



2009
Comprehensive Household Travel
Data Collection Program

MI Travel Counts II



Final Methodological Report Appendices

July 30, 2010

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Appendix A: Pre-Notification Recruitment Letter



STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

KIRK T. STEUDLE
DIRECTOR

Dear Michigan Resident:

The Michigan Department of Transportation (MDOT) will be conducting a second wave of **MI Travel Counts**, a transportation study to help MDOT better understand the daily travel characteristics of Michigan residents and the changes in household travel that may have occurred since the study was last conducted in 2005. Michigan's transportation community will use the results of your participation to evaluate and develop a 21st century transportation system that improves and increases mobility for every Michigan citizen and community.

According to our records, your household may have participated in the 2005 MI Travel Counts. We would like your household to help us out once again by participating in this very important study. If you are receiving this letter, but did not participate in the 2005 MI Travel Counts, we hope you will be able to participate this time. A trained interviewer from *Abt SRBI*, a national research organization providing market research to governmental organizations, will soon be calling to ask some questions about your household. All information is confidential and your participation is voluntary, yet vital.

If you have any questions about **MI Travel Counts**, please contact *Abt SRBI* at 1-800-631-0702, call MDOT at 517-241-1301, or visit www.michigan.gov/mitravelcounts. Thank you in advance for helping to move Michigan forward.

Sincerely,



A handwritten signature in black ink, appearing to read "Kirk T. Steudle".

Kirk T. Steudle
Director

Appendix B: Diary Cover Letter



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

KIRK T. STEUDLE
DIRECTOR

Dear «MAILATTN»:

Did you know that our travel habits can help shape Michigan’s transportation system? It’s true! Our daily commutes to work, vacation trips around the state, errands around town, bus rides, bike rides, walks, and everything in between are important. Where we go, how we get there, and what we do when we get there – all shape the understanding of how Michigan’s transportation system is used and how it can be improved for all of us – now and in the future. Whether you travel by car, bus, train, airplane, boat, bike, or on foot, your participation is essential in helping Michigan and your community to create a safer and more efficient transportation system.

This is why your participation in *MI Travel Counts* is so important, and it’s easy!

This packet contains one Travel Diary for each member of your household.

- Please record ALL the locations you visit during your assigned 24-hour travel period.
- Each household member should complete his or her own diary whenever possible.
- Even if your travel during the assigned period is not typical, we still need it reported.
- Instructions and an example are included in the front of the diary.
- Each household member should fill out the section in the diary for school and work information and record all recent trips over 100 miles.

The information you provide will be held **confidential** and **secure**. It will only be used for the purpose of this study. After your travel period, we will collect your household’s travel information using one of the following options:



Phone: An interviewer from *Abt SRBI*, a national research organization, will call within a few days after your travel period to collect your household’s travel information. *Abt SRBI* would like to speak with each person age 16 or older. Adults will be asked to respond for children less than 16 years of age.



Internet: If you prefer, each household member can record his or her travel information online by logging on to: www.surveycafe.com/michigan/password.asp and entering the password found on the front of the Travel Diary.

If you have questions about filling out the *MI Travel Counts* diary, contact *Abt SRBI* at 1-800-631-0702, or visit www.michigan.gov/mitravelcounts. If you have any other questions about the program, please contact Karen Faussett, Michigan Department of Transportation, at 517-241-1301.

As a small token of our appreciation, we have included a 2009 state map. Thank you for helping move Michigan forward. **Your participation will help improve transportation in Michigan!**



Sincerely,

Kirk T. Steudle
Director

Appendix C: Diary Labels

MI Travel Counts Diary Information: Print on page 1 of travel diary

«NAME_»

Travel Date:
«TDATE1»

«PHONENO» «QNO»«PERS_ID»
www.surveycafe.com/michigan/password.asp
«PASSWORD»

MI Travel Counts BRE Information: Print on Front of BRE Envelope

Please mail diaries ONLY AFTER we have phoned to collect your travel information. You do not need to return your diaries by mail if you were able to record them by phone or Internet.

If mailing, include for each household member:

- **Travel Diary completed for your one travel day (24 hours).**
- **Be sure to complete the Person Information section in the beginning of your diary.**

MI Travel Counts Return Address: Print on upper left corner of outer envelope

MI Travel Counts
Abt SRBI, Inc.
P.O. Box 71505
Madison Heights, MI 48071

MI Travel Counts Mailing Label: Print on outer envelope

«QNO»

«MAILATTN»
«MAILADD1»
«MAILADD2»
«TMAILCTY», «TMAILST» «MAILZIP»

Appendix D: Travel Diary With Person Sheet

Person Information

School Information Not a student – Skip this section

In pre-school/nursery school K-12 student Vocational/Technical

Full-time college/graduate student Part-time college/graduate student

School/College Name: _____

Location: _____

Street Address or Closest Intersection

City, State, Zip

Work Information Not currently employed – Skip this section

Do you have more than one job? Yes No

If you have more than one job, please refer to the job at which you spend the most hours for the following questions

Where do you work? _____

Name of Employer

Type of Business

Street Address

City, State, Zip

Closest Intersection

Does your job involve...? Evenings Overnight shifts

Average hours worked per week? _____ hours

Which of the following best describes your work schedule?

- "I have no flexibility in my work schedule."
 "I have some flexibility in my work schedule."
 "I'm pretty much free to adjust my schedule as I like."

What is your employer's industry?

- | | |
|--|---|
| <input type="checkbox"/> Agriculture, Forestry, Fishing and Hunting | <input type="checkbox"/> Management of Companies and Enterprises |
| <input type="checkbox"/> Mining | <input type="checkbox"/> Administrative and Support and Waste Management and Remediation Services |
| <input type="checkbox"/> Utilities | <input type="checkbox"/> Educational Services |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Health Care and Social Services |
| <input type="checkbox"/> Manufacturing | <input type="checkbox"/> Arts, Entertainment and Recreation |
| <input type="checkbox"/> Wholesale Trade | <input type="checkbox"/> Accommodation and Food Services |
| <input type="checkbox"/> Retail Trade | <input type="checkbox"/> Public Administration/ Government |
| <input type="checkbox"/> Transportation and Warehousing | <input type="checkbox"/> Other Services |
| <input type="checkbox"/> Information | <input type="checkbox"/> Military |
| <input type="checkbox"/> Finance and Insurance | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Real Estate, Rental/Leasing | |
| <input type="checkbox"/> Professional, Scientific and Technical Services | |

Does your employer offer compressed workweek options? (eg 40 hrs in less than 5 days)

Yes No Don't know

Travel: How did you get to Location 12?

1. What type(s) of transportation did you use to go to Location 12?

1 st	→	2 nd (if needed)	→	3 rd (if needed)
1 Car, van, truck		5 School Bus		9 Public Bus (Provider) _____
2 Motorcycle/Moped		6 Taxi/Shuttle		10 Other (Specify) _____
3 Bicycle		7 Dial-A-Ride		
4 Walk		8 Train		

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

A. Were you the . . . ? Driver Passenger

B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+

NOT including yourself, how many are household members? 0 1 2 3 4 5 6+

Which household members were with you?

C. Was this vehicle from your household? Yes No

D. How much, in total, did you personally pay for parking? Nothing

\$ _____ . _____

Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 12

4. When did you arrive at Location 12? _____ : _____ AM PM

5. Where is this? _____

Name of Location 12

If address was already reported

GO TO QUESTION 6

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 12? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 12, if any? _____

7. When did you leave Location 12? _____ : _____ AM PM

Instructions for One-Day Travel Diary

- Use this diary on your assigned travel day, shown on the cover. Begin at 3:00 AM on your assigned travel day and continue for 24 hours, ending at 3:00 AM the next day.
- Fill out one page for EACH location you go to. If uncertain whether to include a location at which you stop, include it.
- Record ALL locations visited, even short stops for coffee or gas.
- Record the EXACT time that you arrive and leave each location.
- Provide as much address information as you can. Include:
 - street address
 - type of place or business
 - nearest cross streets
- Record your primary activity (what you did) at each location. (*Refer to Activity Choices on Page 4.*)
- If you take a round-trip without stopping at a location (walk the dog or ride around in the car), record the furthest point of the trip as the location and what you do there as TURN AROUND. (*Refer to Activity Choice 17 on Page 4.*)
- If you park your car and walk MORE than five minutes to your destination, record your type of transportation as car first, then walk. If you walk more than five minutes from a bus to your destination, record your transportation as bus first, then walk.
- If your work involves frequent travel - truck driver, sales person, taxi driver, etc. - record where and when you start work and where and when you end work. If you make non-work related stops between work stops, record those locations. Do not report your frequent work-related stops.

If you have any questions, please call or e-mail:
 1-800-631-0702
 surveyhelp@srbi.com

Travel: How did you get to Location 10?

1. What type(s) of transportation did you use to go to Location 10?

1 st	→	2 nd (if needed)	→	3 rd (if needed)
1 Car, van, truck		5 School Bus		9 Public Bus
2 Motorcycle/Moped		6 Taxi/Shuttle		(Provider) _____
3 Bicycle		7 Dial-A-Ride		10 Other
4 Walk		8 Train		(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . . ? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
- \$ _____ . _____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 10

4. When did you arrive at Location 10? _____ : _____ AM PM

5. Where is this? _____

Name of Location 10	_____
If address was already reported	_____
GO TO QUESTION 6	Street Address
_____	Type of Place or Business
_____	_____
City, State, Zip Code	Nearest Cross Streets

6. A. What was your primary activity at Location 10? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

D. Other activities at Location 10, if any? _____

7. When did you leave Location 10? _____ : _____ AM PM

Travel: How did you get to Location 9?

1. What type(s) of transportation did you use to go to Location 9?

1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . .? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
\$ ____ . ____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ ____ . ____

Location 9

4. When did you arrive at Location 9? ____ : ____ AM PM

5. Where is this?

Name of Location 9	_____	
If address was already reported GO TO QUESTION 6	Street Address	Type of Place or Business
_____	_____	_____
City, State, Zip Code	Nearest Cross Streets	
_____	_____	

6. A. What was your primary activity at Location 9? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

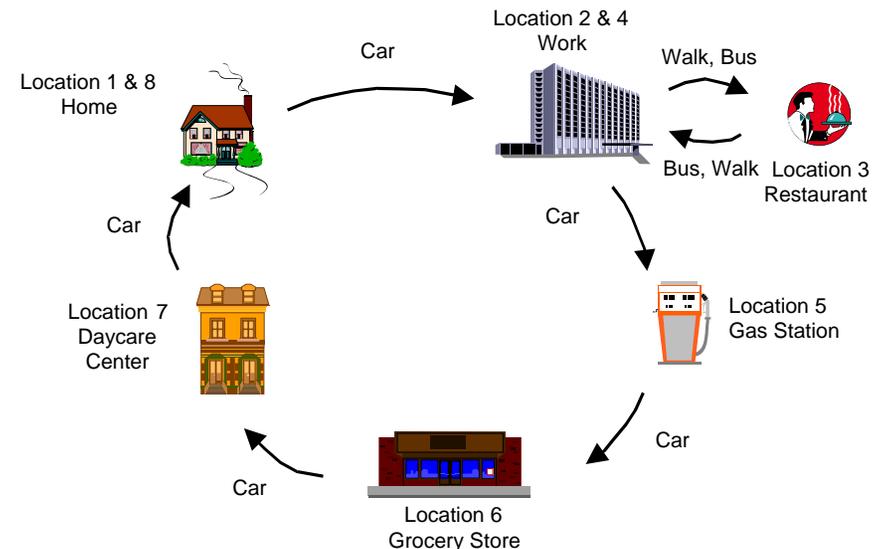
E. Other activities at Location 9, if any? ____ . ____

7. When did you leave Location 9? ____ : ____ AM PM

Activity Choices: What you do at locations

- HOME – PAID WORK
- HOME – OTHER (sleeping, eating, chores, watching TV, etc.)
- WORK (employment and job-related activities)
- ATTEND CHILDCARE
- ATTEND SCHOOL
- ATTEND COLLEGE (college or university, graduate or professional school)
- EAT OUT (restaurant, drive-thru, etc.)
- PERSONAL BUSINESS (banking, medical, salon, etc.)
- EVERYDAY SHOPPING (grocery, drug store, gas, etc.)
- MAJOR SHOPPING (appliances, cars, home furnishings, clothes, etc.)
- RELIGIOUS/COMMUNITY (worship, wedding, funeral, meetings, etc.)
- SOCIAL (visit friends, relatives, etc.)
- RECREATION – PARTICIPATE (sports, exercise, park, museum, etc.)
- RECREATION – WATCH (movies, sports events, etc.)
- ACCOMPANY ANOTHER PERSON (child accompanies parent to food store, etc.)
- PICK-UP/DROP-OFF PASSENGER
- TURN AROUND (to travel back from furthest point on dog walk, etc.)

Example of Travel Day



DIARY EXAMPLE

Where were you at 3:00 AM?

1. Traveling – GO TO NEXT SECTION
 At a location

2. Where is this?

Home

Name of Location 1

715 Lovely Lane

Street Address

Anytown, MI 48000

City, State, Zip Code

Residential

Type of Place or Business

Lovely Lane & Sea Way

Nearest Cross Streets

3. A. What was your primary activity at Location 1? (check only ONE box)

- | | | |
|--|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input checked="" type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 1, if any? _____

4. When did you leave Location 1? 7 : 15 AM PM

Travel: How did you get to Location 8?

1. What type(s) of transportation did you use to go to Location 8?

_____ →	_____ →	_____ →
1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . . ? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
 Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
 \$ _____ . _____
 Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 8

4. When did you arrive at Location 8? _____ : _____ AM PM

5. Where is this?

_____ Name of Location 8

If address was
 already reported

**GO TO
 QUESTION 6**

_____ Street Address

_____ Type of Place or Business

_____ City, State, Zip Code

_____ Nearest Cross Streets

6. A. What was your primary activity at Location 8? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 8, if any? _____

7. When did you leave Location 8? _____ : _____ AM PM

Travel: How did you get to Location 7?

1. What type(s) of transportation did you use to go to Location 7?

1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . . ? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
 Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
 \$ _____ . _____
 Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 7

4. When did you arrive at Location 7? _____ : _____ AM PM

5. Where is this? _____

Name of Location 7

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 7? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 7, if any? _____

7. When did you leave Location 7? _____ : _____ AM PM

Travel: How did you get to Location 2?

DIARY EXAMPLE

1. What type(s) of transportation did you use to go to Location 2?

1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . . ? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
 Which household members were with you?
Michael
- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
 \$ _____ . _____
 Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 2

DIARY EXAMPLE

4. When did you arrive at Location 2? _____ 7 : 4 2 AM PM

5. Where is this? Anytown Middle School

Name of Location 2

If address was
already reported

**GO TO
QUESTION 6**

123 Main St

Street Address

School

Type of Place or Business

Anytown, MI 48000

City, State, Zip Code

Main St & Elm Rd

Nearest Cross Streets

6. A. What was your primary activity at Location 2? (check only ONE box)

- | | | |
|---|---|---|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input checked="" type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 2, if any? _____

7. When did you leave Location 2? _____ 7 : 4 5 AM PM

**Record travel for your
assigned travel day,
a full 24 hours.**

Start Recording Here

Where were you at 3:00 AM?

1. Traveling – **GO TO QUESTION 1 ON PAGE 8**
 At a location

2. Where is this?

Name of Location 1

Street Address

City, State, Zip Code

Type of Place or Business

Nearest Cross Streets

3. A. What was your primary activity at Location 1? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 1, if any? _____

4. When did you leave Location 1? _____ : _____ AM PM

Travel: How did you get to Location 6?

1. What type(s) of transportation did you use to go to Location 6?

1 st	→	2 nd (if needed)	→	3 rd (if needed)
1 Car, van, truck		5 School Bus		9 Public Bus
2 Motorcycle/Moped		6 Taxi/Shuttle		(Provider) _____
3 Bicycle		7 Dial-A-Ride		10 Other
4 Walk		8 Train		(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . . ? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

C. Was this vehicle from your household? Yes No

D. How much, in total, did you personally pay for parking? Nothing

\$ _____ . _____

Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 6

4. When did you arrive at Location 6? _____ : _____ AM PM

5. Where is this?

Name of Location 6

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 6? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 6, if any? _____

7. When did you leave Location 6? _____ : _____ AM PM

Travel: How did you get to Location 5?

1. What type(s) of transportation did you use to go to Location 5?

_____ → _____ → _____		
1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . .? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
- \$ _____ . _____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 5

4. When did you arrive at Location 5? _____ : _____ AM PM

5. Where is this?

Name of Location 5

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 5? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 5, if any? _____

7. When did you leave Location 5? _____ : _____ AM PM

Travel: How did you get to Location 2?

1. What type(s) of transportation did you use to go to Location 2?

_____ → _____ → _____		
1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . .? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
- \$ _____ . _____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 2

4. When did you arrive at Location 2? _____ : _____ AM PM

5. Where is this?

Name of Location 2

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 2? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 2, if any? _____

7. When did you leave Location 2? _____ : _____ AM PM

Travel: How did you get to Location 3?

1. What type(s) of transportation did you use to go to Location 3?

_____ →	_____ →	_____ →
1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . .? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
- \$ _____ . _____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 3

4. When did you arrive at Location 3? _____ : _____ AM PM

5. Where is this?

Name of Location 3

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 3? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 3, if any? _____

7. When did you leave Location 3? _____ : _____ AM PM

Travel: How did you get to Location 4?

1. What type(s) of transportation did you use to go to Location 4?

_____ →	_____ →	_____ →
1 st	2 nd (if needed)	3 rd (if needed)
1 Car, van, truck	5 School Bus	9 Public Bus
2 Motorcycle/Moped	6 Taxi/Shuttle	(Provider) _____
3 Bicycle	7 Dial-A-Ride	10 Other
4 Walk	8 Train	(Specify) _____

2. If you used a car/van/truck or motorcycle/moped for this trip . . .

- A. Were you the . . .? Driver Passenger
- B. NOT including yourself, how many people were in the vehicle? 0 1 2 3 4 5 6+
- NOT including yourself, how many are household members? 0 1 2 3 4 5 6+
- Which household members were with you?

- C. Was this vehicle from your household? Yes No
- D. How much, in total, did you personally pay for parking? Nothing
- \$ _____ . _____
- Was the rate...? Hourly Daily Monthly Other _____

3. If you used a bus/train/taxi for this trip, how much did you pay? \$ _____ . _____

Location 4

4. When did you arrive at Location 4? _____ : _____ AM PM

5. Where is this?

Name of Location 4

If address was
already reported

**GO TO
QUESTION 6**

Street Address

Type of Place or Business

City, State, Zip Code

Nearest Cross Streets

6. A. What was your primary activity at Location 4? (check only ONE box)

- | | | |
|---|---|--|
| <input type="checkbox"/> 1 Home – Paid Work | <input type="checkbox"/> 7 Eat Out | <input type="checkbox"/> 13 Recreation – Participate |
| <input type="checkbox"/> 2 Home – Other | <input type="checkbox"/> 8 Personal Business | <input type="checkbox"/> 14 Recreation – Watch |
| <input type="checkbox"/> 3 Work | <input type="checkbox"/> 9 Everyday Shopping | <input type="checkbox"/> 15 Accompany Another Person |
| <input type="checkbox"/> 4 Attend Childcare | <input type="checkbox"/> 10 Major Shopping | <input type="checkbox"/> 16 Pick-Up/Drop-Off Passenger |
| <input type="checkbox"/> 5 Attend School | <input type="checkbox"/> 11 Religious/Community | <input type="checkbox"/> 17 Turn Around |
| <input type="checkbox"/> 6 Attend College | <input type="checkbox"/> 12 Social | |

B. Other activities at Location 4, if any? _____

7. When did you leave Location 4? _____ : _____ AM PM

Appendix E: Reminder Call Script

Michigan Department of Transportation
"MI Travel Counts"
Reminder Calls
Job 4577

QINT. Hello, my name is <INSERT INTERVIEWER'S FIRST NAME> from Abt SRBI, calling on behalf of the Michigan Department of Transportation.

(INTERVIEWER: DO NOT READ THIS PARAGRAPH IF LEAVING MESSAGE ON ANSWERING MACHINE!)

May I speak with <INSERT NAME_1> or someone in your household who is at least 18 year old?

(INTERVIEWER: CONTINUE WITH CONTACT PERSON OR MEMBER OF THE HOUSEHOLD OVER 18 YEARS OF AGE. IF ANSWERING MACHINE, RECORD THE FOLLOWING ON THE ANSWERING MACHINE.)

I am calling to remind your household that tomorrow begins your 24-hour travel period for "MI Travel Counts", a transportation study to better understand the travel characteristics of Michigan residents. Your household's participation is extremely important. Please remember to record ALL locations that you and each member of your household go to, beginning at 3:00 am on your assigned travel day and continuing to record for 24 hours. Please keep your diaries. We will phone you after your travel day to collect your travel information.

01	Spoke to person	(GO TO THANKS)
02	Left message on answering machine	(GO TO THANKS)
03	Did not receive project materials	(GO TO MAIL)
04	NO LONGER WISHES TO PARTICIPATE	(TERMINATE)

(ASK IF QINT=3)

MAIL. I am sorry you have not received the materials. We will call back in two days and can complete the project from memory.

(INTERVIEWER: If the respondent wants to CHANGE TRAVEL DAY ...

Explain that it does not matter what they are doing on the travel day. Even if they have a different travel pattern than normal during the travel period, such as being at home all day, we would like to know what they are doing.)

01	Continue	(GO TO THANKS)
02	NO LONGER WISHES TO PARTICIPATE	(TERMINATE)

THANKS. Thank you very much for your time and cooperation.

(INTERVIEWER: Provide, only if requested.)

Toll-free number 1-800-631-0702

Website www.Michigan.gov/mitravelcounts

Appendix F: Recruitment Script

Michigan Department of Transportation
"MI Travel Counts"
Recruit Interview
Job 4755

LETTER_I. *If pre-notification letter was sent, show:*
 "Pre-notification letter sent"
 Else, show:
 "Pre-notification letter was NOT sent"

DISPO_INT. Hello, my name is <INSERT INTERVIEWER'S FIRST NAME> from Abt SRBI calling on behalf of the Michigan Department of Transportation. MDOT is conducting a transportation study to better understand the daily travel characteristics of Michigan residents.

Are you a member of this household and at least 18 years old?

(INTERVIEWER: If necessary, say: "I'm allowed to only interview individuals that are at least 18 years of age. Are you at least 18?")

INT: IF NEW RESPONDENT COMES TO PHONE RE-READ INTRO

(INTERVIEWER: IF UNWILLING TO CONFIRM ELIGIBILITY, READ: "Thank you for your time." Then enter "SCREEN-OUT NO ONE IN HH 18", which will terminate the interview.)

(PROGRAMMER: INSERT DISPOSITION SCREEN)

INTRO. (CONTINUE WITH HOUSEHOLD MEMBER AT LEAST 18 YEARS OF AGE)
This is an official MDOT study and the information collected is confidential and secure. This is not a sales call and no sales calls will result from this interview. For quality control purposes, this call may be monitored.

1 Continue with interview **(GO TO CONFIRM)**

DELETED ADULT_C

(ASK IF INTRO=3)

TERM_INT. Thank you for considering our request.
(TERMINATE)

CONFIRM. Your household may have participated in the MI Travel Counts Survey in 2004 or 2005. This is a follow-up study to see how travel in Michigan has changed. Your participation in this follow-up is voluntary, but vital. If you did not participate before we are requesting your participation this time.

ASK ALL

INTRO2. We first want to confirm that you live in the survey area.

ASK ALL

AREA_ST. Do you live in Michigan?

- 01 Yes
- 02 No **(GO TO AREA_TM)**

- 8 Don't know **(GO TO AREA_TM)**
- 9 Refused **(GO TO AREA_TM)**

ASK ALL

AREA_CTY. What COUNTY do you live in?
(RECORD NUMBER FOR APPROPRIATE COUNTY FROM COUNTY LIST)
(RECORD 996 FOR "OTHER" - WHICH WILL TERMINATE THE INTERVIEW)

- 01 Alcona
- 02 Alger
- 03 Allegan
- 04 Alpena
- 05 Antrim
- 06 Arenac
- 07 Baraga
- 08 Barry
- 09 Bay
- 10 Benzie
- 11 Berrien
- 12 Branch
- 13 Calhoun
- 14 Cass
- 15 Charlevoix
- 16 Cheyboygan
- 17 Chippewa
- 18 Clare
- 19 Clinton
- 20 Crawford
- 21 Delta
- 22 Dickinson
- 23 Eaton
- 24 Emmet
- 25 Genesee
- 26 Gladwin
- 27 Gogebic
- 28 Grand Traverse

- 29 Gratiot
- 30 Hillsdale
- 31 Houghton
- 32 Huron
- 33 Ingham
- 34 Ionia
- 35 Iosco
- 36 Iron
- 37 Isabella
- 38 Jackson
- 39 Kalamazoo
- 40 Kalkaska
- 41 Kent
- 42 Keweenaw
- 43 Lake
- 44 Lapeer
- 45 Leelanau
- 46 Lenawee
- 47 Livingston
- 48 Luce
- 49 Mackinac
- 50 Macomb
- 51 Manistee
- 52 Marquette
- 53 Mason
- 54 Mecosta
- 55 Menominee
- 56 Midland
- 57 Missaukee
- 58 Monroe
- 59 Montcalm
- 60 Montmorency
- 61 Muskegon
- 62 Newaygo
- 63 Oakland
- 64 Oceana
- 65 Ogemaw
- 66 Ontonagon
- 67 Osceola
- 68 Oscoda
- 69 Otsego
- 70 Ottawa
- 71 Presque Isle
- 72 Roscommon
- 73 Saginaw
- 74 Saint Claire
- 75 Saint Joseph
- 76 Sanilac
- 77 Schoolcraft
- 78 Shiawassee
- 79 Tuscola
- 80 Van Buren

- 81 Washtenaw
- 82 Wayne
- 83 Wexford

- 96 Other (GO TO AREA_TM)

- 98 Don't Know (GO TO AREA_TM)
- 99 Refused (GO TO AREA_TM)

**PROGRAMMER:
SEE NOTES AT END OF QUESTIONNAIRE FOR ASSIGNMENT OF HOUSEHOLD TO REGION.**

(ASK IF AREA_CTY=3 (ALLEGAN) OR 4 (ALPENA) OR 8 (BARRY) OR 11 (BERRIEN) OR 12 (BRANCH) OR 13 (CALHOUN) OR 14 (CASS) OR 16 (CHEBOYGAN) OR 17 (CHIPPEWA) OR 21 (DELTA) OR 22 (DICKINSON) OR 24 (EMMET) OR 27 (GOGEBIC) OR 28 (GRAND TRAVERSE) OR 29 (GRATIOT) OR 30 (HILLSDALE) OR 31 (HOUGHTON) OR 34 (IONIA) OR 37 (ISABELLA) OR 44 (LAPEER) OR 46 (LENAWEE) OR 51 (MANISTEE) OR 52 (MARQUETTE) OR 53 (MASON) OR 54 (MECOSTA) OR 55 (MENOMINEE) OR 59 (MONTCALM) OR 61 (MUSKEGON) OR 70 (OTTAWA) OR 75 (SAINT JOSEPH) OR 78 (SHIAWASSEE) OR 80 (VAN BUREN) OR 82 (WAYNE) OR 83 (WEXFORD).)

AREA_CTW. What CITY or TOWNSHIP do you live in?
(IF NEEDED: "We need to know the physical location of your residence.")
(RECORD NUMBER FOR APPROPRIATE CITY OR TOWNSHIP FROM
CITY/TOWNSHIP LIST)
(RECORD 996 FOR "OTHER")

- 001 Acme Township
- 002 Adrian (City)
- 003 Albion (City)
- 004 Allendale Township
- 005 Alma (City)
- 006 Alpena (City)
- 007 Battle Creek (City)
- 008 Bedford Township
- 009 Belding (City)
- 010 Benton Township
- 011 Benton Harbor (City)
- 012 Bertrand Township
- 013 Big Rapids (City)
- 014 Blair Township
- 015 Blendon Township
- 016 Blue Lake Township
- 017 Bridgeman (City)
- 018 Buchanan (CITY)
- 019 Buchanan TOWNSHIP
- 020 Cadillac (City)
- 021 Cedar Creek Township
- 022 Cheboygan (City)
- 023 Coldwater (City)

024 Crockery Township
025 Dalton Township
026 Detroit (City)
027 Dowagiac (City)
028 East Bay Township
029 Edwardsburg (City)
030 Egelston Township
031 Elmwood Township
032 Emmett Township
033 Escanaba (City)
034 Ferrysburg (City)
035 Fillmore Township
036 Fruitland Township
037 Fruitport Township
038 Garfield Township
039 Georgetown Township
040 Gladstone (City)
041 Grand Haven (CITY)
042 Grand Haven TOWNSHIP
043 Green Lake Township
044 Greenville (City)
045 Hastings(City)
046 Hillsdale (City)
047 Holland (CITY)
048 Holland TOWNSHIP
049 Holton Township
050 Houghton (City)
051 Howard Township
052 Hudsonville (City)
053 Ionia (City)
054 Iron Mountain (City)
055 Ironwood (City)
056 Ishpeming (City)
057 Jamestown Township
058 Kingsford (City)
059 Lake Township
060 Laketon Township
061 Laketown Township
062 Lapeer (City)
063 Leroy Township
064 Lincoln Township
065 Long Lake Township
066 Ludington (City)
067 Manistee (City)
068 Marquette (City)
069 Marshall (City)
070 Menominee (City)
071 Milton Township
072 Montague Township
073 Mount Pleasant (City)
074 Muskegon (CITY)
075 Muskegon TOWNSHIP

- 076 Muskegon Heights (City)
- 077 Newton Township
- 078 Niles (CITY)
- 079 Niles TOWNSHIP
- 080 North Muskegon (City)
- 081 Norton Shores (CITY)
- 082 Norton Shores TOWNSHIP
- 083 Olive Township
- 084 Ontwa Township
- 085 Overisel Township
- 086 Owosso (City)
- 087 Park Township
- 088 Peninsula Township
- 089 Pennfield Township
- 090 Petoskey (City)
- 091 Port Sheldon Township
- 092 Robinson Township
- 093 Roosevelt Park (City)
- 094 Royalton Township
- 095 Saint Joseph (CITY)
- 096 Saint Joseph TOWNSHIP
- 097 Sault Sainte Marie (City)
- 098 Shoreham (City)
- 099 Sodus Township
- 100 South Haven (City)
- 101 Spring Lake (CITY)
- 102 Spring Lake TOWNSHIP
- 103 Springfield (City)
- 104 Stevensville (City)
- 105 Sturgis (City)
- 106 Sullivan Township
- 107 Tallmadge Township
- 108 Tecumseh (City)
- 109 Three Rivers (City)
- 110 Traverse City (City)
- 111 White River Township
- 112 White Water Township
- 113 Whitehall (CITY)
- 114 Whitehall TOWNSHIP
- 115 Zeeland (CITY)
- 116 Zeeland TOWNSHIP
- 996 Other (Specify _____) (GO TO INFO)**
- 998 Don't Know (GO TO AREA_TM)
- 999 Refused (GO TO AREA_TM)

(ASK IF AREA_CTW=2, 3, 5, 6, 7, 9, 11, 13, 17, 18, 20, 22, 23, 26, 27, 29, 33, 34, 40, 41, 44, 45, 46, 47, 50, 52, 53, 54, 55, 56, 58, 62, 66, 67, 68, 69, 70, 73, 74, 76, 78, 80, 81, 86, 90, 93, 95, 97, 98, 100, 101, 103, 104, 105, 108, 109, 110, 113, OR 115)

AREA_LIM. Do you live inside or outside of the city limits?

(IF NEEDED: "Is your residence located inside or outside of the legal boundaries of the city?")

- 01 Inside city limits
- 02 Outside city limits

- 98 Don't Know (GO TO AREA_TM)
- 99 Refused (GO TO AREA_TM)

ASK IF AREA_LIM=2 AND (AREA_CTW=3, 7, 11, 17, 18, 27, 29, 47, 52, 69, 74, 76, 78, 80, 81, 93, 95, 101, 103, 104, 110, 113, OR 115)

SHOW THE FOLLOWING CODES FROM THE CITY/TOWNSHIP LIST: AREA_CTW LIST=1, 4, 8, 10, 12, 14, 15, 16, 19, 21, 24, 25, 28, 30, 31, 32, 35, 36, 37, 38, 39, 42, 43, 48, 49, 51, 57, 59, 60, 61, 63, 64, 65, 71, 72, 75, 77, 79, 82, 83, 84, 85, 87, 88, 89, 91, 92, 94, 96, 99, 102, 106, 107, 111, 112, 114, 116)

AREA_TWN What TOWNSHIP do you live in?

INTERVIEWER NOTE: EDIT NUMBER – MUST BE A TOWNSHIP

(If NEEDED: "We need to know where the physical location of your residence is."
(RECORD NUMBER FOR APPROPRIATE TOWNSHIP FROM CITY/TOWNSHIP LIST)
(RECORD 996 FOR "OTHER")

- 196 Other (Specify _____) (CONTINUE)
- 198 Don't Know (CONTINUE)
- 199 Refused (CONTINUE)

(ASK IF AREA_ST=2 OR AREA_CTY>995 OR AREA_CTW>997 OR AREA_LIM>97)

AREA_TM. Unfortunately, your household is not eligible for this project. Thank you for your time.
(TERMINATE)

**ASK ALL
INFO.**

Michigan's transportation community will use the results of your participation to evaluate and develop a 21st century transportation system that provides mobility to every Michigan citizen and community. Each member of your household will receive a diary to easily record travel information for a 24-hour period. The diary will ask you what locations you visit and how you travel from one location to the next. After the one-day travel period, an interviewer will call back to collect the information over the phone.

ALL members of your household, regardless of age, must complete the interview for your household to count as a complete. Can we count on your support for this important Michigan project?

- 01 Yes – Continue (GO TO HHNUMVEH)
- 02 No – Will Not Participate (INFORMED TERMINATE)

- 98 Don't Know (INFORMED TERMINATE)
- 99 Refused (INFORMED TERMINATE)

ASK ALL

INTRO3.

We understand that your household may have answered the next series of questions before, but changes may have occurred. For study purposes it is important that we have correct household information.

ASK ALL

HHNUMVEH.

I first need to ask about the vehicles available to your household. Please count all working owned and leased cars, vans, trucks, and motorcycles, as well as vehicles available for REGULAR USE to your household, such as company vehicles. Include RVs and mopeds if they are used for local trips. Do NOT include bicycles, golf carts, boats, or snowmobiles.

How many working vehicles are available to your household?

(INTERVIEWER: Verify if more than 6 vehicles.)

(INTERVIEWER: If respondent says don't know/refused say, "This information is very important to our study. In order to continue we need to know how many vehicles are available to your household.")

(RECORD NUMBER OF HOUSEHOLD VEHICLES)

___ (PROGRAMMER: Allow 0 to 10 vehicles.) (If 0 GO TO HHNUMPPL)

98 Don't Know **(TERMINATE)**

99 Refused **(TERMINATE)**

(ASK IF HHNUMVEH=1)

VEHSUB_A. Is this vehicle provided or subsidized by a household member's employer?

01 Yes

02 No

98 Don't Know

99 Refused

(ASK IF HHNUMVEH=2:10)

VEHSUB_B. How many of these vehicles, if any, are provided or subsidized by a household member's employer?

___ (PROGRAMMER: Allow 0 to HHNUMVEH.)
(PROGRAMMER: IF VEHSUB_A=1, CODE VEHSUB_B=1,
ELSE VEHSUB_B=0)

98 Don't Know

99 Refused

HHNUMPPL. We will send a travel diary for EACH person that lives in your household. INCLUDING yourself, all other adults, and children of all ages, how many people live in your household?

(INTERVIEWER: Include roommates and housemates. Do NOT include children living away from home.)

(INTERVIEWER: If respondent says don't know/refused say, "This information is very important to our study. In order to continue we need to know how many people live in your household.")

(RECORD TOTAL NUMBER OF HOUSEHOLD MEMBERS)

___ (PROGRAMMER: Allow 1 to 15.)

98 Don't Know (TERMINATE)

99 Refused (TERMINATE)

(ASK IF HHNUMPPL>9)

GROUPCK. Are any of these people related?

01 Yes

02 No (TERMINATE)

8 Don't Know (TERMINATE)

9 Refused (TERMINATE)

(ASK IF HHNUMPPL=1)

WRKRS1. Are you employed?

01 Yes

02 No

98 Don't Know (TERMINATE)

99 Refused (TERMINATE)

(ASK IF HHNUMPPL>1)

WRKRS2. Including yourself, how many of the people, 16 years of age or older, living in your household are employed?

(INTERVIEWER: If respondent says don't know/refused say, "This information is very important to our study. In order to continue we need to know how many people in your household are employed.")

___ (PROGRAMMER: Allow 0 to HHNUMPPL.)

(PROGRAMMER: IF WRKRS1=1, CODE WRKRS2=1, ELSE WRKRS2=0/97)

98 Don't Know (TERMINATE)

99 Refused (TERMINATE)

(ASK IF HHNUMPPL>1)

PERS_INT. Now I'd like to ask a few questions about each of the household members so we can prepare individual diaries. Again, I want to assure you that this information is for research purposes only. Let's start with you.

NAME_1. Please tell me your first name.
NAME_#. Now please tell me the next person's first name.
(INTERVIEWER: If respondent refuses, ask for initials or other identifying information.)
(RECORD FIRST NAME)

SEX_1. (RECORD GENDER - BY OBSERVATION)
SEX_#. Is <INSERT NAME_#> male or female?

- 01 Male
- 02 Female

- 99 Refused

SAGE_1. What is your age?
SAGE_#. What is <INSERT NAME_#>'s age?
(RECORD AGE)

___ (PROGRAMMER: Allow 18 to 115 for SAGE_1.)
(PROGRAMMER: Allow 0 to 115 for SAGE_2:15.)

- 998 Don't Know
- 999 Refused

(ASK IF SAGE_#=998 OR 999)

AGE_1. Which of the following categories best describes your age?
AGE_#. Which of the following categories best describes <INSERT NAME_#>'s age?

- 01 Under 5 **(DO NOT SHOW FOR PERSON 1)**
- 02 5 to 15 **(DO NOT SHOW FOR PERSON 1)**
- 03 16 to 17 **(DO NOT SHOW FOR PERSON 1)**
- 04 18 to 24
- 05 25 to 34
- 06 35 to 44
- 07 45 to 54
- 08 55 to 64
- 09 65 to 74
- 10 75 to 84
- 11 85 and over

- 98 Don't Know
- 99 Refused

(ASK IF AGE_#>11)

AGE18_1. (INTERVIEWER: HIT "1" TO CONTINUE)
(PROGRAMMER: Only allow answer 1.)

AGE18_#. Is <INSERT NAME_#> 18 years of age or older?

- 01 Yes (18 or older)
- 02 No (under 18)

- 98 Don't Know
- 99 Refused

(ASK IF NOT FIRST PERSON)

RELAT_#. What is <INSERT NAME_#>'s relationship to you?
(DO NOT READ LIST. PROMPT, IF NEEDED.)

- 001 Husband/Wife/Unmarried Partner
- 002 Son/Daughter/In-Law
- 003 Brother/Sister/In-Law
- 004 Mother/Father/In-Law
- 005 Other Relative
- 006 Roommate/Friend
- 007 Household Help
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

LDRV_1. Are you a licensed driver?

(ASK IF (SAGE_#>15 AND SAGE_#<116) OR (AGE_#>2 AND AGE_#<12) OR AGE18_# <>2)

LDRV_#. Is <INSERT NAME_#> a licensed driver?

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF (SAGE_#>5)

TPASS_1. Do you have a bus or transit pass?

TPASS_#. Does <INSERT NAME_#> have a bus or transit pass?

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF TPASS_#=1)

PTYPE_1. What bus or transit pass do you have?
Any others?

PTYPE_#. What bus or transit pass does <INSERT NAME_#> have?
Any others?
(MULTIPLE MENTION. UP TO THREE RESPONSES.)

- 001 ADRIAN Dial-A-Ride
- 002 ALLEGAN County Transportation
- 003 ALMA Dial-A-Ride
- 004 City of ALPENA Dial-A-Ride
- 005 ALTRAN Transit Authority (ALGER County)
- 006 ANN ARBOR Transportation Authority (AATA)
- 007 ANTRIM County Transportation (ACT)
- 008 ARENAC Dial-A-Ride
- 009 BARRY County Transit
- 010 BATTLE CREEK Transit
- 011 BAY AREA Transportation Authority (BATA) - LEELANAU/GRAND TRAVERSE
- 012 BAY METRO Transportation Authority (BMTA)
- 013 BELDING Dial-A-Ride
- 014 BERRIEN Bus (Berrien County Public Transportation)
- 015 BIG RAPIDS Dial-A-Ride
- 016 BLUE WATER Area Transportation Commission (BWATC) - PORT HURON
- 017 BRANCH Area Transit Authority
- 018 BUCHANAN Dial-A-Ride
- 019 CADILLAC/WEXFORD Transit Authority (CWTA)
- 020 CAPITAL AREA Transportation Authority - LANSING (CATA)
- 021 CARO Transit Authority (CTA) - "Thumbbody Express"
- 022 CASS County Transportation Authority
- 023 CHARLEVOIX County Public Transit (CCPT)
- 024 CLARE County Transit Corporation (CCTC)
- 025 CLINTON AREA Transit System
- 026 CRAWFORD County Transportation Authority - GRAYLING
- 027 DELTA Area Transit Authority (DATA)
- 028 DETROIT Department of Transportation (DDOT)
- 029 DOWAGIAC Dial-A-Ride (DART)
- 030 EASTERN UPPER PENINSULA Transportation Authority (EUPTA)
- 031 EATON County Transportation Authority (EATRAN)
- 032 FLINT Mass Transportation Authority (MTA)
- 033 GLADWIN City/County Transit (GCCT)
- 034 GOGEBIC County Transit (GTC)
- 035 GRAND RAPIDS - ITP/The Rapid (Interurban Transit Partnership)
- 036 GREENVILLE Transit
- 037 HARBOR Transit
- 038 HILLSDALE Dial-A-Ride
- 039 HOUGHTON Motor Transit Line
- 040 INTERURBAN Transit Authority (SAUGATUCK)
- 041 City of IONIA Dial-A-Ride
- 042 IONIA Transit Authority
- 043 IOSCO Transit Corporation (ITC)
- 044 ISABELLA County Transportation Commission (ICTC)
- 045 JACKSON Transportation Authority (JTA)

- 046 KALAMAZOO County Human Services
- 047 KALAMAZOO Metro Transit System (KMTS)
- 048 KALKASKA Public Transit Authority (KPTA)
- 049 LAKE ERIE Transit (MONROE)
- 050 Greater LAPEER Transportation Authority (GLTA)
- 051 LENAWEЕ Transportation Corporation
- 052 LIVINGSTON Essential Transportation (LETS)
- 053 LUDINGTON Mass Transportation Authority (LMTA)
- 054 MACATAWA Area Express - MAX - City of HOLLAND
- 055 MANISTEE County Transportation
- 056 MARQUETTE County Transit Authority (MARQTRAN)
- 057 City of MARSHALL Dial-A-Ride
- 058 MECOSTA County Area Transit
- 059 MIDLAND County Connection
- 060 City of MIDLAND Dial-A-Ride
- 061 City of MILAN Public Transportation (MPT)
- 062 MUSKEGON Area Transit System (MATS)
- 063 NILES Dial-A-Ride
- 064 OGEMAW County Public Transportation (OCPT)
- 065 ONTONAGON County Public Transit
- 066 OSCEOLA County Area Transit
- 067 OTSEGO County Bus System
- 068 ROSCO Mini Bus System (ROSCOMMON)
- 069 SAGINAW Transit System (Saginaw Transit Authority Regional Services)
- 070 SANILAC Transportation Corporation (STC)
- 071 City of SAULT SAINTE MARIE
- 072 SCHOOLCRAFT County Public Transportation
- 073 SHIAWASSEE Area Transportation Agency
- 074 SMART aka SEMTA (Suburban Mobility Authority for Regional Transportation)
- 075 THUMB AREA Transit (TAT) - HURON Transit Corporation
- 076 TWIN CITIES Area Transportation Authority (TCATA - BENTON HARBOR)
- 077 VAN BUREN Public Transit
- 078 YATES Township Transportation System
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF PTYPE_#<998 - FIRST MENTION)

PCOST1_1. How much do you pay for the transit pass?
PCOST1_#. How much does <INSERT NAME_#> pay for the transit pass?
<INSERT TEXT FROM PTYPE FIRST MENTION ANSWER>
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)

- 9998 Don't Know **(GO TO PCOST2_#)**
- 9999 Refused **(GO TO PCOST2_#)**

(ASK IF PCOST1_#=2)



COST1A_#. (RECORD TRANSIT PASS COST - DOLLARS)
____ _ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PCOST1_#=2)

COST1B_#. (RECORD TRANSIT PASS COST - CENTS)
____ _ (PROGRAMMER: Allow 0 to 99.)

(ASK IF PCOST1_# > 0 OR < 9998)

COST1C_#. Is this rate...?
(READ LIST)

001 Weekly
002 Monthly
003 Annually
996 Other (Specify _____)

998 Don't Know
999 Refused

(ASK IF PTYPE_#<998 - SECOND MENTION)

PCOST2_1. How much do you pay for the transit pass?
PCOST2_#. How much does <INSERT NAME_#> pay for the transit pass?
<INSERT TEXT FROM PTYPE SECOND MENTION ANSWER>
(DO NOT READ LIST)

01 NOTHING
02 Amount (to be recorded in next question)

98 Don't Know (GO TO PCOST3_#)
99 Refused (GO TO PCOST3_#)

(ASK IF PCOST2_#=2)

COST2A_#. (RECORD TRANSIT PASS COST - DOLLARS)
____ _ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PCOST2_#=2)

COST2B_#. (RECORD TRANSIT PASS COST - CENTS)
____ _ (PROGRAMMER: Allow 0 to 99.)

(ASK IF PCOST2_# > 0 OR < 9998)

COST2C_#. Is this rate...?
(READ LIST)

001 Weekly
002 Monthly
003 Annually

- 996 Other (Specify _____)
- 998 Don't Know
- 999 Refused

(ASK IF PTYPE_#<998 - THIRD MENTION)

PCOST3_1. How much do you pay for the transit pass?
PCOST3_#. How much does <INSERT NAME_#> pay for the transit pass?
<INSERT TEXT FROM PTYPE THIRD MENTION ANSWER>
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)

- 98 Don't Know **(GO TO EDU_#)**
- 99 Refused **(GO TO EDU_#)**

(ASK IF PCOST3_#=2)

COST3A_#. (RECORD TRANSIT PASS COST - DOLLARS)

(PROGRAMMER: Allow 0 to 9000.)

(ASK IF PCOST3_#=2)

COST3B_#. (RECORD TRANSIT PASS COST - CENTS)

(PROGRAMMER: Allow 0 to 99.)

(ASK IF PCOST3_# > 0 OR < 9998)

COST3C_#. Is this rate...?
(READ LIST)

- 001 Weekly
- 002 Monthly
- 003 Annually
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

EDU_1. What is the highest level of school you have completed?
(ASK IF (SAGE_#>17 AND SAGE_#<116) OR (AGE_#>3 AND AGE_#<12) OR AGE18_# <>2)

EDU_#. What is the highest level of school <INSERT NAME_#> has completed?
(DO NOT READ LIST. PROMPT, IF NEEDED.)

- 01 Less than high school
- 02 High school graduate
- 03 Some college
- 04 Vocational/Technical training
- 05 Associates degree
- 06 Bachelors degree

- 07 Graduate/Post-graduate degree
- 98 Don't Know
- 99 Refused

WRKR_1. Are you a...?

(ASK IF (SAGE_#>15 AND SAGE_#<116) OR (AGE_#>2 AND AGE_#<12) OR AGE18_# <>2)

WRKR_#. Is <INSERT NAME_#> a...?

(INTERVIEWER NOTE: Answers 1 and 2 refer to PAID work. Answer 3 can be full-time OR part-time.
(READ LIST)

- 01 PAID full-time worker
- 02 PAID part-time worker
- 03 Unpaid worker or volunteer
- 04 Not working

- 98 Don't Know
- 99 Refused

(ASK IF WRKR_#=4)

NOWK_1. Are you looking for PAID work?

NOWK_#. Is <INSERT NAME_#> looking for PAID work?

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

PROGRAMMER: REPEAT NAME_# TO NOWK_# FOR EACH HOUSEHOLD MEMBER, UP TO 15.

PROGRAMMER: COMPARE WRKRS2 ANSWER TO TOTAL OF WRKR_#=1 OR 2
IF EQUAL, CONTINUE WITH INTERVIEW BY PROCEEDING TO DATE.
IF NOT EQUAL, GO TO WRKVER.

(ASK IF WRKRS2<>TOTAL OF WRKR_#=1 OR 2)

WRKVER. In the beginning of the interview, you indicated that <INSERT WRKRS> member(s) of your household work(s). However, when we asked about the individual members of your household, it appears that <TOTAL OF WRKR_#=1 OR 2> work(s). Which number is correct?

- 01 Beginning of the interview was incorrect
Need to change the beginning number
- 02 Beginning of the interview was correct
Need to change an individual's employment answer

(ASK IF WRKVER=1)

WRKCH1. So, to confirm, there is/are **<TOTAL OF WRKR_#=1 OR 2>** worker(s) in your household.
(IF RESPONDENT AGREES, ENTER ABOVE NUMBER)
(IF NOT, BACKUP AND CHANGE PREVIOUS ANSWER)

___ (PROGRAMMER: Allow TOTAL OF WRKR_#1 OR 2 ONLY!!)

- 98 Don't Know **(TERMINATE)**
- 99 Refused **(TERMINATE)**

(ASK IF WRKVER=2)

WRKCH2. Let's now review which household members are employed.

(PROGRAMMER: Cycle back through all WRKR_# questions.)

DATE. As I mentioned earlier, we'd like to send [PROGRAMMER: If HHNUMPPL=1 SHOW: "you", ELSE SHOW: "each member of your household"] a diary to keep track of your travel for a 24-hour period,

INTERVIEWER NOTE: READ FIRST DAY AND DATE ONLY. IF REPENDENT REFUSES, READ NEXT, THEN NEXT, UNTIL THE LIST IS DONE.

INTERVIEWER NOTE: PLEASE TRY TO FILL THE TRAVEL DATE THAT IS LISTED FIRST.

<INSERT DAY OF WEEK AND DATE OF TRAVEL DAY>
<INSERT DAY OF WEEK AND DATE OF TRAVEL DAY>
<INSERT DAY OF WEEK AND DATE OF TRAVEL DAY>
<INSERT DAY OF WEEK AND DATE OF TRAVEL DAY>
<INSERT DAY OF WEEK AND DATE OF TRAVEL DAY>

- 98 Don't know **(GO TO ASSURE)**
- 99 Refused **(TERMINATE)**

ASSURE. Your household will represent many others in Michigan, and no one else can be substituted for you. Your input will help MDOT better understand how and why people travel in Michigan. Will you help us out with this important project?

- 01 Yes – willing to participate **(GO BACK TO DATE)**
- 02 No – not willing to participate **(TERMINATE)**

- 98 Don't Know **(TERMINATE)**
- 99 Refused **(TERMINATE)**

ASK ALL

MAILADD1. In order to mail the project materials to you, I need to verify that your MAILING address is
USE SAMPLE MAILING ADDRESS...?
(VERIFY/EDIT ADDRESS OR RECORD NEW STREET ADDRESS)
(BE SURE TO INCLUDE APARTMENT NUMBER, IF APPLICABLE)

DELETED MAILADD2 FROM QUESTIONNAIRE

ASK ALL

MAILCITY. City?

(RECORD NUMBER FOR APPROPRIATE CITY FROM CITY LIST)
(RECORD 9996 FOR OTHER SPECIFY)

ASK ALL

MAILSTAT. State?

001 Michigan
996 Other (Specify _____)

ASK ALL

MAILZIP. Zip code?
(VERIFY/EDIT ZIP CODE OR RECORD NEW ZIP CODE)

<INSERT ZIP>

ASK ALL

MAILTYPE. INTERVIEWER: **DO NOT READ.** RECORD IF THE ADDRESS IS ...

01 Normal street address
02 P O Box

(ASK IF MAILTYPE=1)

MAILXSTS. What intersection is closest to this address?
(RECORD TWO NEAREST CROSS STREETS)
(PROBE BUT DO NOT PUSH)

ASK ALL

MAILATTN. To whom should we address the envelope?
(RECORD FULL NAME, INCLUDE FIRST NAME AND LAST NAME. PLEASE VERIFY
SPELLING.)

(ASK IF MAILTYPE=1)

MAILHOME. Is this your home address?

- 01 Yes
- 02 No

(ASK IF MAILTYPE=2 OR MAILHOME=2)

HOMEADD. So we know where most of your trips will begin, I need to know the location of your home.
What is your home address?

(INTERVIEWER: Do NOT record a P O Box. Record the PHYSICAL ADDRESS of the household, even if mail cannot be received at this address.)
(RECORD HOME STREET NAME AND NUMBER)

Street Address:

Apt. Number:

(ASK IF MAILTYPE=2 OR MAILHOME=2)

HOME CITY. City?

(RECORD NUMBER FOR APPROPRIATE CITY FROM CITY LIST)
(RECORD 9996 FOR OTHER SPECIFY)

(ASK IF MAILTYPE=2 OR MAILHOME=2)

HOMESTAT. INTERVIEWER: HIT "1" TO CONTINUE

001 Michigan

(ASK IF MAILTYPE=2 OR MAILHOME=2)

HOMEZIP. Zip code?
(RECORD ZIP CODE)

(ASK IF MAILTYPE=2 OR MAILHOME=2)

HOMEXSTS. What intersection is closest to this address?
(RECORD TWO NEAREST CROSS STREETS)

HHINC. In order to be sure that the project accurately represents all Michigan residents, could you tell me if the total 2008 combined annual income for your HOUSEHOLD is ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")
(READ LIST)

- 01 Below \$50,000 (GO TO INC_U50)
- 02 \$50,000 or above (GO TO INC_O50)

- 98 Don't Know
- 99 Refused

(ASK IF HHINC=1)

INC_U50. Please stop me when I get to the category that best describes the total 2008 combined income for everyone living in your household. Was it ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")

- 01 Less than \$10,000
- 02 \$10,000 to less than \$20,000
- 03 \$20,000 to less than \$30,000
- 04 \$30,000 to less than \$40,000
- 05 \$40,000 to less than \$50,000

- 98 Don't Know
- 99 Refused

(ASK IF HHINC=2)

INC_O50. Please stop me when I get to the category that best describes the total 2008 combined income for everyone living in your household. Was it ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")

- 01 \$50,000 to less than \$60,000
- 02 \$60,000 to less than \$75,000
- 03 \$75,000 to less than \$100,000
- 04 \$100,000 to less than \$125,000
- 05 \$125,000 or more

- 98 Don't Know
- 99 Refused

OTHER. For future contact, where is the best place to reach you?
(DO NOT READ LIST. PROMPT, IF NEEDED.)

- 01 Home
- 02 Work (GO TO O_NUM)
- 03 Cell phone (GO TO O_NUM)
- 04 Other (GO TO O_NUM)

- 98 Don't Know
- 99 Refused

(ASK IF OTHER>1 AND OTHER<98)

O_NUM. Can I have that number please?
(RECORD PHONE NUMBER TO REACH RESPONDENT AT)

(____) _____ - _____

END. That completes this portion of the project. The travel diaries will be sent to you in the mail and need to be completed on **<INSERT TRAVEL DATES>**. An Abt SRBI interviewer will call to collect your household's travel information over the phone the day after your assigned travel day or within a few days if we have trouble reaching you. If you prefer, you will be able to enter your household's travel information by logging on to a MI Travel Counts website. The travel diary package you receive will provide instructions.

If you have any questions, a toll-free number will be provided with your diary package, along with information to verify the project's legitimacy.

Your household's participation in this project is greatly appreciated. Thank you for your time.

(ONLY PROVIDE IF REQUESTED: 1-800-631-0702)
(ONLY PROVIDE IF REQUESTED: www.michigan.gov/mitravelcounts)

PROGRAMMER NOTES:

REGION=1A (SEMCOG):
AREA_CTY=47 (LIVINGSTON)
AREA_CTY=50 (MACOMB)
AREA_CTY=58 (MONROE)
AREA_CTY=63 (OAKLAND)
AREA_CTY=74 (SAINT CLAIR)
AREA_CTY=81 (WASHTENAW)
AREA_CTY=82 (WAYNE) AND AREA_CTW=996 (OTHER)
AREA_CTW=26 (DETROIT) AND AREA_LIM=2 (OUTSIDE)

REGION=1B (DETROIT):
AREA_CTW=26 (DETROIT) AND AREA_LIM=1 (INSIDE)

REGION=2 (SMALL CITIES):

AREA_CTW=2 (ADRIAN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=3 (ALBION) AND AREA_LIM=1 (INSIDE)
AREA_CTW=5 (ALMA) AND AREA_LIM=1 (INSIDE)
AREA_CTW=6 (ALPENA) AND AREA_LIM=1 (INSIDE)
AREA_CTW=9 (BELDING) AND AREA_LIM=1 (INSIDE)
AREA_CTW=13 (BIG RAPIDS) AND AREA_LIM=1 (INSIDE)
AREA_CTW=20 (CADILLAC) AND AREA_LIM=1 (INSIDE)
AREA_CTW=22 (CHEBOYGAN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=23 (COLDWATER) AND AREA_LIM=1 (INSIDE)
AREA_CTW=27 (DOWAGIAC) AND AREA_LIM=1 (INSIDE)
AREA_CTW=33 (ESCANABA) AND AREA_LIM=1 (INSIDE)
AREA_CTW=40 (GLADSTONE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=44 (GREENVILLE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=45 (HASTINGS) AND AREA_LIM=1 (INSIDE)
AREA_CTW=46 (HILLSDALE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=50 (HOUGHTON) AND AREA_LIM=1 (INSIDE)
AREA_CTW=53 (IONIA) AND AREA_LIM=1 (INSIDE)
AREA_CTW=54 (IRON MOUNTAIN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=55 (IRONWOOD) AND AREA_LIM=1 (INSIDE)
AREA_CTW=56 (ISHPEMING) AND AREA_LIM=1 (INSIDE)
AREA_CTW=58 (KINGSFORD) AND AREA_LIM=1 (INSIDE)
AREA_CTW=62 (LAPEER) AND AREA_LIM=1 (INSIDE)
AREA_CTW=66 (LUDINGTON) AND AREA_LIM=1 (INSIDE)
AREA_CTW=67 (MANISTEE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=68 (MARQUETTE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=69 (MARSHALL) AND AREA_LIM=1 (INSIDE)
AREA_CTW=70 (MENOMINEE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=73 (MOUNT PLEASANT) AND AREA_LIM=1 (INSIDE)
AREA_CTW=86 (OWOSSO) AND AREA_LIM=1 (INSIDE)
AREA_CTW=90 (PETOSKEY) AND AREA_LIM=1 (INSIDE)
AREA_CTW=97 (SAULT SAINTE MARIE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=100 (SOUTH HAVEN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=105 (STURGIS) AND AREA_LIM=1 (INSIDE)
AREA_CTW=108 (TECUMSEH) AND AREA_LIM=1 (INSIDE)
AREA_CTW=109 (THREE RIVERS) AND AREA_LIM=1 (INSIDE)

REGION=3 (UPPER PENINSULA RURAL):

AREA_CTY=2 (ALGER)
AREA_CTY=7 (BARAGA)
AREA_CTY=36 (IRON)
AREA_CTY=42 (KEWEENAW)
AREA_CTY=48 (LUCE)
AREA_CTY=49 (MACKINAC)
AREA_CTY=66 (ONTONAGON)
AREA_CTY=77 (SCHOOLCRAFT)
AREA_CTW=33 (ESCANABA) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=40 (GLADSTONE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=50 (HOUGHTON) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=54 (IRON MOUNTAIN) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=55 (IRONWOOD) AND AREA_LIM=2 (OUTSIDE)

AREA_CTW=56 (ISHPEMING) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=58 (KINGSFORD) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=68 (MARQUETTE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=70 (MENOMINEE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=97 (SAULT SAINTE MARIE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTY=17 (CHIPPEWA) AND AREA_CTW=996 (OTHER)
AREA_CTY=21 (DELTA) AND AREA_CTW=996 (OTHER)
AREA_CTY=22 (DICKINSON) AND AREA_CTW=996 (OTHER)
AREA_CTY=27 (GOGEBIC) AND AREA_CTW=996 (OTHER)
AREA_CTY=31 (HOUGHTON) AND AREA_CTW=996 (OTHER)
AREA_CTY=52 (MARQUETTE) AND AREA_CTW=996 (OTHER)
AREA_CTY=55 (MENOMINEE) AND AREA_CTW=996 (OTHER)

REGION=4 (NORTHERN LOWER PENINSULA):

AREA_CTY=1 (ALCONA)
AREA_CTY=5 (ANTRIM)
AREA_CTY=6 (ARENAC)
AREA_CTY=10 (BENZIE)
AREA_CTY=15 (CHARLEVOIX)
AREA_CTY=18 (CLARE)
AREA_CTY=20 (CRAWFORD)
AREA_CTY=26 (GLADWIN)
AREA_CTY=35 (IOSCO)
AREA_CTY=40 (KALKASKA)
AREA_CTY=43 (LAKE)
AREA_CTY=45 (LEELANAU)
AREA_CTY=57 (MISSAUKEE)
AREA_CTY=60 (MONTMORENCY)
AREA_CTY=65 (OGEMAW)
AREA_CTY=67 (OSCEOLA)
AREA_CTY=68 (OSCODA)
AREA_CTY=69 (OTSEGO)
AREA_CTY=71 (PRESQUE ISLE)
AREA_CTY=72 (ROSCOMMON)
AREA_CTW=6 (ALPENA) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=20 (CADILLAC) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=22 (CHEBOYGAN) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=66 (LUDINGTON) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=67 (MANISTEE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=90 (PETOSKEY) AND AREA_LIM=2 (OUTSIDE)
AREA_CTY=4 (ALPENA) AND AREA_CTW=996 (OTHER)
AREA_CTY=16 (CHEYBOYGAN) AND AREA_CTW=996 (OTHER)
AREA_CTY=24 (EMMET) AND AREA_CTW=996 (OTHER)
AREA_CTY=51 (MANISTEE) AND AREA_CTW=996 (OTHER)
AREA_CTY=53 (MASON) AND AREA_CTW=996 (OTHER)
AREA_CTY=83 (WEXFORD) AND AREA_CTW=996 (OTHER)
AREA_CTY=28 (GRAND TRAVERSE) AND AREA_CTW=996 (OTHER)

REGION=5 (SOUTHERN LOWER PENINSULA):

AREA_CTY=32 (HURON)
AREA_CTY=62 (NEWAYGO)
AREA_CTY=64 (OCEANA)
AREA_CTY=76 (SANILAC)
AREA_CTY=79 (TUSCOLA)
AREA_CTW=2 (ADRIAN) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=5 (ALMA) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=9 (BELDING) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=13 (BIG RAPIDS) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=23 (COLDWATER) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=34 (FERRYSBURG) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=41 (GRAND HAVEN) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=44 (GREENVILLE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=45 (HASTINGS) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=46 (HILLSDALE) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=53 (IONIA) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=62 (LAPEER) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=73 (MOUNT PLEASANT) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=86 (OWOSSO) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=100 (SOUTH HAVEN) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=105 (STURGIS) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=108 (TECUMSEH) AND AREA_LIM=2 (OUTSIDE)
AREA_CTW=109 (THREE RIVERS) AND AREA_LIM=2 (OUTSIDE)
AREA_CTY=8 (BARRY) AND AREA_CTW=996 (OTHER)
AREA_CTY=12 (BRANCH) AND AREA_CTW=996 (OTHER)
AREA_CTY=29 (GRATIOT) AND AREA_CTW=996 (OTHER)
AREA_CTY=30 (HILLSDALE) AND AREA_CTW=996 (OTHER)
AREA_CTY=34 (IONIA) AND AREA_CTW=996 (OTHER)
AREA_CTY=37 (ISABELLA) AND AREA_CTW=996 (OTHER)
AREA_CTY=44 (LAPEER) AND AREA_CTW=996 (OTHER)
AREA_CTY=46 (LENAWEE) AND AREA_CTW=996 (OTHER)
AREA_CTY=54 (MECOSTA) AND AREA_CTW=996 (OTHER)
AREA_CTY=59 (MONTCALM) AND AREA_CTW=996 (OTHER)
AREA_CTY=75 (SAINT JOSEPH) AND AREA_CTW=996 (OTHER)
AREA_CTY=78 (SHIAWASSEE) AND AREA_CTW=996 (OTHER)
AREA_CTY=80 (VAN BUREN) AND AREA_CTW=996 (OTHER)
AREA_CTY=3 (ALLEGAN) AND AREA_CTW=996 (OTHER)
AREA_CTY=11 (BERRIEN) AND AREA_CTW=996 (OTHER)
AREA_CTY=13 (CALHOUN) AND AREA_CTW=996 (OTHER)
AREA_CTY=14 (CASS) AND AREA_CTW=996 (OTHER)
AREA_CTY=61 (MUSKEGON) AND AREA_CTW=996 (OTHER)
AREA_CTY=70 (OTTAWA) AND AREA_CTW=996 (OTHER)

REGION=6 (TMAs):

AREA_CTY=19 (CLINTON)
AREA_CTY=23 (EATON)
AREA_CTY=25 (GENESEE)
AREA_CTY=33 (INGHAM)
AREA_CTY=41 (KENT)
AREA_CTW=52 (HUDSONVILLE) AND AREA_LIM=1 (INSIDE)

AREA_CTW=4 (ALLENDALE)
AREA_CTW=39 (GEORGETOWN)
AREA_CTW=57 (JAMESTOWN)
AREA_CTW=107 (TALLMADGE)

REGION=7 (SMALL URBAN MODELED AREAS):

AREA_CTY=9 (BAY)
AREA_CTY=38 (JACKSON)
AREA_CTY=39 (KALAMAZOO)
AREA_CTY=56 (MIDLAND)
AREA_CTY=73 (SAGINAW)
AREA_CTW=7 (BATTLE CREEK) AND AREA_LIM=1 (INSIDE)
AREA_CTW=11 (BENTON HARBOR) AND AREA_LIM=1 (INSIDE)
AREA_CTW=17 (BRIDGEMAN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=18 (BUCHANAN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=29 (EDWARDSBURG) AND AREA_LIM=1 (INSIDE)
AREA_CTW=34 (FERRYSBURG) AND AREA_LIM=1 (INSIDE)
AREA_CTW=41 (GRAND HAVEN) AND AREA_LIM=1 (INSIDE)
AREA_CTW=47 (HOLLAND) AND AREA_LIM=1 (INSIDE)
AREA_CTW=74 (MUSKEGON) AND AREA_LIM=1 (INSIDE)
AREA_CTW=76 (MUSKEGON HEIGHTS) AND AREA_LIM=1 (INSIDE)
AREA_CTW=78 (NILES) AND AREA_LIM=1 (INSIDE)
AREA_CTW=80 (NORTH MUSKEGON) AND AREA_LIM=1 (INSIDE)
AREA_CTW=81 (NORTON SHORES) AND AREA_LIM=1 (INSIDE)
AREA_CTW=93 (ROOSEVELT PARK) AND AREA_LIM=1 (INSIDE)
AREA_CTW=95 (SAINT JOSEPH) AND AREA_LIM=1 (INSIDE)
AREA_CTW=98 (SHOREHAM) AND AREA_LIM=1 (INSIDE)
AREA_CTW=101 (SPRING LAKE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=103 (SPRINGFIELD) AND AREA_LIM=1 (INSIDE)
AREA_CTW=104 (STEVENSVILLE) AND AREA_LIM=1 (INSIDE)
AREA_CTW=110 (TRAVERSE CITY) AND AREA_LIM=1 (INSIDE)
AREA_CTW=113 (WHITEHALL) AND AREA_LIM=1 (INSIDE)
AREA_CTW=115 (ZEELAND) AND AREA_LIM=1 (INSIDE)
AREA_CTW=1 (ACME)
AREA_CTW=8 (BEDFORD)
AREA_CTW=10 (BENTON)
AREA_CTW=12 (BERTRAND)
AREA_CTW=14 (BLAIR)
AREA_CTW=15 (BLENDON)
AREA_CTW=16 (BLUE LAKE)
AREA_CTW=19 (BUCHANAN)
AREA_CTW=21 (CEDAR CREEK)
AREA_CTW=24 (CROCKERY)
AREA_CTW=25 (DALTON)
AREA_CTW=28 (EAST BAY)
AREA_CTW=30 (EGELSTON)
AREA_CTW=31 (ELMWOOD)
AREA_CTW=32 (EMMETT)
AREA_CTW=35 (FILLMORE)
AREA_CTW=36 (FRUITLAND)
AREA_CTW=37 (FRUITPORT)

AREA_CTW=38 (GARFIELD)
AREA_CTW=42 (GRAND HAVEN)
AREA_CTW=43 (GREEN LAKE)
AREA_CTW=48 (HOLLAND)
AREA_CTW=49 (HOLTON)
AREA_CTW=51 (HOWARD)
AREA_CTW=59 (LAKE)
AREA_CTW=60 (LAKETON)
AREA_CTW=61 (LAKETOWN)
AREA_CTW=63 (LEROY)
AREA_CTW=64 (LINCOLN)
AREA_CTW=65 (LONG LAKE)
AREA_CTW=71 (MILTON)
AREA_CTW=72 (MONTAGUE)
AREA_CTW=75 (MUSKEGON)
AREA_CTW=77 (NEWTON)
AREA_CTW=79 (NILES)
AREA_CTW=82 (NORTON SHORES)
AREA_CTW=83 (OLIVE)
AREA_CTW=84 (ONTWA)
AREA_CTW=85 (OVERISEL)
AREA_CTW=87 (PARK)
AREA_CTW=88 (PENINSULA)
AREA_CTW=89 (PENNFIELD)
AREA_CTW=91 (PORT SHELDON)
AREA_CTW=92 (ROBINSON)
AREA_CTW=94 (ROYALTON)
AREA_CTW=96 (SAINT JOSEPH)
AREA_CTW=99 (SODUS)
AREA_CTW=102 (SPRING LAKE)
AREA_CTW=106 (SULLIVAN)
AREA_CTW=111 (WHITE RIVER)
AREA_CTW=112 (WHITE WATER)
AREA_CTW=114 (WHITEHALL)
AREA_CTW=116 (ZEELAND)

Appendix G: Retrieval Script

Michigan Department of Transportation
"MI Travel Counts"
Retrieval Interview
Job 4755

NOT IN CATI:

Proxy Rules: A proxy interview is REQUIRED for persons under 14 years old. Persons 14 or 15 years of age SHOULD be proxy interviews, unless an adult requests we talk directly to the individual. Persons 16 years of age and older should NOT be interviewed by proxy, unless the interview will be lost if a proxy is not allowed sooner.

HH_LIST. 1. PERSON_1: NAME_1, AGE_1, STATE_1
 2. PERSON_2: NAME_2, AGE_2, STATE_2
 #. PERSON_#: NAME_#, AGE_#, STATE_# (Allow up to 8 respondents per household)

PROGRAMMER NOTE: Pre-set the STATE field for each household member to 0.
STATE_# field will equal 0 for each household member if the member has not completed any part of the interview; equal 1 if member completed interview; will equal 2 if member completed part of the interview; will equal 3 if the household is unwilling to participate; will equal 4 if the household member completed by mail; and will equal 5 if the household member completed by internet.

When listing HH_List on screen Person_1 should be punch 1, Person_2 should be punch 2, etc.

STATE_# will equal 1 if LD_INT<>1 OR MORE_#=2, 98, OR 99 for each household member.

- Household is considered complete if STATE_#=1 or 6 for all household members and the household should no longer show up in the CATI. Dispo household as Complete.
- If STATE_#=2 OR 0 for any household members, set-up call back. Dispo as "Partial Complete Callback."
- If STATE_#=3. Household is a hard refusal (terminate).
- If STATE_#=4, we will need to be able to pull the interview up on the CATI screen and complete using the household members travel diary. (Dispo as "Korean language callback." See CALLB2 for more detail.)
- If STATE_#=5, respondent completed the survey online. Dispo as Claimed Online Complete.

CATI:

FIRST. (INTERVIEWER: Is this the first person in the household that you are interviewing during this call?)

(INT: Please select YES if this is the beginning of the interview. Please select NO if you are asking about the next person in the household.)

- 01 Yes **(GO TO INTROA)**
02 No **(GO TO NEXT)**
03 Entering information from a MAILED in diary **(GO TO DIARY_#)**

(ASK IF AGE_#>15 AND STATE_#=0 or 2 AND FIRST=1)

INTROA. Hello, may I speak with <INSERT FIRST NAME ON HH_LIST AGE_#>15 AND STATE_#<>1 or 3>?"

- 01 Yes, speaking to the person **(GO TO INT_CALL)**
02 No, not available at this time **(GO TO INT_CALL)**
03 Person no longer in household **(GO TO INT_CALL)**

(PROGRAMMER: If INTROA=3, make STATE=6 for household member selected.)

(ASK IF FIRST=1)

INT_CALL. Hello, my name is <INSERT INTERVIEWER'S FIRST NAME> and I'm calling on behalf of the Michigan Department of Transportation. < INSERT 'Your household recently agreed' if NAME_1 on phone. INSERT '<INSERT NAME_1> confirmed that your household was willing' if NAME_1 is not on phone> to participate in "MI Travel Counts", an official MDOT transportation study to better understand the travel characteristics of Michigan residents. I'm calling now to collect your household's travel information from <INSERT TRAVEL DAY>.

<INSERT "May I please speak to someone who lives in this household and is 18 years of age or older?" IF INTROA=2>

(INTERVIEWER: Continue with household member at least 18 year of age.)

- 01 Continue with interview
- 02 REFUSED – No longer willing to participate (GO TO REFUSE)
- 03 Mailed Diaries (GO TO ITNET)
- 04 Information collected via INTERNET (GO TO ITNET)
- 05 Person no longer in household (GO TO FIRST)
- 98 Not a good time (SCHEDULE CALLBACK)

(PROGRAMMER: If INTCALL=5, make STATE=6 for household member selected.)

(ASK IF FIRST=2)

NEXT_#. Now let's talk about <INSERT NAME OF FIRST PERSON ON HH_LIST IF STATE_#=0 OR 2>.

(INTERVIEWER: Conduct interview with next available person.)

- 01 Continue with interview (GO TO DIARY_#)
- 02 REFUSED – No longer willing to participate (GO TO REFUSE)
- 03 Mailed Diaries (GO TO ITNET)
- 04 Information collected via INTERNET (GO TO ITNET)
- 05 Person no longer in household (GO TO FIRST)
- 98 Not a good time (SCHEDULE CALLBACK)

(PROGRAMMER: If NEXT_#=5, make STATE=6 for household member selected.)

(ASK IF INTROA=1 or 2 OR NEXT_#=1 OR FIRST=3)

DIARY_#. Is <If INTROA=1 insert: 'your', Else INSERT NAME's> travel diary complete? Yes or no?

(PROGRAMMER: INSERT FIRST NAME ON HH_LIST IF STATE_#=0 or 2)

(PROGRAMMER: IF FIRST=3 INSERT FIRST NAME ON HH_LIST IF STATE_#=0,2, OR 4)

	Yes	No	Did Not Receive Materials	Don't Know	Refused
1. PERSON_1 (SHOW NAME_1, AGE_1, STATE_1)	1	2	3	4	5
2. PERSON_2 (SHOW NAME_2, AGE_2, STATE_2)	1	2	3	4	5
3. PERSON_3 (SHOW NAME_3, AGE_3, STATE_3)	1	2	3	4	5
4. CONTINUE WITH PERSON_4 – PERSON_8	1	2	3	4	5

(ASK IF DIARY_#=5 AND NAME_1)

REFCON1 Could you please have each household member fill out the travel diary online? The website address and your household password are provided on the front cover of your travel diary.

- 01 Yes (GO TO RCEND)
- 02 No (GO TO REFCON2)
- 98 Don't know (GO TO RCEND)
- 99 Refused (GO TO RCEND)

(ASK IF DIARY_#=5 AND NAME_1 AND REFCON1=2)

REFCON2 Are you able to mail back your households travel diaries in the postage paid envelope provided?

- 01 Yes (GO TO RCEND)
- 02 No (GO TO REFCON3)
- 98 Don't know (GO TO RCEND)
- 99 Refused (GO TO RCEND)

(ASK IF DIARY_#=5 AND NAME_1 AND REFCON2=2)

REFCON3 Would you like us to assign a different travel date within the next few weeks?

- 01 Yes (GO TO RCEND – NEED UNIQUE DISPO CODE)
- 02 No (GO TO RCEND)
- 98 Don't know (GO TO RCEND)
- 99 Refused (GO TO RCEND)

(ASK IF DIARY_#=5)

RCEND Thank you very much for your time. (TERMINATE)

(PROGRAMMER: If REFCON1=1 make STATE=5 for all household members.)
(PROGRAMMER: If REFCON2=1 make STATE=4 for all household members.)
(PROGRAMMER: If REFCON1=98 or 99 or REFCON2=98 or 99 or REFCON3=1, 2, 98, or 99 make STATE=3 for all household members.)

(SKIP IF INTROA=1 OR NEXT_#<>1 or DIARY_#=5 or FIRST=3 or AGE_#<16)

INFOA_# We would prefer to talk to (NAME) directly. Is (NAME) available to give me his/her travel information?

- 01 Yes (GO TO PROXY)
- 02 No (GO TO INFOB_#)

(SKIP IF INTROA=1 or INFOA_#=1 or FIRST=3)

INFOB_# <If DIARY_#=2, 3, or 4 INSERT: 'Let's continue with the interview anyway. Information on <INSERT NAME>'s travel is important to us.' If DIARY_#=1 INSERT: 'We need to collect travel information on <INSERT NAME>.'> Are you willing to provide travel information for him/her?

- 01 Yes (GO TO DHAVE_#)

02 No **(GO TO DIARY_# OR CALLB IF LAST PERSON)**

(ASK IF DIARY_#=1 AND INFOB_#=1)

DHAVE_#. Do you have (your/NAME's) completed diary with you now?
(IF NEEDED: "I can wait while you get it.")

01 Yes **(GO TO PROXY)**
02 No **(GO TO PROXY)**

PROGRAMMER NOTE:
REPEAT DIARY_# TO DHAVE_# UNTIL NO MORE NAMES LEFT ON HH_LIST

(ASK IF INFOB_#=2 FOR THE LAST PERSON ON HH_LIST)

CALLB. (INTERVIEWER: Schedule call back for household members that did not complete the survey.)

<INSERT HH_LIST NAMES IF STATE_#=0 or 2>

97 None available at this time **(SCHEDULE CALLBACK – ALLOW CHINESE LANGUAGE RIGHTS)**
98 Don't know **(SCHEDULE CALLBACK – ALLOW CHINESE LANGUAGE RIGHTS)**
99 Refused **(SCHEDULE CALLBACK – ALLOW CHINESE LANGUAGE RIGHTS)**

(ASK ALL)

(IF FIRST=3, CODE PROXY=05 AND GO TO START.)

PROXY. **<IF INFOA_#=1, INSERT 'Hello, I'm calling to collect your travel diary information from <INSERT TRAVEL DAY>**
(INTERVIEWER: Is the person on the phone sharing their own diary or someone else's?)

01 Sharing their own diary/travel information
(ONLY SHOW IF FIRST<>3) (GO TO INSTRUCTIONS BEFORE C_PPL)
02 PROXY interview/Someone else's diary
(ONLY SHOW IF FIRST<>3) (GO TO PROXYNAM)
03 They told you the diary(ies) were mailed
(ONLY SHOW IF FIRST<>3) (GO TO NEXT_#)
04 Information was put in via INTERNET
(ONLY SHOW IF FIRST<>3) (GO TO NEXT_#)
05 Entering information from a MAILED in diary
(do not show) (GO TO START)

(ASK IF DIARY_#>1 AND FIRST<>3)

PINTRO. Please try to recall **<your/NAME's>** travel information as best you can."

(ASK IF INT_CALL=3 or 4)

ITNET. Did everyone in your household complete the survey online or mail back their diaries?

01 Yes **(GO TO MAILD)**
02 No

(ASK IF NEXT_#=3 or 4 OR ITNET=2 AND INT_CALL=3 or 4)

MAILB. Which household members mailed back their diaries? (Read List) (Multiple Response)

<INSERT ALL HH_LIST NAMES IF STATE_#=0 or 2> (GO TO CITNET)

(PROGRAMMER: ALLOW INTERVIEWERS TO SELECT MULTIPLE HOUSEHOLD MEMBERS. MAKE STATE=4 IF SELECTED)

97	None of the above	(GO TO CITNET)
98	Don't know	(GO TO CITNET)
99	Refused	(GO TO REFUSE)

(PROGRAMMER: If MAILB=98 OR 99, make STATE=3 for all household members.)

(ASK IF NEXT_#=3 or 4 OR ITNET=2 AND INT_CALL=3 or 4)

CITNET. Which household members completed the survey online? (Read List) (Multiple Response)

<INSERT ALL HH_LIST NAMES IF STATE_#=0 or 2> (GO TO NEXT_#)

(PROGRAMMER: ALLOW INTERVIEWERS TO SELECT MULTIPLE HOUSEHOLD MEMBERS. MAKE STATE=5 IF SELECTED)

97	None of the above	(GO TO NEXT_#)
98	Don't know	(GO TO NEXT_#)
99	Refused	(GO TO REFUSE)

(PROGRAMMER: If CITNET= 99, make STATE=3 for all household members.)

(ASK IF ITNET=1 AND OR INT_CALL=3 or 4)

MAILD. Thank you very much. We will check our system to confirm the information.

(PROGRAMMER: Make STATE=4 for all household members if INT_CALL=3. Make STATE=5 for all household members if INT_CALL=4))

(ASK IF STATE=4 FOR THE LAST PERSON ON HH_LIST)

CALLB2. (INTERVIEWER: Schedule call back for household members that mailed back diaries.)

<INSERT HH_LIST NAMES IF STATE_#=4>

97	None available at this time	(SCHEDULE CALLBACK – ALLOW KOREAN LANGUAGE RIGHTS)
98	Don't know	(SCHEDULE CALLBACK – ALLOW KOREAN LANGUAGE RIGHTS)
99	Refused	(SCHEDULE CALLBACK – ALLOW KOREAN LANGUAGE RIGHTS)

(ASK IF PROXY=2)

PROXYNAM. (INTERVIEWER: Who is providing the proxy information?)

<LIST HOUSEHOLD MEMBERS 16 YEARS OF AGE AND OLDER (OR DK/OR REFUSED AGE), NOT INCLUDING THE RESPONDENT>

(ASK IF FIRST PERSON/CONTACT (NAME_1) PERSON FROM RECRUIT)

C_PPL. Before recording the travel information, I need to confirm the number of people living in your household. In our first call to your household, you indicated **<INSERT HHNUMPPL FROM RECRUIT>** person(s) live(s) in your household. Is that correct?

- 01 Yes - Household size is correct
- 02 No - ADD a household member
- 03 No - REMOVE a household member

(ASK IF C_PPL=2)

ADD_HM. INCLUDING yourself, all other adults, and children of all ages, how many people live in your household?
(INTERVIEWER: Include roommates and housemates. Do NOT include children living away from home.)

(RECORD TOTAL NUMBER OF HOUSEHOLD MEMBERS)

__ __ (PROGRAMMER: Allow 1 to 15.)

(ASK IF C_PPL=3)

REM_HM. Which person(s) are not actually members of your household?

(INTERVIEWER: COMPLETE REMOVAL FORM FOR EACH HOUSEHOLD MEMBER!)

<LIST NAME_# FOR EACH HOUSEHOLD MEMBER>

(ASK IF FIRST PERSON/CONTACT (NAME_1) PERSON FROM RECRUIT)

C_VEH. I also need to confirm the number of vehicles available to your household. In our first call to your household, you indicated, **<INSERT HHNUMVEH FROM RECRUIT>** vehicle(s) are/is available to your household for regular use. Is that correct?

- 01 Yes - Number of vehicles is correct
- 02 No - Change number of vehicles

(ASK IF C_VEH=2)

CORR_VH. How many working vehicles are available to your household?
(INTERVIEWER: Verify if more than 6 vehicles.)
(RECORD NUMBER OF HOUSEHOLD VEHICLES)

__ __ (PROGRAMMER: Allow 0 to 10 vehicles.)

- 97 Zero/None
- 98 Don't Know
- 99 Refused

(ASK IF CORR_VH=1)

CORRSB_A. Is this vehicle provided or subsidized by a household member's employer?

- 01 Yes
- 02 No

- 98 Don't Know

99 Refused

(ASK IF CORR_VH=2:10)

CORRSB_B. How many of these vehicles, if any, are provided or subsidized by a household member's employer?

___ (PROGRAMMER: Allow 0 to CORR_VH.)
(PROGRAMMER: IF CORRSB_A=1, CODE CORRSB_B=1,
ELSE CORRSB_B=0/97)

97 Zero/None
98 Don't Know
99 Refused

START. Now I need to ask a few questions about school and work. These questions were included in the person information section on page 1 of your travel diary.

PROGRAMMER NOTE: Throughout the interview, when (text1/text2) is used, text1 should be used if PROXY=1. Text2 should be used if PROXY>1.
--

S_STATUS. (Are you/Is NAME) currently attending any level of school?
(INTERVIEWER NOTE: From preschool/nursery school to college or post graduate work such as Master's degree, Doctorates, etc.)

01 Yes
02 No - NOT CURRENTLY A STUDENT

98 Don't Know
99 Refused

(ASK IF S_STATUS=1)

S_TYPE. What type of school (do you/does NAME) attend?
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

01 Pre-school/Nursery school
02 K-12 (elementary/grammar school, middle/junior high, high school)
03 Vocational/Technical
04 FULL-time college student (including graduate or professional school)
05 PART-time college student (including graduate or professional school)

98 Don't Know
99 Refused

(ASK IF S_STATUS=1)

S_NAME. What is the NAME of (your/NAME's) school?
(PROBE FOR FULL NAME OF SCHOOL)

(ASK IF S_STATUS=1)

S_ADDR. What is the ADDRESS of (your/NAME's) school?
(IF NEEDED, ASK FOR SPELLING.)
(IF DK/REF, DO NOT TYPE - HIT ENTER)
(RECORD STREET NUMBER AND NAME)

(ASK IF S_STATUS=1)

S_CITY. City?
(RECORD CITY NUMBER FROM LIST OF MICHIGAN CITIES)

9996 Other (Specify _____)

9998 Don't Know

9999 Refused

(ASK IF S_STATUS=1)

S_STATE. State?
(DO NOT READ LIST)

(INTERVIEWER NOTE: MICHIGAN IS CODE 23)

INSERT CODE LIST FROM QUESTION FSTAT_#

98 Don't Know

99 Refused

(ASK IF S_STATUS=1)

S_ZIP. Zip Code?

99998 Don't Know

99999 Refused

(ASK IF S_STATUS=1)

S_XSTS. What are the nearest cross streets?
(RECORD CROSS STREETS)

(ASK IF WRKR_#=1:2)

W_CONF. In our first call to your household, you indicated .that (you are/NAME is) currently employed. Is that correct?

01 Yes - employed

02 No - NOT employed

(ASK IF W_CONF=2)

CNOWK. (Are you/Is NAME) looking for PAID work?

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF WRKR_#=3:4)

NW_CONF. In our first call to your household, you indicated (you are/NAME is) NOT currently employed in paid work. Is that correct?

- 01 Yes - NOT employed
- 02 No - employed

(ASK IF NW_CONF=2)

CWRKR_1. (Are you/Is NAME) a...?
(READ LIST)

- 01 Paid FULL-time worker
- 02 Paid PART-time worker

- 98 Don't Know
- 99 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_NAME. Michigan's transportation community is interested in where people work because travel to work often affects other daily travel. What is the name of (your/NAME's) employer?
(INTERVIEWER: If respondent has more than one job, the following questions refer to the primary job – where the respondent spends the most hours.)
(RECORD FULL COMPANY NAME)

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_TYPE. What type of business is that?
(RECORD TYPE OF COMPANY.)

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_ADDR. What is the street address of (your/NAME's) workplace?
(INTERVIEWER NOTE: If respondent works both at home and at work, enter "1" and then enter the work address.)
(DO NOT READ LIST)

- 01 Workplace
- 02 Works only at home
- 03 No fixed workplace

(ASK IF W1_ADDR=1)

W1_STR. (RECORD WORKPLACE STREET ADDRESS)

(INTERVIEWER NOTE: Do NOT enter a Post Office Box!)
(IF NEEDED: "We are not going to contact the employer.")
(IF DK/REF, DO NOT TYPE – HIT ENTER)
(RECORD STREET NUMBER AND STREET NAME)

(ASK IF W1_ADDR=1)

W1_CITY. City?
(RECORD CITY NUMBER FROM LIST OF MICHIGAN CITIES)

9996 Other (Specify _____)

9998 Don't Know

9999 Refused

(ASK IF W1_ADDR=1)

W1_STATE. State?
(DO NOT READ LIST)

(INTERVIEWER NOTE: MICHIGAN IS CODE 23)

INSERT CODE LIST FROM QUESTION FSTAT_#

98 Don't Know

99 Refused

(ASK IF W1_ADDR=1)

W1_ZIP. Zip Code?

99998 Don't Know

99999 Refused

(ASK IF W1_ADDR=1)

W1_XSTS. What are the nearest cross streets?
(RECORD CROSS STREETS)

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_TIMES. Does (your/NAME's) job involve ...?

W1_EVES. A. Evenings
W1_ONITE. B. Overnight shifts

01 Yes

02 No

- 98 Don't Know
- 99 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_HRS. On average, how many hours per week (do you/does NAME) work at this job?

____ (PROGRAMMER: Allow 1 to 120.)

- 998 Don't Know
- 999 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_FLEX. Which of the following statements best describes (your/NAME's) work schedule?

- 01 "I have NO FLEXIBILITY in my work schedule."
- 02 "I have SOME FLEXIBILITY in my work schedule."
- 03 "I'm PRETTY MUCH FREE to adjust my schedule as I like."

- 98 Don't Know
- 99 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_COMP. Does (your/NAME's) employer offer compressed work week options?
(IF NEEDED: "A compressed work week is working 40 hours in less than 5 days.")

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W1_IND. What is (your/NAME's) employer's industry?
(IF NEEDED: By industry, we mean the employer's principal business or activity.)
(DO NOT READ LIST)

- 001 Agriculture, Forestry, Fishing and Hunting
- 002 Mining
- 003 Utilities
- 004 Construction
- 005 Manufacturing
- 006 Wholesale Trade
- 007 Retail Trade
- 008 Transportation and Warehousing
- 009 Information
- 010 Finance and Insurance
- 011 Real Estate, Rental/Leasing
- 012 Professional, Scientific and Technical Services
- 013 Management of Companies and Enterprises
- 014 Administrative and Support and Waste Management and Remediation Services
- 015 Educational Services
- 016 Health Care and Social Services

- 017 Arts, Entertainment, and Recreation
- 018 Accommodation and Food Services
- 019 Public Administration/Government
- 020 Other Services
- 021 Military
- 022 Automotive
- 023 Child Care/Daycare/Adult Foster Care
- 024 Maintenance Services
- 025 Lumber/Lumber Mill
- 026 Church
- 027 Marketing/Advertising
- 028 Charity/Charitable Organizations
- 029 Sel-Employed/Owns Business
- 030 Gaming/Gambling
- 031 Media/Publishing
- 196 Other (Specify _____)

- 198 Don't Know
- 199 Refused

(ASK IF W_CONF=1 OR CWRKR_#=1:2)

W_MJOBS. (Do you/Does NAME) have more than one job?

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF W_MJOBS=1)

W2_NAME. What is the name of (your/NAME's) SECONDARY employer?
(RECORD FULL COMPANY NAME)

(ASK IF W_MJOBS=1)

W2_TYPE. What type of business is that?
(RECORD TYPE OF COMPANY)

=====

(ASK IF W_MJOBS=1)

W2_ADDR. What is the street address of this workplace?
(INTERVIEWER NOTE: If respondent works both at home and at work, enter "1" and then enter the work address.)
(DO NOT READ LIST)

- 01 Workplace
- 02 Works only at home
- 03 No fixed workplace

(ASK IF W2_ADDR=1)

W2_STR. (RECORD WORKPLACE STREET ADDRESS)
(INTERVIEWER NOTE: Do NOT enter a Post Office Box!)
(IF NEEDED: "We are not going to contact the employer.")
(IF DK/REF, DO NOT TYPE – HIT ENTER)
(RECORD STREET NUMBER AND STREET NAME)

(ASK IF W2_ADDR=1)

W2_CITY. City?
(RECORD CITY NUMBER FROM LIST OF MICHIGAN CITIES)

- ____ _
- 9996 Other (Specify _____)
 - 9998 Don't Know
 - 9999 Refused

(ASK IF W2_ADDR=1)

W2_STATE. State?
(DO NOT READ LIST)

(INTERVIEWER NOTE: MICHIGAN IS CODE 23)

INSERT CODE LIST FROM QUESTION FSTAT_#

- 98 Don't Know
- 99 Refused

(ASK IF W2_ADDR=1)

W2_ZIP. Zip Code?

- ____ _
- 99998 Don't Know
 - 99999 Refused

(ASK IF W2_ADDR=1)

W2_XSTS. What are the nearest cross streets?
(RECORD CROSS STREETS)

(ASK IF W_MJOBS=1)

W2_TIMES. Does this job involve ...?

W2_EVES. A. Evenings
W2_ONITE. B. Overnight shifts

01 Yes
02 No

98 Don't Know
99 Refused

(ASK IF W_MJOBS=1)

W2_HRS. On average, how many hours per week (do you/does NAME) work at this job?

____ (PROGRAMMER: Allow 1 to 120.)

998 Don't Know
999 Refused

(ASK IF W_MJOBS=1)

W2_FLEX. Which of the following statements best describes (your/NAME's) work schedule?

01 "I have NO FLEXIBILITY in my work schedule."
02 "I have SOME FLEXIBILITY in my work schedule."
03 "I'm PRETTY MUCH FREE to adjust my schedule as I like."

98 Don't Know
99 Refused

(ASK IF W_MJOBS=1)

W2_COMP. Does (your/NAME's) employer offer compressed work week options?
(IF NEEDED: "A compressed work week is working 40 hours in less than 5 days.")

01 Yes
02 No

98 Don't Know
99 Refused

(ASK IF W_MJOBS=1)

W2_IND. What is (your/NAME's) employer's industry?
(IF NEEDED: By industry, we mean the employer's principal business or activity.)
(DO NOT READ LIST)

- 001 Agriculture, Forestry, Fishing and Hunting
- 002 Mining
- 003 Utilities
- 004 Construction
- 005 Manufacturing
- 006 Wholesale Trade
- 007 Retail Trade
- 008 Transportation and Warehousing
- 009 Information
- 010 Finance and Insurance
- 011 Real Estate, Rental/Leasing
- 012 Professional, Scientific and Technical Services
- 013 Management of Companies and Enterprises
- 014 Administrative and Support and Waste Management and Remediation Services
- 015 Educational Services
- 016 Health Care and Social Services
- 017 Arts, Entertainment, and Recreation
- 018 Accommodation and Food Services
- 019 Public Administration/Government
- 020 Other Services
- 021 Military
- 023 Child Care/Daycare/Adult Foster Care
- 024 Maintenance Services
- 025 Lumber/Lumber Mill
- 026 Church
- 027 Marketing/Advertising
- 028 Charity/Charitable Organizations
- 029 Self-Employed/Owns Business
- 030 Gaming/Gambling
- 031 Media/Publishing
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

START. At 3:00 am on <INSERT TRAVEL DAY>, (were you/was NAME) ...?
(READ LIST)

- 01 Traveling **(GO TO TRS_TYPE_#)**
- 02 At a location **(GO TO LOCATE_S)**

(ASK IF START=2)

LOCATE_S. Where (were you/was NAME) at 3:00 am?

(ASK AFTER LOC_ARR_#)

LOCATE_#. Where is this?
(DO NOT READ LIST)

- 01 Home
- 02 Primary workplace (SHOW IF W1_ADDR=1)

- 03 Secondary workplace (SHOW IF W2_ADDR=1)
- 04 School (SHOW IF S_STATUS=1)
- 05 Previously reported location (SHOW IF OTHER LOCATIONS COLLECTED)
- 06 New location
- 07 (SHOW PLACE, START TIME, AND END TIME OF THE **FIRST** TRIP ANOTHER HOUSEHOLD MEMBER TOOK WITH THE SUBJECT - IF START TIME IS AFTER THE PREVIOUS END TIME)
- 08 (SHOW PLACE, START TIME, AND END TIME OF THE **NEXT** TRIP ANOTHER HOUSEHOLD MEMBER TOOK WITH THE SUBJECT - IF START TIME IS AFTER THE PREVIOUS END TIME)
- 09 (SHOW PLACE, START TIME, AND END TIME OF THE **NTH** TRIP ANOTHER HOUSEHOLD MEMBER TOOK WITH THE SUBJECT - IF START TIME IS AFTER THE PREVIOUS END TIME)

PROGRAMMER: If another household member who has already been interviewed has made a reference to having been somewhere with the member currently being interviewed, that 'somewhere' and the start and end time of having been there needs to appear as a prompt (code 7, 8, etc., Up to 10 codes).

If NAME_1, check all WHOACC_# for other respondent loops (NAME_2, NAME_3, etc.) for references to NAME_1 in **ALL** WHOACC_#. If another respondent mentions NAME_1 in one of their WHOACC_#, refer to that respondent's corresponding answers to place [LOCATE_#] start time [3:00 if LOCATE_S, otherwise AHOUR_#, LOC_ARR#], and end time [D HOUR_#, LOC_TIME2_#]. Display on screen as "place' between 'start time' and 'end time'"

Similarly, if NAME_2, check all WHOACC_# for other respondent loops (NAME_1, NAME_3, etc.) for references to NAME_2 in **ALL** WHOACC_#. If another respondent mentions name_2 in one of their WHOACC_#, refer to that respondent's corresponding answers to place [LOCATE_#] start time [3:00 if LOCATE_s, otherwise AHOUR_#, LOC_ARR#], and end time [D HOUR_#, LOC_TIME2_#]. Display on screen as "place' between 'start time' and 'end time.'"

In similar fashion check for all other respondents as they are interviewed.

(ASK IF LOCATE_#=5)

LOC_PREV_#. Which location?
(IF NEEDED, READ LIST)

- 01 (SHOW LNAME AND CITY OF THE **FIRST** PREVIOUS LOCATION)
- 02 (SHOW LNAME AND CITY OF THE **NEXT** PREVIOUS LOCATION)
- 03 (SHOW LNAME AND CITY OF THE **NTH** PREVIOUS LOCATION)

(ASK IF LOCATE_#=6)

LOC_NAME_#. What is the NAME of this location?
(IF NEEDED, ASK FOR SPELLING.)
(RECORD NAME OF LOCATION)

(ASK IF LOCATE_#=6)

ADDR_#. What is the ADDRESS of this location?
(IF NEEDED, ASK FOR SPELLING.)
(INTERVIEWER NOTE: Do NOT enter a Post Office Box!)
(IF DK/REF, DO NOT TYPE – HIT ENTER)
(RECORD STREET NUMBER AND NAME)

(ASK IF LOCATE_#=6)

CITY_#. City?
(RECORD CITY NUMBER FROM LIST OF MICHIGAN CITIES)

9996 Other (Specify _____)

9998 Don't Know

9999 Refused

(ASK IF LOCATE_#=6)

STATE_#. State?
(DO NOT READ LIST)

(INTERVIEWER NOTE: MICHIGAN IS CODE 23)

INSERT CODE LIST FROM QUESTION FSTAT_#

98 Don't Know

99 Refused

(ASK IF LOCATE_#=6)

ZIP_#. Zip Code?

99998 Don't Know

99999 Refused

(ASK IF LOCATE_#=6)

TYPE_#. What type of place or business is that?
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

- 001 Residential
- 002 Automotive Dealer/Repair
- 003 Bank/Financial Institution
- 004 Barber/Beauty/Nail Salon
- 005 Bookstore/Library/Newsstand
- 006 Construction Site
- 007 Convenience/Drug Store
- 008 Daycare Facility/Preschool/Nursery School
- 009 Gas Station
- 010 Government/Municipal/City Offices
- 011 Grocery
- 012 Hotel/Motel/Other Lodging Facility
- 013 Indoor Recreation - gym/health club, skating rink
- 014 Industrial Site
- 015 Medical Facility/Hospital
- 016 Movie Theater/Theatre/Concert Venue/Sports Arena
- 017 Museum/Zoo/Historic Site
- 018 Office Building
- 019 Outdoor Recreation - Park, Athletic Field, Beach
- 020 Religious - Church/Synagogue/Houses of Worship
- 021 Restaurant/Fast Food/Bar & Grill
- 022 School - K-12
- 023 School - College/University/Technical/Vocational
- 024 Shopping Mall/Department Store
- 025 Transportation Terminal (airport, train, or bus)
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF TYPE_#=3, 4, 5, 7, 13, 16, 21, OR 24)

TYPEA_#. Is this place part of an enclosed shopping mall OR is it a standalone building or part of a strip mall?
(DO NOT READ LIST)

- 01 In an enclosed shopping mall
- 02 A standalone location or in a strip mall

- 98 Don't Know
- 99 Refused

(ASK IF LOCATE_#=6)

XSTS_#. What are the nearest cross streets?
(RECORD CROSS STREETS)

A1_#. What was (your/NAME's) PRIMARY activity at this location?
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

- 001 1 Home – Paid Work (SHOW IF LOCATE_#=1 AND (W_CONF=1 OR CWRKR_#=1:2))
- 002 2 Home – Other (sleeping, eating, chores, watching TV, etc.) (SHOW IF LOCATE_#=1)
- 003 3 Work
- 004 4 Attend Childcare
- 005 5 Attend School
- 006 6 Attend College
- 007 7 Eat Out
- 008 8 Personal Business
- 009 9 Everyday Shopping
- 010 10 Major Shopping
- 011 11 Religious/Community
- 012 12 Social
- 013 13 Recreation – Participate
- 014 14 Recreation – Watch
- 015 15 Accompany Another Person
- 016 16 Pick-Up/Drop-Off Passenger
- 017 17 Turn Around

A2_#. Did (you/NAME) do anything else at this location?
(MULTIPLE MENTION, UP TO THREE RESPONSES.)
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)
(INTERVIEWER NOTE: NO OTHER ACTIVITY IS CODE 97)
(PROGRAMMER NOTE: Do not show A1_# answer.)

- 001 1 Home – Paid Work (SHOW IF LOCATE_#=1 AND (W_CONF=1 OR CWRKR_#=1:2))
- 002 2 Home – Other (sleeping, eating, chores, watching TV, etc.) (SHOW IF LOCATE_#=1)
- 003 3 Work
- 004 4 Attend Childcare
- 005 5 Attend School
- 006 6 Attend College
- 007 7 Eat Out
- 008 8 Personal Business
- 009 9 Everyday Shopping
- 010 10 Major Shopping
- 011 11 Religious/Community
- 012 12 Social
- 013 13 Recreation – Participate
- 014 14 Recreation – Watch
- 015 15 Accompany Another Person
- 016 16 Pick-Up/Drop-Off Passenger
- 017 17 Turn Around
- 097 97 NO OTHER ACTIVITY

TRAV_#. Did (you/NAME) LEAVE this location?
(PROGRAMMER NOTE: IF TRAV_18=1, GO TO LONGTRIP.)

- 01 Yes

02 No

(ASK IF TRAV_1=2)

NOTRV_1. Does this mean that (you/NAME) stayed at the same place on <INSERT TRAVEL DAY>?

01 Yes
02 No

(ASK IF NOTRV_1=1)

WHYNO_S. Why did (you/NAME) stay at the same place?

001 Sick/ill
996 Other (Specify _____)

(IF A1_1=1 OR A2_1=1 GO TO WKHM_S, ELSE GO TO LD_INT)

(ASK IF NOTRV_1=1 AND (A1_1=1 OR A2_1=1))

WKHM_S. What time did you do paid work at home on your assigned travel day?
(EXAMPLE: 8 am to 1 pm)

(GO TO LD_INT)

(ASK IF TRAV_2+=2)

DDONE_#. Does this mean that (you/NAME) didn't go anywhere else during the 24-hour travel period?

01 Yes – NO MORE TRAVEL (**GO TO LONGTRIP**)
02 No – CONTINUE RECORDING TRAVEL

(ASK IF TRAV_#=1 OR NOTRV_1=2 OR DDONE_#=2)

DHOUR_#. What time did (you/NAME) LEAVE this location?
(SELECT HOUR OF DEPARTURE TIME)

001 3:00 AM
002 4:00 AM
003 5:00 AM
004 6:00 AM
005 7:00 AM
006 8:00 AM
007 9:00 AM
008 10:00 AM
009 11:00 AM
010 12:00 PM (NOON)
011 1:00 PM
...
020 10:00 PM
021 11:00 PM
022 12:00 AM (MIDNIGHT)

023 1:00 AM
024 2:00 AM

(ASK IF TRAV_#=1 OR NOTRV_1=2 OR DDONE_#=2)
LOC_TIME2_#. (SELECT MINUTE OF DEPARTURE TIME)

001 #:01
002 #:02
003 #:03
004 #:04
005 #:05
006 #:06
007 #:07
008 #:08
009 #:09
010 #:10
...
053 #:53
054 #:54
055 #:55
056 #:56
057 #:57
058 #:58
059 #:59
060 #:00

PROGRAMMER NOTE:
DEPARTURE TIME MUST BE LATER THAN PREVIOUS ARRIVAL TIME.

TRS_TYPE_#. What type of transportation did (you/NAME) use to go to the next location?
Anything else?
(MULTIPLE MENTION, UP TO THREE RESPONSES.)
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

001 Car, van, truck
002 Motorcycle/Moped
003 Bicycle
004 Walk
005 School Bus
006 Taxi/Shuttle
007 Dial-A-Ride
008 Train
009 Public Bus
010 Private Bus
011 Boat/Ferry Boat/Kayak
012 Skateboard/Scooter
013 Airplane
014 Tractor
015 Golf Cart
016 Ambulance
017 ATV
018 Funeral Home Limousine
019 Rollerblades/Rollerskates
020 Baby Stroller/Stroller

- 021 Wheel Chair/Power Chair
- 022 Snowmobile
- 996 Other (Specify _____)

(ASK IF TRS_TYPE_#=7)

DAR_#. Which DIAL-A-RIDE provider did (you/NAME) ride?
(MULTIPLE MENTION, UP TO THREE RESPONSES.)
(RECORD NUMBER FOR BUS PROVIDER FROM TRANSIT LIST)
(RECORD 996 FOR OTHER SPECIFY)
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF TRS_TYPE_#=9)

BUS_#. Which BUS provider did (you/NAME) ride?
(MULTIPLE MENTION, UP TO THREE RESPONSES.)
(RECORD NUMBER FOR BUS PROVIDER FROM TRANSIT LIST)
(RECORD 996 FOR OTHER SPECIFY)
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF TRS_TYPE_#=6)

PAY6_#. How much, in total, did (you/NAME) pay for the TAXI or SHUTTLE?
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)

- 98 Don't Know
- 99 Refused

(ASK IF PAY6_#=2)

PAY6A_#. (RECORD TAXI/SHUTTLE COST - DOLLARS)

_____ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PAY6_#=2)

PAY6B_#. (RECORD TAXI/SHUTTLE COST - CENTS)

_____ (PROGRAMMER: Allow 0 to 99.)

(ASK IF TRS_TYPE_#=7)

PAY7_#. How much, in total, did (you/NAME) pay for the DIAL-A-RIDE service, or was a transit pass used?
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)
- 03 Used transit pass

- 98 Don't Know
- 99 Refused

(ASK IF PAY7_#=2)

PAY7A_#. (RECORD DIAL-A-RIDE COST - DOLLARS)

____ _ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PAY7_#=2)

PAY7B_#. (RECORD DIAL-A-RIDE COST - CENTS)

____ _ (PROGRAMMER: Allow 0 to 99.)

(ASK IF TRS_TYPE_#=8)

PAY8_#. How much, in total, did (you/NAME) pay for the TRAIN?
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)

- 98 Don't Know
- 99 Refused

(ASK IF PAY8_#=2)

PAY8A_#. (RECORD TRAIN COST - DOLLARS)

____ _ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PAY8_#=2)

PAY8B_#. (RECORD TRAIN COST - CENTS)

____ _ (PROGRAMMER: Allow 0 to 99.)

(ASK IF TRS_TYPE_#=9)

PAY9_#. How much, in total, did (you/NAME) pay for the BUS, or was a bus or transit pass used?
(DO NOT READ LIST)

- 01 NOTHING
- 02 Amount (to be recorded in next question)
- 03 Used bus or transit pass

- 98 Don't Know
- 99 Refused

(ASK IF PAY9_#=2)

PAY9A_#. (RECORD BUS COST - DOLLARS)

____ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PAY9_#=2)

PAY9B_#. (RECORD BUS COST - CENTS)

____ (PROGRAMMER: Allow 0 to 99.)

(ASK IF TRS_TYPE_#=1 OR 2 AND ((SAGE_#>13 AND SAGE_#<116) OR (AGE_#>2 AND AGE_#<12) OR (AGE18_#<=2))

TRS_DP_#. (Were you/was NAME) the driver or passenger?
(DO NOT READ LIST)

- 01 Driver
- 02 Passenger

- 98 Don't Know
- 99 Refused

(ASK IF TRS_TYPE_#=1 OR 2)

VTNUM_#. NOT including (yourself/NAME), how many people were in the vehicle?

- 01 1
- 02 2
- 03 3
- 04 4
- 05 5
- 06 6+
- 07 0 – ALONE (DO NOT SHOW IF TRS_DP=2)

- 98 Don't Know
- 99 Refused

(ASK IF VTNUM_#=1:6 AND HHNUMPPL>1. DO NOT ASK IF VISITOR)

VHNUM_#. How many of these people are members of your household?

- 01 1
- 02 2 (DO NOT ALLOW IF VTNUM_#<1 OR HHNUMPPL<2)
- 03 3 (DO NOT ALLOW IF VTNUM_#<2 OR HHNUMPPL<3)
- 04 4 (DO NOT ALLOW IF VTNUM_#<3 OR HHNUMPPL<4)
- 05 5 (DO NOT ALLOW IF VTNUM_#<4 OR HHNUMPPL<5)
- 06 6+ (DO NOT ALLOW IF VTNUM_#<5 OR HHNUMPPL<6)
- 07 0 – None (POSTCODE IF VTNUM_#<1 AND HHNUMPPL<1)

(ASK IF VHNUM_#=1:6)

WHOACC_#. Which household member(s) was/were with (you/NAME)?
(MULTIPLE MENTION, UP TO 15 HOUSEHOLD MEMBERS.)

<LIST HOUSEHOLD MEMBERS, NOT INCLUDING THE RESPONDENT>

(PROGRAMMER: IF VHNUM_#=1, ALLOW ONE MENTION.)
(PROGRAMMER: IF VHNUM_#=2, ALLOW TWO MENTIONS.)
(PROGRAMMER: IF VHNUM_#=N, ALLOW N MENTIONS.)

98 Don't Know
99 Refused

(ASK IF TRS_TYPE_#=1 OR 2 AND (HNUMVEH NE 0/97OR CORR_VH# NE 97)

HHV_#. Was a vehicle from your household used for this trip?

01 Yes
02 No (POSTCODE IF HNUMVEH=0/97)
98 Don't Know
99 Refused

(ASK IF TRS_TYPE_#=1 OR 2)

PK1_#. How much, in total, did (you/NAME) personally pay for parking?
(DO NOT READ LIST)

01 NOTHING
02 Amount (to be recorded in next question)
98 Don't Know
99 Refused

(ASK IF PK1_#=2)

PK2A_#. (RECORD PARKING AMOUNT - DOLLARS)

_____ (PROGRAMMER: Allow 0 to 9000.)

(ASK IF PK1_#=2)

PK2B_#. (RECORD PARKING AMOUNT - CENTS)

_____ (PROGRAMMER: Allow 0 to 99.)

(ASK IF PK1_#=2)

PK3_#. Was the rate...?
(READ LIST)

001 Hourly
002 Daily
003 Monthly
004 Annually
005 Bi-Weekly
006 Per Semester
007 One Time Rate
008 Quarterly
009 Meter
996 Other (Specify _____)

998 Don't Know
999 Refused

AHOUR_#. What time did (you/NAME) ARRIVE?
(SELECT HOUR OF ARRIVAL TIME)

001 3:00 AM
002 4:00 AM
003 5:00 AM
004 6:00 AM
005 7:00 AM
006 8:00 AM
007 9:00 AM
008 10:00 AM
009 11:00 AM
010 12:00 PM (NOON)
011 1:00 PM
012 2:00 PM
021 11:00 PM
022 12:00 AM (MIDNIGHT)
023 1:00 AM
024 2:00 AM

LOC_ARR_#. (SELECT MINUTE OF ARRIVAL TIME)

001 #:01
002 #:02
003 #:03
004 #:04
005 #:05
006 #:06
007 #:07
008 #:08
009 #:09
010 #:10
056 #:56
057 #:57
058 #:58
059 #:59
060 #:00

PROGRAMMER NOTE:
ARRIVAL TIME MUST BE LATER THAN DEPARTURE TIME.

(IF [AHOUR_# + LOC_ARR_#] minus [DHOURLS_# + LOC_DEP_#] = or > 1 HOUR, ASK:)
HOUR_CHK_#. Then this trip took over one hour, is that correct?

01 Yes (CONTINUE)
02 No (CORRECT AHOUR_ AND LOC_ARR_#)
98 Don't Know (CONTINUE)
99 Refused (CONTINUE)

PROGRAMMER NOTE:
REPEAT LOCATE_# TO HOUR_CHK_# UNTIL DDONE_# = 1.
INTERVIEWERS ARE ALLOWED TO ENTER UP TO 10 TOTAL TRIPS.

(AFTER 24 HOUR TRAVEL IS COMPLETE, IF HOUR_CHK=01, ASK:)

LONGTRIP. Did any of the trips you've reported take significantly longer than usual?

- 01 Yes
- 02 No (GO TO LD_INT)
- 98 Don't Know (GO TO LD_INT)
- 99 Refused (Go to LD_INT)

(IF LONGTRIP=01, ASK:)

REAS_LT. Was this due to: (READ LIST)

- 01 Weather (rain or snow)
- 02 Construction
- 03 An accident
- 04 Traffic congestion

- 96 Other
- 98 Don't Know
- 99 Refused

LONG DISTANCE RETROSPECTIVE

LD_INT. Now I'd like you to think back over the last 3 months. I need to ask you some questions about (your/NAME's) LONG-DISTANCE travel during that time. These are trips where the destination was AT LEAST 100 MILES away from your home, one-way.

Did (you/NAME) take any LONG-DISTANCE trips in the last 3 months?

(INTERVIEWER NOTE: This information was asked for in the long-distance travel section on page 2 of your travel diary.)

- 01 Yes
- 02 No

- 98 Don't Know
- 99 Refused

(ASK IF LD_INT=1, ELSE GO TO END)

FCITY_#. What is the first/next city that (you/NAME) went to that was more than 100 miles away from your home?

(INTERVIEWER NOTE: Enter the respondent's FINAL and FURTHEST destination that they went on their trip.)

(INTERVIEWER NOTE: For international trips, enter the name of the country in this field. If trip to Canada, please probe for City and Province (Toronto, Ontario, Canada).

If respondent provides a place, like Disney World, and is unable to provide city when probed, enter the place provided in this field.)

(RECORD CITY)

(ASK IF LD_INT=1)

FSTAT_#.	What state is that? (RECORD STATE)	
01	ALABAMA	AL
02	ALASKA	AK
03	ARIZONA	AZ
04	ARKANSAS	AR
05	CALIFORNIA	CA
06	COLORADO	CO
07	CONNECTICUT	CT
08	DELAWARE	DE
09	DISTRICT OF COLUMBIA	DC
10	FLORIDA	FL
11	GEORGIA	GA
12	HAWAII	HI
13	IDAHO	ID
14	ILLINOIS	IL
15	INDIANA	IN
16	IOWA	IA
17	KANSAS	KS
18	KENTUCKY	KY
19	LOUISIANA	LA
20	MAINE	ME
21	MARYLAND	MD
22	MASSACHUSETTS	MA
23	MICHIGAN	MI
24	MINNESOTA	MN
25	MISSISSIPPI	MS
26	MISSOURI	MO
27	MONTANA	MT
28	NEBRASKA	NE
29	NEVADA	NV
30	NEW HAMPSHIRE	NH
31	NEW JERSEY	NJ
32	NEW MEXICO	NM
33	NEW YORK	NY
34	NORTH CAROLINA	NC
35	NORTH DAKOTA	ND
36	OHIO	OH
37	OKLAHOMA	OK
38	OREGON	OR
39	PENNSYLVANIA	PA
40	RHODE ISLAND	RI
41	SOUTH CAROLINA	SC
42	SOUTH DAKOTA	SD
43	TENNESSEE	TN
44	TEXAS	TX
45	UTAH	UT
46	VERMONT	VT
47	VIRGINIA	VA
48	WASHINGTON	WA
49	WEST VIRGINIA	WV
50	WISCONSIN	WI
51	WYOMING	WY
96	OUT OF THE COUNTRY	

DWEEK_#. What day of the week did (you/NAME) depart?
(DO NOT READ LIST)

- 01 Monday
- 02 Tuesday
- 03 Wednesday
- 04 Thursday
- 05 Friday
- 06 Saturday
- 07 Sunday

- 98 Don't Know
- 99 Refused

REAS_#. What was the PRIMARY reason for this trip?
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

- 01 Work/Business
- 02 School-related
- 03 Vacation
- 04 Social (visit friends or relatives)
- 05 Sightseeing
- 06 Recreation
- 07 Entertainment
- 08 Shopping
- 09 Family/Personal Reasons
- 10 Religious
- 11 Medical

- 98 Don't Know
- 99 Refused

TRTYP_#. What was the PRIMARY type of transportation (you/NAME) used TO REACH this destination?
(DO NOT READ LIST. IF NEEDED, PROMPT WITH CATEGORIES.)

- 001 Car, van, truck
- 002 Motorcycle/Moped
- 003 Bicycle
- 004 Walk
- 005 School Bus
- 006 Taxi/Shuttle
- 007 Public Bus
- 008 Train
- 009 Airplane
- 010 Boat
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF TRTYP_#=7)

FBUS_#. Which provider did (you/NAME) ride?
(RECORD BUS PROVIDER, SUCH AS GREYHOUND.)

FMODE_#. Tell me all the types of transportation that (you/NAME) used during (your/his/her) stay in
<INSERT FCITY_#>?

Did (you/he/she) use any other type of transportation during (your/his/her) stay in
<INSERT FCITY_#>, including bicycling or walking?

Anything else?

(DO NOT READ LIST)

(MULTIPLE MENTION. UP TO FOUR RESPONSES.)

- 001 Car, van, truck
- 002 Motorcycle/Moped
- 003 Bicycle
- 004 Walk
- 005 School Bus
- 006 Taxi/Shuttle
- 007 Public Bus
- 008 Train
- 009 Airplane
- 010 Boat
- 996 Other (Specify _____)

- 998 Don't Know
- 999 Refused

(ASK IF FMODE_#=7)

FMBUS_#. Which provider did (you/NAME) ride?
(RECORD BUS PROVIDER, SUCH AS GREYHOUND.)

RWEEK_#. What day of the week did (you/NAME) return home?
(DO NOT READ LIST)

- 01 Monday
- 02 Tuesday
- 03 Wednesday
- 04 Thursday
- 05 Friday
- 06 Saturday
- 07 Sunday

- 98 Don't Know
- 99 Refused

3MTH_#. How many times in the past 3 months did (you/NAME) make this trip?
(RECORD NUMBER OF TIMES)

___ (PROGRAMMER: Allow 1 to 90.)

98 Don't Know

99 Refused

(ASK IF 3MTH_#=1:90)

12MTH_#. How many times in the past 12 months did (you/NAME) make this trip?
(RECORD NUMBER OF TIMES)

___ (PROGRAMMER: Allow 1 to 90. Must be equal to or greater than
3MTH_#.)

98 Don't Know

99 Refused

MORE_#. Did (you/NAME) take any ADDITIONAL long-distance trips in the last 3 months?
(IF NEEDED: "A long-distance trip is any trip that is 100 miles or more away from your
home, one-way.)

01 Yes **(GO TO FCITY_#)**

02 No

98 Don't Know

99 Refused

PROGRAMMER NOTE:
REPEAT FCITY_# TO MORE_# UNTIL MORE_# NE 1
INTERVIEWERS ARE ALLOWED TO ENTER UP TO 5 TOTAL TRIPS.

(ASK IF FIRST PERSON/CONTACT PERSON (NAME_1) FROM RECRUIT)

FUTURE. Thank you very much. MDOT sometimes likes to recontact households for future
research studies.

Would you be willing to be recontacted by MDOT for future studies?

01 Yes

02 No

98 Don't Know

(ASK IF FIRST PERSON/CONTACT PERSON FROM RECRUIT AND HHINC=98:99)

HHINC2. In order to be sure that the project accurately represents all Michigan residents, could you tell me if the total 2008 combined annual income for your HOUSEHOLD is ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")
(READ LIST)

- | | | |
|----|-------------------|-------------------------|
| 01 | Below \$50,000 | (GO TO INC2_U50) |
| 02 | \$50,000 or above | (GO TO INC2_O50) |
| 98 | Don't Know | |
| 99 | Refused | |

(ASK IF HHINC2=1 OR IF FIRST PERSON/CONTACT (NAME_1) PERSON FROM RECRUIT AND INC_U50=98:99)

INC2_U50. Please stop me when I get to the category that best describes the total 2008 combined income for everyone living in your household. Was it ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")

- | | | |
|----|--------------------------------|--|
| 01 | Less than \$10,000 | |
| 02 | \$10,000 to less than \$20,000 | |
| 03 | \$20,000 to less than \$30,000 | |
| 04 | \$30,000 to less than \$40,000 | |
| 05 | \$40,000 to less than \$50,000 | |
| 98 | Don't Know | |
| 99 | Refused | |

(ASK IF HH2INC=2 OR IF FIRST PERSON/CONTACT (NAME_1) PERSON FROM RECRUIT AND INC_O50=98:99)

INC2_O50. Please stop me when I get to the category that best describes the total 2008 combined income for everyone living in your household. Was it ...?
(IF NEEDED: "I understand your reluctance to divulge your household income. However, I can assure you that this information is used for classification purposes only. We must be sure that our project accurately represents Michigan residents, and income is an important factor in projecting transportation needs.")

- | | | |
|----|----------------------------------|--|
| 01 | \$50,000 to less than \$60,000 | |
| 02 | \$60,000 to less than \$75,000 | |
| 03 | \$75,000 to less than \$100,000 | |
| 04 | \$100,000 to less than \$125,000 | |
| 05 | \$125,000 or more | |
| 98 | Don't Know | |
| 99 | Refused | |

(ONLY SHOW IF LAST PERSON IN HOUSEHOLD COMPLETING THE STUDY: IF ALL OTHERS IN HOUSEHOLD STATE_#=1 or 3 or 4 or 5, IF NOT GO TO FIRST_#)

END. Since we completed the interview over the phone, you do not need to mail in the travel diary. Thank you very much for your participation in this study.

Appendix H: Retrieval Postcard



Abt SRBI, Inc.
P.O. Box 71505
Madison Heights, MI
48071-0505



Abt SRBI, Inc.
P.O. Box 71505
Madison Heights, MI
48071-0505



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P.O. Box 71505
Madison Heights, MI
48071-0505



Abt SRBI, Inc.
P.O. Box 71505
Madison Heights, MI
48071-0505



Thank you for participating in **MI Travel Counts**.

If your household has already completed the survey, please disregard this notice.

If you have not finished, please call the Abt SRBI Transportation Team today at 800-631-0702. Or, return the completed diaries in the postage-paid envelope that was provided. We will contact you to clarify any information.

If you prefer, you may complete the study on the web by visiting www.surveycafe.com/michigan/password/asp. Your password can be found on the front label of the diary, below the website address.

Thank you.

Karen Faussett

MI Travel Counts Project Manager



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Karen Faussett

MI Travel Counts Project Manager



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If you prefer, you may complete the study on the web by visiting www.surveycafe.com/michigan/password/asp. Your password can be found on the front label of the diary, below the website address.

Thank you.

Karen Faussett

MI Travel Counts Project Manager



Thank you for participating in **MI Travel Counts**.

If your household has already completed the survey, please disregard this notice.

If you have not finished, please call the Abt SRBI Transportation Team today at 800-631-0702. Or, return the completed diaries in the postage-paid envelope that was provided. We will contact you to clarify any information.

If you prefer, you may complete the study on the web by visiting www.surveycafe.com/michigan/password/asp. Your password can be found on the front label of the diary, below the website address.

Thank you.

Karen Faussett

MI Travel Counts Project Manager



Appendix I: 1-800 Line Greeting

1-800 Line Greeting

**TRANSPORTATION LINE
1-800-631-0702**

“Live” Greeting

“Abt SRBI”

Voicemail Greeting

“Hello, you’ve reached Abt SRBI. Please leave a message and a staff member will return your call as soon as possible. Be sure to include your name and telephone number with area code, as well as the best time to reach you. Thank you.”

Appendix J: Answering Machine Message

Answering Machine Message

Michigan Department of Transportation “MI Travel Counts” Job 4577

Answering Machine Message

“Hello, I’m calling about MDOT’s “MI Travel Counts” study.
Please call 1-800-631-0702 at your earliest convenience.
We are looking forward to including your household in this important project.
Thank you.”

**Appendix K: In-CATI and In-Web-Based Interview Data
Checks and Abt SRBI Post Survey Data
Checks**

Appendix K: In-CATI and In-Web-Based Interview Data Checks and Abt SRBI Post Survey Data Checks

- **Household information is linked for the retrieval interview.** It may take more than one evening to collect all needed information for each requested household member. Abt SRBI's electronically controlled system allows interviewers to view the last disposition, name, and age of each household member. When all appropriate data collected for household members is complete, the household disposition automatically shows as complete, and does not come up again for interviewing.
- **On-line time checks are performed.** Respondents cannot provide an end time that is before a start time, or a start time that is before the previous end time.
- **City lists are compiled.** Complete city lists for the inventory area are developed and provided to the interviewers in alphabetical order. The interviewer simply types the city number into the CATI system, saving time and avoiding common spelling mistakes. (The other-specify option is always allowed.)
- **Previously reported locations are automatically recorded.** Respondent burden is greatly reduced when location information only needs to be reported once. If a respondent goes to work, then goes out for lunch, and then returns to work, the respondent is very frustrated if the work location information must be recorded twice. Abt SRBI's CATI system allows the interviewer to select the previously reported location and move forward with the interview, relieving the respondent of duplicating information.
- **Trips and locations reported by other household members are automatically confirmed and recorded.** Respondent burden is significantly reduced when trips and locations reported by other household members do not need to be repeated. If multiple household members go to lunch before coming home together from church, they are understandingly frustrated if the trip and location information must be recorded multiple times.
- **Many other checks are either automatic or can be customized within our CATI system.** (A more complete listing of these additional, specific in-CATI data checks is given below.) For example, not allowing inconsistent answers such as an under 16 year old driving alone, an unemployed person reporting work trips, consistency between number of vehicles available to the household and number of vehicles used on a travel day, and consistency in mode changes.
- **Person counts will always match reported household size.** There cannot be a vehicle trip without a driver, and if the last location of each travel day was not home, the CATI prompts to confirm that no more trips were taken for the remainder of the day until after 3 a.m. This helps to ensure that trips are not missed.
- **Client and project manager remote and on-site monitoring of interviews to assure quality control.** Using a standard remote phone connection, clients can access Abt SRBI's CATI system and monitor interviews in real time. Clients are also welcome to personally visit the interviewing location.

Other ABT SRBI In-System and Post Survey Data Checks:

Household File

- Every variable should have an answer. There should be no blanks.
- Each case should have a Record Type of "1" for "Household Record".
- Check that there are no duplicate QNOs or phone numbers.

- Check that the area codes are valid Michigan area codes. (If when reached or re-interviewed in 2009, a household now lives outside Michigan, they will not be considered an eligible respondent household for MTC II.)
- Check that the month/day combinations are correct and that they match the day of the week variable.
- Check that all home addresses are located in Michigan and that all home zip codes are between 48000 and 49999.
- Check that all counties listed are included in the master list of the 83 Michigan counties.
- Check that home longitude is always a negative value, typically between 80 and 90.
- Check that home latitude is always a positive value, typically between 40 and 50.
- Check that longitude and latitude are not rounded. Data should be six decimal places.
- Check that the number of workers in the household does not exceed the number of people in the household.
- Check that the number of subsidized vehicles number of vehicles available in the household.
- Check that in the raw data file from the recruit that the sampling area assignment is checked for each household.
- Check that all files are consistent on the key fields. There are no duplicate records. The key files are: Household, Person, and Trip (Activity), and Long Distance Trips.
- Check that one-to-many correspondence exists between the household file and the person file. After merging the two files by the Household ID variable, it will be found that there are no household IDs in the household file that do not exist in the person file and vice versa. It will also be found that there are no missing household IDs for any observation in the person file.
- Check that one-to-many correspondence exists between the person file and the trip (activity) file. After merging the two files by the Household ID and the Person variable, it will be found that there are no Person IDs in the person file that do not exist in the trip (activity) file and vice versa. It will also be found that there are no missing Person IDs for any observation in the trip file.
- Check that the number of persons with unique Person ID within a Household ID can be counted and found to be equal to the number of household members reported in the household file.
- Check that for the different household size variable, the value in the household file equals the number of persons for the household in the person file.

Person File

- Each case should have a Record Type of "2" for "Person Record".
- QNO and phone number will have duplicates. Frequency of QNO and phone number is the number of persons in the household.
- Person number should be equal to the number of people in the household from the household file.
- Person number "1" frequency should be the total number of households.
- Check that all cases have a value for age range.
- Only respondents with AGERNG=98 or 99 should have an answer for the AGE!* variable.
- Check that all cases have a value for relationship.
- Check that person number 1 is code 0 for relationship.
- Only respondents that said "other" for relationship should have an answer for other relationship to contact person.
- Check that no cases are missing for licensed driver. Check that respondents 16 years of age or older are not code 3 for licensed driver. Check that respondents under 16 years of age are code 3 (not applicable).
- Check that no cases are missing for transit pass. Check that only respondents with a transit pass have one or more answers for type of transit pass.
- Check that only respondents who indicated "other" transit pass have an answer for other type of transit pass.
- Check that no cases are missing for education level. Check that respondents 18 years of age or older are not code 0 for education level. Check that respondents under 18 years of age are code 0 (not applicable).

- Check that no cases are missing for school name through school zone, if respondent is currently a student.
- Check that school latitude and longitude comply with the same rules as above for home address.
- Check that no cases are missing for working status. Check that respondents 16 years of age or older are not code 5 for working status. Check that respondents under 16 years of age are code 5 (not applicable).
- Check that respondents that are not working are asked the not working status question.
- Check that worker questions are only asked if working status is code 1, 2 or code 3.
- Check that only respondents who indicated "other" industry have an answer for other industry.
- Check that only respondents who have a fixed workplace have answers for work address through work zone.
- Check that secondary job questions are only asked if respondent has more than one job.
- Check that longitude and latitude for primary and secondary work places generally comply with the rules above for home address.
- Check that no cases are missing proxy status.
- Check that an infant or child is not a "respondent" interview. Interviewers are not allowed to talk directly with someone less than 14 years of age. Interviewers are only allowed to talk directly to 14 and 15 year olds with parental approval.
- Check that all proxy cases indicate which household member provided the proxy information.
- Check that no proxy cases indicate that the person number providing the proxy is the same as the person number of the respondent.
- Check that no cases are missing the diary completed variable.
- Check that the respondents who completed the diary are not code 3 (not applicable) for using the completed diary. Other respondents should be code 3 for using the completed diary.
- Check that no cases are missing for long distance trips taken.

Trip File

- Each case should have a Record Type of "3" for "Trip Record".
- QNOs with a frequency of 1 are households that did not take any trips.
- TRIPNUM=0 frequency is the number of no trip people.
- Cases that did not take any trips will only have origin information where they started and ended the travel period.
- Check that trip origin and destination longitude is generally a negative value, typically between 80 and 90.
- Check that trip origin and destination latitude is generally a positive value, typically between 40 and 50.
- Check that origin and destination longitude and latitude is not rounded. Data should be to six decimal places.
- Check that only respondents who indicated "other" for type of origin or destination have an answer for other type of location.
- Check that all cases of TRAV=2 and TRIPNUM=0 provided a reason for no travel.
- If the trip number is equal to 1, time of departure and type of transportation used should be answered, unless respondent began travel period traveling.
- Check that only cases with "other" for type of transportation have an answer for other type of transportation used.
- Check that the bus provider used is not missing if the trip involved dial-a-ride or a public bus as one of the transportation modes.
- Check that only cases with "other" for bus provider have an answer for other bus provider used.
- Check that there are no cases missing pay for trip, if transportation types 6 (taxi/shuttle), 7 (dial-a-ride), 8 (train), or 9 (public bus) were used as a transportation mode.
- Check that if the respondent indicated they paid for the trip that a valid amount has been recorded for amount paid for trip.

- Check that if a trip involved a car, van, truck or motorcycle that the driver/passenger variable is not missing. Note that children that are too young to drive (under 14 years of age) are not asked the question, but are post-coded as passengers.
- Check that if a trip involved a car, van, truck, or motorcycle that the number of additional people in the vehicle was asked.
- If the respondent did take a trip with other people in a car, van, truck, or motorcycle, check that the number of household members in the vehicle was asked, unless the respondent lives alone. If the respondent is a one-member household, the variable is post-coded with "none".
- Check that the number of household members in the vehicle is not greater than the number of people in the vehicle.
- Check that the respondent is not listed as a household member in the vehicle.
- Check that if a trip involved a car, van, truck, or motorcycle that the respondent was asked if a household vehicle was used for the trip, unless the household does not have any available vehicles. If the respondent is a zero-vehicle household, the variable is post-coded with "no".
- Check that if a trip involved a car, van, truck, or motorcycle that the respondent was asked if they paid for parking.
- Check that if the respondent indicated they paid for parking that a valid amount has been recorded for amount paid for parking and that a parking rate has been identified. If the parking rate is "other", the answer should be recorded in the other parking rate variable.
- Check that all cases (except those respondents that did not travel) are not missing arrival time or destination information.
- Check that if the respondent was at home that only activity codes 1 or 2 are used.
- Check that if the respondent was not at home that activity codes are not code 1 or 2.
- Check that departure & arrival times are in Military time.

Long Distance File

- Each case should have a record type of "4" for "Long Distance Trip Record".
- The frequency of LDTRIP=1 should be the number of LDTRIPS=1 in the person file.
- Check that only cases with "other" for type of transportation used to reach location have an answer for other type of transportation used.
- Check that the bus provider used to reach a location is not missing if a public bus was the mode of transportation used to reach the location.
- Check that only cases with "other" for bus provider have an answer for other bus provider used to reach the location.
- Check that only cases with "other" for type of transportation used at the location have an answer for other type of transportation used at the location.
- Check that the bus provider used at the location is not missing if a public bus was used at the location.
- Check that only cases with "other" for bus provider used have an answer for other bus provider used at the location.
- Check that the number of times the trip was taken in the last 3 months is not greater than the number of times the trip has been taken in the last 12 months.

Appendix L: Cambridge Systematics Post Survey Data Checks

Appendix L: Cambridge Systematics Post Survey Data Checks

Cambridge Systematics Data File Checks

Cambridge Systematics (CS) will review interim datasets to assure that all logic checks specified in Appendix A to this *Data Coding and Quality Control Manual* for post processing checks by Abt SRBI have been performed and reported. The following interim data checks will be made by CS.

Household File

1. Check that the month/day combinations are correct and that they match the day of the week variable.
2. Check that the number of workers in the household does not exceed the number of people in the household age 16 and older.
3. Check that the number of persons in the Person Record equals the total number of persons in households.
4. All home addresses and home zip codes should be located in Michigan.
5. Insure that all fields have information.

Person File

1. Check that the QNO has corresponding QNO in home file.
2. Person numbers should be within the range of the number of people in the household from the Household file, i.e., total number of persons by household should be equal to household size in household file.
3. The overall frequency of person records coded "person #1" should equal the total number of households.
4. Check for age and relationship reasonableness (e.g., spouses are probably not under 18 years of age).
5. Only respondents that said "other" for relationship should have an answer for other relationship to contact person.
6. All cases should have a value for licensed driver. Check that respondents have age appropriate codes.
7. All cases should have a value for education level. Check that respondents have age appropriate codes.
8. If currently a student, check for school name through zone.
9. All cases should have a value for work status. Check that respondents have age appropriate codes.
10. Check that worker questions are only asked if working status is code 1, 2, or 3.
11. Check that only respondents who have a fixed workplace have answers for work address through work zone.
12. Zip codes for work address should be consistent with the region.
13. Check that only respondents who indicated "other" industry have an answer for other industry
14. Check that respondents that are not working are asked the not working status question.
15. No cases should have a missing proxy status.
16. Check that no information is missing for the following: gender, age, age range, relationship, licensed driver, transit pass, education level, school type, working status, proxy, diary completed, and long distance trip.

Travel Day Trip File

1. Check that only respondents who indicated "other" for type of origin, destination, type of transportation, bus provider have and answer in the other category.
2. Check that all cases of TRAV=2 and TRIPNUM=0 provided a reason for no travel.
3. If the trip number is greater than zero, check time of departure and type of transportation used.
4. Check that bus provider is not missed if trip involved dial-a-ride or public bus.
5. Check for pay for trip if transportation mode is 6, 7, 8, or 9.
6. Check for amount paid if paid for trip.
7. Check that respondent is not listed as a household member in vehicle.
8. If type of transportation used is 1, 2, or 3, then check for household vehicle used and pay for parking.
9. Check to see if paid for parking amount rate is valid.
10. If parking rate is "other", check for other parking rate.

11. Persons that did not take any trips will only have origin information - where they started and ended the travel period.

The following type of trips (Checks 12-17) will be checked for reasonability to ensure that activities and travel are logical and complete for the full 24-hour recording period. If illogical or incomplete reporting is found, the case will be flagged in the data set:

12. Trips where origin and destination location are the same.
13. When origin of trip #1 is not residence or work places, or school for students attending higher education.
14. When destination of the last trip is not residence or work places, or school for students attending higher education.
15. Check reasonableness of walk and transit trips, e.g., walk trips more than 45 minutes for non-recreational purposes.
16. Flag walk, bicycle and taxi/shuttle modes coded as primary travel modes for long distance (longer than 100 miles) trips.
17. Check for unusual activity durations; less than an hour of work or school activities or discretionary activities more than two or three hours should be flagged.
18. Only cases with "other" for type of transportation should have an answer for other type of transportation used.
19. If a trip involved a car, van, truck, or motorcycle then the driver/passenger variable should not be missing. Note that children (under 14 years of age) are not asked the question, but should be coded as passengers.
20. If a trip involved a car, van, truck, or motorcycle then the number of additional people in the vehicle should have been asked.
21. If the respondent did take a trip with other people in a car, van, truck, or motorcycle, check that the number of household members in the vehicle was asked, unless the respondent lives alone. If the respondent is a one-member household, the variable is post-coded with "none".
22. The number of household members in a vehicle should not be greater than the number of people in the vehicle or the number of persons in the household.
23. If a trip involved a car, van, truck, or motorcycle check that the respondent was asked if a household vehicle was used for the trip, unless the household does not have any available vehicles. If the respondent is a zero-vehicle household, the variable is coded as "no".
24. Check that all cases (except those persons that did not travel) are not missing arrival time or destination information.
25. Check that the departure and arrival times are in military time.
26. Check that arrival time is after departure time.
27. Check percentage of workers who did not make a work trip, and non-workers who did.
28. Check number and percentage of trips made by drive alone mode from zero-vehicle households.

Long Distance Trip File

1. Check that only respondents who indicated "other" for type of transportation used to reach location provide an answer for the other transportation used category.
2. If public bus was used for type of transportation to reach location or for type of transportation used at location, check that name of bus provider was provided.
3. Check that the number of times the trip was taken in the last three months is less than the number of times the trip has been taken in the past 12 months.

GEOCODING CONSISTENCY: A set of automated data checks will focus on the geocoding. These include a check that all longitudes have a negative value and are within a specified range, all latitudes have a positive value and are within a specified range, longitude and latitude values are not rounded, and six decimals are used to code the values.

Cambridge Systematics will provide Time and Distance testing between successive geocoding points to confirm consistency with respondent reported times and travel mode. TransCAD will be used to test respondent reported trip departure and arrival times and mode of travel against origin and destination geocoded point distances, using the general tolerances for time and speed documented in the *MTC I Data Checking Manual and in Appendix C to this 2009 Quality Control Memorandum..* CS will confirm the tolerances and rules used for this testing in the first MTC II interim report.

A time and distance testing program will be developed to run these checks for the interim and draft final reports. The Abt SRBI-CS team has found that such checks can be invaluable in uncovering points that are geocoded wrongly, or households whose diary information is inconsistent, requiring the entire household to be replaced.

Other Cambridge Systematics Data Checks and Reporting

CS reviews will include:

1. Review of zero trip households for exclusion or inclusion based on reasonability standards.
2. Review of interim sampling data cell target progress and deviations. CS will create and review the table to review sampling goal achievements and make recommendations based on the results of the total number of households by data cell.
3. Review of geocoding results and non-geocodable issues and rates, based on CS time and distance testing and reasonability standards.
4. Review of interim report tables, progress, and corrective actions.

CS' interim and draft final reports will be in writing in the following format:

- a. Executive Summary
- b. Documentation and Review of Logic Checks by Dataset: Household, Person, Trip, and Long Distance
- c. Review of Zero Trip Households
- d. Review of Progress on Meeting Sampling Targets
- e. Documentation and Review of Geocoding Using Time and Distance Testing
- f. Recommendations for Corrections

**Appendix M: Methodology for Time and Distance Testing
of Geocoded Points**

Appendix M: Methodology for Time and Distance Testing of Geocoded Points

Cambridge Systematics (CS) will check the trip time between consecutive geocoded points based on departure and arrival time for each trip by using the TransCAD statewide model network provided by MDOT. The TransCAD statewide model network is based on MGFv3 file, but only has higher level roadways included in the network. This file also has speed and time associated with each link. CS will also use the Southeast Michigan Council of Government (SEMCOG) TransCAD 2000 travel demand forecasting model for these trips that are made completely within the SEMCOG region. The SEMCOG TransCAD network is based off of the MGFv2 file. The following is a list of steps to check time and distance of trips for reasonability.

1. Edit trip file so that each trip record contains a combined household, person, and trip identification number. This number will be in the format of QNO*1000+PersonID*100+TripNO*10, this will be IDNO.
2. Create a location file in which each record corresponds to a trip end. Uniquely identify each record by IDNO and origin/destination indicator. LOCNO = IDNO+ODID where ODID is 1 if origin or 2 if destination. This file will have twice as many records as the original trip file and will be saved as a .DBF file.
3. Using TransCAD, this new location file will be opened onto the MDOT network file. The corresponding geocoded coordinates for each record will be automatically converted by TransCAD into a standard geographic file with points located onto the network file.
4. Using TransCAD, the trip points will then be connected onto the network file by using Tools . . Map Editing . . Connect.
5. Within the location file a new field will be created (NodeNo) to copy the node number from the network file into the new trip file for each point. This is done by using Edit . . Fill . . Tag.
6. The trip file will be updated by merging origin and destination NodeNo from location file for each trip end of the trip record in the trip file.
7. The trip file will then be sorted by IDNO and saved as a .DBF file and closed.
8. All files except the network file will be closed.
9. The trip file will be reopened in TranCAD using File . . .open.
10. Using TransCAD, the distance and time will be determined for each trip by using the following command: Route Systems . . Utilities . . . Create from File. This will take the trip file and map the shortest route (via distance and also time) and create a table for each trip. For trips taken with the SEMCOG region, the SEMCOG network will be utilized. For trips made during the peak times in the SEMCOG region, the peak model times will be utilized. The times found from the TransCAD program will be compared to the times reported by the departure and arrival time.
11. The following checks will be done with the calculated distances, calculated travel times, and respondent travel time:
 - a. The trip will be flagged if the TransCAD travel time has more than a 60-minute difference from the reported respondent travel time. These trips will be documented in the report and recommendations.

- b. A trip will be flagged if a trip is made within the same city/township and is greater than 60 minutes, or 90 minutes for the city of Detroit. These trips will be further reviewed to determine the time of day of the trip to determine if congestion could be a factor. These trips will be documented in the report and recommendations. The time thresholds for intra-city/township travel will be monitored by CS and MDOT as interim data is released and is subject to change and further refinement as may be necessary.
- c. Average travel speed will be calculated for each trip by using the TransCAD shortest route distance and respondent travel time. A trip will be flagged if the average travel speed is less than 5 miles per hour (mph). If a trip is greater than 30 miles in length, the trip will be flagged if the average travel speed is greater than 65 mph. Trips less than 2 miles in length and also 30 minutes in time will be considered acceptable due to short distance and time. Trips that are flagged will have 10 minutes added and subtracted for trip length and new speed computed. If the new speed is still within the speed parameters, the record will be flagged and reviewed. These trips will be documented in the report and recommendations.

These methods are useful for identifying outliers for further review, correction, or elimination as "incomplete".

Following receipt of CS's written report, Abt SRBI will, on a continuous basis, attempt to make corrections or before submitting geocoding files and corrected data files to MDOT for review. The geocoding and data files will be accompanied by a written interim report with recommendations for corrective actions. (CS's report will be appended.)

CS's interim geocoding review will cover the following:

1. Any outliers found using TransCAD review by time, mode, and distance. Findings will cite full file ID numbers for household/person/trip.
2. Review geocoding result code rates with regard to meeting the geocoding specifications of this manual. (Stated on page 4-5)
3. Review of non-geocodable records and any recommendations for corrections or exclusion of households. Again, CS will cite full case number IDs.

Appendix N: Final Interim Report

**MI Travel Counts II
3rd and Final Interim Report
April 2, 2010
Submitted by Abt SRBI, Inc.**

1.0 3rd Interim Report Update

1.1 WORK ACCOMPLISHED DURING THE REPORT PERIOD

1.1.1 Recruit and Retrieval Data Collection Effort

As of November 19, 2009, 3,370 households had been recruited and the data collection phase of MTC II was completed as of December 12, 2009 with 2,400 households retrieved; 122% of the targeted 1,960 household completes. Retrievals by phone, mailed-in diaries, calls to the 800-number, and Internet retrievals were processed on a continuous basis. As a result of the 3rd Interim Report review, five households were determined to have incomplete or insufficient data to the extent that they were not continued through the quality assurance process and were instead deleted from the 3rd Interim Report submitted datafile, leaving 2,395 household completes.

By household size, 15.4% of households retrieved are 4+person households (368), 81.4% of the 452 4+ person households targeted (23% of total target). Of the total retrieved, 4.1% (98) are zero vehicle households, which is 68% of the total zero vehicle household target of 145 (7.4% of total target). Table 1.1 below shows retrieved households to date by geographic region. All regions exceeded goals for household completes.

Table 1.1 Final Retrieved Households by Sampling Strata

Sampling Area	Frequency
SEMCOG	291
Small Cities	374
Upper Peninsula Rural	358
Northern Lower Peninsula	342
Southern Lower Peninsula	362
TMA's	333
Small Urban Modeled Areas	335
Total	2,395

In order to improve progress towards reaching the sampling requirements of the MI Travel Counts II Sampling Technical Document, adjusted plans approved by MDOT, and implemented by Abt SRBI included:

- Closing recruitment for sampling target cells when 90% or more of sample target has been retrieved and priority loading of available recruitment sample for the difficult-to-fill data cells (particularly the SEMCOG region, 4+person households,

and zero vehicle households). All recruitment activities were closed as of 11/19/09.

- Implementation of refusal conversion technique for households recruited in the difficult-to-fill data cells (SEMCOG region, 4+person households, and zero vehicle households) that were non-responders to the retrieval began on November 23, 2009. The majority of these households when called, mailed in their diaries from their previously assigned travel day. Abt SRBI reassigned travel days for the remaining 458 households for Tuesday December 1, Wednesday December 2nd, and Thursday December 3rd. Using this process, Abt SRBI obtained an additional 321 completed households in the difficult-to-fill sample cells.

The targeted household retrievals to available sample (from MTC I 2005) is 1 to 4 or less for 12 data cells (3 in the SEMCOG region, 1 each in Small Urban Areas, Small Cities, and Northern Lower Peninsula Rural regions, 4 in the Upper Peninsula Rural region, and 2 in the Southern Lower Peninsula Rural Region). Each of these difficult-to-reach data cells had a minimum target of 10 completed households. Two of these targets, one each in the Northern Lower Peninsula Rural region and in the Southern Lower Peninsula Rural region reached goal, one in the Upper Peninsula Rural region reached 90% of goal. Of the others with a 4 or less list ratio, one has 7 household completes, three have 4 to 6 household completes, one has 2 to 3 household completes, and four have zero to 1 completes (zero autos and household size greater than 1 in the Upper Peninsula Rural, Small Urban Areas, and Southern Lower Peninsula and zero workers and household size 4+ in the SEMCOG region). Only two other targeted sample data cells were less than 50% complete (zero autos and household size 3+ in the SEMCOG region and household size=3 and workers =2+ in the TMAs). Over two-thirds of 106 targeted cells obtained 80% of goal and only 15% of cells had less than a minimum of 8 completed households. It should be noted that no incentives were offered to rare population households in MTC II.

1.1.2 Geocoding Progress

Final region assignment using geocoding coordinates for residence was accomplished by Abt SRBI with MDOT's help for the 3rd Interim report and final draft data files. MDOT provided shape files for assigning region.

Cambridge Systematics (CS) provided a thorough review of geocoded points in the draft final trip data files and three kinds of problems were found: 100+ households contained trips where the origin was the same as the destination, other households were found to have more than 25% of their trips ungeocoded, while an almost equal number of households were found to have trips where the time and distance between geocoded points (given mode and general location) did not match the respondent reported travel time. In all, initially 371 households were selected by CS for manual review for these reasons, since they were in data cells that were near or under sample target. Final results will be reported as a part of the Final Methodology MTC II Report and the Comparison Report. A running tally of the questionable households will be made until project data reporting completion. The priority is on salvaging the households in the difficult to fill data cells.

Finally, in relation to geocoding it was found that the most-up-to-date ArcView TeleAtlas files for Michigan fell short of the expected geocoding proportion of 95% due to the high percentage of rural addresses, so CS supplemented Abt SRBI geocoding with TransCAD geocoding. Approximately 5% of all O-D points were geocoded using TransCAD. For the draft dataset approximately 7.3% of trip ends were non-geocodable.

1.1.3 Public Awareness and Respondent Response

The MTC I website was updated by MDOT for MTC II and the web address was cited in all advance letters and diary cover letters sent to sample households. All sample households received advance letters approved by MDOT explaining the survey, prior to the recruitment attempt phone call. The advance letter also provided a 1-800 number to verify the legitimacy of the survey and to respond to questions. An internet help address was also available.

Less than five complaints were received regarding “an out-of Michigan firm conducting MTC II”. These complaints came as a result of either the respondent viewing the caller ID that appears on their phone, which indicates Abt SRBI with a New York number, or as a result of respondents’ perceiving an out-of-Michigan accent on the part of the interviewer. The NY caller ID number is used by Abt SRBI for all of its surveys, since a person is available at this location (or a message can be taken) to properly direct respondents to the appropriate help staff for specific surveys. MDOT was informed either directly or by Abt SRBI of all of these complaints, and steps were taken to respond as needed to the reasons why Abt SRBI is conducting this study. Additionally, interviewers were monitored to assure that interviewers speak clearly and that accents are not a prevalent issue.

1.1.4 Reports

Weekly, monthly, and tally reports have been submitted as scheduled. Weekly conference calls have been held as scheduled.

1.2 PLAN FOR FINAL REPORT PERIOD

Plans for the final report period include the following:

1. Manual review and correction of 371+ households in rare population data cells where CS found one of the following issues: the origin and destination of a trip was at the same location, more than 25% of a household’s trip ends were non-geocodable, time and distance testing showed a mismatch between respondent reported travel time and the distance between geocoding points, taking into account mode and general location.
2. Once this final review is complete, Abt SRBI will make corrections and deliver final data files to CS and MDOT by April 9, 2010.
3. Abt SRBI will submit Second Draft of the Methodology Report on April 1, 2010.
4. CS will submit Draft Comparison Report pm 4/26/2010 and the Final Comparison Report on 5/26/2010.

1.3 PROBLEMS ENCOUNTERED DURING REPORT PERIOD

Problems encountered have been as follows:

1. Many households completed in MTC I, and particularly those households in rare or difficult-to complete data cells, have had changes in their key demographic characteristics since 2005 and, therefore, no longer qualified as a complete for MTC II within the sampling target cells for which they were intended to be recruited. This included changes in household size, number of workers, and number of autos. CS will develop a report which will quantify these changes, but it is clear that more households moved from rare cells into other sampling cells, rather than vice versa. For MTC II, Abt SRBI was dependent on the current demographic characteristics of MTC I respondents to meet MTC II sampling goals.
2. The short length of the data collection period for MTC II, diminished the ability of Abt SRBI to implement corrective actions, as the recruit had to continue as the retrievals were being completed, with differential response rates among target sampling cells. Lack of the ability to offer incentives to low-income households, zero vehicle households, and household with 4+ persons also created challenges.
3. Initial programming of the trip file for MTC II took more time than was anticipated.
4. Assignment of regions was dependent on geocoded coordinates, rather than on information provided by respondents in the recruitment interview. Provision by MDOT of shape files for geocoding to region alleviated this issue.
5. The disproportional sampling of rural households made geocoding more challenging.

2.0 Recruitment and Retrieval Summary – Status and Corrective Actions

2.1 RECRUITMENT AND RETRIEVAL SUMMARY BY SAMPLING AREA

This and the following sections summarize the data collected for the 3rd interim report: 2,395 completed households before final review. This section specifically addresses the recruitment and retrieval status as of March 19, 2010.

MTC II recruitment and retrieval results are presented by the sample design data cells (household size, number of vehicles, and number of workers) for each of the seven MTC II sampling areas. Recruitment and retrieval results are shown together in the charts which follow so that these results can be compared. Throughout the data collection period, recruitment targets by data cell were adjusted on a continuous basis, based on the varying data cell retrieval rates experienced.

Table 2.1. Sample Area 1 – SEMCOG: Recruitment and Retrieval by Data Cells as 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
SEMCOG												
1	1	HH Size=1 Autos=0 Workers=0,1	1A/1B	125	15	6	17	10	58.8%	15	66.7%	
2	2	HH Size=1 Autos=1+ Workers=0	1A/1B	185	21	6	53	47	88.7%	21	223.8%	
3	3	HH Size=1 Autos=1+ Workers=1	1A/1B	297	34	7	56	39	69.6%	34	114.7%	
4	4	HH Size=2 Autos=0 Workers=0,1,2	1A/1B	44	10	4	5	3	60.0%	10	30.0%	
6+7	5	HH Size=2 Autos=1 Workers=1,2	1A/1B	119	14	7	18	8	44.4%	14	57.1%	
5+8	6	HH Size=2 Autos=1,2+ Workers=0	1A/1B	169	19	6	48	39	81.3%	19	205.3%	
12	7	HH Size=3 Autos=1,2,3+ Workers=0	1A/1B	33	10	3	8	6	75.0%	10	60.0%	
9	8	HH Size=2 Autos=2+ Workers=1	1A/1B	121	14	7	39	34	87.2%	14	242.9%	
10	9	HH Size=2 Autos=2+ Workers=2	1A/1B	211	24	7	41	23	56.1%	24	95.8%	
11	10	HH Size=3,4+ Autos=0 Workers=0,1,2,3+	1A/1B	60	10	6	2	1	50.0%	10	10.0%	
13+15	11	HH Size=3 Autos=1,2,3+ Workers=1	1A/1B	138	16	7	20	15	75.0%	16	93.8%	
14+16	12	HH Size=3 Autos=1,2 Workers=2,3	1A/1B	129	15	6	20	9	45.0%	15	60.0%	
17+18	13	HH Size=3 Autos=3+ Workers=2,3	1A/1B	73	10	5	22	13	59.1%	10	130.0%	
19	14	HH Size=4+ Autos=1,2,3+ Workers=0	1A/1B	31	10	2	5	1	20.0%	10	10.0%	
20+22	15	HH Size=4+ Autos=1,2 Workers=1	1A/1B	160	18	7	17	11	64.7%	18	61.1%	
21+23	16	HH Size=4+ Autos=1,2 Workers=2,3+	1A/1B	158	18	6	32	15	46.9%	18	83.3%	
24	17	HH Size=4+ Autos=3+ Workers=1,2	1A/1B	90	12	5	19	12	63.2%	12	100.0%	
25	18	HH Size=4+ Autos=3+ Workers=3+	1A/1B	78	10	7	15	5	33.3%	10	50.0%	
SEMCOG Total				1A/1B	2,221	280	6	437	291	66.6%	280	103.9%

Findings for the SEMCOG Region:

1. Overall, retrieval to date is 104% of the sampling plan goal while statewide retrieval is 122% of sampling plan target.
2. The retrieval to recruit response rate at 67% is below average.
3. Three out of 18 data cells had a sampling ratio of 1 in 4 or less; two of these data cells met less than 50% of sample target. Five of 18 data cells had less than 8 household completes; 9 of 18 cells achieved 90% or more of target goals; and additional cell completed over 80% of its target goal.

Table 2.2. Sample Area 2 – TMAs: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
TMAs												
26	19	HH Size=1 Autos=0 Workers=0,1	6	78	10	5	13	6	46.2%	10	60.0%	
27	20	HH Size=1 Autos=1+ Workers=0	6	172	23	6	58	49	84.5%	23	213.0%	
28	21	HH Size=1 Autos=1+ Workers=1	6	258	34	7	50	34	68.0%	34	100.0%	
29	22	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	6	56	10	5	11	6	54.5%	10	60.0%	
30+31	23	HH Size=2 Autos=1 Workers=0,1	6	145	19	6	25	23	92.0%	19	121.1%	
32+35	24	HH Size=2 Autos=1,2+ Workers=2	6	274	37	6	89	51	57.3%	37	137.8%	
33	25	HH Size=2 Autos=2+ Workers=0	6	100	14	5	38	32	84.2%	14	228.6%	
34	26	HH Size=2 Autos=2+ Workers=1	6	128	17	6	50	43	86.0%	17	252.9%	
36+37+39	27	HH Size=3 Autos=1,2,3+ Workers=0,1	6	143	19	6	26	13	50.0%	19	68.4%	
40+41	28	HH Size=3 Autos=2,3+ Workers=2	6	138	18	6	22	13	59.1%	18	72.2%	
38+42	29	HH Size=3 (Autos=1 Workers=2,3) and (Autos=2,3+ Workers=3)	6	61	10	5	12	3	25.0%	10	30.0%	
43+44+46	30	HH Size=4+ Autos=1,2,3+ Workers=0,1	6	182	24	6	28	22	78.6%	24	91.7%	
45+47	31	HH Size=4+ Autos=1,2 Workers=2,3+	6	175	23	6	40	22	55.0%	23	95.7%	
48	32	HH Size=4+ Autos=3+ Workers=2	6	71	10	6	20	9	45.0%	10	90.0%	
49	33	HH Size=4+ Autos=3+ Workers=3+	6	84	12	5	20	7	35.0%	12	58.3%	
TMAs Total				6	2,065	280	6	502	333	66.3%	280	118.9%

Findings for TMAs:

1. Retrieval is at 119% of sampling target.
2. The retrieval to recruit response rate is below average at 66%.
3. Four out of 15 target cells (27%) have less than 8 completed households; 9 cells achieved 90% or more of target goals.

Table 2.3. Sample Area 3 – Small Urban Areas: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
Small Urban												
50	34	HH Size=1 Autos=0 Workers=0,1	7	91	12	5	12	12	100.0%	12	100.0%	
51	35	HH Size=1 Autos=1+ Workers=0	7	199	26	6	76	62	81.6%	26	238.5%	
52	36	HH Size=1 Autos=1+ Workers=1	7	234	31	6	45	35	77.8%	31	112.9%	
53	37	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	7	51	10	4	9	1	11.1%	10	10.0%	
54+55	38	HH Size=2 Autos=1 Workers=0,1	7	160	21	5	33	28	84.8%	21	133.3%	
56+59	39	HH Size=2 Autos=1,2+ Workers=2	7	264	36	6	64	40	62.5%	36	111.1%	
57	40	HH Size=2 Autos=2+ Workers=0	7	135	19	5	47	40	85.1%	19	210.5%	
58	41	HH Size=2 Autos=2+ Workers=1	7	141	19	5	44	31	70.5%	19	163.2%	
60+61+63	42	HH Size=3 Autos=1,2,3+ Workers=0,1	7	125	18	5	20	13	65.0%	18	72.2%	
62+64	43	HH Size=3 Autos=1,2 Workers=2,3	7	104	14	6	16	9	56.3%	14	64.3%	
65+66	44	HH Size=3 Autos=3+ Workers=2,3	7	80	12	5	21	16	76.2%	12	133.3%	
67+68+70	45	HH Size=4+ Autos=1,2,3+ Workers=0,1	7	155	21	5	26	19	73.1%	21	90.5%	
69+71	46	HH Size=4+ Autos=1,2 Workers=2+	7	163	21	6	32	14	43.8%	21	66.7%	
72	47	HH Size=4+ Autos=3+ Workers=2	7	71	10	5	18	10	55.6%	10	100.0%	
73	48	HH Size=4+ Autos=3+ Workers=3+	7	72	10	5	20	5	25.0%	10	50.0%	
Small Urban Total				7	2,045	280	6	483	335	69.4%	280	119.6%

Findings for Small Urban Areas:

1. Retrieval is at 120% of sampling target.
2. The retrieval to recruit response rate is at average at 69%.
3. Two out of 15 target cells (13%) have less than 8 completed households; 10 of 15 data cells achieved 90% or more of target goals.

Table 2.4. Sample Area 4 – Small Cities Areas: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
Small Cities												
74	49	HH Size=1 Autos=0 Workers=0,1	2	118	14	6	20	17	85.0%	14	121.4%	
75	50	HH Size=1 Autos=1+ Workers=0	2	216	24	6	52	52	100.0%	24	216.7%	
76	51	HH Size=1 Autos=1+ Workers=1	2	258	29	7	57	44	77.2%	29	151.7%	
77	52	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	2	47	10	4	6	6	100.0%	10	60.0%	
78+79	53	HH Size=2 Autos=1 Workers=0,1	2	176	20	6	30	21	70.0%	20	105.0%	
80+83	54	HH Size=2 Autos=1,2+ Workers=2	2	256	31	7	66	48	72.7%	31	154.8%	
81	55	HH Size=2 Autos=2+ Workers=0	2	150	18	6	41	38	92.7%	18	211.1%	
82	56	HH Size=2 Autos=2+ Workers=1	2	152	18	6	39	34	87.2%	18	188.9%	
84+85+87	57	HH Size=3 Autos=1,2,3+ Workers=0,1	2	160	19	7	29	19	65.5%	19	100.0%	
86+88	58	HH Size=3 Autos=1,2 Workers=2,3	2	150	18	7	18	14	77.8%	18	77.8%	
89+90	59	HH Size=3 Autos=3+ Workers=2,3	2	93	12	6	23	21	91.3%	12	175.0%	
91+92+94	60	HH Size=4+ Autos=1,2,3+ Workers=0,1	2	190	24	6	25	17	68.0%	24	70.8%	
93+95	61	HH Size=4+ Autos=1,2 Workers=2,3+	2	222	26	7	40	27	67.5%	26	103.8%	
96+97	62	HH Size=4+ Autos=3+ Workers=2,3+	2	140	17	7	24	16	66.7%	17	94.1%	
Small Cities Total				2	2,328	280	6	470	374	79.6%	280	133.6%

Findings for Small Cities Areas:

1. Retrieval is at 134% of sampling target.
2. The retrieval to recruit response rate is the highest for all regions at 80%.
3. Only 1 out of 14 target cells (7%) had less than 8 household completes; 11 of 14 data cells achieved 90% or more of target goals.

Table 2.5. Sample Area 5 – Upper Peninsula Rural: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
Upper Peninsula Rural												
98	63	HH Size=1 Autos=0 Workers=0,1	3	104	14	5	17	12	70.6%	14	85.7%	
99	64	HH Size=1 Autos=1,2,3+ Workers=0	3	246	32	6	71	59	83.1%	32	184.4%	
100	65	HH Size=1 Autos=1,2,3+ Workers=1	3	218	30	6	41	34	82.9%	30	113.3%	
101	66	HH Size=2,3,4+ Autos=0 Workers=0,1,2+	3	24	10	2	2	0	0.0%	10	0.0%	
102+103	67	HH Size=2 Autos=1 Workers=0,1	3	169	21	5	30	27	90.0%	21	128.6%	
104+107	68	HH Size=2 Autos=1,2,3+ Workers=2	3	229	30	6	68	35	51.5%	30	116.7%	
105	69	HH Size=2 Autos=2,3+ Workers=0	3	171	21	6	53	48	90.6%	21	228.6%	
106	70	HH Size=2 Autos=2,3+ Workers=1	3	152	19	6	43	49	114.0%	19	257.9%	
108+109	71	HH Size=3 (Autos=1,2,3+ Workers=0) and (Autos 1,3+ Workers=1)	3	81	12	6	15	11	73.3%	12	91.7%	
111	72	HH Size=3 Autos=2 Workers=1	3	42	10	3	10	7	70.0%	10	70.0%	
110+112	73	HH Size=3 Autos=1,2 Workers=2,3	3	105	14	6	12	8	66.7%	14	57.1%	
113+114	74	HH Size=3 Autos=3+ Workers=2,3	3	71	10	5	31	21	67.7%	10	210.0%	
115+116+118	75	HH Size=4+ Autos=1,2,3+ Workers=0,1	3	132	16	7	23	15	65.2%	16	93.8%	
117+119	76	HH Size=4+ Autos=1,2 Workers=2,3+	3	167	21	6	29	19	65.5%	21	90.5%	
120	77	HH Size=4+ Autos=3+ Workers=2	3	59	10	4	20	9	45.0%	10	90.0%	
121	78	HH Size=4+ Autos=3+ Workers=3+	3	57	10	4	9	4	44.4%	10	40.0%	
Upper Peninsula Rural Total				3	2,027	280	6	474	358	75.5%	280	127.9%

Findings for the Upper Peninsula Rural Region:

1. Retrieval is at 128% of sampling target.
2. The retrieval to recruit response rate is above average at 76%.
3. Three out of 16 target cells (19%) have less than 8 completed households; 11 put of 16 cells achieved 90% or more of target goals; An additional cell achieved 85% of goals.

Table 2.6. Sample Area 6 – Northern Lower Peninsula Rural: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
Northern Lower Peninsula Rural												
122	79	HH Size=1 Autos=0 Workers=0,1	4	72	10	4	20	13	65.0%	10	130.0%	
123	80	HH Size=1 Autos=1+ Workers=0	4	246	32	6	68	52	76.5%	32	162.5%	
124	81	HH Size=1 Autos=1+ Workers=1	4	211	28	6	45	37	82.2%	28	132.1%	
125+126+127	82	(HH Size=2 Autos=1 Workers=0,1) and (HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+)	4	211	28	5	42	38	90.5%	28	135.7%	
128+131	83	HH Size=2 Autos=1,2+ Workers=2	4	233	30	6	67	37	55.2%	30	123.3%	
129	84	HH Size=2 Autos=2+ Workers=0	4	189	26	5	58	49	84.5%	26	188.5%	
130	85	HH Size=2 Autos=2+ Workers=1	4	148	22	6	35	25	71.4%	22	113.6%	
132+133+135	86	HH Size=3 Autos=1,2,3+ Workers=0,1	4	136	18	6	34	26	76.5%	18	144.4%	
134+136	87	HH Size=3 Autos=1,2 Workers=2,3	4	87	12	6	13	9	69.2%	12	75.0%	
137+138	88	HH Size=3 Autos=3+ Workers=2,3	4	76	10	6	23	15	65.2%	10	150.0%	
139+140+142	89	HH Size=4+ Autos=1,2,3+ Workers=0,1	4	164	24	5	25	18	72.0%	24	75.0%	
141+143	90	HH Size=4+ Autos=1,2 Workers=2,3+	4	176	24	6	33	12	36.4%	24	50.0%	
144+145	91	HH Size=4+ Autos=3+ Workers=2,3+	4	124	16	6	31	11	35.5%	16	68.8%	
Northern Lower Peninsula Rural Total				4	2,073	280	6	494	342	69.2%	280	122.1%

Findings for the Northern Lower Peninsula Rural Region:

1. Retrieval is at 122% of sampling target.
2. The retrieval to recruit response rate is at average at 69%.
3. None of 13 target cells (0%) have less than 8 completed households; 9 of 13 cells achieved target goals.

Table 2.7. Sample Area 7 – Southern Lower Peninsula Rural: Recruitment and Retrieval by Data Cells as of 03/19/2010

Strata ID	Cell	Michigan Travel Counts	Region	2005 Total Household Responses	Proposed Add-On	List/Target	Count of Recruited HHs	Count of Retrieved HHs	% of Recruited	Target HHs	% of Target	
					Survey Targets							
Southern Lower Peninsula Rural												
146	92	HH Size=1 Autos=0 Workers=0,1	5	73	10	5	12	8	66.7%	10	80.0%	
147	93	HH Size=1 Autos=1+ Workers=0	5	194	24	6	62	49	79.0%	24	204.2%	
148	94	HH Size=1 Autos=1+ Workers=1	5	233	31	6	47	32	68.1%	31	103.2%	
149	95	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	5	27	10	2	2	1	50.0%	10	10.0%	
150	96	HH Size=2 Autos=1 Workers=0	5	76	10	4	23	19	82.6%	10	190.0%	
151	97	HH Size=2 Autos=1 Workers=1	5	66	10	5	9	8	88.9%	10	80.0%	
152+155	98	HH Size=2 Autos=1,2+ Workers=2	5	269	35	6	76	50	65.8%	35	142.9%	
153	99	HH Size=2 Autos=2+ Workers=0	5	155	20	5	51	43	84.3%	20	215.0%	
154	100	HH Size=2 Autos=2+ Workers=1	5	148	20	6	52	37	71.2%	20	185.0%	
156+157+159	101	HH Size=3 Autos=1,2,3+ Workers=0,1	5	130	18	6	23	16	69.6%	18	88.9%	
158+160	102	HH Size=3 Autos=1,2 Workers=2,3	5	113	15	6	17	11	64.7%	15	73.3%	
161+162	103	HH Size=3 Autos=3+ Workers=2,3	5	82	12	5	30	21	70.0%	12	175.0%	
163+164+166	104	HH Size=4+ Autos=1,2,3+ Workers=0,1	5	165	22	6	30	23	76.7%	22	104.5%	
165+167	105	HH Size=4+ Autos=1,2 Workers=2,3+	5	182	23	6	30	17	56.7%	23	73.9%	
168+169	106	HH Size=4+ Autos=3+ Workers=2,3+	5	146	20	6	50	27	54.0%	20	135.0%	
Southern Lower Peninsula Rural Total				5	2,059	280	6	514	362	70.4%	280	129.3%

Findings for the Southern Lower Peninsula Rural Region:

1. Retrieval is at 129% of sampling target.
2. The retrieval to recruit response rate is at average at 70%.
3. One out of 15 target cells (7%) have less than 8 completed households; 9 of 15 cells have achieved target goals; an additional 3 data cells achieved 80% or more of target goals.

Findings Statewide:

1. Retrieval is at 122% of sampling target.
2. To date, the retrieval to recruit response rate is at 71%.
3. 14 out of 106 target cells (13%) have less than 8 completed households; 73 of 106 data cells (69%) achieved 80% or more of target goals.

3.0 CHARACTERISTICS OF RECRUITED AND RETRIEVED HOUSEHOLDS

3.1 Table 3.1 below shows the characteristics of recruited households as of November 19, 2009.

Table 3.1. Characteristics of Recruited Households as of 11/19/09

Characteristic	MTC II Percent	Goal as Set by 2005 Sample Design/2000 PUMA Data
Sampling Area		
SEMCOG	13.0%	14.3%
Small Cities	13.9%	14.3%
Upper Peninsula Rural	14.0%	14.3%
Northern Lower Peninsula	14.7%	14.3%
Southern Lower Peninsula	15.2%	14.3%
TMA's	14.9%	14.3%
Small Urban Modeled Areas	14.3%	14.3%
Household Size		
1 Person	26.4%	26.0%
2 Persons	40.0%	34.0%
3 Persons	13.9%	16.0%
4+ Persons	19.7%	24.0%
Number of Vehicles		
0 Vehicles	4.4%	7.0%
1 Vehicle	28.6%	38.0%
2 Vehicles	39.1%	41.0%
3+ Vehicles	27.9%	14.0%
Refused	0.0%	0.0%
Number of Workers		
0 Workers	32.8%	25.0%
1 Worker	30.4%	33.0%
2 Workers	30.1%	35.0%
3+ Workers	6.7%	7.0%
Household Income		
Less than \$10,000	4.3%	8.0%
\$10,000 to \$49,999	40.6%	47.0%
\$50,000 to \$74,999	20.3%	20.0%
\$75,000 to \$99,999	11.5%	12.0%
\$100,000 +	9.8%	13.0%
Below \$50,000	3.9%	--
\$50,000 or above	3.7%	--
Unknown Income	5.9%	6.6%

Findings:

1. SEMCOG region recruitment is below average due to the number of cells with insufficient or low sample.
2. 4+ person household recruitments are below target. 8 of 26 (31%) 4+ person household target cells have insufficient sample for completion of target goals.
3. Zero vehicle recruits are at 4.4%. 10 of 15 (67%) zero vehicle household target cells have insufficient sample for completion of target goals.
4. Zero worker recruited households are 7.8% higher than in MTC I. This may be a result of current economic conditions rather than overrepresentation.
5. The unknown income percent is at an acceptable rate at 5.9%. (For MTC I it was 6.6%). Incomes for recruited households are underrepresented for households with incomes under \$10,000 as compared with MTC I recruitments.

3.2 Table 3.1 below shows the characteristics of completed households as of March 19, 2010.

Table 3.2. Characteristics of Completed Households with Travel through December 2009

Characteristic	MTC II Percent	Goal as Set by 2005 Sample Design/2000 PUMA Data
Sampling Area		
SEMCOG	12.2%	14.3%
Small Cities	15.6%	14.3%
Upper Peninsula Rural	14.9%	14.3%
Northern Lower Peninsula	14.3%	14.3%
Southern Lower Peninsula	15.1%	14.3%
TMA's	13.9%	14.3%
Small Urban Modeled Areas	14.0%	14.3%
Household Size		
1 Person	29.4%	26.0%
2 Persons	42.4%	34.0%
3 Persons	12.9%	16.0%
4+ Persons	15.4%	24.0%
Number of Vehicles		
0 Vehicles	4.1%	7.0%
1 Vehicle	31.2%	38.0%
2 Vehicles	39.7%	41.0%
3+ Vehicles	25.0%	14.0%
Refused	0.0%	0.0%
Number of Workers		
0 Workers	38.2%	25.0%
1 Worker	32.3%	33.0%
2 Workers	25.6%	35.0%
3+ Workers	4.0%	7.0%

Table 3.1. Characteristics of Completed Households with Travel through December 2009 *Continued*

Household Income		
Less than \$10,000	3.8%	8.0%
\$10,000 to \$49,999	44.7%	47.0%
\$50,000 to \$74,999	21.3%	20.0%
\$75,000 to \$99,999	11.7%	12.0%
\$100,000 +	9.5%	13.0%
Below \$50,000	2.2%	--
\$50,000 or above	2.8%	--
Unknown Income	3.9%	--

Findings:

1. As with recruitment, the SEMCOG retrieval level is below that of other regions.
2. Retrieved 4+person households are underrepresented at 15.4%. Overall the 4+ person household retrieval to recruit response rate is lower than the average (71%) at 55.5%, perhaps due to high respondent burden and the lack of incentive provisions for MTC II.
3. Zero vehicle households are underrepresented. Overall the zero vehicle household retrieval to recruit response rate is slightly lower than average at 66%. The primary challenge in completing zero vehicle households in the MTC II panel survey appears to be their high mobility rate and corresponding attrition from the panel universe.
4. Zero worker households are 13% higher than in MTC II, possibly due to current economic conditions. Their complete to recruitment rate at 82.6% was significantly higher than average, perhaps because of their greater availability for the survey.
5. Unknown income for MTC II completes is only 3.9%. Incomes for recruited households are underrepresented for households with incomes under \$10,000 and \$100,000 or more, as compared with MTC I recruitments.

4.0 Response Rates for Recruit and Retrieval

As with MTC I, MTC II used a two-stage interviewing process: (1) recruit households from the panel sample as described and (2) retrieve person and travel information from all members of the recruited households. The two response rates are determined separately and are called, respectively, the recruitment response rate and the retrieval response rate.

The Abt SRBI CATI system recorded a disposition (or outcome) for each of the phone numbers in the selected panel sample. Call attempts yielded three types of dispositions: (1) eligible, (2) ineligible, and (3) unknown eligibility. Subcategories for each of these dispositions are shown below in Table 3.

Using the CASRO method of estimating response rates, we would assume, based on our experience to date, that the percent of eligible households taking into account eligible/eligible + ineligible (4,687/9,015) is 52%. Thus, the percent of unknown numbers that can be expected to be eligible is estimated at $(2,611 * 0.52)$ or 1,358. Completes as a percent of estimated eligible households are therefore 55.8% [$3374 / (4,687 + 1,358)$]. The recruitment response rate is estimated at 55.8%. In MTC I, the recruitment response rate was calculated to be a comparable 50.5%.

In comparing the MTC II and MTC I sample dispositions, the main differences are that relatively more sample in MTC II were non-working numbers (25% in MTC II panel sample vs. 5% in MTC I—a freshly selected RDD sample). At the same time, as expected, there were more eligible sample in MTC II (40% in MTC II vs. 12% in MTC I). The high non-working number percent for MTC II (one-fourth of panel sample selected numbers) is an indication of high mobility among former MTC I participants—perhaps an indicator of the extent of economic turmoil within Michigan within the past two years. The trend towards more cell-phone-only households also likely contributed to the relatively high percentage of non-working numbers.

However, differences between wrong numbers and eligible numbers between MTC I and MTC II balanced out to yield comparable recruitment response rates, slightly higher in MTC II.

Table 3. Recruitment Sample Disposition

Sample Category	Frequency	Percent
<i>Eligible</i>	4687	40%
Completed Recruit Interviews	3374	29%
Refused	174	1%
Terminated Mid-Interview/Cancelled	1056	9%
Language Barrier/Deaf/Health Problems	83	1%
<i>Ineligible</i>	4328	38
Travel Date Quota Reached	18	0%
Geographic Screen-Out	191	2%
Disconnected	138	1%
Fax Machine/Data Line	71	1%
Advance Letter Not Deliverable-Vacant	1024	9%
Number not Working	2886	25%
<i>Unknown</i>	2611	22%
No Answer/Busy	944	8%
Answering Machine	505	4%
Scheduled for Callback	1162	10%
<i>Total Sample</i>	11,626	100%

The final MTC II retrieval response rate was 71.0% (2,395 retrieved/3,374 recruited). In comparison, the retrieval rate in MTC I was 57.2%. Part of the reason for increased retrieval rate (in addition to the effects using a panel sample) could be attributed to the rise of the Internet as a viable third mode for retrievals. For MTC II, 19% of persons participating in the study chose to fill out their activity/travel and person information by Internet. In comparison, for MTC I, less than 1% were Internet retrievals. Not surprisingly, the percentages of both phone retrievals (62% MTC II vs. 74% MTC I) and mail retrievals (19% MTC II vs. 25% MTC I) decreased. The final Comparison Report will further analyze differences by collection mode.

5.0 Data Quality Checks

The MI Travel Counts II Data Coding and Quality Control Memorandum approved by MDOT specifies an extensive list of data checks to be provided by Abt SRBI. These data checks have been run and corrections are being made to the data. A summary of these data checks follows.

5.0 Abt SRBI Data Quality Checks

5.1 Household File

All household checks have been completed. Findings are in *italics*.

1. Every variable has an answer except ZONE (TAZ) has not yet been assigned.
2. Every case has a record type of 1 for "Household Record".
3. There are no duplicate QNO or PHONENO values.
4. All area codes are valid Michigan area codes.
5. All month/day combinations are valid and they match the day of the week.
6. All home addresses are located in Michigan.
7. All home zip codes are valid.
8. All Home Counties are listed in the master list of the 83 Michigan counties.
9. Home longitude is always a negative value and always between -80 and -90.
10. Home latitude is always a positive value and always between 40 and 50.
11. All latitude and longitude values have six decimal places and are not rounded.
Note: All latitude and longitude values have twelve decimal places and are not rounded. We can remove the additional six decimal places.
12. The number of workers never exceeds the number of household members.
13. The number of subsidized vehicles never exceeds the number of household vehicles.
14. The raw recruitment data file has been checked and region assignments are being changed as needed based on geocoded location.
15. All files will be consistent by households and persons when the trip file is completed
16. One-to-many correspondence exists between the household and the person file.
There are no household IDs in the household file that do not exist in the person file and vice versa. There are no missing household IDs for any observation in the trip file.
17. One-to-many correspondence between the person file and the trip file will be checked when the 2nd interim report is updated.
18. The household size (HHNUMPPL) has been compared with the number of persons reported in the household in the Person file (HHPPL).

5.2 Person File

All person checks have been completed. Findings are in *italics*.

1. Every case has a record type of 2 for Person Record.
2. The frequency of QNO and PHONENO is always equal to the number of household members.

3. The number of PERNUM = 1 is equal to the number of households (2395). There are 5,302 persons in the Person file. All persons have a response for age range. *Only 6 persons refused to answer age range.*
4. All persons have a response for relationship (RELAT). *Only 10 persons listed response as "other specify". One person refused to answer Relationship.* All PERNUM=1 have "00" for relationship.
5. All persons have a response for licensed driver. A "don't know" response was given for one person. All persons under 16 are coded 3 for "not applicable" (553). *Two persons who refused to answer age are also coded 3.*
6. All persons have a response for transit pass. Only respondents with a transit pass have one or more answers for the type of transit pass possessed. Only respondents that indicated "Other" type of transit pass have a value in the "Other, Specify" field. *Type of transit pass was reported as "don't know" for four persons.*
7. All persons 18 years old or older have a response for education level. *Education level was reported as "don't know" for 19 persons over 18 years old and one person refused to give this information. There are no respondents 18 years of age or older that are coded "Not Applicable" For EDU. All respondents that are under 18 years old are coded as "Not Applicable" for EDU.*
8. *1057 persons attend school. 96.3% of school addresses had been geocoded in the final draft dataset.*
9. School longitude is always a negative value and is typically between -80 and -90.
10. School latitude is always a positive value and is typically between 40 and 50.
11. All latitude and longitude values have six decimal places and are not rounded.
12. *Two respondents who refused to answer age are coded "not applicable" for WRKR.* All respondents that are under 16 years old are coded as "Not Applicable". *Work status was reported as "don't know" for 16 persons age 16+.*
13. *36 persons with work status "not working reported "don't know" when asked if they are looking for work.*
14. The worker questions were only asked if working status was full-time worker, part-time worker.
15. Only respondents who indicated "Other" type of industry were asked the "Other, Specify" question for the industry.
16. Work address, city, state, zip code, geocoding information are only present for respondents with a fixed workplace.
17. Work address longitude values are always negative and typically between .80 and .90. This applies to both the primary and secondary workplace information.
18. *For the 3rd Interim Report, 83.7% of primary workplaces have been geocoded.*
19. Work address latitude values are always positive and typically between 40 and 50. This applies to both the primary and secondary workplace information.
20. All work address latitude and longitude values have six decimal places and are not rounded.
21. The secondary job questions are only asked if the respondent indicates having a second job.
22. *There are no cases with missing values for person proxy status. 44% of diaries were self-reported by phone, 18% were reported by proxy by phone, 19% were reported by mail, and 19% were reported by Internet. The proxy rate for persons 18+ years of age is 11.5%*
23. Long distance trip data checks are under "Trip File".

Trip File

All trip checks have been completed. Findings are in *italics*.

1. Each case should have a Record Type of “3” for “Trip Record”.
2. TRIPNUM=0 frequency is the number of no trip people.
3. Cases that did not take any trips will only have origin information where they started and ended the travel period.
4. Check that trip origin and destination longitude is generally a negative value, typically between 80 and 90.
5. Check that trip origin and destination latitude is generally a positive value, typically between 40 and 50.
6. Check that origin and destination longitude and latitude is not rounded. Data should be to six decimal places.
7. Check that only respondents who indicated “other” for type of origin or destination have an answer for other type of location.
8. Check that all cases of TRAV=2 and TRIPNUM=0 provided a reason for no travel. *Not all Internet responses collected a reason.*
9. If the trip number is equal to 1, time of departure and type of transportation used should be answered, unless respondent began travel period traveling.
10. Check that only cases with “other” for type of transportation have an answer for other type of transportation used. *There were 7 “other transportation” responses but 28 “other specify” descriptions. However all of the responses seem reasonable. For instance answering “car/truck van” and then answering trstypos “tow truck” or “walking” “jogging”.*
11. Check that the bus provider used is not missing if the trip involved dial-a-ride or a public bus as one of the transportation modes.
12. Check that only cases with “other” for bus provider have an answer for other bus provider used. *One case, bus1=59 has a response for “other bus” (busos).*
13. Check that there are no cases missing pay for trip, if transportation types 6 (taxi/shuttle), 7 (dial-a-ride), 8 (train), or 9 (public bus) were used as a transportation mode. Check values for pay6-pay9. *Transtype 6-9 responses=90; pay6-pay9 responses=90.*
14. Check that if the respondent indicated they paid for the trip that a valid amount has been recorded for amount paid for trip.
15. Check that if a trip involved a car, van, truck or motorcycle that the driver/passenger variable is not missing. Note that children that are too young to drive (under 14 years of age) are not asked the question, but are post-coded as passengers. *Whether the person was the driver or passenger was “don’t know” for 81 car, van, truck trips.*
16. Check that if a trip involved a car, van, truck, or motorcycle that the number of additional people in the vehicle was asked.
17. If the respondent did take a trip with other people in a car, van, truck, or motorcycle, check that the number of household members in the vehicle was asked, unless the respondent lives alone. If the respondent is a one-member household, the variable is post-coded with “none”. *Same 81 “don’t knows” as in 15 above for driver/passenger question.*
18. Check that the number of household members in the vehicle is not greater than the number of people in the vehicle.
19. Check that the respondent is not listed as a household member in the vehicle.
20. Check that if a trip involved a car, van, truck, or motorcycle that the respondent was asked if a household vehicle was used for the trip, unless the household does not have any available vehicles. If the respondent is a zero-vehicle

- household, the variable is post-coded with “no”. *53 trips were “don’t know for whether a household vehicle was used. 1 trip was a “refused” response.*
21. Check that if a trip involved a car, van, truck, or motorcycle that the respondent was asked if they paid for parking. *Ten trips are missing whether they paid for parking.*
 22. Check that if the respondent indicated they paid for parking that a valid amount has been recorded for amount paid for parking and that a parking rate has been identified. If the parking rate is “other”, the answer should be recorded in the other parking rate variable.
 23. Check that all cases (except those respondents that did not travel) are not missing arrival time or destination information.
 24. Check that if the respondent was at home that only activity codes 1 or 2 are used.
 25. Check that if the respondent was not at home that activity codes are not code 1 or 2.
 26. Check that departure & arrival times are in Military time.

Long Distance File

All long distance trip checks have been completed. Findings are in italics.

- Each case should have a record type of “4” for “Long Distance Trip Record”.
- The frequency of LDTRIP=1 should be the number of LDTRIPS=1 in the person file. *The number of persons in the trip file with long distance trips is 3,145. The number of ldtrip=1 in the long distance file is 3,145.*
- Check that only cases with “other” for type of transportation used to reach location have an answer for other type of transportation used.
- Check that the bus provider used to reach a location is not missing if a public bus was the mode of transportation used to reach the location.
- Check that only cases with “other” for bus provider have an answer for other bus provider used to reach the location.
- Check that only cases with “other” for type of transportation used at the location have an answer for other type of transportation used at the location.
- Check that the bus provider used at the location is not missing if a public bus was used at the location.
- Check that only cases with “other” for bus provider used have an answer for other bus provider used at the location.
- Check that the number of times the trip was taken in the last 3 months is not greater than the number of times the trip has been taken in the last 12 months.

Appendix O: Final QA/QC Data Checking Report

Memorandum

TO: Laurie Wargelin, AbtSRBI

FROM: Cemal Ayvalik, Cambridge Systematics

DATE: 04/14/2010

RE: MDOT - MI Travel Counts II - Findings from QA/QC Checks for the Third Interim Dataset

This memo summarizes the findings of Quality Control procedures that have been implemented by Cambridge Systematics (CS) to assure accuracy and validity of the MTC II survey data. The detailed descriptions of all logical checks for the Household, Person and Trip data and the geocoding of trip ends are provided in the October 4, 2009, memo titled "Quality Control, Geocoding Process, and Data Checking Manual for Implementation."

CS is responsible for reviewing data retrieval process for meeting sampling targets, conducting several logical checks, and testing the reasonableness of reported travel times by comparing travel times from Michigan Statewide and Southeast Michigan Council of Government's (SEMCOG) Travel Demand Model networks in TransCAD.

This memo is organized in seven technical sections and a summary section which is provided next. In each technical section, a brief description of each check and a summary of its findings are presented. When a large number of records did not pass a check, relevant information is provided in the Appendix A, for tables exceeding two or more pages, data are provided spreadsheets. Finally, descriptions of steps taken to conduct time-distance checks were given in Appendix B.

For the household file, *QNo*, a numeric unique identifier is used. For person records, a variable named *Per_ID* is used for identification. *Per_ID* combines *QNo* and person number from the person file. Similarly, trips are identified by the variable *Trip_ID*, which combines *Per_ID* with the trip number from the trip file. This memo is also accompanied by a spreadsheet set including a master sheet named "All_Flags.xls" which contains dummy variables for each check for the entirety of the household, person and trip records, and several standalone sheets providing detailed information for records with flags where necessary.

Summary of Key Findings and Next Steps

The Third Interim Dataset is free of major structural problems. All three files contain consistent number of records for household, person and trip level data.

All logical checks as detailed in the “Quality Control, Geocoding Process, and Data Checking Manual for Implementation” memo were performed. While most checks did not flag substantial number of records, the following areas still need further examination and some level of corrective action;

- Missing geocodes for trip ends (origin and destinations) of trips,
- Completeness of trip diaries in the trip file,
- Discrepancies between reported travel times and computed travel times obtained by time-distance checks from the model networks.

These key issues are addressed by reviewing the trip diaries of all the respondents in households in which anyone of the flags described above were found.

The initial query of these flags revealed that at least 371 household trip diaries have to reviewed in order to meet regional targets. A review process is designed to first fulfill the sample cell targets, as to the extent of the retrieved data would allow, then to meet regional targets. The reviewers updated/revised geocoding of trip ends, and made corrections to the departure and/or arrival times where necessary using information from model skims, intact accompanying person data if the trip in question is accompanied by another member of the household, or the remainder of the household’s diary. Reviewers also added comments for further action for trips which had to be removed or an addition was necessary, or whether the trip needed major updates.

A total of 429 household trip diaries were reviewed by a collaborative effort from MDOT staff, AbtSRBI and CS teams to meet regional targets. We will repeat some of the critical checks for the final dataset. These will include;

- geocoding rates,
- time-distance checks, and
- inconsistencies in trip diaries including, origin and destination information, activity types, durations, and travel times.

1. Data Retrieval and Sample Targets

The third interim dataset contains 2,395 households, which exceeds the overall sample target by 435 households. As shown in Table 1.1, number of sampled households by region shows that regional targets were consistently exceeded in each region.

Moreover, nine percent (216 households) of the sampled households did not report a trip for day of the survey. The issue is slightly more prevalent in less urbanized areas. Since the Final Report on Michigan Travel Counts (MTC I) also reported a rate of almost 10 percent for non-traveling households in the sample, the rate of non-traveling households is found to be consistent with the MTC I data.

Table 1.1. Number of Households in the Data by Sampling Region

Region	Survey Targets	Sampled Hhs	No-Trip Households	No-Trip Households (%)	HHs w/ Trips
SEMCOG	280	291	22	7.6%	269
TMAAs	280	332	25	8.0%	307
Small Urban Model Areas	280	334	31	9.8%	303
Small City	280	374	30	10.8%	344
UP Rural	280	358	35	9.9%	323
NLP Rural	280	343	37	7.5%	306
SLP Rural	280	363	36	9.3%	327
Total	1,960	2,395	216	9.0%	2,179

The sampling plan for the MTC II consisted of 106 separate cells defined by region, household size, number of workers and vehicles in the household. The details of the plan can be found in the technical memo dated August 10, 2009 and titled "Revised MDOT Household Survey Scheme". Table 1.2 shows the total number of households retrieved by each target cell. For the over half of the cells, targets were reached or exceeded. Nearly 17 percent of the cells (18 cells) had minor deviations (a deficit of less than or equal 30 percent of the cell target) from the target values. However, for 30 percent of the cells (32 cells), generally for zero-vehicle households, response was weaker (no response from more than 30 percent of the cell target). For these cells data can be aggregated by combining regions into urban and rural areas for analysis. Further details about sampling target achievement and recommendations can be found in AbtSRBI's Methodology Report.

Table 1.2. Survey Retrieval by Sampling Cells

Cell	Description	Region	Survey		Minor Deviation Cell	Low Response Cell
			Targets	Retrieved		
1	HH Size=1 Autos=0 Workers=0,1	SEMCOG	15	10	0	1
2	HH Size=1 Autos=1+ Workers=0	SEMCOG	21	47	0	0
3	HH Size=1 Autos=1+ Workers=1	SEMCOG	34	39	0	0
4	HH Size=2 Autos=0 Workers=0,1,2	SEMCOG	10	3	0	1
5	HH Size=2 Autos=1 Workers=1,2	SEMCOG	14	8	0	1
6	HH Size=2 Autos=1,2+ Workers=0	SEMCOG	19	39	0	0
7	HH Size=3 Autos=1,2,3+ Workers=0	SEMCOG	10	6	0	1
8	HH Size=2 Autos=2+ Workers=1	SEMCOG	14	34	0	0
9	HH Size=2 Autos=2+ Workers=2	SEMCOG	24	23	1	0
10	HH Size=3,4+ Autos=0 Workers=0,1,2,3+	SEMCOG	10	1	0	1
11	HH Size=3 Autos=1,2,3+ Workers=1	SEMCOG	16	15	1	0
12	HH Size=3 Autos=1,2 Workers=2,3	SEMCOG	15	9	0	1
13	HH Size=3 Autos=3+ Workers=2,3	SEMCOG	10	13	0	0
14	HH Size=4+ Autos=1,2,3+ Workers=0	SEMCOG	10	1	0	1
15	HH Size=4+ Autos=1,2 Workers=1	SEMCOG	18	11	0	1
16	HH Size=4+ Autos=1,2 Workers=2,3+	SEMCOG	18	15	1	0
17	HH Size=4+ Autos=3+ Workers=1,2	SEMCOG	12	12	0	0
18	HH Size=4+ Autos=3+ Workers=3+	SEMCOG	10	5	0	1
SEMCOG Subtotal			280	291	3	9
19	HH Size=1 Autos=0 Workers=0,1	TMA	10	6	0	1
20	HH Size=1 Autos=1+ Workers=0	TMA	23	49	0	0
21	HH Size=1 Autos=1+ Workers=1	TMA	34	34	0	0
22	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	TMA	10	6	0	1
23	HH Size=2 Autos=1 Workers=0,1	TMA	19	23	0	0
24	HH Size=2 Autos=1,2+ Workers=2	TMA	37	51	0	0
25	HH Size=2 Autos=2+ Workers=0	TMA	14	32	0	0
26	HH Size=2 Autos=2+ Workers=1	TMA	17	42	0	0
27	HH Size=3 Autos=1,2,3+ Workers=0,1	TMA	19	13	0	1
28	HH Size=3 Autos=2,3+ Workers=2	TMA	18	13	0	1
29	HH Size=3 (Autos=1 Workers=2,3) and (Autos=2,3+ Workers=3)	TMA	10	3	0	1
30	HH Size=4+ Autos=1,2,3+ Workers=0,1	TMA	24	22	1	0
31	HH Size=4+ Autos=1,2 Workers=2,3+	TMA	23	22	1	0
32	HH Size=4+ Autos=3+ Workers=2	TMA	10	9	1	0
33	HH Size=4+ Autos=3+ Workers=3+	TMA	12	7	0	1
Transportation Management Area Subtotal			280	332	3	6
34	HH Size=1 Autos=0 Workers=0,1	SUMA	12	12	0	0
35	HH Size=1 Autos=1+ Workers=0	SUMA	26	62	0	0
36	HH Size=1 Autos=1+ Workers=1	SUMA	31	35	0	0
37	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	SUMA	10	1	0	1
38	HH Size=2 Autos=1 Workers=0,1	SUMA	21	28	0	0
39	HH Size=2 Autos=1,2+ Workers=2	SUMA	36	40	0	0
40	HH Size=2 Autos=2+ Workers=0	SUMA	19	40	0	0
41	HH Size=2 Autos=2+ Workers=1	SUMA	19	31	0	0
42	HH Size=3 Autos=1,2,3+ Workers=0,1	SUMA	18	13	0	1
43	HH Size=3 Autos=1,2 Workers=2,3	SUMA	14	9	0	1
44	HH Size=3 Autos=3+ Workers=2,3	SUMA	12	16	0	0
45	HH Size=4+ Autos=1,2,3+ Workers=0,1	SUMA	21	19	1	0
46	HH Size=4+ Autos=1,2 Workers=2+	SUMA	21	13	0	1
47	HH Size=4+ Autos=3+ Workers=2	SUMA	10	10	0	0
48	HH Size=4+ Autos=3+ Workers=3+	SUMA	10	5	0	1
Small Urban Model Area Subtotal			280	334	1	5
49	HH Size=1 Autos=0 Workers=0,1	Small Cities	14	17	0	0
50	HH Size=1 Autos=1+ Workers=0	Small Cities	24	52	0	0
51	HH Size=1 Autos=1+ Workers=1	Small Cities	29	44	0	0
52	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	Small Cities	10	6	0	1
53	HH Size=2 Autos=1 Workers=0,1	Small Cities	20	21	0	0
54	HH Size=2 Autos=1,2+ Workers=2	Small Cities	31	48	0	0
55	HH Size=2 Autos=2+ Workers=0	Small Cities	18	38	0	0
56	HH Size=2 Autos=2+ Workers=1	Small Cities	18	34	0	0
57	HH Size=3 Autos=1,2,3+ Workers=0,1	Small Cities	19	19	0	0
58	HH Size=3 Autos=1,2 Workers=2,3	Small Cities	18	14	1	0
59	HH Size=3 Autos=3+ Workers=2,3	Small Cities	12	21	0	0
60	HH Size=4+ Autos=1,2,3+ Workers=0,1	Small Cities	24	17	0	1
61	HH Size=4+ Autos=1,2 Workers=2,3+	Small Cities	26	27	0	0
62	HH Size=4+ Autos=3+ Workers=2,3+	Small Cities	17	16	1	0
Small Cities Subtotal			280	374	2	2

Table 1.2. (Continued) Survey Retrieval by Sampling Cells

Cell	Description	Region	Survey		Minor	Low
			Targets	Retrieved	Deviation Cell	Response Cell
63	HH Size=1 Autos=0 Workers=0,1	UP Rural	14	12	1	0
64	HH Size=1 Autos=1,2,3+ Workers=0	UP Rural	32	59	0	0
65	HH Size=1 Autos=1,2,3+ Workers=1	UP Rural	30	34	0	0
66	HH Size=2,3,4+ Autos=0 Workers=0,1,2+	UP Rural	10	0	0	1
67	HH Size=2 Autos=1 Workers=0,1	UP Rural	21	27	0	0
68	HH Size=2 Autos=1,2,3+ Workers=2	UP Rural	30	35	0	0
69	HH Size=2 Autos=2,3+ Workers=0	UP Rural	21	48	0	0
70	HH Size=2 Autos=2,3+ Workers=1	UP Rural	19	49	0	0
71	HH Size=3 (Autos=1,2,3+ Workers=0) and (Autos 1,3+ Workers=1)	UP Rural	12	11	1	0
72	HH Size=3 Autos=2 Workers=1	UP Rural	10	7	0	1
73	HH Size=3 Autos=1,2 Workers=2,3	UP Rural	14	8	0	1
74	HH Size=3 Autos=3+ Workers=2,3	UP Rural	10	21	0	0
75	HH Size=4+ Autos=1,2,3+ Workers=0,1	UP Rural	16	15	1	0
76	HH Size=4+ Autos=1,2 Workers=2,3+	UP Rural	21	19	1	0
77	HH Size=4+ Autos=3+ Workers=2	UP Rural	10	9	1	0
78	HH Size=4+ Autos=3+ Workers=3+	UP Rural	10	4	0	1
Upper Peninsula Rural Subtotal			280	358	5	4
79	HH Size=1 Autos=0 Workers=0,1	NLP Rural	10	13	0	0
80	HH Size=1 Autos=1+ Workers=0	NLP Rural	32	52	0	0
81	HH Size=1 Autos=1+ Workers=1	NLP Rural	28	37	0	0
82	(HH Size=2 Autos=1 Workers=0,1) and (HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+)	NLP Rural	28	38	0	0
83	HH Size=2 Autos=1,2+ Workers=2	NLP Rural	30	37	0	0
84	HH Size=2 Autos=2+ Workers=0	NLP Rural	26	49	0	0
85	HH Size=2 Autos=2+ Workers=1	NLP Rural	22	26	0	0
86	HH Size=3 Autos=1,2,3+ Workers=0,1	NLP Rural	18	26	0	0
87	HH Size=3 Autos=1,2 Workers=2,3	NLP Rural	12	9	0	1
88	HH Size=3 Autos=3+ Workers=2,3	NLP Rural	10	15	0	0
89	HH Size=4+ Autos=1,2,3+ Workers=0,1	NLP Rural	24	18	0	1
90	HH Size=4+ Autos=1,2 Workers=2,3+	NLP Rural	24	12	0	1
91	HH Size=4+ Autos=3+ Workers=2,3+	NLP Rural	16	11	0	1
Northern Peninsula Rural Subtotal			280	343	0	4
92	HH Size=1 Autos=0 Workers=0,1	SLP Rural	10	8	1	0
93	HH Size=1 Autos=1+ Workers=0	SLP Rural	24	49	0	0
94	HH Size=1 Autos=1+ Workers=1	SLP Rural	31	32	0	0
95	HH Size=2,3,4+ Autos=0 Workers=0,1,2,3+	SLP Rural	10	1	0	1
96	HH Size=2 Autos=1 Workers=0	SLP Rural	10	19	0	0
97	HH Size=2 Autos=1 Workers=1	SLP Rural	10	8	1	0
98	HH Size=2 Autos=1,2+ Workers=2	SLP Rural	35	50	0	0
99	HH Size=2 Autos=2+ Workers=0	SLP Rural	20	43	0	0
100	HH Size=2 Autos=2+ Workers=1	SLP Rural	20	37	0	0
101	HH Size=3 Autos=1,2,3+ Workers=0,1	SLP Rural	18	16	1	0
102	HH Size=3 Autos=1,2 Workers=2,3	SLP Rural	15	11	0	1
103	HH Size=3 Autos=3+ Workers=2,3	SLP Rural	12	21	0	0
104	HH Size=4+ Autos=1,2,3+ Workers=0,1	SLP Rural	22	23	0	0
105	HH Size=4+ Autos=1,2 Workers=2,3+	SLP Rural	23	18	1	0
106	HH Size=4+ Autos=3+ Workers=2,3+	SLP Rural	20	27	0	0
Southern Peninsula Rural Subtotal			280	363	4	2
Statewide Totals			1960	2395	18	32

2. Overview of Connectivity between Data Files

The third Interim MTC II data set is composed of three files that are interrelated with common identifiers. The dataset contains information from 2,395 households, 5,302 individuals, and 19,846 trips, while 744 trip records indicated no actual trips were made for these records reducing the total to 19,102 actual trips. This corresponds to an average household size of 2.21 persons and an average trip rate of 7.98 trips per household and 3.60 trips per person. The data from entire MTC I sample indicated an average household size of 2.5 persons and 9.1 trips per household which seem higher than MTC II, while for both datasets trip rate per person was found as 3.60 trips per person. However, these differences can be even smaller, if MTC I data from the same households sampled in MTC II are considered. The “Comparison Report” will include such comparisons and will derive more concrete conclusions.

In order to check the comprehensiveness of the data components, higher order of the nests were queried in person and trip files, and total number of persons covered by the survey is computed as the sum of household sizes in the household file. Table 2.1 shows the summary of these comparisons.

Table 2.1. Household, Person and Trip Counts by Data File Type

	Number of Household Records	Number of Person Records	Number of Trip Records
Household File	2,395	5,302	
Person File	2,395	5,302	
Trip File	2,395	5,302	19,846

The shaded cells indicate that information was not applicable. Uniform counts listed in columns would indicate a proper representation of all levels of the data in all higher nests. The statistics featured in Table 2.1 indicate that the third Interim Dataset has no major structural problems and all queries of higher nests in person and trip files matched the total number of records in these nests.

3. Critical Checks on Trip File

Before conducting the full set of all checks, we have performed a few critical checks on the trip file which were known from the previous waves to produce flags pointing to critical errors or missing information. These included missing geocodes, repeated origins or destinations for subsequent trips from the same person, and substantial differences between reported travel times and travel times derived from model skims.

A household which had more than 25 percent of its total trips with a missing geocode was flagged. When this flag with was combined with repeated trip ends and time-distance flags, trip records from 771 households were identified as having a critical error. Since deletion of these households would have violated the great majority of the cell targets and regional targets, a strategy for conducting thorough reviews on a subset of these households was developed. The selection process considered to meet cell targets first. If there are no records available for a cell to meet its target, additional households were selected with similar vehicle budgets from other cells. If regional targets were still not met, then additional households were selected from the remaining households. Once, a regional target is reached selection process is stopped. Table 3.1 shows distribution of flagged households by sampling region and number of households to be reviewed.

Table 3.1. Number of Households with Critical Flags by Region

Region	Retrieved	Regional Targets	Households with Critical Flags	Households in Need of a Review
SEMCOG	291	280	84	73
Small_City	374	280	117	48
UP_Rural	358	280	126	48
NLP_Rural	343	280	122	59
SLP_Rural	363	280	119	46
TMA	332	280	110	58
Small_Urb	334	280	93	39
Totals	2395	1960	771	371

The review process consisted of two main activities,

- conducting an additional round of geocoding if geocoding information was missing or seemed erroneous, and
- reviewing and updating reported arrival and/or departure times based on model skims and information from accompanying persons from the same households.

For trip records which had substantial missing information or contained unrealistic information, the associated households were marked to be removed from the sample. For cases which more detailed searches were necessary, these households were marked to suggest further reviews. Reviews were conducted in collaboration with MDOT staff, AbtSRBI and CS teams. There were 429 reviews completed in order to meet regional targets. The following sections in this report detail the findings of all checks performed on the entirety of the third Interim MTC II dataset.

4. Household File Checks

There are five different checks that involve the Household file.

4.1. Month/Day Combinations and Day of the Week

Table 4.1 displays the dates on which the households reported their trips. All of the day and month and day-of-week combinations were valid.

Table 4.1. Day and Month Combinations

Dates	Day of the Week	Frequency	Percent	Cumulative Frequency	Cumulative Percent
14-Sep-09	Monday	51	2.13	51	2.13
15-Sep-09	Tuesday	54	2.25	105	4.38
16-Sep-09	Wednesday	51	2.13	156	6.51
17-Sep-09	Thursday	47	1.96	203	8.48
18-Sep-09	Friday	49	2.05	252	10.52
21-Sep-09	Monday	49	2.05	301	12.57
22-Sep-09	Tuesday	45	1.88	346	14.45
23-Sep-09	Wednesday	53	2.21	399	16.66
24-Sep-09	Thursday	53	2.21	452	18.87
25-Sep-09	Friday	55	2.3	507	21.17
28-Sep-09	Monday	57	2.38	564	23.55
29-Sep-09	Tuesday	53	2.21	617	25.76
30-Sep-09	Wednesday	53	2.21	670	27.97
1-Oct-09	Thursday	60	2.51	730	30.48
2-Oct-09	Friday	26	1.09	756	31.57
5-Oct-09	Monday	28	1.17	784	32.73
6-Oct-09	Tuesday	38	1.59	822	34.32
7-Oct-09	Wednesday	57	2.38	879	36.7
8-Oct-09	Thursday	56	2.34	935	39.04
9-Oct-09	Friday	52	2.17	987	41.21
12-Oct-09	Monday	59	2.46	1046	43.67
13-Oct-09	Tuesday	59	2.46	1105	46.14
14-Oct-09	Wednesday	53	2.21	1158	48.35
15-Oct-09	Thursday	49	2.05	1207	50.4
16-Oct-09	Friday	56	2.34	1263	52.73
19-Oct-09	Monday	60	2.51	1323	55.24
20-Oct-09	Tuesday	60	2.51	1383	57.75
21-Oct-09	Wednesday	48	2	1431	59.75
22-Oct-09	Thursday	50	2.09	1481	61.84
23-Oct-09	Friday	54	2.25	1535	64.09
26-Oct-09	Monday	53	2.21	1588	66.3
27-Oct-09	Tuesday	52	2.17	1640	68.48
28-Oct-09	Wednesday	51	2.13	1691	70.61
29-Oct-09	Thursday	45	1.88	1736	72.48
30-Oct-09	Friday	51	2.13	1787	74.61
2-Nov-09	Monday	51	2.13	1838	76.74
3-Nov-09	Tuesday	47	1.96	1885	78.71
4-Nov-09	Wednesday	49	2.05	1934	80.75
5-Nov-09	Thursday	51	2.13	1985	82.88
6-Nov-09	Friday	34	1.42	2019	84.3
9-Nov-09	Monday	49	2.05	2068	86.35
10-Nov-09	Tuesday	39	1.63	2107	87.97
11-Nov-09	Wednesday	51	2.13	2158	90.1
12-Nov-09	Thursday	50	2.09	2208	92.19
13-Nov-09	Friday	49	2.05	2257	94.24
16-Nov-09	Monday	44	1.84	2301	96.08
17-Nov-09	Tuesday	51	2.13	2352	98.2
18-Nov-09	Wednesday	43	1.8	2395	100

We observe that all five days of the work week are represented in the sample, with each day of the week ranging between 18 to 21 percent. Table 4.2 shows the frequency distribution of sampled households by day of the week. The dataset contains records from Fridays. While Fridays are often excluded from travel data collection, the overall sample size and proportional distribution of data across days of the week allow us to perform additional analysis to help better understand travel patterns on an average weekday. These include testing whether data from Fridays are different from the other days of week with respect to trip rates, purpose, and trip length.

Table 4.2. Day of the Week Frequency Distribution

Day of the Week	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Monday	501	20.9	501	20.9
Tuesday	498	20.8	999	41.7
Wednesday	509	21.3	1508	63.0
Thursday	461	19.2	1969	82.2
Friday	426	17.8	2395	100.0

4.2. Consistency of Number of Workers with Number of Household Members 16 or Older

All the reported number of workers who were paid to work full or part time are smaller than or equal to the number of household members who are at least 16 years of age. All records are valid.

4.3. Number of Persons by Household in Person File Should Equal to Household Size in the Household File.

As noted in Section 2, it was found that all households met this criterion and household count in the person file matched the number of household records in the household file. The condition is satisfied.

4.4. All Home Addresses and Home Zip Codes Should be Located in Michigan

All the home zip codes and addresses were located in Michigan. The condition is satisfied for all household records.

4.5. All Fields Should Have Information

All records and all fields were checked for missing information. For some instances, missing information was justified such as number of vehicles subsidized, if a household has no vehicles. There were only three household records with missing information. Households 100203 and 112064 do not have a valid Qno number for MTC I data. Most probably, the records were dropped from the final data, but these households remained in the recruitment lists. The household 114119 has missing values on longitude and latitude fields. This household is located on the Mackinac Island.

5. Person File Checks

CS conducted 16 different logical checks on the person file.

5.1 Each Per_Id (Person Identifier) must have a Corresponding Qno in the Household File

All person records had a matching household identifier in the household file.

5.2. Person Numbers should be within the Range of the Number of People in the Household from the Household File.

All persons numbers are within the range of household size and all persons have a matching record in the person file.

5.3. Overall Frequency of Person Records Coded as #1 Should be Equal to the Total Number of Households.

All household heads (person #1) had person records in the Person file.

5.4. Reasonableness of Age and Relationship to Household Head

Household head age ranged between 18 and 94 years. Among 1,512 spouses, the youngest spouse age was 29 and oldest spouse was 95 years old. There were eight spouses with missing age information, while six of them reported their ages in age ranges and all ranges were reasonable. Persons with Per_ID 103723200 and 104341200 had missing values on age and age range fields.

The youngest child of a household head was 0 and the oldest “child” was 79 years old. The youngest parent who lived with the household head was 42 and the oldest parent was 99 years old. The age of the household head with the youngest parent was found to be 19 years old. Since such patterns are plausible but unlikely, we can incorporate additional criteria for the final data checks.

5.5. Other Relationship Field Should be Populated only for Respondents who Reported “Other” Relationship to Household Contact Person.

Only one person (109272200) reported “Other” as a response to relationship to the household head while a standardized relationship was defined.

5.6. All Cases Should have a Value for Licensed Driver and all Values Should be Age Appropriate.

In the person file there were 310 individuals who did not have a driver license and their age ranged between 16 to 92 years. There were 4,174 licensed drivers in the sample and 817 individuals were too young to have a drivers license. There was only person with an unknown drivers license status - person no 101605100 is 28 years old; however, his/her driver license status is unknown.

5.7. All Cases Should Have a Value for Educational Attainment and All Values Should be Age Appropriate.

All person records had a valid value for educational attainment. However, there are 12 cases with inconsistent School Type and Age categories. Table 5.1 lists these 12 individuals who are between 5 and 15 year old category, but reported that they were not enrolled in a school. These records need a review to confirm their educational status or coding for their ages.

Table 5.1 Unexpected Educational Status and Age Relationships

No	Per_id	Age	Age Range	Edu	STYPE
1	100758300	11	5 - 15	Not Applicable Too Young	Not a Student
2	100758400	9	5 - 15	Not Applicable Too Young	Not a Student
3	101600300	15	5 - 15	Not Applicable Too Young	Not a Student
4	101600400	14	5 - 15	Not Applicable Too Young	Not a Student
5	101600500	12	5 - 15	Not Applicable Too Young	Not a Student
6	104385300	5	5 - 15	Not Applicable Too Young	Not a Student
7	109545400	9	5 - 15	Not Applicable Too Young	Not a Student
8	109596400	15	5 - 15	Not Applicable Too Young	Not a Student
9	110961300	8	5 - 15	Not Applicable Too Young	Not a Student
10	111850700		5 - 15	Not Applicable Too Young	Not a Student
11	111850800		5 - 15	Not Applicable Too Young	Not a Student
12	113381300	14	5 - 15	Not Applicable Too Young	Not a Student

Table 5.2 features youngest and oldest age values for each educational attainment category. All age ranges were reasonable for each of the educational attainment category.

Table 5.2 Educational Attainment and Age Relationships

Highest Level of School Completed	Minimum Age	Maximum Age
0 = Not Applicable Too Young	0	17
1 = Less than High School	18	95
2 = High School	18	96
3 = Some College	18	93
4 = Technical/Vocational	20	87
5 = Associate's Degree	22	91
6 = Bachelors Degree	20	99
7 = Post Graduate Degree	25	93

5.8. If student, Check for School Name.

There were 1,057 students in the sample. However, 10 students did not report a school name. The list of these individuals is provided in Table 5.3.

Table 5.3 Person Records with Incomplete School Names

Per_id	School Type
101250300	Pre-School/Nursery School
101250400	Pre-School/Nursery School
103949200	Pre-School/Nursery School
104087300	Pre-School/Nursery School
104233200	Pre-School/Nursery School
104233300	Pre-School/Nursery School
106049100	Pre-School/Nursery School
107454400	Pre-School/Nursery School
110102600	Pre-School/Nursery School
112925300	Pre-School/Nursery School

5.9. All Cases Should have a Value for Work Status and All Values Should be Age Appropriate.

All the person records had a valid code for work status and all worker status categories had valid age ranges. Table 5.4 lists youngest and oldest age values for each employment status category.

Table 5.4. Employment Status and Age Relationships

Work Status	Minimum Age	Maximum Age
Paid Full-time Worker	18	93
Paid Part-time Worker	16	89
Unpaid Worker/Volunteer	16	88
Not Working	16	99
Not Applicable /Too Young	0	15

5.10. Worker Questions Should be Asked to Respondents Who Reported to be Workers

Non-workers' responses were queried for the questions asking for industry, workplace location, address, workplace coordinates, number of jobs held, and details about work hours and schedules. The queries yielded NULL responses for all person records, except for one person with Per_ID 110676200. This individual reported that he/she was not working but provided work address.

5.11. Respondents Who Have a Fixed Workplace Should Have Answers to Work Address Fields.

For all person records which did not report a fixed workplace, the fields pertaining to work address information were null, therefore, the condition is satisfied. Moreover, there were 59 workers who declined to report their location of their employer but had a workplace addresses available. There is no violation for this check.

5.12. Zip Codes For Work Addresses Should be Consistent with the Region.

The "Zip Code" and "the State" fields from the workplace addresses were queried. The query resulted in 38 person records that showed out of state workplace locations. These records are listed in Table 5.5. While most of these locations are in the neighboring states, we are planning

to expand this check by querying trip file on trip lengths and whether they have made a work trip.

Table 5.5. Out of State Workplaces

No	QNo	Per_ID	W1 State	W1 Zip	W2 State	W2 Zip
1	100369	100369100	MI	49877	WI	54143
2	100369	100369300	WI	54143	MI	49858
3	101350	101350200	IN	48001		
4	102002	102002100	IN	46703		
5	102695	102695300	AK	49707		
6	103082	103082100	MO	49098		
7	103611	103611200	OH	43560		
8	103781	103781200	IN	46526		
9	104176	104176100	WI	54143		
10	104545	104545100	IN	46514		
11	104819	104819100	WI	99998		
12	104819	104819200	WI	54157		
13	106218	106218100	TN	38401		
14	106236	106236200	MA	2072		
15	106397	106397300	OH	43623		
16	106484	106484100	WI	54121		
17	107659	107659100	ZZ	99998		
18	107714	107714200	98	99998		
19	107788	107788200	AK	49423		
20	108051	108051100	OH	43610		
21	108491	108491300	IN	46545		
22	108965	108965200	WI	54143		
23	109057	109057200	WI	54157		
24	109104	109104100	OH	43537		
25	109929	109929100	AK	49601		
26	110257	110257200	WI	54143		
27	110834	110834100	WI	54143		
28	111225	111225100	WI	54151		
29	111963	111963100	WI	54151		
30	112546	112546200	MA	2142		
31	112630	112630100	IN	46761		
32	112648	112648100	WI	54512		
33	113130	113130200	WI	54143		
34	113580	113580100	WI	54806		
35	113602	113602200	OH	43624		
36	113789	113789100	WI	54143		
37	113789	113789200	WI	54143		
38	113999	113999100	IN	46628		

5.13. Only Respondents Who Indicated "Other" Industry Have an Answer for Other Industry

The "Other Industry" field was null for all person records that reported to be workers in predefined Industry categories. The condition is satisfied.

5.14. *Non-Working Status Questions Were Only Asked to Respondents Who Were not Working.*

The query of persons who were working yielded that none of them answered to the questions which were asked to persons who were not working. This condition is satisfied.

5.15. *No Cases Should Have a Missing Proxy Status.*

All person records had non-missing values on the proxy status. However, for 403 cases proxy status was “Unknown”, therefore, source of the information for these person records and associated trip records cannot be identified. The list of these 403 person records are provided in the attached spreadsheet called “PR_Proxy_Unknown.xls”.

5.16. *Check That no Information is Missing For the Following: Gender, Age, Age Range, Relationship, Licensed Driver, Transit Pass, Education Level, School Type, Working Status, Proxy, Diary Completed, and Long Distance Trip.*

The queries that searched for missing values in the variables listed above yielded that only the age variable had missing values for 24 cases. Table 5.6 shows these records. While this check cannot be satisfied for these individuals, due to presence of a valid “Age Range” value for 18 of these person records, and well-known sensitivities towards age, this violation may be neglected.

Table 5.6. Individuals with Missing Values on Age

QNO	Per_ID	Gender	Age	Age Range
100461	100461200	Female		45 to 54
101222	101222100	Female		Refused
101258	101258100	Male		55 to 64
101258	101258200	Female		55 to 64
103598	103598100	Female		55 to 64
103723	103723100	Male		Refused
103723	103723200	Female		Refused
104341	104341100	Female		Refused
104341	104341200	Male		Refused
106221	106221100	Female		45 to 54
106221	106221200	Male		65 to 74
109649	109649100	Female		55 to 64
109649	109649200	Male		55 to 64
111142	111142100	Female		55 to 64
111142	111142200	Male		55 to 64
111850	111850300	Male		16 to 17
111850	111850400	Female		5 to 15
111850	111850500	Female		5 to 15
111850	111850600	Female		5 to 15
111850	111850700	Female		5 to 15
111850	111850800	Female		5 to 15
112212	112212100	Female		45 to 54
112212	112212200	Male		35 to 44
113652	113652300	Female		Refused

6. Trip File Checks

The trip file checks included 29 different logical checks as described in the Task 4.4 of the “Quality Control, Geocoding Process, and Data Checking Manual for Implementation” Memorandum. Before discussing the findings of these checks, we would like to point out two important observations in regards to the trip file.

The data compilation process for the trip file seems to truncate trips after the ninth trip. This results in loss of data. We have observed 201 trips from 182 households where a person made more than nine trips, but the trip diaries ended at the ninth trip. While the amount of such kind of trip diaries may be reduced in the final trip file after the reviews, such records remaining in the final data should be labeled to indicate the issue. For some trip diaries, relevant data can be retrieved from accompanying persons if trips after ninth trip were accompanied by another member of the household. Additional coding can be introduced for these households such that number of trips, trip rates by purpose, time of day can be corrected.

Another concern is related to subsequent trip records having the same origin from the previous trip record from the same person. While there were 169 trip records from 122 households with this issue, we expect to see lower levels of this type of errors in the final data, since the review process rejected these households to a greater extent. The trip records with this error including associated households are listed in the spreadsheet included in the spreadsheet set attached to this memo titled “CODING_TR_Repeated_Origins.xls”.

As mentioned in section 1, there were 744 trips records without an actual trip. These trip records are listed separately in the spreadsheet named “TR_NO_Trip.xls” and provided in the spreadsheet set. The spreadsheet also contains 216 household records for which all their members stayed home at the day of survey.

There were 65 one-way trips in the trip file. While potentially all of these can be justified, we listed these trips in Table A.1 in the Appendix and suggest a brief review of these diaries. Some of the trips listed in the table shows the same location as origin and destination. Moreover, workplaces were also shown as destinations, for these individuals activity type at destination, and their workplaces should be confirmed.

6.1. Only Respondents Who Indicated “Other” for Type of Origin, Destination, Type of Transportation, Bus Provider Have an Answer in the Other Category.

The query that checked other category responses for the trip records that were not covered by the predefined response categories yielded large number of violations for “Origin Type “ and “Destination Type” variables. In total, there were 1,094 records flagged due to this check. The lists of records are not presented in the document, but they are provided in the “All_Flags.xls” under “Trip_Flags” tab.

Table 6.1 provides a count of violations by each of the variables considered in this check, please note that summation of the counts is larger than 1,094 since one records may have more than violation. Finally, the violations reported by this check are not critical, and redundant display of information can be avoided by setting few additional conditions in queries.

Table 6.1 Violation Count in Selected Variables

	Number of Violations
Origin Type Other	544
Destination Type Other	564
Travel Mode Other	21
Bus Provider Other	1

6.2. All Cases of TRAV=2(No Trip) and TRIPNUM=0 Provided a Reason for No Travel.

In addition to check whether each of the non-traveling person has reported a reason why they did not travel at the day of survey, this check expanded to check whether TRAV variable is consistent with the trip diaries for each person. There were no incidences of a non-response to the reason for not traveling.

As noted above, there were 201 trip records where the trip sequence in person trip diaries did not match with codes in TRAV variable. For these 201 cases, TRAV value for the last reported trip by a person had a value of "1" indicating that the trip was followed by another trip. All of these diaries had reported only nine trips. The trip records with this error and associated households are listed in the spreadsheet titled "TR_Trav_Errors.xls" in the attached spreadsheet set.

6.3. If the Trip Number is Greater than Zero, Check Time of Departure and Type of Transportation Used.

For all trip records, the departure time and type of transportation fields had valid values. Table 6.2 and 6.3 show the number of trips by time of day and travel mode used, respectively.

Table 6.2. Trips by Time of Day Periods

TOD Periods	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Early AM	256	1.3%	256	1.3%
AM Peak	3,541	17.8%	3,797	19.1%
Mid-Day	7,252	36.5%	11,049	55.7%
PM Peak	5,097	25.7%	16,146	81.4%
Evening	2,387	12.0%	18,533	93.4%
Late Night	501	2.5%	19,034	95.9%
Past Midnight	812	4.1%	19,846	100.0%

Table 6.3. Trips by Travel Mode

Travel Modes	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Bike/Scooter	110	0.6	110	0.6
Bus	72	0.4	182	1.0
Car	17,262	90.4	17,444	91.4
Motorcycle	50	0.3	17,494	91.7
Other	90	0.5	17,584	92.2
Plane	9	0.05	17,593	92.2
School Bus	689	3.6	18,282	95.8
Train	2	0.01	18,284	95.8
Walk	801	4.2	19,085	100.0

6.4. Bus Provider Should not be Missed if Trip Involved Dial-A-Ride or Public Bus.

For all trips that involved public bus as a mode of travel, bus provider was reported with valid values. For 10 trips taken by a dial-a-ride mode, the service provider was not recorded. Table 6.4 lists these trip records.

Table 6.4. Trip records with Missing Service Provider Information

Trip_ID	Service Provider 1	Service Provider 2	Service Provider 3	Mode
100068110				Dial a Ride
100068120				Dial a Ride
100189310				Dial a Ride
102611210				Dial a Ride
103645510				Dial a Ride
103645520				Dial a Ride
109187320				Dial a Ride
114121110				Dial a Ride
114121120				Dial a Ride
114121130				Dial a Ride

6.5. Check for Pay for Trip If Transportation Mode Is 6, 7, 8, Or 9 (Taxi, Shuttle; Dial A Ride; Train; Public Bus).

For all trips that involved taxi, dial-a-ride, train, or public bus, payment of a fare was reported with valid values. However, the response categories for pay variables were miscoded; the codes for “Yes” and the “No” responses should be reversed or data dictionary should be updated.

6.6. Check For Amount Paid if Paid for the Trip.

There were 60 trips for which a cash fare was paid and transit passes were used for 10 additional trips. Cab or shuttle fares ranged between \$2.5 and \$25. Dial-a-ride fares of \$0.75 and \$50 were observed and a fare of \$50 seems unlikely, and therefore needs further examination. A train fare of \$10.75 was reported, and bus fares ranged between \$0.4 and \$70. The \$70 bus fare must be for an intercity travel, when this is excluded highest fare paid for bus is \$3.00, which is reasonable. We suggest a brief examination of cases with fares greater than or equal to \$50.00. The rest of the fares paid seem reasonable.

6.7. Check that Respondent is not Listed as a Household Member in the Vehicle.

This check was also expanded slightly to query number of household members and the number of occupants in a vehicle and to conduct some comparisons along with the values reported in the household member identifiers as occupants. The key variables for this check are VHNUM: number of household members in a vehicle and VTNUM: number of other individuals in a vehicle. Tables 6.5 and 6.6 show the frequency distribution for each variable.

Table 6.5. Frequency Distribution Number of Additional People in a Vehicle

VTNUM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	10,057	52.6	10,057	52.6
1	4,824	25.3	14,881	77.9
2	1,496	7.8	16,377	85.7
3	530	2.8	16,907	88.5
4	163	0.9	17,070	89.4
5	42	0.2	17,112	89.6
6	64	0.3	17,176	89.9
Unknown	140	0.7	17,316	90.7
Missing	1,786	9.3	19,102	100.0

Table 6.6. Frequency Distribution Number of Additional Household Members in a Vehicle

VHNUM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	13,600	71.2	13,600	71.2
1	4,098	21.5	17,698	92.7
2	998	5.2	18,696	97.9
3	271	1.4	18,967	99.3
4	92	0.5	19,059	99.8
5	9	0.05	19,068	99.8
6	34	0.2	19,102	100.0

The frequency table for VTNUM shows that there are 1,926 cases with “Unknown” and “Missing” values, however, for all these cases, VHNUM was zero. While this confirms for these cases there was no additional household member traveled, it cannot be concluded that the respondent was traveling alone.

The manifest variables (WHOACC1 – 8) denote the person numbers for household members traveling with the respondent. For none of the cases, the respondent was listed as an additional household member in company. Therefore, the first logical check is satisfied. We also added three additional checks to confirm;

- whether total number of persons listed in manifest variables is less than or equal to household size
- whether all additional household members in the vehicle are listed in manifest variables, and
- whether VTNUM is not missing or greater than zero when VHNUM is greater than zero.

For 106 cases, WHOACC_1 field contains a value of 18. These trip records are listed in the Table A.2 in the Appendix. It is apparent this flag will be removed automatically when the code 18 for the WHOACC_1 field is documented. The second additional check also produces flags in the same trip records that were flagged by the previous check. The third check is satisfied.

6.8. If Type of Transportation Used is 1, 2, or 3 (Car, Van, Truck ;Motorcycle; Bicycle, Moped), Then Check whether Household was Vehicle Used and Paid for Parking.

There were 108 trip records where the household vehicle identifier was missing. Furthermore, there were 118 trip records with missing information on paying for parking. In both queries, for most of the cases that are in violation, the transportation mode was “Bike or Scooter” (transportation type=3). Based on this finding, the definition of the check can be revised. The detailed list of cases that are flagged is provided in Table A.3 in the Appendix.

6.9. If Paid for Parking, Amount or Rate must be Valid.

There were 89 trip records in which a payment was recorded for parking. Table 6.7 shows these cases and parking payments made. Most of payment amounts and rates were found reasonable, except for the following nine trip records ;

- 103611110, \$5.00 as a monthly rate seemed low,
- 111699310, \$3.00 as an annual rate seemed low,
- 108274310, \$15.00 as an annual rate seemed low,
- 109488310, \$30.00 as an annual rate seemed low,
- 110443260, \$80.00 as a daily rate seemed high,
- 109958110, \$3.25 as a monthly rate seemed low,
- 113669310 and 113669340, \$3.33 as a monthly rate seemed low, and
- 113669320, \$1,458.00 as a monthly rate seemed very high.

These records can be investigated further to confirm the amount and the rate type.

Table 6.7 Reported Parking Rates in the Trip File

Trip_ID	Amount	Rate Type
100005210	\$30.00	Monthly
100033110	\$12.50	Monthly
100125210	\$5.00	Daily
100485120	\$40.00	Daily
100992130	\$5.00	Other
101084110	\$40.00	Monthly
101084210	\$74.00	Monthly
101138310	\$155.00	Per Semester
101707210	\$12.50	Monthly
101856230	\$0.10	Hourly
101987110	\$8.75	Hourly
102324120	\$5.00	Hourly
102324210	\$75.00	Monthly
102712220	\$2.00	Hourly
102721110	\$180.00	Annually
102817150	\$2.00	One-Time Rate
102847120	\$2.00	Hourly
103053310	\$15.00	Monthly
103053320	\$300.00	Annually
103053330	\$15.00	Monthly
103053340	\$300.00	Annually
103255110	\$0.50	Hourly
103346330	\$0.50	Meter
103550110	\$2.00	Daily
103611110	\$5.00	Monthly
104094210	\$51.00	Monthly
104094220	\$51.00	Monthly
104341150	\$0.25	Hourly
104732110	\$50.92	Monthly
104732120	\$50.92	Monthly
104968230	\$1.50	Hourly
105078110	\$60.00	Monthly
105603250	\$5.00	Hourly
105701150	\$70.00	Annually
106267210	\$30.00	Daily
106275280	\$1.50	Hourly
106339210	\$84.50	Monthly
106577310	\$2.50	Don't Know
106751210	\$3.00	Quarterly
106941110	\$4.75	Daily
106941130	\$0.50	Meter
106941210	\$4.75	Daily
106941230	\$0.50	Meter
106981320	\$60.00	Annually
107046150	\$180.00	Annually

Trip_ID	Amount	Rate Type
107046210	\$185.00	Annually
107046250	\$185.00	Annually
107077130	\$10.00	One-Time Rate
107105160	\$0.75	Hourly
107520110	\$15.00	Monthly
107773210	\$54.00	Monthly
108274310	\$15.00	Annually
108530310	\$150.00	Per Semester
109488310	\$30.00	Annually
109925230	\$1,000.00	Annually
109958110	\$3.25	Monthly
109985140	\$0.25	Meter
110443260	\$80.00	Daily
110575220	\$7.00	Hourly
110681210	\$75.00	Monthly
110721120	\$2.50	Daily
110821210	\$185.00	Annually
111158250	\$1.00	Hourly
111286120	\$15.00	Monthly
111286210	\$15.00	Monthly
111383220	\$75.00	Monthly
111619140	\$38.00	Daily
111621110	\$275.00	Per Semester
111699310	\$3.00	Annually
111899310	\$7.40	Hourly
112145310	\$200.00	Annually
112145330	\$200.00	Annually
112330110	\$55.00	Monthly
112339110	\$23.00	Monthly
112392170	\$5.00	One-Time Rate
112618110	\$0.25	Hourly
112823150	\$2.00	Hourly
113369110	\$85.00	Monthly
113369160	\$85.00	Monthly
113407130	\$14.00	Monthly
113505220	\$0.25	Hourly
113612190	\$0.25	Hourly
113627120	\$15.00	Monthly
113669160	\$15.42	Monthly
113669210	\$15.42	Monthly
113669310	\$3.33	Monthly
113669320	\$1,458.00	Monthly
113669340	\$3.33	Monthly
113800210	\$45.00	Monthly

6.10. If Parking Rate is "Other", Check For Other Parking Rate.

There was only one trip record that reported a parking rate type outside the predefined categories. For the trip with trip record number 100992130, a five dollar parking fee was paid, but rate type was reported as "Other" only.

6.11. Persons that did not Take any Trips will Only Have Origin Information - Where They Started and Ended the Travel Period.

None of records from respondents who did not travel had a destination information. We flagged all 744 trip records which did not report a travel. However, these flags do not constitute an error, rather a label that indicates no trip had occurred.

6.12. Trips Where Origin and Destination Location are the Same.

There were 228 trip records which had the same location as origin and destination. These cases including some key trip information, such as mode, purpose, and travel time are listed in the spreadsheet titled "TR_LoopTrip_Errors.xls". Based on the information provided in the spreadsheet, there are only few trips that qualify as a turn-around trip, and we suggest to repeat this check after the final dataset becomes available.

6.13. When Origin of Trip #1 is not Residence or Work Places, or School for Students Attending Higher Education.

The query that would conduct this check uses information about the type of origin and activity type at the origin. Flags are created when an origin location is not a place of residence, or cannot offer accommodation, and whether the type of activities at these locations are different from home related, traveling, or visiting someone else. Workers and students in higher education were allowed to be present at work or school locations as the base for their first trip of the day. The query pointed to 54 cases with unexpected base locations and/or activity types at base. There were 12 trip records which no trip was made, however, the activity type was not consistent with origin type.

All these 54 trip records and some key trip end information are listed in the spreadsheet titled "TR_Base_Errors.xls" which is included in the spreadsheet set attached to this memo. Further examination of the information in the spreadsheet indicated that most of these records indicated a traveling activity. While, these trips are flagged by this check, traveling can be considered as a valid activity for the final dataset. We suggest to repeat this check after the final dataset becomes available.

6.14. When Destination of the Last Trip is not Residence or Work Place, or School for Students Attending Higher Education.

Similar to the previous check, this check queried whether the final destination is able to offer accommodation or activity type was consistent with home, lodging, work or school for workers, and students, respectively. Outdoor recreation was also allowed as a reasonable final destination for the day. There were 171 trip records with an unexpected final destination or

activity type at the final destination. These trip records and some key trip end information are listed in the spreadsheet titled “TR_Terminal_Errors.xls”. We suggest to repeat this check after the final dataset becomes available.

6.15. Check Reasonableness of Walk and Transit Trips, e.g., Walk Trips More Than 45 Minutes for Non-Recreational Purposes.

There were 20 trip records which had an unexpectedly long travel times. These trips are listed in Table 6.8. We suggest a brief review of these records.

Table 6.8 Unexpectedly Long Walk Trips

No	Trip_ID	Travel Time	Mode
1	101217210	70	Walk
2	101740110	60	Walk
3	105932110	47	Walk
4	106500230	294	Walk
5	106842110	540	Walk
6	106842240	60	Walk
7	109929530	440	Walk
8	110109250	90	Walk
9	110831130	60	Walk
10	111354130	60	Walk
11	111864230	50	Walk
12	112925310	50	Walk
13	113246110	55	Walk
14	113297110	47	Walk
15	113381420	129	Walk
16	113492220	60	Walk
17	113631220	60	Walk
18	114152210	60	Walk
19	114306410	150	Walk
20	114306510	60	Walk

Trip records that reported regular travel times of more than or equal to 75 minutes by school bus, shuttle or taxi, dial-a-ride, public bus, or train are selected as unexpectedly long transit trips. There were 44 trip records that met this criteria. Table 6.9 shows these records. The majority of these records reported “School Bus” as a travel mode. We expect some improvements following the changes from the reviews and suggest to repeat this check after the final data becomes available.

Table 6.9 Unexpectedly Long Transit Trips

No	Trip_ID	Travel Time	Mode	No	Trip_ID	Travel Time	Mode
1	100189310	93	Dial a Ride	23	110066520	105	School Bus
2	101040350	120	School Bus	24	110135320	105	School Bus
3	101774310	210	School Bus	25	110212330	144	School Bus
4	102427320	87	School Bus	26	110212340	155	School Bus
5	102828310	80	School Bus	27	111267130	75	Public Bus
6	102828410	80	School Bus	28	111818320	75	School Bus
7	103645510	92	Dial a Ride	29	111818420	75	School Bus
8	103645520	95	Dial a Ride	30	112945420	135	School Bus
9	104422220	95	School Bus	31	113131340	120	Train
10	104700110	80	Public Bus	32	113131380	85	Train
11	104732420	91	School Bus	33	113131390	80	School Bus
12	105177110	85	School Bus	34	113337330	205	School Bus
13	105177140	80	School Bus	35	113337340	120	School Bus
14	105177510	85	School Bus	36	113743310	105	School Bus
15	105177520	90	School Bus	37	113743410	105	School Bus
16	106146220	85	School Bus	38	114071220	90	School Bus
17	106300310	81	School Bus	39	114071250	80	School Bus
18	106672120	100	School Bus	40	114100220	120	School Bus
19	106672220	100	School Bus	41	114100230	90	School Bus
20	107047320	76	School Bus	42	114100320	120	School Bus
21	108651310	565	School Bus	43	114100330	90	School Bus
22	108651410	505	School Bus	44	114568310	90	School Bus

6.16 Flag Walk, Bicycle And Taxi/Shuttle Modes Coded As Primary Travel Modes For Long Distance (Longer Than 100 Miles) Trips.

The query of travel distances and transportation modes used identified ten trip records with unexpectedly long trips made by walking. These records are listed in Table 6.10. We suggest further review of coding of these records and geocodes for these trips. The reviews conducted on the third interim dataset is also likely to correct geocoding for these records. We also suggest to repeat this check on the final dataset.

Table 6.10 Unexpectedly Long Trips for Non-Motorized and Taxi/Shuttle Modes

Trip_ID	Activity at Origin	Activity at Destination	Travel Time	Mode	Distance
100458310	Social	Social	3	Walk	116.2
100458320	Social	Social	4	Walk	116.4
103645320	Attend School	Attend School	3	Walk	153.0
103645330	Attend School	Attend School	2	Walk	153.0
111899230	Social	Work	2	Walk	203.9
113045210	Home - Other	Work	15	Walk	167.3
113045220	Work	Home - Other	5	Walk	167.4
113045240	Work	Work	15	Walk	166.2
113045250	Work	Work	15	Walk	166.3
114149140	Work	Home - Other	10	Walk	166.3

6.17. Check For Unusual Activity Durations; Less than an Hour of Work or School Activities or Discretionary Activities More than Two or Three Hours Should be Flagged.

This check identifies work and school activities that are shorter than 60 minutes as unexpectedly short. Furthermore, it creates flags for discretionary activities such as eating out, personal business, everyday shopping, or pick-up/drop-off someone, that are longer than 180 minutes. The queries resulted in 574 long and 116 short activities. These trip records and some key trip information are listed in the spreadsheet titled “TR_Activity_Duration_Errors.xls” which is included in the spreadsheet set. The review procedure also focused on the reported departure and arrival times and included updates or removals, therefore, it is likely that the amount of flags produced with this check would be reduced. We suggest to repeat this check after the final dataset becomes available.

6.19¹ If a Trip Involved a Car, Van, Truck, Or Motorcycle Then the Driver/Passenger Variable Should not be Missing. Note that Children are not Asked the Question, but Should be Coded as Passengers.

There were 30 trip records which did not meet this criteria. These records are given in Table 6.11. We suggest a brief review of these records.

Table 6.11 Missing or Inconsistent Driver/Passenger Identifier

Trip_ID	Drv/Pass	Mode	Age
100203430	Driver	Car, Van, Truck	8
100500620	Driver	Car, Van, Truck	3
101223410	Driver	Motorcycle	15
101223420	Driver	Motorcycle	15
102060440	Driver	Car, Van, Truck	9
102060450	Driver	Car, Van, Truck	9
102471230	Driver	Car, Van, Truck	10
104329210	Driver	Car, Van, Truck	15
105886330	Driver	Car, Van, Truck	14
105886340	Driver	Car, Van, Truck	14
108665210		Motorcycle	87
108665230		Motorcycle	87
108665240		Motorcycle	87
109596420	Driver	Car, Van, Truck	15
109596430	Driver	Car, Van, Truck	15
110516330		Car, Van, Truck	30
110516340		Car, Van, Truck	30
110516350		Car, Van, Truck	30
110516360		Car, Van, Truck	30
110755410	Driver	Car, Van, Truck	15
110755420	Driver	Car, Van, Truck	15
111063440	Driver	Car, Van, Truck	12
111168110		Motorcycle	43
111168120		Motorcycle	43
111168130		Motorcycle	43
111427430	Driver	Car, Van, Truck	10
112388310	Driver	Car, Van, Truck	14
112388320	Driver	Car, Van, Truck	14
113475330	Driver	Car, Van, Truck	12
113683310	Driver	Car, Van, Truck	15

¹ Check no 6.18 has been performed under Check 6.1.

6.20. *If a Trip Involved a Car, Van, Truck, or Motorcycle then the Number of Additional People in the Vehicle Should Have been Asked*

The same 10 records listed in Table 6.11 who had missing driver/passenger indicator were flagged in this check due to missing value on the number additional people in the vehicle variable (VTNUM).

6.21. *If the Respondent Did Take a Trip With Other People in a Car, Van, Truck, or Motorcycle, Check That the Number of Household Members in the Vehicle was Asked, Unless the Respondent Lives Alone. If the Respondent is a One-Member Household, the Variable is Post-Coded With "None".*

For all trip records for which a respondent from a household size of two persons or more who took a trip with other people in a car, van, truck, or motorcycle, the number of other household members in the vehicle (VHNUM) field was populated with a valid response. The condition is satisfied.

6.22. *The Number of Other Household Members in a Vehicle Should not be Greater than the Other Number of People in the Vehicle or the Number of Persons in the Household.*

The query for this check flags a trip record if the number of other members of the household in the vehicle (VHNUM) is greater than the number of other persons in the vehicle (VTNUM), or VHNUM is greater than or equal to household size. This query flagged eight trip records for which VHNUM was greater than VTNUM. These records are listed in Table 6.12. None of these flags seem very critical. These records indicate there was at least one person accompanying the person who was making the trip, however, there is some discrepancy in the number of other occupants. This result would have been more critical, if there had been an inconsistency about whether the trip making person was driving alone or not.

Table 6.12 Inconsistent Reports of Counts of People in Company

Trip_ID	Number of Other People in the Vehicle (VTNUM)	Number of Other Household Members in the Vehicle (VHNUM)	Household Size	Mode
103705320	1	2	4	Car, Van, Truck
107797310	1	2	4	Car, Van, Truck
109417530	1	2	5	Car, Van, Truck
110102110	1	2	6	Car, Van, Truck
113134440	2	3	5	Car, Van, Truck
113602630	3	4	6	Car, Van, Truck
114422160	1	2	4	Car, Van, Truck
114422170	1	2	4	Car, Van, Truck

6.23. *If a Trip Involved a Car, Van, Truck, or Motorcycle Check that the Respondent was Asked If a Household Vehicle was Used for the Trip, Unless the Household does not Have Any Available Vehicles. If the Respondent is in a Zero-Vehicle Household, the Variable is Coded as "No".*

There were four trip records, involving a trip with a car, van, truck, or motorcycle, and the household vehicle question had a missing response. All these records belongs to the same

household (SAMPN: 110516). Due to prior appearances of this household in earlier checks, the trip records from this household should be reviewed or this household could be removed from the data. In addition, for all records from zero-vehicle households, except SAMPN 101605, household vehicle variable (HHV) was coded as a “No.” Household 101605 produced three trips, as shown in Table 6.13 for which a household vehicle was used, while the household did not report any vehicles owned.

Table 6.13 Inconsistent Household Vehicle Identifiers

Trip_ID	Household Vehicle Identifier	Mode	Number of Vehicles in the Household
101605220	Yes	Auto	0
101605240	Yes	Auto	0
101605250	Yes	Auto	0

6.24. *Check That all Cases (Except Those Persons That did not Travel) are not Missing Arrival Time or Destination Information.*

All cases had valid arrival time and destination information. Condition is satisfied.

6.25. *The Departure and Arrival Times are in Military Time.*

All departure and arrival times were recorded in military time. Condition is satisfied.

6.26. *Arrival Time is After Departure Time.*

All arrivals occurred after departure times. Condition is satisfied.

6.27. *Check Percentage of Workers Who did not Make a Work Trip, and Non-Workers Who did.*

This check involves a query that flags person records of paid workers if they have not made a work trip, or person records of non-workers who reported a work trip during the date of survey. A work trip is defined by a trip which has a work activity at the origin or destination. The trip file included records from 2,176 paid workers, 139 volunteers and 2,230 non-workers (including students and a children younger than 16).

The query indicated that there were 388 person records of workers (8.5 percent) who did not travel for work and 52 person records of non-workers (1.14 percent) who traveled for work. These trip records are listed in the spreadsheet titled “TR_WorkTrip_Anomalies.xls” which is included in the spreadsheet set. Most of the flagged records may not contain errors, since worker definition contains part-time workers and some of the flags may also account for absenteeism in the workplace or workers not scheduled to work on the travel day. However, we suggest to repeat this check emphasizing the trip records and associated diaries of non-workers who have reported work trips after the final dataset becomes available.

6.28. Check Number and Percentage of Trips Made by Drive Alone Mode from Zero-Vehicle Households.

Two of the zero-vehicle households reported seven trips with a drive alone mode. Table 6.14 lists these records. While it is not necessarily an error, since a person may have borrowed a vehicle from somebody outside the household, or driven a company car if provided, a brief review is suggested for these records.

Table 6.14 Drove Alone Trips from Zero Vehicle Households

Trip ID	Others in the Vehicle	Household Vehicle Identifier	Mode	Number of Vehicles in the Household
111165110	0	No	Car, Van, Truck	0
111165120	0	No	Car, Van, Truck	0
114561110	0	No	Car, Van, Truck	0
114561120	0	No	Car, Van, Truck	0
114561130	0	No	Car, Van, Truck	0
114561140	0	No	Car, Van, Truck	0
114561150	0	No	Car, Van, Truck	0

7. Geocoding, Travel Time and Distance Checks

7.1. Basic Geocoding Checks

CS conducted three different basic checks on the geocoding information in the trip file. These involved the level of accuracy in the reporting of coordinates, sign consistency, and range. All longitude and latitude information was recorded with at least six decimal digits, all longitudes were negative and 137 trips had a trip end outside the predefined coordinate range. CS created a slightly more detailed set of ranges that covered the entire State of Michigan and its vicinity. The list of trip records with a trip end outside the region are provided in Table A.4 in the Appendix.

7.2. Missing Geocodes

Trip records that have a missing value in any of the origin or destination coordinates are flagged. There were 2,887 trip records that had a missing geocoding information. This corresponds to an incomplete geocoding rate of 14.5 percent. When only trip records with an actual trip are considered, there were 2,143 trips out of 19,102 actual trips with a missing geocode. This corresponded to a rate of 11.2 percent for incomplete geocoding information.

The trip file included 5,112 actual work trips (where work activity was defined at origin or destination). Nearly nine percent of those trips (455) had a missing geocode. Furthermore, the trip file contained 1,955 actual school trips and more than seven percent (141) had a missing geocode.

In order to evaluate the impact of missing geocodes at the household level, number of trips with a missing geocoding information are counted per each household. Every household which had 25 percent or more of its trips having geocoding problems is flagged. The query of these flags indicated that were 427 households with substantial geocoding problems.

The extent of the problem was acknowledged by the project team and the review process had been implemented to improve geocoding. We will repeat this query once the final dataset becomes available.

Due to the large number of records flagged with incomplete geocoding, the lists of such trip records and households are provided in the attached spreadsheet set named "GEO_TripEnd_GeocodingErrors.xls" and "GEO_HHLevel_GeocodingErrors.xls", respectively.

7.3. Travel Time and Distance

Another means of examining the adequacy of geocoding efforts is to compare reported travel times against travel times obtained from travel demand model networks. For trips with both an origin and a destination within the SEMCOG region, the SEMCOG travel demand model network was used. For other trips, the Michigan Statewide travel demand model network was examined.

Trips with missing geocodes, out-of-region trip ends, and very short trips that had the same node as origin and destination are excluded. The resultant trip file included 15,225 trips, while 1,908 trips took place within the SEMCOG area and 13,317 trips had at least one trip-end outside the SEMCOG area.

Geocodes at trip ends are used to assign the nearest node to that location in the model networks, and the shortest paths between the associated nodes were computed by skimming travel times under free flow conditions for each trip. The procedure produces an estimate of travel time and distance. Detailed descriptions of the steps involved in the procedure are provided in the Appendix B of this memo. For short trips with a network skim smaller than 5 minutes, network travel times are coded as five minutes to allow extra time to access to and egress from the network. Reported travel times and network distances were used to generate an estimate of average speed.

Five separate checks were conducted on 14,822 motorized trips. Reported travel times ranged between 1 and 740 minutes, and travel distances ranged between 0.005 and 327.7 miles. Travel times representing free flow conditions ranged between 0.007 and 370 minutes. The range of travel time discrepancy (reported minus network travel time) ranged between -330 and +727 minutes. These ranges were fairly large and implied potential errors in geocoding or coding of reported travel times.

We also conducted a series of reviews on the model networks. Previously, we have observed that trip locations from the previous MTC I study appeared as nodes. This was creating computational errors and sometimes missing values for skims. These artificial nodes were cleaned from the model networks. This resulted in observations with usual speeds, and reduction of connectivity problems to cases where the same model node was identified as the nearest node for both origin and destination locations for very short trips.

The following sections detail the findings of time and distance checks performed on a total of 14,822 trip records. The initial results from these checks were used to inform review process, therefore, we expect to see substantial improvements in the final dataset and we will conduct another round of time-distance checks when the final dataset becomes available. Therefore, level of detail in the following sections were reduced to basic findings. More detailed evaluations will be provided for the analysis of the final data. All records flagged with a time-distance check are featured in the master spreadsheet named "All_Flags.xls" under the "TT_Flags" tab.

7.3.1. Travel Time Differences Greater than 60 minutes

When there is a difference greater than 60 minutes between reported travel time and network travel time, the trip record is flagged. There were 213 trips (about 1.4 percent) which had such a large discrepancy. A total of 173, reported shorter travel times and the remaining 40 reported longer travel times than model travel times. Table 7.1 shows the distribution of absolute magnitude of differences between reported and network travel times. There were 2,104 cases with exact matches with reported travel times and modified network times of five minutes.

More than 5,200 (40 percent) of the differences were less than five minutes, and more than 9,000 (72 percent) were less than 10 minutes. This indicates that there is generally a good level of agreement between reported and network travel times. About 10,000 trips (78 percent) reported a slower trip than the model networks suggested. This is expected since free flow conditions are used in computing model travel times, and these exclude access and egress times. However, larger discrepancies in this group should be examined carefully.

Table 7.1. Distribution of Differences between Reported and Network Travel Times

Absolute Value of Travel Time Differences	Faster Reported Trips	Slower Reported Trips	Total
Less than 5 Minutes	2,021	3,188	5,209
5-10 Minutes	376	3,563	3,939
10-15 Minutes	139	1,585	1,724
15-20 Minutes	65	526	591
20-30 Minutes	62	528	590
30-45 Minutes	42	276	318
45-60 Minutes	14	111	125
60 Minutes or More	40	182	222
Total	2,759	9,959	12,718

7.3.2. Long Intracity Trips

Trips that have their origins and destinations within the same city limits were flagged when the reported travel times were greater than 60 minutes. This threshold is 90 minutes for trips that took place in Detroit. There were 67 trips flagged by this condition.

7.3.3. Very Slow Trips

All trips slower than 5 mph were flagged. For trips that were shorter than 2 miles and took less than 30 minutes flags were removed for consistency with check number five. There were 355 trips flagged due to low speeds.

7.3.4. High Speed Trips

Trips that are longer than 30 miles and with average speeds of more than 70 mph were flagged. Trips that were shorter than 30 miles but reported average speeds greater than 45 mph were also flagged. While the second criterion was not in the Task 4.4 memo, it was included to identify unusual speeds for shorter distance trips. There were 1,538 trips that were flagged by this check. The majority of the flagged trips (1,437 records) was shorter than 30 miles with speeds higher than 45 mph; there were 101 trips longer than 30 miles with high speeds.

7.3.5. Short and Slow Trips

Trips that were shorter than 2 miles but took more than 30 minutes were flagged. This check resulted in 169 flags due to short trip distances and low speeds.

The first round of travel time and distance checks identified a total of 1,959 trip records out of 14,822 (about 13.2 percent) that needed further review due discrepancies flagged by the first round of time-distance checks.

In order to test the severity of the observed differences, reported travel times were altered by 10 minutes. Depending on the flag type reported, travel times were either inflated or deflated by 10 minutes and speeds were recalculated to check whether the same flag still existed. Table 7.2 summarizes the number of flags that still remain after this adjustment.

Table 7.2. Number of Flags Created by Time and Distance Checks Before and After 10-minute Travel Time Sensitivity Adjustment

Time and Distance Check Type	Number of Flagged Records	
	First Round	Second Round
1 : Travel Time Differences Greater than 60 minutes	213	174
2: Long Intracity Trips	67	57
3: Very Slow Trips	355	278
4: High Speed Trips	1,538	200
5: Short and Slow Trips	169	73

The fourth check produced substantially small number flags after a 10-minute increase in reported travel times. This may imply that most of flags were not pointing to severe discrepancies.

After the adjusted travel time and distance checks there were 519 trip records that needed a further examination. All these trip records are also featured in the attached master spreadsheet under the "TT_Flags" tab.

APPENDIX A

Table A.1 One-way Trip Records

Qno	Per_id	Trip_ID	Origin	Destination
100005	100005300	100005310	Home	Kenwood school
100227	100227100	100227110	Home	Kinney's iga
100458	100458200	100458210	NEW PAGE PAPER MILL	Home
100591	100591100	100591110	Best Western	Home
100962	100962100	100962110	Home	SILVER CREEK CAMP GROUND
100962	100962200	100962210	Home	SILVER CREEK CAMP GROUND
101211	101211100	101211110	Home	Home
101350	101350300	101350310	JD'S TRUCK STOP	Home
101466	101466200	101466210	Home	BCMh FITNESS CENTER
101466	101466300	101466310	Home	BCMh FITNESS CENTER
102270	102270100	102270110	Herman Miller	Home
102292	102292100	102292110	Home	Home
102311	102311200	102311210	Home	Home
102812	102812200	102812210	Home	Unspecified
102819	102819100	102819110	Home	Home
103039	103039200	103039210	some Ohio or Pennsylvania Motel room	Home
103284	103284300	103284310	Home	Residential
103361	103361100	103361110	Home	Home
103589	103589200	103589210	Home	Cedar Springs Post Office
103844	103844200	103844210	Home	Walmart
103902	103902200	103902210	CALVIN COLLEGE	Home
104051	104051500	104051510	in-laws	in-laws
104545	104545100	104545110	Home	Walmart
104656	104656200	104656210	Home	DOW CHEMICAL
104968	104968100	104968110	Wayne state university school of medicine	Home
105741	105741500	105741510	DELTON KELLOGG SCHOOL	Home
106057	106057100	106057110	TRAVELING	Home
106205	106205100	106205110	SECOND HOME	Home
106237	106237200	106237210	Home	Home
106680	106680100	106680110	GLENS MARKET	Home
106779	106779200	106779210	Home	PACKAGING CORPORATION OF AMERICA
107940	107940200	107940210	SBM GRAIN	Home
108237	108237100	108237110	Home	JEAN'S CABIN
108551	108551200	108551210	TRAVELING	Unspecified
108651	108651300	108651310	Home	PATHEFINDER SCHOOL-PINCKNEY SCHOOLS
108651	108651400	108651410	Home	NAVIGATOR SCHOOL-PINCKNEY
109251	109251100	109251110	COMFORT SUITES	Home
109251	109251200	109251210	COMFORT SUITES	Home
109467	109467100	109467110	Home	Home
110147	110147100	110147110	Home	PINNACLE AIRLINES, INC.
110866	110866100	110866110	Home	MICHAELS
111006	111006100	111006110	Home	Home
111363	111363100	111363110	MIDMICHIGAN MEDICAL CENTER	Home
111711	111711100	111711110	Home	ODAWA CASINO RESORT

Qno	Per_id	Trip_ID	Origin	Destination
111781	111781200	111781210	FAMILY CABIN	Home
111895	111895200	111895210	Home	WORK
111990	111990200	111990210	VILLAGE MARKET	Home
112164	112164200	112164210	Shrine or Lady of the Snows Hotel	Quality Inn and Suites
112183	112183400	112183410	Home	FRIEND HOME
112349	112349200	112349210	Home	STARR COMMONWEALTH
112523	112523100	112523110	Home	Trelleborg Automotive
112613	112613200	112613210	Home	MICHIGAN TECH UNIVERSITY
113007	113007200	113007210	Home	House of flavors
113497	113497100	113497110	ALPENIA REGIONAL MEDICAL CENTER	Home
113502	113502100	113502110	Home	COMMUNITY HEALTH CENTER
113621	113621200	113621210	St. Ann School	Home
113621	113621400	113621410	Home	Home
113734	113734300	113734310	COOK NEW CLEAR APPLIANCE	Home
113764	113764200	113764210	Home	CITY OF ALPENIA FIRE DEPARTMENT
113948	113948100	113948110	PARAMOUNT CHARTER ACADEMY	Home
114077	114077100	114077110	Home	Home
114221	114221300	114221310	Home	Unspecified
114589	114589100	114589110	Daughters House	Home
114696	114696200	114696210	WALMART	Home
114747	114747200	114747210	Home	BOYNE IRRIGATION

Table A.2 Trips with Undocumented Code for the First Accompanying Person

Trip_ID	VTNUM	VHNUM	WHOACC_1	Mode	HH Size
100462110	1	0	18	1	2
100655110	1	0	18	1	3
101077150	1	0	18	1	2
101077160	1	0	18	1	2
101223260	1	0	18	1	4
101926210	1	0	18	1	2
102382210	1	0	18	1	2
102651220	1	0	18	1	2
102695120	1	0	18	1	3
102812110	1	0	18	1	3
102812310	1	0	18	1	3
102812320	1	0	18	1	3
102838210	1	0	18	1	2
103307420	1	0	18	1	6
103307430	1	0	18	1	6
103829150	2	0	18	1	3
104126210	1	0	18	1	2
104126240	1	0	18	1	2
104126250	1	0	18	1	2
104126260	1	0	18	1	2
104126270	1	0	18	1	2
104126280	1	0	18	1	2
104126290	1	0	18	1	2
104181120	1	0	18	1	2
104181130	1	0	18	1	2
104181210	1	0	18	1	2
104181220	1	0	18	1	2
104594310	1	0	18	1	3
104777110	1	0	18	1	3
104777120	1	0	18	1	3
104777130	1	0	18	1	3
104777220	1	0	18	1	3
104777230	1	0	18	1	3
104777240	1	0	18	1	3
104913120	1	0	18	1	2
106049120	1	0	18	1	2
106170120	1	0	18	1	2
106577230	2	0	18	1	4
106577240	2	0	18	1	4
106842120	2	0	18	1	3
107047250	1	0	18	1	3
107047260	1	0	18	1	3
107587130	1	0	18	1	2
107587140	1	0	18	1	2
107587150	1	0	18	1	2

Trip_ID	VTNUM	VHNUM	WHOACC_1	Mode	HH Size
108516310	1	0	18	1	3
108770320	1	0	18	1	3
108770330	2	0	18	1	3
109466260	3	0	18	1	4
109466470	3	0	18	1	4
109466480	2	0	18	1	4
109466490	2	0	18	1	4
109488140	1	0	18	1	5
109488150	1	0	18	1	5
109488160	2	0	18	1	5
109488170	2	0	18	1	5
109488180	1	0	18	1	5
109488210	1	0	18	1	5
109488280	1	0	18	1	5
109488290	1	0	18	1	5
109596420	1	0	18	1	4
109596430	1	0	18	1	4
109967210	2	0	18	1	4
109967240	2	0	18	1	4
109967310	2	0	18	1	4
109967320	2	0	18	1	4
109967410	2	0	18	1	4
109967420	2	0	18	1	4
110159190	1	0	18	1	3
110234110	1	0	18	1	2
110443160	1	0	18	1	2
110443170	2	0	18	1	2
110443250	1	0	18	1	2
110443260	2	0	18	1	2
110932110	1	0	18	1	3
110932120	1	0	18	1	3
110932130	1	0	18	1	3
110932260	1	0	18	1	3
110932270	1	0	18	1	3
110932320	1	0	18	1	3
110932330	1	0	18	1	3
111517250	3	0	18	1	3
111517270	3	0	18	1	3
111517320	3	0	18	1	3
111517330	3	0	18	1	3
112169410	2	0	18	1	5
112169420	2	0	18	1	5
112169510	2	0	18	1	5
112169520	2	0	18	1	5
112925150	1	0	18	1	5
112925160	2	0	18	1	5
112925170	2	0	18	1	5

Trip_ID	VTNUM	VHNUM	WHOACC_1	Mode	HH Size
112992210	1	0	18	1	5
112992410	2	0	18	1	5
112992430	2	0	18	1	5
112992440	3	0	18	1	5
112992510	2	0	18	1	5
112992520	1	0	18	1	5
112992530	1	0	18	1	5
112992540	1	0	18	1	5
112992550	2	0	18	1	5
112992560	3	0	18	1	5
113621410	1	0	18	1	4
114071140	1	0	18	1	4
114071270	1	0	18	1	4
114071280	1	0	18	1	4

Table A.3 Trips with Missing Values on Household Vehicle and Payment for Park

Trip_ID	HHV	Mode	Vehicles in the Household	Flag TRCheck#8a	Flag TRCheck#8b
100203150		3	2	1	1
100203160		3	2	1	1
100203170		3	2	1	1
100547270		3	2	1	1
100547280		3	2	1	1
101365130		3	1	1	1
101365140		3	1	1	1
101987410		3	3	1	1
101987420		3	3	1	1
101987430		3	3	1	1
102350170		3	1	1	1
102350180		3	1	1	1
102616180		3	4	1	1
102616190		3	4	1	1
102616280		3	4	1	1
102616290		3	4	1	1
105835110		3	2	1	1
105835120		3	2	1	1
106463170		3	2	1	1
106463180		3	2	1	1
106701110	2	3	0	0	1
106701120	2	3	0	0	1
107308210		3	2	1	1
107308220		3	2	1	1
107308230		3	2	1	1
107308240		3	2	1	1
107962120		3	1	1	1
107970220		3	1	1	1
108129230		3	1	1	1
108129240		3	1	1	1
108129250		3	1	1	1
108129260		3	1	1	1
108129270		3	1	1	1
108186110		3	2	1	1
108186120		3	2	1	1
108274210		3	2	1	1
108274220		3	2	1	1
108274230		3	2	1	1
108369230		3	2	1	1
108369240		3	2	1	1
108528170		3	1	1	1
108665210	2	2	0	0	1
108665230	2	2	0	0	1
108665240	2	2	0	0	1
108876230		3	2	1	1
108876240		3	2	1	1
109001220		3	1	1	1
109001230		3	1	1	1
109408110		3	1	1	1

Trip_ID	HHV	Mode	Vehicles in the Household	Flag TRCheck#8a	Flag TRCheck#8b
109408160		3	1	1	1
109700130		3	1	1	1
110516330		1	5	1	1
110516340		1	5	1	1
110516350		1	5	1	1
110516360		1	5	1	1
110850210		3	3	1	1
110850220		3	3	1	1
111006210		3	2	1	1
111006220		3	2	1	1
111168110	2	2	0	0	1
111168120	2	2	0	0	1
111168130	2	2	0	0	1
111691310		3	2	1	1
111691320		3	2	1	1
111701110		3	2	1	1
111701120		3	2	1	1
111800110	2	3	0	0	1
111800120	2	3	0	0	1
112022110		3	1	1	1
112022120		3	1	1	1
112030110		3	3	1	1
112030120		3	3	1	1
112030210		3	3	1	1
112030220		3	3	1	1
112138210		3	2	1	1
112138220		3	2	1	1
112390410		3	2	1	1
112753110		3	2	1	1
112753120		3	2	1	1
112753130		3	2	1	1
112845230		3	2	1	1
112845240		3	2	1	1
113248210		3	2	1	1
113248220		3	2	1	1
113337430		3	2	1	1
113337440		3	2	1	1
113381230		3	2	1	1
113381240		3	2	1	1
113459310		3	1	1	1
113459320		3	1	1	1
113517210		3	1	1	1
113517240		3	1	1	1
113517250		3	1	1	1
113989110		3	2	1	1
113989120		3	2	1	1
114035210		3	1	1	1
114035220		3	1	1	1
114119110		3	1	1	1
114119120		3	1	1	1
114119210		3	1	1	1

Trip_ID	HHV	Mode	Vehicles in the Household	Flag TRCheck#8a	Flag TRCheck#8b
114119220		3	1	1	1
114119230		3	1	1	1
114119240		3	1	1	1
114119310		3	1	1	1
114119320		3	1	1	1
114119330		3	1	1	1
114119340		3	1	1	1
114119410		3	1	1	1
114119420		3	1	1	1
114119430		3	1	1	1
114119440		3	1	1	1
114119450		3	1	1	1
114317110		3	1	1	1
114317140		3	1	1	1
114657210		3	1	1	1
114657220		3	1	1	1
114787110		3	3	1	1
114787120		3	3	1	1

Table A.4. Trip Records with Trip Ends Located Outside the Region

Trip ID	O_Long	O_Lat	D_Long	D_Lat	Outside Region
100111230	-83.752494	42.179240	-85.520645	38.287651	1
100369310	-87.706738	45.158626	-87.611337	45.074817	1
100369320	-87.611337	45.074817	-87.619233	45.071218	1
100369330	-87.619233	45.071218	-87.636538	45.113601	1
100894110	-86.797473	36.152242	-86.780636	36.161235	1
100894120	-86.780636	36.161235	-86.777515	36.161018	1
100894130	-86.777515	36.161018	-86.780636	36.161235	1
100894140	-86.780636	36.161235	-86.794112	36.153068	1
101742110	-86.686607	41.830554	-86.510770	42.028943	1
101742120	-86.510770	42.028943	-86.713409	41.616674	1
101742130	-86.713409	41.616674	-86.510770	42.028943	1
101742210	-86.686607	41.830554	-86.479873	42.116383	1
101742250	-86.422431	42.077887	-86.686607	41.830554	1
102324110	-82.902541	42.409653	-82.217119	41.387737	1
102398110	-86.494700	41.967109	-86.567609	41.936457	1
102398120	-86.567609	41.936457	-86.494700	41.967109	1
102398210	-86.494700	41.967109	-86.550024	41.945141	1
102398220	-86.550024	41.945141	-86.351363	41.937938	1
102398410	-86.494700	41.967109	-86.550024	41.945141	1
102398420	-86.550024	41.945141	-86.494700	41.967109	1
102430110	-86.631687	41.872317	-87.691545	42.064160	1
102430210	-86.631687	41.872317	-86.481570	42.109482	1
102430230	-86.252393	41.830949	-86.631687	41.872317	1
102742110	-86.552638	41.933171	-86.541855	41.943009	1
102742130	-86.542518	41.943007	-86.562457	41.938922	1
102742140	-86.562457	41.938922	-86.552638	41.933171	1
102742150	-86.552638	41.933171	-86.475227	42.058699	1
102742160	-86.475227	42.058699	-86.552638	41.933171	1
102790240	-87.532772	45.442242	-87.656400	45.076239	1
102790250	-87.656400	45.076239	-87.284695	45.745648	1
103112240	-87.504398	45.677095	-90.177024	44.675935	1
103112250	-90.177024	44.675935	-87.504398	45.677095	1
103611240	-83.690222	41.715316	-83.724310	41.688470	1
103611250	-83.724310	41.688470	-83.841067	41.746550	1
103699110	-81.319585	35.713703	-81.176482	35.733859	1
103699120	-81.176482	35.733859	-81.319585	35.713703	1
103781210	-85.564862	41.882447	-85.847412	41.589001	1
103781220	-85.847412	41.589001	-85.848042	41.581699	1
103781230	-85.848042	41.581699	-85.847412	41.589001	1
104051120	-83.864401	40.892471	-84.216078	43.697318	1
104051220	-83.864401	40.892471	-84.216078	43.697318	1
104051320	-83.864401	40.892471	-84.216078	43.697318	1
104051420	-83.864401	40.892471	-84.216078	43.697318	1
104322220	-85.293833	42.057560	-85.153029	41.105001	1

Trip ID	O_Long	O_Lat	D_Long	D_Lat	Outside Region
104322230	-85.153029	41.105001	-85.293833	42.057560	1
104464120	-83.568282	41.767625	-83.562036	41.665507	1
104464130	-83.562036	41.665507	-83.549704	41.790650	1
104546140	-87.910699	41.756652	-87.623315	41.896677	1
104546150	-87.623315	41.896677	-87.910699	41.756652	1
104819210	-87.634152	45.108186	-87.735140	45.052751	1
104819220	-87.735140	45.052751	-87.634152	45.108186	1
105063130	-86.227367	41.627874	-86.187594	41.685912	1
105063140	-86.187594	41.685912	-86.187739	41.713062	1
105063230	-86.227367	41.627874	-86.187594	41.685912	1
105063240	-86.187594	41.685912	-86.187739	41.713062	1
105452120	-85.867075	41.786236	-85.952507	41.699931	1
105664310	-86.604157	41.771704	-86.794763	41.764257	1
105664320	-86.794763	41.764257	-86.734454	41.780318	1
105664330	-86.734454	41.780318	-86.604157	41.771704	1
105787120	-86.322525	42.172290	-86.893641	41.687623	1
105787130	-86.893641	41.687623	-86.716149	41.770077	1
105787140	-86.716149	41.770077	-86.574649	41.925253	1
105787150	-86.574649	41.925253	-86.322525	42.172290	1
106016110	-86.547650	41.885489	-86.561201	41.942874	1
106016120	-86.561201	41.942874	-86.547650	41.885489	1
106205210	-87.861195	41.994746	-84.486072	42.742962	1
106218110	-83.160464	42.850426	-87.078435	35.615484	1
106218120	-87.078435	35.615484	-83.160464	42.850426	1
106351140	-86.244346	41.800542	-86.745393	41.796221	1
106351150	-86.745393	41.796221	-86.486916	42.110890	1
106351210	-86.244346	41.800542	-86.745393	41.796221	1
106351220	-86.745393	41.796221	-86.486916	42.110890	1
106484220	-88.068374	45.815588	-88.262199	44.281062	1
107259140	-85.421066	41.797487	-85.204286	41.591096	1
107259150	-85.213745	41.581663	-85.436237	41.797076	1
107259270	-85.421066	41.797487	-85.204286	41.591096	1
107259280	-85.213745	41.581663	-85.436423	41.797081	1
108051110	-83.563562	41.732694	-83.555350	41.672129	1
108051120	-83.555350	41.672129	-83.587518	41.771738	1
108584130	-87.614018	45.115905	-87.655285	45.083393	1
108584140	-87.655285	45.083393	-87.614018	45.115905	1
108584240	-87.624040	45.107887	-87.658283	45.058170	1
109057110	-87.621703	45.126394	-87.660057	45.077004	1
109057120	-87.660057	45.077004	-87.660057	45.079504	1
109057130	-87.660057	45.079504	-87.621703	45.126394	1
109057210	-87.621703	45.126394	-87.735140	45.052751	1
109057220	-87.735140	45.052751	-87.621703	45.126394	1
109104110	-83.405720	41.839217	-83.681150	41.583309	1
109226140	-83.661559	41.704995	-83.682588	41.653752	1
109226150	-83.682588	41.653752	-83.672235	41.777076	1

Trip ID	O_Long	O_Lat	D_Long	D_Lat	Outside Region
109745110	-87.609542	45.108644	-87.628089	45.070742	1
109908210	-86.158062	39.765435	-86.161862	39.765639	1
109908220	-86.161862	39.765639	-86.159779	39.768029	1
109908230	-86.159779	39.768029	-86.158062	39.765435	1
109908240	-86.158062	39.765435	-86.161862	39.765639	1
109908250	-86.161862	39.765639	-86.161862	39.765639	1
109908260	-86.158062	39.765435	-86.159672	39.767183	1
109908270	-86.159672	39.767183	-86.158062	39.765435	1
110257210	-87.600898	45.102444	-87.619233	45.071218	1
110257220	-87.619233	45.071218	-87.600898	45.102444	1
110353140	-87.907325	45.786362	-87.938304	44.493677	1
110353240	-87.907325	45.786424	-87.938304	44.493677	1
110983110	-87.618926	45.136139	-87.621238	45.070847	1
110983120	-87.621238	45.070847	-87.618926	45.136139	1
112164210	-90.089049	38.561051	-87.508628	41.633349	1
112168110	-87.862725	41.975991	-87.845884	41.987672	1
112168120	-87.845884	41.987672	-87.862725	41.975991	1
112630110	-85.003445	41.770789	-85.416270	41.640391	1
112630120	-85.416270	41.640391	-85.425909	41.661846	1
112630130	-85.425909	41.661846	-85.416270	41.640391	1
112630160	-85.003445	41.770789	-84.999674	41.648287	1
112630170	-84.999674	41.648287	-85.003445	41.770789	1
112770130	-87.655285	45.083393	-87.655987	45.160987	1
113130110	-87.611127	45.104099	-87.619426	45.071384	1
113130120	-87.619426	45.071384	-87.611127	45.104099	1
113130210	-87.611127	45.104099	-87.619426	45.071384	1
113130220	-87.619426	45.071384	-87.611127	45.104099	1
113130250	-87.611127	45.104099	-87.611337	45.074817	1
113130260	-87.611337	45.074817	-87.611127	45.104099	1
113130310	-87.611127	45.104099	-87.619426	45.071384	1
113130320	-87.619426	45.071384	-87.611127	45.104099	1
113131330	-86.309492	41.700630	-86.905009	41.720881	1
113355290	-84.043230	41.879230	-83.638724	41.697080	1
113580310	-90.145705	46.435382	-90.885635	46.566893	1
113580320	-90.885635	46.566893	-90.145705	46.435382	1
113602210	-83.960661	42.002464	-83.539061	41.653289	1
113602220	-83.539061	41.653289	-83.937745	42.011101	1
113734310	-86.555588	41.942968	-86.212346	42.403760	1
113788130	-90.113960	46.492160	-90.868589	46.600324	1
113788140	-90.868589	46.600324	-90.856738	46.604283	1
113788150	-90.856738	46.604283	-90.145144	46.463228	1
113788210	-90.113960	46.492160	-90.868589	46.600324	1
113788220	-90.868589	46.600324	-90.856738	46.604283	1
113788230	-90.856738	46.604283	-90.145172	46.463093	1
113789120	-87.643154	45.078236	-87.663478	45.145021	1
113789210	-87.663478	45.145021	-87.650063	45.089249	1
113789220	-87.650063	45.089249	-87.663478	45.145021	1

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APPENDIX B

B. Steps to Conduct Time-Distance Checks

This section concerns the Geographic Information Systems (GIS) methodology used in the validation of geocoding results in the Michigan Department of Transportation (MIDOT) Statewide Household Survey Add-On (MTC II) study.

The process involves two major set of activities;

- 1-) Assignment of nearest model nodes to trip ends, and
- 2-) Skimming appropriate model networks to extract skims for the given O-D pair.

B1. Data Used

Table B.1 shows the data sources used during this task.

Table B.1 The Data Sources

Data Type	File Name / Source
Household locations and trip data	MTC II Household and Trip Files / AbtSRBI
Michigan statewide network road file in TransCAD format	MI Travel Counts II TTime Network.dbd / MIDOT
Michigan statewide network traffic analysis zones (TAZs) file in TransCAD format	Ver8NATAZ.dbd / MIDOT
SEMCOG network road file in TransCAD format	HwyFG05ForMDOT.dbd / MIDOT
SEMCOG network traffic analysis zones (TAZs) file in TransCAD format	Zones_2899.dbd / MIDOT
Michigan statewide road layer in TransCAD format	ver9 all roads.cdf / MIDOT

B2. Geocoding Household and Other Locations

- a. Undertook an automotive process using TransCAD as the geocoding engine.
- b. Loaded a database file with locations into TransCAD and launched the “Locate by Address” tool, using U.S. Caliper Streets as the address reference.

- c. Generated latitude and longitude coordinates for locations which matched an address in the reference index.
- d. Conducted a series of post-processing checks to ensure matched geocoded results were logical.

B3. Separating Statewide Locations and SEMCOG Locations

- a. Compiled a list of household, trip end, and other locations with corresponding latitude and longitude coordinates.
- b. Utilized ESRI's ArcGIS software as the location engine.
- c. Plotted these locations using the "Display XY Data" tool in ArcMap and North American 1983 as the geographic coordinate reference system.
- d. Exported the resulting locations into an ArcGIS shapefile.
- e. Exported TAZ layers for both the statewide and SEMCOG networks from TransCAD into ArcGIS shapefile format.
- f. Associated in ArcMap using spatial join tools individual locations with the appropriate model area. This process used the Michigan GeoRef, which conforms to the state's spatial standards, as the map projection.
- g. Flagged locations with their corresponding model network as an attribute in the location file's database.

B4. Validating Trip Lengths and Travel Times

- a. For each model network area, loaded trip end locations into TransCAD as a geographic file along with the corresponding model network geographic file.
- b. Added to the location file an attribute field named "NODE_ID" as a 10 character integer.
- c. Using the Fill / Tag feature in TransCAD, associated each location with the nearest model node identification number.
- d. Exported tagging results to a .dbf file.

- e. Created a list of unique nodes.
- f. Created for each model network area a subset network file (.net) using the unique nodes in each area, noting the travel time and length fields.
- g. Created an IJ database table to house node trip ends as origin nodes (I Nodes) and destination nodes (J Nodes).
- h. Loaded IJ table for each model area into TransCAD.
- i. Generated trips for each unique IJ pair using the “Point-to-Point Distance” tool in TransCAD. Node IDs were used for the origins and destinations, while the subset network was employed. Additionally, the process was asked to skim lengths and free flow travel times.
- j. Exported the newly created IJ_results dataview to a database table file.
- k. Performed manual distance and travel time checks using TransCAD’s shortest path toolbox.

Appendix P: Sample Plan

- P1. Original MTC II Sample Plan – Attachment A from RFP
- P2. Review Memorandum from Peter Stopher, PlanTrans
- P3. Final Michigan DOT (MTC II) Sample Data Plan 2
- P4. Abt SRBI Sample Selection and Maintenance Memorandum

Attachment A.1 – MTC II Sampling Plan

Michigan Department of Transportation (MDOT) is interested in measuring recent changes in statewide travel patterns by collecting a new wave of survey data from previous respondents in the Michigan Travel Counts survey data collection in 2004/2005. The new survey data collection is expected to obtain the same data as the previous effort, except that a 24-hour diary period will be used rather than the 48-hour diary period. The new data collection will provide MDOT with additional data for the development of travel demand models and for statewide planning analyses. The new data will also be used to measure travel changes over the past three years that have been caused by the combination of recent increases in fuel prices and other structural and localized economic changes.

The follow-up survey will concentrate on obtaining usable data for testing travel demand changes over the past few years, rather than on potential modeling uses for these data. This is because it is reasonable to assume that virtually any new household survey data collection effort would be of benefit for the modeling. The current model plan has envisioned using only the current very large Michigan Travel Counts survey data, and it is believed that the existing data source is adequate for the modeling (Additional data could be used for additional model validation or possibly in model estimation, so the modeling would be enhanced with virtually any household survey sampling plan).

The comparison of the previously collected travel demand measures with the same measures from a new survey can be accomplished with two different general approaches, through aggregate comparisons or through disaggregate paired comparisons. There are many different specific technical approaches to applying either of these broad strategies that analysts may consider, but the proposed sampling plan tries to accommodate analyses of either of the general types.

Add-On Survey Sample Stratification

The Michigan Travel Counts Survey provided more than 14,000 usable responses from households in 169 strata. Figure 1 summarizes the strata that were used in the Michigan Travel Counts Survey. There are seven geography-based categories, and within each, the households are classified by household sizes, number of household workers, and number of available autos. In many cases, adjacent combinations of households are merged into a single survey stratum. For instance, survey stratum 1 consists of SEMCOG area one person, zero auto households with zero workers in the household and SEMCOG area one person, zero auto households with one worker in the household. The figure shows the number of surveyed households in each stratum within the parentheses.

For the add-on survey sample plan, we first compared the strata in terms of several relevant travel behavior variables that are likely to be used in comparative analyses.

Changes in travel patterns can be summarized using several different survey-derived measures. For the sampling plan development, we focused on the following measures of travel demand:

- Household trip generation (number of person trips made by household members over the Michigan Travel Counts survey diary period);
- Household vehicle trip generation (number of vehicle trips made by household members over the Michigan Travel Counts survey diary period);
- Household person-hours traveled (number of person trip hours spent by household members over the Michigan Travel Counts survey diary period);
- Household vehicle-hours traveled (number of vehicle trip hours spent – in all vehicle types – by household members over the Michigan Travel Counts survey diary period); and
- Household vehicle-hours traveled (number of vehicle trip hours spent – in autos – by household members over the Michigan Travel Counts survey diary period).

The means and standard deviations of the travel measures from the Michigan Travel Counts survey data were calculated for each survey stratum, as shown in Table 1. Additional measures related to transit and nonmotorized travel were also summarized but the trip-making levels by these modes were substantially smaller than auto trip-making. In addition, trip-making summaries by trip purpose were also made, but there were not substantial differences between the purpose shares for the strata.

Statistical tests were used to compare the means and standard deviations for the travel behavior measures, and those adjacent strata that had several measures that were statistically indistinguishable from each other were identified. We combined these comparable strata to form a new set of strata for the follow-up survey, as shown in Figures 2 through 8. The strata for the geographic divisions were not combined, but adjacent strata for household sizes, workers, and autos were combined where warranted. Through this process, the 169 strata were reduced to 98 strata.

Figure 1 MI Travel Counts Survey Strata

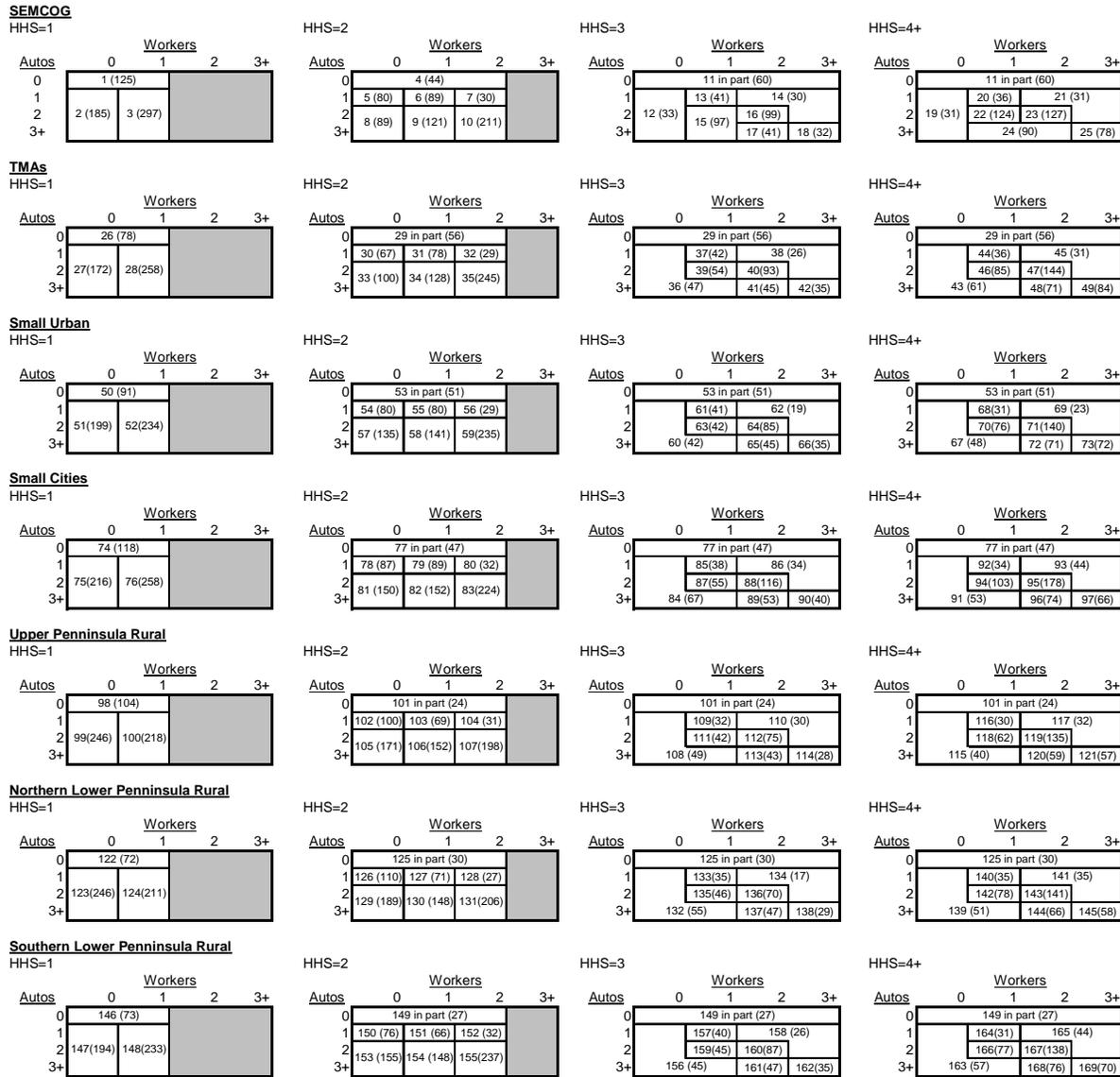


Figure 2 SEMCOG Strata Combination

SEMCOG - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	1 (125)			
1				
2	2 (185)	3 (297)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	4 (44)			
1	5 (80)	6 (89)	7 (30)	
2	8 (89)	9 (121)	10 (211)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	11 in part (60)			
1		13 (41)	14 (30)	
2	12 (33)	15 (97)	16 (99)	
3+			17 (41)	18 (32)

HHS=4+

Autos	Workers			
	0	1	2	3+
0	11 in part (60)			
1		20 (36)	21 (31)	
2	19 (31)	22 (124)	23 (127)	
3+		24 (90)	25 (78)	

SEMCOG - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	1 (125)			
1				
2	2 (185)	3 (297)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	4+6+7 (163)			
1	5+8+12 in part (202)			
2		9 (121)	10 (211)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	11 in part (60)			
1	5+8+12 in part (202)		13+15 (138)	14+16 (129)
2			17+18 (73)	
3+				

HHS=4+

Autos	Workers			
	0	1	2	3+
0	11 in part (60)			
1	19+20+22 (191)		21+23 (158)	
2		24 (90)	25 (78)	
3+				

Figure 3 TMAs Strata Combination

TMAs - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	26 (78)			
1				
2	27(172)	28(258)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1	30 (67)	31 (78)	32 (29)	
2	33 (100)	34 (128)	35(245)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1		37(42)	38 (26)	
2		39(54)	40(93)	
3+	36 (47)	41(45)	42(35)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1		44(36)	45 (31)	
2		46(85)	47(144)	
3+	43 (61)	48(71)	49(84)	

197

TMAs - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	26 (78)			
1				
2	27(172)	28(258)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1	30+31 (145)		32+35	
2	33 (100)	34 (128)	(274)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1	36+37+39 (143)		38+40 (119)	
2			41+42 (80)	
3+				

HHS=4+

Autos	Workers			
	0	1	2	3+
0	29 in part (56)			
1	43+44+46+48 (253)		45+47 (175)	
2				
3+				49(84)

Figure 4 Small Urban Strata Combination

Small Urban - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	50 (91)			
1				
2	51(199)	52(234)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	54 (80)	55 (80)	56 (29)	
2	57 (135)	58 (141)	59(235)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	61(41)	62 (19)		
2	63(42)	64(85)		
3+	60 (42)	65(45)	66(35)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	68(31)	69 (23)		
2	70(76)	71(140)		
3+	67 (48)	72 (71)	73(72)	

Small Urban - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	50 (91)			
1				
2	51(199)	52(234)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	54+55 (160)		56+59	
2	57 (135)	58 (141)	(264)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	60+61+63		62+64 (104)	
2	(125)		65+66 (80)	
3+				

HHS=4+

Autos	Workers			
	0	1	2	3+
0	53 in part (51)			
1	67+68+70+72		69+71 (163)	
2	(226)		73(72)	
3+				

Figure 5 Small Cities Strata Combination

Small Cities - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	74 (118)			
1				
2	75(216)	76(258)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	78 (87)	79 (89)	80 (32)	
2	81 (150)	82 (152)	83(224)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	85(38)	86 (34)		
2	87(55)	88(116)		
3+	84 (67)	89(53)	90(40)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	92(34)	93 (44)		
2	94(103)	95(178)		
3+	91 (53)	96(74)	97(66)	

Small Cities - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	74 (118)			
1				
2	75(216)	76(258)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	78+79 (176)		80+83	
2	81 (150)	82 (152)	(256)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	84+85+87		86+88 (150)	
2	(160)		89+90 (93)	
3+				

HHS=4+

Autos	Workers			
	0	1	2	3+
0	77 in part (47)			
1	91+92+94+96		93+95 (222)	
2	(264)		97(66)	
3+				

Figure 6 Upper Penninsula Rural Strata Combination

Upper Penninsula Rural - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	98 (104)			
1				
2	99(246)	100(218)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	101 in part (24)			
1	102 (100)	103 (69)	104 (31)	
2	105 (171)	106(152)	107(198)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	101 in part (24)			
1	109(32)	110 (30)		
2	111(42)	112(75)		
3+	108 (49)	113(43)	114(28)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	101 in part (24)			
1	116(30)	117 (32)		
2	118(62)	119(135)		
3+	115 (40)	120(59)	121(57)	

Upper Penninsula Rural - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	98 (104)			
1				
2	99(246)	100(218)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	101 in part+102+103 (193)			
1			104+107	
2	105 (171)	106(152)	(229)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	101 in part+102+103 (193)			
1	108+109+111	110+112 (105)		
2	(123)			
3+		113+114 (71)		

HHS=4+

Autos	Workers			
	0	1	2	3+
0	101 in part+102+103 (193)			
1	115+116+118+120	117+119 (167)		
2	(191)			
3+			121(57)	

Figure 7 Northern Lower Penninsula Rural Strata Combination

Northern Lower Penninsula Rural - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	122 (72)			
1				
2	123(246)	124(211)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	125 in part (30)			
1	126 (110)	127 (71)	128 (27)	
2	129 (189)	130 (148)	131(206)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	125 in part (30)			
1	133(35)	134 (17)		
2	135(46)	136(70)		
3+	132 (55)	137(47)	138(29)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	125 in part (30)			
1	140(35)	141 (35)		
2	142(78)	143(141)		
3+	139 (51)	144(66)	145(58)	

Northern Lower Penninsula Rural - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	122 (72)			
1				
2	123(246)	124(211)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	125 in part+126+127 (211)			
1			128+131	
2	129 (189)	130 (148)	(233)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	125 in part+126+127 (211)			
1	132+133+135	134+136 (87)		
2	(136)			
3+		137+138 (76)		

HHS=4+

Autos	Workers			
	0	1	2	3+
0	125 in part+126+127 (211)			
1	139+140+142+144	141+143 (176)		
2	(230)			
3+			145(58)	

Figure 8 Southern Lower Penninsula Rural Strata Combination

Southern Lower Penninsula Rural - MI Travel Counts Survey Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	146 (73)			
1				
2	147(194)	148(233)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	150 (76)	151 (66)	152 (32)	
2	153 (155)	154 (148)	155(237)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	157(40)	158 (26)		
2	159(45)	160(87)		
3+	156 (45)	161(47)	162(35)	

HHS=4+

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	164(31)	165 (44)		
2	166(77)	167(138)		
3+	163 (57)	168(76)	169(70)	

Southern Lower Penninsula Rural - Collapsed Strata
HHS=1

Autos	Workers			
	0	1	2	3+
0	146 (73)			
1				
2	147(194)	148(233)		
3+				

HHS=2

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	150+151 (142)		152+155	
2	153 (155)	154 (148)	(269)	
3+				

HHS=3

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	156+157+159		158+160 (113)	
2	(130)		161+162 (82)	
3+				

HHS=4+

Autos	Workers			
	0	1	2	3+
0	149 in part (27)			
1	163+164+166+168		165+167 (182)	
2	(241)			
3+			169(70)	

Table 1. Michigan Travel Counts Survey
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	SEMCOG											
1	HH Size=1 Autos=0 Workers=0,1	125	3.55	3.57	1.70	2.5	1.52	1.8	1.21	1.66	0.29	0.47
2	HH Size=1 Autos=1+ Workers=0	185	6.36	4.61	6.09	4.47	1.88	1.48	1.68	1.32	1.59	1.26
3	HH Size=1 Autos=1+ Workers=1	297	8.12	3.99	7.45	3.9	2.78	1.66	2.65	1.56	2.41	1.41
4	HH Size=2 Autos=0 Workers=0,1,2	44	6.86	5.27	2.89	4.11	3.70	3.61	3.18	3.52	0.31	0.5
5	HH Size=2 Autos=1 Workers=0	80	8.93	7.24	8.36	7.19	2.63	2.18	1.49	1.29	1.27	1.11
6	HH Size=2 Autos=1 Workers=1	89	12.80	7.37	11.36	7.14	4.00	2.41	2.99	1.91	2.48	1.71
7	HH Size=2 Autos=1 Workers=2	30	14.27	6.65	10.87	6.58	4.60	2.12	3.69	1.89	2.47	1.43
8	HH Size=2 Autos=2+ Workers=0	89	13.94	8.63	13.58	8.49	3.99	3.51	2.65	2.02	2.52	1.92
9	HH Size=2 Autos=2+ Workers=1	121	13.88	6.46	13.53	6.21	4.94	3.03	4.13	2.39	4.00	2.37
10	HH Size=2 Autos=2+ Workers=2	211	15.90	6.29	15.59	6.2	6.02	3.49	5.45	3.13	5.22	2.75
11	HH Size=3,4 Autos=0 Workers=0,1,2,3+	60	16.07	10.18	5.60	6.93	9.20	8.76	7.06	5.77	0.96	1.27
12	HH Size=3 Autos=1,2,3+ Workers=0	33	13.67	12.55	12.21	11.99	3.53	3.26	2.02	1.94	1.44	1.35
13	HH Size=3 Autos=1 Workers=1	41	20.05	11.83	17.44	11.79	6.07	4.85	3.65	1.8	2.66	1.48
14	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	30	20.03	7.68	17.13	7.82	6.66	3.74	4.74	2.32	3.58	2.27
15	HH Size=3 Autos=2,3+ Workers=1	97	18.64	9.56	17.54	9.3	6.22	3.76	4.58	2.56	4.01	2.18
16	HH Size=3 Autos=2 Workers=2	99	21.69	9.66	20.15	9.64	6.96	3.54	5.28	2.6	4.78	2.53
17	HH Size=3 Autos=3+ Workers=2	41	22.66	9.25	21.76	9.09	7.44	3.24	6.16	2.58	5.97	2.6
18	HH Size=3 Autos=3+ Workers=3	32	21.50	7.47	20.88	7.1	8.12	3	7.53	2.83	7.19	2.78
19	HH Size=4 Autos=1,2,3+ Workers=0	31	23.61	15.96	21.03	15.13	7.32	6.02	3.78	2.77	2.61	2.04
20	HH Size=4 Autos=1 Workers=1	36	29.22	17.33	23.92	17.3	8.58	5.06	4.75	3.29	2.55	1.6
21	HH Size=4 [Autos=1 Workers=2,3+] and [Autos=2 Workers=3+]	31	30.06	14.79	22.87	12.54	9.42	4.73	6.05	3.26	3.93	2.01

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	SEMCOG (continued)											
22	HH Size=4 Autos=2 Workers=1	124	32.40	15.12	28.77	15.2	8.13	4.45	5.10	2.5	3.93	2.02
23	HH Size=4 Autos=2 Workers=2	127	34.40	13.1	29.71	13.76	9.06	4	6.54	3.44	4.72	2.09
24	HH Size=4 Autos=3+ Workers=1,2	90	32.61	13.11	28.17	12.96	9.53	3.82	7.00	2.96	5.44	2.61
25	HH Size=4 Autos=3+ Workers=3+	78	35.36	15.06	33.51	14.46	10.68	4.04	8.57	3.31	7.72	2.92
	SEMCOG Totals	2,221	17.15	13.5	15.20	12.7	5.45	4.43	4.16	3.24	3.33	2.68
	TMA											
26	HH Size=1 Autos=0 Workers=0,1	78	3.55	3.67	1.77	2.53	1.61	3.06	1.32	3.02	0.27	0.44
27	HH Size=1 Autos=1+ Workers=0	172	6.28	4.69	6.10	4.67	1.80	1.7	1.55	1.46	1.45	1.35
28	HH Size=1 Autos=1+ Workers=1	258	7.99	3.97	7.69	3.96	2.59	1.85	2.39	1.62	2.28	1.63
29	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	56	11.61	9.91	4.79	6.09	4.80	4.93	4.00	4.2	0.87	1.28
30	HH Size=2 Autos=1 Workers=0	67	11.33	7.58	10.82	7.31	3.65	3.11	1.85	1.26	1.73	1.24
31	HH Size=2 Autos=1 Workers=1	78	13.10	7.76	12.09	7.76	3.41	2.37	2.48	1.76	2.13	1.54
32	HH Size=2 Autos=1 Workers=2	29	16.93	7.63	15.10	8.27	4.45	2.09	3.04	1.27	2.62	1.52
33	HH Size=2 Autos=2+ Workers=0	100	15.04	7.6	14.91	7.6	4.36	2.9	2.89	2.28	2.71	1.8
34	HH Size=2 Autos=2+ Workers=1	128	15.52	8.03	14.77	7.82	5.19	3.63	4.16	2.61	3.86	2.38
35	HH Size=2 Autos=2+ Workers=2	245	16.21	6.86	15.73	6.52	5.21	2.6	4.50	2.38	4.34	2.34
36	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	47	19.87	12.87	18.64	12.96	6.71	4.14	4.29	2.58	3.76	2.49
37	HH Size=3 Autos=1 Workers=1	42	22.69	9.82	19.48	9.28	5.62	2.35	3.62	1.81	2.50	1.15
38	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	26	19.92	11.75	19.00	11.91	6.55	6.22	4.95	5.37	4.24	5.2
39	HH Size=3 Autos=2 Workers=1	54	19.83	8.98	18.46	8.81	5.18	2.87	3.58	2.19	2.87	1.6

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	TMAs (continued)											
40	HH Size=3 Autos=2 Workers=2	93	23.62	8.96	22.20	8.74	6.52	2.81	4.99	2.21	4.54	2.13
41	HH Size=3 Autos=3+ Workers=2	45	22.67	10.46	21.20	9.94	7.87	3.45	6.55	2.73	5.87	2.56
42	HH Size=3 Autos=3+ Workers=3	35	24.03	11.17	23.46	11.46	7.11	4.02	6.34	3.57	5.80	2.66
43	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	61	36.10	17.6	31.66	16.74	9.86	5.17	6.13	3.67	4.26	2.87
44	HH Size=4 Autos=1 Workers=1	36	26.31	14.66	20.75	14.51	7.55	3.81	4.40	2.21	2.34	1.19
45	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	31	30.77	17.53	25.45	17.17	9.17	5.2	6.26	3.98	3.92	2.67
46	HH Size=4 Autos=2 Workers=1	85	30.96	14.88	27.45	15.77	8.80	5.24	5.19	3.54	3.59	1.74
47	HH Size=4 Autos=2 Workers=2	144	36.22	12.29	31.36	11.84	9.45	4.03	6.27	3.06	4.55	2.41
48	HH Size=4 Autos=3+ Workers=2	71	31.38	13.55	27.20	12.2	9.72	4.34	7.28	3.54	5.55	3.16
49	HH Size=4 Autos=3+ Workers=3+	84	35.00	14.7	33.05	14.72	10.46	4.3	8.43	3.49	7.45	3.21
	TMAs Total	2,065	18.62	14.19	16.87	13.21	5.54	3.71	4.11	2.57	3.38	2.23
	Small Urban Model Areas											
50	HH Size=1 Autos=0 Workers=0,1	91	3.12	3.5	1.82	2.48	1.01	1.24	0.71	1.02	0.28	0.49
51	HH Size=1 Autos=1+ Workers=0	199	6.99	5.07	6.69	4.91	1.97	1.75	1.66	1.27	1.56	1.22
52	HH Size=1 Autos=1+ Workers=1	234	8.62	4.41	8.31	4.29	2.52	1.83	2.35	1.69	2.14	1.43
53	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	51	10.96	9.29	5.22	6.82	5.02	5.68	3.47	4.42	0.91	1.51
54	HH Size=2 Autos=1 Workers=0	80	10.36	7.34	10.23	7.29	2.87	2.68	1.41	1.2	1.37	1.17
55	HH Size=2 Autos=1 Workers=1	80	12.79	7.26	11.69	6.94	3.08	1.88	2.22	1.37	1.85	1.16
56	HH Size=2 Autos=1 Workers=2	29	16.45	7.73	14.69	7.13	4.76	3.29	3.06	1.82	2.59	1.54
57	HH Size=2 Autos=2+ Workers=0	135	14.19	8.57	13.68	8.2	3.97	2.96	2.65	2	2.32	1.6

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Small Urban Model Areas (continued)											
58	HH Size=2 Autos=2+ Workers=1	141	14.56	7.99	14.29	7.82	4.45	2.97	3.49	2.12	3.34	1.99
59	HH Size=2 Autos=2+ Workers=2	235	16.29	6.55	15.82	6.33	5.04	2.71	4.32	2.29	4.15	2.15
60	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	42	18.71	9.95	17.88	10.17	5.99	4.09	3.92	2.87	3.30	2.51
61	HH Size=3 Autos=1 Workers=1	41	22.05	10.86	19.88	11.9	5.38	2.72	3.23	1.74	2.46	1.53
62	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	19	18.95	9.65	18.05	9.28	5.07	3.19	3.75	2.01	3.48	1.93
63	HH Size=3 Autos=2 Workers=1	42	21.83	10.96	20.86	10.87	5.58	2.47	3.87	1.9	3.57	1.64
64	HH Size=3 Autos=2 Workers=2	85	22.78	9.42	20.99	8.47	6.39	3.03	4.53	2.11	3.89	1.76
65	HH Size=3 Autos=3+ Workers=2	45	21.80	10.41	21.38	10.18	7.18	4.21	5.31	2.87	5.00	2.69
66	HH Size=3 Autos=3+ Workers=3	35	23.71	10.01	22.69	8.94	7.42	3.28	6.68	2.93	6.43	2.99
67	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	48	31.15	19.08	27.65	19.25	8.35	4.73	5.11	2.87	3.70	2.41
68	HH Size=4 Autos=1 Workers=1	31	28.68	13.07	21.71	13.58	7.52	4.79	4.50	3.49	2.13	1.13
69	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	23	33.26	22.85	27.04	22.01	7.92	4.2	5.09	2.63	3.14	1.43
70	HH Size=4 Autos=2 Workers=1	76	37.79	15.08	33.78	15.65	9.12	5.32	4.83	2.67	3.43	1.79
71	HH Size=4 Autos=2 Workers=2	140	32.98	12.75	28.19	12.34	8.69	3.9	5.73	2.88	3.93	2.33
72	HH Size=4 Autos=3+ Workers=2	71	33.35	11.75	30.15	12.67	9.18	3.91	6.33	2.96	4.99	2.89
73	HH Size=4 Autos=3+ Workers=3+	72	32.83	12.21	30.54	12.41	9.83	4.34	7.91	3.63	6.96	3.48
	Small Urban Model Areas Total	2,045	17.83	12.5	16.27	11.36	5.04	4.82	3.64	3.2	3.03	2.57

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Small Cities											
74	HH Size=1 Autos=0 Workers=0,1	118	3.06	3.34	1.65	2.65	0.82	1.31	0.59	0.84	0.23	0.62
75	HH Size=1 Autos=1+ Workers=0	216	6.46	5.17	6.15	5.04	1.46	1.3	1.25	1.07	1.19	1.04
76	HH Size=1 Autos=1+ Workers=1	258	8.58	4.37	8.09	4.45	1.82	1.41	1.69	1.27	1.59	1.3
77	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	47	11.68	10.16	6.02	7.49	4.04	4.29	2.57	2.37	0.77	1.18
78	HH Size=2 Autos=1 Workers=0	87	10.55	7.87	10.08	7.73	2.57	2.68	1.43	1.51	1.32	1.46
79	HH Size=2 Autos=1 Workers=1	89	14.30	7.98	12.65	7.18	2.61	1.77	1.84	1.28	1.46	1.04
80	HH Size=2 Autos=1 Workers=2	32	17.31	7.21	14.28	6.78	3.85	2.47	2.76	1.74	2.25	1.56
81	HH Size=2 Autos=2+ Workers=0	150	16.12	9	15.34	8.88	4.01	3.64	2.58	2.02	2.30	1.85
82	HH Size=2 Autos=2+ Workers=1	152	15.63	7.61	14.89	7.16	4.26	2.97	3.42	2.37	3.12	2.1
83	HH Size=2 Autos=2+ Workers=2	224	17.11	7.78	16.38	7.74	4.26	3.24	3.74	2.8	3.46	2.61
84	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	67	19.31	10.81	18.37	10.72	4.74	3.89	3.00	2.51	2.76	2.39
85	HH Size=3 Autos=1 Workers=1	38	24.08	11.3	20.58	9.88	5.47	3.75	3.17	2.28	2.09	1.45
86	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	34	27.38	14.79	24.44	14.41	4.95	2.96	3.42	2.33	3.01	1.9
87	HH Size=3 Autos=2 Workers=1	55	21.47	11.52	20.04	10.85	4.75	3.04	3.40	2.03	3.03	1.86
88	HH Size=3 Autos=2 Workers=2	116	23.71	10.24	22.08	9.75	5.15	2.87	3.79	2.25	3.34	2.14
89	HH Size=3 Autos=3+ Workers=2	53	24.21	12.94	22.38	12.05	7.55	7.33	5.26	3.61	4.68	3.08
90	HH Size=3 Autos=3+ Workers=3	40	26.25	9.1	25.28	9.06	6.66	2.64	5.67	2.3	5.38	2.07
91	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	53	29.49	17.57	25.45	17.55	5.96	3.77	3.76	2.14	2.70	2.03

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Small Cities (continued)											
92	HH Size=4 Autos=1 Workers=1	34	31.97	17.3	26.53	16.34	6.44	4	3.90	3.21	2.23	1.7
93	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	44	33.36	12.82	28.89	12.15	7.17	3.31	4.81	2.74	3.62	2.31
94	HH Size=4 Autos=2 Workers=1	103	32.05	16.67	27.87	16.22	6.79	4.42	4.17	2.3	2.98	1.74
95	HH Size=4 Autos=2 Workers=2	178	32.32	13.77	28.11	13.37	6.23	3.08	4.30	2.34	2.97	1.71
96	HH Size=4 Autos=3+ Workers=2	74	33.86	15.75	30.53	16.06	6.39	3.7	4.59	2.98	3.58	2.41
97	HH Size=4 Autos=3+ Workers=3+	66	37.61	15.59	35.18	14.64	8.07	4.39	6.09	3.38	5.48	3.32
	Small Cities Total	2,328	18.67	12.72	16.87	11.85	4.18	4.39	3.03	3.07	2.52	2.47
	Upper Peninsula Rural											
98	HH Size=1 Autos=0 Workers=0,1	104	3.64	4.11	1.71	2.68	1.01	1.24	0.72	0.96	0.25	0.46
99	HH Size=1 Autos=1+ Workers=0	246	5.94	4.96	5.70	4.79	2.04	2.87	1.80	2.73	1.70	2.71
100	HH Size=1 Autos=1+ Workers=1	218	7.76	4.47	7.30	4.32	2.18	1.68	1.99	1.46	1.85	1.34
101	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	24	9.83	9.03	5.83	5.89	3.76	3.78	2.66	2.82	1.41	1.84
102	HH Size=2 Autos=1 Workers=0	100	9.67	7.86	9.00	7.8	3.04	3.12	1.52	1.42	1.38	1.35
103	HH Size=2 Autos=1 Workers=1	69	14.07	7.88	12.45	7.2	3.70	2.53	2.52	1.85	1.97	1.4
104	HH Size=2 Autos=1 Workers=2	31	13.42	6.84	12.23	6.38	3.04	1.77	2.08	1.1	1.88	1.12
105	HH Size=2 Autos=2+ Workers=0	171	13.72	8.17	13.15	7.7	4.72	4.35	2.84	2.55	2.66	2.49
106	HH Size=2 Autos=2+ Workers=1	152	13.83	7.66	13.19	7.37	5.00	4.04	3.50	2.26	3.23	2.06
107	HH Size=2 Autos=2+ Workers=2	198	16.47	7.27	15.82	7.18	5.31	4.17	4.43	3.04	4.07	2.51
108	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	49	17.88	11	17.06	10.71	6.31	4.73	3.71	2.85	3.32	2.54
109	HH Size=3 Autos=1 Workers=1	32	17.63	8.8	14.66	8.53	5.23	3.75	3.30	2.26	2.10	1.57

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Upper Peninsula Rural (continued)											
110	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	30	20.83	12.28	18.30	12.53	4.49	3.1	3.29	2.71	2.44	1.91
111	HH Size=3 Autos=2 Workers=1	42	20.14	9.71	19.02	9.71	6.63	4.12	4.10	2.65	3.47	2.29
112	HH Size=3 Autos=2 Workers=2	75	22.15	10.03	20.36	9.91	5.91	3.63	3.88	1.96	3.23	1.77
113	HH Size=3 Autos=3+ Workers=2	43	23.53	10.05	21.88	9.96	8.71	5.97	6.25	4.17	5.60	4.09
114	HH Size=3 Autos=3+ Workers=3	28	24.21	9.92	23.00	8.63	7.69	4.72	5.80	2.76	5.47	2.84
115	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	40	28.15	19.78	22.15	17.39	10.74	7.9	6.86	4.49	3.45	2.49
116	HH Size=4 Autos=1 Workers=1	30	23.70	13.72	16.87	14.35	6.89	4.06	4.67	2.58	2.10	1.36
117	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	32	31.91	13	26.81	12.78	8.91	6.43	5.62	4.07	3.81	3.59
118	HH Size=4 Autos=2 Workers=1	62	28.13	15.85	23.26	14.86	8.48	5.77	5.32	3.75	2.97	2.13
119	HH Size=4 Autos=2 Workers=2	135	30.07	12.14	25.81	11.73	7.16	3.56	4.79	2.69	3.06	1.59
120	HH Size=4 Autos=3+ Workers=2	59	29.37	11.28	24.14	11.1	11.69	8.41	7.87	4.94	4.72	3.6
121	HH Size=4 Autos=3+ Workers=3+	57	33.93	12.53	30.72	11.78	9.48	5.11	6.99	3.7	5.81	3.34
	Upper Peninsula Rural Totals	2,027	16.00	13.19	14.28	12.11	4.94	4.88	3.46	3.45	2.75	2.78
	Northern Lower Peninsula Rural											
122	HH Size=1 Autos=0 Workers=0,1	72	2.88	3.74	1.86	3.26	1.00	1.36	0.65	1.02	0.30	0.55
123	HH Size=1 Autos=1+ Workers=0	246	5.58	4.86	5.41	4.64	1.61	1.56	1.39	1.37	1.36	1.36
124	HH Size=1 Autos=1+ Workers=1	211	7.53	4.42	7.30	4.29	2.52	1.99	2.34	1.8	2.26	1.75
125	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	30	8.00	10.61	4.47	7.28	3.94	5.26	2.65	4.06	0.73	1.12
126	HH Size=2 Autos=1 Workers=0	110	9.10	7.52	8.93	7.45	3.21	3.51	1.55	1.37	1.47	1.31

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Northern Lower Peninsula Rural (continued)											
127	HH Size=2 Autos=1 Workers=1	71	10.62	7.5	9.42	7.09	3.06	2.41	2.32	1.98	1.84	1.53
128	HH Size=2 Autos=1 Workers=2	27	11.85	6.93	10.56	5.7	4.36	4.05	3.38	3.21	2.94	2.83
129	HH Size=2 Autos=2+ Workers=0	189	10.94	7.9	10.78	7.88	3.93	3.53	2.27	2.14	2.16	1.94
130	HH Size=2 Autos=2+ Workers=1	148	13.05	6.9	12.72	6.7	4.70	3.02	3.66	2.38	3.51	2.25
131	HH Size=2 Autos=2+ Workers=2	206	15.66	6.75	15.17	6.39	4.96	3.15	4.15	2.52	4.04	2.5
132	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	55	17.76	11.24	16.25	11.58	5.93	3.98	3.65	2.35	3.01	2.27
133	HH Size=3 Autos=1 Workers=1	35	18.46	13.25	16.03	13.45	5.78	3.98	3.42	2.38	2.15	1.77
134	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	17	21.53	12.97	20.18	13.38	7.10	2.9	5.32	2.27	4.39	2.06
135	HH Size=3 Autos=2 Workers=1	46	17.85	8.37	16.33	8.57	6.62	4.76	4.21	3.62	3.37	3.48
136	HH Size=3 Autos=2 Workers=2	70	20.29	7.79	18.56	7.8	6.05	3.18	4.63	2.63	3.96	2.53
137	HH Size=3 Autos=3+ Workers=2	47	20.53	8.22	18.47	7.39	7.63	4.25	6.02	3.25	5.16	3.01
138	HH Size=3 Autos=3+ Workers=3	29	24.31	9.85	23.83	9.89	8.65	3.94	7.28	3.71	6.85	3.7
139	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	51	26.35	15.45	22.92	16.62	9.41	5.16	6.02	3.08	3.78	1.92
140	HH Size=4 Autos=1 Workers=1	35	20.46	14.28	15.03	12.64	7.58	5.63	5.28	3.79	2.27	1.46
141	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	35	29.91	15.52	24.69	14.97	10.10	7.22	6.41	3.99	3.71	2.22
142	HH Size=4 Autos=2 Workers=1	78	27.71	15.05	23.45	16.55	8.44	4.97	5.15	3.19	3.00	1.88
143	HH Size=4 Autos=2 Workers=2	141	31.35	13.89	27.13	13.89	8.24	3.89	5.53	2.85	3.70	1.85

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Northern Lower Peninsula Rural (continued)											
144	HH Size=4 Autos=3+ Workers=2	66	30.38	11.89	26.03	11.48	9.69	4.56	6.81	3.34	4.80	2.27
145	HH Size=4 Autos=3+ Workers=3+	58	31.90	14.59	30.00	14.28	9.27	4.86	7.00	3.48	6.02	3.27
	Northern Lower Peninsula Rural Totals	2,073	15.51	13.91	14.08	12.94	4.99	4.33	3.56	3.23	2.89	2.67
	Southern Lower Peninsula Rural											
146	HH Size=1 Autos=0 Workers=0,1	73	3.23	3.7	2.03	2.64	0.96	1.19	0.67	0.88	0.35	0.61
147	HH Size=1 Autos=1+ Workers=0	194	5.76	4.08	5.57	4.02	2.06	1.94	1.75	1.58	1.68	1.5
148	HH Size=1 Autos=1+ Workers=1	233	7.98	4.18	7.83	4.16	2.50	1.82	2.33	1.66	2.29	1.67
149	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	27	11.52	11.72	8.15	10.03	4.11	5.25	2.56	3.03	1.08	1.35
150	HH Size=2 Autos=1 Workers=0	76	9.20	7.02	8.93	6.89	3.33	3.75	1.51	1.51	1.40	1.32
151	HH Size=2 Autos=1 Workers=1	66	13.33	7.33	12.23	7.23	4.28	2.84	2.89	1.99	2.27	1.43
152	HH Size=2 Autos=1 Workers=2	32	15.41	8.18	13.97	7.65	4.22	2.79	2.82	1.87	2.54	1.85
153	HH Size=2 Autos=2+ Workers=0	155	13.59	8.47	13.39	8.46	4.49	3.46	2.49	2.04	2.29	1.53
154	HH Size=2 Autos=2+ Workers=1	148	14.04	7.51	13.86	7.57	4.95	3.08	3.87	2.12	3.80	2.1
155	HH Size=2 Autos=2+ Workers=2	237	13.88	7.09	13.32	6.6	5.80	4.44	4.78	3.5	4.43	2.76
156	HH Size=3 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	45	18.27	11.08	16.47	10.73	5.97	3.88	4.20	2.88	3.47	2.66
157	HH Size=3 Autos=1 Workers=1	40	19.40	10.27	15.43	9.21	5.61	3.26	3.99	2.67	2.17	1.31
158	HH Size=3 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	26	21.81	12.04	21.38	12.17	6.33	3.97	5.18	3.94	5.12	3.96
159	HH Size=3 Autos=2 Workers=1	45	17.69	11.07	16.27	11.16	5.96	3.92	4.00	2.5	3.30	2.07

Table 1. Michigan Travel Counts Survey (continued)
Measures of Household Travel Demand

Strata ID	Strata	Number of Households	Total Trip Rate: Household Mean	Total Trip Rate: Household Standard Deviation	Auto Trip Rate: Household Mean	Auto Trip Rate: Household Standard Deviation	Person-Hours Traveled: Household Mean	Person-Hours Traveled: Household Std. Dev.	Vehicle-Hours Traveled (All Modes): Household Mean	Vehicle-Hours Traveled (All Modes): Household Std. Dev.	Vehicle-Hours Traveled (Auto): Household Mean	Vehicle-Hours Traveled (Auto): Household Std. Dev.
	Southern Lower Peninsula Rural (continued)											
160	HH Size=3 Autos=2 Workers=2	87	22.02	9.43	20.47	9.51	6.55	3.25	5.00	2.71	4.26	2.41
161	HH Size=3 Autos=3+ Workers=2	47	23.64	9.14	22.34	8.9	7.63	4.58	6.15	4.01	5.62	3.62
162	HH Size=3 Autos=3+ Workers=3	35	23.69	8.29	22.66	7.79	9.28	3.45	8.23	3.25	7.64	3.24
163	HH Size=4 [Autos=1,2,3+ Workers=0] and [Autos=3+ Workers=1]	57	26.60	13.52	22.98	12.82	8.71	4.78	5.68	3.49	3.71	2
164	HH Size=4 Autos=1 Workers=1	31	16.61	11.64	12.52	9.92	5.36	4.48	3.99	3.56	2.07	1.49
165	HH Size=4 [Autos=1 Workers=2,3] and [Autos=2 Workers=3]	44	28.70	13.38	24.89	13	9.05	4.88	5.62	3.56	3.87	2.46
166	HH Size=4 Autos=2 Workers=1	77	34.19	15.08	29.48	15.32	10.99	5.25	6.76	3.89	4.55	2.79
167	HH Size=4 Autos=2 Workers=2	138	33.17	14.1	28.41	13.7	10.00	5.33	6.55	3.29	4.26	2.01
168	HH Size=4 Autos=3+ Workers=2	76	32.29	12.82	28.42	12.36	10.58	4.28	7.71	3.59	5.67	2.82
169	HH Size=4 Autos=3+ Workers=3+	70	33.04	13.59	31.14	13.03	11.85	7.4	8.68	4.3	7.84	4.1
	Southern Lower Peninsula Rural Totals	2,059	17.08	13.51	15.58	12.61	5.70	4.07	4.12	2.85	3.40	2.41
	Statewide	14,818	17.29	13.43	15.61	12.48	5.11	4.41	3.72	3.12	3.04	2.57

Add-On Survey Sample Size

To estimate the necessary sample size for the add-on survey, we investigated potential ranges of averages and standard deviations for the five travel behavior measures listed above, and performed statistical simulations. We established a statistical power level of 90 percent (power is the probability of correctly rejecting the null hypothesis when the alternative is true), and then tested different means and standard deviations for the measures of interest. We then estimated the necessary sample size for each of the modified strata in the follow-up survey.

We used SAS to perform these calculations at the statewide and geographic category levels. For the simulations, we tested combinations of differences in the main survey and add-on survey means and standard deviations with different sample sizes. After reviewing the different combinations, we estimated that a basic sample size of one-eighth of the initial survey should provide reasonable probabilities of accurately detecting real changes in travel behavior. At this approximate sample size, real differences in statewide trip rates and travel hours of five percent or more are likely to be correctly measured at least 90 percent of the time. At this same sample size of one-eighth of the initial survey sample size, real differences in the geographic region trip rates and travel hours of 15 percent or more will be correctly measured 90 percent or more of the time.

Minor adjustments were made to ensure that the individual combined strata included a minimum number of target samples. Finally, target sample sizes were adjusted so that the same number of samples will be targeted from each geographic category. Table 2 summarizes the proposed targets. We propose an overall sample size of 1,960 households drawn from the list of Michigan Travel Counts households that agreed to participate in a follow-up survey.

For most of the strata, the number of households agreeing to participate in further surveys is more than six times the targeted number of completes, but this ratio is lower for some of the smaller strata. These ratios will affect the ability of the surveyors to achieve the proposed targets cost-effectively. Therefore, we recommend that the individual stratum targets not be set as firm minima. If individual targets cannot be met after multiple contact attempts, then replacement with surveys of other strata in the same geographic region should be made.

In comparing the two survey samples, it will be important for data analysts to account for attrition/participation biases, therefore it will be important for the data collection contractor to maintain detailed records on sample disposition, including measures such as the number of calls needed to complete a survey and follow-up procedures used on each completed, partially completed, and refusing households, as well as the nature of the refusals. These data may enable analysts to develop participation models that can account for differential probabilities of participation.

Table 2. Proposed Survey Sample Targets by Stratum

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets
	Total Household Responses	Willing to Participate in Further Surveys	
SEMCOG			
1	125	83	16
2	185	130	22
3	297	234	35
4+6+7	163	126	20
5+8+12	202	138	24
9	121	99	15
10	211	177	24
11	60	56	12
13+15	138	111	17
14+16	129	91	16
17+18	73	51	12
19+20+22	191	145	23
21+23	158	112	20
24	90	65	12
25	78	68	12
SEMCOG Total	2,221	1,686	280
TMA s			
26	78	54	12
27	172	131	23
28	258	225	33
29	56	48	12
30+31	145	109	19
32+35	274	215	36
33	100	73	13
34	128	104	17
36+37+39	143	113	19
38+40	119	87	16
41+42	80	66	12
43+44+46+48	253	197	33
45+47	175	147	23
49	84	57	12
TMA s Total	2,065	1,626	280
Small Urban			
50	91	60	12
51	199	143	26
52	234	190	30
53	51	43	12
54+55	160	112	21
56+59	264	219	36

Table 2. Proposed Survey Sample Targets by Stratum (continued)

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets
	Total Household Responses	Willing to Participate in Further Surveys	
Small Urban (continued)			
57	135	101	18
58	141	103	19
60+61+63	125	91	17
62+64	104	90	14
65+66	80	60	12
67+68+70+72	226	166	30
69+71	163	132	21
73	72	49	12
Small Urban Total	2,045	1,559	280
Small Cities			
74	118	78	14
75	216	141	24
76	258	199	29
77	47	41	12
78+79	176	118	20
80+83	256	207	30
81	150	111	18
82	152	111	18
84+85+87	160	125	18
86+88	150	125	18
89+90	93	73	12
91+92+94+96	264	207	30
93+95	222	178	25
97	66	53	12
Small Cities Total	2,328	1,767	280
Upper Peninsula Rural			
98	104	68	14
99	246	179	33
100	218	177	30
101+102+103	193	139	26
104+107	229	194	31
105	171	124	23
106	152	115	20
108+109+111	123	97	16
110+112	105	86	14
113+114	71	53	12
115+116+118+120	191	151	26
117+119	167	132	23
121	57	40	12
Upper Peninsula Rural Total	2,027	1,555	280

Table 2. Proposed Survey Sample Targets by Stratum (continued)

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets
	Total Household Responses	Willing to Participate in Further Surveys	
Northern Lower Peninsula Rural			
122	72	42	12
123	246	181	32
124	211	173	27
125+126+127	211	148	27
128+131	233	189	30
129	189	132	25
130	148	121	20
132+133+135	136	102	18
134+136	87	71	12
137+138	76	63	12
139+140+142+144	230	173	30
141+143	176	139	23
145	58	45	12
Northern Lower Peninsula Rural Total	2,073	1,579	280
Southern Lower Peninsula Rural			
146	73	49	12
147	194	149	25
148	233	189	30
149	27	22	12
150+151	142	96	18
152+155	269	200	35
153	155	92	19
154	148	118	20
156+157+159	130	102	16
158+160	113	88	14
161+162	82	60	12
163+164+166+168	241	181	31
165+167	182	148	24
169	70	53	12
Southern Lower Peninsula Rural Total	2,059	1,547	280
TOTAL	14,818	11,319	1,960

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30 July 2010

MEMORANDUM

To: Cambridge Systematics, Inc.

From: Prof. Peter Stopher, PlanTrans Pty Ltd.

Subject: Sampling for Household Survey Update Comments

These comments are based on the Sample Design Memorandum (revised on October 31, 2008) received from Cambridge Systematics on 17th June, 2009. My review of the suggested aggregation of cells in the survey design is based principally on a review of the proposed aggregations, consideration of the magnitude of the average trip rates (as reported in the Memorandum), and the principles of modelling. In this memorandum, I deal with each geographic stratum in turn. Generally, the proposed aggregations of strata appear to make sense, with the exceptions of the ones discussed under each of the headings, below.

SEMCOG STRATA

I am uncomfortable with the proposal to combine strata 4+6+7, mainly because it does not differentiate between non-car owning and one car owning households. For modeling purposes, I think it is important that the non-car owning households are still sampled separately, or else the chances are that one-car owning households will so dominate the sample as to exclude sufficient non-car owning households. I recommend combining strata 6 and 7, but leaving 4 alone. If 4 is considered too small, it would be preferable to combine 4 with 11. I am also uncomfortable with the combination of 5, 8, and 12, because this cell will be dominated by 2 person households. Finally, I am also uncomfortable with combining 19, 20 and 22. 20 and 22 could be combined, but I feel that 19 should be kept separate. Perhaps combining 12 and 19 would be a better strategy.

TMAS STRATA

My main concerns are for Household Size 3, I would propose combining 40 and 41, rather than 38 and 40, and 41 and 42. Also, for household size 4+, I would combine 43, 44, and 46, and combine as another stratum, 48 and 49.

SMALL URBAN STRATA

The only change I would propose here is again for household size 4+, where I would recommend combining 67, 68, and 70 into one stratum, and 72 and 73 into one stratum, rather than adding 72 to the first stratum.

SMALL CITIES STRATA

Again, I would propose aggregating 96 and 97, rather than aggregating 96 with 91, 92, and 94.

UPPER PENINSULA STRATA

For household size 2, I disagree with 102 and 103 into 101. I would propose leaving 101 as one stratum, and combining 102 and 103 as another stratum. For household size 3, stratum 11 needs to be left on its own, because of the average trip making, or it could be combined with 110 and 112. For household size 4+, it would again be my preference to combine 120 with 121, and remove 120 from 115 + 116 + 118.

NORTHERN LOWER PENINSULA RURAL STRATA

My only concern here is again with household size 4+, where I would again recommend aggregating 144 and 145, and not including 144 with 139, 140, and 142.

SOUTHERN LOWER PENINSULA RURAL STRATA

In household size 2, I disagree with aggregating 150 and 151, and believe these two strata should be kept separate. Again, in household size 4+, I would recommend aggregating 168 and 169, and removing 168 from 163, 164, and 166.

Memorandum

TO: Michigan Department of Transportation (MDOT)

FROM: Cemal Ayvalik
Kevin Tierney
Thomas Rossi

DATE: August 10, 2009

RE: Revised MDOT Household Survey Scheme

CC: Amlan Banerjee, CS, Laurie Wargelin/Lindsay Steffens, Abt SRBI

This memo documents the adjustments made to the MDOT household survey sampling plan. These changes were based on Peter Stopher's comments included in his memo dated June 24, 2009, recommendations made by CS including Peter Stopher's second set of comments, and the discussions with MDOT and the Abt SRBI team during the conference call on August 05, 2009.

Table 1 presents the revised survey sample targets by stratum. The strata were defined in the original sampling plan memo, from Cambridge Systematics, Inc. to MDOT dated October 21, 2008, revised October 31, 2008. The table follows the same format as the table with the sampling plan in the original memo, with an additional column labeled "List/Target." The "List/Target" is the ratio of the number of households in the stratum from the list of households from the original MI Travel Counts survey who agreed to be recontacted to the number of households in the proposed target for the stratum. A low number indicates potential for difficulty in filling the target from the available list (numbers less than or equal to 4.0 are highlighted).

The revised sampling plan increases the number of strata from 98 to 106, which also increased the sample size. Due to concerns about the level of response from some of these new strata and available budget, we have reduced the minimum target cell size from 12 to 10 responses. This reduction is made for the strata for which original MI Travel Counts survey had low levels of response. In our view, such reduction will not have a substantial effect since these two targets are very close to each other from a statistical point of view. Both target sizes are prone to produce large standard errors in estimation of statistics, therefore, we encourage all efforts to exceed these targets within budgetary and time constraints.

Table 1. Proposed Survey Sample Targets by Stratum

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets	List/Target
	Total Household Responses	Willing to Participate in Further Surveys		
SEMCOG				
1	125	83	15	6
2	185	130	21	6
3	297	234	34	7
4	44	35	10	4
6+7	119	91	14	7
5+8	169	113	19	6
12	33	25	10	3
9	121	99	14	7
10	211	177	24	7
11	60	56	10	6
13+15	138	111	16	7
14+16	129	91	15	6
17+18	73	51	10	5
19	31	25	10	2
20+22	160	120	18	7
21+23	158	112	18	6
24	90	65	12	5
25	78	68	10	7
SEMCOG Total	2,221	1,685	280	6
TMA s				
26	78	54	10	5
27	172	131	23	6
28	258	225	34	7
29	56	48	10	5
30+31	145	109	19	6
32+35	274	215	37	6
33	100	73	14	5
34	128	104	17	6
36+37+39	143	113	19	6
40+41	138	106	18	6
38+42	61	47	10	5
43+44+46	182	138	24	6
45+47	175	147	23	6
48	71	59	10	6
49	84	57	12	5
TMA s Total	2,065	1,626	280	6

Table 1. Proposed Survey Sample Targets by Stratum (continued)

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets	List/Target
	Total Household Responses	Willing to Participate in Further Surveys		
Small Urban				
50	91	60	12	5
51	199	143	26	6
52	234	190	31	6
53	51	43	10	4
54+55	160	112	21	5
56+59	264	219	36	6
57	135	101	19	5
58	141	103	19	5
60+61+63	125	91	18	5
62+64	104	90	14	6
65+66	80	60	12	5
67+68+70	155	114	21	5
69+71	163	132	21	6
72	71	52	10	5
73	72	49	10	5
Small Urban Total	2,045	1,559	280	6
Small Cities				
74	118	78	14	6
75	216	141	24	6
76	258	199	29	7
77	47	41	10	4
78+79	176	118	20	6
80+83	256	207	31	7
81	150	111	18	6
82	152	111	18	6
84+85+87	160	125	19	7
86+88	150	125	18	7
89+90	93	73	12	6
91+92+94	190	149	24	6
93+95	222	178	26	7
96+97	140	111	17	7
Small Cities Total	2,328	1,767	280	6

Table 1. Proposed Survey Sample Targets by Stratum (continued)

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets	List/Target
	Total Household Responses	Willing to Participate in Further Surveys		
Upper Peninsula Rural				
98	104	68	14	5
99	246	179	32	6
100	218	177	30	6
101	24	24	10	2
102+103	169	115	21	5
104+107	229	194	30	6
105	171	124	21	6
106	152	115	19	6
108+109	81	66	12	6
111	42	31	10	3
110+112	105	86	14	6
113+114	71	53	10	5
115+116+118	132	107	16	7
117+119	167	132	21	6
120	59	44	10	4
121	57	40	10	4
Upper Peninsula Rural Total	2,027	1,555	280	6
Northern Lower Peninsula Rural				
122	72	42	10	4
123	246	181	32	6
124	211	173	28	6
125+126+127	211	148	28	5
128+131	233	189	30	6
129	189	132	26	5
130	148	121	22	6
132+133+135	136	102	18	6
134+136	87	71	12	6
137+138	76	63	10	6
139+140+142	164	128	24	5
141+143	176	139	24	6
144+145	124	90	16	6
Northern Lower Peninsula Rural Total	2,073	1,579	280	6

Table 1. Proposed Survey Sample Targets by Stratum (continued)

Michigan Travel Counts Strata	Michigan Travel Counts Survey		Proposed Add-On Survey Targets	List/Target
	Total Household Responses	Willing to Participate in Further Surveys		
Southern Lower Peninsula Rural				
146	73	49	10	5
147	194	149	24	6
148	233	189	31	6
149	27	22	10	2
150	76	42	10	4
151	66	54	10	5
152+155	269	200	35	6
153	155	92	20	5
154	148	118	20	6
156+157+159	130	102	18	6
158+160	113	88	15	6
161+162	82	60	12	5
163+164+166	165	122	22	6
165+167	182	148	23	6
168+169	146	112	20	6
Southern Lower Peninsula Rural Total	2,059	1,547	280	6
TOTAL	14,818	11,318	1,960	

MEMORANDUM

To: Karen Faussett, MDOT

From: Laurie Wargelin, Abt SRBI; Lindsay Steffens, Abt SRBI

Subject: MI Travel Counts (MTC) - Task 4: Sample Selection and Maintenance Procedures

Date: Revised, August 25, 2009

TASK 4: SAMPLE SELECTION AND MAINTENANCE PROCEDURES

This memorandum describes the sample selection and maintenance procedures Abt SRBI will use for the 2009 MTC Survey.

The sample for the 2009 MTC Survey will be composed of households that participated in the 2004-2005 MTC Survey. Both households who participated in 2004-05 MTC Survey and new households now residing at the previous 2004-05 MTC participant's address, or with the previous 2004-05 MTC phone number, will be eligible to participate in the 2009 MTC Survey, if the household meets criteria needed for completing data cells, as established by the approved Sample Design Plan. (Substitute households are expected to be less than 10% of the total sample).

The sample will generally be selected for recruitment in proportion to the data cell completes required by the approved Sample Design Plan. However, the sample selected for data cells with low response rates in 2004-05 MTC has been adjusted upward as appropriate to further represent completes in these data cells. Likewise, the sample selected for data cells with high response rates in 2004-05 MTC has been adjusted downward.

Sampling will be monitored daily and adjusted weekly, if necessary, to promote appropriate levels of recruitments and travel inventory completions by data cells. If we are having problems recruiting a certain cell, then we will need to determine what we lose if we don't get that group and/or what corrective actions are needed.

Abt SRBI will provide weekly status reports using automated tallies that will include the number of recruited and retrieved households by sampling data cells (household size by number of vehicles by number of workers in the household by region).

To ensure that households in each region are randomly spread across the available fall travel days, Abt SRBI's sampling call algorithm will randomly select households from all data cells for initial contact, with adjustments as noted within high and low 2004-05 response data cells. A carefully planned telephone-calling algorithm ensures that each non-responder receives up to six call attempts strategically made across weekdays, weeknights, and weekends.

Abt SRBI has identified the 2009 MTC Survey sample targets in Table 1 of Attachment A using the Sample Design Plan. Proposed recruit targets and survey targets for monitoring the sample are also included in Table 1 of Attachment A. Abt SRBI will attempt to meet the proposed sample targets using disproportional sample selection strategies as described. Given the limited number of sample records from the 2004-05 MTC Survey that agreed to participate in future surveys, we will advance sample selection into the remaining sample when sampling targets for data cells are not being met. Since all households in the sampling frame agreed to be interviewed for the 2004-05 MTC Survey, it is allowable under the Council of American Survey Research Organization (CASRO) rules to re-contact them. Adjustments to sample selection will be made around the halfway point of the 2009 MTC Survey, based on sample data cell monitoring reports. While all efforts will be made to monitor and control sampling, we may not be able to populate all the cells as specified and some adjustments are expected--particularly since available sample pool is limited and given that this is a two-stage survey.



Advance letters will be sent to sample records before recruitment. The advance letter mailing will be composed of two mailings. The first mailing will consist of two groups: 1) an equal distribution of households based on the recruit targets with sample ratio targets between 5 and 7, including only those households that agreed to participate in future surveys and 2) all the hard to reach households with sample ratio targets equal to 4 or less, including respondents that did not agree to participate in future surveys. The sample ratio targets are indicated in the last column of Table 1 of Attachment A.

The proportion of household selected from each data cell for the 2nd advance letter mailing will take into account response rates for each data cell from the 1st advance letter mailing, with increased selection among households in data cells with lower response rates. This disproportionate sampling approach for the 2nd advance letter, will best meet Sample Design Plan target goals.



Attachment A

Table 1: Sample Selection

Strata ID	Michigan Travel Counts	2005 Total Household Responses	Advanced Letter 1st Mailing	Recruit Targets	Proposed Add-On	List/Target
					Survey Targets	
SEMCOG						
1	HH Size=1 Autos=0 Workers=0,1	125	56	25	15	6
2	HH Size=1 Autos=1+ Workers=0	185	79	35	21	6
3	HH Size=1 Autos=1+ Workers=1	297	133	59	34	7
4	HH Size=2 Autos=0 Workers=0,1,2	44	44	20	10	4
6+7	HH Size=2 Autos=1 Workers=1,2	119	56	25	14	7
5+8	HH Size=2 Autos=1,2+ Workers=0	169	72	32	19	6
12	HH Size=3 Autos=1,2,3+ Workers=0	33	33	20	10	3
9	HH Size=2 Autos=2+ Workers=1	121	56	25	14	7
10	HH Size=2 Autos=2+ Workers=2	211	92	41	24	7
11	HH Size=3,4 Autos=0 Workers=0,1,2,3+	60	38	17	10	6
13+15	HH Size=3 Autos=1,2,3+ Workers=1	138	63	28	16	7
14+16	HH Size=3 Autos=1,2 Workers=2,3	129	56	25	15	6
17+18	HH Size=3 Autos=3+ Workers=2,3	73	38	17	10	5
19	HH Size=4 Autos=1,2,3+ Workers=0	31	31	20	10	2
20+22	HH Size=4 Autos=1,2 Workers=1	160	70	31	18	7
21+23	HH Size=4 Autos=1,2 Workers=2,3+	158	68	30	18	6
24	HH Size=4 Autos=3+ Workers=1,2	90	45	20	12	5
25	HH Size=4 Autos=3+ Workers=3+	78	41	18	10	7
	SEMCOG Total	2,221	1,071	488	280	6
TMA						
26	HH Size=1 Autos=0 Workers=0,1	78	38	17	10	5
27	HH Size=1 Autos=1+ Workers=0	172	88	39	23	6
28	HH Size=1 Autos=1+ Workers=1	258	131	58	34	7
29	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	56	38	17	10	5
30+31	HH Size=2 Autos=1 Workers=0,1	145	72	32	19	6
32+35	HH Size=2 Autos=1,2+ Workers=2	274	140	62	37	6
33	HH Size=2 Autos=2+ Workers=0	100	54	24	14	5
34	HH Size=2 Autos=2+ Workers=1	128	63	28	17	6
36+37+39	HH Size=3 Autos=1,2,3+ Workers=1,2,3+	143	72	32	19	6
40+41	HH Size=3 Autos=2,3+ Workers=2	138	68	30	18	6
38+42	HH Size=3 (Autos=1 Workers=2,3) and (Autos=2,3+ Workers=3)	61	38	17	10	5
43+44+46	HH Size=4 Autos=1,2,3+ Workers=0,1	182	90	40	24	6
45+47	HH Size=4 Autos=1,2 Workers=2,3	175	86	38	23	6
48	HH Size=4 Autos=3+ Workers=2	71	38	17	10	6
49	HH Size=4 Autos=3+ Workers=3+	84	45	20	12	5
	TMA Total	2,065	1,061	471	280	6
Small Urban						
50	HH Size=1 Autos=0 Workers=0,1	91	45	20	12	5
51	HH Size=1 Autos=1+ Workers=0	199	99	44	26	6
52	HH Size=1 Autos=1+ Workers=1	234	117	52	31	6
53	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	51	51	20	10	4
54+55	HH Size=2 Autos=1 Workers=0,1	160	79	35	21	5
56+59	HH Size=2 Autos=1,2+ Workers=2	264	135	60	36	6
57	HH Size=2 Autos=2+ Workers=0	135	72	32	19	5
58	HH Size=2 Autos=2+ Workers=1	141	72	32	19	5
60+61+63	HH Size=3 Autos=1,2,3+ Workers=0,1	125	68	30	18	5
62+64	HH Size=3 Autos=1,2 Workers=2,3	104	54	24	14	6
65+66	HH Size=3 Autos=3+ Workers=2,3	80	45	20	12	5
67+68+70	HH Size=4 Autos=1,2,3+ Workers=1,2,3+	155	79	35	21	5
69+71	HH Size=4 Autos=1,2 Workers=2,3	163	79	35	21	6
72	HH Size=4 Autos=3+ Workers=2	71	38	17	10	5
73	HH Size=4 Autos=3+ Workers=3+	72	38	17	10	5
	Small Urban Total	2,045	1,071	473	280	6



Table 1: Sample Selection (continued)

Strata ID	Michigan Travel Counts	2005 Total Household Responses	Advanced Letter 1st Mailing	Recruit Targets	Proposed Add-On	List/Target
					Survey Targets	
Small Cities						
74	HH Size=1 Autos=0 Workers=0,1	118	54	24	14	6
75	HH Size=1 Autos=1+ Workers=0	216	92	41	24	6
76	HH Size=1 Autos=1+ Workers=1	258	115	51	29	7
77	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	47	47	20	10	4
78+79	HH Size=2 Autos=1 Workers=0,1	176	77	34	20	6
80+83	HH Size=2 Autos=1,2+ Workers=2	256	122	54	31	7
81	HH Size=2 Autos=2+ Workers=0	150	68	30	18	6
82	HH Size=2 Autos=2+ Workers=1	152	68	30	18	6
84+85+87	HH Size=3 Autos=1,2,3+ Workers=0,1	160	74	33	19	7
86+88	HH Size=3 Autos=1,2 Workers=2,3	150	70	31	18	7
89+90	HH Size=3 Autos=3+ Workers=2,3	93	45	20	12	6
91+92+94	HH Size=4 Autos=1,2,3+ Workers=0,1	190	90	40	24	6
93+95	HH Size=4 Autos=1,2 Workers=2,3+	222	101	45	26	7
96+97	HH Size=4 Autos=3+ Workers=2,3+	140	68	30	17	7
Small Cities Total		2,328	1,091	483	280	6
Upper Peninsula Rural						
98	HH Size=1 Autos=0 Workers=0,1	104	54	24	14	5
99	HH Size=1 Autos=1,2,3+ Workers=0	246	122	54	32	6
100	HH Size=1 Autos=1,2,3+ Workers=1	218	113	50	30	6
101	HH Size=2,3,4 Autos=0 Workers=0,1,2	24	24	20	10	2
102+103	HH Size=2 Autos=1 Workers=0,1	169	79	35	21	5
104+107	HH Size=2 Autos=1,2,3+ Workers=2	229	113	50	30	6
105	HH Size=2 Autos=2,3+ Workers=0	171	79	35	21	6
106	HH Size=2 Autos=2,3+ Workers=1	152	72	32	19	6
108+109	HH Size=3 (Autos=1,2,3+ Workers=0) and (Autos 1,3+ Workers=1)	81	45	20	12	6
111	HH Size=3 Autos=2 Workers=1	42	42	20	10	3
110+112	HH Size=3 Autos=1,2 Workers=2,3	105	54	24	14	6
113+114	HH Size=3 Autos=3+ Workers=2,3	71	38	17	10	5
115+116+118	HH Size=4 Autos=1,2,3+ Workers=1,2,3+	132	63	28	16	7
117+119	HH Size=4 Autos=1,2 Workers=2,3	167	79	35	21	6
120	HH Size=4 Autos=3+ Workers=2	59	59	20	10	4
121	HH Size=4 Autos=3+ Workers=3+	57	57	20	10	4
Upper Peninsula Rural Total		2,027	1,093	484	280	6
Northern Lower Peninsula Rural						
122	HH Size=1 Autos=0 Workers=0,1	72	72	20	10	4
123	HH Size=1 Autos=1+ Workers=0	246	162	54	32	6
124	HH Size=1 Autos=1+ Workers=1	211	106	47	28	6
125+126+127	(HH Size=2 Autos=1 Workers=0,1) and (HH Size=2,3,4 Autos=0 Workers=0,1,2,3+)	211	106	47	28	5
128+131	HH Size=2 Autos=1,2+ Workers=2	233	113	50	30	6
129	HH Size=2 Autos=2+ Workers=0	189	99	44	26	5
130	HH Size=2 Autos=2+ Workers=1	148	83	37	22	6
132+133+135	HH Size=3 Autos=1,2,3+ Workers=0,1	136	68	30	18	6
134+136	HH Size=3 Autos=1,2 Workers=2,3	87	45	20	12	6
137+138	HH Size=3 Autos=3+ Workers=2,3	76	38	17	10	6
139+140+142	HH Size=4 Autos=1,2,3+ Workers=1,2,3+	164	90	40	24	5
141+143	HH Size=4 Autos=1,2 Workers=2,3	176	90	40	24	6
144+145	HH Size=4 Autos=3+ Workers=2,3+	124	61	27	16	6
Northern Lower Peninsula Rural Total		2,073	1,133	473	280	6
Southern Lower Peninsula Rural						
146	HH Size=1 Autos=0 Workers=0,1	73	38	17	10	5
147	HH Size=1 Autos=1+ Workers=0	194	90	40	24	6
148	HH Size=1 Autos=1+ Workers=1	233	117	52	31	6
149	HH Size=2,3,4 Autos=0 Workers=0,1,2,3+	27	27	20	10	2
150	HH Size=2 Autos=1 Workers=0	76	76	20	10	4
151	HH Size=2 Autos=1 Workers=1	66	38	17	10	5
152+155	HH Size=2 Autos=1,2+ Workers=2	269	133	59	35	6
153	HH Size=2 Autos=2+ Workers=0	155	77	34	20	5
154	HH Size=2 Autos=2+ Workers=1	148	77	34	20	6
156+157+159	HH Size=3 Autos=1,2,3+ Workers=0,1	130	68	30	18	6
158+160	HH Size=3 Autos=1,2 Workers=2,3	113	56	25	15	6
161+162	HH Size=3 Autos=3+ Workers=2,3	82	45	20	12	5
163+164+166	HH Size=4 Autos=1,2,3+ Workers=0,1	165	83	37	22	6
165+167	HH Size=4 Autos=1,2 Workers=2,3	182	88	39	23	6
168+169	HH Size=4 Autos=3+ Workers=2,3+	146	77	34	20	6
Southern Lower Peninsula Rural Total		2,059	1,090	478	280	6
TOTAL		14,818	7,610	3,350	1,960	

Appendix Q: Codebook for MTC II

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	FDATE	Completion Date (2009 ONLY)	Text	Text
Numeric	RECTYP	Record Type	1	Household Record
Numeric	QNO	Sample Number	Value	Value
Alphanum	QPHONE	Phone Number (PHONENO 2005)	Value	Value
Numeric	MONTH	Month of Day 1 (MONTH1 2005)	1	January
Numeric	MONTH2	Month of Day 2 (2005 ONLY)	2	February
			3	March
			4	April
			5	May
			6	June
			7	July
			8	August
			9	September
			10	October
			11	November
			12	December
Numeric	DAY	Day 1 (DAY1 2005)	1-31	Valid Range
Numeric	DAY2	Day 2 (2005 ONLY)	1-31	Valid Range
Numeric	DAYWK	Day of Week (24 HOUR TRAVEL)	1	Monday
			2	Tuesday
			3	Wednesday
			4	Thursday
			5	Friday
Numeric	LETTER	Advance Letter Sent	1	Yes
			2	No
Alphanum	OADDR	Original Home Address	Text	Text
Alphanum	GADDR	Geocoded Home Address	Text	Text
Alphanum	CITY	Home City	Text	Text
Alphanum	STATE	Home State	Text	Text
Numeric	ZIPCD	Home Zip Code	Value	Value
Alphanum	XSTS	Home Cross Streets	Text	Text
Alphanum	COUNTY	Home County	Text	Text
Alphanum	REGION	Region	1	SEMCOG
			2	Small Cities
			3	Upper Peninsula Rural
			4	Northern Lower Peninsula
			5	Southern Lower Peninsula
			6	TMA's
			7	Small Urban Modeled Areas
Alphanum	LONG	Home Longitude	Value	Value
			000.000000	Unknown Longitude

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	LAT	Home Latitude (LATI 2005)	Value	Value
			000.000000	Unknown Latitude
Alphanum	GEORSL	Geocoding Result	Text	Text
Numeric	GEOLVL	Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other (CITYFILE)
			13	Manually Geocoded
Alphanum	ZONE	Household TAZ	Value	Value
			88888888	Unknown Zone
Numeric	HHNUMPPL	Number of Persons in Household	1-15	Valid Range
Numeric	WRKRS	Number Employed in Household	0-15	Valid Range
Numeric	HHNUMVEH	Vehicles Available to Household	0-10	Valid Range
			98	Don't Know
			99	Refused
Numeric	VEHSUB	Vehicles Subsidized by Employer	0-10	Valid Range
			98	Don't Know
			99	Refused
Numeric	INCOME	Income	1	Less than \$10,000
			2	\$10,000 to \$19,999
			3	\$20,000 to \$29,999
			4	\$30,000 to \$39,999
			5	\$40,000 to \$49,999
			6	\$50,000 to \$59,999
			7	\$60,000 to \$74,999
			8	\$75,000 to \$99,999
			9	\$100,000 to \$124,999
			10	\$125,000 or more
			11	Below \$50,000
			12	\$50,000 or above
			98	Don't Know
			99	Refused
Numeric	FUTURE	Willing to Participate in the Future	1	Yes

Type	Variable Name	Variable Label	Response Category	Response Category Description
			2	No
			8	Don't Know (CODE 98 IN 2005)
Numeric	TYEAR	Travel Year	Value	Value
Numeric	HHPPL	Number of Persons in Household	1	1
			2	2
			3	3
			4+	4 or more
Numeric	HHVEH	Vehicles Available to Household	0	0
			1	1
			2	2
			3+	3 or more
Numeric	HHWKR	Number Employed in Household	0	0
			1	1
			2	2
			3+	3 or more
Numeric	CELL	Sample Cell Number	1-106	Valid Range
Numeric	QNO2005	Sample Number from 2005	Value	Value
Numeric	DELIV	Interim Delivery (MISSING)	1	1st interim Report
			2	2nd interim Report
			3	Final interim Report
Numeric	ACCEPT	MDOT Accept (MISSING)	0	Not Acceptable
			1	Acceptable
Numeric	STATUS	Status of HH (MISSING)	1	Household removed, they are in data cells with qota closed
			2	Household agreed upon to remove (no trips)
			3	Part of the 79 from MDOT to remove
			4	Household 20% or more non-geocodable
			5	Household with 25% or less non-geocodable
Numeric	NUMVIS	Overnight Visitors (2005 ONLY)	0-8	Valid Range
			98	Don't Know
			99	Refused
Numeric	SW_TAZ	TAZ_ID1	Value	Value
Numeric	SC_TAZ	SEMTAZ2000	Value	Value
Numeric	COMPRPT	Used in Comparison Report	1	Yes
			2	No

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	FDATE	Completion Date (2009 ONLY)	Text	Text
Numeric	RECTYP	Record Type	2	Person Record
Numeric	QNO	Sample Number	Value	Value
Numeric	PERNUM	Person Number	1	Person 1
			2	Person 2
			3	Person 3
			4	Person 4
			5	Person 5
			6	Person 6
			7	Person 7
			8	Person 8
			9	Person 9
			10	Person 10
			11	Person 11
			12	Person 12
			13	Person 13
			14	Person 14
			15	Person 15
Alphanum	QPHONE	Phone Number (PHONENO 2005)	Value	Value
Numeric	GENDER	Gender	1	Male
			2	Female
			8	Don't Know
			9	Refused (CODE 99 IN 2005)
Numeric	AGE	Age	0-115	Valid Range
			998	Don't Know
			999	Refused
Numeric	AGERNG	Age Range	1	Under 5
			2	5 to 15
			3	16 to 17
			4	18 to 24
			5	25 to 34
			6	35 to 44
			7	45 to 54
			8	55 to 64
			9	65 to 74
			10	75 to 84
			11	85 and over
			98	Don't Know
			99	Refused
Numeric	AGE18	Age Above/Below 18	1	18 or older
			2	Under 18
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	RELAT	Relationship to Contact Person	0	Contact Person
			1	Husband/Wife/Unmarried Partner
			2	Son/Daughter/In-Law
			3	Brother/Sister/In-Law
			4	Mother/Father/In-Law
			5	Other Relative
			6	Roommate/Friend
			7	Household Help
			8	Foster Home Resident
			9	Grandchild
			10	Child of Boyfriend/Girlfriend/Spouse
			11	Boyfriend/Girlfriend/Spouse of Son/Daughter
			12	Tenant
			13	Cousin
			14	Exchange Student
			15	Foster Child/Daughter/Son
			16	Grandmother/Grandfather/In Law
			17	Great Grandchild
			18	Stepdaughter's son/Stepson's Girlfriend
			19	Legal Guardian
			20	Step Granddaughter
			21	Caregiver/Care Worker
			22	Dependent
			23	Niece/Nephew
			24	Aunt/Uncle
			25	Grandparent
			26	Employers Child
			96	Other
			98	Don't Know
			99	Refused
Alphanum	RELATOS	Other Relationship to Contact Person	Text	Text
Numeric	LDRV	Licensed Driver	1	Yes
			2	No
			3	Not Applicable (Too Young)
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	TPASS	Transit Pass	1	Yes
			2	No
			3	Not Applicable (Too Young)
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	PTYPE1	Type of Transit Pass - 1st Mention	1	Adrian Dial-A-Ride
Numeric	PTYPE2	Type of Transit Pass - 2nd Mention	2	Allegan County Transportation

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	PTYPE3	Type of Transit Pass - 3rd Mention	3	Alma Dial-A-Ride
			4	City Of Alpena Dial-A-Ride
			5	Altran Transit Authority (Alger County)
			6	Ann Arbor Transportation Authority (AATA)
			7	Antrim County Transportation (ACT)
			8	Arenac Dial-A-Ride
			9	Barry County Transit
			10	Battle Creek Transit
			11	Bay Area Transportation Authority (BATA)
			12	Bay Metro Transportation Authority (BMTA)
			13	Belding Dial-A-Ride
			14	Berrien Bus (Berrien County Public Transportation)
			15	Big Rapids Dial-A-Ride
			16	Blue Water Area Transportation Commission (BWATC)
			17	Branch Area Transit Authority
			18	Buchanan Dial-A-Ride
			19	Cadillac/Wexford Transit Authority (CWTA)
			20	Capital Area Transportation Authority (CATA)
			21	Caro Transit Authority (CTA)
			22	Cass County Transportation Authority
			23	Charlevoix County Public Transit (CCPT)
			24	Clare County Transit Corporation (CCTC)
			25	Clinton Area Transit System
			26	Crawford County Transportation Authority
			27	Delta Area Transit Authority (DATA)
			28	Detroit Department of Transportation (DDOT)
			29	Dowagiac Dial-A-Ride (DART)
			30	Eastern Upper Peninsula Transportation Authority (EUPTA)
			31	Eaton County Transportation Authority (EATRAN)
			32	Flint Mass Transportation Authority (MTA)
			33	Gladwin City/County Transit (GCCT)
			34	Gogebic County Transit (GTC)
			35	Grand Rapids - ITP/The Rapid (Interurban Transit Partnership)
			36	Greenville Transit
			37	Harbor Transit
			38	Hillsdale Dial-A-Ride
			39	Houghton Motor Transit Line
			40	Interurban Transit Authority (Saugatuck)
			41	City of Ionia Dial-A-Ride
			42	Ionia Transit Authority
			43	Iosco Transit Corporation (ITC)

Type	Variable Name	Variable Label	Response Category	Response Category Description
			44	Isabella County Transportation Commission (ICTC)
			45	Jackson Transportation Authority (JTA)
			46	Kalamazoo County Human Services
			47	Kalamazoo Metro Transit System (KMTS)
			48	Kalkaska Public Transit Authority (KPTA)
			49	Lake Erie Transit
			50	Greater Lapeer Transportation Authority (GLTA)
			51	Lenawee Transportation Corporation
			52	Livingston Essential Transportation (LETS)
			53	Ludington Mass Transportation Authority (LMTA)
			54	Macatawa Area Express - MAX
			55	Manistee County Transportation
			56	Marquette County Transit Authority (MARQTRAN)
			57	City of Marshall Dial-A-Ride
			58	Mecosta County Area Transit
			59	Midland County Connection
			60	City of Midland Dial-A-Ride
			61	City of Milan Public Transportation (MPT)
			62	Muskegon Area Transit System (MATS)
			63	Niles Dial-A-Ride
			64	Ogemaw County Public Transportation (OCPT)
			65	Ontonagon County Public Transit
			42	Senior Care (Assisted Living/Retirement Communities/Nursing Homes etc.)
			43	Retail (Retail Shops/Unspecified Sales)
			44	Agriculture (Farms/Dairy, Egg Production etc.)
			45	Other Academic (Unspecified Teaching/School Administration/Dance Classes/Karate Classes etc.)
			46	Animal Care/Control (Veterinary/Boarding/Grooming/Supplies etc.)
			47	Military
			48	Non-Profit
			49	Cemeteries
			50	Utilities (Gas/Electric/Water/Waste Disposal etc.)
			51	Indoor Work (Non-Industrial Labor/Small Production)
			52	Commercial Services (Shipping/Packaging/Plumbing/Tailoring etc.)
			66	Osceola County Area Transit
			67	Otsego County Bus System
			68	Rosco Mini Bus System (Roscommon)
			69	Saginaw Transit System (Saginaw Transit Authority Regional Services)
			70	Sanilac Transportation Corporation (STC)

Type	Variable Name	Variable Label	Response Category	Response Category Description
			71	City of Sault Sainte Marie
			72	Schoolcraft County Public Transportation
			73	Shiawassee Area Transportation Agency
			74	SMART aka SEMTA (Suburban Mobility Authority For Regional Transportation)
			75	Thumb Area Transit (TAT) - Huron Transit Corporation
			76	Twin Cities Area Transportation Authority (TCATA)
			77	Van Buren Public Transit
			78	Yates Township Transportation System
			79	Blue Lakes Charter
			80	DASH
			81	Hope
			82	University of Michigan
			84	MASS
			85	MTA
			96	Other
			98	Don't Know
			99	Refused
Alphanum	PTYPEOS	Other Type of Transit Pass	Text	Text
Alphanum	PCOST1	Amount Paid for Transit Pass 1	0.01-9000.99	Valid Range
			9998	Don't Know
			9999	Refused
Numeric	PTRANS1	Pay for Transit Pass 1	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	PRATE1	Transit Pass 1 Rate	1	Weekly
			2	Monthly
			3	Annually
			6	Other (CODE 996 IN 2005)
			8	Don't Know (CODE 998 IN 2005)
			9	Refused (CODE 999 IN 2005)
Alphanum	PRATE1OS	Other Transit Pass 1 Rate (PRATEO1 2005)	Text	Text
Alphanum	PCOST2	Amount Paid for Transit Pass 2	0.01-9000.99	Valid Range
			9998	Don't Know
			9999	Refused
Numeric	PTRANS2	Pay for Transit Pass 2	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	PRATE2	Transit Pass 2 Rate	1	Weekly
			2	Monthly
			3	Annually

Type	Variable Name	Variable Label	Response Category	Response Category Description
			6	Other (CODE 996 IN 2005)
			8	Don't Know (CODE 998 IN 2005)
			9	Refused (CODE 999 IN 2005)
Alphanum	PRATE2OS	Other Transit Pass 2 Rate (PRATEO2 2005)	Text	Text
Alphanum	PCOST3	Amount Paid for Transit Pass 3	0.01-9000.99	Valid Range
			9998	Don't Know
			9999	Refused
Numeric	PTRANS3	Pay for Transit Pass 3	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	PRATE3	Transit Pass 3 Rate	1	Weekly
			2	Monthly
			3	Annually
			6	Other (CODE 996 IN 2005)
			8	Don't Know (CODE 998 IN 2005)
			9	Refused (CODE 999 IN 2005)
Alphanum	PRATE3OS	Other Transit Pass 3 Rate (PRATEO3 2005)	Text	Text
Numeric	EDU	Education Level	0	Not Applicable (Too Young)
			1	Less Than High School
			2	High School Graduate
			3	Some College
			4	Vocational/Technical Training
			5	Associates Degree
			6	Bachelors Degree
			7	Graduate/Post-Graduate Degree
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	STYPE	Type of School	0	Not currently a student
			1	Pre-School/Nursery School
			2	K-12
			3	Vocational/Technical
			4	Full-Time College Student
			5	Part-Time College Student
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Alphanum	SNAME	School Name	Text	Text
Alphanum	OSADDR	Original School Address	Text	Text
Alphanum	SADDR	Geocoded School Address	Text	Text
Alphanum	SCITY	School City	Text	Text
Alphanum	SSTATE	School State	Text	Text
Alphanum	SZIPCD	School Zip Code	Text	Text
			99998	Don't Know

Type	Variable Name	Variable Label	Response Category	Response Category Description
			99999	Refused
Alphanum	SXSTS	School Cross Streets	Text	Text
Alphanum	SLONG	School Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanum	SLAT	School Latitude (SLATI 2005)	Value	Value
			000.000000	Unknown Latitude
Alphanum	SGEORSL	School Geocoding Result	Text	Text
Numeric	SGEOLVL	School Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other (CITYFILE)
			13	Manually Geocoded
Alphanum	SZONE	School TAZ	Value	Value
			88888888	Unknown Zone
Numeric	WRKR	Working Status	1	Full-Time Worker
			2	Part-Time Worker
			3	Unpaid Worker or Volunteer
			4	Not Working
			5	Not Applicable (Too Young)
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	NOWK	Not Working Status	1	Looking for Work
			2	Not Looking for Work
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	W1INDUST	Primary Industry	1	Agriculture, Forestry, Fishing and Hunting
			2	Mining
			3	Utilities
			4	Construction
			5	Manufacturing
			6	Wholesale Trade
			7	Retail Trade
			8	Transportation and Warehousing
			9	Information
			10	Finance and Insurance

Type	Variable Name	Variable Label	Response Category	Response Category Description
			11	Real Estate, Rental/Leasing
			12	Professional, Scientific and Technical Services
			13	Management of Companies and Enterprises
			14	Administrative and Support and Waste Management and Remediation Services
			15	Educational Services
			16	Health Care and Social Services
			17	Arts, Entertainment, and Recreation
			18	Accommodation and Food Services
			19	Public Administration/Government
			20	Other Services
			21	Military
			22	Automotive
			23	Child Care/Daycare/Adult Foster Care
			24	Maintenance Services
			25	Lumber/Lumber Mill
			26	Church
			27	Marketing/Advertising
			28	Charity/Charitable Organizations
			29	Self-Employed/Owns Business
			30	Gaming/Gambling
			31	Media/Publishing
			96	Other
			98	Don't Know
			99	Refused
Alphanumeric	W1INDOS	Other Primary Industry	Text	Text
Alphanumeric	W1NAME	Name of Primary Employer	Text	Text
Numeric	W1LOC	Primary Employer Location	1	Workplace
			2	Works Only at Home
			3	No Fixed Workplace
			4	Refused
Alphanumeric	OW1ADDR	Original Primary Employer Address	Text	Text
Alphanumeric	W1ADDR	Geocoded Primary Employer Address	Text	Text
Alphanumeric	W1CITY	Primary Employer City	Text	Text
Alphanumeric	W1STATE	Primary Employer State	Text	Text
Alphanumeric	W1ZIPCD	Primary Employer Zip Code	Text	Text
			99998	Don't Know
			99999	Refused
Alphanumeric	W1XSTS	Primary Employer Cross Streets	Text	Text
Alphanumeric	W1LONG	Primary Employer Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanumeric	W1LAT	Primary Employer Latitude (W1LATI 2005)	Value	Value
			000.000000	Unknown Latitude

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	W1GEORSL	Primary Employer Geocoding Result	Text	Text
Numeric	W1GEOLVL	Primary Employer Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other (CITYFILE)
			13	Manually Geocoded
Alphanum	W1ZONE	Primary Employer TAZ	Value	Value
			88888888	Unknown Zone
Numeric	W1EVES	Primary Job includes Evenings	1	Yes
			2	No
			8	Don't Know
			9	Refused
Numeric	W1ONITE	Primary Job includes Overnights	1	Yes
			2	No
			8	Don't Know
			9	Refused
Numeric	W1HRS	Primary Job Weekly Hours	1-120	Valid Range
			998	Don't Know
			999	Refused
Numeric	W1FLEX	Primary Job Flexibility	1	No Flexibility
			2	Some Flexibility
			3	Complete Flexibility
			8	Don't Know
			9	Refused
Numeric	W1COMP	Primary Job Compressed Week	1	Compressed Work Week Offered
			2	Compressed Work Week Not Offered
			8	Don't Know
			9	Refused
Numeric	MJOBS	Multiple Jobs	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	W2INDUST	Secondary Industry	1	Agriculture, Forestry, Fishing and Hunting
			2	Mining
			3	Utilities

Type	Variable Name	Variable Label	Response Category	Response Category Description
			4	Construction
			5	Manufacturing
			6	Wholesale Trade
			7	Retail Trade
			8	Transportation and Warehousing
			9	Information
			10	Finance and Insurance
			11	Real Estate, Rental/Leasing
			12	Professional, Scientific and Technical Services
			13	Management of Companies and Enterprises
			14	Administrative and Support and Waste Management and Remediation Services
			15	Educational Services
			16	Health Care and Social Services
			17	Arts, Entertainment, and Recreation
			18	Accommodation and Food Services
			19	Public Administration/Government
			20	Other Services
			21	Military
			22	Automotive
			23	Child Care/Daycare/Adult Foster Care
			24	Maintenance Services
			25	Lumber/Lumber Mill
			26	Church
			27	Marketing/Advertising
			28	Charity/Charitable Organizations
			29	Self-Employed/Owns Business
			30	Gaming/Gambling
			31	Media/Publishing
			96	Other
			98	Don't Know
			99	Refused
Alphanum	W2INDOS	Other Secondary Industry	Text	Text
Alphanum	W2NAME	Name of Secondary Employer	Text	Text
Numeric	W2LOC	Secondary Employer Location	1	Workplace
			2	Works Only at Home
			3	No Fixed Workplace
			4	Refused
Alphanum	OW2ADDR	Original Secondary Employer Address	Text	Text
Alphanum	W2ADDR	Geocoded Secondary Employer Address	Text	Text
Alphanum	W2CITY	Secondary Employer City	Text	Text
Alphanum	W2STATE	Secondary Employer State	Text	Text
Alphanum	W2ZIPCD	Secondary Employer Zip Code	Text	Text

Type	Variable Name	Variable Label	Response Category	Response Category Description
			99998	Don't Know
			99999	Refused
Alphanum	W2XSTS	Secondary Employer Cross Streets	Text	Text
Alphanum	W2LONG	Secondary Employer Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanum	W2LAT	Secondary Employer Latitude (W2LATI 2005)	Value	Value
Alphanum	W2GEORSL	Secondary Employer Geocoding Result	Text	Text
			000.000000	Unknown Latitude
Numeric	W2GEOLVL	Secondary Employer Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other (CITYFILE)
			13	Manually Geocoded
Alphanum	W2ZONE	Secondary Employer TAZ	Value	Value
			88888888	Unknown Zone
Numeric	W2EVES	Secondary Job includes Evenings	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	W2ONITE	Secondary Job includes Overnights	1	Yes
			2	No
			98	Don't Know
			99	Refused
Numeric	W2HRS	Secondary Job Weekly Hours	1-120	Valid Range
			998	Don't Know
			999	Refused
Numeric	W2FLEX	Secondary Job Flexibility	1	No Flexibility
			2	Some Flexibility
			3	Complete Flexibility
			98	Don't Know
			99	Refused
Numeric	W2COMP	Secondary Job Compressed Week	1	Compressed Work Week Offered
			2	Compressed Work Week Not Offered
			98	Don't Know
			99	Refused

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	PROXY	Proxy Status	1	Respondent
			2	Proxy
			3	Mailed Diary - On the Way
			4	Internet
			5	Mailed Diary - Entered
Numeric	PROXYNAM	Person Providing Proxy	1	Person 1
			2	Person 2
			3	Person 3
			4	Person 4
			5	Person 5
			6	Person 6
			7	Person 7
			8	Don't Know
Numeric	DCOMP	Diary Completed	1	Yes
			2	No
			3	Did not receive materials
			4	Don't Know
Numeric	DHAVE	Using Completed Diary	1	Yes
			2	No
			3	Not Applicable
Numeric	LDTRIPS	Long-Distance Trips Taken	1	Yes
			2	No
			8	Don't Know
			9	Refused
Numeric	DELIV	Interim Delivery (MISSING)	1	1st interim Report
			2	2nd interim Report
			3	Final interim Report
Numeric	ACCEPT	MDOT Accept (MISSING)	0	Not Acceptable
			1	Acceptable
Numeric	STATUS	Status of HH (MISSING)	1	Household removed, they are in data cells with qota closed
			2	Household agreed upon to remove (no trips)
			3	Part of the 79 from MDOT to remove
			4	Household 20% or more non-geocodable
			5	Household with 25% or less non-geocodable
Alphanum	W1TYPE	Type of Primary Employer (2005 ONLY)	Text	Text
Alphanum	W2TYPE	Type of Secondary Employer (2005 ONLY)	Text	Text

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	FDATE	Completion Date (2009 ONLY)	Text	Text
Alphanum	D_R	Blank Variable	Text	Text
Numeric	ID	ID Number (Blank)	Value	Value
Numeric	RECTYP	Record Type	3	Trip Record
Numeric	QNO	Sample Number	Value	Value
Numeric	PERNUM	Person Number	1	Person 1
			2	Person 2
			3	Person 3
			4	Person 4
			5	Person 5
			6	Person 6
			7	Person 7
			8	Person 8
			9	Person 9
			10	Person 10
			11	Person 11
			12	Person 12
			13	Person 13
			14	Person 14
			15	Person 15
Numeric	TRIPNUM	Trip Number	0-99	Valid Range
Alphanum	QPHONE	Phone Number (PHONENO 2005)	Value	Value
Alphanum	ORIGIN	Origin of Trip	Text	Text
Alphanum	OOADDR	Original Origin Address	Text	Text
Alphanum	OADDR	Geocoded Origin Address	Text	Text
Alphanum	OCITY	Origin City	Text	Text
Alphanum	OSTATE	Origin State	Text	Text
			ZZ	Out of the Country
Alphanum	OZIP	Origin Zip Code	Text	Text
			99998	Don't Know
			99999	Refused
Alphanum	OXSTS	Origin Cross Streets	Text	Text
Alphanum	OLONG	Origin Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanum	OLAT	Origin Latitude (OLATI 2005)	Value	Value
			000.000000	Unknown Latitude
Alphanum	OGEORSL	Origin Geocoding Result	Text	Text
Numeric	OGEOLVL	Origin Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level

Type	Variable Name	Variable Label	Response Category	Response Category Description
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other
			13	Manually Geocoded
Alphanum	OZONE	Origin TAZ	Text	Text
			88888888	Unknown Zone
Numeric	OTYPE	Origin Type of Location	1	Residential
			2	Automotive Dealer/Repair
			3	Bank/Financial Institution
			4	Barber/Beauty/Nail Salon
			5	Bookstore/Library/Newsstand
			6	Construction Site
			7	Convenience/Drug Store
			8	Daycare Facility/Preschool/Nursery School
			9	Gas Station
			10	Government/Municipal/City Offices
			11	Grocery
			12	Hotel/Motel/Other Lodging Facility
			13	Indoor Recreation
			14	Industrial Site
			15	Medical Facility/Hospital
			16	Movie Theater/Theatre/Concert Venue/Sports Arena
			17	Museum/Zoo/Historic Site
			18	Office Building
			19	Outdoor Recreation
			20	Religious - Church Synagogue/Houses of Worship
			21	Restaurant/Fast Food/Bar & Grill (Unknown)
			22	School - K-12
			23	School - College/University/Technical/Vocational
			24	Shopping Mall/Department Store
			25	Transportation Terminal (airport, train, bus)
			96	Other
			98	Don't Know

Type	Variable Name	Variable Label	Response Category	Response Category Description
			99	Refused
Alphanum	OTYPEOS	Other Type of Origin Location	Text	Text
Numeric	OTYPEA	Origin Enclosed Mall OR Standalone Location	1	In an enclosed shopping mall
			2	A standalone location or in a strip mall
			8	Don't Know
			9	Refused
Numeric	ACT1	Primary Activity at Origin Location	1	Home - Paid Work
Numeric	ACT2	2nd Activity at Origin Location	2	Home - Other
Numeric	ACT3	3rd Activity at Origin Location	3	Work
Numeric	ACT4	4th Activity at Origin Location	4	Attend Childcare
			5	Attend School
			6	Attend College
			7	Eat Out
			8	Personal Business
			9	Everyday Shopping
			10	Major Shopping
			11	Religious/Community
			12	Social
			13	Recreation - Participate
			14	Recreation - Watch
			15	Accompany Another Person
			16	Pick-Up/Drop-Off Passenger
			17	Turn Around
Numeric	TRAV	Did Respondent Leave Location	1	Yes - Traveled From Origin Location
			2	No - Stayed at Origin Location til End of 24-hours
Alphanum	WHYNO	Reason for No Travel	1	Sick/III
			96	Other
			98	Don't Know
			99	Refused
Alphanum	WHYNOS	Reason for No Travel	Text	Text
Alphanum	WRKHM	Paid Work at Home Time Periods	Text	Text
Numeric	DTIME	Time of Departure - Hour/Minute	Value	Value
Numeric	DDAY	Time of Departure - Day 1/Day 2	1	Day 1
Numeric	TRSTYPE1	1st Type of Transportation Used	1	Car, Van, Truck
Numeric	TRSTYPE2	2nd Type of Transportation Used	2	Motorcycle
Numeric	TRSTYPE3	3rd Type of Transportation Used	3	Bicycle/Moped
			4	Walk
			5	School Bus
			6	Taxi/Shuttle

Type	Variable Name	Variable Label	Response Category	Response Category Description
			7	Dial-A-Ride
			8	Train
			9	Public Bus
			10	Private Bus
			11	Boat/Ferry Boat/Kayak
			12	Skateboard/Scooter
			13	Airplane
			14	Tractor
			15	Golf Cart
			16	Ambulance
			17	ATV
			18	Funeral Home Limousine
			19	Rollerblades/Rollerskates
			20	Baby Stroller/Stroller
			21	Wheel Chair/Power Chair
			22	Snowmobile
			96	Other
			98	Don't Know
Alphanum	TRSTYPOS	Other Type of Transportation Used	Text	Text
Numeric	DAR1	1st Type of Dial-A-Ride Provider Used	1-99	See BUS1 - BUS3
Numeric	DAR2	2nd Type of Dial-A-Ride Provider Used	1-99	See BUS1 - BUS3
Numeric	DAR3	3rd Type of Dial-A-Ride Provider Used	1-99	See BUS1 - BUS3
Numeric	BUS1	1st Type of Bus Provider Used	1	Adrian Dial-A-Ride
Numeric	BUS2	2nd Type of Bus Provider Used	2	Allegan County Transportation
Numeric	BUS3	3rd Type of Bus Provider Used	3	Alma Dial-A-Ride
			4	City Of Alpena Dial-A-Ride
			5	Altran Transit Authority (Alger County)
			6	Ann Arbor Transportation Authority (AATA)
			7	Antrim County Transportation (ACT)
			8	Arenac Dial-A-Ride
			9	Barry County Transit
			10	Battle Creek Transit
			11	Bay Area Transportation Authority (BATA)
			12	Bay Metro Transportation Authority (BMTA)
			13	Belding Dial-A-Ride
			14	Berrien Bus (Berrien County Public Transportation)
			15	Big Rapids Dial-A-Ride

Type	Variable Name	Variable Label	Response Category	Response Category Description
			16	Blue Water Area Transportation Commission (BWATC)
			17	Branch Area Transit Authority
			18	Buchanan Dial-A-Ride
			19	Cadillac/Wexford Transit Authority (CWTA)
			20	Capital Area Transportation Authority (CATA)
			21	Caro Transit Authority (CTA)
			22	Cass County Transportation Authority
			23	Charlevoix County Public Transit (CCPT)
			24	Clare County Transit Corporation (CCTC)
			25	Clinton Area Transit System
			26	Crawford County Transportation Authority
			27	Delta Area Transit Authority (DATA)
			28	Detroit Department of Transportation (DDOT)
			29	Dowagiac Dial-A-Ride (DART)
			30	Eastern Upper Peninsula Transportation Authority (EUPTA)
			31	Eaton County Transportation Authority (EATRAN)
			32	Flint Mass Transportation Authority (MTA)
			33	Gladwin City/County Transit (GCCT)
			34	Gogebic County Transit (GTC)
			35	Grand Rapids - ITP/The Rapid (Interurban Transit Partnership)
			36	Greenville Transit
			37	Harbor Transit
			38	Hillsdale Dial-A-Ride
			39	Houghton Motor Transit Line
			40	Interurban Transit Authority (Saugatuck)
			41	City of Ionia Dial-A-Ride
			42	Ionia Transit Authority
			43	Iosco Transit Corporation (ITC)
			44	Isabella County Transportation Commission (ICTC)
			45	Jackson Transportation Authority (JTA)
			46	Kalamazoo County Human Services
			47	Kalamazoo Metro Transit System (KMTS)
			48	Kalkaska Public Transit Authority (KPTA)
			49	Lake Erie Transit
			50	Gaming/Gambling
			51	Media/Publishing

Type	Variable Name	Variable Label	Response Category	Response Category Description
			50	Greater Lapeer Transportation Authority (GLTA)
			51	Lenawee Transportation Corporation
			52	Livingston Essential Transportation (LETS)
			53	Ludington Mass Transportation Authority (LMTA)
			54	Macatawa Area Express - MAX
			55	Manistee County Transportation
			56	Marquette County Transit Authority (MARQTRAN)
			57	City of Marshall Dial-A-Ride
			58	Mecosta County Area Transit
			59	Midland County Connection
			60	City of Midland Dial-A-Ride
			61	City of Milan Public Transportation (MPT)
			62	Muskegon Area Transit System (MATS)
			63	Niles Dial-A-Ride
			64	Ogemaw County Public Transportation (OCPT)
			65	Ontonagon County Public Transit
			66	Osceola County Area Transit
			67	Otsego County Bus System
			68	Rosco Mini Bus System (Roscommon)
			69	Saginaw Transit System (Saginaw Transit Authority Regional Services)
			70	Sanilac Transportation Corporation (STC)
			71	City of Sault Sainte Marie
			72	Schoolcraft County Public Transportation
			73	Shiawassee Area Transportation Agency
			74	SMART aka SEMTA (Suburban Mobility Authority For Regional Transportation)
			75	Thumb Area Transit (TAT) - Huron Transit Corporation
			76	Twin Cities Area Transportation Authority (TCATA)
			77	Van Buren Public Transit
			78	Yates Township Transportation System
			79	Blue Lakes Charter
			80	DASH
			81	Hope
			82	University of Michigan

Type	Variable Name	Variable Label	Response Category	Response Category Description
			84	MASS
			85	MTA
			96	Other
			98	Don't Know
			99	Refused
Alphanum	DAROS	Other Dial-A-Ride Provider Used	Text	Text
Alphanum	BUSOS	Other Bus Provider Used	Text	Text
Numeric	PAY6	Pay for Taxi/Shuttle	1	Yes
			2	No
			98	Don't Know
			99	Refused
Alphanum	PAY6AMT	Amount Paid for Taxi/Shuttle	0.01-9000.99	Valid Range
Numeric	PAY7	Pay for Dial-A-Ride	1	Yes
			2	No
			3	Used Transit Pass
			98	Don't Know
			99	Refused
Alphanum	PAY7AMT	Amount Paid for Dial-A-Ride	0.01-9000.99	Valid Range
Numeric	PAY8	Pay for Train	1	Yes
			2	No
			98	Don't Know
			99	Refused
Alphanum	PAY8AMT	Amount Paid for Train	0.01-9000.99	Valid Range
Numeric	PAY9	Pay for Public Bus	1	Yes
			2	No
			3	Used Bus or Transit Pass
			98	Don't Know
			99	Refused
Alphanum	PAY9AMT	Amount Paid for Public Bus	0.01-9000.99	Valid Range
Numeric	TRSDP	Driver or Passenger	1	Driver
			2	Passenger
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	VTNUM	Number of Additional People in Vehicle	0	0 - Alone
			1	1 person
			2	2 people
			3	3 people
			4	4 people
			5	5 people
			6	6 or more people

Type	Variable Name	Variable Label	Response Category	Response Category Description
			98	Don't Know
			99	Refused
Numeric	VHNUM	Number of Household Members in Vehicle	0	0 - None
			1	1 household member
			2	2 household members
			3	3 household members
			4	4 household members
			5	5 household members
			6	6 or more household members
			98	Don't Know
			99	Refused
Numeric	WHOACC1	1st Household Member in Vehicle	1	Person 1
Numeric	WHOACC2	2nd Household Member in Vehicle	2	Person 2
Numeric	WHOACC3	3rd Household Member in Vehicle	3	Person 3
Numeric	WHOACC4	4th Household Member in Vehicle	4	Person 4
Numeric	WHOACC5	5th Household Member in Vehicle	5	Person 5
Numeric	WHOACC6	6th Household Member in Vehicle	6	Person 6
Numeric	WHOACC7	7th Household Member in Vehicle	7	Person 7
Numeric	WHOACC8	8th Household Member in Vehicle	8	Person 8
Numeric	HHV	Household Vehicle Used for Trip	1	Yes
			2	No
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	PARK	Pay for Parking	1	Yes
			2	No
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Alphanumeric	PARKAMT	Amount Paid for Parking	0.01-9000.99	Valid Range
Numeric	PARKRATE	Parking Rate	1	Hourly
			2	Daily
			3	Monthly
			4	Annually
			5	Bi-Weekly
			6	Per Semester
			7	One-Time Rate
			8	Quarterly
			9	Meter
			96	Other
			98	Don't Know
			99	Refused

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanumeric	PRATEOS	Other Parking Rate	Text	Text
Numeric	ATIME	Time of Arrival - Hour/Minute	Value	Value
Numeric	ADAY	Arrival Day	Value	Value
Numeric	RLGTRP	Reason Long Trip Length	1	Weather (rain or snow)
			2	Construction
			3	An Accident
			4	Traffic Congestion
			6	Other (CODE 96 IN 2005)
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Numeric	LGTRP	Trip Length Longer than Usual	1	Yes
			2	No
			8	Don't Know (CODE 98 IN 2005)
			9	Refused (CODE 99 IN 2005)
Alphanumeric	DESTINATION	Destination of Trip (DEST IN 2005)	Text	Text
Alphanumeric	ODADDR	Original Destination Address	Text	Text
Alphanumeric	DADDR	Geocoded Destination Address	Text	Text
Alphanumeric	DCITY	Destination City	Text	Text
Alphanumeric	DSTATE	Destination State	Text	Text
			ZZ	Out of the Country
Alphanumeric	DZIP	Destination Zip Code	Text	Text
			99998	Don't Know
			99999	Refused
Alphanumeric	DXSTS	Destination Cross Streets	Text	Text
Alphanumeric	DLONG	Destination Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanumeric	DLAT	Destination Latitude (DLATI 2005)	Value	Value
			000.000000	Unknown Latitude
Alphanumeric	DGEORSL	Destination Geocoding Result	Text	Text
Numeric	DGEOLVL	Destination Geocoding Level	1	Framework Street-Level
			2	MapMarker Street-Level
			3	Framework Intersection-Level
			4	MapMarker Intersection-Level
			5	TAZ Level
			6	Non-Geocodable
			7	Ohio
			8	Illinois
			9	Wisconsin
			10	Indiana
			11	Canada
			12	Other (CITYFILE)

Type	Variable Name	Variable Label	Response Category	Response Category Description
			13	Manually Geocoded
Alphanum	DZONE	Destination TAZ	Text	Text
			88888888	Unknown Zone
Numeric	DTYPE	Destination Type of Location	1	Residential
			2	Automotive Dealer/Repair
			3	Bank/Financial Institution
			4	Barber/Beauty/Nail Salon
			5	Bookstore/Library/Newsstand
			6	Construction Site
			7	Convenience/Drug Store
			8	Daycare Facility/Preschool/Nursery School
			9	Gas Station
			10	Government/Municipal/City Offices
			11	Grocery
			12	Hotel/Motel/Other Lodging Facility
			13	Indoor Recreation
			14	Industrial Site
			15	Medical Facility/Hospital
			16	Movie Theater/Theatre/Concert Venue/Sports Arena
			17	Museum/Zoo/Historic Site
			18	Office Building
			19	Outdoor Recreation
			20	Religious - Church Synagogue/Houses of Worship
			21	Restaurant/Fast Food/Bar & Grill (Unknown)
			22	School - K-12
			23	School - College/University/Technical/Vocational
			24	Shopping Mall/Department Store
			25	Transportation Terminal (airport, train, bus)
			96	Other
			98	Don't Know
			99	Refused
Alphanum	DTYPEOS	Other Type of Destination Location	Text	Text
Numeric	DTYPEA	Destination Enclosed Mall OR Standalone Location	1	In an enclosed shopping mall
			2	A standalone location or in a strip mall
			8	Don't Know
			9	Refused

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	DACT1	Primary Activity at Destination	1	Home - Paid Work
Numeric	DACT2	2nd Activity at Destination	2	Home - Other
Numeric	DACT3	3rd Activity at Destination	3	Work
Numeric	DACT4	4th Activity at Destination	4	Attend Childcare
			5	Attend School
			6	Attend College
			7	Eat Out
			8	Personal Business
			9	Everyday Shopping
			10	Major Shopping
			11	Religious/Community
			12	Social
			13	Recreation - Participate
			14	Recreation - Watch
			15	Accompany Another Person
			16	Pick-Up/Drop-Off Passenger
			17	Turn Around
Numeric	DELIV	Interim Deilvery	2000	2000 Household Delivery
			4000	4000 Household Delivery
			6000	6000 Household Delivery
			8000	8000 Household Delivery
			10000	10000 Household Delivery
			12000	12000 Household Delivery
			14280	14280 Household Delivery
Numeric	STATUS	Status of HH	1	Household removed, they are in data cells with gotta closed
			2	Household agreed upon to remove (no trips)
			3	Part of the 79 from MDOT to remove
			4	Household 20% or more non-geocodable
			5	Household with 25% or less non-geocodable
Numeric	CETIME	Computed End Time	Value	Value
Numeric	ACCEPT	MDOT Accept	0	Not Acceptable
			1	Acceptable
Numeric	START	Status at Start of Travel Day	1	Traveling
			2	At a Location
Numeric	NOTRV	Stayed at Same Place on Travel Day	1	Yes
			2	No
Numeric	COMPRPT	Used in Comparison Report	1	Yes
			2	No
Numeric	SW_OR_TA		Value	Value

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	SC_OR_TA		Value	Value
Numeric	SW_DES_T		Value	Value
Numeric	SC_DES_T		Value	Value
Date	ARR_TIME_SKIM	Computed Arrival Time	Value	Value
String	COMMENTS_T	Further Comments	Text	Text
Numeric	COMMENTS	Have Comments	1	Yes
			2	No

Type	Variable Name	Variable Label	Response Category	Response Category Description
Alphanum	FDATE	Completion Date (2009 ONLY)	Text	Text
Numeric	RECTYP	Record Type	4	Long Distance Trip Record
Numeric	QNO	Sample Number	Value	Value
Numeric	PERNUM	Person Number	1	Person 1
			2	Person 2
			3	Person 3
			4	Person 4
			5	Person 5
			6	Person 6
			7	Person 7
			8	Person 8
			9	Person 9
			10	Person 10
			11	Person 11
			12	Person 12
			13	Person 13
			14	Person 14
			15	Gaming/Gambling
			16	Media/Publishing
			15	Person 15
Numeric	LDTRIP	Long Distance Trip Number	1-99	Valid Range
Alphanum	QPHONE	Phone Number (PHONENO 2005)	Value	Value
Alphanum	FCITY	Long Distance City	Text	Text
Alphanum	FSTATE	Long Distance State	Text	Text
			ZZ	Out of the Country or Unknown
Alphanum	LLONG	Long Distance Longitude	Value	Value
			000.000000	Unknown Longitude
Alphanum	LLATI	Long Distance Latitude	Value	Value
			000.000000	Unknown Latitude
Alphanum	LGEORSL	Long Distance Geocoding Result	Text	Text
Alphanum	LGEOLVL	Long Distance Geocoding Level	Text	Text
Numeric	DWEEK	Departure Day of the Week	1	Monday
			2	Tuesday
			3	Wednesday
			4	Thursday
			5	Friday
			6	Saturday
			7	Sunday
			98	Don't Know
			99	Refused
Numeric	REASON	Primary Reason for Trip	1	Work/Business

Type	Variable Name	Variable Label	Response Category	Response Category Description
			2	School-related
			3	Vacation
			4	Social
			5	Sightseeing
			6	Recreation
			7	Entertainment
			8	Shopping
			9	Family/Personal Reasons
			10	Religious
			11	Medical
			98	Don't Know
			99	Refused
Numeric	TRTYP	Transportation to Reach Location	1	Car, Van, Truck
			2	Motorcycle
			3	Bicycle/Moped
			4	Walk
			5	School Bus
			6	Taxi/Shuttle
			7	Public Bus
			8	Train
			9	Airplane
			10	Boat
			11	Charter Bus
			12	Snow Mobile
			13	Subway
			14	Golf Cart
			15	Horse Drawn Carriage/Horse
			16	ATV
			17	Church Bus
			18	Motorhome
			19	Tour Bus
			20	Tram/Sky Lift
			21	Trolley
			22	Four Wheeler Quad/Four Wheeler
			23	RV (Recreational Vehicle)
			96	Other
			98	Don't Know
			99	Refused
Alphanum	TRTYPOS	Other Transportation to Reach Location	Text	Text
Alphanum	FBUS	Bus Provider to Reach Location	Text	Text

Type	Variable Name	Variable Label	Response Category	Response Category Description
Numeric	FMODE1	1st Type of Transportation Used	1	Car, Van, Truck
Numeric	FMODE2	2nd Type of Transportation Used	2	Motorcycle/Moped
Numeric	FMODE3	3rd Type of Transportation Used	3	Bicycle
Numeric	FMODE4	4th Type of Transportation Used	4	Walk
			5	School Bus
			6	Taxi/Shuttle
			7	Public Bus
			8	Train
			9	Airplane
			10	Boat
			11	Charter Bus
			12	Snow Mobile
			13	Subway
			14	Golf Cart
			15	Horse Drawn Carriage/Horse
			16	ATV
			17	Church Bus
			18	Motorhome
			19	Tour Bus
			20	Tram/Sky Lift
			21	Trolley
			22	Four Wheeler Quad/Four Wheeler
			23	RV (Recreational Vehicle)
			24	Wheelchair
			96	Other
			97	None
			98	Don't Know
			99	Refused
Alphanum	FMODEOS	Other Transportation Used at Location	Text	Text
Alphanum	FMBUS	Bus Provider Used at Location	Text	Text
Numeric	RWEEK	Return Day of the Week	1	Monday
			2	Tuesday
			3	Wednesday
			4	Thursday
			5	Friday
			6	Saturday
			7	Sunday
			98	Don't Know
			99	Refused
Numeric	Q3MTH	Number of Times in Last 3 Months	1-90	Valid Range

Type	Variable Name	Variable Label	Response Category	Response Category Description
			98	Don't Know
			99	Refused
Numeric	Q12MTH	Number of Times in Last 12 Months	1-90	Valid Range
			98	Don't Know
			99	Refused
Numeric	DELIV	Interim Delivery (MISSING)	1	1st interim Report
			2	2nd interim Report
			3	Final interim Report
Numeric	TAZ	TAZ	Value	Value
Numeric	ACCEPT	MDOT Accept	0	Not Acceptable
			1	Acceptable
Numeric	STATUS	Status of HH	1	Household removed, they are in data cells with qota closed
			2	Household agreed upon to remove (no trips)
			3	Part of the 79 from MDOT to remove
			4	Household 20% or more non-geocodable
			5	Household with 25% or less non-geocodable
Numeric	COMPRPT	Used in Comparison Report	1	Yes
			2	No

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Survey Planning: Website

Michigan

MI Travel Counts

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Did you know that **YOUR** travel habits help shape Michigan's transportation system?

It's true. Your daily commute to work from home and back. Cross-state vacations. Errands around town. Even bike rides and walks. And everything in between. Where you go, how you get there and what you do when you get there all shape the understanding of how Michigan's transportation system is used and how it can be improved - now and in the future.

This is why the Michigan Department of Transportation (MDOT) is conducting **MI Travel Counts**, a statewide data collection program of 14,280 households across the state of Michigan. In 2009, MDOT is conducting a second wave of MI Travel Counts to understand the changes in household travel that may have occurred since 2005.

Michigan's transportation community will use the results of your participation to evaluate and develop a 21st century transportation system that provides mobility to every Michigan citizen, community, and visitor.

It comes down to one thing:
your participation means better Michigan transportation!

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