

Preliminary Draft

**Inventory of Data Sources for
Passenger Travel Demand Forecasting Models**

Travel and Land Use Model Improvement Program

Prepared for

Transportation Development Branch
Oregon Department of Transportation

By

KJS Associates, Inc.

And

Parsons Brinckerhoff Quade & Douglas, Inc.
Urban Analytics, Inc.
ECO Northwest

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1. INTRODUCTION

This paper is an inventory of the data sources available for statewide passenger travel demand model development. The data inventory concentrates on 4 types of surveys:

- household surveys,
- origin-destination (intercept) surveys,
- on-board surveys, and
- specialized surveys.

The consultant team obtained as many data sources as possible to evaluate their usefulness for model development. Summaries of data sources were developed from actual evaluation as well as by conducting interviews with agency staff responsible for these data sources.

2. SUMMARY OF DATA SOURCES

The following summary of data sources available for passenger travel demand model development was developed by ODOT staff, in association with the consultant team. Specific locations of data sources and ongoing contacts are identified for future use. The condition is noted as a subjective opinion of the effort involved in preparing these data for model development.

Household surveys were collected in all four MPO regions of the state, as well as in seven non-MPO areas. A summary of these surveys is presented in Table 1. The household surveys were collected by NuStats using a consistent survey design. This survey was an activity-based survey, collected over a two-day analysis period. Most of the MPO data are cleaned and geocoded to MPO traffic analysis zones. Additional geocoding of trips leaving the MPO region will be necessary, although the Metro survey has geocoded all trips to the state coordinate system. The non-MPO surveys have also been cleaned and geocoded by NuStats (to what zone system?). There is some question as to whether trips occurring outside each region of interest were coded completely so all surveys related to intercity trips will be checked to verify that they were collected and coded in full.

The summary of origin-destination surveys is presented in Table 2. The majority of the origin-destination surveys were collected by DKS in 1994 in the areas of Albany, Salem (including Newberg and surrounding areas), Eugene, and Rogue Valley. These data are in the process of being cleaned and will be geocoded to place name following this cleaning process. These data are currently geocoded to 100 places, including cities by area, regions and states. There are also origin-destination surveys in Bend, Redmond and on the Longview Kelso Bridge; these data will need to be cleaned and geocoded. Portland Metro has an external survey that has been cleaned and used in modeling; these data are geocoded to place names.

Table 1: Summary of Household Survey Data Sources

DATA	SOURCE	LOCATION	CONDITION	COMMENTS
Portland Area	METRO SWRTC	The cleaned information can be obtained either through METRO's web or FTP site. Web IRQ www.webconcepts.com/m2lib/pdxsvy.htm . FTP - ftp.metro.dst.or.us/planning/tf/pub The consultant team has obtained and reviewed these data.	The data is cleaned and geocoded. The trip records going outside the cordon stations will need to be re-examined and the tour outside of the study area completed in order to estimate intercity travel.	The contact in METRO for this data is Kyung-Hwa Kim 503-797-1773.
MWVCOG	MWVCOG TPAU	The data is available from the COG or TPAU. MWVCOG has all of the original data files. This data needs to be transferred to a central location and available through a web or ftp site. It will be housed on the OMEGA server.	The data is cleaned and geocoded. The trip records going outside the cordon stations will need to be re-examined and the tour outside of the study area completed in order to estimate intercity travel.	The contact for this information is Mike Jaffe at MWVCOG 503-588-6177. The contact in TPAU is Mike Gillett at 503-986-4113
LCOG	LCOG MWVCOG TPAU	LCOG has all of the original files and the data is available from them. This data needs to be transferred to a central location and available through a web or ftp site. It will be housed on the OMEGA server.	The data appears to be fairly clean and is geocoded. Mike Jaffe of MWVCOG has done some additional work on the data also. Trips outside the area were coded but will need to be checked for accuracy.	The contact for this information is Bud Reiff 541-465-2454 at LCOG. The contact in TPAU is Mike Gillett.
RVCOG	RVCOG TPAU	RVCOG is in the process of transferring the original files to TPAU. When ready these data need to be transferred to a central location and available through a web or ftp site. It will be housed on the OMEGA server.	The data has had some cleaning done to it by Linda Zing (city of Medford). When TPAU obtains the data will need to be cleaned and geocoded.	The contact for this data is up in the air at this point. For now contact Bill Upton at 503-986-4106.
Non MPO	TPAU	TPAU has all the original files. When ready this data needs to be transferred to a central location and available through a web or ftp site. It will be housed on the OMEGA server.	The households have been cleaned and geocoded by NuStats. TPAU is working on geocoding the activities.	The contact for this data is Mike Gillett at TPAU 503-986-4113.

Table 2: Summary of Origin-Destination Survey Data Sources

DATA	SOURCE	LOCATION	CONDITION	COMMENTS
1988 Bend	TPAU	Should be in note book in Upton's office. File is on S0442C server under ftp\temp\lumip\bendod.dbf	In dBASE III format, some cleaning and no XY's.	This work was done by Mitchell as part of Parkway. We need to find zone map and OD codes
1988 Redmond	TPAU	Unknown at this time. Look at archive dB files in Upton's office. Also try Redmond model folder. May need to request from City of Redmond.	Completely unknown. Should be in a dBASE III file with some cleaning completed.	This work was performed by Juza as part of the Redmond model development.
1989 Longview Kelso Bridge	LKRATS	Either with LKRATS or Region 1. Look in TPAU's LKRATS files (outside chance)	Unknown at this time. The cleaning and analysis was completed by WashDOT and CWCOG	This survey picked up all 4 legs of the Bridge with a stop interview. We can at least get bridge crossing if not intercity trips.
1994 Eugene Area	LCOG ODOT	TPAU has original database and copies of the original survey forms.	Gretchen is cleaning the database in preparation for geo-coding of XY's.	
1994 Salem Area	MWVCOG TPAU	TPAU has original database and survey forms.	Gretchen & Pat are finished with cleaning and ready to geo-code XY's.	Information is also available for Newberg and surrounding areas
1994 Albany Area	TPAU	KJS has a preliminary dataset; a final dataset will need to be obtained from TPAU.		
1994 Rogue Valley Area	RVCOG TPAU	I believe same as above.	Gretchen is cleaning the database in preparation for geo-coding of XY's.	
1988 Portland Area	METRO	These files are available on Metro's ftp site 204.200.232.100 dir is planning/tf/pub file is external.zip. The consultant team has these files.	These data are geocoded to a 400 zone system of actual place names from survey.	We need to contact Kyung-Hwa Kim at 797-1773 to see what is available

There are two recent surveys that collected on-board transit data for intercity travel, describe in Table 3. The first was conducted as part of the 1994 Origin-Destination survey project led by DKS Associates. These data are a combination of revealed preference and stated preference for air, rail and intercity bus modes. These data were collected at Portland Airport, AMTRAK Portland to Eugene, and Bus terminals in Portland, Salem and Eugene from October to mid-December. There were not many surveys collected, but the percentage of actual trips appears reasonable. The data has not been coded, cleaned or geocoded to place names. The second on-board survey was a more traditional survey of rail trips on the Coast Starlight route, collected in 1994. These data also have not been coded, cleaned or geocoded.

Table 3: Summary of On-Board Survey Data Sources

DATA	SOURCE	LOCATION	CONDITION	COMMENTS
1994 Coast Starlight	TPAU	These data reside in a filing cabinet at TPAU.	These data look promising but have not been coded or geocoded.	The contact for this data is up in the air at this point. For now contact Bill Upton at 503-986-4106.
1994 Stated Preference Surveys	DKS	These data were collected at the same time as the 1994 OD surveys around the state. They reside at DKS and may be at TPAU.	These data look promising, but have not been reviewed.	The contact for this data is Mike Kennedy or Mike Aronson at DKS 510-763-2061

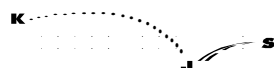


The Oregon Tourism Commission has conducted two surveys of tourism activities in the state in recent years. Table 4 presents a summary of the status of these data sources.

The first survey was collected and used to develop the *Oregon Visitor Profile* (April, 1995). There were three types of surveys conducted for this study: a survey of lodging and campground operators, a survey of households to identify visiting friends and relatives, and an intercept survey of visitors collected at tourist attractions around the state. These data were collected by Davidson-Peterson Associates in a format that is not conducive to use in standard software packages. The intercept survey was obtained and evaluated for use in the statewide model development. Unfortunately, these data represent an unusable sample size compared to the total population (less than one one-hundredth of a percent) and appear to represent an biased sample of tourist attractions (according to Rick Donnelly, county historical museums were oversampled and many large tourist destinations were not sampled at all).

Table 4: Summary of Specialized Survey Data Sources

DATA	SOURCE	LOCATION	CONDITION	COMMENTS
1994 Oregon Visitor Survey	OTC-Econ. Dev. Dept	These data have been obtained by Rick Donnelly-PB	These data are not a representative or unbiased sample. They were geocoded to nine regions in the state	The contact for this data is Julie Curtis at OTC 503-986-0006
1994/1995 Oregon Major Attractions	OTC	These data reside at OTC.	These data are a cross-section of visitor attractions in the state.	The contact for this data is Julie Curtis at OTC 503-986-0006



3. SURVEY DATA DESCRIPTIONS

3.1 Home Interview Surveys

There were approximately 15,000 household surveys statewide completed in 1994 by NuStats, Inc. These surveys covered all five MPO regions and seven non-MPO regions and are summarized in Table 5. One of the MPO regions is located in Vancouver, Washington and is considered as part of the metropolitan Portland region.

The 15,000 surveys represent approximately 1.5 percent of total households in the state. There are probably 75-85 percent of the surveys that will be usable for model development, although this has not been confirmed yet. This estimate is based on the exclusion of choice-based sampling in the MPO regions for transit and expectations that some records may have critical data missing. From an analysis of the Portland Metro dataset, it appears that missing data has been minimized.

Each of the MPO datasets have been evaluated by MPO staff and estimates of intercity trips have been provided in the summary. The tendency to have a higher percentage of intercity travel in smaller MPOs is expected. An estimate of intercity travel for the non-MPO regions (14 percent) was based solely on the expectation that these areas would have a higher percentage of intercity travel than any of the MPO regions.

Table 5: Summary of Oregon Household Surveys by Region

Region	Survey Areas	1994 Population (estimated by County)	Average HH Size	1994 HH	Surveys Collected	Percent of HH	Percent of Intercity Trips
MPOs	Metro (OR counties)	1,265,384	2.53	500,713	4,551	0.9%	10%
	SWRTC (WA)				1,500		10%
	M-WVCOG	374,394	2.77	135,216	2,400	1.8%	12%
	LCOG	305,409	2.49	122,654	1,631	1.3%	13%
	RVCOG	155,946	2.50	62,378	1,500	2.4%	12%
Subtotal		2,101,133	2.56	820,961	11,582	1.4%	11%
Non MPOs	Pendleton	64,129	2.60	24,665	526	2.1%	14%
	Astoria-Seaside-Cannon Beach	36,204	2.43	14,899	297	2.0%	14%
	Newport-Lincoln City	42,924	2.34	18,344	352	1.9%	14%
	Bend-Redmond-Sisters	88,185	2.54	34,719	724	2.1%	14%
	Coos Bay	64,754	2.45	26,430	532	2.0%	14%
	Grants Pass, Josephine County	70,132	2.46	28,509	576	2.0%	14%
	Klamath Falls	59,998	2.54	23,621	493	2.1%	14%
Subtotal		426,326	2.49	171,186	3,500	2.0%	14%
TOTAL		2,527,459	2.55	992,147	15,082	1.5%	12%
Statewide		3,098,000	2.52	1,229,365		1.2%	
	Percent of State	82%					

Sources: Interviews with Metro, M-WVCOG, LCOG, ODOT representatives
 ODOT Demographic and Economic Forecasts, 1990-2030
 1994 City and County Data Book, Bureau of Census

Most of the household survey data by region were not available for evaluation in the context of this inventory, so the Portland Metro data was evaluated as a representative sample of these household surveys. All of the household surveys were collected using the same survey design and with the same techniques and, as such, are expected to be consistent. The primary differences in the surveys is the use of stratum to identify transit or pedestrian friendly corridors and the opportunities for different modes of travel (such as light rail in Portland).

The Portland Metro household survey (which did not include the Vancouver, WA portion of the Metro region for this analysis) contains the following individual files:

1. Activity Files (primary activity database and address matching file)
2. Household Files (recruited and completed households)
3. Person Files (recruited and completed persons)
4. Vehicle File

Tables 6 through 9 summarize the data in each file, with a short description of the data item. A brief summary of all the files are as follows:

- The activity file (ACT1A.DBF) contains 129,188 records, which is an average of 29 activities per completed household and an average of 13 activities per person for a two-day period. There are 71,808 trips in the activity file, which is an average of 16.1 trips per household and an average of 7.2 trips per person for a two-day period. The second activity file contains data that is used for address matching.
- The recruited household file contains 7,090 records and the completed household file (HH.DBF) contains 4,451 records, for a completion rate of 63 percent. All of the household records contain income and household size data.
- The recruited person file contains 17,400 records and the completed person file (PER.DBF) contains 7,760 records, for a completion rate of 57 percent. There are an average of 2.3 persons per household.
- There are 7,760 records in the vehicle file (VEH.DBF), which represents an average of 1.7 vehicles per household and 0.8 vehicles per person.

This household survey represents one of the first activity-based household surveys in the country. It contains all of the data items (and more) that we envision needing for model development of the statewide passenger demand forecasting model. There is some concern that there will be not enough intercity trips contained in this survey, but the estimated numbers of intercity trips contained in the survey appear to be sufficient for model development.

There is also some concern that the intercity trips in the survey were either not collected or coded accurately. An initial assessment of this problem is that the intercity trips were collected in full, but were not coded in full because they were not deemed important to regional travel forecasting models for the MPOs. This problem does not appear to exist in the Portland Metro dataset, but has been identified in one or more of the other MPO datasets and will be revised and corrected as necessary. The non-MPO datasets are still under evaluation for this problem, but there is every indication that this coding problem is correctable.

Table 6: Activity File Data and Format

ACTIVITY FILE RECORDS		ACT1A.DBF 129,188			
Field	Field Name	Type	Width	Dec	Description
1	PHASE	Numeric	1		Season (Spring, Fall, Winter)
2	STRATUM	Numeric	2		County, good/bad PEF, LUM & Transit
3	SAMPNO	Numeric	6		
4	PERSNO	Numeric	2		
5	DAYNO	Numeric	1		
6	ACTNO	Numeric	2		
7	Q1	Numeric	2		Activity (28 types)
8	Q2NAME	Character	30		Place of Activity
9	Q3	Numeric	1		Were you there already?
10	Q4	Numeric	4		Start Activity
11	Q4AMPM	Numeric	1		
12	Q5	Numeric	4		End Activity
13	Q5AMPM	Numeric	1		
14	Q6	Numeric	1		Did you make any trips during Activity?
15	Q7	Numeric	1		Mode (8 types)
16	Q7A	Character	20		Other Mode?
17	Q8	Numeric	1		Vehicle Available
18	Q8A	Numeric	1		Would you pay if you went by car?
19	Q8B	Numeric	5	2	Parking cost
20	Q8BTIME	Numeric	1		Parking cost time frame
21	Q9	Numeric	2		People in party
22	Q10	Numeric	1		Vehicle Available
23	Q11	Numeric	1		Would you pay if you went by car?
24	Q11A	Numeric	5	2	Parking cost
25	Q11ATIME	Numeric	1		Parking cost time frame
26	Q12	Character	20		Route
27	Q13NAME	Character	30		Where did you board?
28	Q14	Numeric	1		Mode of Access
29	Q14A	Numeric	1		Mode of Egress
30	Q15	Numeric	1		Payment Type
31	Q16	Numeric	1		Who subsidized fare?
32	Q17	Numeric	1		First Transfer
33	Q18	Character	30		Second Route
34	Q19	Numeric	1		Second Transfer
35	Q19A	Numeric	2		People in party
36	Q20	Numeric	2		Vehicle
37	Q21	Numeric	1		Driver/Passenger
38	Q22	Numeric	2		Vehicle Occupancy
39	Q23	Numeric	1		Parking Location
40	Q24	Numeric	1		Did you pay?
41	Q25	Numeric	5	2	Parking Cost
42	Q25TIME	Numeric	1		Parking cost time frame
43	Q26	Numeric	1		Who subsidized cost?
44	Q27	Numeric	5	2	Unsubsidized parking cost
45	Q27TIME	Numeric	1		Parking cost time frame
46	Q28	Numeric	4		Start Time
47	Q28AMPM	Numeric	1		
48	Q29	Numeric	4		End Time
49	Q29AMPM	Numeric	1		
50	Q29AHOUR	Numeric	2		Trip Duration-hours
51	Q29AMIN	Numeric	2		Trip Duration-minutes
52	Q30	Numeric	1		Change modes?
53	Q31NAME	Character	30		Where change mode
54	Q32	Numeric	1		Second mode (5 types)
55	HALFMILE	Numeric	1		HH within 1/2 mile of light rail
Total			253		

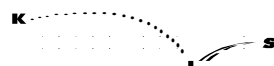


Table 7: Household File Data and Format

HOUSEHOLD FILE RECORDS		HH.DBF 4,451			
Field	Field Name	Type	Width	Dec	Description
1	PHASE	Numeric	1		Season (Spring, Fall, Winter)
2	INTWNUMB	Numeric	6		
3	SAMPNO	Numeric	6		
4	CITY	Character	30		
5	ZIP	Character	5		
6	SAMPTYPE	Character	1		Listed, Unlisted, Intercept
7	STRATUM	Numeric	2		County, good/bad PEF, LUM & Transit
8	HHSIZE	Numeric	2		
9	PHONES	Numeric	1		1 to 4+
10	PARTYLIN	Numeric	1		
11	CARPHONE	Numeric	1		1 to 4+
12	VEHICLES	Numeric	2		
13	OWNHOME	Numeric	1		Own, Rent
14	YRSHOME	Numeric	1		6 stratifications of time
15	HOMETYPE	Numeric	1		4 types
16	OLDAREA	Numeric	1		last home in/out of study area
17	INCOME	Numeric	2		13 categories
18	TRAVELD	Date	8		
19	TRAVELD2	Date	8		
20	DAY1	Numeric	1		
21	DAY2	Numeric	1		
22	DAY1ACT	Numeric	2		Number of Activities-Day 1
23	DAY2ACT	Numeric	2		Number of Activities- Day 2
24	TOTLACT	Numeric	3		
25	DAY1TRIP	Numeric	2		Number of Trips-Day 1
26	DAY2TRIP	Numeric	2		Number of Trips-Day 2
27	TOTLTRIP	Numeric	3		
28	HALFMILE	Numeric	1		HH within 1/2 mile of light rail
** Tota	I **		98		

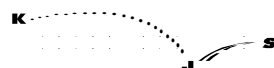


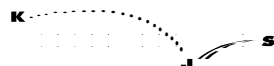
Table 8: Person File Data and Format

PERSON FILE RECORDS		PER.DBF		10,048	
Field	Field Name	Type	Width	Dec	Description
1	PHASE	Numeric		1	Season (Spring, Fall, Winter)
2	SAMPNO	Numeric		6	
3	PERSNO	Numeric		2	
4	RELATION	Numeric		1	7 categories
5	GENDER	Numeric		1	male,female
6	AGE	Numeric		2	5 categories
7	RACE	Numeric		1	
8	HOMELANG	Numeric		1	
9	OTHLANG	Numeric		2	10 categories
10	SPEAKENG	Numeric		1	4 levels of competence
11	LICENSED	Numeric		1	to drive
12	EMPLOYED	Numeric		1	8 categories
13	WORKHRS	Numeric		2	per week
14	OCCUPAT	Numeric		1	8 categories
15	INDUSTRY	Numeric		2	14 categories
16	WORKHOME	Numeric		1	
17	HRSHOME	Numeric		2	hours worked at home
18	SUBPARK	Numeric		1	Subsidized parking or transit pass from €
19	SHIFTWRK	Numeric		1	Shift work/flex-time offered by employer
20	PAY2PARK	Numeric		1	Pays to park at work
21	COST2PRK	Numeric		3	Cost of parking at work
22	DRIVE	Numeric		1	Drove alone to work past 5 days
23	CARPOOL	Numeric		1	Carpool to work last 5 days
24	TRANSIT	Numeric		1	Public transit to work last 5 days
25	OTHER	Numeric		1	Other mode of transportation to work las
26	NOWORK	Numeric		1	Did not work last 5 days
27	YRSWORK	Numeric		2	Years employed at current place of empl
28	TWOJOBS	Numeric		1	Works 2 or more jobs
29	LASTJOB	Numeric		1	Last job located in ____ area
30	STUDENT	Numeric		1	Student status
31	HHSTU	Numeric		1	Head of household student level
32	STULEVEL	Numeric		1	Level of education
33	SCHOOL	Character	3	8	Name of school
34	SCHCITY	Character	3	8	City location of school
35	SCHDRIVE	Numeric		1	Drove alone to school last 5 days
36	SCHPOOL	Numeric		1	Carpooled to school last 5 days
37	SCHBUS	Numeric		1	Public transit to school last 5 days
38	SCHOTHER	Numeric		1	Other transportation to school last 5 day:
39	NOSCHOOL	Numeric		1	No school last 5 days
40	HANDICAP	Numeric		1	Disabilities affecting outside travel
41	HANDIOTH	Numeric		1	Specific disability
** Total	**		13	0	



Table 9: Vehicle File Data and Format

VEHICLE FILE RECORDS		VEH.DBF 7,760			
Field	Field Name	Type	Width	Dec	Description
1	PHASE	Numeric		1	Season (Spring, Fall, Winter)
2	SAMPNO	Numeric		6	
3	VEHNUMBE	Numeric		2	
4	VEHOWNER	Numeric		1	Personal, Employer, Rental
5	YEAR	Numeric		2	
6	ACQUIRED	Character		6	
7	REPLACE	Numeric		1	Replacement or addition
8	MAKE	Character		30	
9	MODEL	Character		30	
10	CLASS	Numeric		1	8 vehicle types
11	TYPE	Character		30	
12	FUEL	Numeric		1	gas, diesel or other
13	BEGOD	Numeric		6	beginning odometer
14	ENDOD	Numeric		6	ending odometer
15	MILES	Numeric		6	
** Tota	**			130	



3.2 Origin-Destination Surveys

3.2.1 1994 Origin Destination (Cordon) Surveys

These surveys were collected on weekdays (Monday-Thursday) from 10AM to 7PM in the late summer/early fall of 1994. There was one survey taken on a summer weekend day. These surveys were collected at cordon locations around the following areas: Salem, Albany, Eugene, Rogue Valley and the Dayton/Newberg area in the Mid-Willamette Valley region. There were 65,728 weekday surveys in total. A summary of these data by region is presented in Table 10, along with a summary of trip end purposes, vehicle type and vehicle registration. The trip end purposes are presented to provide a sense of the significance of the business (work-related) and social-recreational trips. There are 31 percent trucks in the survey and 3 percent of the vehicles were registered out-of-state.

These data were originally geocoded to a 100 zone system around the state, including large areas for other states. Bill Upton has discovered that there are some problems in the geocoding of these surveys; ODOT staff is currently cleaning and correcting for these errors. In any case, the geocoding of these records should be consistent with geocoding practices established in the household survey, such as the use of the statewide coordinate system in the absence of a place name/analysis zone system for the statewide model.

All of the origin-destination stations included in this survey were collected with the same survey design. The data collected is identified in Figure 1, which is a sample of the survey form. The key issue in using this survey data for model development is not what data was collected, but rather what data was not collected. There is no demographic or socioeconomic data for any of these surveys. As a result, these data will be more useful for model validation than model development.

Table 10: Summary of Oregon Origin Destination Surveys by Area

	Surveys Collected	Trip End Activities				
		Home	Work	Work-Relate	SocRec	Other
Surveys Collected						
Salem Area	25,460	9,106	2,314	5,753	2,465	5,823
Dayton/Newberg Area	5,605	1,969	584	1,203	744	1,106
Albany Area	13,595	4,678	1,104	3,276	1,472	3,067
Eugene Area	13,497	5,017	1,277	2,407	1,687	3,111
Rogue Valley Area	7,571	2,574	334	1,482	971	2,212
TOTAL	65,728	23,343	5,611	14,120	7,337	15,318
Percent Distribution						
Salem Area	39%	36%	9%	23%	10%	23%
Dayton/Newberg Area	9%	35%	10%	21%	13%	20%
Albany Area	21%	34%	8%	24%	11%	23%
Eugene Area	21%	37%	9%	18%	12%	23%
Rogue Valley Area	12%	34%	4%	20%	13%	29%
TOTAL	100%	36%	9%	21%	11%	23%
	Surveys Collected	Vehicle Type *		Vehicle Registration		
		Autos	Trucks	OR	Other	
Surveys Collected						
Salem Area	25,460	18,015	6,952	24,952	508	
Dayton/Newberg Area	5,605	3,266	2,221	5,281	324	
Albany Area	13,595	9,331	3,971	13,125	426	
Eugene Area	13,497	8,814	3,956	11,259	315	
Rogue Valley Area	7,571	3,946	3,420	7,007	552	
TOTAL	65,728	43,372	20,520	61,624	2,125	
Percent Distribution						
Salem Area	39%	71%	27%	98%	2%	
Dayton/Newberg Area	9%	58%	40%	94%	6%	
Albany Area	21%	69%	29%	97%	3%	
Eugene Area	21%	65%	29%	83%	2%	
Rogue Valley Area	12%	52%	45%	93%	7%	
TOTAL	100%	66%	31%	94%	3%	

Notes: * Vehicle Types are presented only for autos and trucks; the remaining 3 percent of vehicles are motorcycles or other vehicles.

Source: 1994 Origin-Destination Surveys, Final Report, Volume I: Salem/Albany Surveys, DKS
1994 Origin-Destination Surveys, Final Report, Volume II: Eugene Surveys, DKS, May
1994 Origin-Destination Surveys, Final Report, Volume III: Rogue Valley Surveys, DKS



Figure 1: 1994 Origin-Destination Survey Data and Format

EXTERNAL TRAVEL SURVEY INTERVIEW FORM Rev. 8/12/94

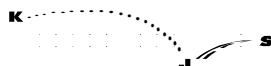
External Station #: _____ Survey Date: _____

External Station Name/Location _____ Interviewer: _____

For each vehicle you collect:

	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Time	1 a.m. 2 p.m.	1 a.m. 2 p.m.	1 a.m. 2 p.m.	1 a.m. 2 p.m.
Number of people in vehicle? (including driver)				
Vehicle classification (See chart)				
Registration of vehicle (OR, WA, CA, etc.)				
If vehicle classification is '4 - Heavy-duty truck,' what is the cargo? (See chart)				
1.a. What year is this vehicle? b. Gas or diesel? Other?	_____ Year 1 Gas 2 Diesel 3 (Other, specify)	_____ Year 1 Gas 2 Diesel (Other, specify)	_____ Year 1 Gas 2 Diesel (Other, specify)	_____ Year 1 Gas 2 Diesel (Other, specify)
2. Where is the last place you stopped for more than 30 minutes?	(City)	(City)	(City)	(City)
2.a. If within study area (or Portland), could you give the address or nearest intersection?				
2.b. If not within study area, what route did you use to enter the greater (area name) area?				
3. What was your purpose for being at that location? (Choose option)				
4. Where is your next stop of 30 minutes or more?				
4.a. If within study area (or Portland), could you give the address or nearest intersection?				
4.b. If not within study area, what route will you use to exit the greater (area name) area?				
5. What is your purpose for traveling to your next destination? (Choose option)				
6. How frequently do you make this trip?				
Trip Purpose Options 1) Home/Return home 6) Shop 2) Go to work 7) Pick up/Drop off passenger 3) Work related 8) Delivery 4) School 9) Personal Business 5) Social/Recreational/Eat 10) Other (specify in block)		Vehicle Classification (See Chart) 1) Passenger car 2) Small light-duty truck 3) Large light-duty truck 4) Heavy-duty truck 5) RV/Motor home 6) Bus 7) Motorcycle		Frequency 1) 5 or more times/week 2) 2-4 times/week 3) Once a week 4) Once or twice a month 5) Seldom

**FIGURE 5
 ROADSIDE INTERVIEW SURVEY FORM**



3.2.2 1988 Metro External Surveys (Metro)

In 1988, Metro conducted an external survey for the Metro region, collecting data at 9 sites. Table 11 presents a summary of these data by site and vehicle registration, as well as by purpose and destination (internal or external). There was a similar-size sample collected at each of the 9 locations. Table 12 presents a list of data variables contained in this survey dataset.

This survey reflects that 8 percent of the trips are through trips, which would be classified as intercity trips in the statewide model (this is less than the 10 percent estimated intercity trips from the household survey). Of the intercity trips, 17 percent of these are social-recreational trips and 14 percent are non-home-based other trips, while only 8 percent are home-cowork trips (are these the same as business or work-related trips?). This existence of a large proportion of intercity trips with a purpose of “other” is consistent with the 1994 origin-destination surveys conducted in Salem, Eugene, Rogue Valley and Albany and may raise the issue of whether these “other” trips should be stratified for model development.

Table 11: Summary of the 1988 Metro External Survey

Surveys by Site and Vehicle Registration				
	Oregon		Wash	Grand Total
	sitenum	1	2	
US26E	1	545	5	550
I5S	2	563	22	585
I84E	3	491	50	541
SR14	4	52	398	450
I5N	5	151	420	571
99W	6	506	18	524
US26W	7	505	14	519
US30	9	493	17	510
Grand Total		3306	944	4254

Oregon			Wash		Total
1	2		1	2	
	99%		1%		13%
	96%		4%		14%
	91%		9%		13%
	12%		88%		11%
	26%		74%		13%
	97%		3%		12%
	97%		3%		12%
	97%		3%		12%
	78%		22%		100%

Surveys by Purpose and Destination (Internal or External)					
	Ext-Ext	Ext-Int	Int-Ext	Badcase	Grand Total
	0	1	2	3	
HomeWork	47	645	659	29	1380
Home-Cowork	53	264	295	28	640
Home-School	8	64	76	7	155
Home-Shop	76	437	612	57	1182
Home-Socrec	154	336	336	55	881
Non-Home-Work	0	3	1	1	5
Non-Home-Other	1	2	4	0	7
	339	1754	1983	177	4254

Ext-Ext	Ext-Int	Int-Ext	Badcase	Total
0	1	2	3	
3%	47%	48%	2%	32%
8%	41%	46%	4%	15%
5%	41%	49%	5%	4%
6%	37%	52%	5%	28%
17%	38%	38%	6%	21%
0%	60%	20%	20%	0%
14%	29%	57%	0%	0%
8%	41%	47%	4%	100%



Table 12: 1988 Metro External Survey Data and Format

Structure for table		external.dbf		
Number of data records		4254		
Field	Field Name	Type	Width	Description
1	CASENUM	Numeric	9	
2	RECORD#	Numeric	9	
3	CASENUM	Numeric	9	
4	DATE	Character	9	
5	GENDER	Character	9	
6	STATE	Character	9	
7	SITENUM	Character	9	
8	DAY	Character	9	
9	TIME	Character	9	
10	OBSHR	Character	9	
11	DIRECT	Character	9	
12	HOME	Character	9	
13	OCC5	Character	9	
14	OCC16	Character	9	
15	PURPOSE1	Character	9	Primary Purpose
16	STOPS	Character	9	
17	PURPOSE2	Character	9	
18	PURPOSE3	Character	9	
19	PURPOSE4	Character	9	
20	BABY05	Character	9	
21	START	Character	9	Trip Start Time
22	END	Character	9	Trip End Time
23	COLUMCR	Character	9	
24	WHBRIDG	Character	9	
25	LANENUM	Character	9	
26	ORIG	Numeric	9	Origin
27	DEST	Numeric	9	Destination
28	G0B1	Numeric	9	
29	METCLAS	Numeric	9	Metro Class Data
30	PKFACT	Character	9	
31	AWDFACT	Character	9	
32	PRONUM	Character	9	
33	ATTNUM	Character	9	
34	PURPOSE	Character	9	Linked Trip Purpose
35	EXTNUM	Character	9	
36	DISTANCE	Character	9	
37	TRAVTIME	Character	9	
38	DIST4	Character	9	
39	FINCLAS	Numeric	9	Final Data Class
40	TRIPCLAS	Numeric	9	Old Metro Class
41	IRCCLAS	Numeric	9	IRC Class
42	BADCASE	Character	9	
43	TRIPINT	Numeric	9	
44	PRODIST	Character	9	
45	ATTDIST	Character	9	
** Total	I**		405	



3.3 On-Board Surveys

3.3.1 1994 Stated Preference Survey

The 1994 Stated Preference Survey was conducted for air, rail, and bus passengers making intercity trips in the state of Oregon. Revealed preferences of trip-making was also collected. Only 257 completed surveys were obtained, but this represented 22 percent of the total travel during the survey time periods (*Final Report: Volume IV: Stated Preference Surveys*, DKS Associates, May, 1995). A summary of the stated preference surveys is provided in Table 13 by mode and purpose. Survey forms are available for review. A sample question from the stated preference is presented in Figure 2.

Table 13: 1994 Stated Preference Surveys by Mode and Purpose

Surveys by Mode				
	Surveys	Total Passengers	Percent of Total	
Air	94	333	28%	
Bus	76	651	12%	
Rail	87	200	44%	
Total	257	1184	22%	

Trip Purposes of Expanded Annual Trips by Mode						
	Commute	Business	Recreational	Other	Total	
Air	564	22,923	40	5,082	28,609	
Bus	4,514	1,963	115	73,336	79,928	
Rail	6,221	6,963	139	106,237	108,537	
Total	11,299	31,849	294	184,655	228,097	

Percentage Distribution of Trips by Purpose and Mode						
	Commute	Business	Recreational	Other	Total	
Air	2%	80%	0%	18%	100%	
Bus	6%	2%	0%	92%	100%	
Rail	6%	6%	0%	98%	100%	
Total	5%	14%	0%	81%	100%	

Figure 2: Sample Question from Stated Preference Survey

Your Choice
Please Circle One for Each Situation

Air or Car

Q17 For the trip that you have described, circle the choice that you would actually make if the following conditions existed for each situation. The rows below compare your trip, traveled by AIR, to traveling the same trip by CAR, considering the following changes in air service and car travel.

Situation	Air Departure Frequency	One-Way Air Travel Cost & (fare, parking and ground transport)	One-Way Air & Door-to-Door Car Travel Time	One-Way Air & Door-to-Door Car Travel Cost
A	every two hours	\$50 more than current fare	same as existing car time	same as existing car cost
B	every three hours	\$50 more than current fare	1/4 (25%) shorter than existing car time	\$5 more than existing car cost
C	twice a day each way (once before 8:00am once after 5:00pm)	\$50 more than current fare	1/4 (25%) shorter than existing car time	\$10 more than existing car cost
D	twice a day each way (once before 8:00am once after 5:00pm)	\$25 more than current fare	1/4 (25%) shorter than existing car time	same as existing car cost
E	every two hours	\$25 more than current fare	1/4 (25%) shorter than existing car time	\$5 more than existing car cost
F	every three hours	\$25 more than current fare	same as existing car time	\$10 more than existing car cost
G	every three hours	same as current fare	1/4 (25%) shorter than existing car time	same as existing car cost
H	twice a day each way (once before 8:00am once after 5:00pm)	same as current fare	same as existing car time	\$5 more than existing car cost
I	every two hours	same as current fare	1/4 (25%) shorter than existing car time	\$10 more than existing car cost

Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car
Definitely Air	Probably Air	Indifferent	Probably Car	Definitely Car

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3.4 Specialized Surveys

3.4.1 1994 Oregon Visitor Survey

Table 14 presents a summary of the 1994 Oregon Visitor Survey. There were three types of surveys conducted; the intercept survey included 4,386 samples of visitors to the state. The surveys were conducted in three seasons: Fall (September-December), Winter/Spring (January-May) and Summer (June-August). The visitor surveys were summarized by region in Table 14 and compared to annual visitors to each region. The annual visitors were based on 26.1 million visitors in 1994, which translates to 33.4 million person-visits to the various regions, assuming one person may have visited more than one region in Oregon (*Oregon Visitor Profile*, April, 1995).

Table 11: Summary of 1994 Oregon Visitor Surveys

Summary of Surveys Collected by Type			
	Collected	Sample Rate	
Hotel/Motel Operators	756	84%	
Campground Operators	252	84%	
<i>Subtotal</i>	<i>1,008</i>		
Household Surveys	900		
Visitor Surveys-Statewide	2,918		
Visitor Surveys-Community	1,468		
<i>Subtotal</i>	<i>4,386</i>		

Summary of Surveys Collected by Region			
Region	Visitor Surveys	Annual Person Visits (thousands)	Percent of Visitors Surveyed
Coast	2,027	7,682	0.026%
Portland Metro	868	8,350	0.010%
Columbia Gorge	286	2,004	0.014%
Willamette Valley	339	5,678	0.006%
Southern	289	4,676	0.006%
Central	230	2,338	0.010%
Eastern	347	2,004	0.017%
Total	4,386	33,400	0.013%

The Oregon Visitor Survey also included an inventory of lodgings by type; these are presented in Table 15. These lodgings would undoubtedly be useful as part of an application dataset for recreational trips. Portland Metro area has the largest percentage of hotels/motels/resorts and the Southern part of the state has the largest percentage of campgrounds.

Table 12: Summary of Lodgings by Type in Oregon

Summary of Lodgings by Region						
Region	Hotels/Motels/Resorts			Campgrounds		
	Properties	Rooms	% of Total	Properties	Sites	% of Total
North Coast	163	3,503	7%	60	3,637	9%
Central Coast	158	4,662	9%	65	3,871	10%
South Coast	109	2,650	5%	84	4,379	11%
Portland Metro	223	14,865	30%	34	1,723	4%
Columbia Gorge	62	1,624	3%	59	2,228	6%
Willamette Valley	212	7,104	14%	160	6,086	16%
Southern	288	7,301	15%	208	7,270	19%
Central	108	4,025	8%	172	5,053	13%
Eastern	148	3,992	8%	205	4,237	11%
Total	1,471	49,726	100%	1,047	38,484	100%

Table 16 presents a list of selected tourist attractions in Oregon. This list identifies 12.7 million visitors annually in 1995, which is approximately 38 percent of the total person-trip visitors statewide. Further data will need to be provided on the remaining tourist attractions in Oregon (which may be available) to provide a basis for recreational attraction locations.

Table 13: Selected Tourist Attractions in Oregon

Attractions	Annual Visitors in 1995
Bonneville Dam	494,575
Cape Perpetua	100,000
Cascade Sternwheelers	100,930
Columbia River Maritime Museum	73,497
Crater Lake National Park	542,611
D River Wayside, Lincoln City	1,364,836
Enchanted Forest, Salem	176,332
End of the Oregon Train Interpretive Center	59,000
Ft. Clatsop National Monument	195,835
The Grotto, Portland	155,000
Hatfield Marine Science Center	82,723
Hellgate Jet Boats	72,000
Hells Canyon Adventures	10,670
High Desert Museum	177,245
John Day Fossil Beds	128,872
Metro Washington Park Zoo	1,088,028
Museum at Warm Springs	70,738
Mutnomah Falls	2,000,000
Oregon Museum of Science and Industry	1,100,000
Oregon Caves National Monument	72,879
Oregon Coast Aquarium	514,000
Oregon Shakespeare Festival	359,429
Pendleton Underground Tours	20,963
Shore Acres State Park	415,936
Silver Falls State Park	388,096
State Capital	118,568
Dalles Lock and Dam	53,000
National Historic Oregon Trail, Baker City	170,405
Pacific Northwest Museum of Natural History	80,917
Tillamook Cheese Factory	901,150
Timberline Lodge	1,450,000
Wildlife Safari	171,933
Total	12,710,168

