



# An Initial Transportation and Mobility Needs Assessment for the Shoalwater Bay Indian Tribe

In partnership with the Shoalwater Bay Indian Tribe  
staff and community

Led by Solana Granados  
Under the guidance of Daniel B. Abramson and Jeff Ban

## Acknowledgements

I would like to acknowledge and give my deepest gratitude to Jamie Judkins, planner for the Shoalwater Bay Indian Tribe, and SBIT staff Cynthia Toop, Shane Thomas, Quintin Swanson, and Raleigh Anderson for their enthusiasm and guidance throughout the thesis process. My intentions is that we continue the Shoalwater Bay Indian Tribe's story with reciprocity and meaningful partnership. *Ahéhee'*



# EXECUTIVE SUMMARY

The Shoalwater Bay Indian Tribe is facing extremely rapid erosion, rising sea levels, and a plausible earthquake and tsunami inundation that together threaten their community and future. In response, the Tribe is now in the planning stage to develop housing and services at nearby higher elevations above inundation levels. The Tribe calls this initiative the 'upland expansion' instead of 'relocation'. Upland expansion is as much an effort to meet current housing needs for members on and off reservation as it is a preparation for hazards-driven relocation in the future. Just as an earthquake or tsunami hazard may present the need for a safety tower and uphill assembly area, it also presents transportation and mobility challenges. Using community engagement, secondary data analysis, and a community survey, this study identifies the Tribe's transportation needs and challenges; some of the immediate, short and long-term transportation-related opportunities that will contribute to Tribal goals and values, specifically as related to upland expansion; and how the Tribe may enhance mobility and transportation to support hazards resilience, self-reliance, regional accessibility, and economic development. The data, information and insights from these methods will inform a transportation and mobility needs assessment report for the Shoalwater Bay Indian Tribe. Based on the findings, the research intends to provide language, data, and tailored recommendations for the Tribe as it continues to seek consensus among members, technical assistance, and funding.

From the data 12 key findings came forward. One finding was that most participants have a vehicle and are able to drive. On the other hand some participants don't have access or own a vehicle. Additionally, among participants, regional travel is frequent, WIFI and electric vehicle charging stations are of interest and participants are in favor of increased walking, rolling, and biking infrastructure.

The seven recommendations fall under three time frames of short-term (next six months), medium-term (next year to two years) and long-term (next three to five years). Some of these recommendations include creating a proposal for a resilient trail system, generating transportation data with Federal Highways Administration's technical assistance and other tech assistance centers in the region, and the SBIT operating its own community transportation van. Also, some of the highlighted recommendations are pursuing funding for expanded WIFI/ internet access and capitalizing on economic development initiatives in partnership with SBIT.



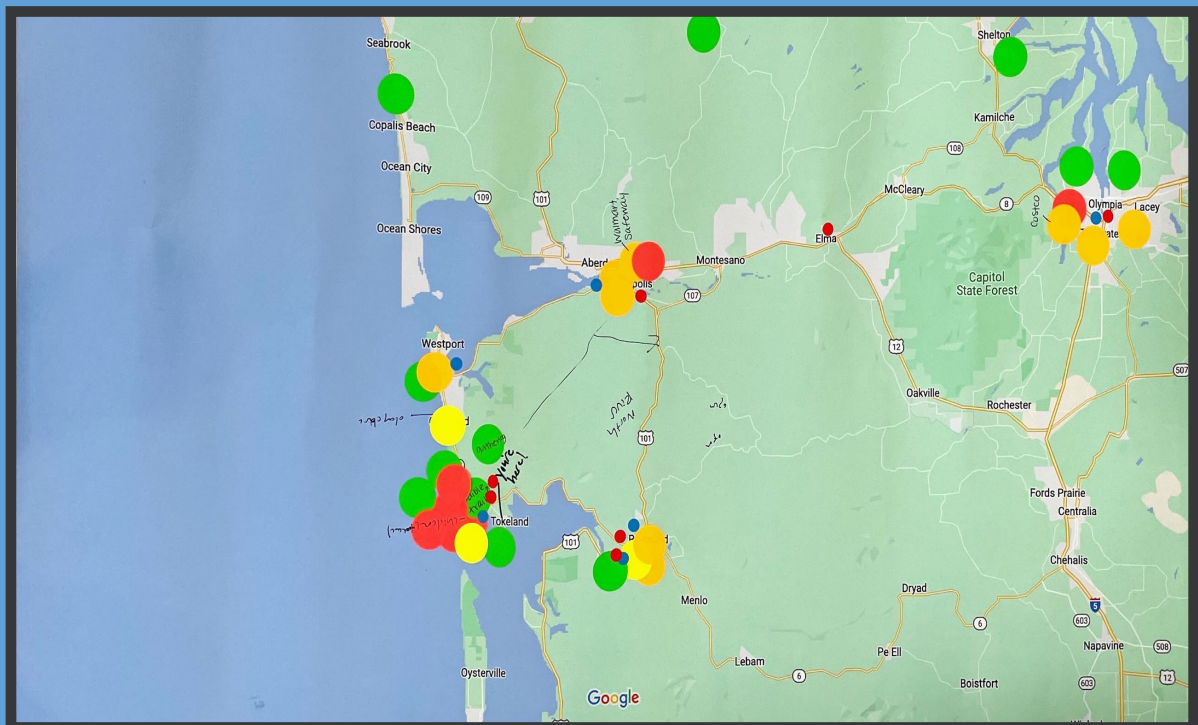
# ENGAGEMENT RESULTS

## October Workshops

The October 21st community engagement event's activity wanted understand members' general regional travel and transportation options they would like to see happen in regard to the upland community to inform the studio work. There were about fifteen participants for both workshops. The mapping activity's key takeaway was the need to travel regionally for groceries, school and work. Also, the completed map activity, demonstrates that recreation and employment could be done near or within reservation. A couple of the key takeaways from the second activity were that trails were the number one sticky note placed on the ideas board and bioswales were also of interest to the community participants.

The key takeaways from this mapping activity were:

- Much of the community's employment is concentrated in the Shoalwater Bay Tribe's Reservation and Tokeland area.
- Household goods are obtained and bought elsewhere rather than in the immediate community.
- Youth and higher education students seek their education in Westport, Raymond, South Bend, Aberdeen, and Olympia. As there is no K-12 school in the reservation or Tokeland.
- Members mainly go nearby for recreation and in the region to towns and larger cities. Even into forested areas too.
- Health needs are also met in other towns like Raymond and Aberdeen because of the hospitals and other healthcare centers there. The Tribe's current wellness center is still viewed as an essential service to fulfill the health needs of many community members.
- A couple of members traveled outside this region for work-related needs and recreation (i.e., to visit someone).



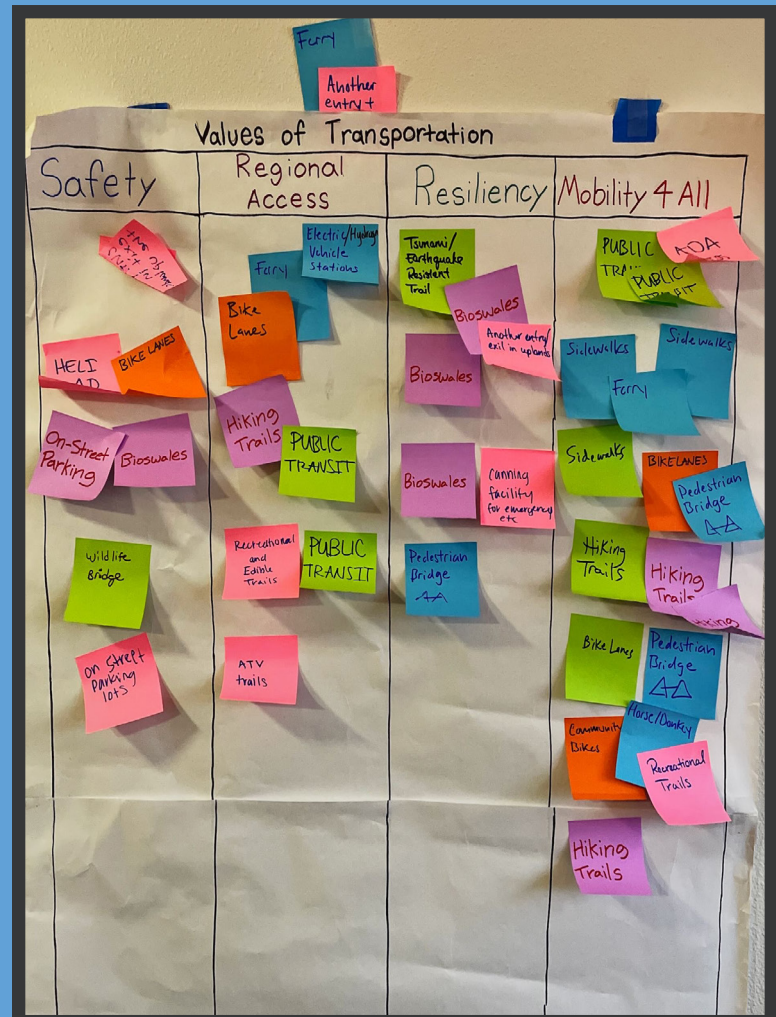
## October 24th Engagement Event

Based on the listening session and map responses, we gathered that the main four concerns are safety, regional access, resiliency, and mobility for all. Safety is made apparent with member' comments on car crashes and having to park on the roads. Regional access came into play because the regional map shows the most participants travel for their necessities and health and educational needs. Resiliency was exemplified with the comments on roads being obstructed by landslides and therefore traveling in and out of the community was difficult. Lastly, mobility for all is highlighted because people in the community do not have driver's licenses and conditions that contribute to car reliance. With that information, we developed an activity so that members can choose from over 20 ideas as possible solutions to address the four concerns and that connect the community to the uplands and the region.

The key takeaways from the second activity were:

- Bioswales were of interest to the community. After we explained what they are for community members who participated, most of them placed the bioswale sticky note on the ideas board.
- Public transit was placed 4 times on the board under regional access and mobility for all columns.
- The trail is a popular idea.
- Participants seem interested in multimodal travel with bike lanes and sidewalks (4 bike lanes post it notes are on the board).
- Horses and donkeys were not exactly well received as it got one placement from a member.
- New ideas generated from members are a wildlife bridge, ATV trails, different types of trails, and a canning facility.
- More parking is on the board twice under the safety column. A couple of members pointed out the various festivals, gatherings, and events held in the area such as Canoe

- Journey.
- Another entry and exit and ferry are placed in both regional access and resiliency columns.
- Members placed 'another entry/exit in uplands on the board 3 times. And, during the activity members discussed "back roads" connected to Route 101 as an option.
- Public transit had 4 sticky notes on the board.
- Many of the sticky notes with the ideas written on them that were placed on the table for community members to choose from were not put on the ideas board. This may be because members who attended were not familiar with some of the ideas or did not know how they would be used exactly in the context of the upland expansion and meeting their regional transportation needs. Also the various ideas written on the sticky notes were simply not important or priority for participating community members. For instance, drones were one idea written on sticky notes however no one chose it to put on the board.



## December 9th Open House

A poster and survey was made for the final studio open house in December. The quick preliminary survey was made to tease out regional travel and desires a bit more. The questions and the responses verbatim from the six participants are:

1. Is there anything you travel outside the community for that you would like provided for here? Why?

- Produce from the garden is very nice. Fruit trees planted here and there is nice too.
- I frequently drive locals to Olympia for medical specialist appointments. Some more gerontology resources.
- Grocery stores
- Food! Long drive to buy affordable groceries.
- Groceries
- Agriculture. Daycare

2. How many times a week do you travel outside the community? For work or something else?

- Once a month for groceries, pet food, etc.
- .3-.5
- 1-2
- Once , for groceries. In general I try to minimize driving because of the price of gas.
- 1 x wk - food + sundries
- I live outside the community. There is no housing here for me.

3. In October the most picked ideas were bike lanes, hiking/recreational trails, public transit. From the list what would you like to have first?

- Hiking and creational trails, it's fun to take the grandkids on "adventures" through the wilderness. And great exercise.
- Hiking trails
- Trails
- Recreational trails
- Hiking trails

4. Which businesses or services would you like to see started or developed soon than later? Do you support the expanded ecotourism in the uplands?

- The tribal center, clinic is also needed.
- Social services. not a fan of tourism. Shuttle from lowland to upland
- museum/library
- Groceries is the major one. Not the biggest fan of ecotourism - tourist season is a drag.
- No
- Food processing? Energy - clean. Agriculture - hemp. Recycling.

With that, one takeaway of this survey was that participating community members provided food and food systems related responses to question one on what they would like provided for in their community. There were varied responses to question two on frequency of travel ranging from does not apply to a participant (because they lived elsewhere) to once a month to one or two times a week. Another takeaway was that all the participants put down trails (hiking/recreational) to question three. And lastly for question four, two participants desired improvements be made around access to food and their food system in general such as growing their own food to consume. Half of survey takers (three participants) currently do not support ecotourism in the uplands. Medical services and social services were chosen among two participants. On top of this, the engagement shed light on some tensions between the community's priority of self-reliance and the need to travel and communicate across a large region – particularly, the Tribe's need to gather occasionally with other Tribes and its members outside the reservation and interact with the larger society and economy.

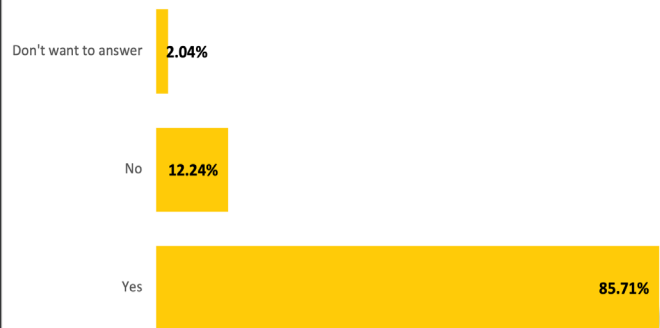


**Bioswales** are landscape features that collect polluted stormwater runoff, soak it into the ground, and filter out pollution.

# SURVEY RESULTS

The survey's poster flyer that was distributed via the SBIT's social media and their newsletter. After filtering over 400 respondents for the data cleaning, the total respondents came down to 49 respondents and their responses.

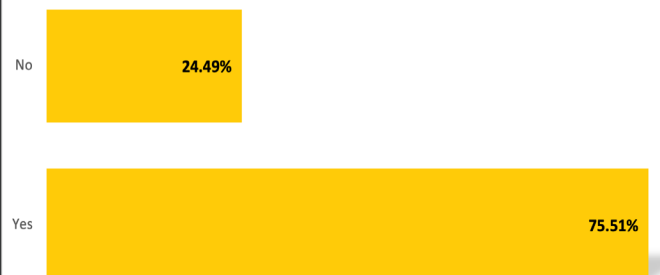
## Do you have a driver's license?



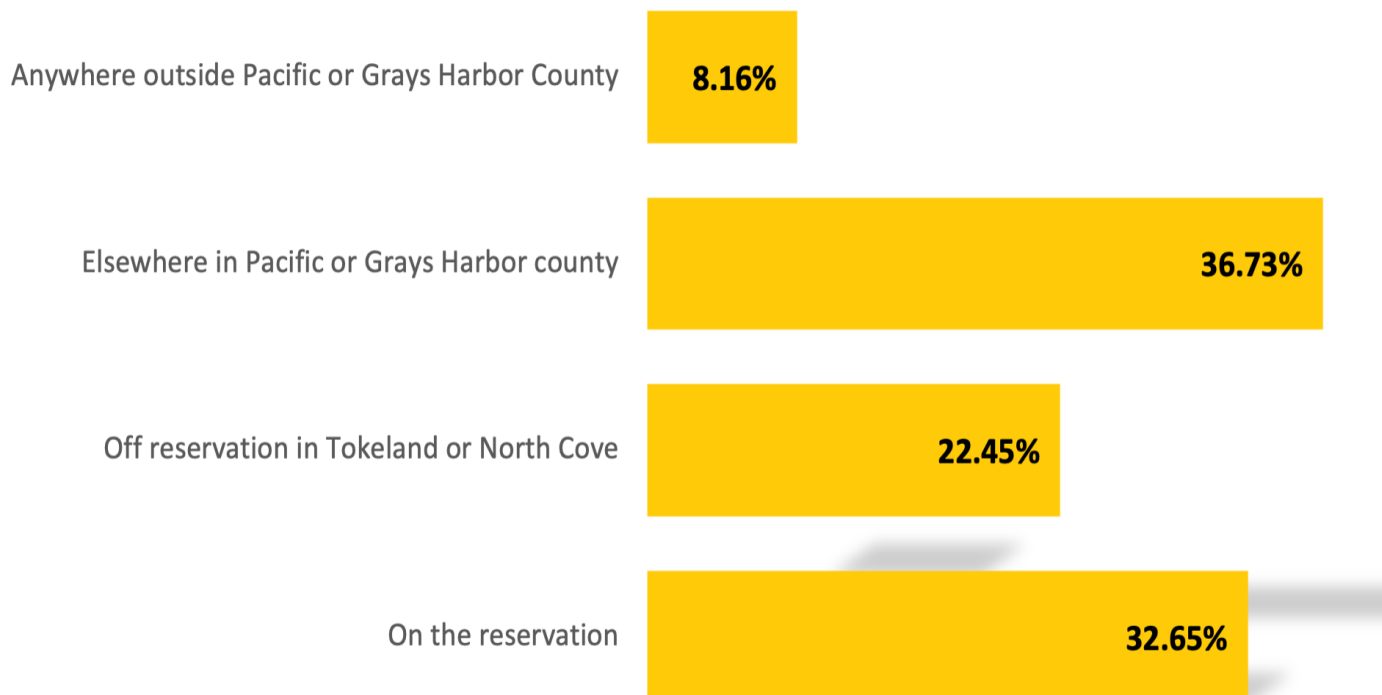
## Are you currently able to drive?



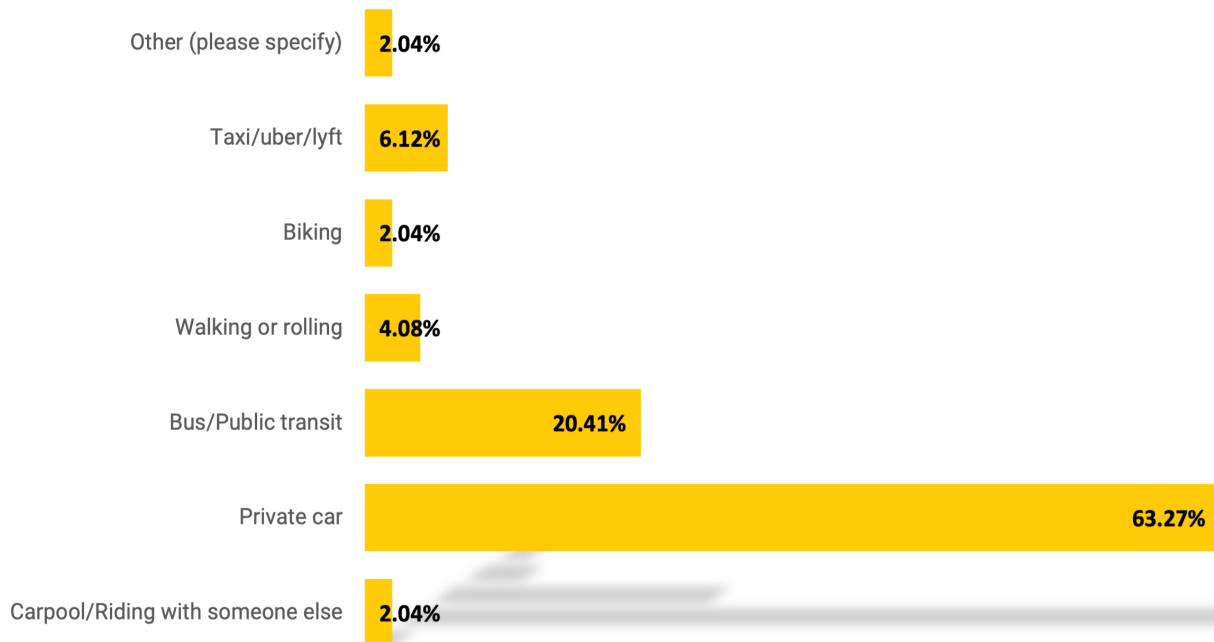
## Do you own car or have regular access to a car?



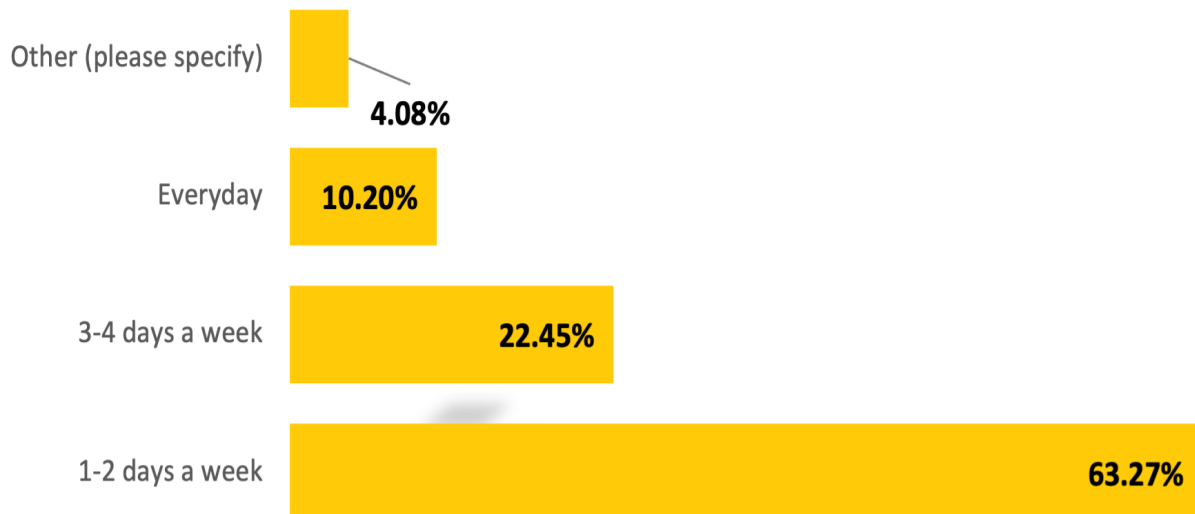
## Which area do you live?



## When you travel, what is your main form of transportation?

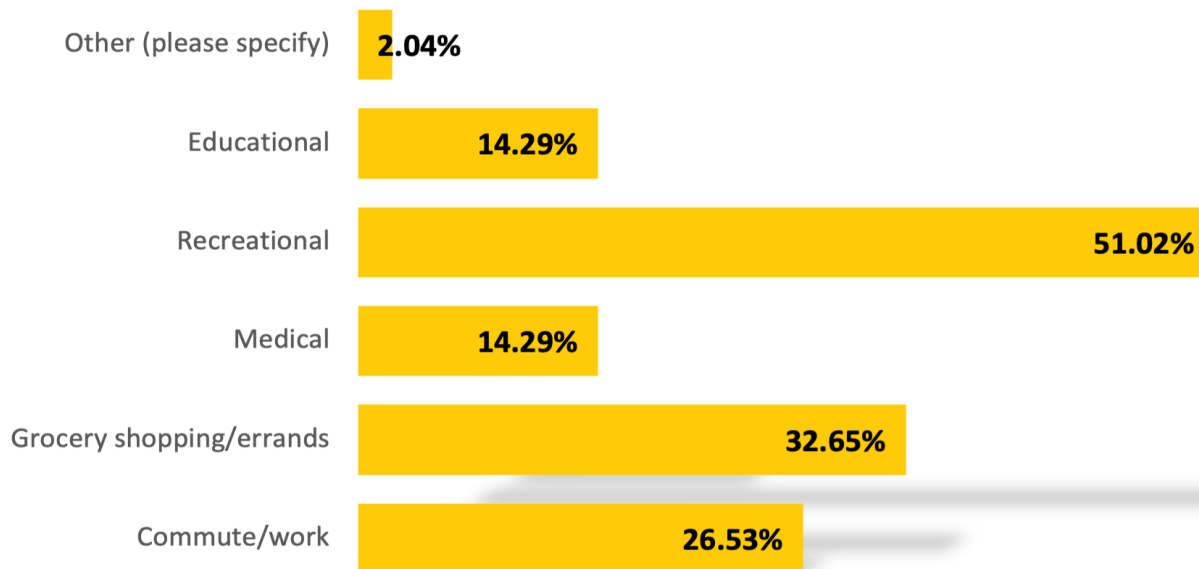


## How many days a week do you travel outside the SBIT Reservation and Tokeland community?

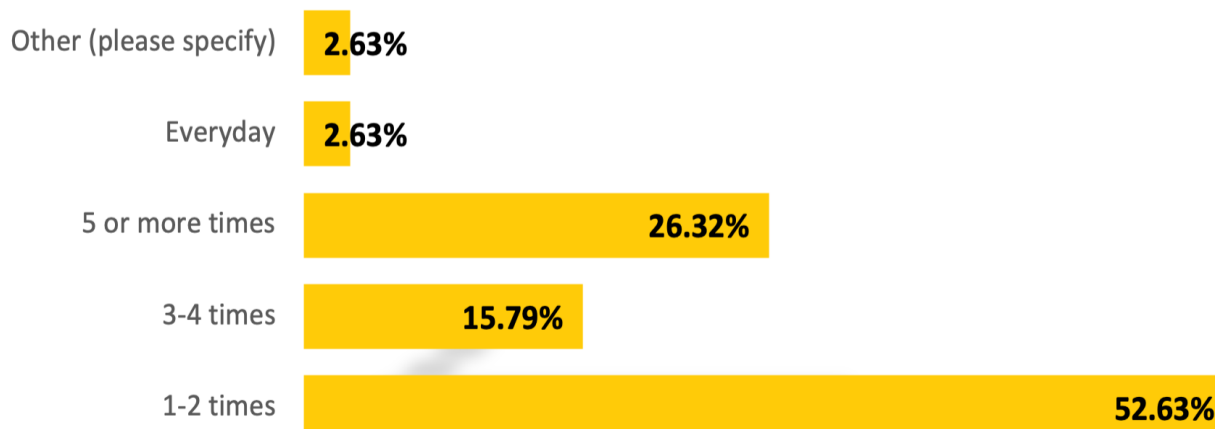




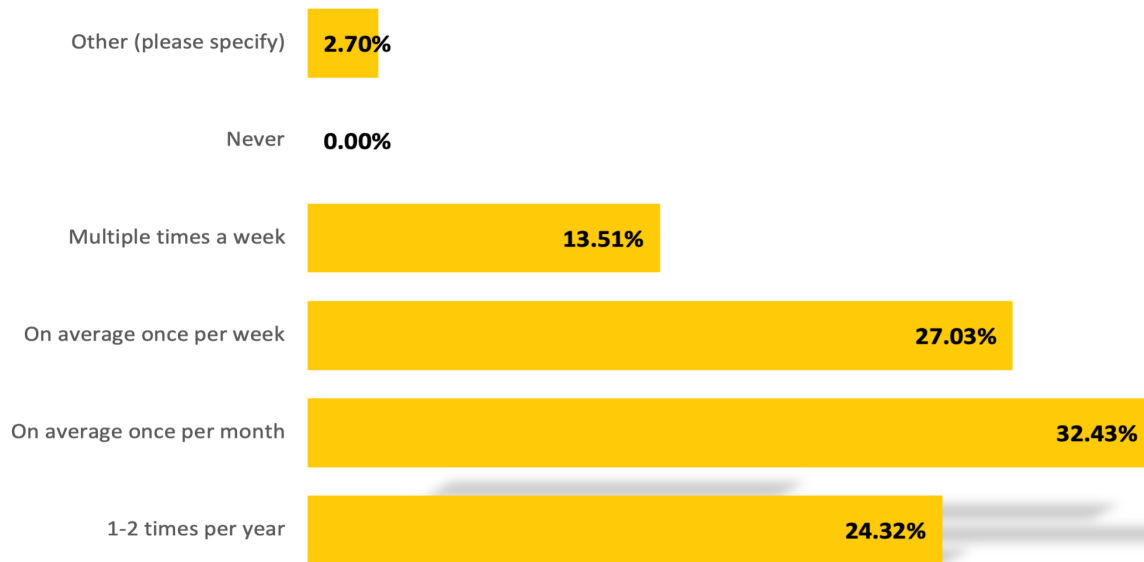
## Select the reasons for traveling outside the SBIT Reservation and Tokeland community.



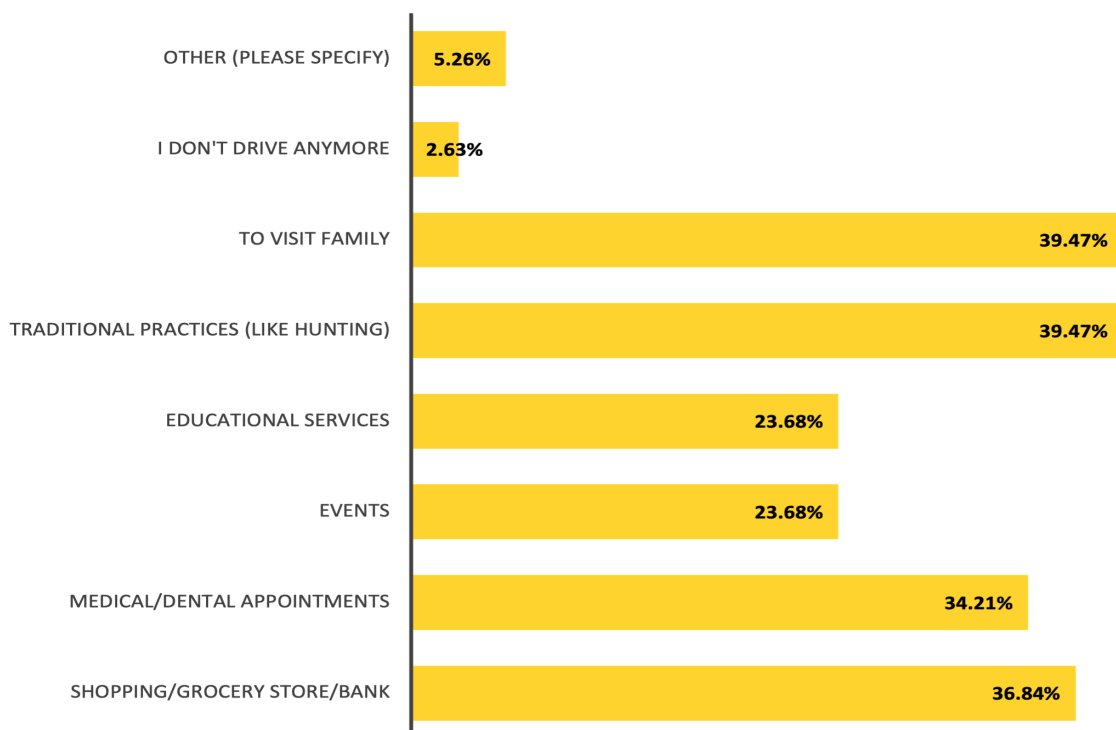
## How often each week do you travel within the SBIT Reservation and Tokeland community? Please skip if you live off the reservation or Tokeland community.



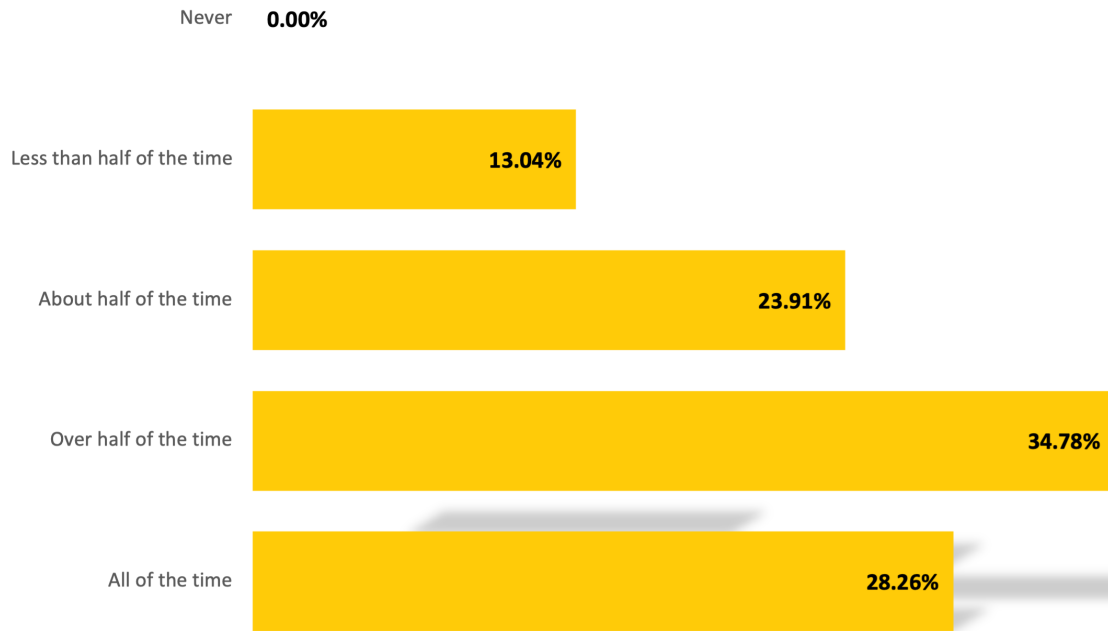
## How often do you travel to the reservation or Tokeland? Please skip if you live on the reservation or Tokeland community.



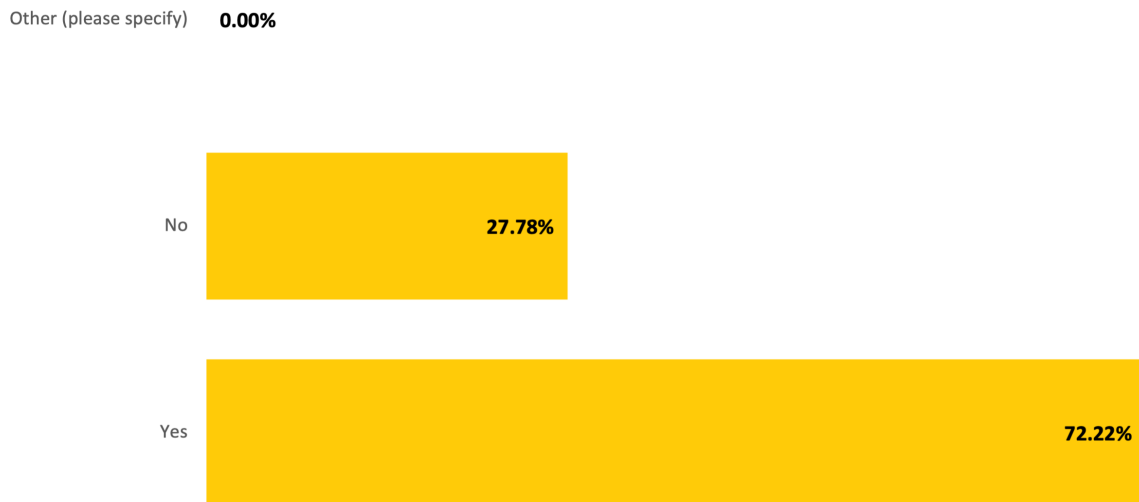
## If you drive, to which of the following local (like Raymond or Westport) destinations do you drive to? Please skip if you live on the reservation or Tokeland community.



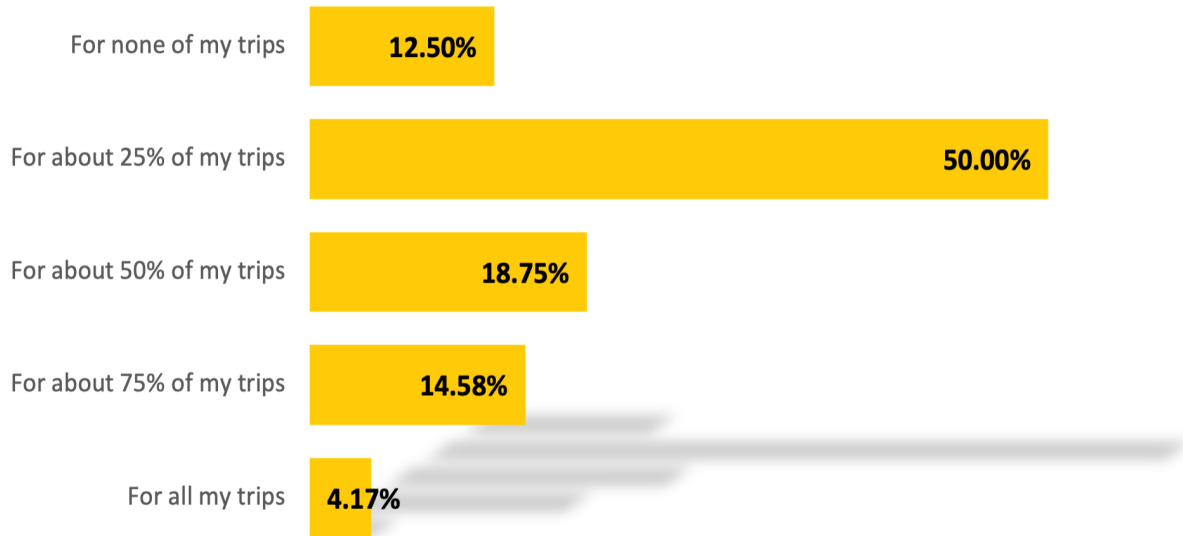
## Are you able to get to the places you need to go?



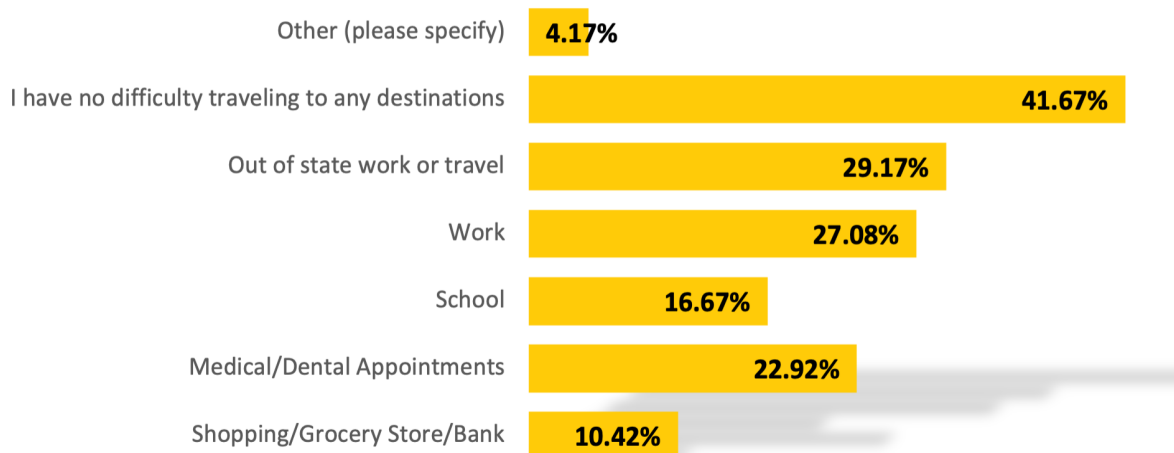
## Are you able to get to the community as frequently as you want? Please skip if you live on the reservation or Tokeland community.



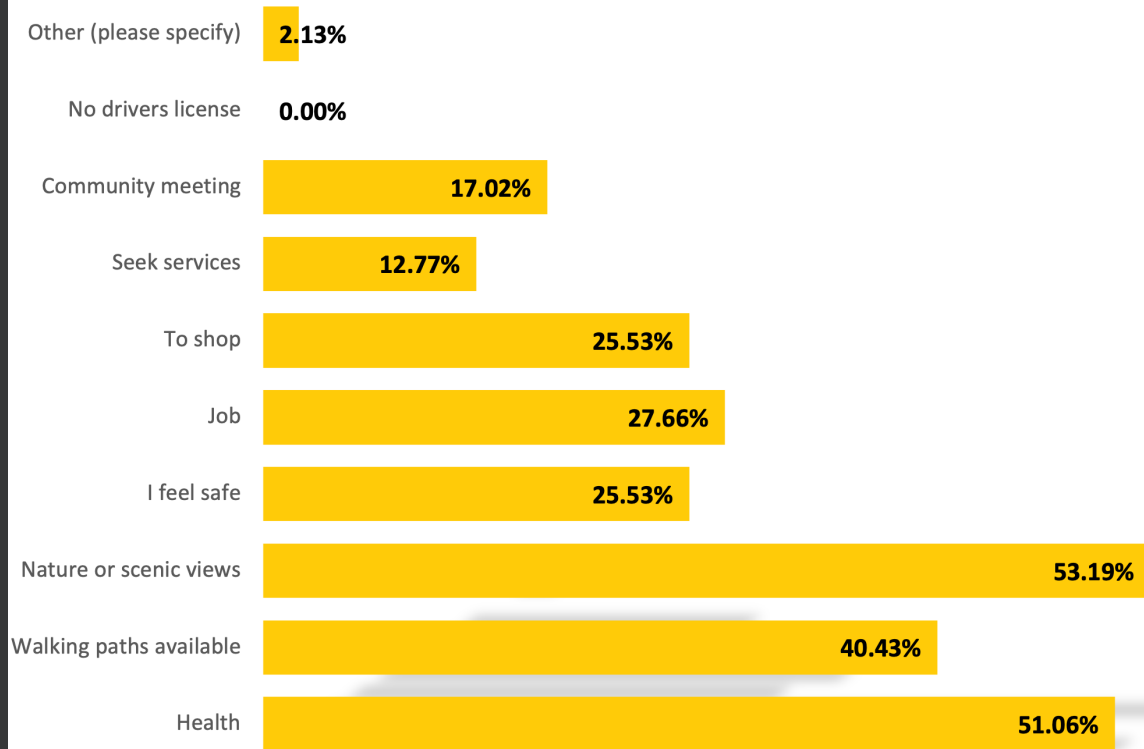
## During the past 3 months, how much do you rely on others for transportation?



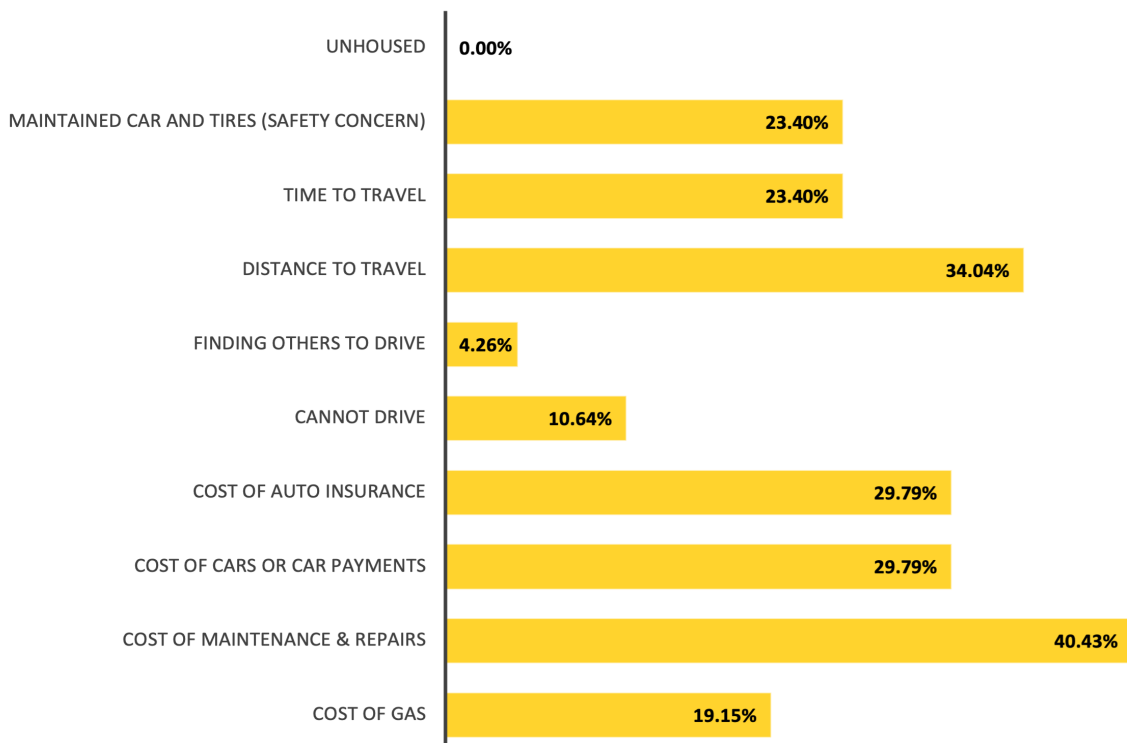
## During the past 3 months, were you unable to travel to any of the following destinations? Please check all that apply.



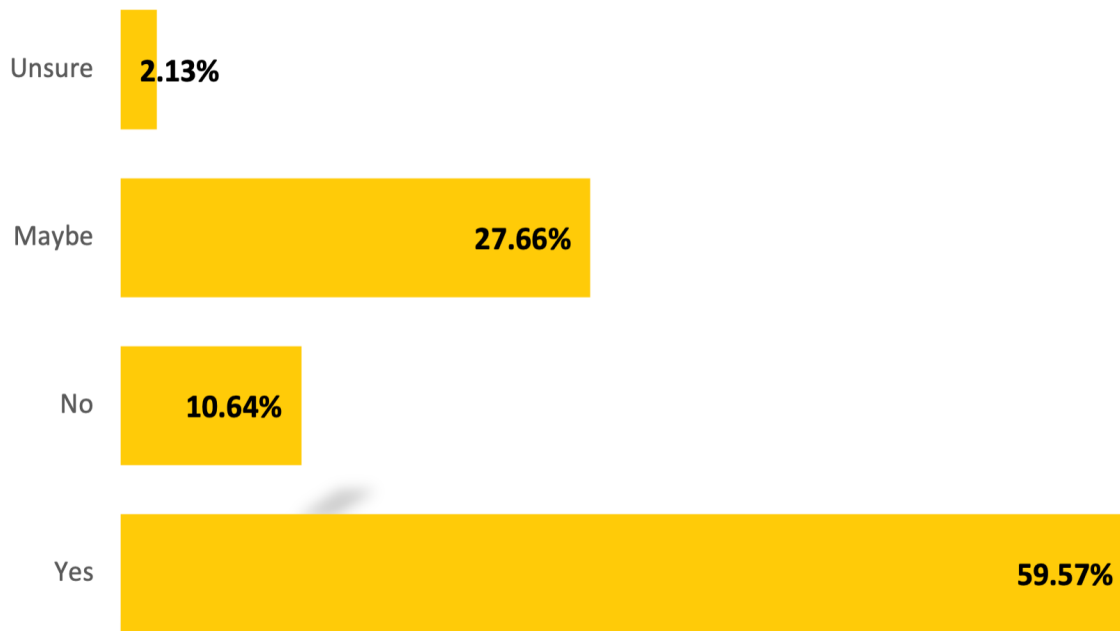
## community? Please check all that apply.



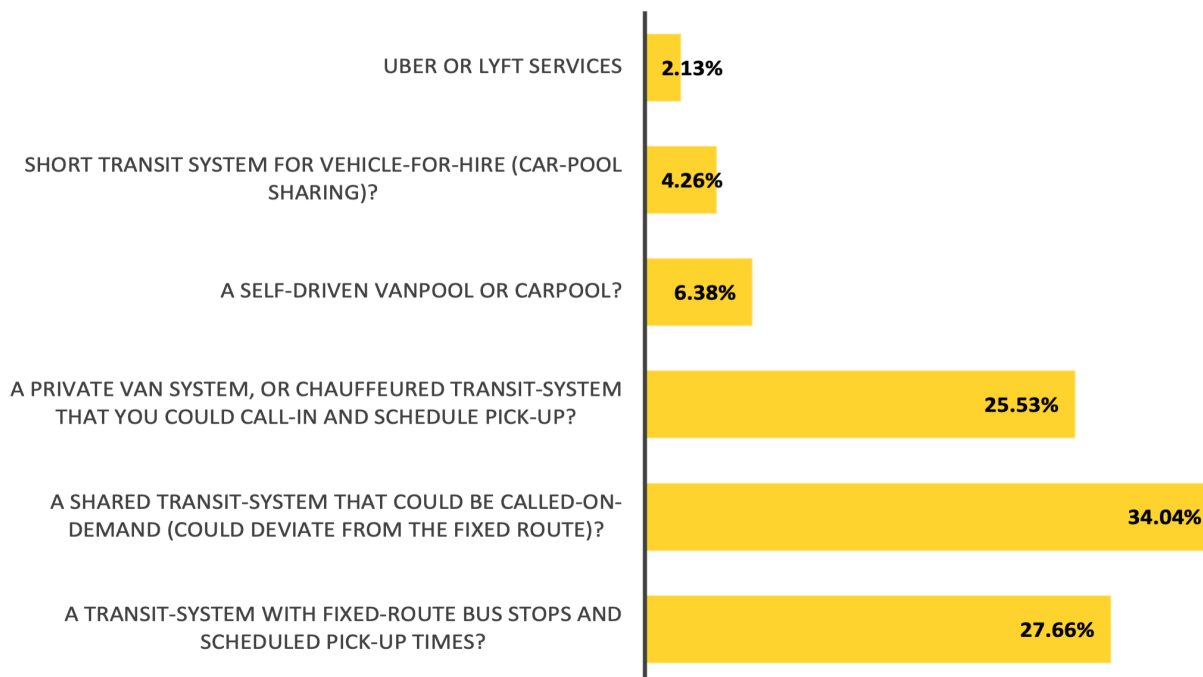
## What do you see as your biggest transportation problems? Select all that apply.



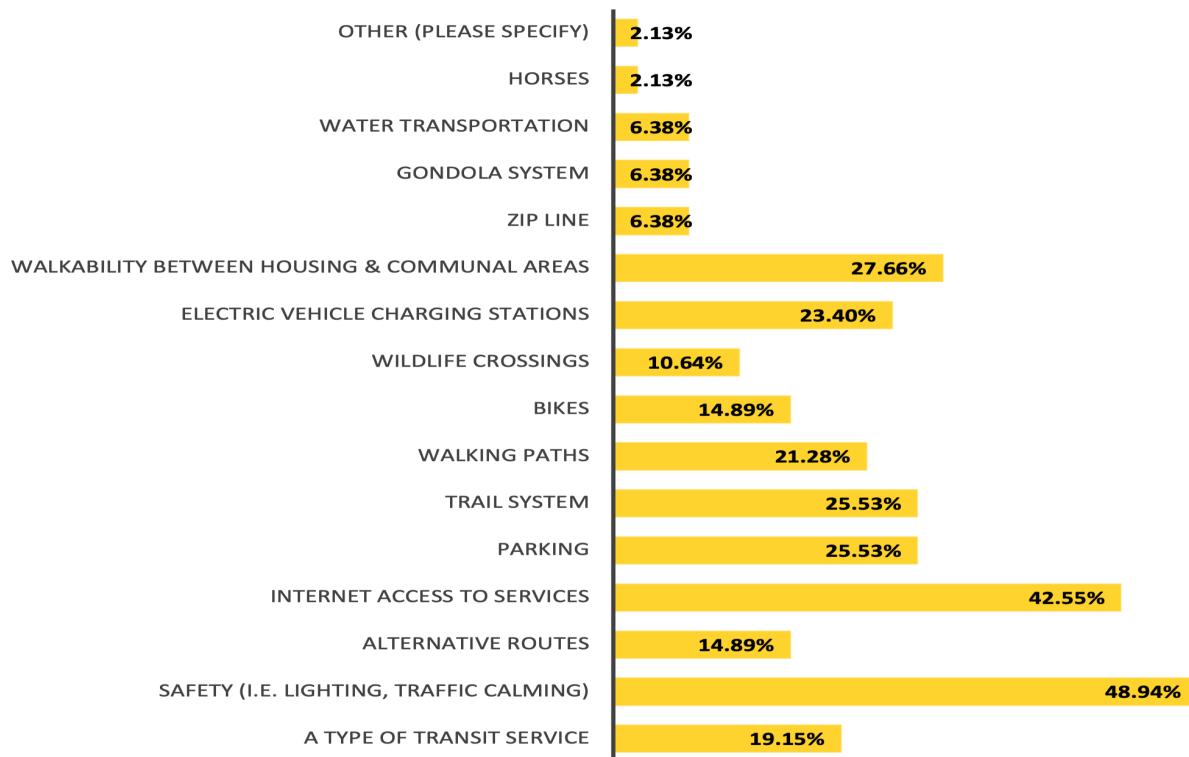
# Would you use transit if it were available?



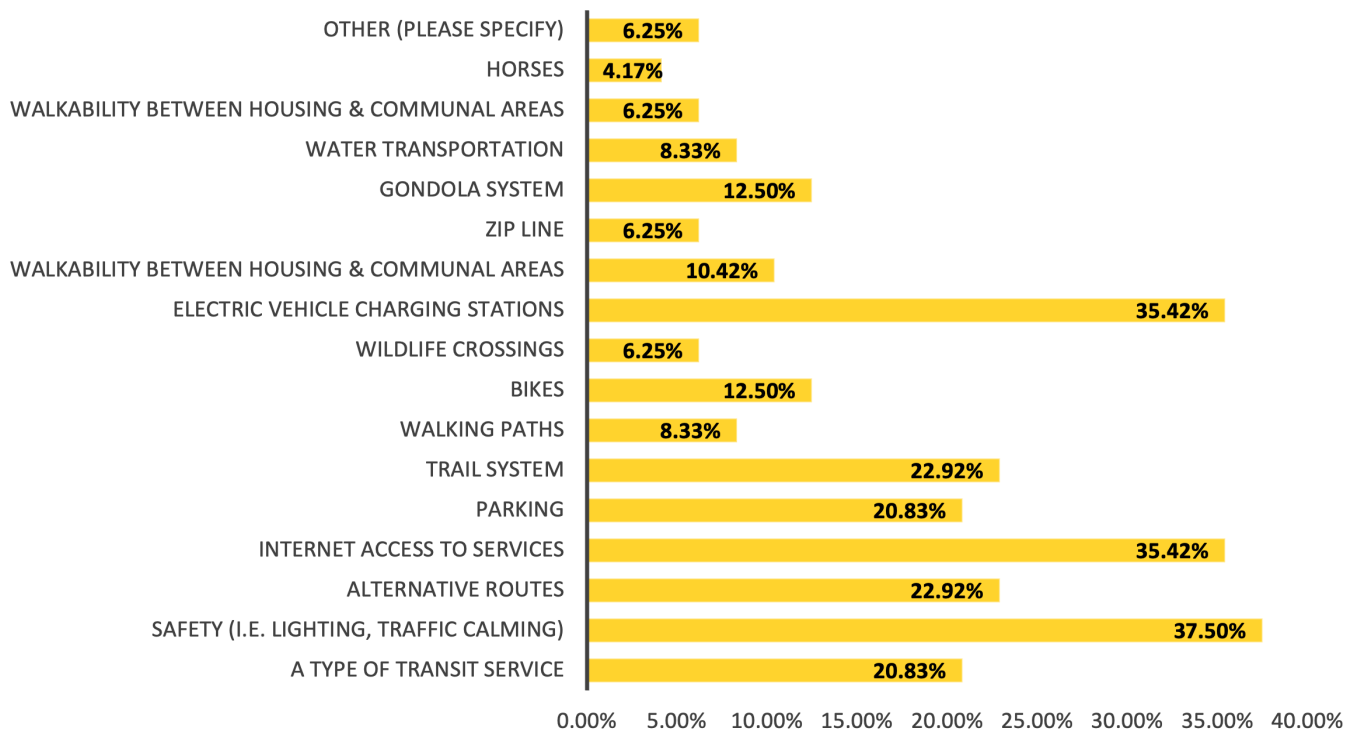
# There are several options for a local transit system. What would best meet you or your community's needs?



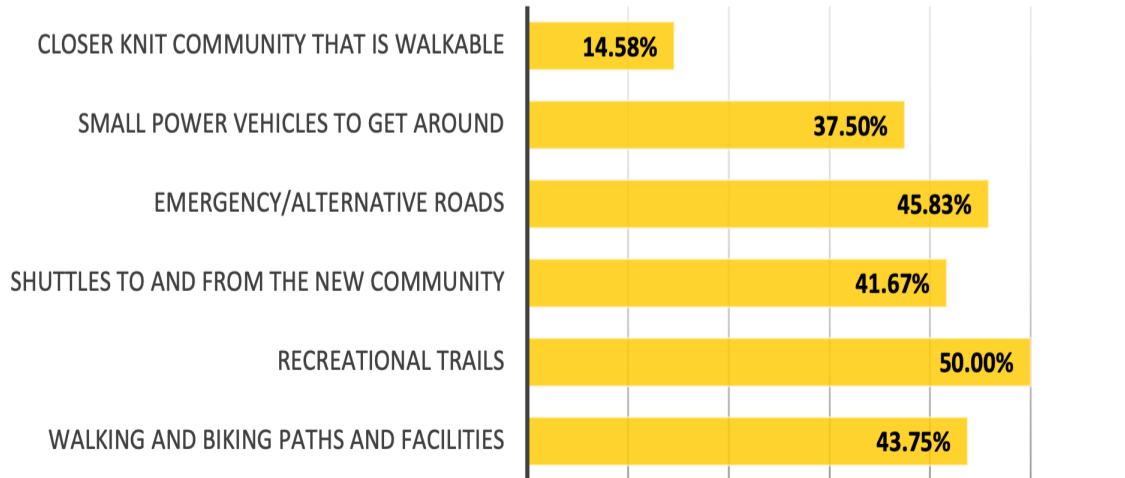
## What transportation and mobility resources would you like to see in the local community? Please select 3 you favor the most.



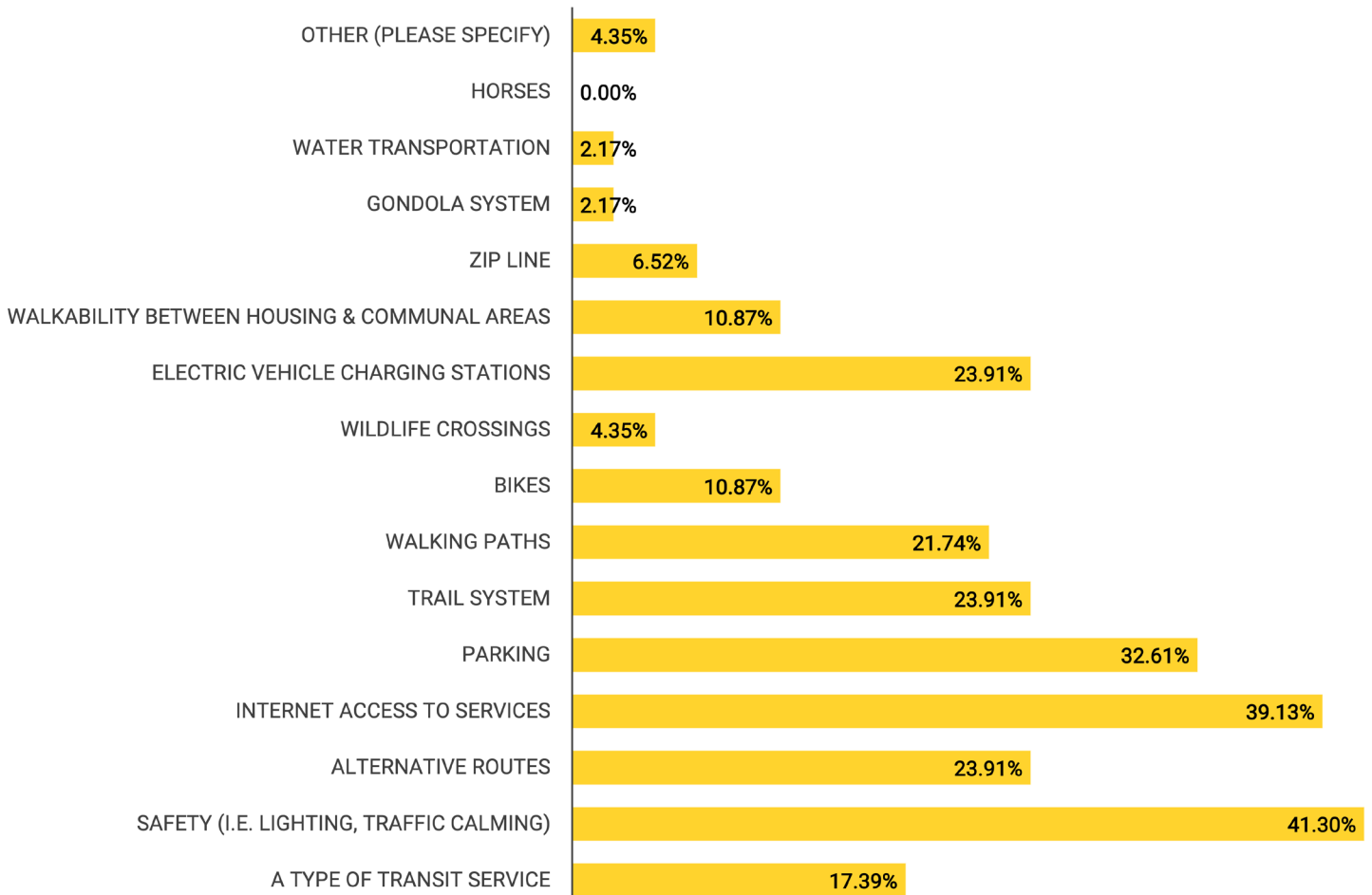
## What transportation and mobility resources do you think would be useful in the near future (in about 3-5 years)? Please select 3 you favor the most.



# What kind of transportation and mobility options would you like to see in the uplands specifically? Can select as many as you like.



## What transportation and mobility resources do you think you would need once the uplands community is completed? Please select 3 you favor the most.





# KEY FINDINGS

## 1. *Access to vehicle and ability to drive*

Most participating community members have access and ability to travel within the immediate SBIT community and regionally by vehicle. This finding supports the notion that “American Indian reservations remain some of the most isolated, auto-dependent populations in the nation”.

## 2. *Some participants do not have the above*

There is a segment of the participating community members who do not have this privilege (questions 11, 13 and 14) for a variety of reasons that the results allude to (that will be discussed in another finding below) and other reasons not highlighted in the data. Also, this finding connected to the relevant transportation accessibility issue that rural areas and rural tribes face especially for elderly and youth populations.

## 3. *Regional travel is frequent*

Regional travel is frequent and is not just for work (question 6 and 7) among participating community members that live on the reservation, Tokeland, and Pacific County. Major reasons for travel include needing to

obtain household goods and to run errands, for recreational purposes, medical appointments, and going to school

## 4. *Specific transportation challenges*

Transportation challenges for members include costs associated with vehicles & distance (question 16) as such this finding connects to demographics that many work off the reservation. This factors into the discussion about members desiring (from engagement) a grocery store, medical facility, WIFI, and expanded enterprises for increased jobs in the future that could reduce the distance challenge.

## 5. *Interest in transit*

Transit is of interest to participating community members – in particular, a standard transit system and an on-demand transit system (question 17). However, transit did not make it to the top five responses in the last four questions on transportation options for their community and upland expansion development. This will most likely remain a lesser priority strategy for SBIT to target.

## 6. *WIFI and electric vehicle charging*

WIFI and electric vehicle parking stations made it to the top five responses (Q 19, 20, and 22), showing participating community members value technology as a transportation and mobility strategy. Currently, it is still uncertain if electric vehicle charging stations are a feasible feature for the lowlands and uplands for community members and the public to have access to.

## 7. *Non-motorized transportation*

The community is in favor of increased walking, rolling, and biking infrastructure for the upland expansion planning and development. The survey results (question 19 to 22) illustrate that the community would like to see more safety infrastructure in place, active transportation paths and facilities, and trails.W

## 8. *A comparison to a tribal similiar survey*

A comparison to the Colville Confederated Tribes' survey results:

Comparatively, both tribes are on the same page with both having the cost of maintenance and repairs as the same transportation problem. However, the Colville's Confederated Tribes (CCT) departs from SBIT in that the second biggest problem for them is the cost of gas. Whereas distance is the second largest problem for SBIT. This is interesting because the cost of gas has risen considerably due to inflation and other factors since when the CCT survey was conducted.

Both tribes agree on the two types of transit systems that would meet their needs. Yet, SBIT community respondents liked the shared transit system that could be called on-demand more so than the standard fixed-route system that the CCT liked more.

The CCT survey results revealed a higher percentage of their community do not have a driver's license (38 out of 157 yes) compared to the SBIT community. But the surveys had two different response rates (the CCT's was higher), so accuracy of this is affected somewhat. The report emphasizes that Colville community members without drivers' licenses pose a safety concern because they most likely got it revoked due to driving while intoxicated or other driver infractions.

The question "Do you often ride with someone else?" in the CCT survey is similar to question 13 (During the past 3 months, how much do you rely on others for transportation?) posed to SBIT community members who participated (Campobasso & Winchell, 2021). Both show a high percentage of participants riding with others for transportation or relying on others out of necessity to a specific destination. As mentioned, half of the SBIT respondents selected 'yes' that in the past three months, they've relied on others and responses for this question in the CCT survey shows a sizable group of 66 respondents riding with others on a weekly basis, but the frequencies are unclear

Very similar results appear with the same question on transit ('Would you use transit if it were available?') posed in both surveys. Most of the respondents for both surveys said yes and most of the respondents of both surveys selected 'maybe' rather than outright selecting 'no'.

## 9. *Transportation data gap*

A transportation data gap is apparent after the existing conditions section was completed for the needs assessment. Unfortunately, this is a common challenge for tribal transportation practitioners and for rural and small-town contexts (Grisham, 2021). The data not identified nor available includes traffic studies (volume and speed data), models that establish the future use of the community's transportation system i.e., roads, Route 105 conditions, and Pacific County transit user data. To add, many transportation practitioners have voiced their needs for training on how to collect data themselves and having a centralized data management system. The limitations section above notes that the comprehensiveness of this needs assessment is not to the degree of other reports due to time constraints and data not available or created yet.



# RECOMMENDATIONS

## Short-term recommendations (next six months)

1. The Shoalwater Bay Indian Tribe may want to consider constructing a resilient trail system that would advance the SBIT's Resilience Plan. The proposal for such a trail can incorporate the key findings and design considerations from the FHWA's Trails as Resilience report; the fall studio products (particularly ideas for edible trails); and take inspiration from Nehemiah Studio's trail system concepts. This can be developed in conjunction with the phased upland expansion planning and development. Also, this will address the responses from the survey and engagement that show participating community members want and need non-motorized mobility via trails and paths, increased security, and resilience.
  - Action: Look into pursuing funding under Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program. The grant application can be informed by the key findings of this project (members are interested in trails) and existing conditions.
  - Action: Create a trail material matrix to assist in the decision-making for which trail path material to choose.

## Medium-term recommendations (next year to two years)

2. Coordinate with organizations and state and federal agencies to generate relevant transportation data and receive other technical assistance to support future grant applications and the comprehensive transportation plan.
3. The Shoalwater Bay Indian Tribe should consider exploring operating their first ever transit van (that they could potentially purchase using funds). The transit van could be on demand or have scheduled routes/destinations. This will align with their current capacity and the needs of the community as seen in this assessment. A full-time or part-time driver position may need to be created. This could boost the sustainability element of any grant with vehicle miles traveled reduced. Lastly, the transit van should transport vulnerable groups during an evacuation event and be used in the future as a shuttle between uplands and lowlands.
  - Possibly pursuing one of the FHWA rural and Tribal transit grants. Link below.
  - <https://www.transportation.gov/rural/toolkit/routes-discretionary-grant-funding-matrix>
  - <https://www.transportation.gov/buildamerica/RuralandTribalGrants>
  - Increase coordination and outreach with Pacific County's transit program to ensure community members' needs are met (i.e., weekend availability).
4. Consider pursuing a grant focused on providing WIFI for community members to increase access to services (i.e., telehealth and education) virtually and resources. As well as consider installing electric vehicle charging stations with support from the FHWA's Charging and Fueling Infrastructure Discretionary Grant Program. Also, this could boost the sustainability element of any grant.

5. Consider coordinating and negotiating with appropriate state and local agencies and property owners for road easements or similar processes that acquire permissions to access logging roads that connect to Route 105 or Route 101 across forested uplands during a hazardous event

**Long-term recommendations (next three to five years)**

6. Ensure that maintenance and upgrading of transportation facilities and assets are informed by impacts of climate change by incorporating a variety of resilience metrics into the capital improvements prioritization process.
  - SBIT can conduct a transportation vulnerable assessment utilizing the U.S. Department of Transportation’s Vulnerability Assessment Scoring Tool (VAST) tool or the Research Board’s decision process. To support this effort, the tribe can identify federal grant funding and technical assistance from FHWA and Northwest Tribal Technical Assistance Program at the University of Washington.
7. Willapa Bay Enterprises should contemplate how to capitalize on economic development initiatives that produce more jobs for community members within or near the community to alleviate regional travel and reduce vehicle miles traveled while also increasing regional attraction.
  - Partner with the SBIT for these initiatives
  - The Coastal Adaptations studio explored how this could be done by constructing a food processing hub in the Tribal Center to enhance the community’s food system and food sovereignty initiatives
  - In addition, the Tribe can acquire more land to construct a Spa or Wellness resort that creates more jobs and regional attraction. This Spa-Wellness resort can be

built somewhere more appropriately in the uplands where it does not interfere too much with the new community. the uplands where it does not interfere too much with the new community.

- One of the main resilient economic strategies put forward by the fall studio is “Ensure that more enterprises and business sectors are more mobile and reduce dependence on the region for employment and goods and services”. This strategy was created in response to rising seas and erosion that may put many of these enterprises’ physical structures at risk. Also, since several businesses have high start-up costs. To add, these mobile enterprises could include construction, general administration and professional services that are already established by some Tribes in North America.



# CONCLUSIONS

Transportation can be challenging due the distance required for regional travel and ability to travel may be inadequate for a segment of the participating SBIT community members. The sparseness of the road network is a major vulnerability for everyone living in the reservation and Tokeland in the case of an earthquake and tsunami, or even just severe winter storms, due to landslides, flooding, and fallen trees. As such, safety and resilience are critical and prompts the need for transportation accessibility. More broadly, the Tribe will have to grapple with how to strike a balance between regional travel, regional attraction, and self-reliance.'

High priorities from this assessment are: active transportation infrastructure, including paths and trails; and transportation and mobility infrastructure that enhances safety and resilience, especially alternative emergency routes; and a tribal operated on-demand transit van, appears to be a lower priority but needs further exploration, especially in the case of increased development in the uplands. Electric vehicle charging stations may become a higher priority with rising gas prices; EV feasibility and level of need would need to be investigated further. Like many rural and rural tribal communities in the US, the digital divide is ever-present (Bauer et al., 2022). Tribal members not only want expanded WIFI and/or internet access but need it especially for those interested in telehealth, remote work and online education.

Holistic planning and design, and outreach to community members can help catapult the upland development efforts. Getting back to basics (as one community member put it during a meeting "Well, we know that having no plan hasn't worked") and being creative with solutions

has been a realization for the Tribe. There is no doubt the Shoalwater Bay Indian Tribe has a spectacular vision and their actions demonstrate that the upland development as a plan.

This work adds to the body of tribal transportation research because it showcases transportation and mobility needs and challenges in the context of tribal-led managed retreat. Furthermore, the challenges the SBIT faces mirror the transportation and mobility-related challenges for rural tribal communities such as the food and transit deserts, the digital divide, isolation and auto dependence, safety concerns more broadly, systemic inequities and the undermining of tribal sovereignty. Furthmore, from this work, the SBIT is considered another tribe that is continuing to shift transportation planning from totally being auto-centric towards implementing more active transportation infrastructure.

## *Future research and next steps*

To continue this work, further research alongside the SBIT community can be conducted to understand some of the ambiguous findings more. As noted, certain findings were unclear or seemed counterintuitive. In particular, transit was not one of the top five transportation options in the last four questions. Then for the cross tabulations, several respondents seemed to contradict themselves when they selected 'not having a vehicle' for question three and then chose 'over half of time' to question 11 (Are you able to get to the places you need to go?) instead of 'about half of the time' or less. Future research could be more in-depth qualitative interviews and focus groups with SBIT community members and staff on their transportation needs and priorities. Lastly, the interviews or focus groups with community members could gauge level of interest and concerns with autonomous electric vehicles or driverless vehicles.

The Earthlab team and I want to continue this partnership and reciprocity with the Shoalwater Bay Indian Tribe. This may come in the form of future studios in the College of Built Environments and thesis projects from previously involved students.