# TRANSPORTATION NEEDS AND ISSUES SURVEY

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SURVEY METHODOLOGY
SURVEY INSTRUMENT DEVELOPMENT
SAMPLE
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PROFILE OF RESPONDENTS

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## INTRODUCTION

In December 2002, the Oregon Department of Transportation (ODOT) contracted with the University of Oregon Survey Research Laboratory (OSRL) to replicate the "Transportation Needs and Issues Surveys" that OSRL conducted in 1998 and 2001. The study's goal was to obtain statistically valid and reliable information concerning a wide variety of transportation issues. Working closely with ODOT representative, Scott Bassett, OSRL planned, pretested and implemented a telephone survey with 1,014 Oregon adults.

This report summarizes the survey design, sampling methodology, and data collection, and provides a demographic profile of survey respondents. We also include a set of graphs summarizing trends over time in common questions. ODOT will conduct detailed survey data analysis.

## SURVEY METHODOLOGY

This section describes OSRL's procedures for developing and implementing the telephone survey instrument, the sampling to conduct this representative study, and the actual data collection.

### SURVEY INSTRUMENT DEVELOPMENT

The survey's broad goals were to obtain information on the transportation-related opinions, perceptions, and behaviors of Oregonians, as ODOT has done semi-annually for many years. Survey questions were developed in close consultation with ODOT, with special care exercised to ensure that certain survey questions directly paralleled those on previous ODOT surveys and national surveys; many questions, however, are OSRL originals.

The 2003 instrument replicates roughly half of the 1998 and 2001 questions; ODOT added numerous new questions. The current survey excludes questions on respondents' perceptions of local community transportation issues. Likewise, two series of questions from the 1998 and 2001 surveys – one relating to perceptions of the DMV and the other to alternative

transportation issues – were reduced to a single, simplified question in the 2003 survey. Both the current survey and the 2001 survey also excluded a large group of questions concerning perceptions of high-density communities, asked in 1998. Basic demographic questions remain the same.

The final 2003 survey instrument comprised the following specific subject areas:

1. **Satisfaction** with ODOT maintenance of highways, roads and bridges, improvements, communication, planning, and service provision, DMV service, plus overall evaluation of ODOT.
2. **Comparison** of ODOT now to ten years ago and comparison to other states.
3. **Opinions** on gasoline taxes, studded tires, construction priorities, maintenance priorities, services to the elderly and disadvantaged, airport access, sidewalks, bike paths, Amtrak passenger service, traffic safety, bridge repairs, traffic congestion, traffic laws, protecting fish and wildlife, conserving and protecting clean air and water, and others.
4. **Trip behavior** yesterday (car, truck, van, solo, light rail or MAX, bus, dial-a-ride, van, taxi, bicycle, walking) and in the past 4 weeks (Amtrak, commercial airline, general aviation).
5. **Prospective behaviors**: What the respondent would do if all Oregonians had to reduce vehicle miles by 20%, including more use of public transportation, bicycling, walking, ride-sharing, telecommuting, switching to a 4-day work week, telephone shopping, making fewer trips, and combining more trips.
6. **Employment-related trip behavior**, usual and last week.
7. **Employment-related transportation options**, including the ability to work at home, use flextime, and work 4 10-hour days instead of 5 8-hour days, as well as actual use of these options.
8. **Respondents' use and projected use of ODOT information delivery systems to road users**, including electronic signs or reader boards on highways, radio broadcasts, information centers at highway rest areas and parks, video cameras showing live road conditions on the internet, free telephone numbers, and cable television.
9. **Basic demographic data**, including years of residence in Oregon, age, sex, education, employment, number of adults in the household, number of vehicles in the household, urban-rural community, and household income.

The survey instrument was extensively pretested using OSRL's standard three-pronged pretest procedure, involving (a) potential members of the survey population, (b) OSRL's Questionnaire Review Committee, comprised of survey experts from our staff and university-wide advisory committee, and (c) potential users of the data, including ODOT personnel. Individual questions were pretested for clarity, accuracy, validity, and variability of response. The entire instrument was pretested for flow, length, comprehensiveness, and factors affecting respondents' cooperation and attention. Based on these pretests, the survey instrument was revised and finalized.

The survey was then programmed into OSRL's computer-aided telephone interviewing system (CATI), and further pretested. A facsimile of the survey instrument is provided in the "Toplines" section of this documentation. All interviews were completely anonymous. Human subjects approval was obtained from the University of Oregon's Committee for the Protection of Human Subjects.

### SAMPLING

OSRL's sampling procedure employs a random-digit-dialing (RDD) algorithm that is used in conjunction with our computer-aided telephone interviewing system (CATI). Sampling is pre-programmed and accomplished without interviewers' intervention. Telephone numbers are generated randomly by the computer and appear automatically on interviewers' computer screens. Telephone calls are placed with a computer keystroke, effectively preventing dialing errors. This sampling system avoids biases encountered from telephone books and similar lists. In addition, new and unlisted telephone numbers have an equal chance of being selected as established numbers.

For this study, 5,230 telephone numbers were randomly generated. Of those, 58% were ineligible, i.e., disconnected, non-working, non-residential, fax/modem, or other types of telephone lines unsuitable for completing a survey. Completed interviews comprised 19% of all randomly generated numbers. For 9%, the telephone was consistently busy or never answered, and thus their suitability for interviewing could not be ascertained. Just 4% resulted in refusals. For another 1% of telephone numbers, the adult in the household could not be interviewed because of illness or absence for the study duration, because the sample quota for their region had been filled, or because of a language barrier. (Surveys were only conducted in English.)

### DATA COLLECTION

Interviewer training was conducted on December 11, 2002. Interviewing was conducted December 13, 2002 – February 3, 2003. A minimum of 22 calls was made to each randomly-generated telephone number to avoid nonresponse bias. Interviewing was conducted 9:00 a.m. to 9:00 p.m. Mondays through Saturdays and 2:00 p.m. to 9:00 p.m. Sundays until the target sample was achieved. CATI automatically schedules calls which do not result in interviews for different times of the day and different days of the week, or interviewers can schedule interviews for respondents at more convenient dates and times.

Altogether, OSRL interviewers place 23,680 telephone calls were made to complete 1,014 interviews with adults in randomly-chosen Oregon households. The overall survey response rate was 64% and the refusal rate was 13% [1]. Completed interviews ranged from nine to 75 minutes and averaged 17 minutes, with a standard deviation 6 minutes.

The sample was stratified by ODOT Region, with the aim of achieving approximately 200 completed interviews in each region. Regions were determined in the first survey question, when respondents reported the county they live in. The achieved regional samples are: Region 1 n = 191, Region 2 n = 207, Region 3 n = 203, Region 4 n = 205, Region 5 n = 208.

[1] The response rate was calculated in following manner: Completed interviews / (Eligible sample + ((Eligible sample / (Eligible sample + Ineligible sample)) * Sample with unknown status)).

Survey sampling errors are calculated to assist data users in assessing how much confidence to place in a particular survey result. Large random samples, as in this study, reduce sampling error. Results for surveys in which there is low variability also have less sampling error. For example, a variable with a 50/50 proportional split has wider confidence intervals than a variable with a 5/95 proportional split. Finally, sampling error is affected by strata in the sample design, in this case, the five regional sub-samples.

For this study, the margin of error for an unweighted variable from the entire sample with a 50-50 proportional split is ±3 percentage points, at the 95% confidence level. This means readers of the data can be 95% sure that the true population figure is between 47% and 53% (i.e., 50% ±3 percentage points). The intra-regional margins of error are approximately ±6.7 percentage points. The margin of error for an unweighted variable from the entire sample with a 5/95 proportional split is ±1.3 percentage points, at the 95% confidence level and within regions approximately ±2.9 percentage points.

## PROFILE OF SURVEY RESPONDENTS

- The age distribution of the sample is 18-29 13%, 30-39 13%, 40-49 20%, 50-59 21%, 60-69 14%, 70+ 17%.
- Fully 89% of those interviewed were white, 3% Latino/Hispanic, 3% American Indian/Native American, 2% refused, 1% each Asian or Pacific Islander, African American, mixed race, and "other."
- The sample's sex composition is 58% female and 42% male. This result is very similar to other population surveys and reflects the population's aging (women outlive men).
- The educational distribution of interviewees is 7% not completing high school, 30% a high school diploma or GED, 34% some college (including Associate's degrees), and 27% a bachelor's degree or more.
- The number of adults in households is 25% one-adult, 60% 2-adult, and 14% 3 or more adult household.
- The number of motor vehicles available for household members to use is: zero vehicles 3%, one 24%, two 41%, three 22%, and four or more vehicles 9%. Households with 4 or more vehicles are substantially more likely to be in Region 5 and in rural areas of the state.
- The sample's urban-rural distribution is evenly split, with 48% reporting living in an urban or suburban area and 51% reporting living in a rural area. Not surprisingly, responses to this item are greatly influenced by regional sample strata. In Region 1, 76% reside in self-reported urban or suburb areas, compared to 59% in Region 2, 44% in Region 3, 40% in Region 4, and 19% in Region 5.
- Fifty-six percent of the sample is employed, with a low of 49% in Region 3 and a high of 63% in Region 1.
- Median household income in the sample is just over $40,000 per year, but varies widely by region. For example, just 18% of those in Region 1 earned less than $25,000 per year, compared to over a quarter of those in the other four regions. Also, 29% of those in Region 1 earned $70,000 per year or more, compared to 18% in Regions 4 and 5, and 17% in Regions 2 and 3.