ARIZONA DEPARTMENT OF TRANSPORTATION

A STUDY OF TRAVEL BEHAVIOR FOR RETIREMENT COMMUNITIES

Volume II: Appendices and Procedures

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**A STUDY OF TRAVEL BEHAVIOR
FOR RETIREMENT COMMUNITIES**

VOLUME II -

APPENDICES AND SURVEY PROCEDURES

Prepared for

The Arizona Department of Transportation
Phoenix, Arizona

July 1986

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16. Abstract

The purpose of this survey, conducted for the Arizona Department of Transportation, was to identify how travel characteristics of the residents of a retirement community, particularly Green Valley Arizona, are different from those of the surrounding metropolitan area. Of particular interest was how trip generation, trip distribution, and vehicle occupancy might be different from those currently assumed in the regional modeling process. The Final Report for "A Study of Travel Behavior for Retirement Communities" has two volumes. Volume I summarizes the final results of the project including the survey results and the model modifications. This volume (II) includes more detailed tabulations of the survey responses, some statistical analyses of results, and detailed descriptions of the survey methodology.

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The Final Report for "A Study of Travel Behavior for Retirement Communities" has two volumes. Volume I summarizes the final results of the project including the survey results and the model modifications. This volume (II) includes more detailed tabulations of the survey responses, some statistical analyses of results, and detailed descriptions of the survey methodology.

Green Valley, Arizona is a growing retirement community located approximately 25 miles south of Tucson along Interstate 19. The purpose of this survey, conducted for the Arizona Department of Transportation, was to identify how the travel characteristics of the residents of a retirement community, particularly Green Valley, are different from those of the surrounding metropolitan area. Of particular interest was how trip generation trip distribution and vehicle occupancy might be different from those currently assumed in the regional modeling process.

The Green Valley travel diary survey was completed by 668 households between March 6 and March 21, 1985.

The survey data indicates the following:

o   The average Green Valley household made 7.7 vehicle person trips as compared to the 7.48 trips per household generated by the regional models for a medium income household in 1980.

o   The average vehicle occupancy is 1.38 persons/vehicle as compared to 1.51 persons/vehicle that would be predicted by the regional models.

o   As would be expected, a much smaller percentage of trips by Green Valley residents are home based work trips (less than 5%) than would be predicted by the regional models. Nearly one-half of trips made by Green Valley residents are home based other trips, nearly 20 percent home based shop and 30 percent are non-home based trips.

o   In general, the average length of trips made by Green Valley residents is considerably shorter than would be predicted by the regional models. The average trip length for work trips is 15.7

minutes compared to 34.5 minutes, for shop trips 15.7 compared to 14.1 minutes, and for other and non-home based trips, approximately 14 minutes compared to 20 minutes.

o   Less than 6 percent of Green Valley residents are under 60 years of age, 36 percent are in their 60's, 45 percent are in their 70's and 10 percent are over 80.

Other findings of the survey include:

o   87 percent of Green Valley residents are retired and 11 percent worked either full or part time.

o   An average of 1.30 walk trips were made per household.

o   Less than 0.1 bicycle trip was made per household.

o   87 percent of the trips made by Green Valley residents are to destinations within Green Valley, over 10 percent are to destinations in Tucson and 3 percent are to other places.

o   Over 64 percent of the households have one automobile or truck, and over 26 percent have more than one.

o   Golf carts are an insignificant means of travel for Green Valley residents. Only 16 percent of Green Valley households own a golf cart, and those that do make an average of 0.3 trip per day in a golf cart.

o   Over three-quarters of Green Valley households (78%) have two residents, almost one in five (19%) have one resident and 3 percent have more than two residents.

The implications of the survey findings on the regional travel demand forecasting process are to take the following actions:

o   Treat Green Valley zones as a special generator through the application of unique household size and household trip rates.

o   Apply vehicle occupancy rates unique to trips originating in the retirement community.

o   Reclassify employment in the retirement community to community shopping center rather than other non-retail.

The authors and the Arizona Department of Transportation would like to thank the following individuals for their assistance on this project: William Sapper, Mark Peterson, Dave Wolfson, Paul Klooz, Terry Rosapep, and Ben Goff and the following Green Valley officials and Project Committee members—Jack Shacklett, John Locke, James Cole, and Louise Gordon.

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APPENDIX A

TABULATIONS OF SURVEY RESPONSES

This appendix includes tabulations of the responses to most of the questions asked in the survey. The appendix is divided into three sections corresponding to the three data files created from the survey. First is the Household File which contains appropriate data regarding each household; second is the Person File containing data regarding each individual who completed a travel diary; and third is the Trip File containing data regarding each individual trip reported.

Each section of the appendix begins with a description of the file format. Each of the tabulations of responses is identified by the field number on the file format.

Programmer's   FILE
Initials __PSS   Name __GNVLHH   DATE: DECEMBER 12, 1985

Description of Contents __DISPOSITION LOG PLUS HOUSEHOLD INFORMATION FOR
GREEN VALLEY RETIREMENT COMMUNITY TRAVEL SURVEY

RECORD FORMAT

Field #	CHARACTERS 1st	Last	# of	Code NorA	Field Description
1	1	4	4	N	HOUSEHOLD ID NUMBER
2	6	11	6	A	INTERVIEWER PHASE 1
3	12	12	1	N	STATUS CODE PHASE 1
4	14	19	6	A	INTERVIEWER PHASE 2
5	20	20	1	N	STATUS CODE PHASE 2
6	22	22	1	N	TOTAL VEHICLES
7	23	23	1	N	AUTOS
8	24	24	1	N	TRUCKS OR VANS
9	25	25	1	N	GOLF CART
10	26	30	5	A	OTHER
11	31	31	1	N	HOUSEHOLD MEMBERS
12	33	33	1	N	TYPE OF DWELLING UNIT
13	35	36	2	N	TRIPS BY RESPONDENT
14	38	39	2	N	OTHER HOUSEHOLD MEMBER TRIPS
15	41	42	2	N	YEARS IN GREEN VALLEY
16	44	45	2	N	BEGINNING MONTH OF STAY
17	47	48	2	N	ENDING MONTH OF STAY
18	50	50	1	N	INCOME(THOSE WHO REFUSE PHASE
19	52	52	1	N	NUMBER OF GUESTS
20	54	54	1	N	IF '1', ONE OR MORE PIECES OF DATA ON RECORD QUESTIONABLE
21	56	57	2	N	# OF AUTO TRIPS
22	59	60	2	N	TOTAL # TRIPS
23	62	63	2	N	# OF AUTOS AND TRUCKS
24	65	65	1	N	# WALKING TRIPS
25	67	67	1	N	# BICYCLE TRIPS
26	69	69	1	N	HOUSEHOLD INCOME
27	71	73	3	N	AGE OLDEST HH MEMBER
28	75	76	2	N	NUMBER OF PERSONS IN HH (INCL. GUESTS)
29	78	78	1	N	# HBW VEHICLE PERSON TRIPS
30	79	79	1	N	# HBS VEHICLE PERSON TRIPS
31	80	80	1	N	# HBO VEHICLE PERSON TRIPS
32	81	81	1	N	# NHB VEHICLE PERSON TRIPS
33	82	82	1	N	TOTAL VEHICLE PERSON TRIPS
34	83	83	1	N	# HBW VEHICLE DRIVER TRIPS
35	84	84	1	N	# HBS VEHICLE DRIVER TRIPS
36	85	85	1	N	# HBO VEHICLE DRIVER TRIPS
37	86	86	1	N	# NHB VEHICLE DRIVER TRIPS
38	87	87	1	N	TOTAL VEHICLE DRIVER TRIPS
39	88	88	1	N	# HBW GOLF CART TRIPS
40	89	89	1	N	# HBS GOLF CART TRIPS
41	90	90	1	N	# HBO GOLF CART TRIPS
42	91	91	1	N	# NHB GOLF CART TRIPS
43	92	92	1	N	TOTAL GOLF CART TRIPS

FIELDS 6, 7, 8 AND 9

NUMBER OF VEHICLES IN HOUSEHOLD

TOT_VEH	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	2	.	.	.
0	7	7	1.051	1.051
1	380	387	57.057	58.108
2	239	626	35.886	93.994
3	40	666	6.006	100.000

AUTOS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	61	.	.	.
0	1	1	0.165	0.165
1	471	472	77.595	77.759
2	127	599	20.923	98.682
3	8	607	1.318	100.000

TRUCKS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	614	.	.	.
1	50	50	92.593	92.593
2	4	54	7.407	100.000

GOLF_CRT	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	558	.	.	.
1	109	109	99.091	99.091
2	1	110	0.909	100.000

FIELD 11

HH_MEMS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	2	.	.	.
1	128	128	19.219	19.219
2	517	645	77.628	96.847
3	18	663	2.703	99.550
4	3	666	0.450	100.000

FIELD 19

GUESTS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	79	.	.	.
0	525	525	89.134	89.134
1	29	554	4.924	94.058
2	23	577	3.905	97.963
3	3	580	0.509	98.472
4	7	587	1.188	99.660
5	1	588	0.170	99.830
6	1	589	0.170	100.000

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FIELD 12

DWELLING UNIT TYPE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	2	.	.	.
0	1	1	0.150	0.150
1	355	356	53.303	53.453
2	124	480	18.619	72.072
3	148	628	22.222	94.294
4	31	659	4.655	98.949
6	7	666	1.051	100.000

1 = Single Family House

2 = Duplex (Townhouse) (MF)

3 = Apartments or Condominiums

4 = Mobile Home

6 = Other

FIELD 13

TRIPS[1]	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	6	.	.	.
0	103	103	15.559	15.559
1	9	112	1.360	16.918
2	268	380	40.483	57.402
3	12	392	1.813	59.215
4	141	533	21.299	80.514
5	3	536	0.453	80.967
6	63	599	9.517	90.483
7	2	601	0.302	90.785
8	34	635	5.136	95.921
10	12	647	1.813	97.734
12	5	652	0.755	98.489
13	5	657	0.755	99.245
14	5	662	0.755	100.000

[1]These are estimates of the household tripmaking prior
to the conduct of the travel diary survey.

FIELD 14

HH_TRIPS[1]	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	92	.	.	.
0	228	228	39.583	39.583
1	192	420	33.333	72.917
2	1	421	0.174	73.090
3	86	507	14.931	88.021
6	50	557	8.681	96.701
9	13	570	2.257	98.958
13	5	575	0.868	99.826
19	1	576	0.174	100.000

[1]These are estimates of the household tripmaking prior
to the conduct of the travel diary survey.

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FIELD 15

YEARS	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	47	.	.	.
1	52	52	8.374	8.374
2	47	99	7.568	15.942
3	48	147	7.729	23.671
4	38	185	6.119	29.791
5	67	252	10.789	40.580
6	65	317	10.467	51.047
7	69	386	11.111	62.158
8	55	441	8.857	71.014
9	29	470	4.670	75.684
10	33	503	5.314	80.998
11	16	519	2.576	83.575
12	13	532	2.093	85.668
13	16	548	2.576	88.245
14	14	562	2.254	90.499
15	21	583	3.382	93.881
16	7	590	1.127	95.008
17	10	600	1.610	96.618
18	10	610	1.610	98.229
19	1	611	0.161	98.390
20	4	615	0.644	99.034
21	2	617	0.322	99.356
22	1	618	0.161	99.517
26	2	620	0.322	99.839
70	1	621	0.161	100.000

FIELD 16

MON_BEG	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	128	.	.	.
1	437	437	80.926	80.926
2	5	442	0.926	81.852
3	3	445	0.556	82.407
5	1	446	0.185	82.593
6	2	448	0.370	82.963
8	1	449	0.185	83.148
9	2	451	0.370	83.519
10	20	471	3.704	87.222
11	45	516	8.333	95.556
12	24	540	4.444	100.000

FIELD 17

MON_END	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	132	.	.	.
1	9	9	1.679	1.679
2	5	14	0.933	2.612
3	18	32	3.358	5.970
4	57	89	10.634	16.604
5	24	113	4.478	21.082
6	4	117	0.746	21.828
12	419	536	78.172	100.000

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FIELD 23

NUMBER OF AUTOS AND TRUCKS IN HOUSEHOLD

AUT_TRK	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	61	.	.	.
0	1	1	0.165	0.165
1	430	431	70.840	71.005
2	166	597	27.348	98.353
3	9	606	1.483	99.835
4	1	607	0.165	100.000

FIELD 24

NUM_WALK	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	22	.	.	.
0	373	373	57.740	57.740
1	21	394	3.251	60.991
2	128	522	19.814	80.805
3	6	528	0.929	81.734
4	74	602	11.455	93.189
5	5	607	0.774	93.963
6	22	629	3.406	97.368
7	2	631	0.310	97.678
8	7	638	1.084	98.762
10	4	642	0.619	99.381
11	1	643	0.155	99.536
12	2	645	0.310	99.845
13	1	646	0.155	100.000

FIELD 25

NUM_BIKE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	47	.	.	.
0	599	599	96.457	96.457
1	4	603	0.644	97.101
2	13	616	2.093	99.195
3	1	617	0.161	99.356
4	4	621	0.644	100.000

FIELD 26

HOUSEHOLD INCOME

HH_INC	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	27	.	.	.
1	24	24	3.744	3.744
2	86	110	13.417	17.161
3	122	232	19.033	36.193
4	98	330	15.289	51.482
5	92	422	14.353	65.835
6	58	480	9.048	74.883
7	161	641	25.117	100.000

1 = 0 - $9,999
2 = $10,000 - $19,999
3 = $20,000 - $29,999
4 = $30,000 - $39,999
5 = $40,000 +
6 - Don't know
7 - Refused

AGE OF OLDEST HOUSEHOLD MEMBER

OLD_AGE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	11	.	.	.
21	1	1	0.152	0.152
33	1	2	0.152	0.304
38	1	3	0.152	0.457
39	2	5	0.304	0.761
43	2	7	0.304	1.065
46	5	12	0.761	1.826
47	1	13	0.152	1.979
50	1	14	0.152	2.131
52	1	15	0.152	2.283
53	3	18	0.457	2.740
55	5	23	0.761	3.501
56	2	25	0.304	3.805
57	4	29	0.609	4.414
58	7	36	1.065	5.479
59	6	42	0.913	6.393
60	16	58	2.435	8.828
61	8	66	1.218	10.046
62	13	79	1.979	12.024
63	18	97	2.740	14.764
64	24	121	3.653	18.417
65	28	149	4.262	22.679
66	30	179	4.566	27.245
67	29	208	4.414	31.659
68	29	237	4.414	36.073
69	46	283	7.002	43.075
70	41	324	6.240	49.315
71	35	359	5.327	54.642
72	40	399	6.088	60.731
73	43	442	6.545	67.275
74	27	469	4.110	71.385
75	25	494	3.805	75.190
76	22	516	3.349	78.539
77	20	536	3.044	81.583
78	29	565	4.414	85.997
79	23	588	3.501	89.498
80	18	606	2.740	92.237
81	12	618	1.826	94.064
82	11	629	1.674	95.738
83	5	634	0.761	96.499
84	5	639	0.761	97.260
85	2	641	0.304	97.565
86	4	645	0.609	98.174
87	6	651	0.913	99.087
88	4	655	0.609	99.696
90	1	656	0.152	99.848
96	1	657	0.152	100.000

PERSON FILE

Programmer's   FILE   DATE: JUNE 20, 1985

   Initial PSS   NAME: H-GNVLPE.310

Description of Contents _GREEN VALLEY TRAVEL SURVEY CHARACTERISTICS OF
INDIVIDUALS FROM TRIP LOGS

RECORD FORMAT

Field	CHARACTERS			Code	
#	1st	Last	# of	NorA	Field Description
1	1	4	4	N	HOUSEHOLD ID
2	6	6	1	A	PERSON ID (A,B,C,ETC)
3	8	17	10	A	FIRST NAME
4	19	22	4	N	SURVEY DATE
5	24	24	1	N	RESIDENT (1) OR GUEST (2)
6	26	27	2	N	AGE
7	29	29	1	N	DRIVERS LICENSE YES(1) NO(2)
8	31	31	1	N	WORK STATUS
9	33	46	14	N	TYPE OF OTHER WORK STATUS
10	48	48	1	N	INCOME
11	50	51	2	N	WALK TRIPS
12	53	54	2	N	BICYCLE TRIPS
13	56	56	1	N	1 = NO TRIPS IN MOTORIZED VEH.
14	58	66	9	A	INTERVIEWER
15	68	68	1	N	ONE OR MORE ENTRIES ON RECORD
					QUESTIONABLE DATA
16	70	70	1	N	OLDEST HH MEM YES(1) NO(0)
17	72	72	1	N	HOUSEHOLD INCOME

FIELD 5

RES	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	34	.	.	.
1	1200	1200	96.931	96.931
2	38	1238	3.069	100.000

1 = Resident
2 = Guest

FIELD 7

LIC_DRIV	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	11	.	.	.
1	1192	1192	94.528	94.528
2	69	1261	5.472	100.000

1 = Yes
2 = No

FIELD 8

WORK	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	23	.	.	.
1	1084	1084	86.789	86.789
2	87	1171	6.966	93.755
3	51	1222	4.083	97.838
4	27	1249	2.162	100.000

1 = Retired
2 = Employed, Full Time
3 = Employed, Part Time
4 = Other

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FIELD 6

AGE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	25	.	.	.
4	1	1	0.080	0.080
7	1	2	0.080	0.160
10	1	3	0.080	0.241
12	2	5	0.160	0.401
14	2	7	0.160	0.561
15	2	9	0.160	0.722
17	2	11	0.160	0.882
18	2	13	0.160	1.043
21	5	18	0.401	1.443
22	1	19	0.080	1.524
23	1	20	0.080	1.604
25	1	21	0.080	1.684
26	2	23	0.160	1.844
28	1	24	0.080	1.925
30	2	26	0.160	2.085
33	2	28	0.160	2.245
34	1	29	0.080	2.326
35	1	30	0.080	2.406
36	2	32	0.160	2.566
37	2	34	0.160	2.727
38	1	35	0.080	2.807
39	2	37	0.160	2.967
40	1	38	0.080	3.047
42	2	40	0.160	3.208
43	3	43	0.241	3.448
44	1	44	0.080	3.528
45	1	45	0.080	3.609
46	7	52	0.561	4.170
47	4	56	0.321	4.491
48	2	58	0.160	4.651
49	5	63	0.401	5.052
50	10	73	0.802	5.854
51	3	76	0.241	6.095
52	3	79	0.241	6.335
53	6	85	0.481	6.816
54	4	89	0.321	7.137
55	14	103	1.123	8.260
56	10	113	0.802	9.062
57	14	127	1.123	10.184
58	19	146	1.524	11.708
59	18	164	1.443	13.152
60	42	206	3.368	16.520
61	23	229	1.844	18.364
62	32	261	2.566	20.930
63	39	300	3.128	24.058
64	49	349	3.929	27.987
65	58	407	4.651	32.638
66	57	464	4.571	37.209
67	54	518	4.330	41.540
68	64	582	5.132	46.672
69	87	669	6.977	53.649
70	83	752	6.656	60.305
71	51	803	4.090	64.395
72	63	866	5.052	69.447

AGE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
73	62	928	4.972	74.419
74	51	979	4.090	78.508
75	44	1023	3.528	82.037
76	41	1064	3.288	85.325
77	32	1096	2.566	87.891
78	40	1136	3.208	91.099
79	32	1168	2.566	93.665
80	22	1190	1.764	95.429
81	14	1204	1.123	96.552
82	11	1215	0.882	97.434
83	6	1221	0.481	97.915
84	6	1227	0.481	98.396
85	2	1229	0.160	98.557
86	6	1235	0.481	99.038
87	6	1241	0.481	99.519
88	4	1245	0.321	99.840
90	1	1246	0.080	99.920
96	1	1247	0.080	100.000

FIELD 10

PER_INC	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	78	.	.	.
1	45	45	3.769	3.769
2	148	193	12.395	16.164
3	222	415	18.593	34.757
4	192	607	16.080	50.838
5	174	781	14.573	65.410
6	113	894	9.464	74.874
7	300	1194	25.126	100.000

1 = 0 - $9,999
2 = $10,000 - $19,999
3 = $20,000 - $29,999
4 = $30,000 - $39,999
5 = $40,000 +
6 = Don't know
7 = Refused

FIELD 11

WALK	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	23	.	.	.
0	874	874	69.976	69.976
1	47	921	3.763	73.739
2	236	1157	18.895	92.634
3	8	1165	0.641	93.275
4	62	1227	4.964	98.239
5	9	1236	0.721	98.959
6	12	1248	0.961	99.920
12	1	1249	0.080	100.000

FIELD 12

BIKE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	55	.	.	.
0	1192	1192	97.946	97.946
1	4	1196	0.329	98.274
2	19	1215	1.561	99.836
3	1	1216	0.082	99.918
4	1	1217	0.082	100.000

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Programmer's   FILE   DATE: JUNE 20, 1985
   Initial PSS   NAME: H-GNVLTP.310

Description of Contents GREEN VALLEY TRAVEL SURVEY TRIP RECORDS
INDIVIDUALS FROM TRIP LOGS

RECORD FORMAT

Field #	CHARACTERS 1st	Last	# of	Code N or A	Field Description
1	1	4	4	N	HOUSEHOLD ID #
2	6	6	1	A	PERSON ID (A,B,C,ETC.)
3	8	9	2	N	TRIP NUMBER
4	11	22	12	A	DESTINATION
5	23	23	1	N	LOCATED IN GRNVL=1;TUC=2;OTH=3
6	25	25	1	N	VEHICLE TRAVELLED IN
7	27	36	10	A	TYPE OF OTHER VEH.
8	38	38	1	N	DRIVER=1 PASSENGER =2
9	40	49	10	A	OTHER HH MEMBER WITH
10	50	50	1	N	NUMBER OF NONHOUSEHOLD WITH
11	51	51	1	N	IF '1', ONE OR MORE PIECES OF
					DATA ON RECORD QUESTIONABLE
12	52	53	2	N	ORIGIN TRIP PURPOSE
13	54	55	2	N	DESTINATION TRIP PURPOSE
14	57	60	4	N	DEPARTURE TIME
15	61	61	1	A	DEPART AM OR PM
16	63	66	4	N	ARRIVAL TIME
17	67	67	1	A	ARRIVE AM OR PM
18	69	71	4	N	TRIP DURATION
19	72	72	1	N	ORIGIN/DESTINATION PURPOSE
20	74	74	1	N	ORIGIN/DESTINATION

FIELD 2

PER_ID	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
	84	.	.	.
A	2996	2996	57.827	57.827
B	1999	4995	38.583	96.410
C	140	5135	2.702	99.112
D	39	5174	0.753	99.865
E	7	5181	0.135	100.000

FIELD 3

TRIP_NO	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	1098	1098	20.855	20.855
2	1084	2182	20.589	41.443
3	837	3019	15.897	57.341
4	734	3753	13.941	71.282
5	510	4263	9.687	80.969
6	401	4664	7.616	88.585
7	251	4915	4.767	93.352
8	161	5076	3.058	96.410
9	81	5157	1.538	97.949
10	45	5202	0.855	98.803
11	25	5227	0.475	99.278
12	15	5242	0.285	99.563
13	9	5251	0.171	99.734
14	4	5255	0.076	99.810
15	2	5257	0.038	99.848
16	1	5258	0.019	99.867
17	1	5259	0.019	99.886
18	1	5260	0.019	99.905
19	1	5261	0.019	99.924
20	1	5262	0.019	99.943
21	1	5263	0.019	99.962
22	1	5264	0.019	99.981
23	1	5265	0.019	100.000

FIELD 5

LOC	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	4564	4564	86.686	86.686
2	557	5121	10.579	97.265
3	142	5263	2.697	99.962
9	2	5265	0.038	100.000

1 = Green Valley
2 = Tucson
3 = Other Location

FIELD 6

VEHICLE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	29	.	.	.
1	4770	4770	91.100	91.100
2	257	5027	4.908	96.008
3	180	5207	3.438	99.446
4	29	5236	0.554	100.000

1 = Auto
2 = Truck
3 = Golf Cart
4 = Other

FIELD 8

DRIVER	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	17	.	.	.
1	3860	3860	73.552	73.552
2	1387	5247	26.429	99.981
4	1	5248	0.019	100.000

1 = Driver
2 = Passenger

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FIELD 12

O_PURP	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	92	.	.	.
0	4	4	0.077	0.077
1	1905	1909	36.826	36.903
2	133	2042	2.571	39.474
3	67	2109	1.295	40.769
4	965	3074	18.655	59.424
5	13	3087	0.251	59.675
6	923	4010	17.843	77.518
7	308	4318	5.954	83.472
8	612	4930	11.831	95.303
9	175	5105	3.383	98.685
10	68	5173	1.315	100.000

FIELD 13

D_PURP	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	106	.	.	.
0	4	4	0.078	0.078
1	1865	1869	36.150	36.228
2	135	2004	2.617	38.845
3	67	2071	1.299	40.143
4	971	3042	18.821	58.965
5	13	3055	0.252	59.217
6	929	3984	18.007	77.224
7	310	4294	6.009	83.233
8	616	4910	11.940	95.173
9	179	5089	3.470	98.643
10	70	5159	1.357	100.000

FIELD 18

DURATION	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	17	17	0.323	0.323
1	39	56	0.741	1.064
2	96	152	1.823	2.887
3	122	274	2.317	5.204
4	80	354	1.519	6.724
5	1534	1888	29.136	35.859
6	70	1958	1.330	37.189
7	81	2039	1.538	38.727
8	83	2122	1.576	40.304
9	39	2161	0.741	41.045
10	1326	3487	25.185	66.230
11	16	3503	0.304	66.534
12	22	3525	0.418	66.952
13	26	3551	0.494	67.445
14	16	3567	0.304	67.749
15	585	4152	11.111	78.860
16	6	4158	0.114	78.974
17	9	4167	0.171	79.145
18	9	4176	0.171	79.316
19	1	4177	0.019	79.335
20	174	4351	3.305	82.640
21	3	4354	0.057	82.697
22	4	4358	0.076	82.773
23	2	4360	0.038	82.811
24	7	4367	0.133	82.944
25	69	4436	1.311	84.255
26	2	4438	0.038	84.292
28	7	4445	0.133	84.425
29	5	4450	0.095	84.520
30	236	4686	4.482	89.003
31	1	4687	0.019	89.022
32	4	4691	0.076	89.098
33	2	4693	0.038	89.136
34	1	4694	0.019	89.155
35	65	4759	1.235	90.389
37	2	4761	0.038	90.427
38	1	4762	0.019	90.446
39	1	4763	0.019	90.465
40	73	4836	1.387	91.852
41	3	4839	0.057	91.909
43	4	4843	0.076	91.985
45	164	5007	3.115	95.100
46	3	5010	0.057	95.157
48	1	5011	0.019	95.176
50	52	5063	0.988	96.163
52	3	5066	0.057	96.220
53	4	5070	0.076	96.296
54	2	5072	0.038	96.334
55	15	5087	0.285	96.619
57	2	5089	0.038	96.657
58	2	5091	0.038	96.695
60	73	5164	1.387	98.082
65	15	5179	0.285	98.367
69	2	5181	0.038	98.405
70	5	5186	0.095	98.500

DURATION	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
74	1	5187	0.019	98.519
75	8	5195	0.152	98.670
76	1	5196	0.019	98.689
80	4	5200	0.076	98.765
85	4	5204	0.076	98.841
90	8	5212	0.152	98.993
93	2	5214	0.038	99.031
94	2	5216	0.038	99.069
95	2	5218	0.038	99.107
105	2	5220	0.038	99.145
110	4	5224	0.076	99.221
112	1	5225	0.019	99.240
115	2	5227	0.038	99.278
125	1	5228	0.019	99.297
130	1	5229	0.019	99.316
150	5	5234	0.095	99.411
180	4	5238	0.076	99.487
210	1	5239	0.019	99.506
9999	26	5265	0.494	100.000

TABLE B-1.   VEHICLE PERSON TRIPS BY AGE OF OLDEST HOUSEHOLD MEMBER

AGE	# HH	% HH	HBW TRIPS	HBW TR/HH	HBW STDEV	HBS TRIPS	HBS TR/HH	HBS STDEV	HBO TRIPS	HBO TR/HH	HBO STDEV	NHB TRIPS	NHB TR/HH	NHB STDEV	TOTAL TRIPS	TOTAL TR/HH	TOTAL STDEV
LESS THAN 50	13	1.9	31	2.38	1.98	6	0.46	0.78	44	3.38	3.10	21	1.62	2.79	102	7.85	5.97
50-54	5	0.7	8	1.60	1.67	18	3.60	2.61	12	2.40	4.34	15	3.00	2.83	53	10.60	5.46
55-59	24	3.6	25	1.04	1.73	44	1.83	1.81	66	2.75	2.29	67	2.79	3.74	202	8.42	5.55
60-64	79	11.8	51	0.65	1.40	122	1.54	1.97	284	3.59	2.95	220	2.78	2.77	677	8.57	5.29
65-69	162	24.3	65	0.40	1.10	238	1.47	1.62	582	3.59	3.27	348	2.15	2.62	1235	7.62	5.05
70-74	186	27.8	22	0.12	0.58	270	1.45	1.67	710	3.82	3.11	474	2.55	3.26	1477	7.94	5.18
75-79	119	17.8	15	0.13	0.70	179	1.50	1.71	411	3.45	3.43	267	2.24	4.33	874	7.34	7.18
OVER 80	69	10.3	10	0.14	0.60	83	1.20	1.61	246	3.57	3.29	108	1.57	2.12	447	6.48	4.36
UNKNOWN	11	1.6	5	0.45	1.04	17	1.55	1.75	34	3.09	2.77	16	1.45	2.02	72	6.55	4.99
ALL	668	100.0	232	0.35	1.04	977	1.46	1.71	2389	3.58	3.18	1536	2.30	3.19	5139	7.69	5.53

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH   - Households
TR/HH - Trips per Household

TABLE B-2. VEHICLE PERSON TRIPS BY HOUSEHOLD INCOME

HOUSEHOLD INCOME	# HH	% HH	HBW TRIPS	HBW TR/HH	HBW STDEV	HBS TRIPS	HBS TR/HH	HBS STDEV	HBO TRIPS	HBO TR/HH	HBO STDEV	NHB TRIPS	NHB TR/HH	NHB STDEV	TOTAL TRIPS	TOTAL TR/HH	TOTAL STDEV
LESS THAN $10,000	24	3.6	2	0.08	0.41	18	0.75	0.94	68	2.83	2.43	25	1.04	1.68	115	4.79	3.90
$10,000– 19,999	86	12.9	53	0.62	1.43	126	1.47	1.83	293	3.41	2.85	176	2.05	2.42	648	7.53	4.90
$20,000– 29,999	122	18.3	38	0.31	0.90	204	1.67	1.75	412	3.38	2.76	295	2.42	2.91	949	7.78	4.93
$30,000– 39,999	98	14.7	14	0.14	0.54	125	1.28	1.60	389	3.97	3.50	271	2.77	3.17	799	8.15	5.66
OVER $40,000	92	13.8	33	0.36	1.14	135	1.47	1.39	412	4.48	3.48	259	2.82	4.51	839	9.12	6.85
DON"T KNOW	58	8.7	20	0.34	1.25	94	1.62	1.86	242	4.17	3.67	161	2.78	3.57	519	8.95	6.35
REFUSED	188	28.1	72	0.38	1.04	275	1.46	1.83	573	3.05	3.07	349	1.86	2.82	1270	6.76	5.02
ALL	668	100.0	232	0.35	1.04	977	1.46	1.71	2389	3.58	3.18	1536	2.30	3.19	5139	7.69	5.53

HBW – Home-Based Work
HBS – Home-Based Shop
HBO – Home-Based Other

HNB – Non-Home Based
HH – Households
TR/HH – Trips per Household

TABLE B-3. VEHICLE PERSON TRIPS BY AUTO AND TRUCK OWNERSHIP

VEHICLE OWNERSHIP	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
NOT REPORTING	62	9.3	10	0.16	0.52	106	1.71	1.61	197	3.18	3.43	105	1.69	2.07	420	6.77	5.13
1	430	64.4	152	0.35	1.09	623	1.45	1.73	1577	3.67	3.21	1038	2.41	3.35	3393	7.89	5.70
2 OR MORE	176	26.3	70	0.40	1.07	248	1.41	1.69	615	3.49	3.00	393	2.23	3.08	1326	7.53	5.22
ALL	668	100.0	232	0.35	1.04	977	1.46	1.71	2389	3.58	3.18	1536	2.30	3.19	5139	7.69	5.53

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH - Households
TR/HH - Trips per Household

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TABLE B-4. VEHICLE PERSON TRIPS BY NUMBER OF HOUSEHOLD OCCUPANTS

HOUSEHOLD SIZE	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
1 PERSON	128	19.2	38	0.30	0.88	213	1.66	1.78	457	3.57	3.36	300	2.34	2.99	1008	7.88	5.21
2 PERSONS	517	77.6	192	0.37	1.10	721	1.39	1.69	1847	3.57	3.15	1186	2.29	3.26	3951	7.64	5.63
3 OR MORE PERSONS	21	3.2	0	0.00	0.00	41	1.95	1.60	83	3.95	2.89	50	2.38	2.73	174	8.29	5.00
ALL	666	100.0	230	0.35	1.04	975	1.46	1.71	2387	3.58	3.18	1536	2.31	3.19	5133	7.71	5.53

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH - Households
TR/HH - Trips per Household

TABLE B-5. VEHICLE PERSON TRIPS BY TYPE OF DWELLING UNIT

TYPE OF DWELLING UNIT	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
SINGLE FAMILY HOUSE (SF)	355	53.1	150	0.42	1.17	519	1.46	1.73	1318	3.71	3.31	851	2.40	3.40	2839	8.00	5.88
DUPLEX (TOWNHOUSE) (MF)	124	18.6	17	0.14	0.62	181	1.46	1.73	405	3.27	2.95	248	2.00	3.01	853	6.88	4.95
APARTMENT/ CONDOMINIUMS	148	22.2	52	0.35	1.03	215	1.45	1.63	536	3.62	3.14	357	2.41	3.11	1160	7.84	5.35
MOBILE HOME (SF)	31	4.6	9	0.29	0.94	49	1.58	1.93	93	3.00	2.68	62	2.00	1.67	215	6.94	4.30
OTHER	7	1.0	2	0.29	0.76	10	1.43	1.40	33	4.71	3.55	16	2.29	2.21	61	8.71	5.35
UNKNOWN	3	0.4	2	0.67	1.15	3	1.00	1.00	4	1.33	1.15	2	0.67	1.15	11	3.67	3.21
ALL	668	100.0	232	0.35	1.04	977	1.46	1.71	2389	3.58	3.18	1536	2.30	3.19	5139	7.69	5.53

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH - Households
TR/HH - Trips per Household

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TABLE B-6. GOLF CART TRIPS BY GOLF CART OWNERSHIP

GOLF CARTS OWNED	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
0	558	83.5	2	0.00	0.08	15	0.03	0.21	112	0.20	0.71	20	0.04	0.23	149	0.27	0.86
1	109	16.3	2	0.02	0.19	0	0.00	0.00	24	0.22	0.74	7	0.06	0.48	33	0.30	1.08
2	1	0.1	0	0.00	·	0	0.00	·	0	0.00	·	0	0.00	·	0	0.00	·
ALL	668	100.0	4	0.01	0.11	15	0.02	0.19	136	0.20	0.71	27	0.04	0.28	182	0.27	0.90

HBW – Home-Based Work
HBS – Home-Based Shop
HBO – Home-Based Other

HNB – Non-Home Based
HH   – Households
TR/HH – Trips per Household

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TABLE B-7. VEHICLE TRIPS BY AGE OF OLDEST HOUSEHOLD MEMBER

AGE	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN 50	13	1.9	30	2.31	1.97	6	0.46	0.78	29	2.23	2.31	20	1.54	2.82	85	6.54	5.29
50-54	5	0.7	8	1.60	1.67	14	2.80	2.95	6	1.20	2.17	9	1.80	1.30	37	7.40	2.88
55-59	24	3.6	23	0.96	1.52	35	1.46	1.32	52	2.17	1.86	61	2.54	3.48	171	7.13	4.60
60-64	79	11.8	47	0.59	1.30	89	1.13	1.49	205	2.59	2.06	167	2.11	2.12	508	6.43	4.05
65-69	162	24.3	57	0.35	0.99	193	1.19	1.31	433	2.67	2.68	263	1.62	2.06	948	5.85	4.18
70-74	186	27.8	18	0.10	0.54	206	1.11	1.27	500	2.69	2.19	318	1.71	2.13	1043	5.61	3.61
75-79	119	17.8	14	0.12	0.68	138	1.16	1.28	276	2.32	2.14	152	1.28	2.07	582	4.89	3.80
OVER 80	69	10.3	9	0.13	0.59	60	0.87	1.20	169	2.45	2.18	69	1.00	1.24	307	4.45	2.87
UNKNOWN	11	1.6	5	0.45	1.04	10	0.91	0.94	20	1.82	2.18	12	1.09	1.45	47	4.27	4.08
ALL	668	100.0	211	0.32	0.98	751	1.12	1.32	1690	2.53	2.28	1071	1.60	2.11	3728	5.58	3.89

HBW – Home-Based Work   HNB – Non-Home Based
HBS – Home-Based Shop   HH   – Households
HBO – Home-Based Other   TR/HH – Trips per Household

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TABLE B-8. VHEICLE TRIPS BY HOUSEHOLD INCOME

HOUSEHOLD INCOME	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	24	3.6	0	0.00	0.00	13	0.54	0.78	51	2.13	1.83	15	0.63	1.01	81	3.38	2.83
$10,000-19,999	86	12.9	49	0.57	1.33	104	1.21	1.52	210	2.44	2.06	143	1.66	2.03	506	5.88	3.78
$20,000-29,999	122	18.3	31	0.25	0.72	147	1.20	1.23	294	2.41	2.05	204	1.67	2.05	676	5.54	3.56
$30,000-39,999	98	14.7	13	0.13	0.49	101	1.03	1.21	275	2.81	2.65	191	1.95	2.19	580	5.92	4.19
OVER $40,000	92	13.8	31	0.34	1.12	110	1.20	1.14	289	3.14	2.58	167	1.82	2.44	597	6.49	4.17
DON"T KNOW	58	8.7	18	0.31	1.23	66	1.14	1.37	156	2.69	2.17	105	1.81	2.20	347	5.98	4.05
REFUSED	188	28.1	69	0.37	1.00	210	1.12	1.44	415	2.21	2.20	246	1.31	2.00	941	5.01	3.78
ALL	668	100.0	211	0.32	0.98	751	1.12	1.32	1690	2.53	2.28	1071	1.60	2.11	3728	5.58	3.89

HBW - Home-Based Work　　　　　HNB - Non-Home Based
HBS - Home-Based Shop　　　　　　HH - Households
HBO - Home-Based Other　　　　TR/HH - Trips per Household

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TABLE B-9. VEHICLE TRIPS BY AUTO AND TRUCK OWNERSHIP

VEHICLES OWNED	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
NO RESPONSE	62	9.3	10	0.16	0.52	88	1.42	1.45	143	2.31	2.55	75	1.21	1.58	318	5.13	3.79
1	430	64.4	136	0.32	1.00	468	1.09	1.29	1093	2.54	2.24	712	1.66	2.19	2412	5.61	3.88
2 OR MORE	176	26.3	65	0.37	1.05	195	1.11	1.33	454	2.58	2.29	284	1.61	2.07	998	5.67	3.98
ALL	668	100.0	211	0.32	0.98	751	1.12	1.32	1690	2.53	2.28	1071	1.60	2.11	3728	5.58	3.89

HBW – Home-Based Work   HNB – Non-Home Based
HBS – Home-Based Shop   HH – Households
HBO – Home-Based Other   TR/HH – Trips per Household

TABLE B-10. VEHICLE TRIPS BY NUMBER OF HOUSEHOLD OCCUPANTS

HOUSEHOLD MEMBERS	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
1	128	19.2	34	0.27	0.81	157	1.23	1.35	316	2.47	2.22	202	1.58	2.06	709	5.54	3.67
2	517	77.6	175	0.34	1.03	562	1.09	1.32	1309	2.53	2.29	834	1.61	2.12	2885	5.58	3.94
3 OR MORE	21	3.2	0	0.00	0.00	30	1.43	1.12	65	3.10	2.59	35	1.67	2.33	130	6.19	4.15
ALL	666	100.0	209	0.31	0.98	749	1.12	1.32	1690	2.54	2.28	1071	1.61	2.11	3724	5.59	3.89

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH - Households
TR/HH - Trips per Household

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TABLE B-11. VEHICLE TRIPS BY TYPE OF DWELLING UNIT

HOUSING TYPE	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
SINGLE FAMILY HOUSE (SF)	355	53.1	136	0.38	1.10	411	1.16	1.34	955	2.69	2.44	608	1.71	2.27	2111	5.95	4.10
DUPLEX (TOWNHOUSE) (MF)	124	18.6	15	0.12	0.53	133	1.07	1.37	276	2.23	1.98	159	1.28	1.83	585	4.72	3.28
APARTMENT/ CONDOMINIUM	148	22.2	47	0.32	0.96	159	1.07	1.25	368	2.49	2.15	249	1.68	2.11	823	5.56	3.82
MOBILE HOME (SF)	31	4.6	9	0.29	0.94	38	1.23	1.36	64	2.06	1.65	41	1.32	1.22	154	4.97	3.24
OTHER	7	1.0	2	0.29	0.76	7	1.00	0.82	26	3.71	3.45	12	1.71	1.60	47	6.71	5.35
UNKNOWN	3	0.4	2	0.67	1.15	3	1.00	1.00	1	0.33	0.58	2	0.67	1.15	8	2.67	2.31
ALL	668	100.0	211	0.32	0.98	751	1.12	1.32	1690	2.53	2.28	1071	1.60	2.11	3728	5.58	3.89

HBW - Home-Based Work
HBS - Home-Based Shop
HBO - Home-Based Other

HNB - Non-Home Based
HH - Households
TR/HH - Trips per Household

HOUSEHOLD MEMBERS	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
1 PERSON			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	24	3.6	0	0.00	0.00	6	1.20	1.10	12	2.40	0.89	7	1.40	1.95	25	5.00	2.83
$10,000-19,999	86	12.9	8	0.53	1.19	21	1.40	2.20	60	4.00	3.21	35	2.33	2.13	124	8.27	3.94
$20,000-29,999	122	18.3	7	0.32	0.95	32	1.45	1.84	54	2.45	2.32	55	2.50	3.19	148	6.73	4.77
$30,000-39,999	96	14.4	5	0.26	0.73	34	1.79	1.81	89	4.68	3.27	53	2.79	2.92	181	9.53	5.46
OVER $40,000	92	13.8	4	0.20	0.89	25	1.25	0.85	91	4.55	3.62	62	3.10	3.67	182	9.10	4.81
DONT KNOW	58	8.7	0	0.00	0.00	37	3.08	2.50	53	4.42	4.19	28	2.33	3.14	118	9.83	7.02
REFUSED	188	28.2	14	0.40	0.98	58	1.66	1.61	98	2.80	3.55	60	1.71	2.93	230	6.57	5.25
ALL	666	100.0	38	0.30	0.88	213	1.66	1.78	457	3.57	3.36	300	2.34	2.99	1008	7.88	5.21

HOUSEHOLD MEMBERS	HBW			HBS			HBO			NHB			TOTAL		
2 PERSONS	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	2	0.11	0.47	10	0.56	0.86	46	2.56	2.15	18	1.00	1.68	78	4.33	3.93
$10,000-19,999	45	0.64	1.49	105	1.50	1.77	232	3.31	2.78	138	1.97	2.51	520	7.43	5.11
$20,000-29,999	31	0.33	0.92	163	1.72	1.74	340	3.58	2.84	223	2.35	2.80	757	7.97	4.84
$30,000-39,999	7	0.09	0.44	85	1.13	1.52	292	3.89	3.57	210	2.80	3.23	594	7.92	5.71
OVER $40,000	29	0.43	1.25	98	1.46	1.50	297	4.43	3.53	186	2.78	4.90	610	9.10	7.55
DONT KNOW	20	0.45	1.42	51	1.16	1.43	181	4.11	3.62	129	2.93	3.75	383	8.70	6.28
REFUSED	58	0.39	1.07	209	1.41	1.89	459	3.10	2.98	282	1.91	2.84	1009	6.82	5.03
ALL	192	0.37	1.10	721	1.39	1.69	1847	3.57	3.15	1186	2.29	3.26	3951	7.64	5.63

HOUSEHOLD MEMBERS	HBW			HBS			HBO			NHB			TOTAL		
3 OR MORE PERSONS	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	0	0.00	.	2	2.00	.	10	10.00	.	0	0.00	.	12	12.00	.
$10,000-19,999	0	0.00	.	0	0.00	.	1	1.00	.	3	3.00	.	4	4.00	.
$20,000-29,999	0	0.00	0.00	9	1.80	1.79	18	3.60	2.70	17	3.40	4.22	44	8.80	7.46
$30,000-39,999	0	0.00	0.00	4	2.00	2.83	6	3.00	4.24	8	4.00	5.66	18	9.00	7.07
OVER $40,000	0	0.00	0.00	12	2.40	1.52	24	4.80	2.77	11	2.20	1.48	47	9.40	4.04
DONT KNOW	0	0.00	0.00	6	3.00	1.41	8	4.00	2.83	4	2.00	2.83	18	9.00	7.07
REFUSED	0	0.00	0.00	8	1.60	1.67	16	3.20	2.59	7	1.40	1.34	31	6.20	3.49
ALL	0	0.00	0.00	41	1.95	1.60	83	3.95	2.89	50	2.38	2.73	174	8.29	5.00

HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HH - Households
HBO - Home-Based Other   TR/HH - Trips per Household

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TABLE B-13.   VEHICLE PERSON TRIPS BY DURATION AND PURPOSE

DURATION	HBW	HBS	NBO	NHB	UNKNOWN	TOTAL
0-4	12	31	133	173	1	350
	0.23	0.59	2.53	3.29	0.02	6.65
	3.43	8.86	38.00	49.43	0.29	
	5.13	3.10	5.29	11.43	20.00	
5-9	72	322	898	505	1	1798
	1.37	6.12	17.06	9.59	0.02	34.15
	4.00	17.91	49.94	28.09	0.06	
	30.77	32.20	35.73	33.38	20.00	
10-14	68	349	670	312	0	1399
	1.29	6.63	12.73	5.93	0.00	26.57
	4.86	24.95	47.89	22.30	0.00	
	29.06	34.90	26.66	20.62	0.00	
15-19	29	98	281	198	3	609
	0.55	1.86	5.34	3.76	0.06	11.57
	4.76	16.09	46.14	32.51	0.49	
	12.39	9.80	11.18	13.09	60.00	
20-24	5	23	81	80	0	189
	0.09	0.44	1.54	1.52	0.00	3.59
	2.65	12.17	42.86	42.33	0.00	
	2.14	2.30	3.22	5.29	0.00	
25-29	1	11	32	39	0	83
	0.02	0.21	0.61	0.74	0.00	1.58
	1.20	13.25	38.55	46.99	0.00	
	0.43	1.10	1.27	2.58	0.00	
30-34	15	36	108	84	0	243
	0.28	0.68	2.05	1.60	0.00	4.62
	6.17	14.81	44.44	34.57	0.00	
	6.41	3.60	4.30	5.55	0.00	
35-39	5	8	37	17	0	67
	0.09	0.15	0.70	0.32	0.00	1.27
	7.46	11.94	55.22	25.37	0.00	
	2.14	0.80	1.47	1.12	0.00	
40-44	6	26	33	15	0	80
	0.11	0.49	0.63	0.28	0.00	1.52
	7.50	32.50	41.25	18.75	0.00	
	2.56	2.60	1.31	0.99	0.00	
45-49	6	40	100	22	0	168
	0.11	0.76	1.90	0.42	0.00	3.19
	3.57	23.81	59.52	13.10	0.00	
	2.56	4.00	3.98	1.45	0.00	
50-54	0	7	42	12	0	61
	0.00	0.13	0.80	0.23	0.00	1.16
	0.00	11.48	68.85	19.67	0.00	
	0.00	0.70	1.67	0.79	0.00	
55-59	0	4	8	7	0	19
	0.00	0.08	0.15	0.13	0.00	0.36
	0.00	21.05	42.11	36.84	0.00	
	0.00	0.40	0.32	0.46	0.00	
OVER 60	10	40	54	43	0	147
	0.19	0.76	1.03	0.82	0.00	2.79
	6.80	27.21	36.73	29.25	0.00	
	4.27	4.00	2.15	2.84	0.00	
UNKNOWN	5	5	36	6	0	52
	0.09	0.09	0.68	0.11	0.00	0.99
	9.62	9.62	69.23	11.54	0.00	
	2.14	0.50	1.43	0.40	0.00	
TOTAL	234	1000	2513	1513	5	5265
	4.44	18.99	47.73	28.74	0.09	100.00

DURATION

| FREQUENCY |
| PERCENT |
| ROW PCT |
| COL PCT |
| |

HBW - Home-Based Work   HBO - Home-Based Other
HBS - Home-Based Shop   HNB - Non-Home Based

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DEPARTURE TIME	HBW	HBS	HBO	NHB	UNKNOWN	TOTAL
BEFORE 6:00 AM	13 0.25 26.00 5.56	4 0.08 8.00 0.40	22 0.42 44.00 0.88	11 0.21 22.00 0.73	0 0.00 0.00 0.00	50 0.95
6:00-6:29 AM	3 0.06 23.08 1.28	0 0.00 0.00 0.00	10 0.19 76.92 0.40	0 0.00 0.00 0.00	0 0.00 0.00 0.00	13 0.25
6:30-6:59 AM	11 0.21 27.50 4.70	1 0.02 2.50 0.10	25 0.47 62.50 0.99	2 0.04 5.00 0.13	1 0.02 2.50 20.00	40 0.76
7:00-7:29 AM	10 0.19 21.28 4.27	9 0.17 19.15 0.90	27 0.51 57.45 1.07	1 0.02 2.13 0.07	0 0.00 0.00 0.00	47 0.89
7:30-7:59 AM	20 0.38 20.83 8.55	5 0.09 5.21 0.50	63 1.20 65.63 2.51	8 0.15 8.33 0.53	0 0.00 0.00 0.00	96 1.82
8:00-8:29 AM	12 0.23 9.76 5.13	17 0.32 13.82 1.70	78 1.48 63.41 3.10	16 0.30 13.01 1.06	0 0.00 0.00 0.00	123 2.34
8:30-8:59 AM	13 0.25 7.88 5.56	14 0.27 8.48 1.40	105 1.99 63.64 4.18	33 0.63 20.00 2.18	0 0.00 0.00 0.00	165 3.13
9:00-9:29 AM	5 0.09 2.21 2.14	39 0.74 17.26 3.90	126 2.39 55.75 5.01	56 1.06 24.78 3.70	0 0.00 0.00 0.00	226 4.29
9:30-9:59 AM	5 0.09 2.03 2.14	50 0.95 20.33 5.00	121 2.30 49.19 4.81	70 1.33 28.46 4.63	0 0.00 0.00 0.00	246 4.67
10:00-10:29 AM	4 0.08 1.35 1.71	85 1.61 28.72 8.50	122 2.32 41.22 4.85	85 1.61 28.72 5.62	0 0.00 0.00 0.00	296 5.62
10:30-10:59 AM	5 0.09 1.85 2.14	52 0.99 19.19 5.20	108 2.05 39.85 4.30	104 1.98 38.38 6.87	2 0.04 0.74 40.00	271 5.15
11:00-11:29 AM	11 0.21 3.45 4.70	76 1.44 23.82 7.60	122 2.32 38.24 4.85	109 2.07 34.17 7.20	1 0.02 0.31 20.00	319 6.06
11:30-11:59 AM	8 0.15 2.93 3.42	57 1.08 20.88 5.70	113 2.15 41.39 4.50	95 1.80 34.80 6.28	0 0.00 0.00 0.00	273 5.19
12:00-12:29 PM	7 0.13 3.26 2.99	42 0.80 19.53 4.20	93 1.77 43.26 3.70	72 1.37 33.49 4.76	1 0.02 0.47 20.00	215 4.08
12:30-12:59 PM	7 0.13 3.30 2.99	32 0.61 15.09 3.20	97 1.84 45.75 3.86	76 1.44 35.85 5.02	0 0.00 0.00 0.00	212 4.03
1:00-1:29 PM	7 0.13 2.87 2.99	47 0.89 19.26 4.70	97 1.84 39.75 3.86	93 1.77 38.11 6.15	0 0.00 0.00 0.00	244 4.63
1:30-1:59 PM	4 0.08 1.51 1.71	46 0.87 17.36 4.60	108 2.05 40.75 4.30	107 2.03 40.38 7.07	0 0.00 0.00 0.00	265 5.03
2:00-2:29 PM	9 0.17 3.26 3.85	56 1.06 20.29 5.60	101 1.92 36.59 4.02	110 2.09 39.86 7.27	0 0.00 0.00 0.00	276 5.24

FREQUENCY|
PERCENT |
ROW PCT |
COL PCT |

DEPARTURE TIME	HBW	HBS	HBO	NHB	UNKNOWN	TOTAL
2:30-2:59 PM	2	59	77	82	0	220
	0.04	1.12	1.46	1.56	0.00	4.18
	0.91	26.82	35.00	37.27	0.00	
	0.85	5.90	3.06	5.42	0.00	
3:00-3:29 PM	5	63	97	62	0	227
	0.09	1.20	1.84	1.18	0.00	4.31
	2.20	27.75	42.73	27.31	0.00	
	2.14	6.30	3.86	4.10	0.00	
3:30-3:59 PM	10	48	93	71	0	222
	0.19	0.91	1.77	1.35	0.00	4.22
	4.50	21.62	41.89	31.98	0.00	
	4.27	4.80	3.70	4.69	0.00	
4:00-4:29 PM	10	54	122	67	0	253
	0.19	1.03	2.32	1.27	0.00	4.81
	3.95	21.34	48.22	26.48	0.00	
	4.27	5.40	4.85	4.43	0.00	
4:30-4:59 PM	13	36	91	42	0	182
	0.25	0.68	1.73	0.80	0.00	3.46
	7.14	19.78	50.00	23.08	0.00	
	5.56	3.60	3.62	2.78	0.00	
5:00-5:29 PM	15	40	91	32	0	178
	0.28	0.76	1.73	0.61	0.00	3.38
	8.43	22.47	51.12	17.98	0.00	
	6.41	4.00	3.62	2.12	0.00	
5:30-5:59 PM	6	17	59	15	0	97
	0.11	0.32	1.12	0.28	0.00	1.84
	6.19	17.53	60.82	15.46	0.00	
	2.56	1.70	2.35	0.99	0.00	
6:00-6:29 PM	3	11	49	21	0	84
	0.06	0.21	0.93	0.40	0.00	1.60
	3.57	13.10	58.33	25.00	0.00	
	1.28	1.10	1.95	1.39	0.00	
6:30-6:59 PM	3	9	46	12	0	70
	0.06	0.17	0.87	0.23	0.00	1.33
	4.29	12.86	65.71	17.14	0.00	
	1.28	0.90	1.83	0.79	0.00	
7:00-7:29 PM	0	9	43	11	0	63
	0.00	0.17	0.82	0.21	0.00	1.20
	0.00	14.29	68.25	17.46	0.00	
	0.00	0.90	1.71	0.73	0.00	
7:30-7:59 PM	0	7	31	6	0	44
	0.00	0.13	0.59	0.11	0.00	0.84
	0.00	15.91	70.45	13.64	0.00	
	0.00	0.70	1.23	0.40	0.00	
8:00-8:29 PM	3	4	32	8	0	47
	0.06	0.08	0.61	0.15	0.00	0.89
	6.38	8.51	68.09	17.02	0.00	
	1.28	0.40	1.27	0.53	0.00	
8:30-8:59 PM	1	2	20	11	0	34
	0.02	0.04	0.38	0.21	0.00	0.65
	2.94	5.88	58.82	32.35	0.00	
	0.43	0.20	0.80	0.73	0.00	
9:00-9:29 PM	1	3	38	8	0	50
	0.02	0.06	0.72	0.15	0.00	0.95
	2.00	6.00	76.00	16.00	0.00	
	0.43	0.30	1.51	0.53	0.00	
9:30-9:59 PM	0	0	20	2	0	22
	0.00	0.00	0.38	0.04	0.00	0.42
	0.00	0.00	90.91	9.09	0.00	
	0.00	0.00	0.80	0.13	0.00	
AFTER 10:00 PM	3	1	30	9	0	43
	0.06	0.02	0.57	0.17	0.00	0.82
	6.98	2.33	69.77	20.93	0.00	
	1.28	0.10	1.19	0.59	0.00	
UNKNOWN	5	5	36	6	0	52
	0.09	0.09	0.68	0.11	0.00	0.99
	9.62	9.62	69.23	11.54	0.00	
	2.14	0.50	1.43	0.40	0.00	
TOTAL	234	1000	2513	1513	5	5265
	4.44	18.99	47.73	28.74	0.09	100.00

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HBW - Home-Based Work          HNB - Non-Home Based
HBS - Home-Based Shop          HBO - Home-Based Other
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TABLE B-15. VEHICLE TRIPS BY DURATION AND PURPOSE

DURATION	HBW	NHS	HBO	NHB	UNKNOWN	TOTAL
0-4	11	27	107	136	1	282
	0.28	0.70	2.77	3.52	0.03	7.31
	3.90	9.57	37.94	48.23	0.35	
	5.07	3.47	5.94	12.84	20.00	
5-9	69	274	665	370	1	1379
	1.79	7.10	17.23	9.59	0.03	35.73
	5.00	19.87	48.22	26.83	0.07	
	31.80	35.22	36.92	34.94	20.00	
10-14	62	278	511	226	0	1077
	1.61	7.20	13.24	5.85	0.00	27.90
	5.76	.25.81	47.45	20.98	0.00	
	28.57	35.73	28.37	21.34	0.00	
15-19	29	80	206	137	3	455
	0.75	2.07	5.34	3.55	0.08	11.79
	6.37	17.58	45.27	30.11	0.66	
	13.36	10.28	11.44	12.94	60.00	
20-24	5	17	54	54	0	130
	0.13	0.44	1.40	1.40	0.00	3.37
	3.85	13.08	41.54	41.54	0.00	
	2.30	2.19	3.00	5.10	0.00	
25-29	1	6	19	20	0	46
	0.03	0.16	0.49	0.52	0.00	1.19
	2.17	13.04	41.30	43.48	0.00	
	0.46	0.77	1.05	1.89	0.00	
30-34	10	22	61	41	0	134
	0.26	0.57	1.58	1.06	0.00	3.47
	7.46	16.42	45.52	30.60	0.00	
	4.61	2.83	3.39	3.87	0.00	
35-39	5	4	23	11	0	43
	0.13	0.10	0.60	0.28	0.00	1.11
	11.63	9.30	53.49	25.58	0.00	
	2.30	0.51	1.28	1.04	0.00	
40-44	6	15	19	9	0	49
	0.16	0.39	0.49	0.23	0.00	1.27
	12.24	30.61	38.78	18.37	0.00	
	2.76	1.93	1.05	0.85	0.00	
45-49	6	19	58	16	0	99
	0.16	0.49	1.50	0.41	0.00	2.56
	6.06	19.19	58.59	16.16	0.00	
	2.76	2.44	3.22	1.51	0.00	
50-54	0	4	21	7	0	32
	0.00	0.10	0.54	0.18	0.00	0.83
	0.00	12.50	65.63	21.88	0.00	
	0.00	0.51	1.17	0.66	0.00	
55-59	0	4	7	4	0	15
	0.00	0.10	0.18	0.10	0.00	0.39
	0.00	26.67	46.67	26.67	0.00	
	0.00	0.51	0.39	0.38	0.00	
OVER 60	8	25	28	24	0	85
	0.21	0.65	0.73	0.62	0.00	2.20
	9.41	29.41	32.94	28.24	0.00	
	3.69	3.21	1.55	2.27	0.00	
UNKNOWN	5	3	22	4	0	34
	0.13	0.08	0.57	0.10	0.00	0.88
	14.71	8.82	64.71	11.76	0.00	
	2.30	0.39	1.22	0.38	0.00	
TOTAL	217	778	1801	1059	5	3860
	5.62	20.16	46.66	27.44	0.13	100.00

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FREQUENCY        |
 PERCENT         |
 ROW PCT         |
 COL PCT         |
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HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HBO - Home-Based Other

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DEPARTURE TIME	HBW	HBS	HBO	NHB	UNKNOWN	TOTAL
BEFORE 6:00 AM	11 0.28 28.95 5.07	4 0.10 10.53 0.51	14 0.36 36.84 0.78	9 0.23 23.68 0.85	0 0.00 0.00 0.00	38 0.98
6:00-6:29 AM	3 0.08 30.00 1.38	0 0.00 0.00 0.00	7 0.18 70.00 0.39	0 0.00 0.00 0.00	0 0.00 0.00 0.00	10 0.26
6:30-6:59 AM	9 0.23 31.03 4.15	1 0.03 3.45 0.13	16 0.41 55.17 0.89	2 0.05 6.90 0.19	1 0.03 3.45 20.00	29 0.75
7:00-7:29 AM	9 0.23 24.32 4.15	6 0.16 16.22 0.77	21 0.54 56.76 1.17	1 0.03 2.70 0.09	0 0.00 0.00 0.00	37 0.96
7:30-7:59 AM	17 0.44 23.29 7.83	5 0.13 6.85 0.64	44 1.14 60.27 2.44	7 0.18 9.59 0.66	0 0.00 0.00 0.00	73 1.89
8:00-8:29 AM	10 0.26 9.90 4.61	13 0.34 12.87 1.67	64 1.66 63.37 3.55	14 0.36 13.86 1.32	0 0.00 0.00 0.00	101 2.62
8:30-8:59 AM	13 0.34 9.49 5.99	12 0.31 8.76 1.54	84 2.18 61.31 4.66	28 0.73 20.44 2.64	0 0.00 0.00 0.00	137 3.55
9:00-9:29 AM	5 0.13 2.78 2.30	35 0.91 19.44 4.50	98 2.54 54.44 5.44	42 1.09 23.33 3.97	0 0.00 0.00 0.00	180 4.66
9:30-9:59 AM	5 0.13 2.63 2.30	43 1.11 22.63 5.53	93 2.41 48.95 5.16	49 1.27 25.79 4.63	0 0.00 0.00 0.00	190 4.92
10:00-10:29 AM	4 0.10 1.72 1.84	70 1.81 30.17 9.00	93 2.41 40.09 5.16	65 1.68 28.02 6.14	0 0.00 0.00 0.00	232 6.01
10:30-10:59 AM	5 0.13 2.53 2.30	39 1.01 19.70 5.01	83 2.15 41.92 4.61	69 1.79 34.85 6.52	2 0.05 1.01 40.00	198 5.13
11:00-11:29 AM	10 0.26 3.98 4.61	57 1.48 22.71 7.33	93 2.41 37.05 5.16	90 2.33 35.86 8.50	1 0.03 0.40 20.00	251 6.50
11:30-11:59 AM	8 0.21 4.02 3.69	41 1.06 20.60 5.27	81 2.10 40.70 4.50	69 1.79 34.67 6.52	0 0.00 0.00 0.00	199 5.16
12:00-12:29 PM	7 0.18 4.05 3.23	37 0.96 21.39 4.76	72 1.87 41.62 4.00	56 1.45 32.37 5.29	1 0.03 0.58 20.00	173 4.48
12:30-12:59 PM	7 0.18 4.43 3.23	24 0.62 15.19 3.08	71 1.84 44.94 3.94	56 1.45 35.44 5.29	0 0.00 0.00 0.00	158 4.09
1:00-1:29 PM	7 0.18 3.87 3.23	38 0.98 20.99 4.88	72 1.87 39.78 4.00	64 1.66 35.36 6.04	0 0.00 0.00 0.00	181 4.69
1:30-1:59 PM	3 0.08 1.60 1.38	33 0.85 17.65 4.24	78 2.02 41.71 4.33	73 1.89 39.04 6.89	0 0.00 0.00 0.00	187 4.84
2:00-2:29 PM	8 0.21 3.96 3.69	44 1.14 21.78 5.66	79 2.05 39.11 4.39	71 1.84 35.15 6.70	0 0.00 0.00 0.00	202 5.23

FREQUENCY |
 PERCENT |
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2:30-2:59 PM	2	43	64	54	0	163
	0.05	1.11	1.66	1.40	0.00	4.22
	1.23	26.38	39.26	33.13	0.00	
	0.92	5.53	3.55	5.10	0.00	
3:00-3:29 PM	5	51	69	45	0	170
	0.13	1.32	1.79	1.17	0.00	4.40
	2.94	30.00	40.59	26.47	0.00	
	2.30	6.56	3.83	4.25	0.00	
3:30-3:59 PM	9	39	66	47	0	161
	0.23	1.01	1.71	1.22	0.00	4.17
	5.59	24.22	40.99	29.19	0.00	
	4.15	5.01	3.66	4.44	0.00	
4:00-4:29 PM	10	39	81	46	0	176
	0.26	1.01	2.10	1.19	0.00	4.56
	5.68	22.16	46.02	26.14	0.00	
	4.61	5.01	4.50	4.34	0.00	
4:30-4:59 PM	13	27	65	29	0	134
	0.34	0.70	1.68	0.75	0.00	3.47
	9.70	20.15	48.51	21.64	0.00	
	5.99	3.47	3.61	2.74	0.00	
5:00-5:29 PM	14	26	63	20	0	123
	0.36	0.67	1.63	0.52	0.00	3.19
	11.38	21.14	51.22	16.26	0.00	
	6.45	3.34	3.50	1.89	0.00	
5:30-5:59 PM	6	13	31	8	0	58
	0.16	0.34	0.80	0.21	0.00	1.50
	10.34	22.41	53.45	13.79	0.00	
	2.76	1.67	1.72	0.76	0.00	
6:00-6:29 PM	2	9	28	9	0	48
	0.05	0.23	0.73	0.23	0.00	1.24
	4.17	18.75	58.33	18.75	0.00	
	0.92	1.16	1.55	0.85	0.00	
6:30-6:59 PM	3	7	29	6	0	45
	0.08	0.18	0.75	0.16	0.00	1.17
	6.67	15.56	64.44	13.33	0.00	
	1.38	0.90	1.61	0.57	0.00	
7:00-7:29 PM	0	7	22	7	0	36
	0.00	0.18	0.57	0.18	0.00	0.93
	0.00	19.44	61.11	19.44	0.00	
	0.00	0.90	1.22	0.66	0.00	
7:30-7:59 PM	0	5	20	3	0	28
	0.00	0.13	0.52	0.08	0.00	0.73
	0.00	17.86	71.43	10.71	0.00	
	0.00	0.64	1.11	0.28	0.00	
8:00-8:29 PM	3	3	18	3	0	27
	0.08	0.08	0.47	0.08	0.00	0.70
	11.11	11.11	66.67	11.11	0.00	
	1.38	0.39	1.00	0.28	0.00	
8:30-8:59 PM	1	2	9	4	0	16
	0.03	0.05	0.23	0.10	0.00	0.41
	6.25	12.50	56.25	25.00	0.00	
	0.46	0.26	0.50	0.38	0.00	
9:00-9:29 PM	1	1	22	4	0	28
	0.03	0.03	0.57	0.10	0.00	0.73
	3.57	3.57	78.57	14.29	0.00	
	0.46	0.13	1.22	0.38	0.00	
9:30-9:59 PM	0	0	11	1	0	12
	0.00	0.00	0.28	0.03	0.00	0.31
	0.00	0.00	91.67	8.33	0.00	
	0.00	0.00	0.61	0.09	0.00	
AFTER 10:00 PM	2	1	18	4	0	25
	0.05	0.03	0.47	0.10	0.00	0.65
	8.00	4.00	72.00	16.00	0.00	
	0.92	0.13	1.00	0.38	0.00	
UNKNOWN	5	3	22	4	0	34
	0.13	0.08	0.57	0.10	0.00	0.88
	14.71	8.82	64.71	11.76	0.00	
	2.30	0.39	1.22	0.38	0.00	
TOTAL	217	778	1801	1059	5	3860
	5.62	20.16	46.66	27.44	0.13	100.00

HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HBO - Home-Based Other

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TABLE B-17.   VEHICLE TRIPS BY HOUSEHOLD INCOME AND NUMBER OF HOUSEHOLD OCCUPANTS

HOUSEHOLD MEMBERS

1 PERSON

HOUSEHOLD MEMBERS	# HH	% HH	HBW			HBS			HBO			NHB			TOTAL		
			TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	24	3.6	0	0.00	0.00	3	0.60	0.89	9	1.80	0.45	2	0.40	0.89	14	2.80	1.10
$10,000-19,999	86	12.9	8	0.53	1.19	18	1.20	1.61	45	3.00	2.30	28	1.87	1.81	99	6.60	3.07
$20,000-29,999	122	18.3	4	0.18	0.50	21	0.95	1.13	37	1.68	1.52	38	1.73	1.98	100	4.55	3.28
$30,000-39,999	96	14.4	5	0.26	0.73	27	1.42	1.22	61	3.21	2.18	43	2.26	2.33	136	7.16	4.05
OVER $40,000	92	13.8	4	0.20	0.89	19	0.95	0.83	55	2.75	2.34	32	1.60	2.04	110	5.50	2.95
DONT KNOW	58	8.7	0	0.00	0.00	26	2.17	1.99	32	2.67	1.30	17	1.42	1.88	75	6.25	3.44
REFUSED	188	28.2	13	0.37	0.94	43	1.23	1.37	77	2.20	2.77	42	1.20	2.25	175	5.00	4.26
ALL	666	100.0	34	0.27	0.81	157	1.23	1.35	316	2.47	2.22	202	1.58	2.06	709	5.54	3.67

2 PERSONS

HOUSEHOLD MEMBERS	HBW			HBS			HBO			NHB			TOTAL		
	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	0	0.00	0.00	8	0.44	0.70	36	2.00	1.88	13	0.72	1.07	59	3.28	3.03
$10,000-19,999	41	0.59	1.38	86	1.23	1.51	164	2.34	2.01	112	1.60	2.09	403	5.76	3.94
$20,000-29,999	27	0.28	0.78	121	1.27	1.27	242	2.55	2.10	154	1.62	1.97	544	5.73	3.45
$30,000-39,999	6	0.08	0.36	68	0.91	1.15	209	2.79	2.77	142	1.89	2.14	425	5.67	4.20
OVER $40,000	27	0.40	1.22	81	1.21	1.23	216	3.22	2.62	131	1.96	2.61	455	6.79	4.50
DONT KNOW	18	0.41	1.40	36	0.82	1.02	118	2.68	2.40	84	1.91	2.30	258	5.86	4.27
REFUSED	56	0.38	1.03	162	1.09	1.47	324	2.19	2.04	198	1.34	1.96	741	5.01	3.68
ALL	175	0.34	1.03	562	1.09	1.32	1309	2.53	2.29	834	1.61	2.12	2885	5.58	3.94

3 OR MORE PERSONS

HOUSEHOLD MEMBERS	HBW			HBS			HBO			NHB			TOTAL		
	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV	TRIPS	TR/HH	STDEV
LESS THAN $10,000	0	0.00	.	2	2.00	.	6	6.00	.	0	0.00	.	8	8.00	.
$10,000-19,999	0	0.00	.	0	0.00	.	1	1.00	.	3	3.00	.	4	4.00	.
$20,000-29,999	0	0.00	0.00	5	1.00	1.00	15	3.00	2.65	12	2.40	3.78	32	6.40	6.35
$30,000-39,999	0	0.00	0.00	4	2.00	2.83	5	2.50	3.54	6	3.00	4.24	15	7.50	4.95
OVER $40,000	0	0.00	0.00	10	2.00	0.71	18	3.60	3.36	4	0.80	0.84	32	6.40	3.78
DONT KNOW	0	0.00	0.00	4	2.00	0.00	6	3.00	1.41	4	2.00	2.83	14	7.00	4.24
REFUSED	0	0.00	0.00	5	1.00	1.00	14	2.80	2.77	6	1.20	1.30	25	5.00	4.00
ALL	0	0.00	0.00	30	1.43	1.12	65	3.10	2.59	35	1.67	2.33	130	6.19	4.15

HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HH - Households
HBO - Home-Based Other   TR/HH - Trips per Household

TABLE B-18. VEHICLE PERSON TRIPS BY HOUSEHOLD INCOME AND AUTO AND TRUCK OWNERSHIP

HOUSEHOLD INCOME	# HH	% HH	VEHICLES OWNED 1 VEHICLE HBW TRIPS	TR/HH	STDEV	HBS TRIPS	TR/HH	STDEV	HBO TRIPS	TR/HH	STDEV	NHB TRIPS	TR/HH	STDEV	TOTAL TRIPS	TR/HH	STDEV
LESS THAN $10,000	24	3.6	0	0.00	0.00	2	1.00	1.41	6	3.00	1.41	6	3.00	4.24	14	7.00	7.07
$10,000-19,999	86	12.9	2	0.25	0.71	14	1.75	1.67	24	3.00	3.51	22	2.75	3.81	62	7.75	7.36
$20,000-29,999	122	18.3	1	0.10	0.32	17	1.70	1.64	24	2.40	2.41	14	1.40	1.43	56	5.60	3.47
$30,000-39,999	98	14.7	2	0.20	0.63	15	1.50	2.07	32	3.20	2.86	12	1.20	1.75	61	6.10	3.03
OVER $40,000	92	13.8	0	0.00	0.00	15	1.88	0.83	45	5.63	5.24	7	0.88	0.99	67	8.38	5.45
DON"T KNOW	58	8.7	0	0.00	0.00	11	2.20	1.64	27	5.40	5.68	15	3.00	1.41	55	11.00	8.31
REFUSED	188	28.1	5	0.26	0.65	32	1.68	1.77	39	2.05	2.12	29	1.53	1.68	105	5.53	4.31
ALL	668	100.0	10	0.16	0.52	106	1.71	1.61	197	3.18	3.43	105	1.69	2.07	420	6.77	5.13

HOUSEHOLD INCOME	2 OR MORE VEHICLES HBW TRIPS	TR/HH	STDEV	HBS TRIPS	TR/HH	STDEV	HBO TRIPS	TR/HH	STDEV	NHB TRIPS	TR/HH	STDEV	TOTAL TRIPS	TR/HH	STDEV
LESS THAN $10,000	2	0.25	0.71	5	0.63	0.92	23	2.88	2.59	4	0.50	0.93	34	4.25	4.20
$10,000-19,999	18	0.86	1.74	24	1.14	1.49	64	3.05	2.46	46	2.19	2.46	152	7.24	4.89
$20,000-29,999	10	0.31	0.90	42	1.31	1.28	98	3.06	2.51	50	1.56	2.24	200	6.25	4.43
$30,000-39,999	2	0.08	0.40	29	1.16	1.46	87	3.48	2.82	80	3.20	3.46	198	7.92	5.13
OVER $40,000	15	0.58	1.50	44	1.69	1.72	122	4.69	3.40	60	2.31	2.19	241	9.27	4.41
DON"T KNOW	4	0.33	0.78	23	1.92	1.98	51	4.25	3.49	55	4.58	5.60	133	11.08	7.73
REFUSED	19	0.37	0.86	81	1.56	2.07	170	3.27	3.26	98	1.88	3.10	368	7.08	5.25
ALL	70	0.40	1.07	248	1.41	1.69	615	3.49	3.00	393	2.23	3.08	1326	7.53	5.22

HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HH - Households
HBO - Home-Based Other   TR/HH - Trips per Household

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TABLE B-19. VEHICLE TRIPS BY HOUSEHOLD INCOME AND AUTO AND TRUCK OWNERSHIP

VEHICLES OWNED — 1 VEHICLE

HOUSEHOLD INCOME	# HH	% HH	HBW TRIPS	TR/HH	STDEV	HBS TRIPS	TR/HH	STDEV	HBO TRIPS	TR/HH	STDEV	NHB TRIPS	TR/HH	STDEV	TOTAL TRIPS	TR/HH	STDEV
LESS THAN $10,000	24	3.6	0	0.00	0.00	1	0.50	0.71	5	2.50	0.71	3	1.50	2.12	9	4.50	3.54
$10,000-19,999	86	12.9	2	0.25	0.71	13	1.63	1.60	17	2.13	2.70	17	2.13	2.90	49	6.13	5.59
$20,000-29,999	122	18.3	1	0.10	0.32	11	1.10	1.10	22	2.20	2.49	10	1.00	0.94	44	4.40	3.27
$30,000-39,999	98	14.7	2	0.20	0.63	12	1.20	1.62	24	2.40	2.12	11	1.10	1.73	49	4.90	2.28
OVER $40,000	92	13.8	0	0.00	0.00	14	1.75	0.89	36	4.50	4.72	6	0.75	0.89	56	7.00	4.99
DON"T KNOW	58	8.7	0	0.00	0.00	9	1.80	1.79	11	2.20	1.10	8	1.60	0.55	30	6.00	2.55
REFUSED	188	28.1	5	0.26	0.65	28	1.47	1.71	28	1.47	1.43	20	1.05	1.43	81	4.26	3.66
ALL	668	100.0	10	0.16	0.52	88	1.42	1.45	143	2.31	2.55	75	1.21	1.58	318	5.13	3.79

2 OR MORE VEHICLES

HOUSEHOLD INCOME	HBW TRIPS	TR/HH	STDEV	HBS TRIPS	TR/HH	STDEV	HBO TRIPS	TR/HH	STDEV	NHB TRIPS	TR/HH	STDEV	TOTAL TRIPS	TR/HH	STDEV
LESS THAN $10,000	0	0.00	0.00	5	0.63	0.92	19	2.38	2.26	4	0.50	0.93	28	3.50	3.34
$10,000-19,999	18	0.86	1.74	17	0.81	1.03	52	2.48	2.16	37	1.76	1.95	124	5.90	4.01
$20,000-29,999	9	0.28	0.85	33	1.03	0.90	71	2.22	1.93	40	1.25	1.87	153	4.78	3.54
$30,000-39,999	2	0.08	0.40	24	0.96	1.21	67	2.68	2.34	53	2.12	2.07	146	5.84	3.56
OVER $40,000	14	0.54	1.48	35	1.35	1.26	89	3.42	2.56	45	1.73	2.09	183	7.04	3.92
DON"T KNOW	4	0.33	0.78	15	1.25	1.22	33	2.75	2.34	34	2.83	3.21	86	7.17	5.22
REFUSED	18	0.35	0.84	66	1.27	1.76	123	2.37	2.39	71	1.37	1.94	278	5.35	4.07
ALL	65	0.37	1.05	195	1.11	1.33	454	2.58	2.29	284	1.61	2.07	998	5.67	3.98

HBW - Home-Based Work   HNB - Non-Home Based
HBS - Home-Based Shop   HH - Households
HBO - Home-Based Other   TR/HH - Trips per Household

45

APPENDIX C

ANALYSIS OF VARIANCE

The candidate trip generation variables of household size, household income, auto ownership, age of head of household, and type of residence were examined utilizing analysis of variance procedures. In multivariate statistical analysis, the F distribution is used for significance testing. This involves the testing of the null hypothesis of independence, which is that none of the variables chosen as predictors is associated in the population with the predicted variable. This implies that the regression equation is hypothesized to do no better than the sample mean as a predictor.

The F-test for the null hypothesis is defined as:

$$\alpha = \text{Prob} \ [F_{df=k,n-k-1} \geq F_{obs} \ | \text{null hypothesis is true}]$$

α = level of significance

k = number of predictor variables

n = number of cases

F_{obs} = mean square between groups/mean square within groups

At the 95th percentile of the F distribution (=0.05), the F distribution value for 1 predictor variable and 120 cases is:

$$F_{df=1,120} = 3.92$$

while the F distribution value for 1 predictor variable and α cases is:

$$F_{df=1,\alpha} = 3.84$$

Therefore, one can say that F_{obs} values greater 4.00 are hard to explain as sampling accidents.

As seen in the following tables developed with the SAS general linear model procedure, the F_{obs} values for all of the predictor variables tested were less than 4. This implies that the null hypothesis of independence is true and that the regression equation is no better than the sample mean as a predictor.

SAS

GENERAL LINEAR MODELS PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
HH_MEMS	3	1 2 3 OR MORE

NUMBER OF OBSERVATIONS IN DATA SET = 666

SAS

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: TOT_VP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F
MODEL	2	12.81891743	6.40945871	0.21	0.8113
ERROR	663	20313.08648798	30.63813950		
CORRECTED TOTAL	665	20325.90540541			

R-SQUARE	ROOT MSE	TOT_VP
0.000631	5.53517294	7.7072

| | | 71. |

SOURCE	DF	TYPE I SS	F VALUE	PR > F
HH_MEMS	2	12.81891743	0.21	0.8113

SOURCE	DF	TYPE III SS	F VALUE	PR
HH_MEMS	2	12.81891743	0.21	0.

48

GENERAL LINEAR MODELS PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
HH_INC	5	$10,000-19,999 $20,000-29,999 $30,000-39,999 LESS THAN $10,000 OVER $40,000

NUMBER OF OBSERVATIONS IN DATA SET = 422

SAS   15:42 MONDAY, JUNE 17, 1985

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: TOT_VP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	4	387.63096769	96.90774192	3.18	0.0137	0.029594	69.
ERROR	417	12710.76713658	30.48145596		ROOT MSE	TOT_VP	
CORRECTED TOTAL	421	13098.39810427			5.521000136	7.9383	

SOURCE	DF	TYPE I SS	F VALUE	PR > F	TYPE III SS	F VALUE	PR
HH_INC	4	387.63096769	3.18	0.0137	387.63096769	3.18	0.

```
                                         SAS                        15:23 WEDNESDAY, JUNE 19, 1985

                          GENERAL LINEAR MODELS PROCEDURE

                              CLASS LEVEL INFORMATION

                          CLASS    LEVELS   VALUES

                          AUT_TRK    3      NO RESPONSE 1 2 OR MORE

                   NUMBER OF OBSERVATIONS IN DATA SET = 666
                                         SAS                        15:23 WEDNESDAY, JUNE 19, 1985

                          GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: TOT_VP

SOURCE              DF      SUM OF SQUARES       MEAN SQUARE      F VALUE      PR > F       R-SQUARE

MODEL                2        58.84716016       29.42358008        0.96       0.3825       0.002895       71.

ERROR              663     20267.05824524       30.56871530                               ROOT MSE       TOT_VP

CORRECTED TOTAL    665     20325.90540541                                                 5.52899820     7.7072

SOURCE              DF        TYPE I SS         F VALUE      PR > F       TYPE III SS     F VALUE     PR

AUT_TRK              2        58.84716016         0.96       0.3825       58.84716016       0.96      0.
```

SAS   16:21 WEDNESDAY, JUNE 19, 1985

GENERAL LINEAR MODELS PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
TYPE	5	APARTMENT/CONDO DUPLEX (TOWNHOUS MOBILE HOME (SF) SINGLE FAMILY HO

NUMBER OF OBSERVATIONS IN DATA SET = 661

NOTE: ALL DEPENDENT VARIABLES ARE CONSISTENT WITH RESPECT TO THE PRESENCE OR ABSENCE OF MISSING VALUES. HOWEVER, ONLY 659 OBSERVATIONS IN DATA SET CAN BE USED IN THIS ANALYSIS.

SAS   16:21 WEDNESDAY, JUNE 19, 1985

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: TOT_VP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE
MODEL	4	143.14022987	35.78505747	1.17	0.3228	0.007105
ERROR	654	20004.16174282	30.58740328		ROOT MSE	TOT_VP
CORRECTED TOTAL	658	20147.30197269			5.53058797	7.6965

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
TYPE	4	143.14022987	1.17	0.3228	4	143.14022987	1.17	0.

71.

51

SAS

GENERAL LINEAR MODELS PROCEDURE

CLASS LEVEL INFORMATION

CLASS	LEVELS	VALUES
OLD_AGE	8	LESS THAN 50 OVER 80 50-54 55-59 60-64 65-69 70-74 75-79

NUMBER OF OBSERVATIONS IN DATA SET = 657

SAS

15:37 WEDNESDAY, JUNE 19, 1985

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: TOT_VP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	7	244.06573991	34.86653427	1.14	0.3368	0.012128	71.
ERROR	649	19880.56439708	30.63261078			ROOT MSE	TOT_VP
CORRECTED TOTAL	656	20124.63013699				5.53467350	7.7123

SOURCE	DF	TYPE I SS	F VALUE	PR > F	TYPE III SS	F VALUE	PR
OLD_AGE	7	244.06573991	1.14	0.3368	244.06573991	1.14	0.

Appendix D

Detailed Description of Survey Editing Process

The Green Valley Travel Survey data sets required a great deal of editing to be able to use them to produce accurate statistics. The programs listed below are most of the edits that were made to the data sets, although many individual records had to be recoded by hand using the original surveys.

STEP1: This program deleted duplicate and incorrect records from the person and trip data sets.

STEP2: Trip durations were calculated in minutes using the departure and arrival times from the surveys.

STEP3: Created O_PURP variable on the trip file. O_PURP represents the purpose of the person's previous trip.

STEP4: Created OD_PURP variable on the trip file. OD_PURP is a combination of the present and previous trip purposes. It indicates whether a trip was begun from home or not.

STEP5: Corrected errors made during the survey to the household data set. Also divided the household data set into two parts, those households that completed only phase one of the survey, and those that completed both phase one and two.

STEP6: Added new variables to the household data set. AUT_TRK is the number of autos and trucks per household, NUM_WALK is the number of walking trips per household, NUM_BIKE is the number of bicycle trips per household, TOT_TRIP is the total number of trips per household, and AUT_TRIP is the number of auto and truck trips per household. Also, the oldest member in each household was determined and an indicator was saved on the person file.

STEP7: The age of the oldest household member in each household was added to the household file.

STEP8: Calculated the number of vehicle person trips per household, vehicle driver trips per household, and golf cart trips per household by purpose. These variables were used extensively in the cross tabulations.

STEP9: Recoded blank records and corrected other erroneous data.

STEP10: Converted trip departure and arrival times into military time.

STEP11: Added OD_DEST variable, which indicates the origin and destination of each trip, to the trip file.

Program STEP1: Deleted duplicate records from person and trip
data   steps.

```
DATA  TEMP1 ;  SET  SASDATA.PER3 ;
   IF  HH_ID=2127  THEN  HH_ID=27 ;
   IF  HH_ID=.  THEN  DELETE ;
   IF  HH_ID=358  THEN  DELETE ;

PROC  SORT ;  BY  HH_ID  PER_ID ;

DATA  TEMP2 ;  SET  SASDATA.TRIP3 ;
   IF  HH_ID=.  THEN  DELETE ;
   IF  HH_ID=88  THEN  DELETE ;
   IF  HH_ID=129  THEN  DELETE ;
   IF  HH_ID=132  THEN  DELETE ;
   IF  HH_ID=838  THEN  DELETE ;
   IF  HH_ID=988  THEN  DELETE ;

PROC  SORT ;  BY  HH_ID  PER_ID  TRIP_NO ;

DATA  SASDATA.PER3 ;  SET  TEMP1 ;
DATA  SASDATA.TRIP3 ;  SET  TEMP2 ;
```

Program STEP2:   Calculated the duration of trips in minutes using the departure and arrival time.

```
OPTIONS NOCENTER ;
DATA TRIP ; SET SASDATA.TRIP3 ;
  DROP DURATION ;

DATA TRIPS ; SET TRIP ;
  TEMP1=ARRIVE ;
  TEMP2=DEPART ;
  IF AMPM_D='A' AND (ARRIVE>DEPART) THEN AMPM_A='A' ;
  IF AMPM_D='P' AND AMPM_A='A' THEN AMPM_A='P' ;
  IF ARRIVE =. OR DEPART=. THEN DURATION=9999 ;
  ELSE IF ARRIVE=9999 OR DEPART=9999 THEN DURATION=9999 ;
  ELSE DO ;
  IF AMPM_A='P' AND AMPM_D NE ' ' THEN DO ;
    IF ARRIVE <1200 THEN ARRIVE=ARRIVE+1200 ;
  END ;
  IF AMPM_D='P' AND AMPM_A NE ' ' THEN DO ;
    IF DEPART<1200 THEN DEPART=DEPART+1200 ;
  END ;
  D_HRS=INT(DEPART/100)*60 ;
  D_MINS=DEPART-(D_HRS/60*100) ;
  D_TIME=D_HRS+D_MINS ;
  A_HRS=INT(ARRIVE/100)*60 ;
  A_MINS=ARRIVE-(A_HRS/60*100) ;
  A_TIME=A_HRS+A_MINS ;
  DURATION=A_TIME-D_TIME ;
  END ;
  ARRIVE=TEMP1 ;
  DEPART=TEMP2 ;
  IF DURATION < 0 THEN DURATION=9999 ;
  DROP TEMP1 TEMP2 D_TIME D_HRS D_MINS A_TIME A_MINS A_HRS ;

DATA SASDATA.TRIP3 ; SET TRIPS ;
```

Program STEP3:   Added O_PURP variable to trip records.   O_PURP is
the origin purpose of the trip (the destination purpose of the
previous trip).

OPTIONS NOCENTER ;

DATA TEMP1; SET SASDATA.TRIP3 ;
  DROP O_PURP ;

DATA TRIP ; SET TEMP1;
  BY HH_ID PER_ID TRIP_NO ;
  RETAIN TEMP ;
  IF TRIP_NO=1 THEN TEMP=1 ;
  O_PURP=TEMP ;
  TEMP=D_PURP ;
  DROP TEMP ;

DATA SASDATA.TRIP3 ; SET TRIP ;

Program STEP4: Added OD_PURP variable to the trip records.
OD_PURP is a combination of the origin and destination trip
purposes.

```
OPTIONS NOCENTER ;
%INC FORMATS ;

DATA TEMP ; SET SASDATA.TRIP3 ;
  DROP OD_PURP ;

DATA TRIP ; SET TEMP ;
  IF O_PURP=1 THEN DO ;
    IF D_PURP=2 OR D_PURP=3 THEN OD_PURP=1 ;
    IF D_PURP=4 THEN OD_PURP=2 ;
    IF D_PURP=6 THEN OD_PURP=3 ;
    IF D_PURP=7 OR D_PURP=8 THEN OD_PURP=4 ;
    IF D_PURP=5 OR D_PURP=9 OR D_PURP=10 OR D_PURP=1 THEN OD_PURP=5 ;
    IF D_PURP=. THEN OD_PURP=5 ;
  END ;
  ELSE IF D_PURP=1 THEN DO ;
    IF O_PURP=2 OR O_PURP=3 THEN OD_PURP=1 ;
    IF O_PURP=4 THEN OD_PURP=2 ;
    IF O_PURP=6 THEN OD_PURP=3 ;
    IF O_PURP=7 OR O_PURP=8 THEN OD_PURP=4 ;
    IF O_PURP=5 OR O_PURP=9 OR O_PURP=10 THEN OD_PURP=5 ;
    IF O_PURP=. THEN OD_PURP=5 ;
  END ;
  ELSE OD_PURP=6 ;

PROC FREQ ;
  TABLES OD_PURP O_PURP D_PURP ;
  FORMAT OD_PURP ODFMT. ;

DATA SASDATA.TRIP3 ; SET TRIP ;
```

Program STEP5: Divided household file into two data sets, those households that completed only phase one of the survey and those households that completed both phases. Also corrected errors on household records made during the survey process.

```
PROC SORT DATA=SASDATA.HH3 ;
  BY HH_ID ;

DATA HH ; SET SASDATA.HH3 ;
  BY HH_ID ;
  IF INT_1='GARY' THEN DO ;
    IF MON_BEG=12 AND MON_END=1 THEN DO ;
      MON_BEG=1 ;
      MON_END=12 ;
    END ;
  END ;

DATA PER ; SET SASDATA.PER3 ;
  BY HH_ID PER_ID ;
  IF FIRST.HH_ID ;
  KEEP HH_ID ;

DATA TEMP1 TEMP2 ; MERGE HH (IN=A) PER (IN=B) ;
  IF A AND NOT B THEN OUTPUT TEMP1 ;
  IF A AND B THEN OUTPUT TEMP2 ;

DATA SASDATA.HH3_PH1 ; SET TEMP1 ;

DATA SASDATA.HH3_PH2 ; SET TEMP2 ;

DATA SASDATA.HH3 ; SET HH ;
```

Program STEP6: Added the following variables to the household
records: AUT_TRK, NUM_WALK, NUM_BIKE, HH_INC, TOT_TRIP and
AUT_TRIP.

```
OPTIONS NOCENTER ;

DATA HOUSE ; SET SASDATA.HH3_PH2 ;
  IF TRUCKS NE . THEN AUT_TRK=AUTOS+TRUCKS ;
  ELSE AUT_TRK=AUTOS ;
  LABEL AUT_TRK='NUMBER OF AUTOS AND TRUCKS IN HOUSEHOLD'
        TOT_VEH='NUMBER OF VEHCILES IN HOUSEHOLD' ;

PROC SORT ;
  BY HH_ID ;

DATA PERSON ; SET SASDATA.PER3 ;
  BY HH_ID PER_ID ;
  RETAIN NUM_WALK NUM_BIKE ;
  IF FIRST.HH_ID THEN DO ;
    NUM_WALK=0 ;
    NUM_BIKE=0 ;
  END ;
  NUM_WALK=NUM_WALK+WALK ;
  NUM_BIKE=NUM_BIKE+BIKE ;
  IF LAST.HH_ID THEN OUTPUT ;
  KEEP HH_ID NUM_WALK NUM_BIKE ;

DATA HOUSE ; MERGE HOUSE (IN=A) PERSON (IN=B) ;
  BY HH_ID ;
  IF A ;

DATA PER1 ; SET SASDATA.PER3 ;

PROC SORT ;
  BY HH_ID DESCENDING AGE ;

DATA PERSON TEMP ; SET PER1 ;
  BY HH_ID ;
  IF FIRST.HH_ID THEN OLDEST=1 ;
  ELSE OLDEST=0 ;
  IF OLDEST=1 THEN HH_INC=PER_INC ;
  LABEL HH_INC='HOUSEHOLD INCOME'
        OLDEST='OLDEST MEMBER OF HOUSEHOLD' ;
  IF OLDEST=1 THEN OUTPUT PERSON ;
  OUTPUT TEMP ;

DATA PERSON ; SET PERSON ;
  KEEP HH_ID HH_INC ;

DATA HOUSE ;           MERGE HOUSE (IN=A) PERSON (IN=B) ;
  IF A ;

PROC SORT DATA=TEMP ;
  BY HH_ID PER_ID ;
```

```
DATA SASDATA.PER3 ; SET TEMP ;

DATA TRIP ; SET SASDATA.TRIP3 ;
  BY HH_ID PER_ID TRIP_NO ;
  RETAIN AUT_TRIP TOT_TRIP ;
  IF FIRST.HH_ID  THEN DO ;
    TOT_TRIP=0 ;
    AUT_TRIP=0 ;
  END ;
  TOT_TRIP=TOT_TRIP+1 ;
  IF VEHICLE=1 OR VEHICLE=2 THEN AUT_TRIP=AUT_TRIP+1 ;
  KEEP HH_ID AUT_TRIP TOT_TRIP ;
  IF LAST.HH_ID THEN OUTPUT ;

PROC SORT DATA=HOUSE ;
  BY HH_ID ;

DATA SASDATA.HH3_PH2; MERGE TRIP (IN=A) HOUSE (IN=B) ;
  BY HH_ID ;
  IF B ;

PROC FREQ ;
  TABLES TOT_TRIP AUT_TRIP HH_INC AUT_TRK NUM_BIKE NUM_WALK ;
```

Program STEP7: Continuation of STEP6, added OLD_AGE, the age of
the oldest household member, to the household records.

```
OPTIONS NOCENTER ;

DATA PERSON ; SET SASDATA.PER3 ;
  OLD_AGE=AGE ;
  LABEL OLD_AGE='AGE OF OLDEST HOUSEHOLD MEMBER' ;
  KEEP OLD_AGE HH_ID ;
  IF OLDEST=1 THEN OUTPUT ;

DATA HOUSE ; MERGE SASDATA.HH3_PH2(IN=A) PERSON (IN=B) ;
  BY HH_ID ;
  IF A ;

PROC FREQ ;
  TABLES OLD_AGE ;

DATA SASDATA.HH3_PH2 ; SET HOUSE ;
```

Program STEP8: Calculated variables to count the number of trips by purpose for vehicle person trips, vehicle driver trips, and golf cart trips. These variables were added to the household records.

```
OPTIONS NOCENTER ;

DATA HOUSE ; SET SASDATA.HH3_PH2 ;
  DROP NUM_HBW NUM_HBS NUM_NHB NUM_HBO ;

DATA PERSON ; SET SASDATA.PER3 ;
  BY HH_ID PER_ID ;
  RETAIN NUM_PER ;
  IF FIRST.HH_ID THEN NUM_PER=0 ;
  NUM_PER=NUM_PER+1 ;
  IF LAST.HH_ID THEN OUTPUT ;
  KEEP HH_ID NUM_PER ;

DATA HOUSE2 ; MERGE HOUSE (IN=A) PERSON (IN=B) ;
  BY HH_ID ;
  IF A ;
  IF A AND NOT B THEN NUM_PER=0 ;

DATA TRIP ; SET SASDATA.TRIP ;
  BY HH_ID PER_ID TRIP_NO ;
  RETAIN HBW_VP HBS_VP HBO_VP NHB_VP TOT_VP
         HBW_VD HBS_VD HBO_VD NHB_VD TOT_VD
         HBW_GC HBS_GC HBO_GC NHB_GC TOT_GC ;
  ARRAY ALLVARS HBW_VP--TOT_GC ;
  IF FIRST.HH_ID THEN DO OVER ALLVARS ;
    ALLVARS=0 ;
  END ;
  IF VEHICLE=3 THEN DO ;
    IF OD_PURP=1 THEN HBW_GC=HBW_GC+1 ;
    IF OD_PURP=2 THEN HBS_GC=HBS_GC+1 ;
    IF OD_PURP=3 OR OD_PURP=4 OR OD_PURP=5 THEN HBO_GC=HBO_GC+1 ;
    IF OD_PURP=6 THEN NHB_GC=NHB_GC+1 ;
    TOT_GC=TOT_GC+1 ;
  END ;
  IF VEHICLE NE 3 AND VEHICLE NE . THEN DO ;
    IF OD_PURP=1 THEN HBW_VP=HBW_VP+1 ;
    IF OD_PURP=2 THEN HBS_VP=HBS_VP+1 ;
    IF OD_PURP=3 OR OD_PURP=4 OR OD_PURP=5 THEN HBO_VP=HBO_VP+1 ;
    IF OD_PURP=6 THEN NHB_VP=NHB_VP+1 ;
    TOT_VP=TOT_VP+1 ;
    IF DRIVER=1 THEN DO ;
      IF OD_PURP=1 THEN HBW_VD=HBW_VD+1 ;
      IF OD_PURP=2 THEN HBS_VD=HBS_VD+1 ;
      IF OD_PURP=3 OR OD_PURP=4 OR OD_PURP=5 THEN HBO_VD=HBO_VD+1 ;
      IF OD_PURP=6 THEN NHB_VD=NHB_VD+1 ;
      TOT_VD=TOT_VD+1 ;
    END ;
  END ;
  IF LAST.HH_ID THEN OUTPUT ;
  KEEP HH_ID HBW_VP--TOT_GC ;
```

```
DATA HOUSE3 ; MERGE HOUSE2 (IN=A) TRIP (IN=B) ;
  BY HH_ID ;
  IF A ;
  ARRAY ALLVARS HBW_VP--TOT_GC ;
  IF A AND NOT B THEN DO OVER ALLVARS ;
    ALLVARS=0 ;
  END ;

PROC FREQ ;
  TABLES HBW_VP--TOT_GC NUM_PER ;

DATA SASDATA.HH3_PH2 ; SET HOUSE3 ;
```

Program STEP9: Recoded missing and erroneous responses on the
household data set.

```
DATA HOUSE ; SET SASDATA.HH3_PH2 ;
   IF HH_INC=. THEN HH_INC=7 ;
   IF OLD_AGE=. THEN OLD_AGE=999 ;
   IF AUT_TRK=99 THEN AUT_TRK=0 ;
   IF GOLF_CRT=. THEN GOLF_CRT=0 ;
   IF TOT_TRIP=. THEN TOT_TRIP=0 ;
   IF AUTOS=. THEN AUTOS=0 ;
   IF TRUCKS=. THEN TRUCKS=0 ;
   IF AUT_TRIP=. THEN AUT_TRIP=0 ;
   IF TOT_VEH=. THEN TOT_VEH=99 ;
   LABEL TOT_VEH=' '
         AUT_TRK=' '
         HH_INC=' '
         OLD_AGE=' ' ;
DATA SASDATA.HH3_PH2 ; SET HOUSE ;
```

Program STEP10: Converted the trip departure and arrival times
on the trips records to military time.

```
%INC FORMATS ;

DATA TRIP ; SET SASDATA.TRIP3 ;
   IF (ARRIVE=.) OR (DEPART=.) OR (DURATION=9999) OR
      (ARRIVE=9999) OR (DEPART=9999) THEN DO ;
     ARRIVE=9999 ;
     DEPART=9999 ;
    AMPM_A='U' ;
   TRP_CHK=2 ;
    AMPM_D='U' ;
    DURATION=9999 ;
   END ;
   IF AMPM_D='A' AND AMPM_A=' ' THEN AMPM_A='A' ;
   IF AMPM_D='P' AND AMPM_A=' ' THEN AMPM_A='P' ;
   IF AMPM_D=' ' AND AMPM_A='A' THEN AMPM_D='A' ;
   IF AMPM_D=' ' AND AMPM_A='P' THEN AMPM_D='P' ;
   IF AMPM_A=' ' AND AMPM_D=' ' THEN DO ;
   IF DEPART<700 THEN AMPM_D='P' ;
   IF ARRIVE<700 THEN AMPM_A='P' ;
   IF 1000<=DEPART<=1159 THEN AMPM_D='A' ;
   IF 1000<=ARRIVE<=1159 THEN AMPM_A='A' ;
   IF 1200<=DEPART<=1259 THEN AMPM_D='P' ;
   IF 1200<=ARRIVE<=1259 THEN AMPM_A='P' ;
     IF (700<=DEPART<=959) OR (700<=ARRIVE<=959) THEN DO ;
       ARRIVE=9999 ;
       DEPART=9999 ;
       DURATION=9999 ;
       AMPM_A='U' ;
       AMPM_D='U' ;
      TRP_CHK=2 ;
     END ;
   END ;
   IF AMPM_D='P' AND DEPART<1200 THEN DEPART=DEPART+1200 ;
   IF AMPM_A='P' AND ARRIVE<1200 THEN ARRIVE=ARRIVE+1200 ;
   IF AMPM_D='A' THEN DO ;
     IF DEPART=1200 THEN DEPART=2400 ;
     IF 1201<=DEPART<=1259 THEN DEPART=DEPART-1200 ;
   END ;
   IF AMPM_A='A' THEN DO ;
     IF ARRIVE=1200 THEN ARRIVE=2400 ;
     IF 1201<=ARRIVE<=1259 THEN ARRIVE=ARRIVE-1200 ;
   END ;
   IF ARRIVE=1360 THEN ARRIVE=1400 ;
   IF ARRIVE<700 AND DEPART>=700 THEN DO ;
     ARRIVE=ARRIVE+1200 ;
     AMPM_A='P' ;
   END ;
   IF ARRIVE>=2200 AND DEPART <=2200 THEN DO ;
     ARRIVE=ARRIVE-1200 ;
     AMPM_A='A' ;
   END ;
   IF DEPART>=2200 AND ARRIVE<=2200 THEN DO ;
```

```
          DEPART=DEPART-1200 ;
          AMPM_D='A' ;
          IF DEPART>=1200 THEN AMPM_D='P' ;
      END ;

PROC FREQ ;
   TABLES AMPM_D DEPART AMPM_A ARRIVE DURATION ;
   FORMAT DURATION DURFMT.  DEPART ARRIVE TIMEFMT. ;

DATA SASDATA.TRIP3 ; SET TRIP ;
```

Program STEP11: Added OD_DEST, a combination of the origin and destination of the trip, to the trip records.

```
DATA TRIP ; SET SASDATA.TRIP3 ;
  BY HH_ID PER_ID TRIP_NO ;
  RETAIN TEMP ;
  IF FIRST.PER_ID THEN TEMP=1 ;
  IF TEMP=1 THEN DO ;
     IF LOC=1 THEN OD_DEST=1 ;
     IF LOC=2 THEN OD_DEST=2 ;
     IF LOC=3 THEN OD_DEST=3 ;
  END ;
  ELSE IF TEMP=2 THEN DO ;
     IF LOC=1 THEN OD_DEST=4 ;
     IF LOC=2 THEN OD_DEST=5 ;
     IF LOC=3 THEN OD_DEST=6 ;
  END ;
  ELSE IF TEMP=3 THEN DO ;
     IF LOC=1 THEN OD_DEST=7 ;
     IF LOC=2 THEN OD_DEST=8 ;
     IF LOC=3 THEN OD_DEST=9 ;
  END ;
  ELSE OD_DEST=99 ;
  IF OD_DEST=. THEN OD_DEST=99 ;
  TEMP=LOC ;
  DROP TEMP ;

DATA SASDATA.TRIP3 ; SET TRIP ;
```

APPENDIX E

SURVEY PROCEDURES

INTRODUCTION

The Green Valley Arizona Travel Characteristics Survey is complex and therefore predetermined administrative and implementation procedures should be defined and reviewed prior to actual data collection. This chapter presents the procedures to be used in collecting travel characteristics data from a sample of Green Valley households. This data will be used to establish the difference in travel behavior of retirement community residents compared to the remainder of the Tucson Metropolitan Area. This report documents administrative and surveyor procedures and recommended quality control techniques.

A. SURVEY OVERVIEW

Some urban area travel surveys (such as the 1981 Metropolitan Phoenix Travel Study) distinguished between retired and non-retired households. The data collected in the Phoenix study suggested that retired households make an average of 3.83 daily vehicular person trips per household versus 8.85 for non-retired households. The Phoenix study and others, however, did not collect data specifically for residents of planned retirement communities, which may exhibit different travel behavior than other retired households due to lifestyle differences.

This travel diary survey is designed to collect sufficient data from households in a planned retirement community for a comprehensive analysis of their travel behavior. It is designed to analyze the travel behavior of retirement communities in terms

of the generation of trips by purpose, the occupancy of vehicle trips and the destination (Tucson, Green Valley or others) of trips made by residents of Green Valley households.

The data collected in this travel survey will allow for an assessment of the importance of different socioeconomic characteristics such as household size, income, age and vehicle ownership on a households travel behavior. The results of this analysis will be used to modify the existing regional travel models to better reflect travel generated by retirement communities.

Survey Timetable

It is expected that the survey effort from the hiring and training of survey personnel through data collection will take approximately one month to complete. Figure 1-1 describes in detail the schedule for conduct of the survey. This proposed schedule, which is necessary for the completion of the survey during the winter months, is extremely tight for the conduct of a survey such as this. This report is devoted to the data collection efforts to be undertaken in that month. Approximately 3 months will be dedicated to coding, digitizing and analyzing the results of the survey. Modifications to the survey forms or procedures will be made as required prior to full survey implementation.

A survey pre-test will be conducted to aid the survey team in identifying problems with the survey instrument or administrative procedures. Once the pre-test is completed, the initial

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FIGURE 1-1

SCHEDULE FOR CONDUCT OF GREEN VALLEY
RETIREMENT COMMUNITIES SURVEY

Technical Memorandum on Survey Sampling Approach and Survey Methodology	February 18, 1985
Begin Set Up of Phone Bank	February 19, 1985
Advertise for Temporary Survey Crew	February 22, 1985
Workshop on Survey Approach with ADOT Advisory Committee	February 25, 1985
Revision of Survey Approach based on Workshop Results	February 26, 1985
Begin Pre-test of Survey	February 26, 1985
Begin Training of Survey Personnel	February 27, 1985
Place Article in "Green Valley News" describing survey purpose, technique and survey forms	March 1, 1985
End Pre-test of Survey	March 6, 1985
Revise Survey based on pre-test	March 6, 1985
Begin Conduct of Full Survey	March 6, 1985
Complete Conduct of Full Survey	March 21, 1985

phone interview survey, known as the "screener," will be undertaken. During this time, the survey supervisor will keep track of survey progress and compile a list of those initially sampled who are suitable and have agreed to participate in the trip diary portion of the survey. Also, results will be monitored, comparing the data with such previously collected data as that from the 1980 Census to indicate representativeness of the sample being interviewed. These efforts will result in the selection of the survey sample to receive the mailed-out trip log portion.

The screener survey and the trip log will be conducted and mailed in waves so as to collect the data in an efficient and timely manner. As trip logs are sent, reminder calls will be made.

Once the log has been completed, phone interviews will be conducted to collect the recorded information. This information will then be coded, edited, keypunched and later, analyzed by COMSIS and JHK.

Throughout the survey collection period, strict quality control and monitoring procedures will be followed. The following section details the data collection effort and the administrative, surveyor, and quality control procedures to be followed.

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B. ADMINISTRATIVE PROCEDURES

What is presented herein is a summary explanation of what needs to be accomplished to satisfactorily gather travel characteristics data representative of the Green Valley Community.

A meeting will be held in the Tucson area between JHK, the ADOT technical advisory committee, COMSIS, and (potentially) a representative of the Green Valley Coordinating Council.

During this meeting the overall structure of the data collection effort should be finalized through a review of the sampling plan, survey instruments, and survey procedures. The purpose of this start-up meeting is for everyone involved to gain a good understanding of the recommended procedures to be followed throughout the survey efforts. Any questions concerning the proposed methodology and suggestions for modification to the procedures or forms also will be addressed. During this initial coordination meeting procedures will be refined and finalized for the following aspects of the survey:

o   respective management roles: JHK, COMSIS and PAG,

o   coding format and procedures,

o   sample monitoring and contingency decision-making based on the fixed survey budget,

o   survey interview verification and other quality control measures, and

o   interviewer assignments and scheduling.

After this meeting, JHK will need to proceed quickly to begin the survey pre-test of 10 households. "Screener" calls for the pre-test will be conducted by the survey supervisor on February 26th. Households will be requested to keep travel logs

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for March 5th and they will be called on March 6th to obtain their diary results.

The first tasks to be undertaken by JHK, which is overseeing the conduct of the survey, is to hire surveyors and conduct training. JHK will select a random sample of telephone numbers from the February 1985 Green Valley telephone book for the survey sample and finalize the survey forms and format. A pre-test of the proposed survey form and methodology will be conducted on at least 10 households in Green Valley to validate the survey procedures such as the clarity of certain questions, before the full survey is conducted.

After the start-up meeting has taken place, JHK will complete the hiring and training of six surveyors in survey collection methods. These training sessions will be for the interviewers and the coders and should be held at the facility from which the survey will be conducted. This first training session should provide detailed instructions about the initial screening survey (Phase I). Instruction should concentrate on the detailed procedures for surveyors presented later in the chapter.

Once the telephone sample has been defined, the pre-test conducted, the surveyors have been hired and trained, the forms necessary to record the survey answers have been reproduced, and all personnel are aware of their individual responsibilities, the Phase I survey can begin. All Phase I and Phase II surveys will initially be administered between 1 p.m. and 9 p.m., but will be subject to change based on the response by the community. JHK will provide continuous on-site oversight of the survey's administration. The designated on-site supervisor will be able to

respond immediately to all questions raised by the interviewers, as well as those of persons calling a "hotline" used to answer respondents' questions.

During the Phase I screener survey, JHK will establish and be responsible for the monitoring of the disposition of telephone contacts, account on a daily basis for all non-reachable numbers, refusals, completed Phase I interviews, and Phase II trip log volunteer households. Differences in response rates at this point from those anticipated should be closely monitored. As a result of any significant variations, adjustments to these procedures should be considered and reviewed with ADOT and PAG staff. JHK will distribute trip logs to all households agreeing to participate in Phase II. Beyond what has been stated, the supervisor should also use the detailed quality control checks as presented in the accompanying quality control manual.

The Phase I screener survey will primarily collect household characteristics, key individual characteristics, preliminary travel rates, the respondents willingness to complete the travel log (Phase II), and the contact's name and address. A copy of the Phase I survey form is included in Section 3 of this report. It is anticipated that the average telephone interview time for the Phase I portion of the study will be five minutes.

Once the Phase I results for each day have been reviewed, mailouts of trip logs and instructions should be sent so that potential respondents will have ample time to read and understand the forms and procedures but not so much time that they will

forget to record their travel behavior on their assigned day. It is suggested that trip logs be sent five days in advance of the survey day.

Each household that participates in Phase II will receive a trip log form for each household member and guest. There are two basic forms to be completed for each dwelling. In addition to these forms, a letter of introduction will be attached, written on public agency letterhead. This letter will state the purpose of the survey, the pre-assigned trip diary date, that a follow-up telephone call will be made on the day following the trip diary day, and that a "hot line" telephone number is available for any questions. A draft of this Letter of Introduction is included in Section 3. Detailed trip recording instructions will be included in this same mailing. These instructions are also available for review in Section 3.

The night before the day assigned for trip recording, a reminder call will be made to each household. Any questions that those being surveyed have regarding the travel diary will be answered, and any refusals should be noted at this time and the households rescheduled as needed. It is estimated that each reminder call will take two minutes to complete.

On the day following the respondent's trip diary day, a telephone interview will be held. This call will be made to collect the trip diary and household characteristics information that the respondent recorded on the previous day. The interviewers should be prepared to probe and clarify when necessary to insure that complete and accurate information is obtained. For

further information about quality control during the Phase II survey, please see the Quality Control section of this chapter.

Once all of the surveys have been mailed, all reminder calls made, the data gathered, and the responses checked against the quality controls outlined in the Quality Control Guide, the data is ready to be coded, edited and keypunched.

Extensive editing of the surveys, particularly the trip logs, is required to make sure that the information recorded makes sense. The day's trip patterns should be clearly discernible on each log.

C. INSTRUCTIONS FOR SURVEYORS

The following is a sample format to be followed when informing the participating interviewers about their job:

Each interviewer has a vital task to perform. You are responsible for the quality of the data that is collected, and the quality of your work has a direct impact on the validity of the survey. Unless an accurate and complete set of data is obtained during your interviews, no amount of review or correction can improve the reliability of the survey. Although speed in your work is desirable, accuracy, neatness, and completeness should not be sacrificed for speed. If every data item is not recorded accurately, the value of each interview will be reduced significantly. Never make guesses about any question that arises during your interviews nor make any arbitrary decisions. Make sure to clarify the answers that you obtain with either the individual being interviewed, or with the survey supervisor, whomever is more appropriate.

You will be expected to do certain things during the course of your work. These are:

o   Read and become thoroughly familiar with the contents of this procedures guide and any other materials which may be provided to you,

o   Be available to work at the times and evenings as specified,

o   Attend all designated training sessions,

o   Complete all assignments within the prescribed period of time,

o   Perform your work in an efficient and accurate manner,

o   Refrain at all times from selling, soliciting, political
    campaigning, or other such activities while employed as
    an interviewer,

o   Confer with the survey supervisor when any problems
    arise,

o   Keep all information obtained in an interview strictly
    confidential, and

o   Follow the survey instructions as outlined on the survey
    forms.

We are happy to have you working for us during the course of
the Green Valley Travel Survey. If you follow the guidelines as
described above we will be able to produce a valuable product for
the community and do it in a smooth and accurate manner. Always
remember that if you ever have any questions or problems that
need to be resolved, do not hesitate to speak with the survey
supervisor for clarification.

Details of the Survey

The data that is to be collected will be used in what is
termed "travel demand modeling." Travel demand models are used
to forecast tripmaking in a region for a future year. For
instance, models are presently being developed to forecast travel
demand in the Tucson region for the year 2005. The data which
you will be collecting will help those involved with the models
to estimate how often, for what purpose, and where people are
travelling in the Green Valley portion of the Tucson region.
With this information, the forecasts for the future can be made
more accurately. The forecasts are used to determine where roads
should be widened, and new facilities should be constructed. We
hope that by understanding the importance of the survey that you

collect over the next few weeks you will give your best efforts to collect the data as accurately and efficiently as possible.

The data will be collected in two phases. The first data to be collected through the use of the Phase I survey (which we will be calling the "screener"). The screener will give us some general information about the household you are calling, and if the person will participate in the Phase II survey--a much more detailed survey. If they do agree to participate, they will be sent the Phase II survey materials, and on a certain day you will call them back and record their answers by telephone. Presented below is a more detailed description of what you will be doing with each household.

Detailed Procedures

After you have completed the training courses, you will be given writing materials, a desk to work at, the Phase I and the Phase II survey forms, and a list of phone numbers. Your first task will be to begin calling these telephone numbers. Each telephone number should also have the name and address of the resident. To get a good understanding of what you will be doing, here is an example case.

You have been given the telephone number 555-9134 to call in Green Valley. You should be thoroughly familiar with the Phase I, or screener, questions. Once you feel prepared, make the telephone call to this number, and as described on the survey form, introduce yourself and the purpose of your call. Remember to be courteous and to explain that all responses will be kept strictly confidential. If no one is home, make a note of it and

call back at another time. All telephone numbers should be called four times on different days and at different times before abandoning that number as a potential survey candidate. If a person does answer, several things may occur. The potential responses that you may get and what you should do are presented below:

o   Person answers but it turns out that the place that you have called is actually not a residence. **RESPONSE:** Make a note of the number that you called.

o   A person answers, it is a household, but the person refuses to participate. **RESPONSE:** Try to explain the importance of the survey and that we need as many people to participate as possible. If the resident still refuses, thank them for their time, make a note of what occurred, and inform the survey supervisor.

o   A person answers, it is a household, but the person answering is a child. **RESPONSE:** Ask for an adult. If no adults are present return the call later.

o   A person answers, it is a household, and the person will participate. **RESPONSE:** This is just what you've been waiting for! A chance to use what has been learned in the training sessions. As detailed in your training sessions and as written on the Phase I screener form, go through the questions and responses. Try to get the person to participate fully by stressing the importance of the survey to the well-being of the Green Valley community.

When someone does answer the questions, record the answers and determine whether they will be participating in the Phase II survey. If they won't be participating in Phase II, give the completed Phase I form to the survey supervisor and go on to the next phone number. If they will participate in the Phase II survey, make a note of it, give the completed Phase I form to the survey supervisor and go on to the next number.

You will be responsible for this family (the Jones family) throughout the period of the survey. If they decide to participate in the Phase II survey, you will continue to work with them. After you have delivered the Jones' completed Phase I survey form to the survey supervisor, the Jones family will be mailed a package containing the Phase II travel survey forms, instructions, a cover letter explaining the use of the survey, and an assigned date on which to record their answers. You will be making a reminder telephone call to the Jones family the evening before they are to record their tripmaking. This call will involve making contact with the Jones', answering any questions that they might have, (if needed, get the aid of the survey supervisor to clarify) and reminding them to fill out the forms on the next day. If for some reason the Jones' have decided not to participate, find out why and try to reschedule a survey day with the aid of the survey supervisor. If they have decided not to participate at all, thank them for their time and notify the supervisor of what has occurred.

On the day following the Jones' survey day, you will call them back to record their answers over the phone. The Jones' are not to mail the forms back. You are to ask for their responses to the survey form and record them on the answer sheets that have been provided to you. Probe and clarify for complete answers as needed. Remember, don't hurry. We are striving for accuracy and completeness, so take the time to understand the answers that the participants provide and record them accurately. After you have completed the interview thank the respondent, and give the completed survey form to the survey supervisor.

You will be conducting the steps that we have just outlined many times over the course of the next few weeks. It is imperative that you ask questions of the supervisor whenever you need clarification. That is the main reason that the supervisor is there--to help you do your job. More details on how to present the surveys is provided on the survey forms. Thanks for your help and for your dedication.

D. QUALITY CONTROL TECHNIQUES

One of the first phases of the technical work effort is to agree upon the proper quality control procedures to be used throughout the data collection effort. The importance of applying strict quality control procedures cannot be overemphasized, starting at the beginning of the initial screener/ interviews (Phase I), through the mail-out/telephone follow-up surveys (Phase II), and through final tabulations and analysis.

The degree of quality control applied has a direct effect upon the reliability and usefulness of the data obtained. An important factor to consider is the impact that quality control procedures have on the subsequent accuracy checks to be applied. If adequate resources are devoted to the quality control procedures during the data collection effort in order to achieve a high degree of confidence in the data, there will be less need to adjust the data during later accuracy checks.

Quality Control During the Initial Screener (Phase I)

To ensure a successful data collection effort, JHK will have a day-to-day supervisor present throughout the period when the survey is being conducted. This person will perform three quality control checks during the screener and initial interview (Phase I of the survey), she will also answer questions and solve problems that may arise. These quality control checks are:

1) Monitor the conduct of the survey to check the accuracy of the work of the survey personnel. The supervisor will check that persons are indeed called and verify their answers as recorded by the surveyor. This check will determine the overall non-sampling reliability associated with the initial screener results.

2) The supervisor will routinely check the accuracy and completeness with which each individual surveyor is completing the screener and Phase I interview forms. Where inconsistencies are present, the supervisor will bring this to the attention of the surveyor and stress the importance of obtaining accurate and complete information. The supervisor will keep statistics concerning screener and Phase I interview accuracy and completeness of each interviewer's work, and summary statistics for use later in the analysis stage of the data collection effort.

Quality Control During the Mail-out Survey (Phase II)

Based on the responses from the Phase I effort, JHK will obtain a complete listing of those households willing to participate in the Phase II one-day trip diary survey; ensure that constant surveillance is maintained and that addresses have been recorded properly; organize the schedule for mailouts and callbacks to correspond with the travel day assigned each household; and make sure that the following necessary information for tracking the surveys has been recorded:

o   Name of contact in household
o   Address
o   Household sample number
o   Call-back dates

Quality Control During the Phase II Survey

The Phase II survey will be monitored in much the same manner as Phase I data collection activities. The survey supervisor will be present at all times while the survey is being conducted to oversee all interviewing and coding of responses done by the survey firm. The supervisor will also be present to answer questions as they arise and to address other problems and contingencies. Beyond these tasks, the supervisor will monitor interviews to check the accuracy of the surveyor's work. It is

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important that the interviewer know that his or her work will be checked as this tends to encourage a high level of performance. Once the supervisor is confident of the work of a surveyor, the supervisor may then taper off the monitoring.

It should be noted that the monitoring should be done tactfully, because the interviewer should not be able to determine when he is being monitored. There is a definite value in the monitoring, because it:

o   Ensures that the interviewer actually calls the respondent to obtain the data recorded on the form.

o   Ensures that the interviewers are being polite and courteous as they perform their assignments.

o   Helps identify those interviewers who do not understand their assignment and need retraining, or possibly those who should be reassigned or dismissed.

o   Identifies weak areas in the overall interviewing procedures which may need strengthening.

The supervisor, with the assistance of other COMSIS and JHK staff, must also check all Phase II survey forms as recorded for completeness and reasonableness. Once the forms have been checked, they should be given back to the individual originally responsible for the survey to edit and code the results. Any unreasonable data or unusual responses should be verified by contacting the interviewer as soon as possible, or by calling a member of the sample dwelling unit on the telephone for explanation. In addition, if forms are incomplete or the family interviewed declined to respond, the supervisor should ask the interviewer to explain why he or she did not obtain a completed survey or did not get a response. Those interviews not completed, but

which could be at a later time, should be rescheduled for another attempt.

The supervisor should personally verify any sample reported as impossible to obtain. Every effort must be made to obtain data in cases where the respondent refuses to be interviewed, no one can be found at home, respondents are out of the study area, or for any other reason of this nature. The non-interview rate should be kept as low as possible to prevent bias in the survey results.

The techniques which have been presented up to this point are meant to insure completeness and accuracy of the data collected. However, the checks do not ensure that all trips are actually being reported. Therefore, it is recommended that some statistical checks be made to make sure that, in fact, the interviewer is collecting correct data which is comparable to his or her fellow workers.

A good overall check on the data being collected is to summarize total trips (all trip purposes combined) by the dwelling units in the sample (from the screener), and to stratify them by household size and auto ownership, age and income. These variables are those hypothesized to be strongly related to the number of trips produced by retirement community members.

Summary tables having a similar format to that shown in Figure 1.2 can be developed by the survey supervisor. Data may be accumulated over the duration of the survey, and statistics for each interviewer should be analyzed regularly. The purpose of this table is to allow for an examination of the number of

NUMBER OF PERSONS TRIPS PER DWELLING UNIT

INTERVIEWER NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total
INCOME																										
<10,0000																										
10,000-19,999																										
20,000-34,999																										
>35,000																										
AGE																										
<50																										
50-59																										
60-69																										
70-79																										
79+																										
VEHICLES OWNED																										
0																										
1																										
2+																										
OCCUPANTS																										
1																										
2																										
3+																										

FIGURE 1.2

SUMMARY TABLE FOR PHASE I SCREENER

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interviews made and the trips reported per dwelling unit for various household sizes and auto ownership rates for each interviewer.

Once the tables have been constructed and a significant number of data have been reported, statistical checks should be made comparing each interviewer's work against all other interviewers' work. One method for doing this check is the "Z-score." This test compares the mean value computed for a sample to the mean value computed for all of the samples. The formula for making a Z test is as follows:

$$Z = \frac{\overline{X} - u}{r/\sqrt{N}} \qquad \frac{\overline{Xs} - \overline{Xp}}{Sp/\sqrt{ns}}$$

in which:

Z   =   Z score

$\overline{Xp}$ =   Average value of trips per dwelling unit by age, etc. category reported by all interviewers

$\overline{Xs}$ =   Total number of samples by age, etc. category reported by the interviewer being tested

ns   =   Total number of samples by age, etc. category submitted by the interviewer being tested

Sp   =   Standard deviation for Xp

Where:

$$Sp = \sqrt{\frac{(\overline{Xp} - Xo)^2}{Np - 1}} \qquad or \qquad \frac{Np\,(\Sigma Xo^2) - (\Sigma Xo)^2}{Np(Np - 1)}$$

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And in which:

Xo = Each reported value of trips per dwelling unit by car ownership category for each interview conducted by all interviewers

Np = Total number of interviews by car ownership category conducted by all interviewers

Where inconsistencies are found, the supervisor should follow up to determine what the problem is and rectify it.

In addition to the statistical check noted, it may be useful for the supervisor to record the following information for each interviewer:

o   Total hours worked,
o   Total completed interviews,
o   Total completed interviews per hour,
o   Total trips reported,
o   Total trips per completed interview,
o   Number and reason for incomplete interviews, and
o   Incomplete interviews per hour.

When summarized, this information can help provide a progress report, as well as be useful in providing additional checks on the quality of the data (see Figure 1.3).

If it is noted at any point in the survey progress that a substantial number of surveys are incomplete or are showing inconsistencies, the survey should be temporarily stopped and a meeting of survey staff held to review or revise some aspects of the procedure.

Quality Control for Data Processing

There are three steps in the data processing of the survey data. These are:

o   Editing
o   Coding
o   Keypunching

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A great deal of effort will have already been expended on quality control when the data were collected. It is also critical to maintain a high level of accuracy during editing, coding, and keypunching of the data.

Editing and coding of any form is probably best done at the same time and by the same person. The survey supervisor will be responsible for the quality of all editing and coding work. These forms will be reviewed for completeness and reasonability. When errors are found, the supervisor should follow up, determine the cause and rectify it.

Limited discussions are presented now concerning data entry. One suggested technique for quality control is to have a randomly selected group of survey forms repunched and compared to the original keypunching to check for discrepancies. If errors are found, then steps can be taken to resolve any difficulties identified in the keypunching operation.

Once the data has been collected, edited, coded, and keypunched, the data should be analyzed using computer routines to check further for errors or for unreasonable responses. These computer runs would then be reviewed and where discrepancies are found, checks would be made to determine if they are legitimate or should be corrected.

Interviewer Number	Total Hours Worked	Total Completed Interviews	Completed Interviews per Hour	Total Trips Reported	Trips per Completed Interview	Number of Incomplete Interviews by Reason Code										Incomplete Interviews per Hour	Comments
						1	2	3	4	5	6	7	8	9	Total		
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
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23																	
24																	
25																	

FIGURE 1.3

PROGRESS REPORT TABLE FOR SURVEY INTERVIEWERS

APPENDIX F

SAMPLING PLAN

The size and type of sample needed from the survey should be determined by the requirements of the particular analyses to be performed with the data collected. The approach recommended here is based on the need to assess the accuracy of trip generation estimates as they relate to socioeconomic characteristics that are hypothesized to be important determinants of travel behavior in a retirement community. Further assessments are made of the accuracy of estimates of vehicle occupancy and trip destination. The trip generation model applications for the data present the most demanding statistical tests, and consequently govern most of the sampling requirements of the survey. The level of statistical precision that will be achieved for analyses of other aspects of the proposed retirement community model, for example trip destination or vehicle occupancy of trips will generally be higher than the trip production rate estimation.

It is very important to consider sampling issues carefully in the survey design stage, since most costs associated with the survey will be directly proportional to the size of the target sample sought. The size of the sample targeted should be determined by the following:

o   constraints on data collection budget

o   level of statistical precision needed for analysis:
     i.e, confidence limits around point-estimates, tests of
     the differences between samples, etc.

o   anticipated response and completion rates at various
     stages of contact, interviewing, and data transcription

Based upon the level of funds available for the Green Valley

Travel Survey, and the costs and other parameters associated with the procedures described in Section 1, a target sample of about 500 households is probably the maximum practical size for the final sample of household daily trip logs that can be obtained.

Over 1,100 households will be contacted in order to obtain travel diaries for at least 500 of them even under the most optimistic participation assumptions. The steps required to achieve those 500 samples, the participation assumptions, and the estimated time required for each step are displayed in Figure 2-1.

As shown in Figure 2-1, in order to collect travel diaries for 500 households it will require approximately 600 hours of temporary staff for conducting the surveys, 100 hours for keying the data and 120 hours of surpervisory time. This estimated time for acquiring the data is more than originally anticipated in the proposal and may require the shifting of staff effort and activities from other tasks. The time required for the conduct of each step will be monitored throughout the survey to determine actual time required compared to that estimated. If significantly greater time is required or the acceptance rates are less than those assumed, it will be necessary to either reduce the number of households surveyed or increase the budget for this task.

Based on the rate estimates for retired households of 3.83 daily vehicular trips/household reported in the 1981 Metropolitan Phoenix Travel Study, the final Green Valley data set would include information for at least 1,900 weekday person trips (motor-vehicle) made by the members of the sample households.

Samples of this size will be generally adequate to validate

FIGURE 2-1

SURVEY STEPS REQUIRED FOR 500 HOUSEHOLD SAMPLE

Survey Step	Unit Time	Total Needed	Total Hours
PHASE I - "SCREENER" SURVEY			
1. Contact/Search Assume 80% are interviewed	40/hr	1,125	28
2. Interview Time: Completed Percent Agree to Phase II 75%	8/hr	900	112
3. Editing & Coding	20/hr	900	45
4. Quality Control/Verification 15%	10/hr	135	13.5
5. Keying	40/hr	900	22
PHASE II - Trip Log Distribution & Collection			
Percent Agree to Phase II	75%	670	
1. Mail-out			
Printing: letter	1/hh	670	
Diaries & Explanation	1.85/hh	1,240	
2. Reminder call-preceding day	30/hr	670	22
Percent complete - Phase II	75%		
3. Interview Time: Completed			
Interview time (includes callbacks)	2/hr	500	250
4. Editing & Coding (no geocoding)	6/hr	500	83
5. Quality control/verification	3/hr	75	25
6. Keypunch	6/hr	500	83
			683.5

the trip generation rate for the Green Valley community, and to assess validity of the most important aspects of the Tucson Regional model for the retirement community.

The 500 household sample may be sufficient to assess the importance of individual characteristics such as household size, age, income or car occupancy on trip generation rates.

The level of statistical reliability obtained from the sample data will be determined not only by the size of the sample collected, but by the degree of variability actually to be found in the data. The greater the degree of variability (larger the "coefficient of variation") in household trip rates, the less confidence there will be in the accuracy of the estimate of actual trips rates derived from a sample of a given size. A coefficient of variation (standard deviation/mean) for daily trips produced per household of 1.00 has been assumed here. The actual coefficient of variation will define the final statistical reliability.

Figure 2-2 illustrates the sample requirements for trip production rate estimates for various levels of precision that could be established for the survey. For example, to obtain an estimate of trip production rates that are plus or minus 1 percent at the 95 percent level of confidence, 38,416 valid trip logs would be required.* Alternatively, a plus or minus 15

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*The Universe of household travel characteristics is 7,000 households times 365 days a year or over 2.5 million household travel days. Approximately five hundred households will be surveyed for one day as part of this effort. Therefore this survey is sampling 0.02% of the Universe. The correction factor for sampling a finite population without replacement is the square root of 1-N/M or the square root of 1-500/2,555,000 or .988, and will not be applied in this case to the estimate of the standard error of the mean.

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FIGURE 2-2

LEVEL OF PRECISION FACTORS FOR ESTIMATION OF
TRIP PRODUCTION RATES: REQUIRED SAMPLE SIZES
(NUMBER OF HOUSEHOLDS)

LEVEL OF CONFIDENCE

	99.0%	95.0%	90.0%	80.0%	68.0%
(Z Score) =	2.58	1.96	1.65	1.28	1.00

LEVEL OF ACCURACY(A) (+ or -)	NUMBER OR CASES REQUIRED (N)				
1.0%	66,306	38,416	27,060	16,410	10,000
5.0%	2,652	1,537	1,082	656	400
10.0%	663	384	271	164	100
15.0%	295	171	120	73	44
25.0%	106	61	43	26	16
50.0%	27	15	11	7	4

$$N = C^2 * Z^2 / A^2$$

Assumed Coefficient of Variation (C) = 100.0%
for Trip Production Rate (Standard Deviation/Mean)

* Based on method reported by:
  Smith, Michael E., "Design of Small-Sample
  Home-Interview Travel Surveys." Transportation
  Research Record 701. 1979

percent estimate at the 90 percent level of confidence requires a final sample of 120 cases. Using this later example, it should be understood that 120 cases would be needed to obtain this level of precision for an estimate of the total Green Valley population or to obtain an estimate for a particular segment of the total, for instance, a particular income group of the Green Valley population.

With a sample of 500 randomly selected households it is possible, in most cases, to approach 120 households for each of the socioeconomic variables hypothesized to be important to trip generation in a retirement community.

Figure 2-3 shows a breakdown of the Green Valley dwelling units based on data collected in the 1980 U.S. Census. As shown in Figure 2-3, there are at least 120 dwelling units with 1 or 2 occupants which would be surveyed. When we examine the number of vehicles per household, we anticipate that 1 vehicle households and 2+ vehicle households will have approximately 120 or more households surveyed in each category.

One hundred and twenty households will be surveyed in all income categories except for the small group of households with over $35,000/year annual income.

The only age breakdown readily available from the census data does not disaggregate households into the cohorts that might best be examined, however, the distribution of households by age that is available does indicate that an adequate number of house-holds should be surveyed to look at the importance of age with some degree of accuracy.

FIGURE 2-3

RELIABILITY OF TRIP GENERATION ESTIMATES

	LEVEL OF ACCURACY			
	Percent of Households 1980 Census	Estimated Households Responding	Confidence Limits	Trip Generation
Number of Occupants				
1	26%	130	90%	+14.5%
2	69%	347	90%	+8.9%
3+	5%	24	90%	+33.7%
Number of Autos				
0	6%	29	90%	+31.0%
1	71%	353	90%	+8.8%
2+	23%	116	90%	+15.3%
Income				
<10,000	24%	121	90%	+15.0%
10,000-20,000	37%	185	90%	+12.1%
20,000-35,000	25%	129	90%	+14.5%
35,000+	13%	65	90%	+20.4%
Age				
<55	11%	55	90%	+22.2%
55-64	28%	138	90%	+14.0%
65-74	43%	216	90%	+11.2%
75+	18%	91	90%	+17.3%

The accuracy of the trip generation rates estimated for all of Green Valley is significantly better than for any individual category of households. For the 500 households surveyed, the estimated trip generation rates should be accurate within ±7.4 percent at the 90 percent confidence level and ±8.8 percent at the 95 percent confidence level.

The estimate of vehicle occupancy and the ultimate destination (Tucson, Green Valley, other) for all trips will be based on the total trips made and not on the number of dwelling units. In order to be conservative, we will assume that 3.8 trips will be made by each household, as reported in the Phoenix travel survey. Therefore the estimate of vehicle occupancy and destination will be based on approximately 1,900 trips. Furthermore, since these travel characteristics are estimates of the proportion of trips in each of a limited number of categories (i.e., trips with vehicle occupancy of 1 as a proportion of all trips) we are estimating the relative number of times we would expect to get certain car occupancies in a large number of trips. The statistical reliability of such an estimate can best be estimated using the formula:

$$d = \frac{z^2(p(1-p))}{n}$$

Where:

d = the specific level of accuracy which can be achieved with a given "p";

z = the normal variate, a number which reflects the level of confidence set for the estimate. It increases with increasing levels of confidence thus requiring a larger sample size. The z score for each confidence level is the same as shown in Figure 2-1.

Therefore, the statistical reliability of vehicle occupancy and the ultimate destination of trips (Tucson, Green Valley, other) is shown in Figure 2-4. As can be seen, the accuracy of these estimates at the 90 percent confidence level for each category of households are significantly better due to the binomial nature of the distribution of these variables and their being measured for each trip rather than by household. For example, reliability of the estimate of vehicle occupancy for trips from two person households is 3.9 percent as compared to 8.9 percent for trip generation.

FIGURE 2-4

STATISTICAL ACCURACY OF
VEHICLE OCCUPANCY AND TRIP DESTINATION

VARIABLE	% OF 1980 HOUSEHOLDS	ESTIMATED TRIP RESPONSE	CONFIDENCE LIMITS	LEVEL OF ACCURACY VEH. OCCUPANCY	TRIP DESTINATION
OCCUPANTS					
1	26%	498	90%	3.70%	3.70%
2	69%	1,321	90%	2.27%	2.27%
3+	5%	96	90%	8.43%	8.43%
NUMBER OF VEHICLES					
0	6%	115	90%	7.70%	7.70%
1	71%	1,360	90%	2.24%	2.24%
2+	23%	440	90%	3.93%	3.93%
INCOME					
< $10,000	24%	460	90%	3.85%	3.85%
$10,000-$19,999	37%	709	90%	3.10%	3.10%
$20,000-$34,999	26%	498	90%	3.70%	3.70%
>35,000	13%	249	90%	5.23%	5.23%
AGE					
<55	11%	211	90%	5.68%	5.68%
55-64	28%	536	90%	3.56%	3.56%
65-74	43%	823	90%	2.87%	2.87%
75+	18%	345	90%	4.44%	4.44%

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APPENDIX G

SURVEY FORMS

This appendix contains the actual forms used by survey interviewers and respondents. In order of appearance (and use), these are:

- o   Telephone Interview: Phase I*

- o   Data Entry Form: Disposition Log – Phase I*

- o   Letter of Introduction to Phase II*

- o   General Guidelines to Record Household Travel*

- o   Sample 24-Hour Travel Log**

- o   24-Hour Travel Log**

- o   Telephone Interview II*

- o   Trip Log Transcription Form*

*For use by survey interviewer

**Mailed to respondent

GREEN VALLEY TRAVEL SURVEY

TELEPHONE INTERVIEW: PHASE 1

Phase I: Screener: Interviewer

Hello Mr. or Mrs. _____. My name is _____. I am calling for the Arizona Department of Transportation. As part of our planning for the improvements of the streets and highways in Green Valley, we collect basic information in your area. Would you be willing to answer a few questions for me?

1. A) How many motor vehicles are regularly available to your household for daily travel? Please include cars, vans, trucks, motorcycles, mopeds, and golf carts. _____ Then circle 0, 1, 2 or 3+ vehicles on Data Entry Form.

   If respondent answers none, go to question 2. Otherwise, ask: (Place responses on Data Entry Form)

   B) Of these, how many are cars? _____
   C) How many are trucks or vans? _____
   D) How many are golf carts? _____
   E) Other _____

2. How many people live in your household? Please include all children, adults, and yourself. _____

3. Which of the following best describes the type of building you live in? (Read list and pause between each.)

   Single family house (SF)   Mobile Home (SF)
   Duplex (Townhouse) (MF)   Nursing Home or Other
   Apartments or Condominiums   (End Survey)

                                         Other _____
                                         (Try to fit into categories
                                         given)

4. About how many trips did you make by car, truck, van, golf cart, or other motor vehicle yesterday? Please count each time you got in a car or other vehicle as a separate trip. A round trip should be counted as two trips. _____

5. And roughly how many motor vehicle trips would you say were made yesterday by all other members of your household? (circle one) If the respondent does not know, prompt by saying: Would you say none, 1 to 2 trips, 3 to 5, 6 to 8, 9 to 12, or more?

   0   1-2   3-5   6-8   9-12   13 or more

6. How long have you lived in Green Valley? _____

7.   Are you a part-time or full-time resident?

Which months of the year does your household spend in Green Valley, Arizona?

Beginning Month _____   End Month _____

Thank you very much for answering my questions. Now, I would like to ask you if you would be willing to participate in a second part of our travel study, which would be mailed to you. You would receive forms to keep track of each motor vehicle trip made by your household on one day. Then, we will call you to get the results. Remember, we count on you to help us obtain the information we need to meet your household's travel needs. We realize that Green Valley has many part-time residents but the response of these people is as important as for full-time residents, because they are such a large proportion of the population and have a significant impact on the transportation facilities. May we send you the second part?

If Yes, will participate - ask: How should we address it?

9.   ENTER ADDRESS ON DATA ENTRY FORM AND CONTINUE WITH NEXT STATEMENT.

Thank you for cooperating (go to next page).

If refused - try to convince them by saying: Let me tell you a little more about the second part. In about 3 days, you will receive a set of short forms in the mail. The forms will ask each member of your household a few questions about trips made on (date) _____. You can fill the forms out with each person, or you can have each person fill out a form, whichever is best for you. Then, a telephone interviewer will call you on (date) _____ and ask about the information on the forms.

IF STILL REFUSED, RECORD STATUS ON DATA ENTRY FORM AND ASK THE FOLLOWING QUESTION.

8.   I have one additional question that is important for predicting how much people will travel. Would you please tell me which category best describes your household's 1984 income, before taxes? This information will be kept completely confidential. Be sure to include your income and all social security or other cash benefits. Is it:

        A. Zero to just under ten thousand
        B. Ten thousand to just under twenty thousand
        C. Twenty thousand to just under thirty thousand
        D. Thirty thousand to just under forty thousand
        E. Forty thousand or more
        F. Do not know
        G. Refuse to say

Thank you for your time. Goodbye.

10.   I need to know how many trip logs to send out, so can you list for me the first names of all of the people in your household who are 5 years old or older, starting with yourself? (RECORD ANSWERS ON DATA ENTRY FORM). We will need a completed trip log for each of these persons.

11.   Will there be any out-of-town guests staying with you next week on _____ (Day and Date of Log Completion). IF YES, RECORD ON DATA ENTRY FORM).

12.   We will be calling again on (date) _____.

Can we count on you to be the person that we talk to next time we call, or should we speak to someone else in your household?

13.   What would be a convenient time to call? _____.

RECORD TIME ON DATA ENTRY FORM.

RECORD NAME ON DATA ENTRY FORM.

Thank you very much for helping us. We will speak to you again soon.

TELEPHONE INTERVIEW: PHASE I

DISPOSITION LOG

A) 1. Household ID No.: _____

2. Name: _____

3. Telephone No.: _____

4. Survey Day: _____   _____
   Day of Week   Date

5. Day of Travel Log: _____   _____
   Day of Week   Date

B) Contact Calls | 1st Call | | 2nd Call | | 3rd Call | | 4th Call |

1. Interviewer   _____   _____   _____   _____

2. Date   _____   _____   _____   _____

3. Time   _____   _____   _____   _____

4. Talked To   _____   _____   _____   _____

5. Status Code   ☐   ☐   ☐   ☐

   (1) Responded
   (2) No Answer
   (3) Refused to Participate
   (4) Not a Residential Household
   (5) Other: Explain _____

DATA ENTRY FORM

1)			0	1	2	3+
	A.	Total Vehicles	0	1	2	3+
	B.	Autos	0	1	2	3+
	C.	Trucks or Vans	0	1	2	3+
	D.	Golf Carts	0	1	2	3+
	E.	Other, Specify _____				

2)	Household Members	1	2	3	4+

CONTINUED ON BACK

Green Valley

Community
Coordinating
Council, Inc.

Dear Mr./Mrs./Ms. _____ .

   Thank you for agreeing to participate in the second part of the Green Valley Travel Survey. We depend on people like yourself to help us collect the information that is needed to plan for the transportation needs of our growing community.

   In order to keep the costs of this survey at a minimum, we have selected at random only a small number of households to participate. Your participation is therefore critical to the success of our study. Regardless of how much or how little you or your family travels or whether you live here year-round or part of the year, we need this information to ensure a good representation of all Green Valley residents.

   Enclosed you will find one copy of the travel log for each member of your household, 5 years of age or older. Also, there is a form for each overnight guest that you indicated would be staying with you. We need a complete 24-hour travel log for all members of your household and overnight guests for _____ , _____ .

   Even if two or more household members travel together, please note the trip in the travel log of each person who made the trip. Also, please fill out the travel log for children or other household members who cannot do so themselves.

   At the end of the day, when all travel logs have been completed, please collect them and keep them near the phone. We will call you the following day to record this information over the phone. You will not need to mail anything back to us.

   Again, we thank you in advance for helping us with this important study. If you have any questions, please call our Green Valley Travel Survey number at 648-0022. Of course, all information you provide is confidential and will be analyzed only when included with many other responses.

                                        Sincerely yours,
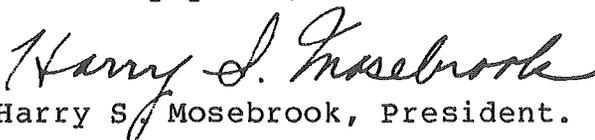
                                        Harry S. Mosebrook, President.

Enc.

GREEN VALLEY TRAVEL SURVEY

TELEPHONE INTERVIEW: PHASE II

After placing call, if you cannot satisfactorily complete any travel logs you must complete a disposition form.

Hello. I would like to speak to (contact person) please.

If contact person is <u>not</u> there, or will be difficult to reach later, say:

I am calling about the Green Valley Travel Survey. Is there someone else at home who could go over the survey with me, or should I call back? If "call back," ask: What time would be most convenient? (Record on disposition log). **Thank you, Goodbye.** If "someone else responds," introduce yourself and go on to Question 1.

When contact person is on the line, say:

Hello, this is (your name). I am calling to talk about the Green Valley Travel Survey. If contact person is too busy at the moment, ask: **When should I call back?** (Record on disposition log). Otherwise, continue.

1. **Was your household able to record your travel on _____ as scheduled?**

   A. If travel logs have not been completed, say:

   Would you take a little time to find out about the trips made by your household yesterday, and then I can call you back? (Arrange time and record status on disposition log.)

   B. If that does not work, say:

   We really are counting on you. I would be glad to answer any questions you have and then give you another day to do the survey, okay? (Arrange time and record status on disposition log.)

   C. If person still will not cooperate, record reasons for refusal, record status on disposition log and say: **Thank you very much.**

   D. If household did complete forms, say:

   Do you have the completed travel logs ready, so we can go over them?

   If not ready, record status and arrange time for re-interview and indicate on disposition log.

(RECORD INFORMATION ON TRIP RECORD LOG FOR EACH PERSON.)

Let's start with the person who made the most trips.

2a. Which person is that? Verify name on transcription form, and whether person is a household member or guest.

2b. About how old is he or she?

2c. Does he or she have a drivers license?

2d. Is he or she:

1. Retired
2. Employed full-time
3. Employed part-time
4. A student
5. Other

3a. Let's start with (name just given)'s first trip.

3b. What time did (he/she) leave the house? (Record in Column B.)

4. And where did (he/she) go? (Record in Column C.)

5. Is that place located in Green Valley, Tucson, or somewhere else? (Check box in Column D.)

Green Valley
Tucson
Other, specify: _____

6. And what time did (name on form) arrive at (place listed in Column C)? (Record in Column E.)

7. For what purpose did (he/she) go there? Code answer according to the following list and enter number in Column F.

TRIP PURPOSES

1 = Home
2 = Go to work
3 = Work-related
4 = Shopping
5 = School
6 = Personal business
(bank, doctor, post office, etc.)
7 = Eat meal or drink
8 = Recreation
(movies, playground, visit, etc.)
9 = Transport someone else
10 = Other, specify: _____

8. How did (he/she) travel there? (Check appropriate vehicle type in Column G.)

9. Was (he/she) a driver or passenger? (Check appropriate block in Column H.)

10. If any household members were traveling with (name on form) on this trip, can you tell me who? Record names in Column I, if any.

11. Did any nonhousehold members go along? If yes, ask: How many? (Record in Column J.)

12. If the trip was made in a car, van, truck, or golfcart, and if there were other people in the vehicle, ask: **Did the other people start and end their trip at the same places as** (name on form) **did?** Yes, started and ended together -- go to Question 14. No -- continue.

13. If someone was dropped off or picked up, you will need to reconstruct the trip just described to you into 2 trips (if there was one drop off/pickup location), 3 trips (if there were two locations), and so on. Record the answers to the following questions on the next trip line.

    A. **Do you know where the** (first, second, etc.) (dropoff, pickup) **was made** (Green Valley, Tucson, or other)? (Record in Column D.)

    C. **What about the time of** (dropoff/pickup?). Record in Column E. Go back to Question 13 A. for each dropoff or pickup. (You will need to adjust the original trip characteristics (i.e., times, trip number, purpose, to reflect the dropoffs).

14. Okay, let's go on to (name on form)'s next trip. What time did (name on form) leave (place visited in previous trip)? (Record in Column B.)

    Go back to Question 3, and go through entire set of questions again. If person is amenable to just reading the information off to you, it would be faster to let him/her do that, while you ask questions for anything that need clarification. If the person does read off to you, make sure you ask Questions 12 and 13 as necessary.

15. How many walk trips did he or she make (in addition to the motor vehicle trips)? _____
    How many bicycle trips did he or she make? _____

    When all of this person's trips have been described, move on to the next section.

NEXT PERSON'S TRIP LOG

    Check your trip log recording sheets to see if there are additional household members or guests, 5 years or older.

    If no, ask: are there any other trip logs? If no, go to Question 16.

If yes, say:

Let's move on to the person who made the next highest number of trips.

Which person is that? Record name in top right portion of another transcription form, and whether that person is a resident or guest. Go back to Question 2B, and continue through as necessary. Make sure you follow these instructions:

● If, at some point, the person being interviewed says something like, "I already described the next trip when I told you about (family member's name)'s trip to _____," it will not be necessary to get all the information on that trip again. Instead, find the trip already described by the person, make a note of whose form it is on and which number it is in the "Notes" column on the next black trip line, and clarify only a few items for that trip with the person being interviewed. Ask:

Just tell me, then, what the purpose of the trip was for (name of person whose trips are now being described). Fill in answer in Column F, coding according to the following list:

TRIP PURPOSES

1 = Home
2 = Go to work
3 = Work-related
4 = Shopping
5 = School
6 = Personal business
    (bank, doctor, post office, etc.)
7 = Eat meal or drink
8 = Recreation
    (movies, playground, visit, etc.)
9 = Transport someone else
10 = Other, specify: _____

Refer back to the previous description of the trip to see if the travel mode described previously was passenger in a car, truck, or van in Column G.

A. If the mode described previously was passenger, ask: Was (person being discussed now) the driver? Code in Columns G and H.

car: driver   golf cart: driver
car: passenger   golf cart: passenger
truck or van: driver
truck or van: passenger

B. If the mode described previously was not passenger, just go on to the next trip and immediately following the interview record the necessary information from the other persons log.

• After the second (third, fourth, etc.) person's trips have been described, quickly look back through the household's trip logs to identify whether that person was listed by another household member as having been on a trip (Column I).

If there is any such mention, make sure the trip has been described again under the second (third, fourth, etc.) person's name in Column A. If it has not been described, remind the telephone interviewer about it: Before you mentioned that _____ made a trip with _____. Can we go over that quickly? Record the information for that trip -- if it is all the same as described before, simply make a note in the last column.

When you have completed trips for all household members, ask the following:

16. Would you please tell me which category best describes your household's 1984 income, before taxes? This information is important for predicting how much people will travel and will be kept completely confidential. Be sure to include your income and all social security or other cash benefits. Is it:

> A. Zero to just under ten thousand
> B. Ten thousand to just under twenty thousand
> C. Twenty thousand to just under thirty thousand
> D. Thirty thousand to just under forty thousand
> E. Forty thousand or more
> F. Do not know
> G. Refused to say

Thank you for your time!

Name **JOHN JONES**

ARIZONA DEPARTMENT OF TRANSPORTATION

GREEN VALLEY TRAVEL SURVEY

24-HOUR TRAVEL LOG

Please fill out on **Wed. March 20, 1985**

General Guidelines to Record Person Travel

PLEASE READ BEFORE TRYING TO COMPLETE FORM

- There is <u>one copy</u> of the travel log <u>for each</u> member of your household, 5 years of age or over. Also, there is a form for each guest that you indicated would be staying with you on the day you are asked to complete the travel log.

- Please fill out your travel log for the weekday marked above.

- Please fill out <u>one line for each and every trip</u> you make by car, bus, truck, van, golf cart or other motor vehicle on the <u>streets</u>, whether you are a <u>passenger</u> or a <u>driver</u>. Please count each time you got in a car or other vehicle as a <u>separate</u> trip. A round trip should be counted as two trips.

- Please note that with regard to trips using a golf cart, we are only interested in those you make on the streets of Green Valley, not those you might make on the golf course.

- In addition, at the bottom of the form we ask that each household member note how many walk trips and bicycle trips he or she has taken to or from your home on the survey day. For example, if you walked to the pharmacy from home and walked back, that would be two walk trips.

- <u>We will call</u> the following day to get the information that your household has recorded on the date shown above. (Please do not mail back.) If we can't reach you then, we will call again.

- Thank you for helping us plan for Green Valley Transportation needs by completing your travel log.

- Please refer to the sample travel log that was enclosed with this form for an example of how a typical day's travel would be recorded.

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SAMPLE TRAVEL LOG

If during the 24-hour period you:

1) Left home by car with your spouse to pick up a passenger.

2) Left from passenger's house to go to restaurant in Tucson for lunch.

3) Left restaurant and went to gas station in Tucson to buy gasoline.

4) Left gas station and drove to passenger's home to drop him/her off.

5) Drove home from passenger's house.

6) Took golf cart to grocery store in Green Valley.

7) Returned home from grocery store.

You would have made 7 trips by motorized vehicles and would have completed 7 lines in the travel log as shown on the form at right.

O If you did not make any trips by m

O Please list your motorized trips in

A	B	C	
TRIP NO.	I LEFT AT:	TO GO TO:	LOC
TRIP 1	11 :15 or (am) pm	Bill's house	Green Tucson Other
TRIP 2	11 :25 or (am) pm	Tucson Cafe	Green Tucso Other
TRIP 3	1 :30 or am (pm)	Frank's Texaco	Green Tucso Other
TRIP 4	1 :45 or am (pm)	Bill's house	Green Tucso Other
TRIP 5	2 :15 or am (pm)	home	Green Tucso Other
TRIP 6	4 :30 or am (pm)	Grocery Store	Green Tucso Other
TRIP 7	5 :30 or am (pm)	home	Green Tucso Other
TRIP 8	: or am pm		Green Tucso Other
TRIP 9	: or am pm		Green Tucso Other
TRIP 10	: or am pm		Green Tucso Other

If you made more than 10 trips

I made ◯ trips to or from m

I made ◯ trips to or from m

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otorized vehicle, check this box ☐ and answer the questions at bottom of page

ne order that you made them

D	E	F	G	H	I	J
ATED N:	I GOT THERE AT:	PURPOSE I WENT TO THIS PLACE WAS FOR:	VEHICLE I TRAVELLED IN WAS:	I TRAVELLED THERE AS:	HOUSEHOLD MEMBERS WHO TRAVELLED WITH ME WERE:	NUMBER OF NON-HOUSEHOLD MEMBERS WITH ME WERE:
Valley ☒ ☐ ☐ Specify	11:20 am or pm	Pick Bill up	Auto ☒ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☒ Passenger ☐	Mary	◯
Valley ☐ ☒ ☐ Specify	12:05 am or pm	To eat	Auto ☒ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☒ Passenger ☐	Mary	1
Valley ☐ ☒ ☐ Specify	1:35 am or pm	To buy gas	Auto ☒ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☒ Passenger ☐	Mary	1
Valley ☒ ☐ ☐ Specify	2:15 am or pm	To drop Bill off	Auto ☒ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☒ Passenger ☐	Mary	1
Valley ☒ ☐ ☐ Specify	2:30 am or pm	To go home	Auto ☒ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☒ Passenger ☐	Mary	◯
Valley ☒ ☐ ☐ Specify	4:40 am or pm	Buy Groceries	Auto ☐ Van or Truck ☐ Golf Cart ☒ Other___	Driver ☒ Passenger ☐	___	◯
Valley ☒ ☐ ☐ Specify	5:40 am or pm	To go home	Auto ☐ Van or Truck ☐ Golf Cart ☒ Other___	Driver ☒ Passenger ☐	___	◯
alley ☐ ☐ ☐ Specify	: am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☐ Passenger ☐		
Valley ☐ ☐ ☐ Specify	: am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☐ Passenger ☐		
alley ☐ ☐ ☐ Specify	: am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other___	Driver ☐ Passenger ☐		

lease continue on back of page

home by walking without using any motorized vehicle

my home by bicycle without using any motorized vehicle

A	B	C	D	E	F	G	H	I	J
TRIP NO.	I LEFT AT:	TO GO TO:	LOCATED IN:	I GOT THERE AT:	PURPOSE I WENT TO THIS PLACE WAS FOR:	VEHICLE I TRAVELLED IN WAS:	I TRAVELLED THERE AS:	HOUSEHOLD MEMBERS WHO TRAVELLED WITH ME WERE:	NUMBER OF NON-HOUSEHOLD MEMBERS WITH ME WERE:
TRIP 11	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 12	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 13	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 14	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 15	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 16	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 17	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 18	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 19	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		
TRIP 20	__:__ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	__:__ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other ☐	Driver ☐ Passenger ☐		

Name_____

ARIZONA DEPARTMENT OF TRANSPORTATION

GREEN VALLEY TRAVEL SURVEY

24-HOUR TRAVEL LOG

Please fill out on _____

General Guidelines to Record Person Travel

PLEASE READ BEFORE TRYING TO COMPLETE FORM

- There is one copy of the travel log for each member of your household, 5 years of age or over. Also, there is a form for each guest that you indicated would be staying with you on the day you are asked to complete the travel log.

- Please fill out your travel log for the weekday marked above.

- Please fill out one line for each and every trip you make by car, bus, truck, van, golf cart or other motor vehicle on the streets, whether you are a passenger or a driver. Please count each time you got in a car or other vehicle as a separate trip. A round trip should be counted as two trips.

- Please note that with regard to trips using a golf cart, we are only interested in those you make on the streets of Green Valley, not those you might make on the golf course.

- In addition, at the bottom of the form we ask that each household member note how many walk trips and bicycle trips he or she has taken to or from your home on the survey day. For example, if you walked to the pharmacy from home and walked back, that would be two walk trips.

- We will call the following day to get the information that your household has recorded on the date shown above. (Please do not mail back.) If we can't reach you then, we will call again.

- Thank you for helping us plan for Green Valley Transportation needs by completing your travel log.

- Please refer to the sample travel log that was enclosed with this form for an example of how a typical day's travel would be recorded.

O If you did not make any trips by motorized vehicle, check

O Please list your motorized trips in the order that you made

A	B	C	D	E	
TRIP NO.	I LEFT AT:	TO GO TO:	LOCATED IN:	I GOT THERE AT:	PUR I WE THIS WAS
TRIP 1	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 2	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 3	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 4	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 5	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 6	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 7	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 8	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 9	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	
TRIP 10	: ___ am or pm		Green Valley ☐ Tucson ☐ Other ___Specify ☐	: ___ am or pm	

If you made more than 10 trips please continue on bac

I made _____ trips to or from my home by walking witho

I made _____ trips to or from my my home by bicycle w

his box ☐ and answer the questions at bottom of page

hem

	G	H	I	J
POSE T TO PLACE FOR:	VEHICLE I TRAVELLED IN WAS:	I TRAVELLED THERE AS:	HOUSEHOLD MEMBERS WHO TRAVELLED WITH ME WERE:	NUMBER OF NON- HOUSEHOLD MEMBERS WITH ME WERE:
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		
	Auto ☐ Van or Truck ☐ Golf Cart ☐ Other_____	Driver ☐ Passenger ☐		

of page

t using any motorized vehicle

hout using any motorized vehicle

A	B	C	D	E	F	G	H	I	J
TRIP NO.	I LEFT AT:	TO GO TO:	LOCATED IN:	I GOT THERE AT:	PURPOSE I WENT TO THIS PLACE WAS FOR:	VEHICLE I TRAVELLED IN WAS:	I TRAVELLED THERE AS:	HOUSEHOLD MEMBERS WHO TRAVELLED WITH ME WERE:	NUMBER OF NON-HOUSEHOLD MEMBERS WITH ME WERE:
TRIP 11	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 12	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 13	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 14	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 15	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 16	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 17	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 18	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 19	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		
TRIP 20	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other __	Driver ☐ Passenger ☐		

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GREEN VALLEY TRAVEL SURVEY PHASE 2
Trip Log Transcription Form

Survey Date _____ Mo. [ ] Day [ ]

First Name of Household Member _____

Household ID No. [ ][ ][ ][ ]

Age [ ]

Drivers License [ ] Yes [ ] No

Resident [ ] Guest [ ]

Work Status

[ ] Retired
[ ] Employed, Full Time
[ ] Employed, Part Time
[ ] Other _____ Specify

A	B	C	D	E	F	G	H	I	J	
TRIP NO.	LEFT AT:	TO GO TO:	LOCATED IN:	GOT THERE AT:	PURPOSE WENT TO THIS PLACE WAS FOR:	VEHICLE TRAVELLED IN WAS:	TRAVELLED THERE AS:	HOUSEHOLD MEMBERS (First Name)	NON-HOUSEHOLD	NOTES
TRIP 1	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 2	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 3	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 4	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 5	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 6	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 7	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 8	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 9	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			
TRIP 10	: __ am or pm		Green Valley ☐ Tucson ☐ Other ☐ Specify	: __ am or pm		Auto ☐ Van or Truck ☐ Golf Cart ☐ Other	Driver ☐ Passenger ☐			

Income 1☐ <10 2☐ 10-20 3☐ 20-30 4☐ 30-40 5☐ 40+ 6☐ Don't Know 7☐ Refused

Number of walk trips made _____

Number of bicycle trips made _____

[ ] No trips made in motorized vehicle

Interviewer _____

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APPENDIX H

CONDUCT OF GREEN VALLEY TRAVEL SURVEY

INTRODUCTION

Some urban area travel surveys (such as the 1981 Metropolitan Phoenix Travel Study) distinguished between retired and non-retired households. The data collected in the Phoenix study suggested that retired households make an average of 3.83 daily vehicular person trips per household versus 8.85 for non-retired households. The Phoenix study and others, however, did not collect data specifically for residents of planned retirement communities, which may exhibit different travel behavior than other retired households due to lifestyle differences.

This travel diary survey is designed to collect sufficient data from households in a planned retirement community for a comprehensive analysis of their travel behavior. It is designed to analyze the travel behavior of retirement communities in terms of the generation of trips by purpose, the occupancy of vehicle trips and the destination (Tucson, Green Valley or others) of trips made by residents of Green Valley households.

The data collected in this travel survey will allow for an assessment of the importance of different socioeconomic characteristics such as household size, income, age and vehicle ownership on a households travel behavior. The results of this analysis will be used to modify the existing regional travel models to better reflect travel generated by retirement communities.

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The survey was conducted in an office in the central area of Green Valley, located in an office building approximately at the intersection of La Canada Drive and Continental Road. These streets are both major streets in Green Valley. The survey site was selected because it gave maximum exposure and provided an optimum working environment for the survey effort. The office was comprised of a large central room, divided into three working areas by two glass semi-partitions. The survey crew and survey crew chief were stationed in the main room. The hot line telephone was set up in one of the spare rooms, along with an additional telephone linked to a surveyor's telephone. In this way, the survey crew chief was able to supervise the staff in one of two ways: through direct observation of work habits, and through unobserved listening of random phone calls by using the additional telephone in the spare room. The survey crew was apprised of both methods of checking their work, and were rotated to the quality control telephone. The telephone system installed was comprised of seven separate telephone lines, one of which was listed as the Green Valley Survey Hot Line number.

Six surveyors were hired for the duration of the survey. During the pretest phase of the study, two of the six surveyors were trained the afternoon before the survey.

The survey was scheduled for conduct between 12-8:00 p.m. During the pretest, and at the start of the survey, these times were tested to determine if an earlier or later starting time would improve the response rate.

PRETEST RESULTS

The pretest for the Green Valley Survey was conducted on Tuesday and Wednesday, February 26 and 27, Monday, March 4, and Wednesday, March 6.

On February 26 and 27, the first phase of the pretest was accomplished, which included testing the Phase 1 trip disposition form, and the Phase 1, "prescreening" phase. A total of 31 households were called. Of these, 18 households responded and agreed to participate in the Phase 2 part of the survey, 2 households refused to participate in the study and 11 households were not home. Therefore, out of 20 households contacted, there was a 10 percent refusal rate. Each Phase 1 call took approximately 3-5 minutes to complete. Minor changes were made to the Phase 1 disposition log and the Phase 1 telephone interview "script" as a result of the pretest. These include adding the question "Are you a part-time or full-time resident?" to clarify Question 6, "How long have you lived in Green Valley." On the disposition log, a space was added on the back of the log to record the name of the contact person. The Phase 2 trip logs were scheduled to be completed by the survey respondents on Tuesday, March 5, 1985. On Monday, March 4, reminder calls were made to all Phase 2 participants, in order to check whether respondents received their trip logs and whether they had any questions on the forms. The survey respondents were then reminded to fill out their forms the next day. This call also provided an opportunity to record comments such as revised Phase 2 call back times.

Phase 2 was conducted on Wednesday, March 5. Minor typographic errors were found in the Phase 2 interview "script," but

no other problems were found on the forms. A total of 17 households completed the Phase 2 part of the survey. One household was not able to be contacted during the pretest period. The Phase 2 part of the survey took between 5 and 10 minutes per household, depending on the number of household members and trips made.

Table 1 shows a summary of the characteristics of pretest households, developed on the basis of Phase 1 responses. The table shows that the largest number of responses were obtained from two person, two car households, making 6 trips per day.

SURVEY PROCEDURE

The survey began on Wednesday, March 6, 1985, the same day the pretest for Phase 2 of the survey ended. Survey personnel were trained in the early afternoon and began making Phase 1 phone calls in the late afternoon. The survey was conducted weekdays between March 6 to March 21, from 12:00 p.m. to 8:00 p.m., with the exception of Saturday, March 16, when the survey was conducted from 9:00 a.m. to 5:00 p.m. In order to obtain the requisite number of Phase 1 and Phase 2 responses, a total of 1,102 telephone numbers were called. Names and addresses were picked at random from the recently published Green Valley telephone directory. It was estimated that there were 8,050 addresses in the telephone directory, and in order to randomly call approximately 1,100 households, every seventh name in the directory was selected. A total of 676 households participated

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TABLE 1

PRETEST – PHASE 1 RESULTS

Vehicles Owned	Number of Person Trips Per Dwelling Unit																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0			1		2												
1	1		2		1		2		1								
2+					1		3		1		1						1

Occupants	Number of Person Trips Per Dwelling Unit																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1		2		1												
2			1		3		5		2		1						1
3+																	

in both Phase 1 and Phase 2 of the survey, 123 households participated in Phase 1 only, 139 households refused to participate in the study, 73 households were unable to be contacted, 5 numbers were not residential households, and 86 households did not participate for other reasons (i.e., leaving town). Out of the total number of household telephone numbers available, 61 percent of households completed both parts of the survey. If households that did not answer the phone are excluded from the count, then 66 percent of respondents participated in both phases of the study. Similarly, 73 percent of the households selected completed Phase 1 of the survey. Seventy-eight percent of the households participated in Phase 1 of the survey, if households not answering the phone are excluded.

SURVEY OPERATIONS

In preparation for the survey, a news article appeared in the Green Valley News newspaper on March 1, 1985. A copy of this article is attached. Survey personnel were familiarized with the article and referred to it during Phase 1 phone calls. During the course of the study, the County sheriff's department and the District Engineer's office were contacted in order to inform them of the nature of the study, although in retrospect, this should have been done concurrently with publication of the news article (before the study began).

A total of seven survey personnel were hired for the study. Six of the surveyors made Phase 1 and Phase 2 calls, and one surveyor was responsible for making all of the reminder calls and for keeping track of which households had Phase 2 information

mailed out to them.

During Phase 1 of the survey, each surveyor kept his/her own records of how many households were scheduled for Phase 2 call backs each day. File boxes were set up for different phases of the project, such as "Phase 1 - Completed," "Phase 1 - Call Backs," "Phase 1 - Other." Each day the boxes were emptied and filed by day.

Mailing of the Phase 2 trip logs proved to be a time consuming aspect of the study. Each envelope needed to be stuffed with the appropriate number of forms, samples, and cover letter, and then was addressed with the appropriate mailing label corresponding to the household number. On the outside of the envelope, the number of trip logs were written, in order to group the completed envelopes into similar weight groups. The majority of households required two blank trip log forms, at a postage cost of 56¢. Mailing labels were typed on the word processor, and a duplicate of the mailing label was attached to the Phase 1 trip disposition log.

The survey personnel were trained to perform the mailings, to compile preliminary statistics, and to proofread their completed Phase 1 and Phase 2 forms, which was done after they reached their quota of Phase 1 or Phase 2 calls. As the survey progressed, it was determined that the optimal number of Phase 2 calls to schedule was 25 per person per day.

SURVEY QUALITY CONTROL

Quality control techniques were also tested during the pretest period. The original quality control technique of calling

back survey respondents to check their answers was dropped after discussion at the last Technical Advisory Committee meeting. It was decided that this technique might negatively impact the survey response rate. An alternative method was used during the pre-test, which involved listening in to telephone conversations during the Phase I and II surveys. This technique was used during the pretest and during the actual conduct of the survey, but did not work well because of background noise, and confusion resulting from the survey respondents and surveyor realizing that the call was being monitored. An alternative quality control technique was tested and used during the survey, which involved listening to the surveyor's phone conversation and immediately checking the survey forms with the surveyor after the phone call was ended. Survey responses were discussed, as well as techniques for eliciting survey responses. The need for accurate and complete responses was repeated many times during the survey, and the surveyors were encouraged to ask questions during all phases of the survey. Approximately 15 percent to 20 percent of the Phase I and Phase II surveys were monitored in this way.

zoning at its 62-acre Santo Tomas plant site be denied.

Kerley, which manufactures chemicals used by the copper mining industry, closed the plant Nov. 15 when faced with a possible shutdown by the state Department of Health Services.

Two weeks earlier, the company had been granted a temporary operating permit by the Pima County Air Quality Control Board, but it was withdrawn after a county zoning inspector red-tagged the plant.

The zoning inspector told the Air Quality Control District that any permits issued would be "null and void" in view of the determination that Kerley was violating zoning regulations in emitting odorous matter that traveled beyond the

Valley..."
—Wallis Weaver

plant property lines.

Kerley officials told the commissioners that the odor problems have been largely corrected, but that the plant needs to be restarted to complete the corrective measures.

Area residents at the hearing said, however, that even with the plant closed they have, from time to time, smelled the foul odors.

Wallis Weaver, chairman of the Santo Tomas Awareness Group, a neighborhood organization that has spearheaded the fight against Kerley, reviewed residents' principal complaints that the odors not

STAG and a Santo Tomas resident, told the commissioners that Kerley has operated illegally and has neglected to take corrective measures until forced to.

He said the commission was bound, under zoning ordinances, to consider "promotion and protection of the public health, comfort and welfare."

He also pointed to a section of the ordinance that obligates the commission to consider the relative importance of interests such as established conforming (land) uses on adjacent and nearby property; costs of tax support and public services to the area affected; and the value of the proposed classification.

Dr. Charles Bates

Phone survey to focus on traffic

Two private firms will conduct a traffic survey of Green Valley in March that will be used for planning by the Arizona Department of Transportation.

The random survey is to be done by telephone and should begin about March 7, officials said.

The two firms, JHK and Associates of Tucson, and Comsis Corp. of Wheaton, Maryland, are performing the study under a contract with ADOT for almost $60,000, said Phillip S. Shapiro of Comsis.

Those doing the survey will call at least 500 households here at random for local travel information.

People will be asked to keep a log of their travel for a day, Shapiro said.

The information collected will be used to revise a mathematical model used by ADOT for traffic projections. The model will be changed to

show Green Valley's traffic characteristics and possibly applied to other retirement communities in the state also, Shapiro said.

"The travel characteristics of a retirement community are somewhat different than a mainstream community," Shapiro said.

He added that the old model didn't accurately predict traffic patterns.

Mary Gallagher, senior transportation engineer for JHK and Associates, said

participation in the project would be important for Green Valley, because the study would be used to allocate proper transportation facilities in the future.

Gallagher said that people who have questions could contact the Green Valley Travel Survey office after March 1 at 648-0022.

The office in the Fairfield Professional Plaza Suite B103 will be occupied March 7.