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I. Sampling Methodology

The sampling process for the 2021 Oregon Health Insurance Survey (2021 OR HIS) used a two-stage approach consisting of sampling within 19 independent geographic strata combined with statewide oversamples targeting racial minorities.

The separate document **OHA Oregon Health Insurance Survey 2021 Sampling Plan** is the guiding document for sampling protocols for the 2021 OR HIS Survey.

The initial discussions with the Oregon Health Authority (OHA) regarding sampling occurred on October 20, 2020, with a draft sampling plan submitted to OHA for review on October 28, 2020. The final approved sampling plan saw submitted to OHA on November 9, 2020.

Target Population

The target population for the 2021 OR HIS consisted of persons in families living in the state of Oregon. Persons residing in group homes with nine or more persons, group quarters such as dormitories, military barracks and institutions, and those with no fixed household address (i.e., the homeless or residents of institutional group quarters such as jails or hospitals) were excluded from this survey[1]. In addition, the sample excluded non-permanent residences and vacation residences. Qualified households will be considered those in which someone resided at least six months of the year.

Since the sampling approach relied on the use of a landline and cell phone sample, the sample population only included those households, and residents therein, with working telephones.

Sample Definition

The goal of the sampling approach was to obtain statewide population information on health insurance status, health care usage and access, barriers to care and other demographic and health variables. The sampling protocols relied on two stages:

- Nineteen geographic strata were defined based on county of residence (summarized in table 1). Within each of these 19 strata, a dual frame approach was used combining random samples drawn from among all listed landlines and a random digit dial (RDD) sample of cell phones within each stratum.
- The second stage of sampling was an oversample drawn from listed landline and cell phone numbers that targeted African American, Asian, and Native American residents statewide.

Overall, the target was to complete surveys with 8,000 Oregon households.

Based on estimates of the cell phone penetration among the target population, the goal was to complete approximately 75% of the surveys via cell phone and 25% via landline.

[1] The initial screening will code as ineligible such group quarters. In this survey, group quarters' telephone numbers were considered those where a number of unrelated people living in more than one "unit" relied on the same telephone. An example of a unit in this case might be a fraternity house where all those residing in the house use the same phone.

The target number of surveys within each of the 19 sub-regions is summarized in Table 1. The sampling plan set a target number of surveys to complete within each of the 19 strata, totaling to 8,000 surveys. In addition to geographic targets, the sampling plan set targets for surveys among African American, Asian, Hispanic, and Native American Households. These targets are presented in Table 2.

Historically, the results from the Oregon Health Insurance Survey have been reported in fifteen regions defined by OHA rather than the 19 sampling strata used during the 2021 survey. A crosswalk of the counties (included in each of the 19 geographic sampling strata) to the counties in each of the 15 OHA reporting regions have been provided in Table 1., to facilitate the use of these OHA reporting regions.

Sample Generation

All the landline and cell phone samples used for this project were generated by Marketing Systems Group. This included:

- Random listed landline sample for each of the 19 geographic strata
- RDD cell phone sample for each of the 19 geographic sample strata
- A listed cell phone sample targeting African American households
- A listed cell phone sample targeting Asian households
- A listed cell phone sample targeting Native American households

The cell sample was generated using Marketing System Groups' Advanced cellular frame. The advance cellular frame provides the ability to generate true RDD samples while taking advantage of the ability to append contact, address, and demographic information to a proportion of the cell phone records. These records are referred to as listed cell while cell phone sample for which contact, and address information is not available is referred to as unlisted cell. For the OR HIS, MDR generated the RDD cell phone sample in a ratio of 2:1 listed to unlisted. Cell phone samples targeting African Americans, Asians, and Native American households were generated from listed cell phone sample.

In all, a total of 214,414 telephone numbers were generated for use in the survey.

Table 1: Target Surveys by Region

Region	Counties	Target Surveys
Region 1	Baker, Umatilla, Union, Wallowa	370
Region 2	Crook, Gilliam, Grant, Hood River, Jefferson, Morrow, Sherman, Wasco, Wheeler	370
Region 3	Harney, Klamath, Lake, Malheur	370
Region 4	Deschutes	420
Region 5	Lincoln, Tillamook	370
Region 6	Linn	425
Region 7	Lane	425
Region 8	Coos, Curry	375
Region 9	Jackson	425
Region 10	Douglas	370
Region 11	Marion	425
Region 12	Polk	370
Region 13	Multnomah	600
Region 14	Clackamas	560
Region 15	Washington	580
Region 16	Josephine	370
Region 17	Yamhill	430
Region 18	Clatsop, Columbia	370
Region 19	Benton	375
Total	State	8000
Region 1	Baker, Umatilla, Union, Wallowa	370

Table 2: Target Surveys by Racial/Ethnic Category

Survey Group	Rate in Population	Target Number of Residents
Black or African American	3.0%	350
American Indian and Alaska Native	3.1%	350
Asian	6.3%	400
Hispanic or Latino (of any race)	13.5%	1400

Sample Screening: Surveys with Residents Aged 65 and Older

A consistent issue with broad based telephone surveys is overrepresentation of older Americans. For multiple reasons, individuals aged 65+ are more likely to answer telephone surveys. Crowding out resources could be dedicated toward completing surveys with more varied groups of respondents. The sampling protocols included steps to help reduce the number of households containing only individuals aged 65, with the goal to keep the rate of those 65 and older completing the survey. This is to match the actual percentage in Oregon (about 18%). These steps included:

- An initial pre-screen of all listed landline sample to identify households with residents aged 65 and older. The prescreening was based on demographic information appended to each landline record about the age of the head of the household.
- An initial pre-screen of all RDD cell sample to identify households with residents aged 65 and older. The prescreening was based on demographic information, when available, appended to each cell phone record about the age of the cell phone owner. In all, age information was available for 65% of RDD cell phone records.
- All landline phone records which identified the head of household as 65 or older were removed from the sample prior to calling.
- All cell phone records which identified the cell phone owner as 65 or older were removed from the sample prior to calling.

II. Questionnaire Design

The survey questionnaire used during the course of the 2021 OR HIS was based on the prior 2019 OR HIS.

The initial steps in survey design focused on a review of the prior 2021 ORHIS instruments. On October 20, 2020 OHA provided an initial list of survey changes. The main focus of changes to the survey was to add a series of questions to determine the impact of COVID-19 on health care coverage and access to care as well as to measure the extent of COVID-19 testing among the population. A summary of the changes in the 2021 OR HIS is provided in Appendix 2.

A survey pretest was conducted in January 2021, and no changes were made to the survey based on the results of the pretest.

The final survey was provided to OHA on January 20, 2021. Once the survey was finalized, it was translated into Spanish to allow for bilingual interviewing. Translation of the new and modified questions was completed by January 27, 2021[2]. The basic components of the 2021 survey gathered information from Oregon residents in the following areas:

- Household Level Demographics and Enumerating the Number of People in the Household
- Person Level Demographics
- Relationships Between Family Members
- Type of Insurance Coverage including Verification
- Private Insurance Follow-ups
- Visits to the Oregon Exchange website
- Follow-up for Those Covered by OHP
- Follow-ups among Uninsured
- Interruptions in Health Insurance Coverage
- Use of Health Care Services
- Usual Source of Care
- ER Visits and Follow-ups
- Use of Urgent Care Facilities
- Hospital Stays
- Use of telehealth
- Rx Usage
- Dental Insurance and Dental Coverage
- Expenses
- Cost Barriers to Care
- Problems Paying Bills
- Structural Barriers to Care
- Impact of COVID 19 on the Household
- Health Status
- Employment Status
- Employer Sponsored Insurance

[2] With the exception of the new questions and the few with wording changes, Spanish translations were available from the 2019 survey.

- Income
- Recontact

Family Formation

One important concept that was incorporated into the 2021 OR HIS was that of family units. This concept is important because of the relationship between variables such as private or governmental insurance coverage and family level characteristics, such as income. The survey logic was designed so that all members of a household were grouped into family units based upon their relationships. The survey was structured to ask the questions about each family unit separately.

Family units were identified by establishing the relationship of each member of the household to the identified head of the household. This was done by first collecting the number of people in the household and a name or other identifier for each person. The household was then rostered, and basic demographic information was gathered on each household member (age, gender, marital status, ethnicity, race, level of education and where the resident was born). The respondents were then asked to describe the relationship of each member of the household to the head of the household. Two follow-up questions, then clarification of marital relationships between household members. Excluding the head of household, their spouse, and any guardian/ward relationships. Based upon this sequence of questions, household members were classified into family units. In general, the rules to assign members to family units were:

1. The head of the household and his/her spouse were classified in the same family unit (always family unit 1).
2. Adults aged 19 and older who were not married to the head of household were classified as a separate family unit.
3. Adults aged 18 were initially classified as a separate family unit. An assessment was later made to determine if they should be classified into the same family unit as their parents (see below).
4. Married couples were classified in the same family unit. This included married couples involving someone under age 17.
5. Children aged 17 and younger were classified in the same unit as their parent(s)/guardians. If their parent(s) or legal guardian did not live in the household, they were considered a separate family unit. With the exceptions that:
    - Children aged 17 and younger were classified into a separate family unit from their parents in cases where they were married and/or had a child of their own, no matter their residence.
6. Adults that were age 18 were classified into a family unit based upon whether they were currently living with their parents, were married and/or had children. If they were not married and did not have any children, they were classified in the same family unit as their parents (if living in the same household). If they were married and/or had a child of their own, they were classified as a separate family unit (with their spouse and/or child).
7. Finally, those who were identified as the ward of another household member were classified in the same unit as that household member, unless prior rules determined the ward should be classified separately.

III. Data Collection

The data collection phase of the 2021 OR HIS began on January 27, 2021, and, was completed by August 28, 2021. A total of 8,000 households were interviewed during this period.

Survey Pre-notification Letter

The data collection protocols for 2021 included the use of a pre-notification letters that was sent to all cell phone sample records with an available address. The letter was based on the pre-notification letter used during the 2019 OR HIS. The pre-notification letter provided a method to communicate with respondents prior to calling. The purpose was to increase overall awareness of the survey and improve the outcome of survey responses.

A draft letter was provided to OHA on December 2, 2020. Requested edits were made, and the final letter was approved on January 6, 2021. The letter provided a brief explanation of the purpose of the 2021 OR HIS, that the survey was sponsored by OHA, and how their household was selected to participate. The letter also informed the recipient that they would be contacted by telephone within a few days, that their participation was important, and the responses were confidential. The letter also provided a link to a website that provided more in-depth information of the study, along with the name, and telephone number. The study manager was also included, so they could verify the legitimacy of the survey, schedule an appointment for a call, or have their telephone number removed from calling.

The mailing of the pre-notification letter was timed to coincide with the release of each weekly sample replicate. The letters were mailed on a Friday with the expectation they would arrive in mailboxes on the following Monday. The sample replicate was released for calling the following Wednesday. This timing ensured that the household would have time to open and read the letter before the call, but there would not be a long delay before the survey call was made.

In total, 87,000 household addresses were identified and sent a pre-notification letter.

Calling Protocols

To meet response rate requirements for this study a rigorous data collection strategy was used in conducting this survey. This included the following:

- Rotation of call attempts across all seven days at different times of the day according to industry standards for acceptability and legality in telemarketing

For Landline Phones:

- Up to of seven callback attempts per telephone number.
- Additional calls beyond seven attempts were made in instances of partially completed surveys and scheduled callback appointments.
- Two attempts to convert refusals (the exception were those households that made it clear they were not to be contacted again).
- A brief message with a toll-free number was delivered to answering machine only attempts to encourage participation (messages were left on the first answering machine dispositions).

For Cell Phones

- Up to six callback attempts per telephone number.
- Additional calls beyond six attempts were made in instances of partially completed surveys and scheduled callback appointments.
- One attempt to convert refusals (the exception were those households that made it clear they were not to be contacted (again).
- A brief message with a toll-free number was delivered to answering machine only attempts to encourage participation (messages were left on the first answering machine dispositions).

For the oversample of African American, Asian, and Native American households

- Up to seven callback attempts per telephone number for landline numbers.
- Up to six callback attempts per telephone number for cell phone numbers.
- Additional calls beyond these maximums were made in instances of partially completed surveys and scheduled callback appointments.
- A brief message with a toll-free number was delivered to answering machine only attempts to encourage participation (messages were left on the first answering machine dispositions).

Per industry standards, interviews were only conducted during the hours from 9 AM to 9 PM and seven days a week. The only exceptions were specific, scheduled appointments outside this range.

Scheduling Callback Appointments

The CATI (Computer Assisted Telephone Interviewing) system, used by MDR, is utilized during this survey to allow interviewers to set callback appointments for a specific date and time. It is also designed to allow respondents who have begun the survey and cannot complete it to complete it at a later time. This is done so that the respondent can complete the survey at a time that is most convenient for him or her. The interviewer enters the date and time, then the respondent is contacted at that time. Over phases 9, 8, 6, & 4 scheduled appointments were made.

Survey Length

The 2021 OR HIS required respondents to provide a great deal of information about themselves and other family members. The goal was to obtain accurate information about all household members while limiting the time commitment required of the respondent.

On average, the survey required 32.7 minutes and 46% percent of the interviews were completed in 30 minutes or less. The shortest amount of time required was 16.5 minutes, while the longest survey required 54.5 minutes.

Exclusion of Household Members

In multiple-family households, it was expected that there would be cases where the respondent would not be able to provide accurate data on every person living in the household. During the course of the survey, the respondent was asked to identify any household member for which he/she could not provide accurate information. During the interview, the respondent was not asked questions relating to these individuals.

There were instances where the respondent could not provide information about the type of health insurance coverage of other household member(s). In this case, the respondent was not asked the remaining survey questions.

There were 1,006 people who were excluded during data collection, or 5.1% of all household members.

Data from excluded individuals is not included in the final data set provided to OHA.

IV. Survey Response Rates and Final Dispositions

The response, cooperation, and refusal rates to the 2021 OR HIS Insurance Survey are presented in Table 3. The survey was broken by landline or cell phone. If further information was provided prior to data collection, respondents would receive a prenotification letter.

The rates reported are based on the standard formulas developed by the American Association for Public Opinion Research (AAPOR). The reported response rate is based on AAPOR RR3 formula, the reported cooperation rate uses the AAPOR COOP3 formula, and the refusal rate the AAPOR RR1 formula.

This final sample disposition report is presented in Table 4. It reports final dispositions for the overall population, and separately for landline and cell phone. If the address was provided, an additional split would be made, by whether an address was obtained for the sample record.

Table 3: Summary of Response, Cooperation, and Refusal Rates by Survey Component and Strata

	Type of Sample				
	Landline	**Cell Phone**	**Sent Letter**	**Not Sent Letter**	**Overall**
AAPOR Response Rate 3	19.3%	16.1%	20.1%	13.7%	16.7%
AAPOR Cooperation Rate 3	56.8%	57.3%	62.7%	50.7%	57.2%
AAPOR Refusal Rate 1	9.3%	8.5%	8.6%	8.8%	8.7%

Table 4: Final Sample Disposition Codes

Final Disposition	Landline Sample	Cell Phone Sample	Sent Letter	Not Sent Letter	Overall
Complete	1,847	6,153	4,316	3,684	8,000
Partial - Callback	88	774	348	514	862
Terminate partial survey	423	1,282	772	933	1,705
Cell Phone < 18	15	470	213	272	485
Scheduled Callback	1,009	6,806	4,151	3,664	7,815
Hard Respondent Refusal	13	43	20	36	56
Soft Respondent Refusal	14	35	19	30	49
Hard Household Refusal	1,426	4,088	2,466	3,048	5,514
Soft Household Refusal	3,600	9,201	5,955	6,846	12,801
Contact Only	3,236	9,368	5,469	7,135	12,604

Table 4: Final Sample Disposition Codes (continued)

Final Disposition	Landline Sample	Cell Phone Sample	Sent Letter	Not Sent Letter	Overall
Not Available in Time Frame	58	153	78	133	211
Language Barrier Not Spanish	180	1,224	495	909	1,404
Not available at this number	1	0	0	1	1
Group Quarters or Institution	34	102	38	98	136
Not a Permanent Residence	9,934	31,326	25,139	16,121	41,260
Vacation Home	7	26	13	20	33
Business	2,727	4,103	2,477	4,353	6,830
Hang Up	7,258	19,569	10,994	15,833	26,827
Fax or Modem	39	23	13	49	62
Disconnected Phone	2,077	12,079	7,892	6,264	14,156
Other	293	596	270	619	889

Table 4: Final Sample Disposition Codes (continued)

Final Disposition	Landline Sample	Cell Phone Sample	Sent Letter	Not Sent Letter	Overall
Not a Working Number	90	1,894	469	1,515	1,984
Number Has Been Changed	15	55	15	55	70
Temporarily Out of Service	104	706	191	619	810
No Ring	242	286	162	366	528
Fast Busy	66	2,212	924	1,354	2,278
Answer Machine	14,002	49,642	27,807	35,837	63,644
Busy	201	1,593	265	1,529	1,794
No Answer	1,339	267	204	1,402	1,606
Total	50,338	164,076	101,175	109,085	214,414

V. Total Interviews

A total of 8,000 households were contacted and interviewed. The final data includes information on 18,570 Oregon residence, including 800 respondents who are not uninsured.

A total of 6,202 surveys were completed via cell phones, and 1,798 were completed via landline phone interviews including oversample interviews.

A total of 164 interviews were completed in Spanish.

A breakdown of surveys by strata in presented in Table 5.

The survey also gathered data from

- 605 African American residents
- 731 American Indian or Alaskan Native residents
- 706 Asian resident
- 1,789 Hispanic residents

Table 5: Number of Completed Surveys by sampling region

Strata	County	Cell Phone	Land line	Total
1	Baker, Umatilla, Union, Wallowa	271	90	361
2	Crook, Gilliam, Grant, Hood River, Jefferson, Morrow, Sherman, Wasco, Wheeler	257	117	374
3	Harney, Klamath, Lake, Malheur	260	103	363
4	Deschutes	299	84	383
5	Lincoln, Tillamook	305	90	395
6	Linn	335	78	413
7	Lane	334	94	428
8	Coos, Curry	290	87	377
9	Jackson	321	107	428
10	Douglas	262	110	372
11	Marion	344	87	431
12	Polk	277	103	380
13	Multnomah	557	70	627
14	Clackamas	414	139	553
15	Washington	505	66	571
16	Josephine	285	82	367
17	Yamhill	331	78	409
18	Clatsop, Columbia	268	111	379
19	Benton	287	102	389
Total		**6,202**	**1,798**	**8,000**

VI. Data Cleaning

A detailed description of the data cleaning process is provided in the separate document, called the *OHA Oregon Health Insurance Survey 2021 Analytical Plan (OHA-OHIS Analytical plan),* on pages 29-30**.** The final analytical plan was provided to OHA on December 1, 2020.

Data cleaning and file preparation was conducted between May 25, 2021, and June 4, 2021. The midpoint data set was collected between October 4, 2021, and October 21, 2021.

The purpose of the mid-point data cleaning and preparation was to prepare a file to verify that all variables were present in the data file, variable formats, and variable labels.

A copy of the mid-point data set was provided to OHA on June 6, 2021.

A copy of the final data set was provided to OHA on October 28, 2021.

VII. Data Imputation

A detailed description of the data imputation process is provided in the separate document on pages 31-33**.** The final analytical plan was provided to OHA on December 1, 2020.

The variables that include imputed values and the method of imputation are summarized in Table 6.

Table 6: Imputed Variables and Methods

Variable	Label	Method of Imputation
gend	What was person's sex at birth?	Hot Deck
Age1	What is person's age?	Hot Deck
ethn	Is person of Hispanic, Latino, or Spanish origin?	Logical and Hot Deck
race	Which of the following would you say is person's race?	Logical and Hot Deck
race2	Which specific Asian population?	Logical and Hot Deck
race3	Which specific Pacific Islander population?	Logical and Hot Deck
race4	Which specific American Indian or Alaska Native population?	Logical and Hot Deck
race5	Which specific Black or African American population?	Logical and Hot Deck
race6	Which specific Middle Eastern or North African population?	Logical and Hot Deck
race7	Which specific White population?	Logical and Hot Deck
Emp06	On this job, is person employed by a private company or business or a government agency?	Logical
emp09	About how many people work for this employer, at all locations?	Logical and Hot Deck
Income	2016 annual family income	Regression Based
Exp01, exp02, exp02a, exp03	Medical Expenditures	Regression Based
Insp20	What is the monthly premium paid for person's health insurance?	Regression Based
Insp25	How much is the deductible for everyone covered under this health insurance?	Regression Based

VIII. Data Weighting

A detailed description of the weighting process is provided in the OHA-OHIS Analytical Plan, (pages 34-36)**.** The final analytical plan was provided to OHA on December 1, 2020.

The data has been weighted to adjust for non-response(s), in addition to matching the states profile. The profile Is based on sex, age, race, ethnicity, area of residence, and income. Weighting adjustments are also for households based on their access to landlines, cell phones, or both. Ultimately, adjustments were utilized to align survey counts of OHP, in addition to Health Exchange enrollees with administrative accounts. Weighting adjustments were also made for households based upon their access to landlines, cell phones, or both. Finally, adjustments were made to align survey counts of OHP and Health Exchange enrollees with administrative counts.

The weighting procedures involved two primary phases: design weights and raking weighting adjustments.

An initial sample weight was assigned to each record in the sample file. This base weight was equal to the inverse of the probability of selecting a number within each of the sampling strata. The base weight was then modified using a raking procedure to normalize the survey respondents to the actual Oregon population on key demographics.

Raking Weighting Adjustments

The purpose of ranking is to standardize the weights, and to provide an overall population within Oregon. As well as creating subsets of the population based on area, age, gender, race, ethnicity, income, and method of contact. Ranking adjustments were made by these various demographic characteristics.

Demographic data on population counts was developed from the 2019 American Community Survey (ACS) single year estimates, provided by the State Health Access Data Assistance Center. The data for the cell phone only population was provided by Marketing Systems Group, which provided estimates of cell phone only households for each Oregon county.

An initial review of survey and census data was conducted to determine the appropriate steps in the weighting process. The general guideline in post-stratification weighting is that no cell should have fewer than 20 cases. The initial post-stratification weighting was done in six steps:

- County of residence
- Age by gender by OHA region of the state
- Ethnicity by age by gender
- Race by age by gender
- Family income by age
- Presence of cell phone only within the household by sampling strata

A summary of the demographic adjustments is presented in Table 7.

Post Stratification Weighting Adjustments for Enrollment in Medicaid and Other State Sponsored Programs

A common issue in all studies regarding insurance is to try to create an accurate measure of those enrolled in Medicaid and other insurance programs. Enrollees who have these types of insurances are generally undercounted. There are several reasons that this occurs, such as lower economic status, general location, reluctance of reporting enrollment, etc. After weighting by the demographic characteristics, the survey results were analyzed to determine if the survey data reflected this population.

In order to determine the potential for an undercount of Medicaid in the survey data, an analysis was undertaken using available administrative data on program enrollees. Based on administrative data, a total of 1,294,484 Oregon residents were enrolled in the Oregon Health Plan, and 128,127 obtained their health plan through the Health Exchange. Those who were not residing in institutions or additional group settings were excluded[3].

Comparing this analysis to the final data, with corrected demographic weights applied, displayed an undercount of residence who were enrolled in the Oregon Health Plan. The ratio is smaller compared to other survey's similar in nature. After adjusting the data based on demographics, the survey estimates of the population enrolled in OHP was 938,878 Oregon Residents. This represents an undercount of 27%.

The survey estimate of the number of enrollees in Health Exchange health plans was 85,985, or an undercount of 33%.

Given the undercount in the OHP and Exchange populations, the data was weighted to adjust for these undercounts so that the survey counts would more match the counts in administrative data. The process added the raking adjustments detailed in table 8.

- By enrollment in a health plan obtained through the Health Exchange and individual plans not purchased through the Health Exchange
- By enrollment in OHP by age by gender
- By enrollment in OPH by region

[3] Administrative records indicate that 1,319,142 Oregon residents are covered by OHP including those in group quarters. Based on estimates from the Community Survey, approximately 2% of those with coverage through OHP reside in group quarters or institutions.

A note on income adjustments

One key adjustment was made to the weighting plan based on the lack of available data from the USE Census Bureau, the 2020 American Community Survey Data.

In past years, the Oregon Health Insurance was weighted using population estimates of income using data provided by the State Health Access Data Assistance Center (SHADAC). SHADAC is used to compute family incomes as a percentage. It is compiled data of federal poverty level which is then merged into income data with additional ACS variables. The income was computed based on household insurance units (HIUs). It is designed to mirror a family structure, along with their income. These two variables are then computed for government program eligibility, i.e., Medicare, Medicaid, and food stamps.

In August, the Census Bureau announced they would not release 2020 ACS data in October due to potential issues with the accuracy of the data.

The MDR team did not believe that the 2019 ACS data would accurately reflect the income of families in 2020. This year, MDR developed income weighting adjustments based on the 2019 ACS data. This was developed based on more recent data that was readily available from the Current Population Survey (CPS).

Using the 2019 ACS, MDR calculated the family income that was based on HIU's, which was done for prior OR HIS. MDR then conducted an analysis of data from the CPS. This is to compare changes of income between 2019 and 2020. The 2020 family income model was calculated, utilizing the adjusted income. The CPS assessment is available for both 2019 and 2020.

Table 7: Demographic Characteristics Used in Raking Adjustments

<table>
<tr><th>Adjustment</th><th colspan="3">Variable Values</th></tr>
<tr><td rowspan="2">County of residence</td><td colspan="3">Oregon Counties</td></tr>
<tr><td colspan="3">See Appendix 1</td></tr>
<tr><td rowspan="8">Age by gender by region of the state</td><td>Age</td><td>Gender</td><td>Region</td></tr>
<tr><td>0 to 9</td><td rowspan="4">Female</td><td rowspan="7">See Appendix 1</td></tr>
<tr><td>10 to 18</td></tr>
<tr><td>19 to 24</td></tr>
<tr><td>25 to 34</td></tr>
<tr><td>35 to 49</td><td rowspan="3">Male</td></tr>
<tr><td>50 to 64</td></tr>
<tr><td>65+</td></tr>
<tr><td rowspan="8">Ethnicity by age by gender</td><td>Age</td><td>Gender</td><td>Ethnicity</td></tr>
<tr><td>0 to 9</td><td rowspan="4">Female</td><td rowspan="4">Hispanic</td></tr>
<tr><td>10 to 18</td></tr>
<tr><td>19 to 24</td></tr>
<tr><td>25 to 34</td></tr>
<tr><td>35 to 49</td><td rowspan="3">Male</td><td rowspan="3">Non-Hispanic</td></tr>
<tr><td>50 to 64</td></tr>
<tr><td>65+</td></tr>
<tr><td rowspan="6">Race by age by gender</td><td>Age</td><td>Gender</td><td>Race</td></tr>
<tr><td rowspan="3">0 to 18</td><td rowspan="3">Female</td><td>White alone</td></tr>
<tr><td>Black or African American alone</td></tr>
<tr><td>American Indian or Alaska Native alone</td></tr>
<tr><td rowspan="2">19+</td><td rowspan="2">Male</td><td>Asian alone</td></tr>
<tr><td>Native Hawaiian, Other Pacific Islander, other race, 2+ race</td></tr>
<tr><td rowspan="8">Family income by age</td><td>Age</td><td>Income (% FPL)</td><td rowspan="8"></td></tr>
<tr><td>0 to 9</td><td>0% - 100% FPL</td></tr>
<tr><td>10 to 18</td><td>101% - 138% FPL</td></tr>
<tr><td>19 to 24</td><td>139% - 200% FPL</td></tr>
<tr><td>25 to 34</td><td>201% - 300% FPL</td></tr>
<tr><td>35 to 49</td><td>301% - 400% FPL</td></tr>
<tr><td>50 to 64</td><td>401%+ FPL</td></tr>
<tr><td>65+</td><td></td></tr>
<tr><td rowspan="3">Presence of cell phone only within the household by sampling strata</td><td>Sampling strata</td><td>Is Household Cell Phone Only?</td><td rowspan="3"></td></tr>
<tr><td rowspan="2">See Appendix 1</td><td>Yes</td></tr>
<tr><td>No</td></tr>
</table>

Table 8: OHP and Health Exchange Undercount Raking Adjustments

<table>
<tr><th>Adjustment</th><th colspan="3">Variable Values</th></tr>
<tr><td>Enrolled in Health Exchange Plan or other individually purchased plan</td><td colspan="3">Source of Private insurance
Health Exchange
Individual Purchase Outside the Exchange
Some other source</td></tr>
<tr><td rowspan="8">OHP enrollment by age by gender</td><th>Age</th><th>Gender</th><th>OHP Enrollment</th></tr>
<tr><td>0 to 9</td><td rowspan="4">Female</td><td rowspan="2">Enrolled in OHP</td></tr>
<tr><td>10 to 18</td></tr>
<tr><td>19 to 24</td><td rowspan="2">Coverage through other insurance</td></tr>
<tr><td>25 to 34</td></tr>
<tr><td>35 to 49</td><td rowspan="3">Male</td><td rowspan="3">Uninsured</td></tr>
<tr><td>50 to 64</td></tr>
<tr><td>65+</td></tr>
<tr><td rowspan="4">OHP enrollment by age by gender</td><th>Region</th><th>OHP Enrollment</th><th>Ethnicity</th></tr>
<tr><td rowspan="3">See Appendix 1</td><td>Enrolled in OHP</td><td>Hispanic</td></tr>
<tr><td>Coverage through other insurance</td><td rowspan="2">Non-Hispanic</td></tr>
<tr><td>Uninsured</td></tr>
</table>

The raking procedure started from the beginning, making the six demographic adjustments, in addition to the three enrollment adjustments (nine adjustments total).

The raking process was repeated until the weighting adjustments converged. As a result, the computed data correlated with the state's overall demographic profile, (age, gender, county of residence, race, ethnic origin, income) and correlated with enrollment in private health plans acquired through the Health Exchange as well as the Medicaid enrollment.

Trimmed Weights

Previous studies have shown that weighted methodologies can result in a small number of cases to have extremely large weights. Large weights have the potential to inflate the variance estimates, while decreasing the accuracy of the results. A methodology called “trimming” was applied to deter an irregular ratio. Trimming was conducted to determine the average weight, along with the standard deviation, gathered from the overall average. Any weight that was greater than three standard deviations from the mean were adjusted to three standard deviations. The remaining cases was calculated from the outlying weighted totals. The newly recalculated totals were then redistributed across all other cases.

The process of trimming can reduce or increase population estimates in relation to untrimmed weights. In the 2021 survey, trimming

- Slightly reduced the population counts for those covered by OHP
- Slightly reduced the population counts for those without health insurance

Population Size Reflected in the Final Dataset

The weighted dataset is designed to provide data that can be generalized to the non-institutionalized population of Oregon (based on ACS estimates). This allows respondents to make statements about the State. Various subpopulations that were represented with a standard error and confidence was calculated. As a result, the population size was accurately reflected in the final dataset of 4,180,284 residents.

Appendices

Appendix 1: Sample Strata and Geography

Table 9. Sampling regions

Region	Counties Included in Region
Region 1	Baker, Umatilla, Union, Wallowa
Region 2	Crook, Gilliam, Grant, Hood River, Jefferson, Morrow, Sherman, Wasco, Wheeler
Region 3	Harney, Klamath, Lake, Malheur
Region 4	Deschutes
Region 5	Lincoln, Tillamook
Region 6	Linn
Region 7	Lane
Region 8	Coos, Curry
Region 9	Jackson
Region 10	Douglas
Region 11	Marion
Region 12	Polk
Region 13	Multnomah
Region 14	Clackamas
Region 15	Washington
Region 16	Josephine
Region 17	Yamhill
Region 18	Clatsop, Columbia
Region 19	Benton
Total	State

Table 10: OHA Historic Regions

Region	Counties
Region 1	Umatilla, Union, Wallowa, Baker
Region 2	Crook, Gilliam, Grant, Hood River, Jefferson, Morrow, Sherman, Wasco, Wheeler
Region 3	Harney, Klamath, Lake, Malheur
Region 4	Deschutes
Region 5	Clatsop Columbia, Lincoln, Tillamook
Region 6	Benton, Linn
Region 7	Lane
Region 8	Coos, Curry, Josephine
Region 9	Jackson
Region 10	Douglas
Region 11	Marion
Region 12	Polk, Yamhill
Region 13	Multnomah
Region 14	Clackamas
Region 15	Washington

Table 31: County Cross Walk to OHA Region and Sample Strata

County	OHA Region	Sample Strata
Baker	1	1
Benton	6	19
Clackamas	14	14
Clatsop	5	18
Columbia	5	18
Coos	8	8
Crook	2	2
Curry	8	8
Deschutes	4	4
Douglas	10	10
Gilliam	2	2
Grant	2	2
Harney	3	3
Hood River	2	2
Jackson	9	9
Jefferson	2	2
Josephine	8	16
Klamath	3	3
Lake	3	3
Lane	7	7
Lincoln	5	5
Linn	6	6
Malheur	3	3
Marion	11	11
Morrow	2	2
Multnomah	13	13
Polk	12	12
Sherman	2	2
Tillamook	5	5
Umatilla	1	1
Union	1	1
Wallowa	1	1
Wasco	2	2
Washington	15	15
Wheeler	2	2
Yamhill	12	17

Appendix 2. Summary of Survey Changes from the 2019 OR HIS

Removals

After a review by the Oregon Health Authority and staff at MDR, the following questions asked during the 2019 survey administration will not be asked in 2021:

H5a	Has anyone had a major change in their TYPE OF health insurance in the past 12 months? By this I mean that they had a change in their insurance company, like from United Healthcare to Providence or from the Oregon Health Plan to a private insurance company. Please don't include times when the benefits in your health plan might have changed.
INSW06	Why did PERSON change health insurance coverage?
INSW09	What type of health insurance coverage did PERSON have PRIOR to changing coverage?
INSW11	Was there any time PERSON was without coverage when changing?

Additions or Modifications due to COVID-19 and Changes in Health Care Delivery

Given the impact of the COVID-19 pandemic on health care coverage, access, and utilization, questions that focused on the pandemic were added to the 2021 survey. In addition, the wording of some questions was also changed to better account for changes in health care delivery. This includes questions addressing Telehealth, Oregonhealthcare.gov, and Race.

INSU03A	*Ask if uninsured AND did not indicate "person with health insurance lost job" in INSU03…* You or another member of the family lost their job. PROMPT: Is this a reason PERSON no longer has health insurance coverage? IF YES ASK: Was this job lost a result of the COVID-19 pandemic? 1 YES, AND RELATED TO COVID-19 2 YES, AND NOT RELATED TO COVID-19 3 NO **Added follow-up to determine if loss of job was due to COVID-19**
INSU03B	*Ask if uninsured AND did not indicate "employer cut person back to part time/temporary status" in INSU03…* You or another member of the family are no longer eligible for insurance through their employer because of a reduction in the number of hours they work. PROMPT: Is this a reason PERSON no longer has health insurance coverage? IF YES ASK: Was this reduction in hours a result of the COVID-19 pandemic? 1 YES, AND RELATED TO COVID-19 2 YES, AND NOT RELATED TO COVID-19 3 NO **Added follow-up to determine if loss of hours was due to COVID-19**
INSW03a	*Ask if the individual was without coverage at any time during the last 12 months…* Did the COVID-19 pandemic lead to the interruption in PERSON's insurance?

DOCV00	Next, I would like to ask about visits to doctors' offices and medical care. This includes visits to doctor's and other health care providers such as physician's assistants, nurse practitioners, or anyone else you might go to for medical care. It also includes anytime that care was provided by telehealth services through your computer, laptop, tablet or cell phone. This does not include things such as getting a flu shot through work or checking your blood pressure at a pharmacy. Telehealth allows health care professionals to evaluate, diagnose and treat patients using telecommunications technology between the patient and a provider at the distant site. This could be done using a telephone or a video call. Telehealth does not include emailing a doctor or nurse for advice, scheduling or changing an appointment or renewing a prescription. **Adjusted language to reference telehealth**
DOCV01	How many times did PERSON see a doctor or health care provider in person or through telehealth services during the past 12 months? PROMPT: Did PERSON see or speak with a doctor or health care provider about his/her health, NOT COUNTING when he/she may have stayed overnight in the hospital? Your best guess is fine. **Adjusted language to reference telehealth**
DOCV02	*Ask of those with at least one Healthcare Provider visit in DOCV01…* How many of those times were for strictly routine check-ups or preventive care, that is when PERSON was not sick? PROMPT: Routine and preventive care includes any treatment not related to illness or injury and can include pre-natal care, vaccinations, physicals, check-ups, and follow-up visits. **Adjusted language to account for telehealth**

DOCV02a	*Ask of those with at least one Healthcare Provider visit in DOCV01…* How many of those times were with a specialist? PROMPT: Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors and others who specialize in one area of health care. Please do not include care PERSON received when PERSON was hospitalized overnight or in hospital emergency rooms. **Adjusted language to account for telehealth**
A10	*Ask of those without a routine care visit in the last 12 months…* About how long has it been since PERSON last saw a doctor or other health care provider in person or through telehealth services for a routine checkup or preventative care? (READ RESPONSES AS NEEDED) PROMPT: Routine care includes any treatment not related to illness or injury and can include physicals, check-ups, and follow-up visits. **Adjusted language to reference telehealth**
A11	*Ask of those indicating they have not visited a specialist in the last 12 months…* About how long has it been since PERSON last saw a specialist in person or through telehealth services? (READ RESPONSES AS NEEDED) PROMPT: Specialists are doctors like surgeons, heart doctors, allergy doctors, skin doctors and others who specialize in one area of health care. **Adjusted language to reference telehealth**

DOCV03	Is there ONE KIND of place that EVERYONE living in the household usually goes when they are sick or need medical attention? If care is provided by telehealth please think of the type of place that is providing care. PROMPT: By PLACE I mean locations such as a private doctor's office, a hospital emergency room, a clinic, or a health center. Think of this as ONE place even if those in the household might go to several private doctors or different private doctors. **Adjusted language to reference telehealth**
DOCV04	*Ask if everyone in the household goes to the same TYPE of place for healthcare…* What kind of place is this... INTS: IF NOT MEDICAL PROVIDER THEN: By this I mean the type of health care provider you would go to in these instances. This could be in person or by telehealth services. **Adjusted language to reference telehealth**
DOCV07	*Ask if everyone in the household does NOT go to the same type of place for care…* Is there a place that PERSON usually goes when he is sick or needs medical attention? If care is provided by telehealth please think of the type of place that is providing the care. PROMPT: By PLACE I mean locations such as a private doctor's office, a hospital emergency room, a clinic, or a health center. Think of this as ONE place even if those in the household might go to several private doctors or different private doctors. **Adjusted language to reference telehealth**

DOCV08	*Ask if individual goes to one place for medical attention…* What kind of place is this... INTS: IF NOT MEDICAL PROVIDER THEN: By this I mean the type of health care provider you would go to in these instances. This could be in person or by telehealth services. **Adjusted language to reference telehealth**
DOCV20	During the past 12 months, did anyone visit or receive telehealth services at a walk-in, urgent care, or ZOOM care facility when they were sick or injured? IF YES ASK: Who was that? **Adjusted language to reference telehealth**
TELE02 **New (adapted from 2017 survey)**	In the past 12 months have you or anyone else in your family used health care by phone, computer or video? Please do not include any times you or others emailed a doctor or nurse for advice, scheduled or changing an appointment or renewed a prescription. PROMPT: This may have been through an application such as ZOOM, GoTo Meeting, WebEx, GOOGLE Meet, or a specific APP used by your healthcare provider. IF YES: Was this a video visit or a phone visit without video? THEN ASK: What types of care did you or other family members receive through telehealth? Telehealth allows health care professionals to use telecommunications technology to offer health care like check-up, therapy, testing, and other services to a patient who is in their own home or another location. This could be done using a telephone or a video call. Telehealth does not include emailing a doctor or nurse for advice, scheduling or changing an appointment or renewing a prescription. For these questions, please limit your responses to real-time consultation between a patient and health care provider who are at different locations.

INSD05	*Ask of individuals who have not been to the dentist in the last 12 months for preventive care…* What is the primary reason PERSON has not visited the dentist within the past 12 months for preventive care? PROMPT: Are there any other reasons? 30 COVID-19, DID NOT VISIT, APPOINTMENT CANCELED DUE TO 10 FEAR, APPREHENSION, NERVOUSNESS, PAIN, DISLIKE 11 COST OF CARE 12 DO NOT HAVE / KNOW A DENTIST 13 CANNOT GET TO THE OFFICE / NO TRANSPORTATION 14 NO REASON TO GO 15 OTHER PRIORITIES 16 HAVE NOT THOUGHT OF IT 17 NO TEETH 18 TOO YOUNG 19 DON'T HAVE DENTAL COVERAGE 20 CAN'T FIND A DENTIST THAT ACCEPTS PERSON'S COVERAGE 95 OTHER (SPECIFY) **Added response category referencing COVID-19 as cause**
COVID01 **New**	These next questions are specifically about the COVID-19 pandemic. Because of the COVID-19 pandemic was anyone in the household… 1 Laid off or furloughed from a job 2 Had the hours they worked reduced 3 Did not get go to a doctor's office or clinic because of fears about catching the virus 4 Transitioned to remote or work from home status 5 Were concerned for their health and voluntarily left their employment
COVID02 **New**	Did anyone in the household receive a COVID 19 test? IF YES: Who was that?
COVID03 **New**	*Ask of each person that was tested* Did PERSON test positive?

COVID04 **New**	Due to the COVID-19 pandemic, did anyone in the household not receive needed PHYSICAL, MENTAL, or DENTAL care? IF YES: Who was that?
COVID04a **New**	*Ask of each person not receiving needed care due to coronavirus* What type of care did PERSON delay or not get? 10 CARE FORE A DENTAL CONCERN (FILLING, CROWN, ORAL SURGERY, EMERGENCY DENTAL) 11 PREVENTATIVE DENTAL CARE (CHECKUPS, CLEANINGS, FLUORIDE, SEALANTS) 12 DIAGNOSTIC TEST (CAT SCAN, MRI, LAB WORK, OR X-RAY) 13 EMERGENCY ROOM CARE 14 HOSPITAL CARE/HOSPITAL STAY 15 MEDICAL CARE FOR AN ILLNESS/CONDITION (FLU, ASTHMA) 16 MEDICAL CARE FOR AN INJURY OR POISONING 17 MENTAL HEALTH CARE OR COUNSELING 18 OUTPATIENT CARE (DAY SURGERY) 19 PRESCRIPTION MEDICINES 20 REHABILITATION SERVICES 21 ROUTINE OR PREVENTIVE MEDICAL CARE (CHECKUP, WELL BABY) 22 SERIOUS MEDICAL CONDITION (PNEUMONIA) 23 SURGERY 35 SUBSTANCE ABUSE TREATMENT OR COUNSELING 95 OTHER (SPECIFY)

Additional follow-ups to cost barriers to identify the specific type of deferred care

HCB02a	*Ask of those not getting medical care due to cost* What type of care did PERSON delay or not get? 10 CARE FORE A DENTAL CONCERN (FILLING, CROWN, ORAL SURGERY, EMERGENCY DENTAL) 11 PREVENTATIVE DENTAL CARE (CHECKUPS, CLEANINGS, FLUORIDE, SEALANTS) 12 DIAGNOSTIC TEST (CAT SCAN, MRI, LAB WORK, OR X-RAY) 13 EMERGENCY ROOM CARE 14 HOSPITAL CARE/HOSPITAL STAY 15 MEDICAL CARE FOR AN ILLNESS/CONDITION (FLU, ASTHMA) 16 MEDICAL CARE FOR AN INJURY OR POISONING 17 MENTAL HEALTH CARE OR COUNSELING 18 OUTPATIENT CARE (DAY SURGERY) 19 PRESCRIPTION MEDICINES 20 REHABILITATION SERVICES 21 ROUTINE OR PREVENTIVE MEDICAL CARE (CHECKUP, WELL BABY) 22 SERIOUS MEDICAL CONDITION (PNEUMONIA) 23 SURGERY 35 SUBSTANCE ABUSE TREATMENT OR COUNSELING 95 OTHER (SPECIFY)
A14DA	*Ask of those not getting specialist care due to cost* What type of care did PERSON delay or not get? 10 CARE FORE A DENTAL CONCERN (FILLING, CROWN, ORAL SURGERY, EMERGENCY DENTAL) 11 PREVENTATIVE DENTAL CARE (CHECKUPS, CLEANINGS, FLUORIDE, SEALANTS) 12 DIAGNOSTIC TEST (CAT SCAN, MRI, LAB WORK, OR X-RAY) 13 EMERGENCY ROOM CARE 14 HOSPITAL CARE/HOSPITAL STAY 15 MEDICAL CARE FOR AN ILLNESS/CONDITION (FLU, ASTHMA) 16 MEDICAL CARE FOR AN INJURY OR POISONING 17 MENTAL HEALTH CARE OR COUNSELING 18 OUTPATIENT CARE (DAY SURGERY) 19 PRESCRIPTION MEDICINES 20 REHABILITATION SERVICES 21 ROUTINE OR PREVENTIVE MEDICAL CARE (CHECKUP, WELL BABY) 22 SERIOUS MEDICAL CONDITION (PNEUMONIA) 23 SURGERY 35 SUBSTANCE ABUSE TREATMENT OR COUNSELING 95 OTHER (SPECIFY)

Changes in question language due to introduction of state-based health insurance exchange (replacing healthcare.gov). Replaced question text referencing healthcare.gov with Oregonhealthcare.gov.

INS02	Is PERSON covered by ANY type of health insurance? IF YES ASK: Which of the following types of insurance is this person covered by? (READ RESPONSES AND SELECT ALL MENTIONED) 10 Private health insurance (THRU EMPLOYER OR COMPANY) 11 Medicare 12 The Oregon Health Plan (MEDICAID) 13 Healthy Kids (MEDICAID) 16 Military, Veterans, TRICARE, or CHAMPVA 31 Indian Health Services 95 Some other type of insurance? (SPECIFY) 21 INDIAN HEALTH SERVICES 14 MEDICAID 18 OR HEALTH INSURANCE MARKETPLACE, OREGONHEALTH CARE.GOV, EXCHANGE, 93 THROUGH THE STATE (BUT NOT AS STATE EMPLOYEE) 94 SSI/SSDI/WELFARE/DISABILITY 97 NO INSURANCE COVERAGE 98 DK/REF

INS02b	*Ask of those indicating they receive insurance through healthcare.oregon.gov, OregonHealthcare.gov, the Marketplace, the health exchange, healthcare.gov, or Obamacare…* Oregon Healthcare.gov is a resource that connects residents to affordable healthcare coverage. They also provide a way for residents to know whether they qualify for health insurance coverage through The Oregon Health Plan or through a private health insurance plan for which a monthly premium is paid. Do you know if PERSON is enrolled in the Oregon Health Plan or is PERSON enrolled in a private health plan? The Oregon Health Plan (OHP) is the state's Medicaid program. It provides health care coverage for low-income Oregonians. It includes the Healthy Kids program that provides coverage for children in low income families. The health plans available through the Oregon Health Insurance Marketplace (Oregon Healthcare.gov) are organized into four "metal" categories: Bronze, Silver, and Gold, and Platinum. Catastrophic coverage is also available for residents under the age of 30, or who meet certain hardship conditions. 1 PERSON ENROLLED IN OREGON HEALTH PLAN OR HEALTHY KIDS 3 PERSON ENROLLED IN PRIVATE HEALTH INSURANCE PLAN 7 PERSON ENROLLED IN OTHER TYPE OF INSURANCE (GOTO INS02 AND REENTER) 8 UNSURE

INSP03	Is PERSON's PRIVATE HEALTH INSURANCE provided through Regence, Moda, United Healthcare, Providence, Kaiser, or some other company? INS: ASK FOR A SPECIFIC INSURANCE COMPANY 44 AARP 41 AETNA 20 ATRIO HEALTH PLANS 21 BRIDGESPAN HEALTH 42 CIGNA 43 HUMANA 50 IAC 22 KAISER FOUNDATION HEALTHPLAN OF THE NW 46 LIFEWISE 23 MODA HEALTH PLAN 24 PACIFICSOURCE HEALTH PLANS 25 PROVIDENCE HEALTH PLAN 47 REGENCE 48 UNITED HEALTHCARE 95 OTHER PROVIDER (SPECIFY) 12 THE OREGON HEALTH PLAN, OHP, HEALTHY KIDS 18 OR HEALTH INSURANCE MARKETPLACE, OREGONHEALTHCARE.GOV, EXCHANGE, OBAMACARE 80 MEDICARE, MEDICARE SUPPLEMENT 94 SSI, WELFARE, DISABILITY, SOCIAL SERVICES, THE STATE 98 DK/REF
INSP04a	*Ask of those indicating coverage source is exchange based carrier to insp03…* Was this health insurance coverage obtained through the Oregon Health Insurance Marketplace, also known as the Exchange or OregonHealthcare.gov? READ AS NEEDED The Marketplace oversees the health insurance products sold to Oregonians through OregonHealthCare.gov. Residents can enroll through the OregonHealthCare.gov web-site, by telephone, walk-in center, or with the help of an insurance agent or community partner. The health plans available through OregonHealthcare.gov and the Marketplace are commercial health plans sold by insurance companies, like Kaiser, Providence, and others. They are organized into four "metal" categories: Bronze, Silver, and Gold, and Platinum. Catastrophic coverage is also available for residents under the age of 30, or who meet certain hardship conditions.

INSP04B	***Ask of those indicating coverage source is the Oregon Health Insurance Marketplace, the Exchange, or Obamacare to INSP03…*** Which company is this insurance provided by? (READ RESPONSES AS NEEDED) 2 BRIDGESPAN HEALTH 3 KAISER FOUNDATION HEALTHPLAN OF THE NORTH WEST 4 MODA HEALTH PLAN 5 PACIFICSOURCE HEALTH PLANS 6 PROVIDENCE HEALTH PLAN **Eliminate response category: ATRIO HEALTH PLANS**
INSP09	*Ask of all indicated as policy holders and not covered by plan through employer/labor union…* Is PERSON's insurance provided through... (READ RESPONSES) PROMPT: IF THROUGH STATE, ASK: Is this through the state's Medicaid program? 12 COBRA or state continuation, 13 A retirement plan, 14 A school, college, or university, or 15 Was the plan purchased directly or the premium paid out of pocket? 95 OTHER (SPECIFY) 90 OR HEALTH INSURANCE MARKETPLACE, OREGONHEALTHCARE.GOV, EXCHANGE, OBAMACARE 91 THE OREGON HEALTH PLAN, OHP, HEALTHY KIDS 93 THROUGH THE STATE (BUT NOT AS A STATE EMPLOYEE) 94 SSI/SSDI/WELFARE/DISABILITY 98 DK 99 REF

Changes and additional questions regarding Race for REAL D

RACE	Which one or more of the following would you say is PERSONS's race? 10 White 11 Black or African American 12 Asian 13 Pacific Islander 14 American Indian or Alaska Native 15 Middle Eastern or North African, 95 Some Other Race (SPECIFY) **Added Middle Eastern or North African as a response category**
Race2	*Ask of those answering "Asian" to RACE…* Is that... 10 Asian Indian 11 Chinese 12 Filipino 13 Hmong 14 Japanese 15 Korean 16 Laotian 17 South Asian 18 Vietnamese 19 Other Asian **Added Hmong, Laotian, South Asian as response categories**
RACE3	*Ask of those answering "Pacific Islander" to RACE…* Is that... 1 Guamanian or Chamorro 2 Micronesian 3 Native Hawaiian 4 Samoan 5 Tongan 6 Other Pacific Islander **Added Micronesia and Tongan as response categories**

RACE4 **New**	*Ask of those answering "American Indian or Alaska Native" to RACE…* Is that... 1 Alaska Native 2 American Indian 3 Canadian Inuit, Metis, or First Nation 4 Central American, 5 Indigenous Mexican, 6 South American 7 Other American Indian or Alaska Native
RACE5 **New**	*Ask of those answering "Black or African American" to RACE…* Is that... 1 African; American African 2 Caribbean 3 Other Black
RACE6 **New**	*Ask of those answering "Middle Eastern or North African" to RACE…* Is that... 1 Middle Eastern 2 Northern African 3 Other Middle Eastern or North African
RACE7 **New**	*Ask of those answering "White" to RACE…* Is that... 1 Eastern European 2 Western European 3 Slavic 4 Some other White

RACE1	*Ask if more than one race selected in RACE…* Which one of these groups would you say best represents PERSON's race? 10 White 11 Black or African American 12 Asian 13 Native Hawaiian or Other Pacific Islander 14 American Indian, Alaska Native 15 Middle Eastern or North African, 95 Some Other Race **Added Middle Eastern or North African as a response category**

Appendix 3: Defining the Underinsured

Two estimates for underinsured residents in Oregon were calculated. The first of these estimates was originally created by the Commonwealth Fund, and is a widely understood and accepted method of estimating the underinsured. The second method, which we refer to as the Market Decisions Research Model, is an original creation of MDR. Based on the Commonwealth Model, it expands and refines the understanding of what it means to be underinsured in ways we consider critical.

The Commonwealth Fund Model for Calculating the Underinsured

The first measure of underinsurance was based on a formula developed by the Commonwealth Fund. This formula is an attempt to determine individuals who would be financially burdened by medical expenses.

Financial burden, and thus underinsurance, under the Commonwealth Fund formula is determined in two ways: the annual insurance deductible and out-of-pocket medical expenses.

Families are determined to be underinsured if the deductible for their private health insurance exceeds **five percent** of the family's income; thus, a family of four making the Federal Poverty Level (2021) amount of $26,500 annually could not pay more than $1,325.00 in annual deductible without being considered underinsured.

The second method by which an individual can be determined to be underinsured by the Commonwealth Fund method is via out-of-pocket expenses. To determine the level, the Commonwealth Fund formula first splits families into two groups: those earning 200% of FPL or less, and those earning more than 200% of FPL. Families at or beneath 200% of FPL are considered underinsured if their reported out-of-pocket medical expenses exceed **five percent** of family income. Families making more than 200% of FPL are considered underinsured if their reported out-of-pocket medical expenses exceed **10%** of family income. Using the examples above, a family of four making $26,500 would be considered underinsured if their medical expenses exceeded $1325.00. However, a family of one making $26,500 would require out-of-pocket medical expenses greater than $2,650 in order to be considered underinsured.

An individual may be considered underinsured based on deductible, based on medical expenses, or based on both criteria.

The Market Decisions Research Model for Calculating the Underinsured

In order to understand the need for the MDR Model, it is important to draw a distinction between direct and indirect measures. The Commonwealth Fund Model relies on indirect measures to determine underinsurance- calculating groups reporting high medical expenses or with risks of high medical expenses- and correlating them with direct measures such as reports of deferral of care or delayed care due to cost.

The MDR model builds on the Commonwealth Fund model by adding in other measures indicating financial burden due to the cost of health care; the deferral of care due to costs and difficulty paying medical expenses.

Reported deferral of care due to cost is not captured by the Commonwealth Fund model. As neither an accountable expense, nor an economically measurable risk of a future cost, the Commonwealth Fund model has no ability to account for individuals who report experiencing the event that the model attempts to understand; the risk if the individual does not otherwise meet the criteria. Clearly, if care is not received due to cost then, from an economic perspective, the household's coverage is inadequate.

The Commonwealth Fund model does not ignore the deferral of care but rather considers the deferral of care due to cost as a correlate rather than causal factor.

There is an additional way in which the MDR model broadens the understanding of the underinsured. Underinsurance should be evaluated at the family rather than the individual level. Simply, if one member of the family is underinsured, we would consider all members of the same health insurance unit (most typically a family, which is the term we use throughout) to be underinsured as well. While health care expenses are incurred by an individual it is the family's income that covers these expenses, therefore the entire family experiences the economic impact of the health care coverage of each of its members. The cost of health care for each individual is an expense that impacts the entire family. It is not possible for expenses to be isolated to an individual, nor are health insurance policies constructed in order to segment expenses. An individual's health care expenses cause economic hardship for the entire family. Money spent on care for an ill family member is money that cannot be spent for other household expenses. Like income, expenses and the hardships caused by those expenses are shared. Finally, the expenses of one or more members of the family may lead to other members of the family deferring care because of the family's medical expenses.

Underinsurance must also consider all health care expenses regardless of whether a health care plan provides coverage for a specific expense. A key example is expenses incurred for dental care, which are rarely covered under health care plans and, for which, people often need to purchase separate coverage. These expenses again come from the common pool of resources dedicated to health care. A lack of coverage in one or more aspects of health care can lead to allocating resources to pay for these health care services at the expense of others. That the health care market is segmented in order to direct the cost of dental care toward individuals rather than to shared insurance pools does not exclude it from being health care, nor does it mitigate the cost.

The MDR model uses the Commonwealth Fund model as a baseline as it includes the key elements of costs incurred and potential risk. We then expand the definition of underinsurance to include:

- Families that experience financial stress in paying for health care.
- Families that have members deferring care due to cost.
- Expanding the definition of underinsurance to the entire family. That is, if one family member would be identified as underinsured based on these criteria, we consider all members of the family underinsured.

Using the MDR model, a family is considered underinsured if:

- The private insurance deductible for a household member exceeds five percent of family income.
- Out of pocket health care expenses for the family exceed five percent of family income for those with incomes up to 200% of Federal Poverty Level or have health care expenses greater than 10 percent of family income for families earning more than 200% of Federal Poverty Level (excluding premiums for health insurance).
- One or more family members deferred health care due to its cost. This includes deferring:
    - Medical care from a doctor or surgery
    - Routine medical care that that was needed
    - Mental health care or counseling
    - Any type of dental care
    - A diagnostic test such as a CAT scan, MRI, lab work, or x-ray that was recommended
    - Specialist care
    - Prescription Medicines
    - Skipping doses or taking smaller amounts of prescription drugs to make them last longer
- If the family experienced difficulties paying for medical bills

Appendix 4: Separate Documents for the 2021 Oregon Health Insurance Survey

These documents are provided separately

- OHA Oregon Health Insurance Survey 2021 Sampling Plan
- OHA Oregon Health Insurance Survey 2021 Analytical Plan
- 2021 Oregon Health Insurance Survey Pre-test report

Survey instruments provided separately:

- 2021 OHA Oregon Health Insurance Survey Instrument Short Version FINAL
- 2021 OHA Oregon Health Insurance Survey Instrument Long Version FINAL