

Human Wellbeing Vital Signs Survey 2022 Summary

A Report on Subjective Human Wellbeing
Indicators Prepared for the
Puget Sound Partnership

Krista Harrington
Bethany Leach
Zoë Antenucci
Kelly Biedenweg

September 2023



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Executive Summary

This report covers the third Human Wellbeing survey iteration to monitor the subjective human wellbeing vital signs created by the Puget Sound Partnership and Oregon State University. The report presents findings for the following Vital Signs. Unless otherwise listed, there were no significant differences between 2018, 2020, and 2022 survey results:

Survey Response Rate: 20.8%

Good Governance: 4.05 on a scale of 1-7 (where 1 is strongly disagree and 7 is strongly agree)

- Score equates to 'neutral' response. Respondents do not feel strongly in agreement or disagreement about how the environment around them is managed and whether they feel heard in decision making.

Local Foods: 1.42 on a scale of 1-5 (where 1 is 1-2x/season and 5 is >10 times/season)

- Score equates to collecting and/or harvesting local foods 1-2 times a season, or, 'rarely'.

Sound Stewardship: 3.36 on scale of 1-5 (where 1 is 1-4x/year and 5 is almost daily)

- Score equates to participants engaging in stewardship activities at least once a month, or, 'occasionally'.

Cultural Wellbeing: 3.81 on a scale of 1-5 (where 1 is dissatisfied and 5 is satisfied)

- 67% of survey participants did not participate in one or more of the cultural activities.
- Score equates to participants experiencing slightly below 'somewhat satisfied' with their ability to participate in cultural traditions related to the natural environment.
- This result is statistically different than 2020 findings but equates to the same category of satisfaction.

Sense of Place is composed of 3 indicators:

Sense of Place: 5.49 on a scale of 1-7 (where 1 is strongly disagree and 7 is strongly agree)

- Score equates to respondents 'somewhat agreeing' that they have a sense of place in the Puget Sound.

Psychological Wellbeing: 3.98 on a scale of 1-5 (where 1 is 1-4x/year and 5 is almost daily)

- Score equates to participants experiencing inspiration or stress reduction from the outdoors almost once a week, or 'regularly'.

Overall Life Satisfaction: 4.41 on a scale of 1-5 (where 1 is dissatisfied and 5 is satisfied)

- Score equates to respondents feeling 'satisfied' with their life.

Outdoor Activity is composed of 2 indicators:

Nature Based Recreation:

- There is no significant differences between the frequency of any summer activity between 2018 and 2022. The most frequent activities in 2022 are gardening/yardwork, the use of motorized trails and paved paths or trails for walking, running, and biking.
- During the winter months, the most frequently engaged with activities are the use of paved and unpaved paths or trails for walking, running, biking, etc. There was a significant difference in hunting frequency between 2018 and 2022.

Nature Based Work:

- 13.6% of respondents said their work involved time outdoors, of those, 50% work more than 10 hours/week outdoors.

Introduction

This is the third report on the subjective human wellbeing Vital Signs created by the Puget Sound Partnership and Oregon State University. The first iteration was implemented in 2018, then again in 2020, following a biennial sampling scheme.

The Vital Signs are monitored to assess the overall health of the ecosystem in the Puget Sound, including aspects that directly measure human quality of life and healthy human populations. The data discussed in this report were collected through both a paper and online survey instrument that were sent directly to residents living in the Puget Sound. The 2022 survey instrument assessed the condition of the subjective wellbeing of the general population in the Puget Sound Region. These indicators are considered “subjective” as they are based on or influenced by personal feelings, opinions, and experiences of respondents. Questions on the 2022 survey directly reflect the indicators chosen by the Puget Sound Partnership that were created using a collaborative research process. The specific categories of human wellbeing (HWB) covered in this report include good governance of natural resources, local foods, sound stewardship, nature-based work, physiological wellbeing, cultural practices and traditions, sense of place, outdoor activity, and life satisfaction in the Puget Sound. Demographic information, such as age, gender identity, education, income, race, and political leaning were also collected to determine the representativeness of our sample and determine if they can serve as predictors to Vital Sign responses. The appendices include detailed methodology, a copy of the survey instrument, and general comments of survey respondents.

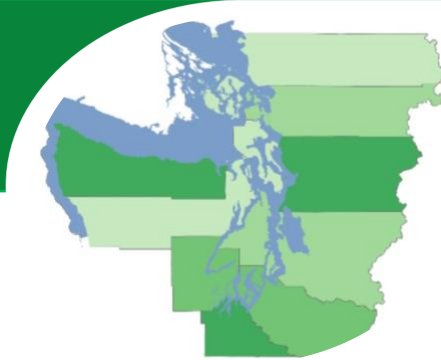
The 2022 survey was implemented in December 2022 to a stratified random sample of Puget Sound residents with an initial sample of 9,000 participants. Due to 804 undeliverable addresses, 38 removals by phone, and 34 returned blank surveys, the total sample reached was 8,144. The response rate was 20.8% for a total of 1,701 individual responses.

The indicators were tested for significant differences across demographic variables.

Unless otherwise indicated, there was no or minimal variation due to the following:

- Years in residence
- Gender
- Rural, Urban, and Suburban communities
- Education
- Income
- Race
- Age

Maps in the upper right-hand corner of each Vital Sign page show the average response per Puget Sound County. Color labels match the response options on the graph on the same page. See the 'Participant Location' map (pg. 21) for county names and spread of survey respondents.



Vital Sign

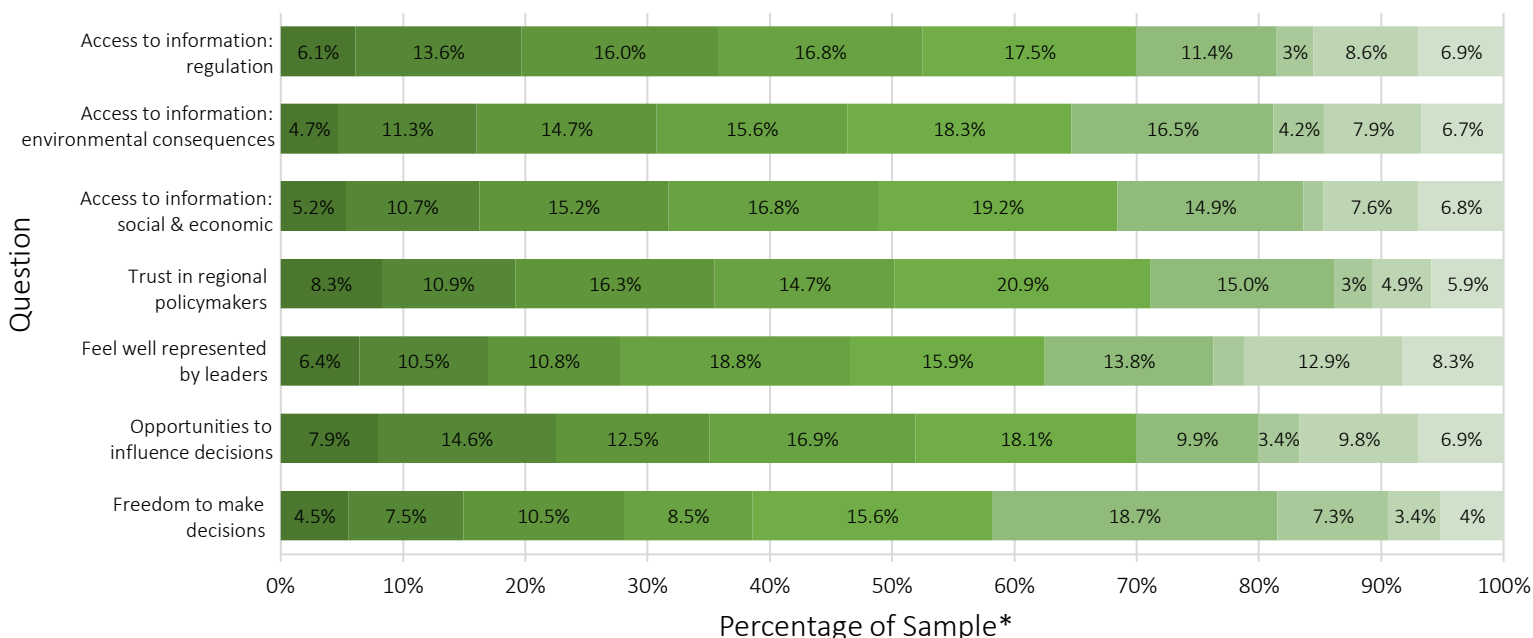
Good Governance

What: Good Governance is participatory, consensus oriented, accountable, transparent, effective, efficient, equitable, inclusive, and follows the rule of law. It is also responsive to the present and future needs of society.

Why: Good Governance tells us whether people agree with how the environment around them is managed and whether they feel heard in decision-making.

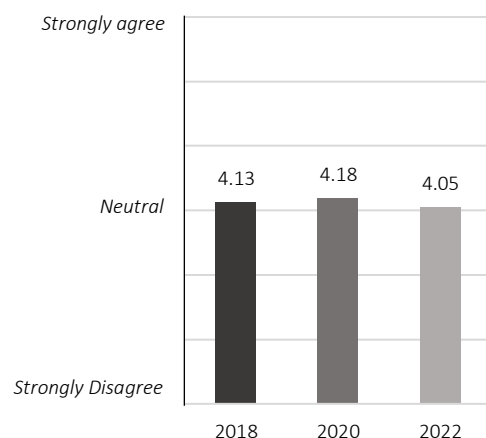
How: We measure Good Governance by asking respondents to rate their agreement or disagreement with statements about the governance of natural resources on a seven-point Likert scale (See Appendix B for survey instrument)

Strongly Disagree
 Disagree
 Somewhat Disagree
 Neutral
 Somewhat Agree
 Agree
 Strongly Agree
 Don't Know
 No Response

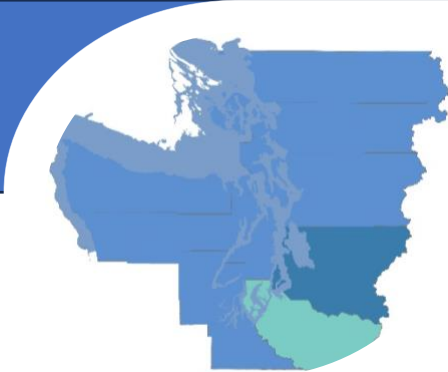


4.05 was the average response in 2022, which equates to a 'neutral' response. This means, on average, Puget Sound residents do not feel strongly in agreement nor disagreement.

This is consistent with responses in 2018 and 2020.



*Percentages less than 3% are not labeled.



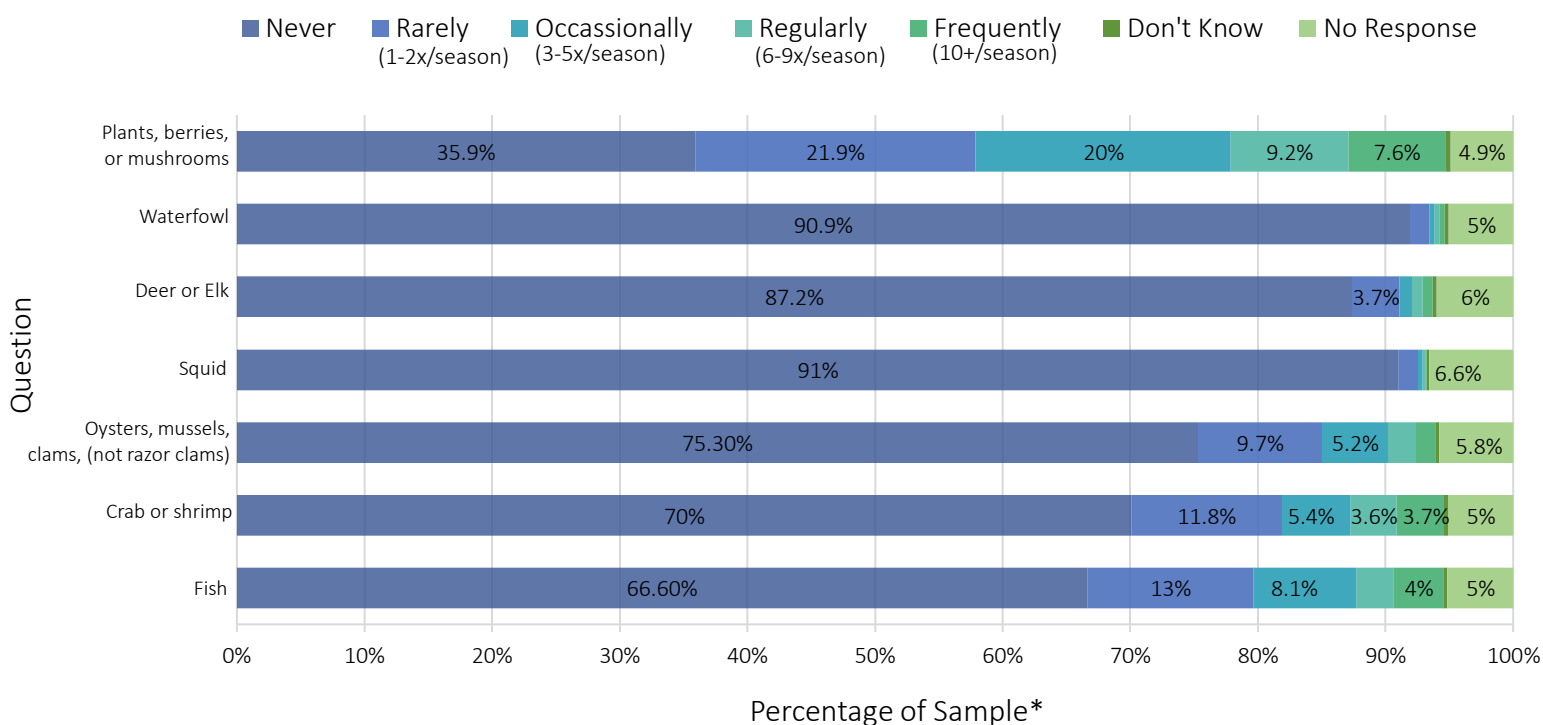
Vital Sign

Local Foods

What: Local Foods include a variety of locally harvestable plants, fungi, and animals in the Puget Sound, including but not limited to, fish and shellfish, other animals and birds, and plant-based greens, roots, nuts, and fruits.

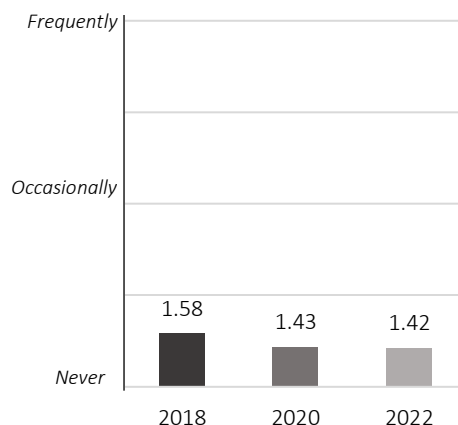
Why: Local Foods tells us about people's actual use of Puget Sound food resources for traditional, subsistence, and recreational uses, suggesting access to and importance of these resources.

How: We measure Local Foods by asking respondents to rate their engagement in hunting, fishing, or foraging on a five-point Likert scale (See Appendix B for survey instrument).

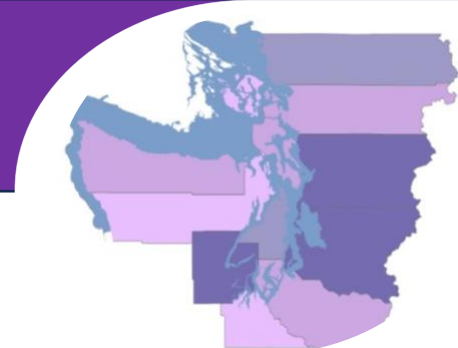


1.42 was the average response in 2022, which equates to collecting and/or harvesting local foods 1-2 times a season, or, 'rarely'.

This score is consistent with 2020 results. Direct comparisons cannot be made with 2018 survey due to survey modifications.



*Percentages less than 3% are not labeled.



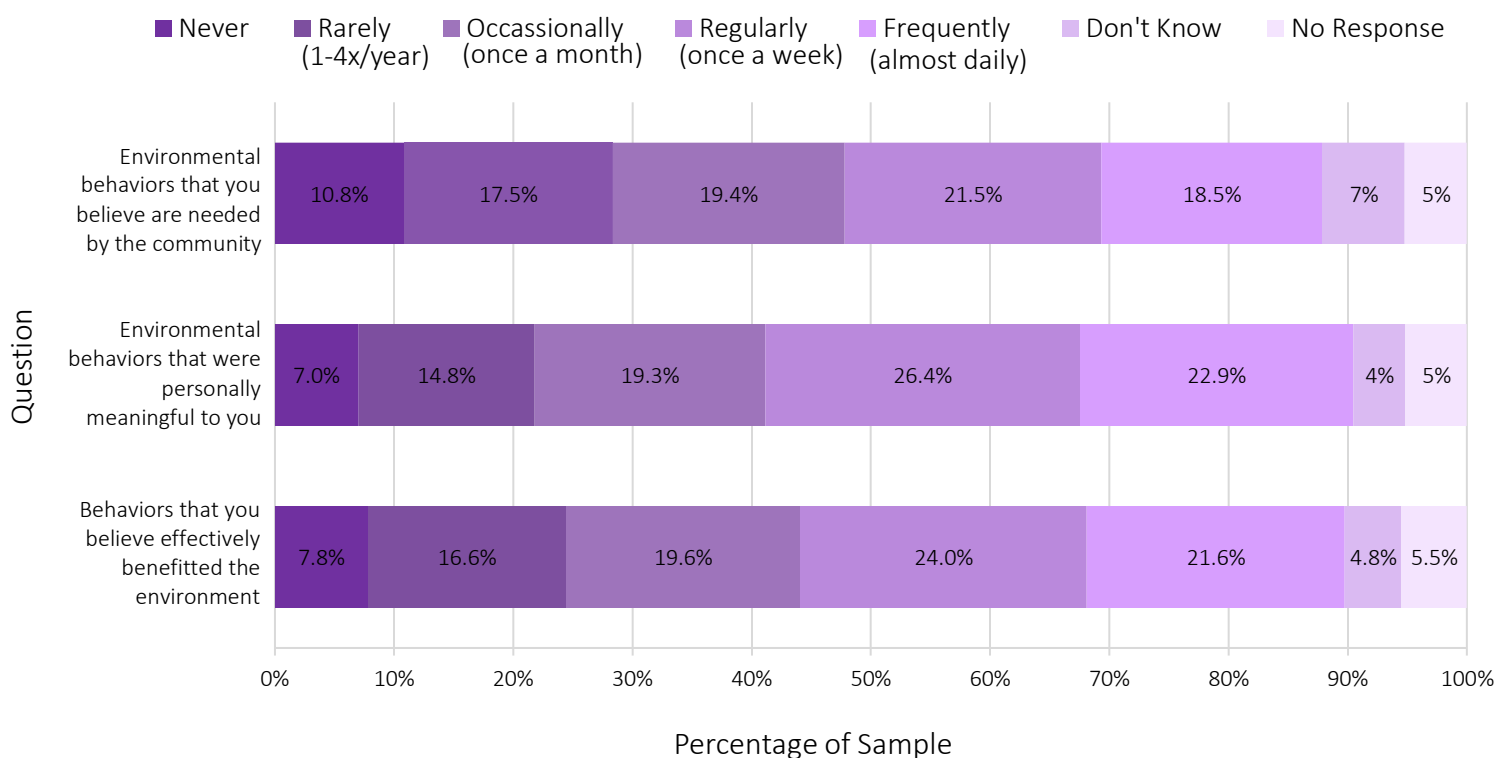
Vital Sign

Sound Stewardship

What: Sound Stewardship is about people engaging in activities that they believe will benefit the environment and are desired by their communities.

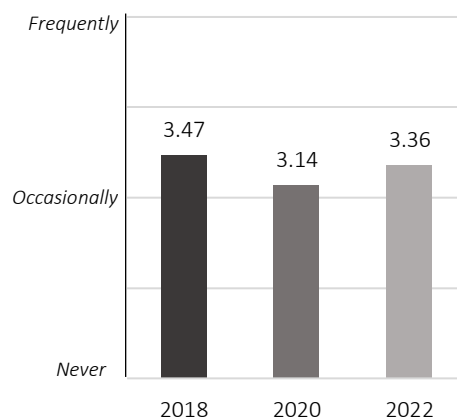
Why: Sound Stewardship tells us about people's engagement in stewardship activities and whether management actions that encourage more sustainable behaviors are effective.

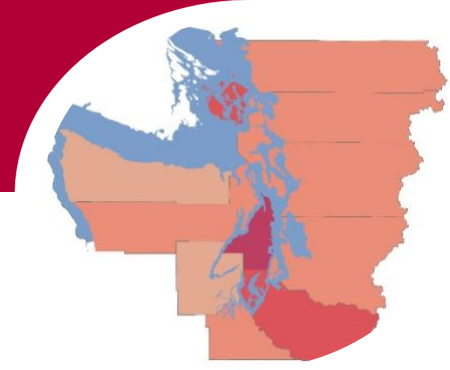
How: We measure Sound Stewardship by asking respondents how often they engaged in stewardship behaviors/activities for different reasons using a five-point Likert scale (See Appendix B for survey instrument).



3.36 was the average response in 2022, which equates to participants engaging in stewardship activities at least once a month, or 'occasionally'.

This is consistent with responses in 2018 and 2020.





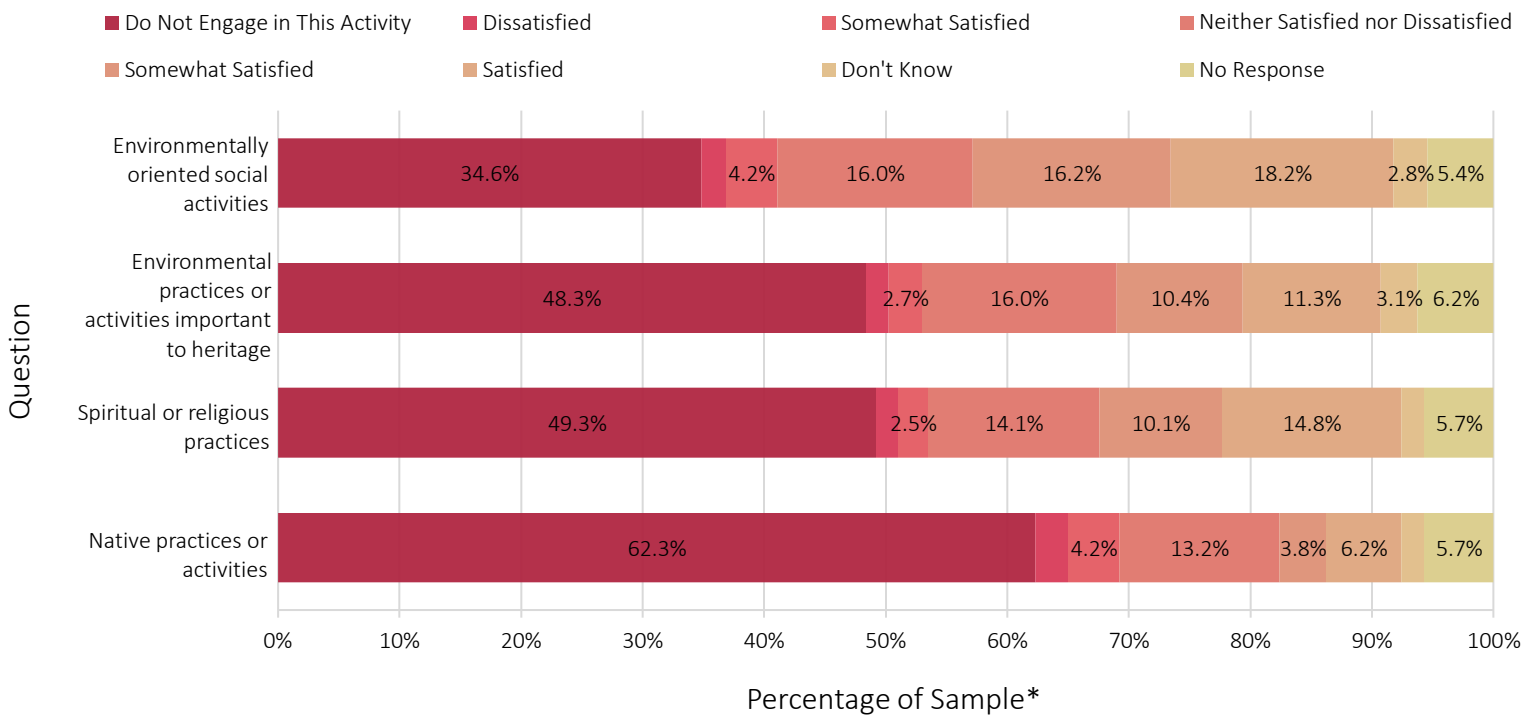
Vital Sign

Cultural Wellbeing

What: Cultural wellbeing is a measure of engagement with activities and/or traditions that are meaningful to individuals of any culture.

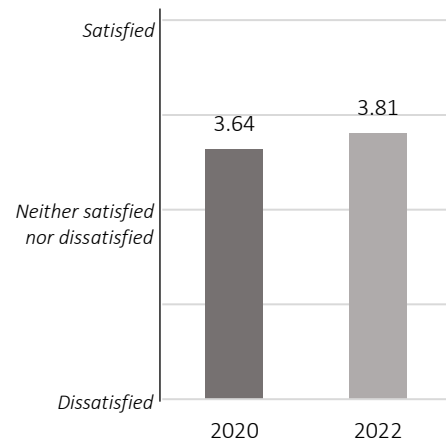
Why: By measuring cultural wellbeing, we can recognize the inter-dependencies between, people, culture, and the environment. This indicator tells us whether people feel satisfied with their ability to participate in and maintain traditions related to the natural environment and whether management actions support diverse cultural expression.

How: We measure Cultural wellbeing by asking respondents to rank their satisfaction levels in regard to their participation in four categories of cultural activities or traditions, using a five-point Likert scale (See Appendix B for survey instrument).



3.81 was the average response in 2022, which equates to participants experiencing about “somewhat satisfied” with their level of participation in cultural activities. This result is statistically different than 2020 findings but equates to the same category of satisfaction.

Comparisons cannot be made with 2018 survey results because this question was revised in 2020.



*Percentages less than 3% are not labeled.



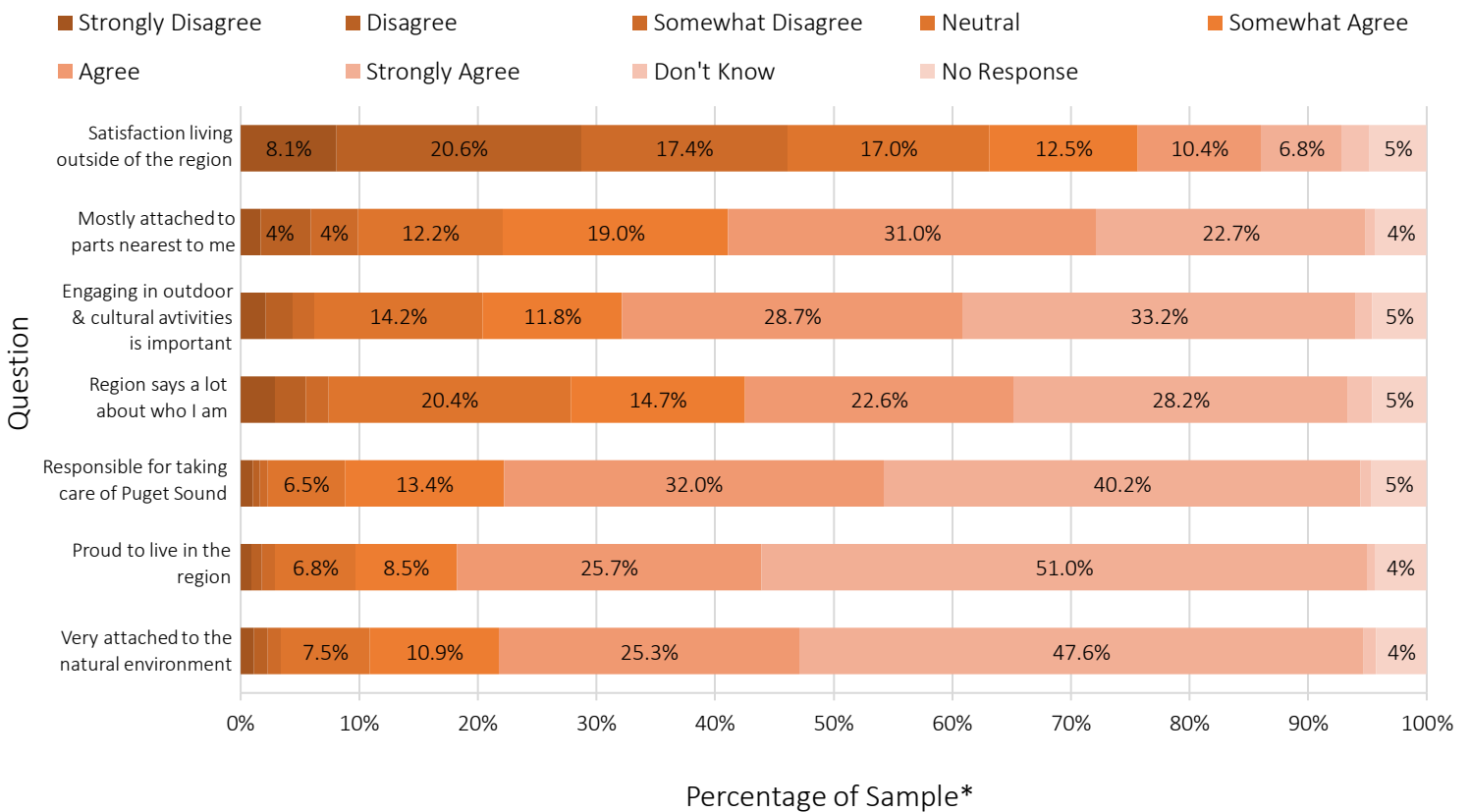
Vital Sign: Sense of Place

Indicator: Sense of Place

What: Sense of Place is the extent to which people identify with and feel positively attached to a specific place.

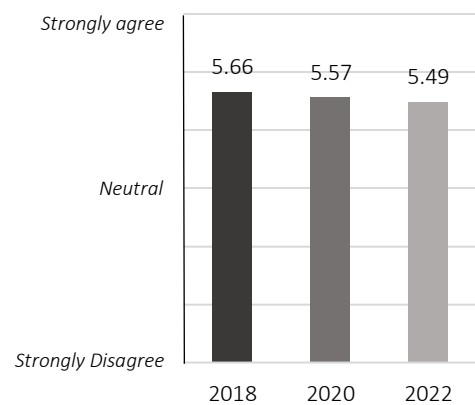
Why: Sense of Place is an important measurement because it tells us about peoples' emotional connection to Puget Sound, which can be associated with stewardship behaviors and ecosystem health.

How: We measure Sense of Place by asking respondents to rate their agreement or disagreement with seven statements about sense of place on a seven-point Likert scale (See Appendix B for survey instrument).

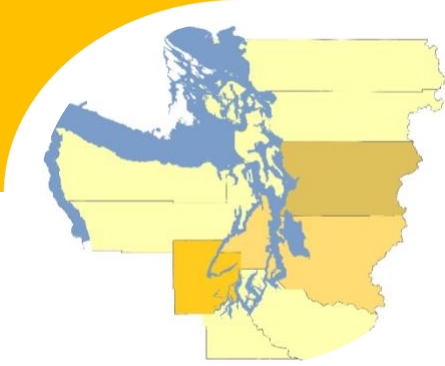


5.49 was the average response in 2022, which means respondents “somewhat agree” that they have a sense of place in the Puget Sound.

This is consistent with participants' responses in 2018 and 2020.



*Percentages less than 3% are not labeled.



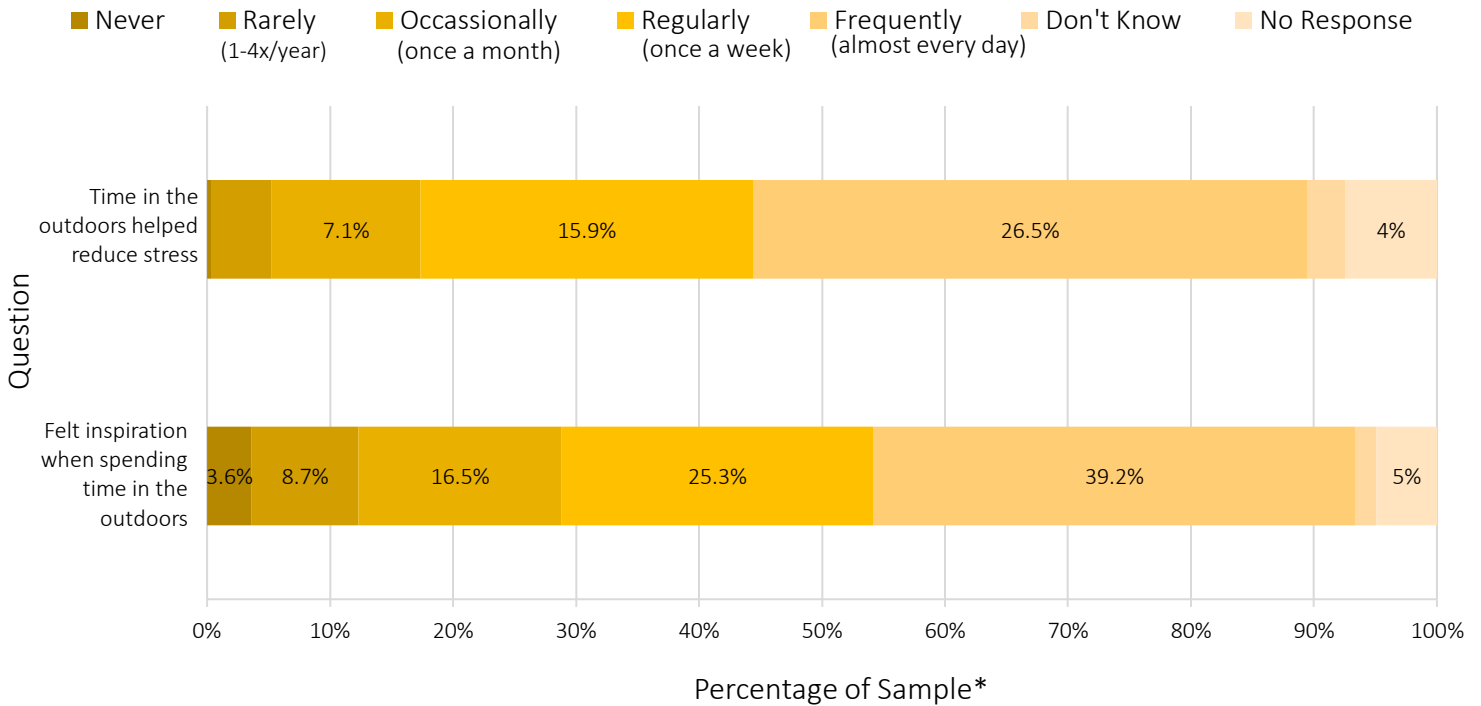
Vital Sign: Sense of Place

Indicator: Psychological Wellbeing

What: Psychological Wellbeing is a general term that refers to an individual's emotional and cognitive health.

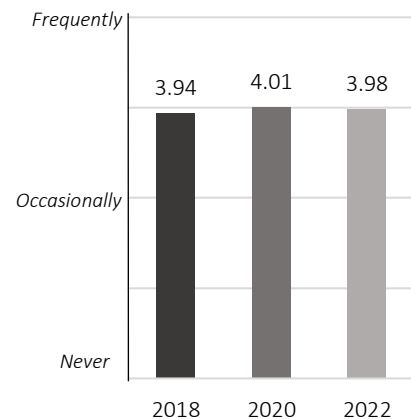
Why: Psychological Wellbeing tells us whether people are feeling psychological benefits from being outdoors in the Puget Sound, suggesting access to and health of ecosystem.

How: We measure Psychological Wellbeing by asking respondents how often they have felt inspiration and reduced stressed as a product of spending time outdoors using a five-point Likert scale (See Appendix B for the paper instrument).

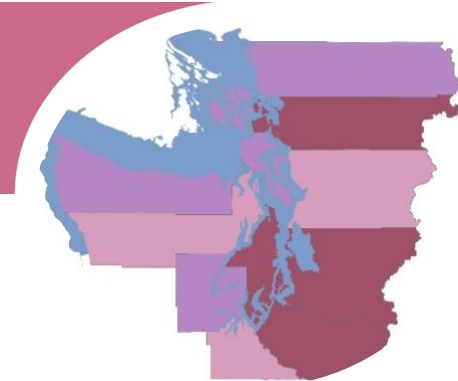


3.98 was the average response in 2022, which equates to participants experiencing inspiration or stress reduction from the outdoors almost once a week, or, “regularly”.

This is consistent with responses in 2018 and 2020.



*Percentages less than 3% are not labeled.



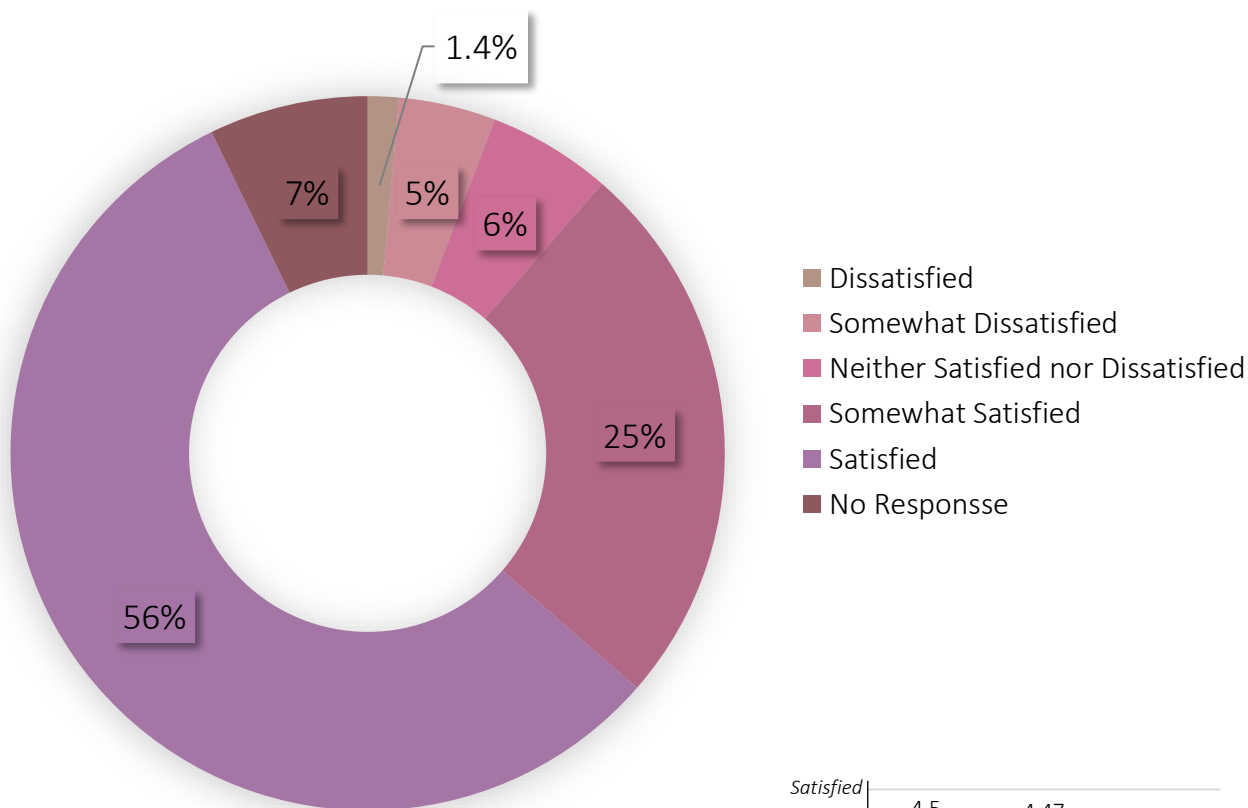
Vital Sign: Sense of Place

Indicator: Life Satisfaction

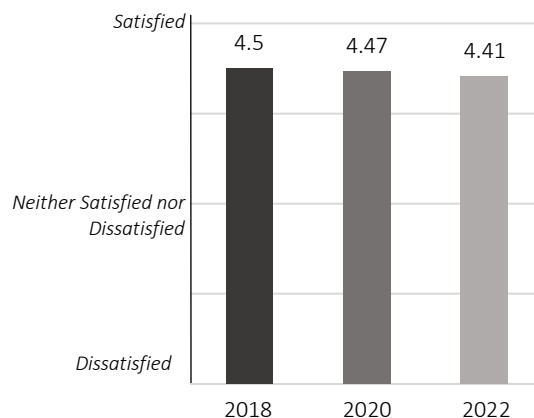
What: Life Satisfaction is the level of life satisfaction that residents in the Puget Sound perceive.

Why: Life Satisfaction is a robust metric of subjective wellbeing that serves as a baseline to understand how trends in environmental health and engagement in activities related to the environment are affecting overall human wellbeing.

How: We measure Life Satisfaction using a standardized question that asks people how satisfied they are with their life, using a five-point Likert scale.



4.41 was the average response in 2022 which means that the majority of respondents are 'satisfied' with their life which is consistent with 2020 findings.



Vital Sign

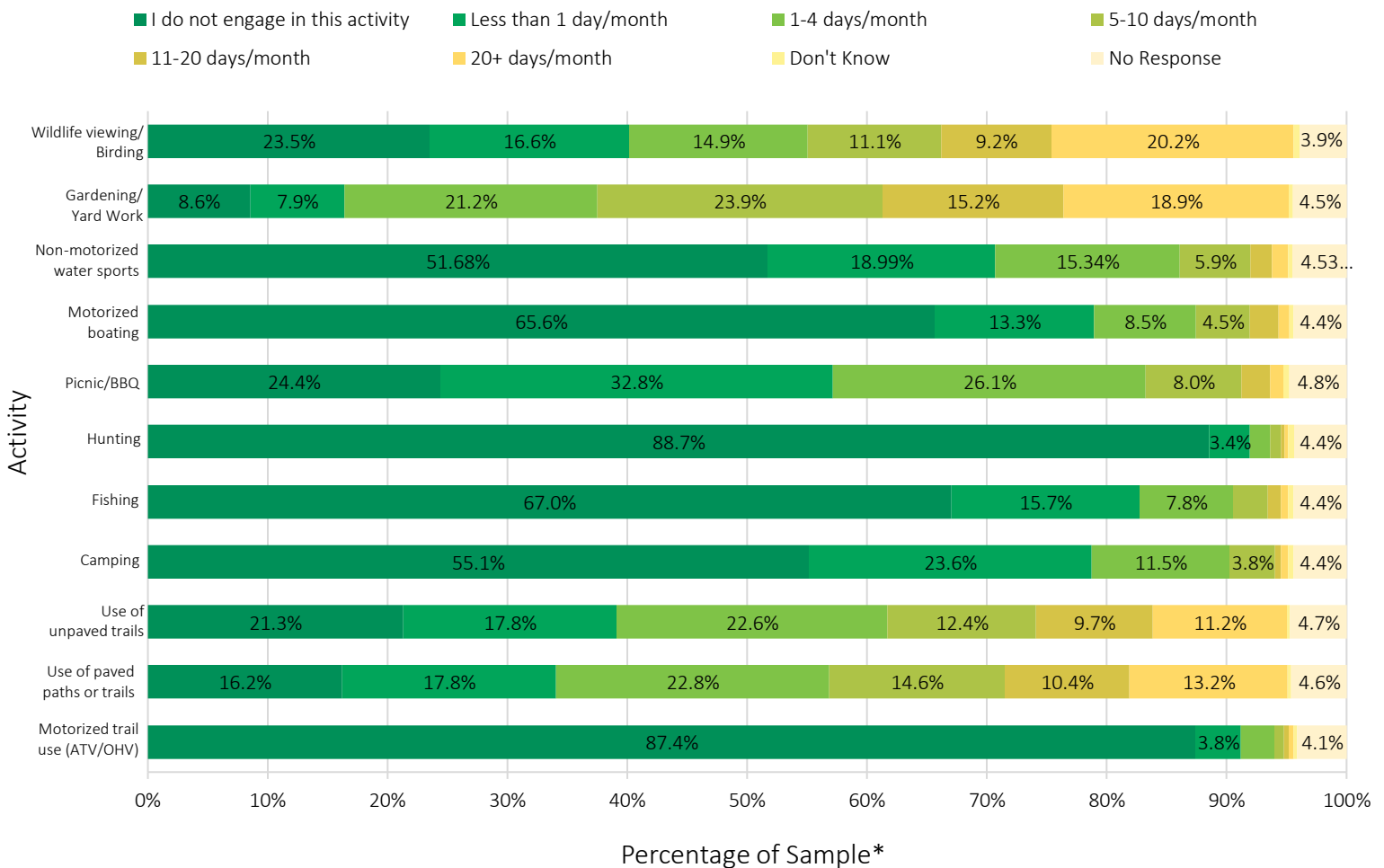
Outdoor Activity

What: Outdoor Activity measures the frequency of recreational activity that is done within the Puget Sound region outdoors throughout the year.

Why: Outdoor Activity in the Puget Sound allows us to measure whether people are obtaining an adequate 'dosage' in nature, what activities are the most popular, and the extent to which people are able to engage in them.

How: We measure Outdoor Activity in the Puget Sound for the 11-12 activities across five frequency options over two seasons by the descriptions that follow:

Indicator: Nature Based Recreation Summer Recreation (about June-September)



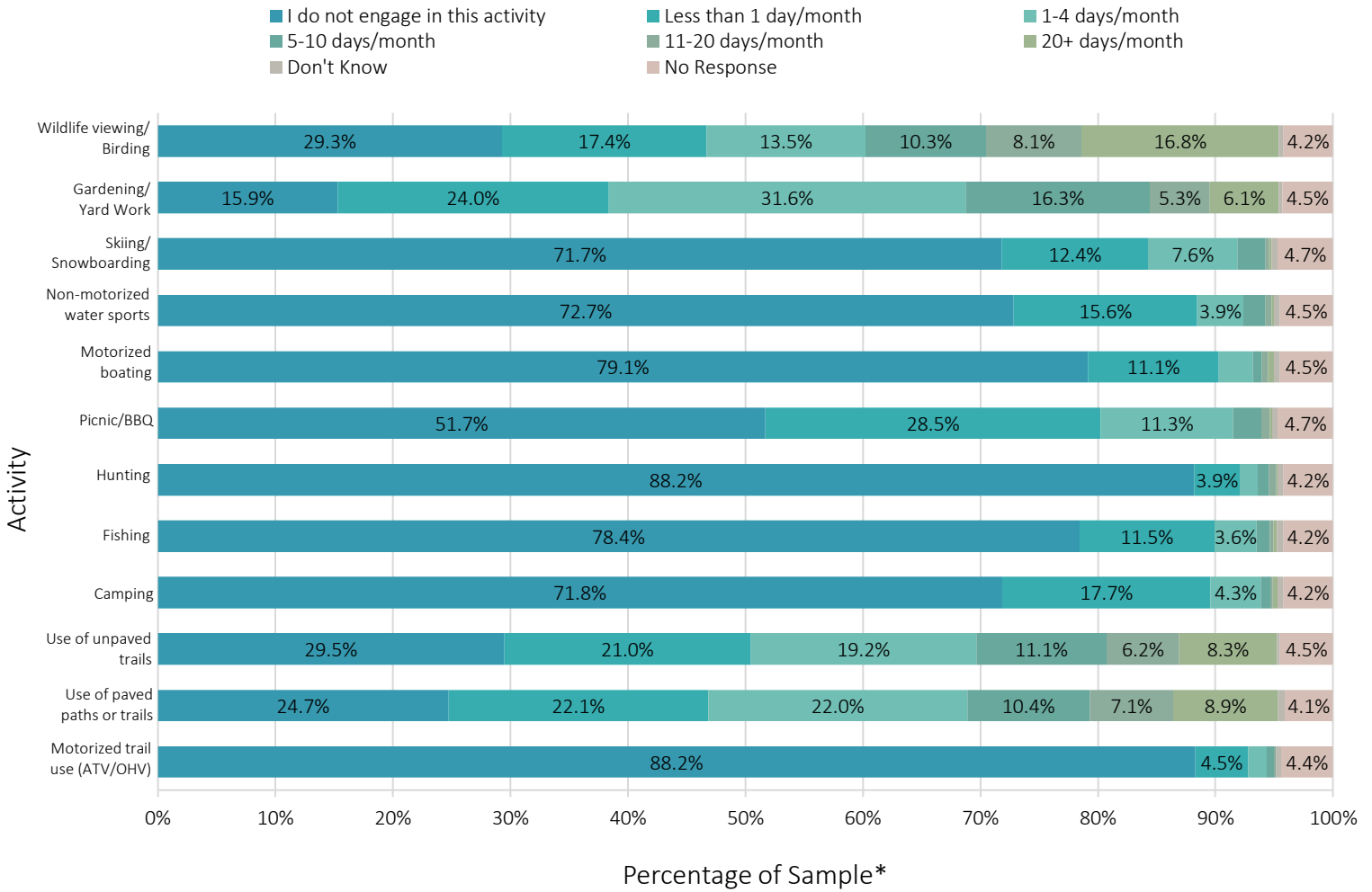
There is no significant differences between the frequency of any summer activity between 2018 and 2022. The most frequent activities in 2022 are gardening/yardwork, the use of motorized trails and paved paths or trails for walking, running, and biking.

*Percentages less than 3% are not labeled.

Vital Sign: Outdoor Activity

Indicator: Nature Based Recreation

Winter Activity (about November-February)



During the winter months, the most frequently engaged with activities are the use of paved and unpaved paths or trails for walking, running, biking, etc.

There was a significant difference in hunting frequency between 2018 and 2022. The mean frequency of 2022 was lower than 2018.

*Percentages less than 3% are not labeled.

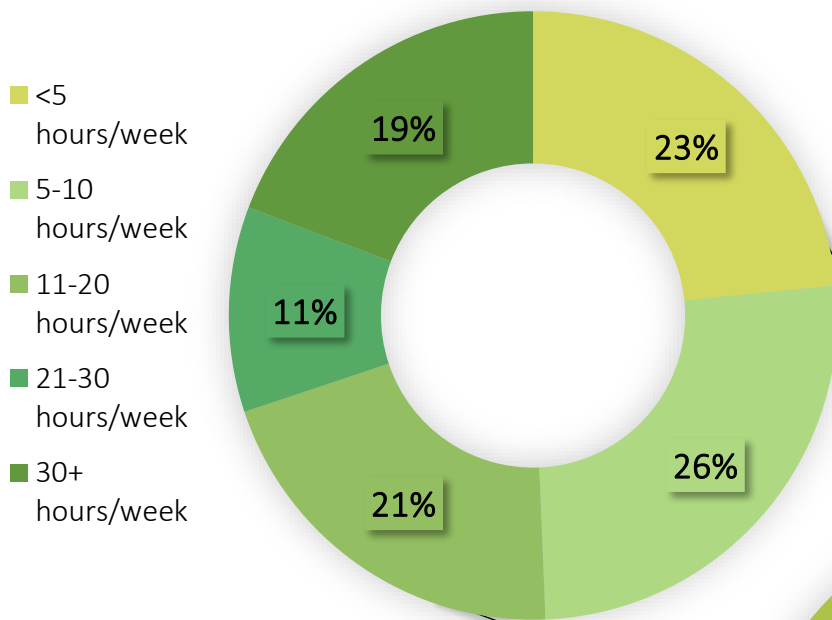
Vital Sign: Outdoor Activity

Indicator: Nature Based Work

What: Nature Based work explores the frequency of stated occupations based in natural environments in the Puget Sound, such as commercial or charter fishing, farming, forestry, habitat restoration, or outdoor recreation jobs.

Why: Nature Based Work helps us measure an additional component of outdoor activity, while also exploring a component of economic vitality.

How: We measure Nature Based Work by asking respondents whether their work involves spending time in natural environments. Respondents that answered, 'yes' were asked to estimate the number of hours per week.

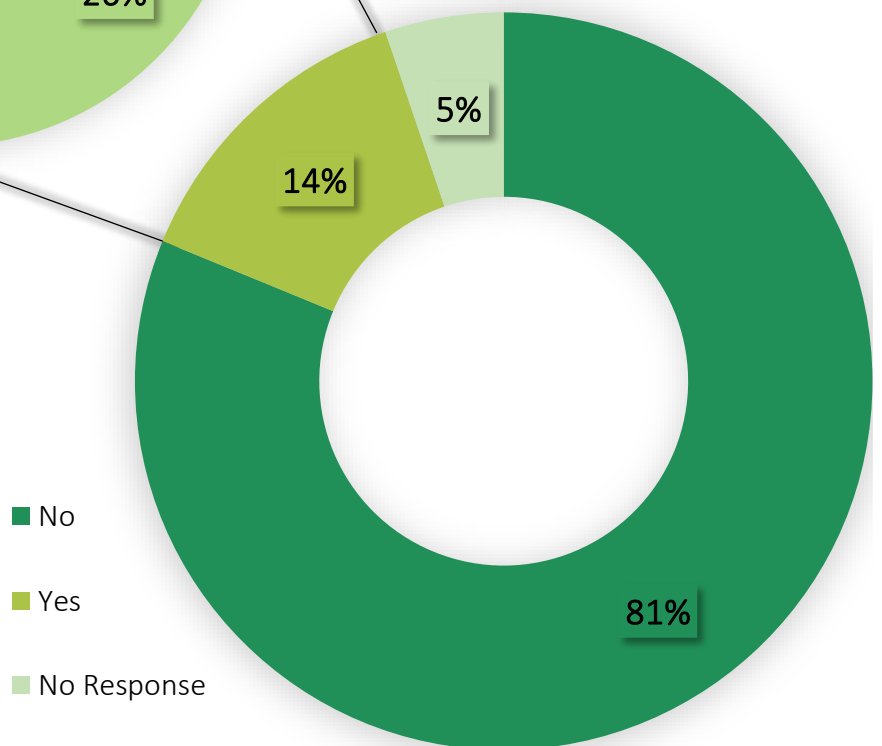


13.6% of survey respondents said their work involved spending time in the outdoors. Of these respondents, over 50% work more than 10 hours per week outdoors.

In 2020, 12.4 % of survey respondents said, 'yes' to working outdoors, with 31% working less than 5 hours/week, 24% working 5-10 hours per week, and 45% working more than 10 hours per week.

In 2018, 17% of survey respondents said 'yes' to working outdoors with 29% working less than 5 hours per week.

These biennial differences are statistically insignificant.



Vital Sign Demographics

The Puget Sound Partnership Survey on Subjective Human Wellbeing asks eight demographic characteristics. They include:

Age: The individual's age

The majority of survey respondents were in the '61-70 years' age class.

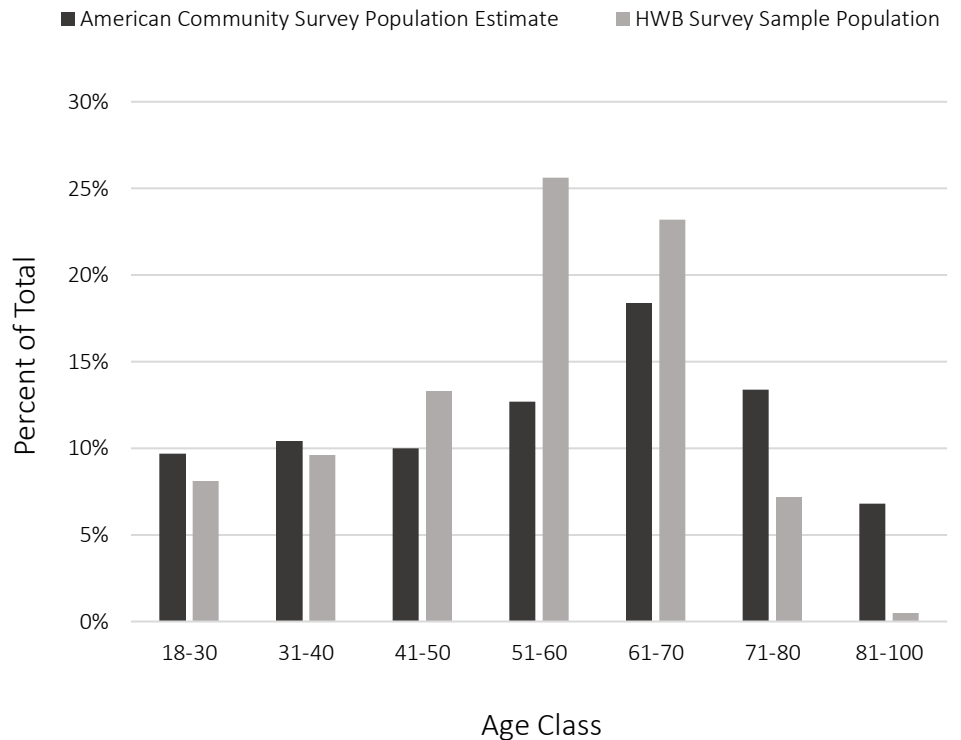
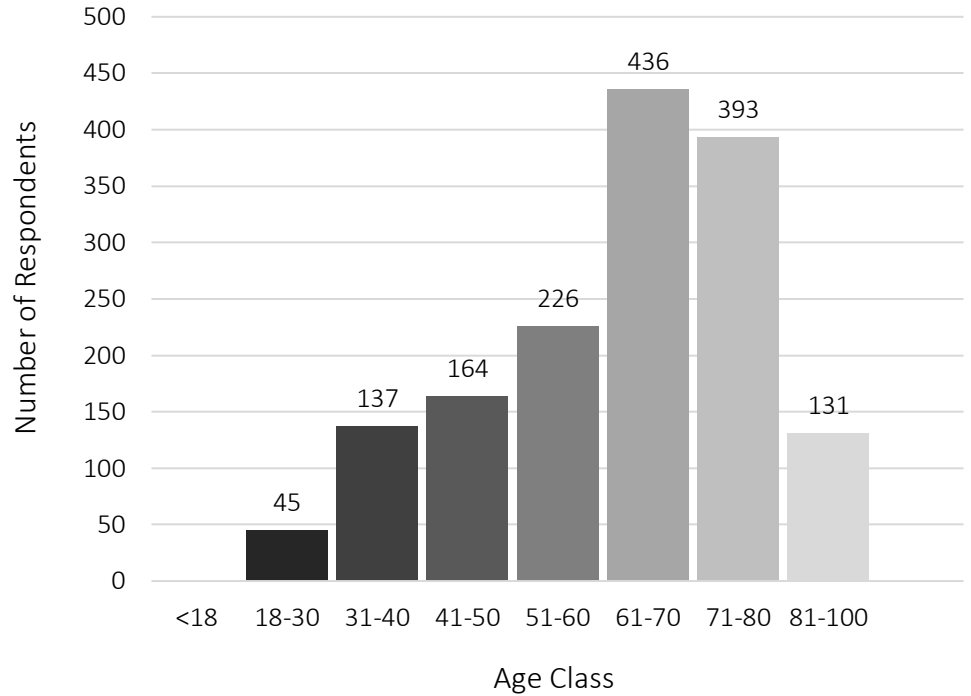
Respondents under the age of 18 were not included in survey data analyses.

The American Community Survey (ACS) is an annual demographics survey program conducted by the U.S. Census Bureau.

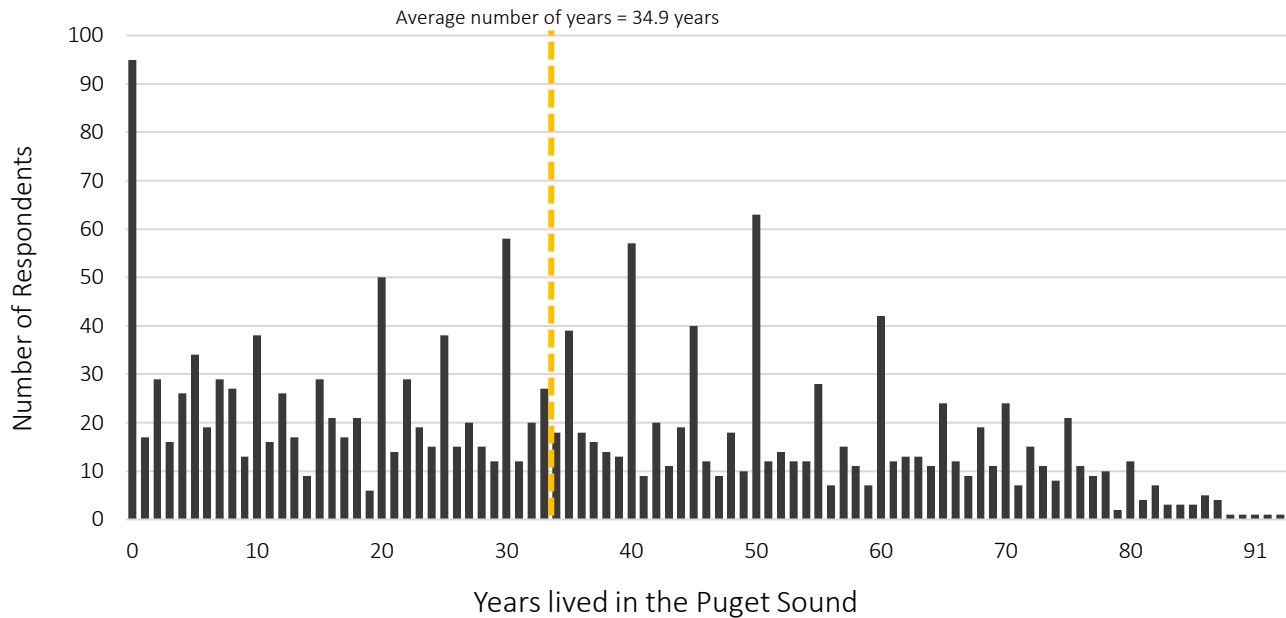
The bottom graph shows the comparison of the Puget Sound population distribution alongside the 2022 Human Wellbeing (HWB) Vital Sign survey age distribution.

There is no significant difference between our survey age distribution and the ACS age distribution ($p=0.55$).

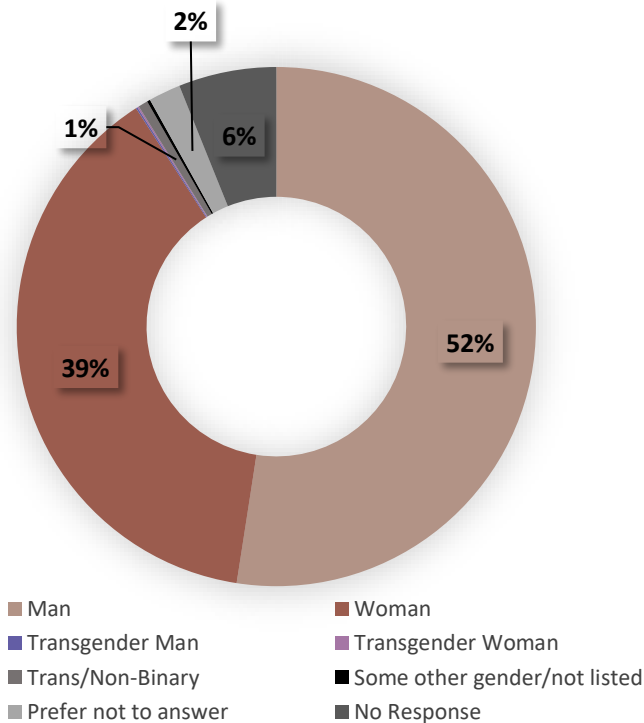
This means that the HWB Vital Sign survey is an accurate representation of the Puget Sound Population by age.



Number of Years Lived in Puget Sound



Gender: Gender Identity

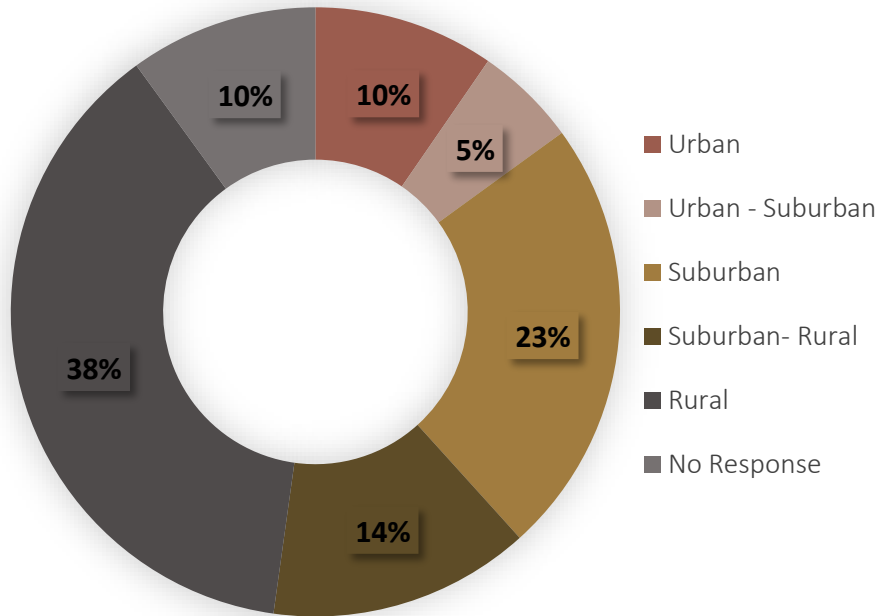


Gender Identity	Percent of Sample
Man	52.5%
Woman	38.5%
Transgender Man	0.1%
Transgender Woman	0.1%
Trans/Non-Binary	0.6%
Some other gender/not listed	0.2%
Prefer not to answer	2.0%
No Response	6.1%

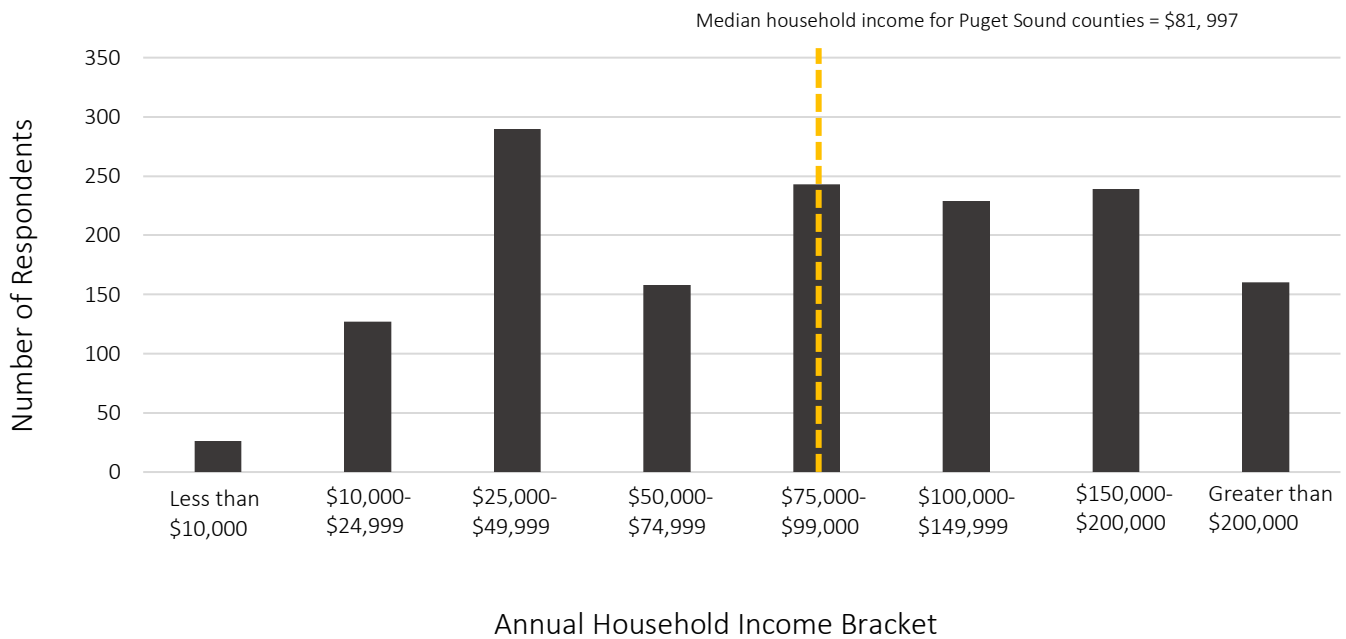
The majority of survey respondents identified as men, as did the majority of 2020 respondents. The table is included to show representation of minority gender identities. In the 2020 survey, this demographic category was, 'sex' with only, 'man', 'woman', 'other', and 'prefer not to answer' as options.

Area Lived In: Urban, suburban, or rural area

The majority of survey respondents live in rural places which was also the case in 2020. However, there is a ~3% increase in respondents living in urban environments and suburban environments compared to 2020.

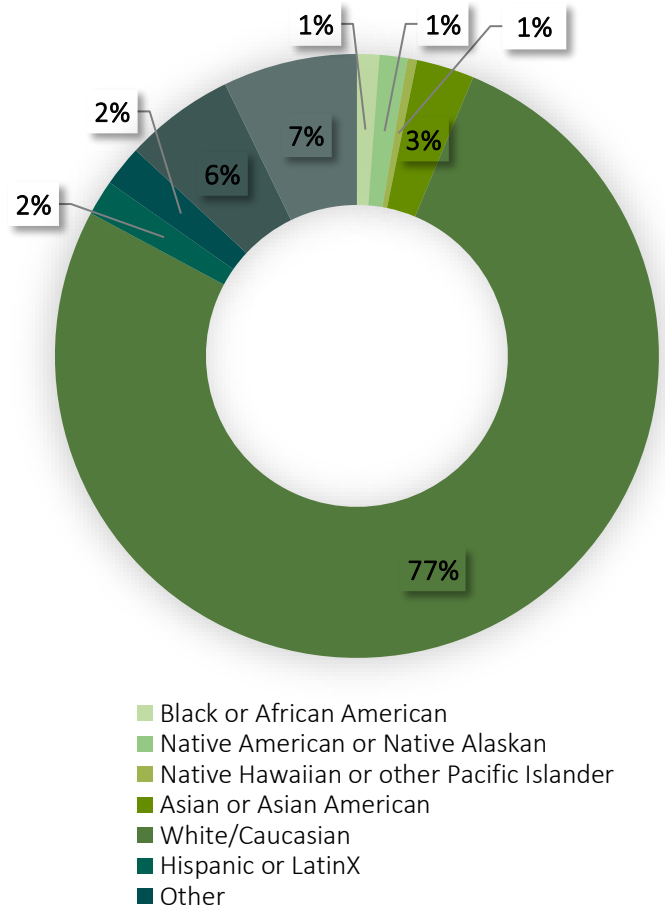


Income: Annual household income

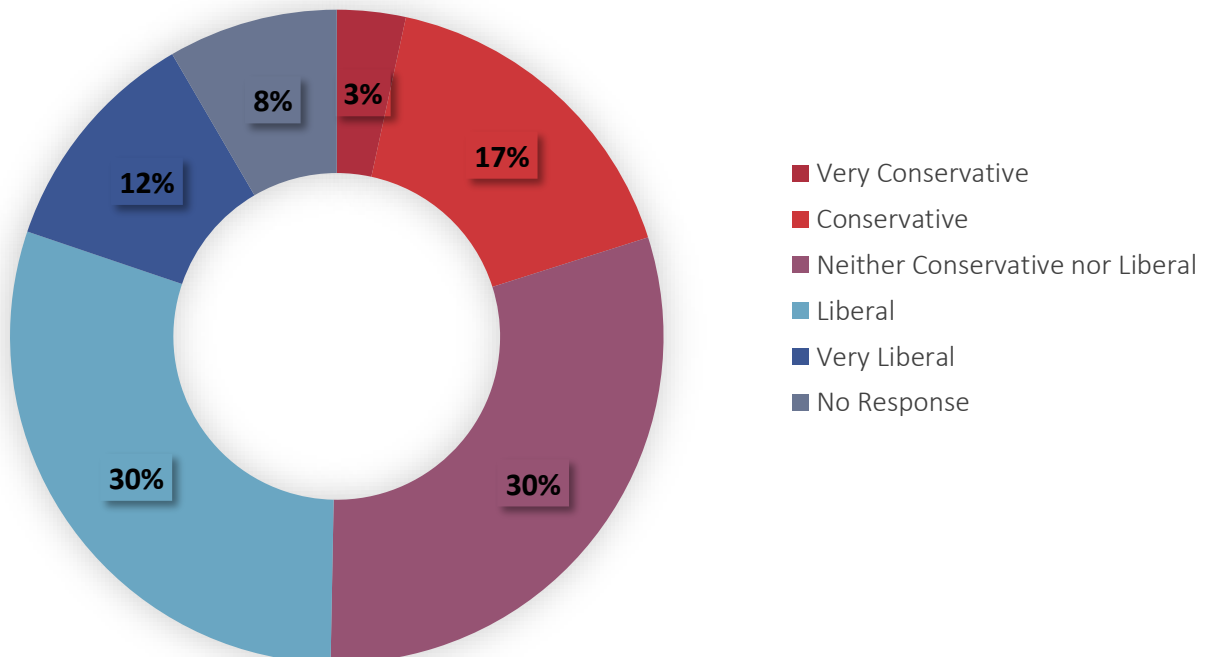


Race: Racial identity

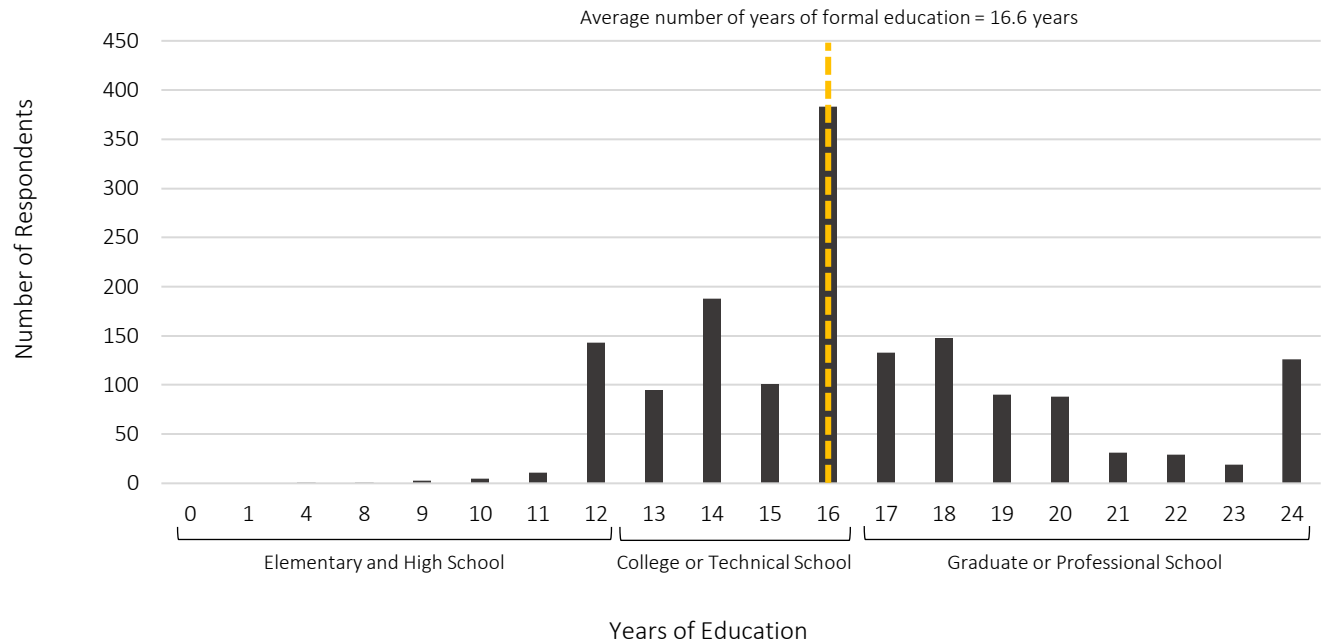
Race	Percent of Sample
Black or African American	1.2%
Native American or Native Alaskan	1.5%
Native Hawaiian or other Pacific Islander	0.5%
Asian or Asian American	3.1%
White/Caucasian	76.7%
Hispanic or Latinx	1.9%
Other	2.2%
Prefer not to answer	5.9%
No Response	7.2%



Political Ideology: The degree to which the respondent identifies either conservative or liberal

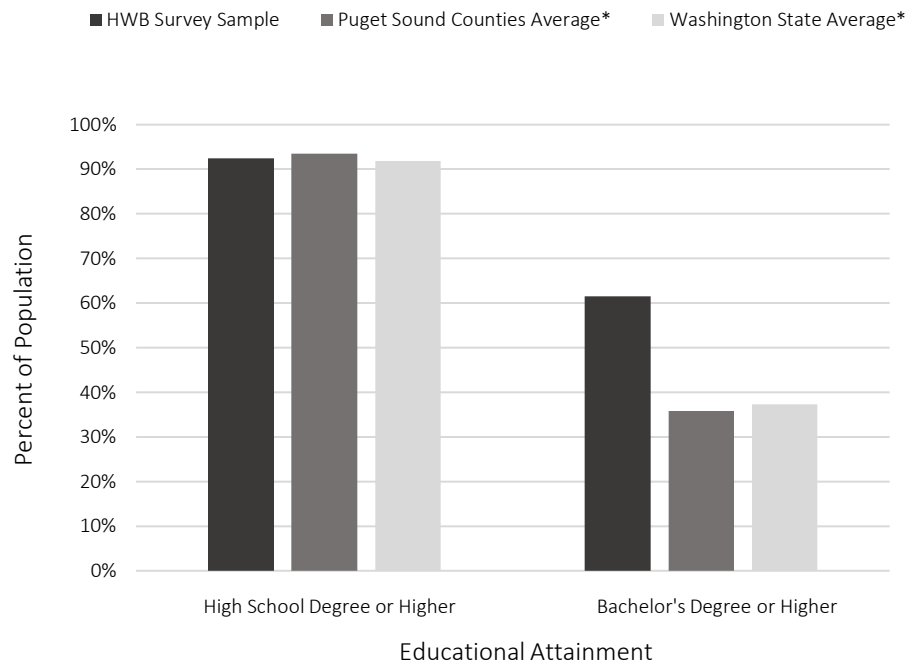


Education: The number of years of formal education



On average, survey participants had 16.6 years of formal education, equating to a four-year college degree (top graph).

Data from census.gov (bottom graph) shows that 91.9% of Washington state residents have a high school degree or higher, and 37.3% of residents have a bachelor's degree or higher. 93.5% of residents in the Puget Sound have, on average, a high school degree or higher and 35.8% have a bachelor's degree or higher.



*Values represent % of persons age 25 years+, 2017-2021 (data from census.gov)

HWB Survey respondents were found to be more educated than the Puget Sound and Washington state residents, having a higher percent of persons having a bachelor's degree or higher. However, direct comparisons should be made with caution as data from census.gov calculates education percentages for persons over 25 years of age. The HWB data represented above, includes percentages for persons over 18 years of age.

Appendices

Appendix A. Detailed Methodology

Survey Design:

This survey was the third iteration of the biennial Survey of Subjective Human Wellbeing for the Puget Sound Partnership. Questions on the survey are based on Kayla Cranston and Kelly Biedenweg's "Recommended Human Wellbeing Specifications, Methods and Survey" (Cranston and Biedenweg (Weebly) 2017),¹ with continual updates as requested by the Partnership. The 2022 online version of the survey was created by the authors in collaboration with the Puget Sound Partnership using Qualtrics that mirrored the paper instrument.

Survey Modifications:

Informed by the performance of the 2018 and 2020 surveys, the 2022 survey modified several questions and sections in the questionnaire. These changes are bulleted below with details to follow.

Modified Language

- Demographics Section: In past versions of the survey, one part of this section prompted the question: "What is your sex?" and provided the following options: 'Man', 'Woman', 'Other', and 'Prefer not to answer'.

The 2022 version has been updated to instead ask: "What is your gender identity?" with the following response choices: 'Man', 'Woman', 'Transgender Man', 'Transgender Woman', 'Trans/Non-Binary', 'Some Other Gender/Not Listed', and 'Prefer not to Answer'.

- Outdoor activity in Puget Sound Section: The 2018 version of the survey focused on outdoor activity in summer and winter. The 2020 version of the survey focused on outdoor activity in fall and spring.

The 2022 version has again focused on summer and winter.

Questions added and removed

- Good Governance Section: In past versions of the survey the 'Good Governance' section has included the question: "I have the freedom to make personal decisions about how natural resources are managed on my property." to be ranked on a seven-point scale from 'Strongly Disagree' (1) to 'Strongly Agree' (7).

¹ Cranston, K. and K. Biedenweg. 2016. [2015 Google Insights & General Public Opinion Survey Reports](#). Report to Puget Sound Partnership.

The 2022 version has removed this ranking question and instead added a two-part question below the 'Good Governance' section asking: "Do you own property in the Puget Sound region?" and the follow-up question asking, "If Yes: I have the freedom to make personal decisions about how natural resources are managed on my property." and the response options ranked on a seven-point scale from 'Strongly Disagree' (1) to 'Strongly Agree' (7).

Answer ranges were expanded

- Sound Stewardship Section: In past versions of the survey this section asked, "In the past year, how often did you engage in stewardship behaviors/activities that you believed benefited the environment?" using a five-point scale ranging from 'Never' (1) to 'Frequently – 'Almost every day' (5).

The 2022 version of the survey added an answer option for 'Don't Know'.

Survey Distribution:

Paper Survey Instrument

A sample of addresses was obtained from The Marketing Systems Group in order to distribute the survey. The Marketing Systems group uses a United States Postal System Database for their surveys. A total of 9,000 addresses were purchased for a clustered random sample using Premier Matching to include phone numbers for participants. There were 750 records purchased per county using four counties classified as urban (King, Kitsap, Pierce, and Snohomish) and eight counties classified as rural (Clallam, Island, Jefferson, Mason, San Juan, Skagit, Thurston, and Whatcom).

When addresses were purchased, the following types of addresses were excluded:

- Drops** - A drop is a single delivery point or receptacle that services multiple residences. Examples: Boarding Houses, Fraternities, a single door slot shared by two or more residences. In standard orders, if a client includes Drops, there are two options. Have the Drop Unit in the sample once, or, if a Drop Point is randomly selected, we can expand the Drop Point to list out the addresses each time for each address. Therefore, if drops are selected the address can be included once or get all the residents of that Drop (which will include duplicate addresses).
- Seasonal** - An address given mail only during a specific season (i.e., summer only residence).
- Vacant** - Delivery points that have been unoccupied for 90 days or longer.

The paper survey instrument was printed and distributed by BMS Technologies using a modified Tailored Design Method². For this method, a postcard was delivered

² Tailored Design Method (2) - Don Dillman, Jolene Smith, and Leah Christian, *Internet, Phone, Mail, and Mixed-Mode Surveys- The Tailored Design Method*, Fourth (John Wiley & Sons, Inc., 2014)

to all usable addresses notifying the recipient that they would be receiving a survey packet. After the initial postcard, 38 individuals called in to opt out of the survey voluntarily. Additionally, 804 of the addresses were determined to be 'undeliverable' and subsequently not included to determine total response rate.

Packets were distributed to the remaining sample after two weeks with an introduction letter that had a URL and a QR code included if participants would like to complete the survey online, as well as the paper survey, a pre-paid return envelope, and a \$2 incentive enclosed. Two weeks later, a second reminder postcard was sent that included the URL and QR code to the online survey hosted by Qualtrics.

Data Analysis:

Response Rate

Analysis used all surveys that were returned excluding surveys that were returned blank. Our sample included 1,701 possible respondents.

1,271 paper surveys were completed, and 430 surveys were completed online. Using the initial sample size of 9,000, this would bring the response rate to 18.9% while incorporating undeliverable addresses brings the response rate to 20.8%.

Number of responses by county are as follows:

Clallam	144	Pierce	115
Island	136	San Juan	125
Jefferson	166	Skagit	136
King	191	Snohomish	99
Kitsap	119	Thurston	128
Mason	112	Whatcom	126
		Other/ Unknown*	104

**Unknown/other county respondents were documented from Qualtrics where location data could either not be found or indicated locations outside of the Puget Sound as location services collected from Qualtrics could differ from their physical location. For example, respondents could have taken the survey on vacation over the holidays or location services on a device may have been disabled. The authors decided to include these respondents in the data analyses because these respondents had access to the QR code from a post card physically received in the Puget Sound. However, these respondents are not included in spatial data analyses (maps seen in this report).*

From the Qualtrics responses, we were able to acquire a latitude/longitude point for each respondent which was used to determine county. From paper surveys, we were able to acquire counties based off of the address data.

Statistical frequencies were calculated in statistical computing software, SPSS. All graphics were made in Microsoft Excel. Maps were created in ArcGIS Pro using data

from Washington Geospatial Open Data Portal.

A Cronbach's alpha reliability estimate was calculated to confirm our ability to create indices for good governance, local foods, sound stewardship, psychological wellbeing, cultural wellbeing, and sense of place with the results below. A score of 70% or higher is considered a reliable index.

Good Governance	88%; removing question 8 increases reliability to 90% but removing any other items would decrease reliability
Local Foods	65%; removing any other items would decrease reliability
Sound Stewardship	92%; removing any items would decrease reliability
Psychological Wellbeing	86%; removing any items would decrease reliability
Cultural Wellbeing	77%; removing any items would decrease reliability
Sense of Place	80%; removing question 7 increases reliability to 83% but removing any other items would decrease reliability

With this information, an index (the mean of all answers for each person) was created for each Vital Sign above.

Limitations

A notable limitation of this year's survey design was that the impact of survey deployment timing may have limited responses. The paper instrument was sent out on December 1st of 2022, due to this timing, many respondents were likely handling them over the holiday season which may have led to skewed response rates.

All surveys are subject to limitation due to error. An error refers to the difference between the sample and the true population. While the researchers did their best to limit errors, all of which have been addressed to the extent possible through the methods described.

Coverage Error occurs when the list from which sample members are drawn does not accurately represent the population on the characteristic(s) one wants to estimate with the survey data (whether a voter preference, a demographic characteristic, or something else). A high-quality sample survey requires that every member of the population has a known, nonzero probability of being sampled, meaning they have to be accurately represented on the list from which the sample will be drawn. Coverage error is the difference between the estimate produced when the list is inaccurate and what would have been produced with an accurate list.

Sampling Error is the difference between the estimate produced when only a sample of units on the frame is surveyed and the estimate produced when every unit on the list is surveyed. Sampling error exists anytime we decide to survey only some, rather than all, members of the sample frame.

Nonresponse Error is the difference between the estimate produced when only some of the sampled units respond compared to when all of them respond. It occurs when those who do not respond are different from those who do respond in a way that influences estimate.

Measurement Error is the difference between the estimate produced and the true value because respondents gave inaccurate answers to survey questions. It occurs when respondents are unable or unwilling to provide accurate answers which can be due to poor question design, survey mode effects, interviewer and respondent behavior, or data collection mistakes.

Appendix B. 2022 Survey Instrument

PUGET SOUND HUMAN WELLBEING SURVEY

IMPORTANT QUESTIONS TO UNDERSTAND YOUR EXPERIENCES

A STUDY COMPLETED COOPERATIVELY BY:






Thank you for participating in this survey of human wellbeing in the Puget Sound, funded by the Puget Sound Partnership. It should take less than 15 minutes of your time. Please complete the brief survey and return it to the researcher using the pre-paid envelope. Participation is voluntary, and your responses are completely confidential.

If you have any questions about the survey, please contact Project Lead, Krista Harrington by e-mail at krista.harrington@oregonstate.edu.

**The results of this survey will be reported in the Puget Sound Partnership's *Puget Sound Info* dashboard. Please visit the following website for more details:
<https://vitalsigns.pugetsoundinfo.wa.gov>**

1. How much do you agree or disagree with the following statements related to the Puget Sound Region?

Please circle one number for each question:

Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
I have plenty of opportunities to influence natural resource decisions in the Puget Sound region if I want to	1	2	3	4	5	6	7	<input type="checkbox"/>
I feel well represented by the leaders of Puget Sound natural resource management processes	1	2	3	4	5	6	7	<input type="checkbox"/>
I trust regional policymakers to protect Puget Sound's natural resources	1	2	3	4	5	6	7	<input type="checkbox"/>
I have access to enough information regarding the social and economic consequences of how natural resources are managed in the Puget Sound	1	2	3	4	5	6	7	<input type="checkbox"/>
I have access to enough information regarding the environmental consequences of how natural resources are managed in the Puget Sound	1	2	3	4	5	6	7	<input type="checkbox"/>
I have access to enough information regarding the regulatory aspects of how natural resources are managed in the Puget Sound	1	2	3	4	5	6	7	<input type="checkbox"/>

2. Do you own property in the Puget Sound region?

No Yes

→ **If Yes:** I have the freedom to make personal decisions about how natural resources are managed on my property

Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't Know
1	2	3	4	5	6	7	<input type="checkbox"/>

3. In the past year, about how often did you hunt, harvest, gather, or forage for the following food in the Puget Sound Region? Please circle one number for each item:

Local Food	Never	Rarely (1-2 times a season)	Occasionally (3-5 times a season)	Regularly (6-9 times a season)	Frequently (More than 10 times a season)	Don't Know
Fish	1	2	3	4	5	<input type="checkbox"/>
Crab or Shrimp	1	2	3	4	5	<input type="checkbox"/>
Oysters, Mussels, clams, (not razor clams)	1	2	3	4	5	<input type="checkbox"/>
Squid	1	2	3	4	5	<input type="checkbox"/>
Deer or Elk	1	2	3	4	5	<input type="checkbox"/>
Waterfowl	1	2	3	4	5	<input type="checkbox"/>
Plants, Berries, or Mushrooms	1	2	3	4	5	<input type="checkbox"/>

4. In the past year, about how often did you engage in the following types of behaviors/activities? Please circle one number for each question:

Behavior/Activity	Never	Rarely (1-4 times a year)	Occasionally (Once a month)	Regularly (Once a week)	Frequently (Almost every day)	Don't Know
Behaviors that you believe effectively benefitted the environment	1	2	3	4	5	<input type="checkbox"/>
Environmental behaviors that were personally meaningful to you	1	2	3	4	5	<input type="checkbox"/>
Environmental behaviors that you believe are needed by the community	1	2	3	4	5	<input type="checkbox"/>

5. Does your work involve spending time in natural environments (e.g. commercial or charter fishing, farming, forestry, habitat restoration, or outdoor-recreation jobs)?

- No Yes → **If Yes:** About how many hours a week do you perform work that involves spending time in natural environments? Less than 5 hours/week 5-10 hours/week 11-20 hours/week. 21-30 hours/week More than 30 hours/week

6. In the past year, about how often have you felt *inspiration* when spending time in the outdoors of the Puget Sound region? Please circle one number:

Never	Rarely (1-4 times a year)	Occasionally (Once a month)	Regularly (Once a week)	Frequently (Almost every day)	Don't Know
1	2	3	4	5	<input type="checkbox"/>

7. In the past year, about how often has spending time in the outdoors of the Puget Sound region helped you reduce *stress*? Please circle one number:

Never	Rarely (1-4 times a year)	Occasionally (Once a month)	Regularly (Once a week)	Frequently (Almost every day)	Don't Know
1	2	3	4	5	<input type="checkbox"/>

8. In the past year, how satisfied were you with your level of participation in any of the following cultural activities or traditions *related to the environment*? Please circle one number for each question:

Environmental Cultural Activity or Tradition	Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Satisfied	I do not engage in this activity or tradition	Don't Know
<u>Native</u> practices or activities (canoe journey, Tribal center events, potlach, etc.)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>
<u>Spiritual</u> or <u>religious</u> practices related to the environment (meditation, prayer, solstice observance etc.)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>
Environmental practices or activities important to your <u>heritage</u> (formal or informal family or community events, etc.)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>
Environmentally oriented <u>social</u> activities (environmental clubs, festivals, outdoor events, etc.)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>

9. About how many **days** per month on average did you participate in the following recreation activities **in the Puget Sound region** this past **summer (about June - September)**. Please circle **one number** for each question:

Outdoor Activity	I do not engage in this activity	Less than 1 day per month	1-4 days per month	5-10 days per month	11-20 days per month	More than 20 days per month	Don't Know
Motorized Trail Use (e.g. ATV or OHV Riding)	1	2	3	4	5	6	<input type="checkbox"/>
Using Paved Paths or Trails for Walking, Running, Biking	1	2	3	4	5	6	<input type="checkbox"/>
Using Unpaved Trails for Walking, Running, Biking, Horseback, Hiking, Backpacking	1	2	3	4	5	6	<input type="checkbox"/>
Camping (Car or Back Country)	1	2	3	4	5	6	<input type="checkbox"/>
Fishing	1	2	3	4	5	6	<input type="checkbox"/>
Hunting	1	2	3	4	5	6	<input type="checkbox"/>
Picnic or BBQ	1	2	3	4	5	6	<input type="checkbox"/>
Motorized Boating	1	2	3	4	5	6	<input type="checkbox"/>
Non-Motorized Water Sports (e.g. Kayak, Surf, Sailing, Swimming, Scuba)	1	2	3	4	5	6	<input type="checkbox"/>
Gardening or Yard Work	1	2	3	4	5	6	<input type="checkbox"/>
Wildlife Viewing/Birding	1	2	3	4	5	6	<input type="checkbox"/>

10. About how many **days** per month on average did you participate in the following recreation activities **in the Puget Sound region** this past **winter (about November - February)**. Please check **one box** for each question:

Outdoor Activity	I do not engage in this activity	Less than 1 day per month	1-4 days per month	5-10 days per month	11-20 days per month	More than 20 days per month	Don't Know
Motorized Trail Use (e.g. ATV or OHV Riding)	1	2	3	4	5	6	<input type="checkbox"/>
Using Paved Paths or Trails for Walking, Running, Biking	1	2	3	4	5	6	<input type="checkbox"/>
Using Unpaved Trails for Walking, Running, Biking, Horseback, Hiking, Backpacking	1	2	3	4	5	6	<input type="checkbox"/>
Camping (Car or Back Country)	1	2	3	4	5	6	<input type="checkbox"/>
Fishing	1	2	3	4	5	6	<input type="checkbox"/>
Hunting	1	2	3	4	5	6	<input type="checkbox"/>
Picnic or BBQ	1	2	3	4	5	6	<input type="checkbox"/>
Motorized Boating	1	2	3	4	5	6	<input type="checkbox"/>
Non-Motorized Water Sports (e.g. Kayak, Surf, Sailing, Swimming, Scuba)	1	2	3	4	5	6	<input type="checkbox"/>
Skiing/Snow Boarding or Snowshoeing	1	2	3	4	5	6	<input type="checkbox"/>
Gardening or Yard Work	1	2	3	4	5	6	<input type="checkbox"/>
Wildlife Viewing/Birding	1	2	3	4	5	6	<input type="checkbox"/>

11. Has environmental change affected your ability to participate in any outdoor activities in the Puget Sound this past **summer** (about June - September)?

No Yes → **If Yes**, which activity/activities and how so? _____

12. Has environmental change affected your ability to participate in any outdoor activities in the Puget Sound this past **winter** (about November - February)?

No Yes → **If Yes**, which activity/activities and how so? _____

13. How much do you agree or disagree with the following statements related to the Puget Sound Region?
Please circle **one** number for each question:

Statement	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree	Don't know
I am very attached to the natural environment in the Puget Sound region	1	2	3	4	5	6	7	<input type="checkbox"/>
I am proud to live in the Puget Sound region	1	2	3	4	5	6	7	<input type="checkbox"/>
I feel responsible for taking care of Puget Sound's natural environment	1	2	3	4	5	6	7	<input type="checkbox"/>
Living in the Puget Sound region says a lot about who I am	1	2	3	4	5	6	7	<input type="checkbox"/>
Being able to engage in outdoor activities or cultural practices is important to my connection to the Puget Sound	1	2	3	4	5	6	7	<input type="checkbox"/>
I am mostly attached to parts of Puget Sound that are nearest to me	1	2	3	4	5	6	7	<input type="checkbox"/>
I could be satisfied living in other places outside the Puget Sound	1	2	3	4	5	6	7	<input type="checkbox"/>

14. Have you ever **personally** experienced any of the following impacts since living in the Puget Sound?

Environmental Impact	No	Yes	If yes, do you think it is due to climate change? (circle only one answer)		
Natural disaster (e.g. flood, wildfire)	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Flooded property (e.g. home or farm)	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Flooded or eroded roadway	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Levee failure or erosion	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Contamination of private well water	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Agricultural well outage	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Moved/relocated due to disaster	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Experienced loss of work (hours/days, opportunities)	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Heat exhaustion or heat stroke	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Asthma or respiratory illness due to poor air quality (wildfire smoke)	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Sickness due to poor water quality	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	I don't know
Other (fill in) _____			Yes	No	I don't know

15. Please rate your level of concern for each of the following affecting the Puget Sound today or at some point over the next 25 years (approximately one generation from now)?

Statement	Not At All Concerned	Somewhat Concerned	Moderately Concerned	Very Concerned
Rising sea levels	1	2	3	4
Increasing air temperatures	1	2	3	4
More frequent/severe heat waves	1	2	3	4
More frequent/severe droughts	1	2	3	4
More frequent/severe rainfall events & floods	1	2	3	4
More frequent/severe wildfires & smoke	1	2	3	4
Worsening air quality	1	2	3	4
Worsening water quality	1	2	3	4
More harmful algal blooms	1	2	3	4
More invasive aquatic weeds	1	2	3	4
Worsening ocean acidification	1	2	3	4
Other (fill in) _____	1	2	3	4

16. If you are concerned about any of the environmental changes above, what negative impacts do you expect to happen to you or your family experience today or at some point over the next 25 years as a result?

17. Do you have access to the following resources?

Resource	Always	Sometimes	Never	I don't have use for it	Unsure
Air conditioning/climate-controlled environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back-up power supply/generator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operable motorized vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Domestic well for clean drinking water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local/community water system for clean drinking water (i.e. not your own well system)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sewage system or septic tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial resources (e.g. savings, stocks/bonds, credit, loans)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Home or renters' insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer/mobile device with reliable internet connection at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Do you believe climate change is happening? Yes No I don't know

→ **If Yes: Do you think climate change is...?**

- Caused entirely by human activities
- Caused mostly by human activities and some changes in the natural environment
- Caused mostly by changes in the natural environment and some changes in human activities
- Caused entirely by natural changes in the natural environment
- Other (fill in): _____

I don't know

19. In general, how empowered, or powerless do you feel about your ability to adapt to climate change? Please circle **one number**:

Powerless	Somewhat Powerless	Neither Powerless nor Empowered	Somewhat Empowered	Empowered
1	2	3	4	5

20. In general, how satisfied, or dissatisfied are you with your life overall? Please circle **one number**:

Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Satisfied
1	2	3	4	5

21. How many years have you lived in the Puget Sound? _____

22. What is your gender identity?

- Man Woman Transgender Man Transgender Woman Trans/Non-Binary
- Some Other Gender/Not Listed Prefer not to answer

23. Which of the following best describes the area you live in? Please circle **one number**:

Urban		Suburban		Rural
1	2	3	4	5

24. What is the highest level of education you have completed? Please circle **one number**:

Elementary and High School											College or Technical School				Graduate or Professional School								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24+

25. What is your annual household income?

- Less than \$10,000 \$10,000-\$24,999 \$25,000-\$49,999 \$50,000-\$74,999
- \$75,000-\$99,999 \$100,000-\$149,999 \$150,000-\$200,000 Greater than \$200,000

26. Which of the following best describes your race? Mark all that apply.

- Black or African American Native American or Native Alaskan Native Hawaiian or Other Pacific Islander
- Asian or Asian American White/Caucasian Hispanic or LatinX Other: _____
- Prefer not to respond

27. What is your age? _____

28. Which of the following do you consider yourself? Please circle **one number**:

Very Conservative	Conservative	Neither Conservative nor Liberal	Liberal	Very Liberal
1	2	3	4	5

If you would be willing to participate in a follow-up interview to discuss questions related to this survey, please provide your phone number or email here: _____

Thank you for completing this survey. If you have any additional thoughts on human wellbeing in your area, please write them here, as needed:

Appendix C. General Comments:

The following comments were left by respondents at the end of the survey.

“Concerned with increasing prices and rent- worried for people experiencing homelessness”

“Concern of nuclear weapons storage in Puget Sound area”

“Litter and garbage increasing in natural areas”

“I hope I can always call the PNW home”

“I would like to see better equity in the management of natural resources. For example: recreational salmon harvest/fishing has been severely restricted vs. tribal harvesting”

“Seeing gentrification in Jefferson Co. Wealthy often have second homes creating increased difficulty to find low/middle income housing options”

“Our kids need a greater understanding of their world and experiences of wild nature”

“[I have] lived there 47 years and it’s still as pretty as it was long ago”

“I was born In the Puget Sound and returning was the best thing after 20 years.”

“I have attempted to make our own yard supportive of native species and pollinators. Unfortunately, I find home owner associations very restrictive in this regard. I would definitely support policies to allow land/home owners much more autonomy over alternatives to traditional lawns and landscaping. Such traditional practices contribute to the introduction of invasive species, harm to native pollinators and wildlife, the overuse of water resources, and the use of destructive lawn chemicals and herbicides.”

“I feel very lucky to have grown up here in PNW. I love the PNW and Puget Sound. People should get outside and hike/any activity to get outside.”

“It seems decision makers are to political, I have a chance to take care of our environment, but I don’t think we are doing a very good job. APPEARS lots of talk not much action.”