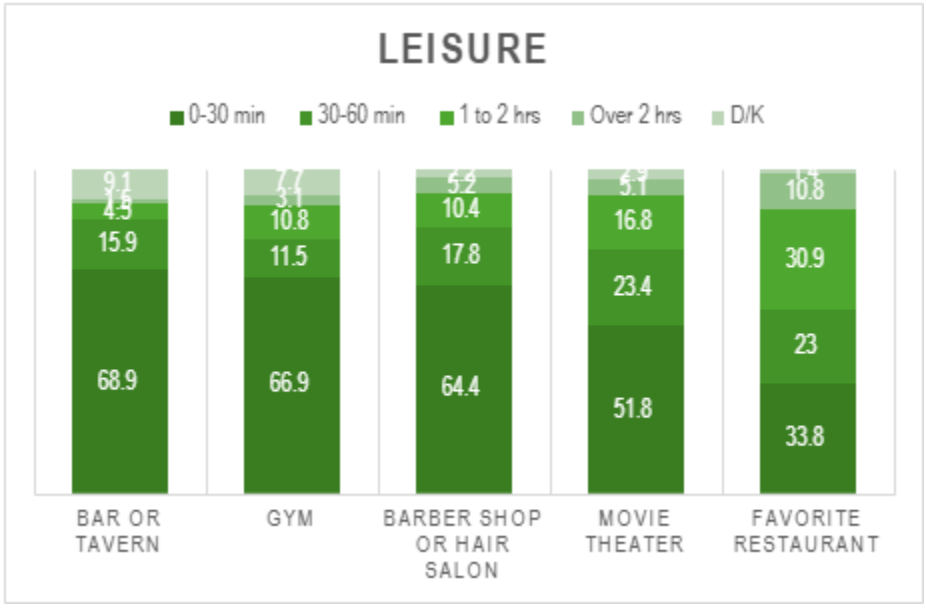
Appendix E: Zip Codes included in survey responses:

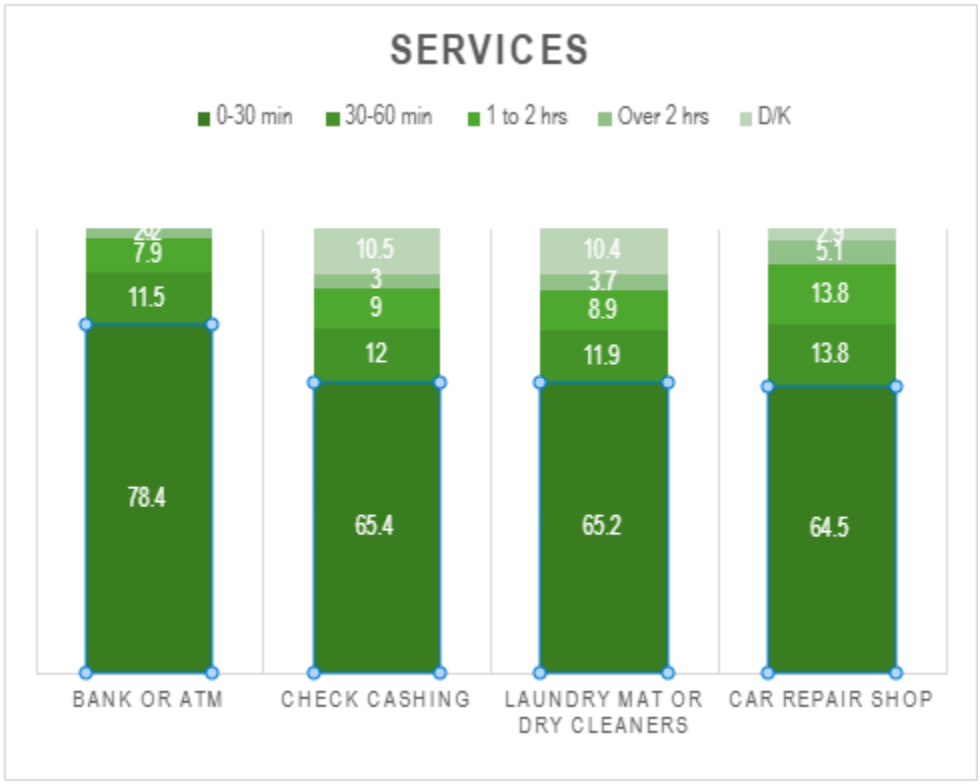
98736
98801
98823
98824
98829
98837
98848
98850
98851
98855
98857
98858
98862
99008
99013
99029
99105
99115
99116
99122
99123
99124
99133
99134
99159
99169
99341
99344
99349
99357
99371

Appendix F. Travel times (burden) for non-health care destinations






LEISURE
0-30 min
30-60 min
1 to 2 hrs
Over 2 hrs
D/K
9.1
1.6
4.5
15.9
68.9
7.7
3.1
10.8
11.5
66.9
5.2
10.4
17.8
64.4
5.1
16.8
23.4
51.8
10.8
30.9
23
33.8
BAR OR TAVERN
GYM
BARBER SHOP OR HAIR SALON
MOVIE THEATER
FAVORITE RESTAURANT


SERVICES
0-30 min
30-60 min
1 to 2 hrs
Over 2 hrs
D/K
7.9
11.5
78.4
10.5
3
9
12
65.4
10.4
3.7
8.9
11.9
65.2
5.1
13.8
13.8
64.5
BANK OR ATM
CHECK CASHING
LAUNDRY MAT OR DRY CLEANERS
CAR REPAIR SHOP