An Economic Model for Valuing Recreational Angling Resources in Michigan

Appendix 2: Survey of Michigan Anglers

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Appendix 2

Section 1: Introduction

This is the second of two appendices that constitute Volume II of the report entitled *The Economic Value of Recreational Angling Resources in Michigan*. This appendix summarizes the survey used to collect information for the MSU model of the demand for recreational fishing in Michigan.

The survey research consisted of a pilot survey and a full survey. The pilot survey was conducted during the 1993 fishing season, and the full survey was conducted during the 1994 season. Both surveys were telephone panel studies. By panel study, we mean that the same group of anglers was interviewed at several points in time. Each of these panel interviews is referred to as a wave. In our case, we interviewed anglers over the course of the Michigan fishing license year, April 1 to March 31. Anglers were asked about all of their fishing activities in the Michigan during the year.

Eligible panel members were identified at the beginning of the fishing season during a screening interview of the general population of Michigan. The screening interviews were conducted over the telephone. In the screening interview, any respondent identified as a potential angler was recruited into the panel study. Potential anglers were identified based on answers to questions about their past fishing activities and their anticipated chances of fishing during the coming season.

In both surveys, the sample for the screening interview was based on a random selection of phone numbers for households in Michigan. The screening interviews were conducted with a randomly selected adult within a household. Data was collected on the fishing activities of that individual, not on the activities of the household. Thus, the samples consisted of adults residing in Michigan, and we collected information on the fishing that the sampled adult did in Michigan over the course of the Michigan fishing license year. Nonresident anglers were not sampled.

In the MSU demand model, the location and number of fishing trips is the dependent variable that is being explained by the model. Previous work has established the potential for upward biases in reported fishing trips that are associated with longer recall periods and increased numbers of intervening fishing events (WESTAT, see also Section 3.1). Because of the potential recall bias, we decided against the use of surveys instruments which ask anglers to recall what they did in a previous year (annual recall).
This decision ruled out surveys using the previous years fishing license list to ask about fishing in that year, as well as end of the season surveys of the general population asking about that seasons’ fishing activities.

Alternatively, a panel format would allow us to follow anglers over the course of a season and collect information on anglers actual fishing activities in a timely manner. Moreover, with the panel, we could vary the number of panel interviews so that frequent anglers could be called more often than infrequent anglers. Thus, the panel format was chosen because it would allow us to limit recall problems by controlling the length of time and limiting the number of intervening fishing events between interviews.

With a panel study, one needs to determine who to recruit and follow in the panel. As mentioned above, the panel surveys for the MSU model followed potential anglers who were identified in screening interviews of the general population. An alternative approach would have been to recruit panel members from fishing license lists. The Michigan Department of Natural Resources (MDNR) collects the names and addresses, though not the phone numbers, of all individuals who purchase Michigan fishing licenses. The panel members for this study were not recruited from the license list because of potential difficulties with using the MDNR’s list of fishing license holders.

At the time of this study, the licenses were sold throughout the state by vendors such as sporting goods stores and bait shops. The vendors would collect and mail the licensee information to the MDNR. Under this system there were significant delays between the time a license was sold and the time that a licensee address could become available for sampling. These delays would result in recall periods that were deemed to be too long to construct the panel based on the current years license list. It would also have been possible to construct the panel from anglers who held licenses in the previous year. However, there is turnover in the population of anglers because not every angler purchases a fishing license in every year. The turnover in the license list is highest in the urban areas of the state (Jester, personal correspondence). Using the fishing license list from a previous year means that there will be individuals who purchase licenses in the study year (and fish in the study year) that are not a part of the sample list.

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1 The MDNR has recently implemented a computerized point-of-sale licensing system. License information is entered into the system when the license is purchased which eliminates any delay between the date of a license purchase and when the license information is available.
Likewise, there will be individuals in the sample who will not purchase a license in the study year. Therefore, using the license list from a previous year was ruled out because it could result in a sample that would not adequately reflect anglers and fishing activities in the study year.

Another approach that could limit recall problems would be to shorten the period of interest (e.g., asking about activities in the last month or asking about the last trip). The survey could then be staggered to cover all the time periods of interest (e.g., all the months in the fishing license season). When anglers must be recruited from the general population, this is more expensive than a panel because a significant portion of the survey effort is devoted to the screening (identifying and recruiting anglers). With a list based survey, this approach is relatively more cost effective. This later approach was not taken for the MSU surveys for the same reasons that the panel was not recruited from the license lists.

There are three main types of survey interviewing modes: face-to-face (in-person); telephone; and mail. All of the panel and screening interviews for the MSU study were conducted over the telephone by the Survey Research Division (SRD) of the Institute for Public Policy and Social Research (IPPSR) at Michigan State University (MSU). The necessity of repeated interviews as well as other factors made face-to-face interviews prohibitively expensive. Relative to a mail survey, a telephone survey provides more control over the data collected. For example, a telephone interviewer can impress upon people that we are interested in all the times they went fishing even if it was just in their backyard. In a mail survey, we can include the same definition, but we cannot ensure that respondents will read it. Furthermore, the telephone survey instrument can be programmed on a computer allowing complex skip patterns which are not apparent to the respondents. If a mail instrument gets too complex, response rates and data quality might suffer. In addition, for anglers who have not fished, the telephone interview would be very short. For these individuals, we would not have to depend on them sending back a complex mail survey just to indicate that they did not fish.

The remainder of this appendix is organized as follows. First we discuss the survey research firm that conducted the telephone interviewing (SRD). We then present some of the steps that went into the development of the survey. The next section describes the pilot survey that was conducted during the 1993 fishing license year. Section 5 then discusses the full survey which was conducted during the 1994 fishing license year. The appendix ends with abridged copies of the survey instruments for the full survey.
Appendix 2

Section 2: Survey Firm (SRD, IPPSR)

2.1 Organization

All survey interviews were conducted by the Survey Research Division (SRD) of the Institute for Public Policy and Social Research (IPPSR) at Michigan State University (MSU). The survey was implemented under the direction of Larry A. Hembroff, Ph.D., Senior Methodologist at SRD and Associate Director of IPPSR. The material covered in this section is meant to provide an overview of SRD, its facilities, and its procedures and relies, in part, on organizational documents and other information supplied by Dr. Hembroff.

2.2 CATI

The telephone survey was programmed on a computer using a Computer Assisted Telephone Interviewing (CATI) system. One advantage of a CATI based instrument is that it can include complex skip patterns without having to depend on the interviewer or the respondent to follow the appropriate skip patterns. In addition, a CATI survey instrument can be programmed to contain information which was provided in preceding questions and/or previous interviews. For example, when asking panel members whether they fished since we last called, we provided the date of their last interview along with the date and location of their last trip. This is an example of a bounded recall technique that may help to prevent double counting of trips. By tailoring the survey instrument to each individual, we aim to improve the accuracy of answers, reduce length of the interview, and reduce the cognitive burden of the interview.

The script of questions to be asked in the interview must be programmed into the CATI system. The software (programming language) SRD uses is the Computer Assisted Survey Execution System (CASES) developed by the University of California at Berkeley and the U.S.D.A. Most of the CATI programming for this project was done at SRD by Ms. Ning Na who has programmed approximately 150 CATI instruments for SRD. Ms. Na worked extensively with Lupi and Dr. Hembroff to test, debug, reprogram, and revise the survey instruments used in the pilot and full survey. The instruments for the
surveys were thoroughly tested by SRD staff, SRD interviewers, and the MSU team before their implementation.

A typical CATI instrument consists of two major components: a "front-end" section, and a section containing the substantive questions of the interview. The substantive questions of the surveys are discussed in later sections of this appendix. The front end section contains the case management information such as items for recording the current status of each case (e.g., whether the case has been called, and if so, the outcome of the most recent attempt) and the call history of the case (e.g., the dates, times, and disposition of all call attempts). The front end also contains sections for identifying the appropriate respondent, reading of scripted material to the respondents, and recording any notes about the respondent or the interview. For example, at the beginning of a contact, interviewers use questions contained in the front end to confirm that they have dialed the correct number and to establish whether the number is for a business or a residence. Finally, the front end stores all the information needed to track the case. By utilizing information stored in the front end, the CATI system can automatically schedule calls, schedule callbacks, and track the status of each case.

2.3 Facilities

SRD is located on the third floor of Berkey Hall on the MSU campus. Their allocated space includes offices for faculty, staff, research specialists, programmers, and systems analysts. The interviewing facility is located in an area of restricted foot traffic. The room contains partitioned CATI stations. Stations consist of a PC, a telephone and headset, and some work space. The room is air conditioned and arranged with an emphasis on the comfort of the interviewers. A supervisors work station is located in the center of the interviewing facility. Staff are located in adjacent offices. The survey operations manager can oversee the interviewing through a large window between the rooms.

SRD's CATI system is operated over a Banyan Local Area Network (LAN). There are a core of 26 personal computers which are networked to an IBM PS/2 model 95 server. SRD also has a PS/2 model 80 configured as a backup server in the event of a malfunction. Software and survey files are maintained on the server and backed up nightly. During peak periods such as when the screening interviews were conducted for the full survey, SRD utilizes 5 additional CATI stations located in adjoining IPPSR offices and 10 additional CATI workstations in a remote facility elsewhere on the MSU
campus. The remote facility accesses the SRD CATI system via MSU’s campus wide ethernet network system.

2.4 Interviewers and training

Generally, SRD maintains a staff of between 60 and 80 interviewers. The interviewers are largely drawn from the MSU student population -- especially advanced undergraduates and graduate students. The large number of screening interviews which needed to be conducted for the full study required SRD to recruit, hire and train additional interviewers. A total of 180 interviewers worked on the interviewing for the full survey -- almost all of them worked on the screening study. Approximately 12 non-student full time interviewers were hired to support the screening interviewing for the full survey because these interviews occurred during the end of the Spring semester when many student interviewers were less available.

Recruitment of SRD interviewing staff involves many stages. After screening applicants' resumes, SRD conducts an initial interview over the phone to judge an applicants phone presence. Applicants are also given a standardized test of telephone aptitude and an evaluation of their social science interests. Applicants who pass this stage receive extensive training. The training consists of three components. The first phase acquaints interviewers with SRD, survey research, and general interviewing skills. The second phase focusses on the CATI system and commands. The third phase involves a series of practice interviews. Those individuals that successfully complete the training are hired as interviewers. Details of SRD's hiring and training procedures are described in their "SRD Interviewer Training Manual." Before making any calls on the screening interview for the full survey, all new interviewers performed calls on another interview instrument which was less difficult.

SRD conducts routine monitoring of telephone interviewing. Monitoring is done in an adjacent office with facilities that permit monitoring of any interview at any CATI station without the interviewer's (or respondent's) knowledge. All interviewers know that their interviews are routinely, and randomly, monitored. The interviewers being monitored by supervisors are rotated among the supervisors to avoid bias. Feedback sessions are periodically held to maintain a high quality of interviewing.

During the interview production, SRD maintains a ratio of interviewers to supervisors at 8 to 1. Supervision is supplemented by the operations manager, the project manager, and the project assistant.
Interview supervisors work no more that 6 hours per shift, and most interviewers work a four hour shift. To avoid potential problems due to fatigue, interviewers are not allowed to work more than 6 hours in a shift.

2.5 Call limits and hours

SRD conducts interviews from 9 a.m. until 9 p.m. Mondays through Thursdays, 9 a.m. until 6 p.m. Fridays and Saturdays, and from 1 p.m. until 9 p.m. on Sundays. Based on the experience with the pilot study, it was found that the most advantageous times for completing interviews with members of the fishing panel were late afternoons, evenings, and weekends. For this project, SRD scheduled interviewers so that 40% of the calling occurred during the day time of weekdays and 60% of the calling took place during the evenings and weekends. Callbacks were scheduled at any time that was convenient for the respondent as long as it was during SRD's normal business hours.

To maximize the completion rate within budget constraints, SRD interviewers make repeated callbacks to telephone numbers to establish contact and determine the status of the number. SRD interviewers are trained to let a phone ring a minimum of 5 times. SRD cites research indicating that 50-60% of respondents who will eventually complete an interview do so within the first three contact attempts, and 95% do so in 9 attempts or less. For our study, the call limits were set high. The CATI system automatically schedules calls so they are spread out across calling periods. If a case reached 9 call attempts without contact, it was placed on hold and reviewed by a supervisor. Supervisors inspected the calling pattern for blocks which were not covered. If all time slots were covered, the case was retired for that wave. If contact was made, a maximum of 15 calls was permitted to complete the interview before it was put on hold for review of a supervisor. Supervisors would determine whether to retire the case or pursue it further.
Appendix 2

Section 3: Survey Development

In this section, the major steps that went into the development of the survey instruments for the pilot and final study are discussed. Bear in mind that the entire pilot study was one of the steps in the development of the final survey. Some of the ways in which the pilot affected the design of the final survey are detailed in the section describing the pilot study.

3.1 Review of Other Surveys

Previous surveys conducted by the Fisheries Division of the Michigan Department of Natural Resources (MDNR) were reviewed including the survey which yielded the information used by Jones and Sung. While the 1984-85 MDNR survey only collected information on one trip, several of the earlier MDNR surveys did collect information on several trips. Some of the MDNR surveys collected information at the end of the season which required respondents to recall their activities for the season. The MDNR found that annual recall based surveys led to substantial overestimates of fishing trips relative to estimates based on the Michigan Creel Survey (Jester, personal correspondence). In addition, the MDNR conducted a series of mail surveys which collected information on fishing trips during a three month period. Some respondents were sent questionnaires immediately following the period, and others were sent questionnaires three, six, and nine months after the period, respectively. Based on these studies, the MDNR determined that there was an upward bias in the reported number of trips that increased as the recall period increased, and the bias was most pronounced for those individuals who fished the most (Jester, personal correspondence). The findings of the earlier MDNR surveys influenced our choice of survey format (see also the study by WESTAT).

We read several other mail surveys that collected information on fishing activities over the course of a fishing season or year. These included several surveys of fishing and hunting in Alberta which were conducted by Adamowicz, along with Hanemann and Carson's study of fishing in Alaska. Some of the panel surveys we looked at were combined mail and telephone instruments such as the Minnesota angling survey developed by Tomasi and discussed in Feather, Hellerstein, and Tomasi (1995). Telephone panel
studies that we reviewed included the survey conducted for the National Acid Precipitation Assessment Project (NAPAP); the portions of the National Survey of Recreation and the Environment (NSRE) developed by the USDA's Economic Research Service; and the U.S. Fish and Wildlife Service's National Survey of Fishing, Hunting, and Wildlife Associated Recreation (NSFHWAR).

3.2 Focus Groups

We conducted four focus groups in March and April of 1993. The groups consisted of 6-8 anglers who were recruited from a sample list of 1992 Michigan fishing license holders who lived in the vicinity of East Lansing, Michigan. The sample list was provided by the MDNR. The list included anglers' names and addresses. Phone numbers were found by locating the individuals in the local telephone directory. We called directory assistance for every case that was not listed in the directory. We did not screen for any special requirements for the potential focus group participants. The focus groups each lasted two hours and were held at the Kellogg Center, a conference facility on the MSU campus. Participants were compensated $40 dollars for attending.

One of the goals of the focus groups was to learn the language of the anglers. In each of the focus groups, we began by talking generally about fishing in Michigan, and we discussed the kind(s) of fishing the different anglers did. The discussion included the types of fish species sought, the places they fished at, how they fished, who they fished with, and how often they fished. We also discussed terminology such as what was meant by the expression "fishing trip." Alternative formats for answering questions about how many fishing trips the angler had taken were examined. We spent some time in each group discussing what features of a site were important to anglers when they were deciding where to fish. We also spent some time discussing water quality and perceptions of water quality. A portion of each focus group was devoted to a contingent behavior choice experiment. We tested alternative versions of a contingent behavior questions posing a hypothetical choice between fishing sites. The contingent behavior questions allowed us to explore alternative ways of augmenting the data about anglers actual fishing trips, and they were not used in the panel surveys.

The Alberta survey instruments were developed and provided by Wiktor Adamowicz; the NAPAP survey instruments were provided by George Parsons who was one of the team of advisors for the study; the NSRE questions were provided by Peter Feather who helped to develop them.
3.3 Peer Review

Questions and survey issues were discussed at two meetings with members of our expert review team. The review team consisted of Drs. Richard Carson, Michael Hanemann, Edward Morey, George Parsons, and Douglass Shaw. The first review team meetings were held in April of 1993. The second review team meetings were held with the same individuals in February of 1994. Meetings were also held with Dr. Wiktor Adamowicz in January, 1993.

Members of the SRD senior staff were also involved in the development of the survey instrument. The SRD staff helped to define what would and would not be feasible within the CATI setting. Survey questions, wording, and flow were reviewed at many stages by senior staff members of SRD. Feedback from SRD interviewers was also a vital part of the survey development. Prior to any pre-test interviews, several interviewers would be asked to read the questions and make suggestions regarding question wording, content, and flow. We also spent time listening to interviewers read through the instrument in mock interviews. During the interviewing, we routinely spoke with interviewers to discuss how the interviews were progressing and to identify any awkward areas or problems. Interviewers are also trained to make a note in the production log books about any problem areas. After each pilot wave was finished, we would hold a debriefing meeting with groups of interviewers to discuss how the interviews went.

3.4 Pre-test Interviews and Interview Monitoring

Pre-test interviews can aid in identifying awkward or ambiguous areas of the survey instrument. Pre-test calls were made prior to the screening interviews and prior to wave 1 and wave 2 of the pilot panel. The pre-test calls were monitored by the MSU team along with SRD staff members. Pre-test interviews were followed by changes to the survey instrument. Then, additional pre-test interviews were conducted and further changes made to the instrument until the pre-test interviews went smoothly.

In addition to the monitoring of interviews SRD conducts to ensure interviewer quality, the MSU team periodically monitored calls throughout the course of the survey. For each of the pilot waves, several hours of interview monitoring was done which was in addition to any monitoring that was done during the pre-testing of that wave. The additional monitoring allowed us to hear what the respondents are saying when they answer questions. Through the monitoring activities we could identify areas which seemed harder to answer or where respondents may have been guessing.
Appendix 2

Section 4: Pilot Survey

4.1 Overview of the Pilot Survey

The pilot survey provided an opportunity to learn about Michigan anglers and work out the details of the full survey. Because of the limited time available to develop a survey instrument prior to the 1993 season, we decided to conduct a pilot survey in 1993 and implement the full survey in 1994. The pilot study was a smaller scale version of the intended full panel study. The pilot allowed us to thoroughly pre-test and develop the survey questions. The pilot gave us the time to test the boundaries of the CATI system to see what worked best. The pilot also allowed us to collect some data to better determine parameters of the population.

The pilot survey was undertaken in stages. The first stage involved the screening of randomly chosen individuals to build the panel. In the screening interviews, we recruited people who indicated they were likely to go fishing or boating in Michigan. The subsequent stages were follow-up calls to ask panel members about their fishing activities. These panel follow-up calls are referred to as panel waves. The screening and waves are described below. The pilot panel survey tracked a sample of potential anglers from April, 1993 through November, 1993. In addition, panel members identified as potential ice anglers were followed through March, 1994.

4.2 Interviewer Training

Prior to implementing the pilot study, interviewer training sessions were held to acquaint interviewers with the various survey instruments used in the pilot study. Training sessions were held for the screening, for wave 1, and for wave 2. The sessions generally consisted of a presentation followed by mock interviews on the actual instrument at the CATI stations. The presentation would begin with an explanation of the purpose of the survey. The interviewers would then be led through a paper copy of the instrument. Any special definitions as well as question specific instructions would be covered in the trainings. After the presentation, interviewers would pair up at CATI stations and conduct mock interviews with the actual instrument. Because of the complexity of the panel instruments, several mock
interviews were needed to demonstrate the possible skip patterns built into the instrument. In addition, for the wave 2 training, special small group training sessions were held to acquaint interviewers with the section of the instrument which required them to code fish species and fish catch. The training sessions for the pilot screening took about two hours. The time each interviewer spent training for the pilot waves was about three hours for wave 1 and about three more hours for waves 2 through 4. Almost all the pilot training sessions were conducted by Lupi. SRD staff and student supervisors were in attendance. The small group practice sessions were conducted by SRD staff, and SRD staff held training sessions for small groups of interviewers who were unable to attend the main training sessions.

4.3 Pilot Screening

In the screening stage of the pilot, people were called using randomly generated phone numbers purchased from Survey Sampling, Inc. (SSI) in Fairfield, CN (a more detailed description of SSI's procedures is found in Section 5.1). The sample was geographically stratified by three regions of the state: the Detroit tri-county area, the Upper Peninsula along with the upper part of the Lower Peninsula (Upper Michigan), and the remaining central and southern areas (Mid Michigan). The three regions were discussed in Section 4.2.3 of Appendix 1 and are approximately those illustrated in Figure A1.2. The Upper Michigan area was over-sampled to increase representation in the less populated areas of the state.

The screening interviews were conducted in April of 1993. The screening interviews were completed with the adult in the household who celebrated the most recent birthday (i.e., a random member of the household). There were 1,215 individuals who completed the screening interview with an average interview length of 4.15 minutes. Table A2.1 provides the disposition of all phone numbers touched in the pilot screening. All screening respondents were asked some general demographic questions. In addition, they were asked when they last went fishing. We also asked about the likelihood that they will go fishing or boating in Michigan from April 1st through March 31, 1994. Those that responded "very likely," "somewhat likely," or "somewhat unlikely" were then asked to participate in the panel study. Those that responded "very unlikely" were not recruited into the panel study. Out of 1,215 completed screening interviews, 314 were in the "very unlikely" to go category. Of the remaining 901 screening respondents, 679 (75%) agreed to participate in the panel study. The percentage of people who said yes was not significantly different across the regional strata.
Table A2.1: Disposition Table for the Pilot Study Screening

<table>
<thead>
<tr>
<th>Disposition Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completions</td>
<td>1,215</td>
</tr>
<tr>
<td>Refusals</td>
<td>341</td>
</tr>
<tr>
<td>Ineligible (disabled/language problems)</td>
<td>52</td>
</tr>
<tr>
<td>Ineligible (business/no adults)</td>
<td>237</td>
</tr>
<tr>
<td>Bad numbers</td>
<td>213</td>
</tr>
<tr>
<td>No answers/Mechanical device</td>
<td>748</td>
</tr>
<tr>
<td>Technical problems (temp. not in service, unresolved dialing errors)</td>
<td>12</td>
</tr>
<tr>
<td>Callbacks *</td>
<td>177</td>
</tr>
<tr>
<td>Total</td>
<td>2,995</td>
</tr>
</tbody>
</table>

* These callbacks were not completed due to a change in the target size of the pilot panel.

4.4 Pilot Panel Waves

4.4.1 Pilot wave 1

After conducting numerous pre-tests, the first main wave of questioning began June 28, 1993. The first wave collected general information about panel members past fishing activities. In the first wave, panel members were also asked how many times they had fished since April 1, 1993, and then we collected the times and dates of these fishing trips. The instrument for wave 1 did not collect detailed information on the sites visited. Wave 1 interviews were completed with 610 panel members, and these interviews lasted an average of five minutes. The recall period for the first wave averaged three months. We defined fishing as going fishing with the intent of catching fish. We explicitly stated that going with someone or watching someone who fished did not count. Trips were defined as each separate occasion the respondent went fishing, from the time they left their home until they returned home.

4.4.2 Pilot wave 2

As in wave 1, the wave 2 instrument contained questions on the time and date of each trip since our last call. In addition, we asked a set of detailed questions about each of these trips. The detailed questions about each trip included party size, length of stay, transportation types, trip expenditures, purpose of trip, sites visited, and fish caught by species by sites. Only respondents who indicated in wave 1 that they had fished or were likely to fish were called in wave 2. In wave 2, 369 interviews were completed lasting an average of 7.25 minutes. The wave 2 interviews began in August and covered the period of time since the completion of the wave 1 interview. The average recall period was two months.
4.4.3 Pilot waves 3 and 4

Everyone who actually fished in wave 1 or 2, was called back in wave 3. Wave 3 took place in early October and covered any fishing trips a respondent had taken since wave 2. The instrument contained the same questions as the instrument for wave 2. The recall period for this wave was about one month. In wave 3, 193 interviews were completed lasting an average of 3.25 minutes. Calling for the final wave, wave 4, began on November 10, 1993. In wave 4, all panel members were called. We were able to complete 506 interviews which lasted an average of 7 minutes. The recall period ranged from about a month for respondents who had been fishing, to about four months for respondents who indicated in wave 1 that they hadn't fished and were unlikely to go the rest of the season.

4.4.4 Ice waves

In the fourth wave of the pilot we asked respondents what their chances were of going fishing during the winter. Those who indicated they were very or somewhat likely to go were called during two winter fishing waves. The first ice fishing wave took place in January, 1994, and the second wave was conducted in April, 1994 after the 1993 license season had closed. There were 129 anglers who were followed in the ice fishing waves. There were 112 interviews completed in the first ice wave and about 100 were completed in the second.

4.5 Key Findings and Results

The pilot study played a crucial role in helping to guide the project's subsequent research design. Experience and information garnered in the pilot was used to shape the remainder of the project, especially the full survey. Some important areas where the pilot helped provide useful information include: the amount, number, and type of questions anglers were willing and able to provide answers for; what did and didn't work from the standpoint of programming the CATI instrument; what parts of the survey were cumbersome for interviewers and respondents; and summary statistics about the kind of fishing that Michigan anglers do. In the remainder of this section, we try to highlight some of the results and findings of the pilot survey. The section ends with a detailed discussion of how we used the pilot survey data to refine the procedures for recruiting panel members and scheduling calls for the full survey.
### Table A2.2: Regional Summaries for the Pilot Screening

<table>
<thead>
<tr>
<th></th>
<th>Mid Michigan (%)</th>
<th>Upper Michigan (%)</th>
<th>Metro Detroit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Last time respondent went fishing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year ago</td>
<td>34.3</td>
<td>41.9</td>
<td>22.9</td>
</tr>
<tr>
<td>One to five years ago</td>
<td>20.7</td>
<td>18.8</td>
<td>17.6</td>
</tr>
<tr>
<td>More than five years ago</td>
<td>32.6</td>
<td>28.2</td>
<td>42.5</td>
</tr>
<tr>
<td>Never</td>
<td>12.3</td>
<td>11.1</td>
<td>17.0</td>
</tr>
<tr>
<td><strong>Last time respondent went boating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year ago</td>
<td>47.3</td>
<td>52.4</td>
<td>44.4</td>
</tr>
<tr>
<td>One to five years ago</td>
<td>21.5</td>
<td>21.9</td>
<td>20.9</td>
</tr>
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<td>More than five years ago</td>
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<td>18.8</td>
<td>23.7</td>
</tr>
<tr>
<td>Never</td>
<td>7.9</td>
<td>6.9</td>
<td>10.9</td>
</tr>
<tr>
<td><strong>Household members that fish</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>40.0</td>
<td>28.1</td>
<td>43.3</td>
</tr>
<tr>
<td>One</td>
<td>23.7</td>
<td>25.2</td>
<td>24.2</td>
</tr>
<tr>
<td>Two</td>
<td>18.8</td>
<td>25.4</td>
<td>19.1</td>
</tr>
<tr>
<td>3 or more</td>
<td>17.5</td>
<td>21.3</td>
<td>13.4</td>
</tr>
<tr>
<td><strong>Household members that boat</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>35.8</td>
<td>26.8</td>
<td>36.5</td>
</tr>
<tr>
<td>One</td>
<td>19.0</td>
<td>19.1</td>
<td>18.4</td>
</tr>
<tr>
<td>Two</td>
<td>22.5</td>
<td>25.9</td>
<td>24.7</td>
</tr>
<tr>
<td>3 or more</td>
<td>22.7</td>
<td>28.1</td>
<td>20.5</td>
</tr>
<tr>
<td><strong>Chances of fishing or boating</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very likely to go</td>
<td>54.1</td>
<td>56.0</td>
<td>46.2</td>
</tr>
<tr>
<td>Somewhat likely to go</td>
<td>12.2</td>
<td>17.3</td>
<td>16.2</td>
</tr>
<tr>
<td>Somewhat unlikely to go</td>
<td>7.2</td>
<td>5.3</td>
<td>7.6</td>
</tr>
<tr>
<td>Very unlikely to go</td>
<td>26.6</td>
<td>21.5</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>Willing to participate in panel (%yes)</strong></td>
<td>75.7</td>
<td>76.2</td>
<td>74.4</td>
</tr>
</tbody>
</table>

* (***) Reject independence using Pearson's Chi-square at 1% (5%) level of significance.

Tables A2.2 through A2.4 present some summaries of survey responses for the pilot survey's three regions of the state (see Section 4.2.3 of Appendix 1). These regions correspond to the three strata for the screening sample. The data presented in these tables is not weighted to account for potential differences between the pilot sample and the Michigan population, and as such, reflects the characteristics of the sample, not the population.

Table A2.2 presents responses to questions which were asked in the screening. As expected, upper Michigan residents are more likely to participate in fishing and boating than residents of other areas, while residents of the Metro Detroit area are less likely to participate in fishing and boating
Some of the cases used in pre-testing the panel wave instruments were kept in the panel because the questions they were asked were only slightly different from the final versions.

### Table A2.3: Trip Characteristics by Regions for the Pilot Panel Survey.

<table>
<thead>
<tr>
<th></th>
<th>Mid Michigan</th>
<th>Upper Michigan</th>
<th>Metro Detroit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditional mean trips in panel†</td>
<td>6.6</td>
<td>10.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Conditional mean trips in previous year†</td>
<td>16.8</td>
<td>20.2</td>
<td>17.7</td>
</tr>
<tr>
<td><strong>Trip length</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% day trips</td>
<td>74.2</td>
<td>87.7</td>
<td>68.9</td>
</tr>
<tr>
<td>% multi-day trips</td>
<td>25.8</td>
<td>12.3</td>
<td>31.1</td>
</tr>
<tr>
<td><strong>Water body</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of trips to inland lakes</td>
<td>53.5</td>
<td>37.9</td>
<td>65.8</td>
</tr>
<tr>
<td>% of trips to rivers/streams</td>
<td>27.1</td>
<td>28.8</td>
<td>11.4</td>
</tr>
<tr>
<td>% of trips to Great Lakes</td>
<td>19.4</td>
<td>33.3</td>
<td>22.9</td>
</tr>
<tr>
<td>Trips with boat use (%)</td>
<td>61.8</td>
<td>65.0</td>
<td>60.6</td>
</tr>
</tbody>
</table>

† Conditional on trips > 0; Reject equality of means at the 1% level of significance based on an F test.  
* Reject independence at the 1% level using Pearson's Chi-squared test.

activities. Likewise, Table A2.3, which describes characteristics of trips from the panel, reveals that the upper Michigan residents also take many more trips than the respondents from the other regions and the Metro Detroit residents take the fewest trips. Interestingly, the number of trips which the pilot respondents say they took during the previous year's open water season is generally twice the number that they took during the course of the pilot panel. Table A2.4, which presents characteristics of panel members, also reveals that upper Michigan (Metro Detroit) panel members are more (less) likely to purchase fishing licenses and per capita have more (less) money invested in fishing equipment.

### 4.5.1 Pilot panel attrition

The pilot screening process identified 679 people that said they were willing to participate in the panel. Of these, 25 were not kept in the panel because they were used in pre-tests.\(^{52}\) Of the 654 remaining people, we were able to complete the final wave interview with 506 of them (77%). Thus, our attrition rate was about 23%. There were 610 people who completed the wave 1 interviews, and 83%

---

\(^{52}\) Some of the cases used in pre-testing the panel wave instruments were kept in the panel because the questions they were asked were only slightly different from the final versions.
Table A2.4: Regional Data Summaries for Respondents Completing the Pilot Panel Survey.

<table>
<thead>
<tr>
<th></th>
<th>Mid Michigan</th>
<th>Upper Michigan</th>
<th>Metro Detroit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased fishing license this year (%)*</td>
<td>34.3</td>
<td>46.9</td>
<td>21.7</td>
</tr>
<tr>
<td><strong>Type of license (if purchased)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily license</td>
<td>5.1</td>
<td>2.2</td>
<td>6.5</td>
</tr>
<tr>
<td>Annual license</td>
<td>78.0</td>
<td>65.2</td>
<td>71.0</td>
</tr>
<tr>
<td>Senior license</td>
<td>5.1</td>
<td>15.2</td>
<td>9.7</td>
</tr>
<tr>
<td>Sportsman's license</td>
<td>8.5</td>
<td>16.3</td>
<td>12.9</td>
</tr>
<tr>
<td>% annual license holders with trout/salmon stamp</td>
<td>33.3</td>
<td>38.7</td>
<td>31.8</td>
</tr>
<tr>
<td>Purchased fishing license last year (%)*</td>
<td>44.0</td>
<td>52.8</td>
<td>29.1</td>
</tr>
<tr>
<td>Fished outside of Michigan this year (%)</td>
<td>4.1</td>
<td>5.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Dollars value of fishing equipment*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 200 dollars</td>
<td>53.2</td>
<td>42.1</td>
<td>57.3</td>
</tr>
<tr>
<td>200 to 1000 dollars</td>
<td>35.1</td>
<td>40.7</td>
<td>39.6</td>
</tr>
<tr>
<td>More than 1000 dollars</td>
<td>11.7</td>
<td>17.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Equipment for cases who fished during panel*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 200 dollars</td>
<td>40.3</td>
<td>36.0</td>
<td>51.0</td>
</tr>
<tr>
<td>200 to 1000 dollars</td>
<td>41.8</td>
<td>41.0</td>
<td>44.0</td>
</tr>
<tr>
<td>More than 1000 dollars</td>
<td>17.9</td>
<td>23.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Equipment for cases who didn’t fish in panel*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 200 dollars</td>
<td>72.7</td>
<td>55.6</td>
<td>63.8</td>
</tr>
<tr>
<td>200 to 1000 dollars</td>
<td>25.0</td>
<td>40.0</td>
<td>34.0</td>
</tr>
<tr>
<td>More than 1000 dollars</td>
<td>2.3</td>
<td>4.4</td>
<td>2.1</td>
</tr>
</tbody>
</table>

* Reject independence using Pearson's Chi-square at 1% level of significance.

(506) of them completed wave 4. Across the waves, there were 19 refusals (19/654 = 2.9%) with 13 of them occurring after the first wave. Most of the attrition was due to an inability to contact some participants in the final wave due to changes in phone numbers, repeated no answers, or other technical problems.

4.5.2 Fish logs

In the pilot study we sent many anglers fishing log books to help them keep track of the information we would be asking about in the interviews. The logs were to serve as memory aids rather than mail survey instruments. The panel was split into two groups, one which was asked if they wanted a log, and another which was not offered a log. The intent of the split sample was to examine the data
to see if those with the logs reported on more trips and had fewer non-response items. Due to production delays, most anglers did not receive the logs in time to put them to much use. However, we did ask anglers what they thought about the logs. Most indicated that they would have used them and thought that they would have been helpful if they had received them earlier in the season.

4.5.3 Quantity of data

Number of anglers and number of trips: In waves 1 to 4 of the pilot study panel, about 270 respondents actually went fishing, and they mentioned they went fishing a total of 2,400 times. For these 2400 trips respondents said they took, we collected trip length, date, and main destination on about 1,200. We collected more detailed information, which included exact sites visited, time spent fishing at sites, fish sought and caught per site, and detailed trip expenditures, for about 550 of the 1,200 trips. The more detailed questions were only asked in waves 2, 3, and 4. In the first ice wave, only 17 of 112 people had fished; they stated that they took 100 trips; and detailed data on was obtained for 67 of them.

Trips with detailed information: In the pilot study, we found that respondents would provide more complete details on a higher proportion of their trips the shorter the recall period. For example, as the recall period was cut from an average 93 days in wave 1, to 64 days in wave 2, the percentage of trips with "detailed" data (date, length, and main destination) went from 38% to 78%. This improvement was largely due to the fact that frequent anglers had taken less trips in the shorter callback interval (fewer intervening events), though some of this increase may have been due to a reduction in upward bias in the stated number of trips taken resulting from the reduction in the recall period. Interestingly, the average number of trips for which "detailed" data was obtained was about the same in both waves. On average, respondents supplied information on approximately three or four trips per wave regardless of how many trips were taken. As we discuss below, this information was used to aid in determining the number and spacing of waves for the final panel.

Sites visited: Most respondents visited the same small set of sites when they went fishing. We found that 91% of the pilot respondents who went fishing visited three or fewer unique places. This result is based on site information gathered in waves 2 through 4 of the pilot. We used this information to improve the flow and efficiency of the final panel study by including individual specific sites as coding options in the final panel instrument.
4.5.4 Quality of data

**Recall bias:** The pilot study provided some evidence of an upward bias in the reported number of trips as the length of the recall period increased. In wave 1, we asked anglers how many trips they took last year. We also asked them whether they fished more, less, or about the same amount last year as they do in a usual year. We compared the total trips an individual took over the course of the panel year with the number they said they took last year and found that the mean of last year's trips was significantly greater than the mean number of trips taken during the panel year (see Table A2.3). This result was true even when the analysis was restricted to those individuals who stated they fished less last year than they do in a usual year. This is consistent with previous experiences of MDNR and with other research that documents an upward bias in recall of trips for long recall periods (WESTAT; Jester, personal correspondence).

Moreover, there is anecdotal evidence of recall bias in wave 1 of the panel. The recall period for wave 1 was three months on average. In wave 1, numerous individuals stated they took a large number of trips which appeared to be inconsistent with the number of trips they provided details for. For example, one individual stated he took 50 trips between April first and Mid July. The individual also provided details of the three most recent trips. These three trips occurred between May 16 and July 12. This would mean that the remaining 47 trips occurred over a six week period. Taken at face value, this individual fished twice a month for the trips for which the date was recalled, but fished almost daily for the trips for which an approximate date could not be remembered. In interviewer debriefings, several interviewers noted this phenomena. We took this into account in the final panel by shortening recall periods for avid anglers and by allowing anglers to revise their trip count.

**Catch rate information:** We attempted in the pilot study to collect information which could be used to internally calculate fishing catch rates by sites. The catch rate information was difficult to collect. Interviewers repeatedly identified this as a problem area of the pilot study. Grouping species and determining the time spent fishing on each group of fish was awkward for most respondents. In interview debriefings and in personal conversations, most interviewers expressed a lack of confidence in the validity and reliability of information respondents provided in these sections. We examined the resulting data for coverage of fishing sites in Michigan and decided that the coverage achieved in the pilot was slim. Based on the results of the pilot, we did not attempt to collect catch rate data within the final panel.
4.6 Development of Full Survey Recruiting Procedure

This part of the appendix and the next discuss in detail how the pilot study information aided us in finalizing the recruiting procedure and the callback frequencies for the final survey. Since the discussions presume some familiarity with the full survey, many readers might find it useful to read about the full survey in Section 5 prior to reading Sections 4.6 and 4.7.

This section addresses the question: who should be recruited into the panel? Following everyone who is reached in the screening would be expensive, yet one does not want to exclude individuals who may end up fishing. Moreover, these decisions must be made at the beginning of the season so that the panel members could be followed in a way that would limit recall. Thus, to recruit anglers for the panel study, we needed to decide where to draw the line between "potential anglers" who would be asked to participate in the panel and "non-anglers" who would not be recruited. To make this determination, we asked anglers questions about their fishing activities, and the responses were used to group anglers. The grouping procedure that was developed for the 1994 screening interviews was based on an analysis of the data from the pilot survey. In this section, we describe that analysis.

In the screening interview for pilot survey, question $PQ3$ was used to partition potential anglers and non-anglers.

$PQ3$ Thinking about the chances that you will go either fishing or boating in Michigan from April 1 of this year through March 31, 1994, would you say you are very likely to go, somewhat likely to go, somewhat unlikely to go, or very unlikely to go?

Respondents who indicated that they were "very unlikely to go" were not recruited into the pilot study panel. In addition to $PQ3$, all screening respondents were asked whether the last time they went fishing was less than a year ago, 1 to 5 years ago, more than 5 years ago, or never (pilot question $PQ1$). We did not use question $PQ1$ to do our screening for the pilot.

At the end of the pilot panel study, we conducted a follow-up interview of a sample of people who were not recruited into the panel (i.e., individuals defined as non-anglers because they indicated "very unlikely to go" for $PQ3$). We wanted to assess the recruiting procedure by checking if any of the people who were not recruited into the panel actually fished during the season. We drew a sample of 100 people who completed the screening interview but were not recruited into the pilot panel. These were
screening respondents who indicated that they were "very unlikely to go" fishing or boating in Michigan during the 1993 fishing season. In the follow-up interview, we asked these respondents if they had fished since April 1, and, if so, how many times. The disposition of the 100 cases is as follows: 83 interviews were completed, 3 were refusals, 5 were bad or disconnected numbers, and 9 were ineligible. Of the 83 people who completed the follow-up interview, only two people went fishing.

The two individuals in the follow-up who fished but were not recruited into the panel shared the fact that both had indicated in the pilot screening that they did fish in the previous year. There were seven other cases that completed the screening that had indicated they "fished last year" but were "very unlikely to go" this year. We also tried to complete follow-up interviews with these cases to see if they also may have fished. We completed four more interviews, and none of the respondents had fished. In any event, for the full survey, we decided to recruit into the panel everyone who said they fished in the previous year. Thus, this analysis led to the following condition for the full survey: *Condition 1, Recruit anyone who fished in the previous year.*

In the pilot, there were cases who were recruited because they indicated they were somewhat unlikely to go (i.e., $PQ3=3$). Of these, 37 finished at least one panel wave, and 31 completed the entire pilot panel. None of the 31 that completed the panel fished. Of the 6 individuals who did not complete the panel, one individual indicated in wave 1 that they did fish once. This one individual that did fish had indicated in the screening that they had fished in the previous year ($PQ1=1$). Such an angler would be captured by the 1994 screening procedure because they fished in the previous year. Taken as a group defined by "somewhat unlikely to go" and "didn't fish last year" ($PQ3=3$ and $PQ1>1$), no members of this group that completed any panel interviews indicated they fished. As such, the 1994 screening procedure does not recruit individuals falling into this group. That is, those indicating that they are "somewhat unlikely" to fish are only recruited if they fished last year. This yielded the second condition for recruiting anglers into the panel for the full survey: *Condition 2, Recruit anyone "very likely" or "somewhat likely" to fish in the coming year.*

Further evidence about the effectiveness of the screening procedure can be gleaned by examining some of the other pilot survey questions. In the pilot survey, we also used a "chances of fishing" question in the first wave of the pilot panel survey ($PA2$). This question focussed on fishing and did not include boating. The responses were used to schedule subsequent callback frequencies for the pilot panel waves.
Only people who hadn't fished were asked *PA2* (their chances of going fishing through the end of the season). There were 192 wave 1 respondents who indicated they were "somewhat unlikely" or "very unlikely" to fish the rest of the season (*PA2*=3 or 4). Of the 192, 163 completed the pilot panel. Of the 163, 17 said they fished in the previous year (*PQ1*=1) and 146 said they did not fish in the previous year (*PQ1>*1). Of the 163, nine fished during the pilot panel and they indicated they took 38 trips. Of the nine who fished during the pilot panel, five were among the 17 who had fished in the previous year. These five took 21 trips. These five people would be recruited under the screening procedures for the 1994 panel.

It is not clear whether or not the remaining four cases would get recruited under the 1994 procedures. All four had said in the pilot screening (April, 1993) that they were very likely to go fishing or boating in 1993 (*PQ3*=1). Then in wave 1 (mid July, 1993), they said they were very unlikely to fish (*PA2*=4). Two explanations may be: first, they were likely to go boating but unlikely to fish, or second they were likely to fish but they revised their forecast downward as the season progressed.\(^{53}\) If the four individuals discussed above are among those who have revised their chances downward, none of them would be missed by the 1994 screening procedure. If the four moved down in their stated chances of going fishing because of the inclusion of boating in the screening question, they all would have been excluded by the 1994 screening procedure. However, even if the later holds, then the four members of this group that fished represent less than two percent of the people in the pilot study who ended up fishing, and their stated trips represent less than one percent of the trips in the panel. It was decided that the cost of following this group on the slight chance that some will fish was prohibitive.

In sum, for the pilot survey we recruited anyone who indicated they were "very likely," "somewhat likely," or "somewhat unlikely" to fish in the coming year. Based on the analysis of the pilot responses and based on a follow-up study of the individuals who were not recruited into the pilot panel, the recruiting criteria were revised for the full survey. For the full survey, we recruited anyone who indicated they were "very likely to fish in the coming year," "somewhat likely to fish in the coming year," or "unlikely to fish in the coming year but fished last year."

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\(^{53}\) A decrease in "chances of going" when responses to *PQ3* are compared to *PA2* is roughly consistent with the way the rest of the pilot panel respondents answered *PQ3* and *PA2*. Less than 3% had an increase in their stated chances of going, while the stated chances of going decreased for 65%. This may imply that people are more optimistic about their chances of going fishing at the beginning of the year. However, any inference is confounded by the inclusion of boating in *PQ3*. 

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4.7 Scheduling the Calls for the Full Survey Panel Waves

We also used the information from the pilot study to aid our design of the calling schedule for the 1994 panel survey. Pilot results were used to form our expectations of how often anglers fish and how many trips they tended to report the details of. Using responses from pilot survey questions, Table A2.5 presents some summaries of total trip data by each of the proposed groups for the 1994 survey. The groups are based on respondents' chances of fishing and how often they fished the previous year. The distribution of trips, and the mean trips per group from the pilot data serve as the basis for setting the call frequencies per group for the 1994 survey. Inspection of Table A2.5 reveals that, as expected, average total trips decreases as one goes from the frequent to infrequent anglers (group 1 to group 3). The groups in Table A2.5 correspond as closely as possible to the groups used in the full survey screening. However, there are some differences between the timing and wording of the questions used to form the groups in the pilot as compared to the full survey. In addition, there are differences in the sample stratification schemes. As such, the results in Table A2.5 are not meant to exactly predict the behavior of the full survey groups, rather the results are meant to help us get a feel for the fishing activities of the groups.

**Group 1**: Group 1 is defined as anglers who fished more than 20 times in the previous year and were likely to fish in the study year. As expected, most of group 1 fished during the study. Interestingly, the members of group 1 who did fish took an average of 18 trips, even though they all state that they took more than 20 trips in the previous year. In fact, on average the members of this group stated they took 39 trips in the previous year. Table A2.5 also presents the quartiles for the distribution of trips for those members of the group that did fish. Half of group 1 members that fished did so less than 15 times, while 75% did so less than 22 times.

For the full panel, we scheduled six waves for group 1 beginning in April and ending in November. By calling this group six times, the number of trips that need to be recollected and reported per interview would tend to be four or less for most members of group 1. This was within the range we found to be most successful for the pilot. (As it turned out, for all the groups, more than 75% of those that fished in any of the 1994 panel waves took less than four trips in that wave). The first five panel interviews for group 1 were spaced to occur about every four to five weeks from late April to mid-September. There was about six to seven weeks between the fifth wave and the sixth wave since less
Table A2.5: Comparison of Pilot Trip Data for Proposed Groups for the Full Survey.†

<table>
<thead>
<tr>
<th></th>
<th>Total cases</th>
<th># who fished</th>
<th>% who fished</th>
<th>Total trips</th>
<th>Mean trips*</th>
<th>S.E. of mean*</th>
<th>Percentiles for trips*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall for pilot panel</td>
<td>506</td>
<td>216</td>
<td>42.7</td>
<td>1726</td>
<td>8.0</td>
<td>0.8</td>
<td>2 4 10 80</td>
</tr>
<tr>
<td>Group 1: Frequent</td>
<td>67</td>
<td>59</td>
<td>88.1</td>
<td>1079</td>
<td>18.3</td>
<td>2.2</td>
<td>6 14 22 80</td>
</tr>
<tr>
<td>Group 2: Moderate</td>
<td>176</td>
<td>121</td>
<td>68.8</td>
<td>542</td>
<td>4.5</td>
<td>0.4</td>
<td>2 3 5 36</td>
</tr>
<tr>
<td>Group 3: Infrequent</td>
<td>232</td>
<td>36</td>
<td>15.5</td>
<td>105</td>
<td>2.9</td>
<td>0.6</td>
<td>1 1 2 16</td>
</tr>
<tr>
<td>Group 0: Non-anglers</td>
<td>31</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 0 0 0</td>
</tr>
</tbody>
</table>

† For cases who completed the panel. These groups will not exactly match those for the full survey because of differences in the sample stratification schemes, and differences in the timing and wording of questions.
* These statistics are conditional on individuals with trips > 0.

Fishing occurs late in the season. We decided that calling respondents in group 1 any more than every five to six weeks would be too intrusive. Feedback from the pilot suggested that the anglers did not want to be called "too often."

**Group 2:** Group 2 is defined as anglers who fished in the previous year, but did so less than 20 times, and stated they were likely to fish in the coming year. Pilot respondents in group 2 stated that they took, on average, about seven trips in the previous year. In the pilot, 69% of respondents in group 2 fished during the study. Those that did fish, took an average of 4.5 trips during the panel. For group 2, 75% of the respondents who did fish during the panel, went less than six times. In fact, less than 2% of this group took more than 15 trips. For the full panel, we scheduled four waves for this group.

**Group 3:** Group 3 is defined as anglers who meet one of two conditions 1) they fished in the previous year but are unlikely to fish in the coming year or 2) they did not fish in the previous year but are likely to fish in the coming year. The "infrequent angler" group have low chances of taking any trips, and if they do, most only take one trip. We scheduled two waves for this group; one in the middle of the summer, and one at the end of the fishing season. As a result, these anglers would face a four month recall period for the latter half of the summer. While this recall period is potentially long, it is similar to that of the NSFHWAR. Moreover, fishing is fairly unique event for these individuals, and there is unlikely to be many intervening fishing trips to cloud their recall of any trips they do take.
Appendix 2

Section 5: Full Survey

The full panel survey which was conducted from March 1994 to May 1995. The structure of the full survey was similar to the structure of the pilot survey. It began with a screening interview of the general population of Michigan adults. Based on responses to questions in the screening interview, individuals who were identified as potential anglers were recruited into the panel study. The panel study was designed to follow the potential anglers over the course of the Michigan fishing license year. The panel interviews attempted to collect information about each of the times a panel member went fishing. What follows is a review of the full survey and some results. First, there is a discussion of the sample. Then the screening interviews are described. Next, the panel interviews are discussed. Finally, some descriptive statistics for the survey are presented.

5.1 Sample

The overall research design of the survey was a telephone panel survey. The panel members were recruited from a stratified random sample of adults in the state of Michigan. Eligible panel respondents were identified using screening interviews. For the screening interviews, potential respondent's households were selected using a "random-digit dialing" sampling procedure. The sample of randomly generated phone numbers for the screening interview was purchased from Survey Sampling, Inc. (SSI) located in Fairfield, CT. Based on Census information, SSI has estimated that more than 96% of Michigan households have telephone subscriptions. The distribution of phone numbers was stratified by counties to match the distribution of resident fishing license holders in Michigan (Mahoney, Jester and Jamsen, page 312).

To construct the sampling frame, SSI began with the list of currently active combinations of area code + 3-digit exchange that were obtained from the telephone companies. To these combinations, they append numbers from 00 to 99. These later numbers represent the first two digits of the four-digit suffix that would comprise a complete telephone number. The resulting eight digit number (e.g., 517-432-38) is termed a block. SSI then compared each of these blocks against its bank of updated directory listings
for over 60 million households. Any block that was not represented among the directory listings was excluded. In addition, SSI excludes any block with less than three listings.

Blocks are linked to states and counties based on the directory listings and information from telephone companies. When geographic areas are defined for sampling, SSI, randomly selects telephone number blocks from among those linked to the defined geographic area. In our case, the blocks were selected from counties in Michigan. The proportion of the sample drawn from each county matched the proportions of resident fishing license holders in that county. From the blocks identified for each county, sample blocks were randomly selected in proportion to the number of households in that county with a telephone number beginning with that block. Blocks were randomly selected with replacement until the total number of blocks needed within that county were obtained. To complete the telephone number, the final two digits were randomly generated and added to the selected blocks.

The resulting telephone numbers were then compared to SSI's database of 11.2 million business telephone numbers. Numbers determined to be businesses were then ruled out as ineligible and were replaced with a new random number selected from the same block. Of the numbers selected, SSI expects that, on average, 60-75% of the phone numbers will be working household numbers. The remaining numbers are either businesses, agencies, institutions, or are not in service.

5.2 Interviewer Trainings

Prior to commencing the interviews for the screening and for the panel, interviewer training sessions were held. The training sessions began with a general presentation on the survey and the instrument. Interviewers were provided with question-by-question instructions (QbyQ's) and a paper copy of the questions in the instrument. The presentation covered the purpose of the study, the survey questions in the study, and any special features of the CATI instrument used for the study. Interviewers were instructed on terms, phrases, probes, and any special procedures for the study. Each interviewer was given a thorough understanding of what the study was about, how to answer any questions respondents may have about the study, how to judge the adequacy of responses, when to probe for more information, and when a case should be retired.

After the presentation, each training session continued with simulated interviews. The simulated interviews were held at the CATI stations and use the actual CATI instrument. SRD staff led interviewers
through mock interviews which highlighted the key aspects of the CATI instrument. Next, interviewers practiced their own trial interviews at a CATI station using training cases. In these sessions, the interviewers were instructed to freely explore the instrument on their own until they were comfortable with it.

The total time spent on the study-specific training was about two hours for the screening and about 3-4 hours for the panel interviews. The initial presentations were conducted by Lupi with SRD staff and student supervisors in attendance. Subsequent training sessions were done by SRD for small groups of interviewers who were unable to attend the initial presentations.

5.3 Screening

The screening interview allows us to "screen" individuals to determine who we will recruit into the panel study. The screening interviews also allow us to collect some demographic characteristics on the general sample of adults in Michigan. These demographic characteristics may differ from the characteristics of potential anglers. Based on this information the sample can be compared to (and weighted to match) other sources of information such as the Census.

In deciding who to recruit into the panel, we wanted to try to identify anyone who might go fishing, but we needed to do so at the beginning of the season. The recruiting was designed to minimize the recruitment of people who would not fish without excluding anyone who would fish (see the discussion in Section 4.6). We identified two questions which would separate potential anglers from non-anglers. Specifically, we asked respondents if they fished in the previous year (Q1) and how likely they were to fish this year (Q3). Screening respondents classified as "potential anglers" were recruited while those classified as "non-anglers" were not be recruited. We defined "non-anglers" as screening respondents who are unlikely to fish this year and did not fish last year. While the non-anglers were not recruited into the panel, they were asked some of the demographic questions.

The screening instrument collected basic demographic information (e.g., the number of adult males and females in the household, and the respondent's gender and age) from all respondents interviewed. For every respondent that we attempted to recruit into the panel, we collected additional demographic information including: number of children in the household, education, employment status, household income, and zip code. Additionally, this full set of demographic data was collected for all
"non-anglers" with an odd phone number (i.e., a random one half of the respondents who were not recruited into the panel). The screening survey questions are provided in Section 6.1 of this appendix.

Several sample stratifications were used to increase the efficiency of the screening. As mentioned earlier, the phone numbers were stratified by counties to match the distribution of fishing license sales in Michigan (Mahoney, Jester and Jamsen, page 312). In addition, the screening instrument was designed to over-sample males from households with both male and female adults. If a household contained both male and female adults, a male was selected 2/3 of the time and a female was selected 1/3 of the time. If there were multiple adult males (females) in the household, the male (female) with the most recent birthday was selected.

5.3.1 Screening production

The screening interviews began on March 23, 1995. Half of the screening interviews were completed by April 10, 1994, while the final interview was completed on May 12, 1994. Once 6,000 interviews were completed, no additional new numbers were scheduled for calling, and the remaining screening efforts were devoted to completing the calling on the cases which had been touched to date. Table A2.6 provides the final disposition of all the numbers touched in the screening. In all, 6,342 screening interviews were completed. The average interview length was 3.02 minutes, and the total time interviewers spent on the telephone for all the screening calling was 3,790 hours (the length and time are for the main body of the interview and do not include time spent locating and identifying respondents).

There are several alternatives ways of calculating the response rate for the screening interviews. SRD generally uses a conservative method based on the formula \( C/(C+R+I1+N+T+Cb) \), where the codes are defined in Table A2.6. However, SRD also reports a common alternative method which does not include any ineligibles, no answers, or technical problems in the denominator and uses the formula \( C/(C+R+Cb) \). Using these two methods, the screening response rate is 61.7% and 75.6%, respectively. Since the complete case dispositions are provided in Table A2.6, response rates for alternative methods can be readily calculated.

During the screening process, SRD supervisors would review the case notes of any case that initially refused an interview. Supervisors would assess the chances of converting the refusal into a completed interview. Since many refusals occur because of contact at an inconvenient time, conversions
Table A2.6: Disposition Table for the 1994 Screening.

<table>
<thead>
<tr>
<th>Code</th>
<th>Disposition</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Completions</td>
<td>6,342</td>
</tr>
<tr>
<td>R</td>
<td>Refusals</td>
<td>1,886</td>
</tr>
<tr>
<td>I1</td>
<td>Ineligible (disabled/language problems)</td>
<td>226</td>
</tr>
<tr>
<td>I2</td>
<td>Ineligible (business/no adults)</td>
<td>1,686</td>
</tr>
<tr>
<td>B</td>
<td>Bad numbers</td>
<td>1,594</td>
</tr>
<tr>
<td>N</td>
<td>No answers/Mechanical device</td>
<td>1,575</td>
</tr>
<tr>
<td>T</td>
<td>Technical problems (temp. not in service, unresolved dialing mistakes)</td>
<td>88</td>
</tr>
<tr>
<td>Cb</td>
<td>Callbacks *</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>13,561</td>
</tr>
</tbody>
</table>

* After some contact indicating a call back, the interview was unable to be completed within 15 more call attempts.

were attempted at a different time and day than the initial refusal. Often, the initial refusal is given by an informant who may not be the member of the household that was chosen to complete the interview. For the screening process, refusal conversions were attempted for 88% of the initial refusals. SRD successfully converted 411 (18%) of these initial refusals.

5.3.2 Stratification weights

We constructed an initial set of weights to correct for the stratified sampling plan. The weights correct for unequal probabilities of selection due to differences in the following factors: the number of households sampled across counties, the number of phone lines across households, the number of adults per household, and the gender composition of the adults in a household. The first factor arises because the county distribution of telephone numbers were stratified to match the distribution of resident fishing license holders in Michigan. The second factor arises because the probability of sampling a household with two phone lines is twice that of a like household with only one phone line. Similarly, the third factor is due to the fact that individuals living in a household with many adults have less chance of being interviewed than does someone living in a household with only one adult. The final factor arises because we over-sampled males from households with both male and female adults.
The initial weights were constructed in the following steps. First, we calculated a term to correct for the unequal selection probabilities for the within household factors of adults and gender composition. The adults and gender corrections are done at once since they are closely related. There is no correction for cases which live in a household with a single adult, no matter the gender of the adult (i.e., the correction term is equal to 1 if there is only one adult in the household). For a case in a household where all adults are males (females), the correction term is the number of males (females). For cases in a household with both females and males, the correction term depends on whether or not the case is a male or a female. If the case is a male, the correction term is $3/2$ times the number of adult males. Similarly, the correction term for females is 3 times the number of adult females in the household. With the correction term, all cases have an equal within household chance of being selected. Next, we corrected for the unequal chances of choosing households with multiple phone lines by dividing the correction term by the number of phone lines. Denote the resulting term by $t_i$, where $i$ indexes individuals.

The final step involves correction for the stratification of numbers across counties. To correct for this, we found the weighted distribution of the cases across counties in Michigan, where the cases were weighted by $t_i$. This distribution of adults per county was compared to the distribution of adults based on the 1990 Census. An adjustment was made to the correction term so that the weighted county distribution of adults in the screening sample would match that of the Census. This was accomplished by multiplying each $t_i$ by the $c_j/s_j$ for $i$'s county, where $j$ denotes a county, $s_j$ denotes the percentage of screening cases that reside in $j$, and $c_j$ denotes the Census percentage of Michigan adults from $j$. The new correction terms were then normed to avoid artificially inflating or deflating the sample size. Under the norming, each correction term is multiplied by the screening sample size divided by the sum of the correction terms. The result is a case weight that takes account of the unequal probabilities of selection that result from the stratified sampling scheme. This case weight is called $wght3$ in the data.

### 5.3.3 How often to call in the panel?

The screening interviews also allowed us to determine how often to call panel members. The number of panel waves differed depending on how often an angler fishes. The differential callback rates were developed for several reasons. First, we wanted to limit phone calls to less frequent anglers to avoid bothering them with unnecessary calls when they had not fished. Second, we wanted to call frequent
anglers more often so that they would not be burdened with long interviews because they had gone fishing so many times since our last interview. Feedback from the pilot study suggested that the more avid anglers wanted to be called more often while the least avid anglers wanted to be called less often. We also tried to space the interviews so that anglers would not have to recall the details of too many trips within any wave.

We grouped screening respondents into four groups based on our expectation of the frequency of their fishing activities. We used information from the pilot study to define the groups and form our expectations of how often anglers in each group would fish. The calling schedule is designed, in part, to keep most anglers from having to report more than four trips per interview, which was approximately the average number of trips we collected complete data on in each of the pilot panel wave interviews.

Of the four groups in the full survey, three groups consisted of "potential anglers" while the fourth group consisted of "non-anglers." The groups were based on two factors: the amount of fishing they did in the last year, and their stated "chances of going fishing this year." As mentioned above, "non-anglers" were defined as screening respondents who are unlikely to fish in the coming year and did not fish in the previous year ($Q3 > 2$ and $Q1 > 1$). Non-anglers were not recruited into the panel.

For scheduling the number and spacing of interviews in the panel, the potential anglers were further subdivided into three groups based on their expected frequency of fishing. Table A2.7 defines the four groups and outlines the calling frequency for those in the panel. Group 1, called "frequent anglers," contains anglers who tend to fish the most and were defined as those that fished more than 20 times last year and are likely to fish this year ($Q1=1$ & $Q2=4$ & $Q3<3$). This group was scheduled to get called about every month and a half. We expected that most members of this group would fish less than 20 times so that they would be reporting on about three or four trips per interview.

Group 2, "moderate anglers," were those that fished last year, did so less than 20 times, and are likely to go this year ($Q1=1$ & $Q2<4$ & $Q3<3$). Group 2 was scheduled to get called a total of four times or about every two months. Based on the pilot data, we expected this group of anglers to take four or five trips, if they fish during the panel. Thus, we expected that anglers in group 2 would report on about one or two trips each wave if they went fishing.

Group 3, "infrequent anglers," are defined as those who either fished in the previous year but indicate they are unlikely to go in the coming year ($Q1=1$ & $Q3>2$), or didn't fish in the previous year but
Table A2.7: Angler Avidity Groups, Recruiting Success, and Number of Panel Waves.

<table>
<thead>
<tr>
<th>Screening group</th>
<th>Definition of each group</th>
<th>Frequency</th>
<th>Recruited into panel</th>
<th>Agree to panel</th>
<th># of panel interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Frequent anglers</td>
<td>Fished more than 20 times last year, and likely to fish this year.</td>
<td>627</td>
<td>YES</td>
<td>530 (84.5%)</td>
<td>6</td>
</tr>
<tr>
<td>2 = Moderate anglers</td>
<td>Fished 1 to 20 times last year, and likely to fish this year.</td>
<td>1680</td>
<td>YES</td>
<td>1271 (75.7%)</td>
<td>4</td>
</tr>
<tr>
<td>3 = Infrequent anglers</td>
<td>Fished last year but unlikely to this year, or didn't fish last year but likely this year.</td>
<td>1108</td>
<td>YES</td>
<td>867 (78.2%)</td>
<td>2</td>
</tr>
<tr>
<td>4 = Non-anglers</td>
<td>Did not fish last year, and unlikely to fish this year.</td>
<td>2927</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>6342</strong></td>
<td><strong>3415</strong></td>
<td><strong>2668</strong></td>
<td></td>
</tr>
</tbody>
</table>

are likely to go in the coming year ($Q1>1$ & $Q3<3$). Based on our pilot survey experience, the anglers in this group have a low probability of going fishing. Furthermore, if they go, most take only one trip which ought to reduce any recall difficulties due to intervening fishing events. Therefore, group 3 would be called back twice, in July and at the end of the season.

Table A2.7 also presents the response rate to the panel recruitment question which differs across the three groups of anglers. The percent of respondents that agree to participate in the panel is 84.4% for the frequent anglers, 75.3% for the middle group, and 78.4% for the infrequent anglers. These response rates are significantly different with a P-value = 0.00001 using Pearson’s chi-squared test of independence. Therefore, the initial panel over-represents avid anglers relative to other groups. In the MSU model this is corrected when the weights are created to match the anglers with complete panel data with the general population of potential anglers (see Section 5 of Appendix 1).
5.4 Panel Waves

5.4.1 Panel Instrument

An outline of the panel interview instrument is given in Figure 5.1. An abridged and annotated version of the survey instrument is provided in Section 6.2. Basically, the interview consists of one loop through a series of questions for each time a respondent fished, and for each site they fished at. This section provides a brief description of the panel instrument and questions.

Usual sites: In wave 1, the interview began by asking about the names and locations of three sites that the respondent usually fishes at. These sites were used later in the interview as closed coding categories for places the respondent fished at during the panel. These usual sites were also passed to all subsequent interviews as coding options for the sites fished at. The usual site questions were only asked in the first wave a respondent completes and are only asked of respondents in groups 1 and 2. Members of group 3 were not asked about usual sites since less than half of group 3 are expected to fish, and most of those that fish would tend to go less than 3 times.

Panel interview: All other panel interviews began by asking if the respondent went fishing since their last interview (or since April 1 if it is the respondent’s first panel interview). When we asked if the respondent had fished, the CATI system provided the date of the last interview, and if they had fished in a previous interview, it provided the date of the last fishing trip and the name of the site. This later information is displayed on the screen for the interviewer to use on an as needed basis. If the respondent had fished, they were asked how many times the respondent went fishing since the last interview. The CATI program then looped through a series of questions about each time the respondent fished. This series of questions is referred to as the trip loop.

The interview would go through the trip loop for each of the times the respondent mentions that they fished, up to 20 times per wave. The basic information collected in the trip loop is the date of the trip, the number of nights away, the sites visited, the time spent fishing at each site, the fish sought at each site, the purpose of the trip, the lodging for the trip, and the transportation used (for the first trip only). An outline of the instrument is given in Figure A2.1.

Within each trip, respondents were asked a series of questions about each site that they fished at. This series of questions is referred to as the site loop. Here we try to get the names and nearest cities for each site they fish at during a trip. The three usual sites appear as coding options. Since most people
take their trips to the same places, providing the usual sites could reduce the interview time. In the site loop, we also asked about the fishing effort and species sought at each site. To maintain the flow of the instrument, the wording of questions varied slightly for single and multiple site trips.

After the site loop, if there were multiple sites for the trip, respondents were asked which site was the main site for the trip. Next, for each trip, we ask if fishing was the primary purpose of this trip. If they say no, we ask what their main destination was for this trip, and then we ask if they would have made the trip even if they could not have gone fishing. We asked this to see how important the availability of fishing opportunities was to their choice of main destination. Next, we asked some questions about their types of and expenses for lodging and transportation for the trip. The transportation questions were only
asked for their most recent trip since we anticipated that ample observations on transportation costs could be obtained from such a sub-sample of all trips.

Outside the trip loop, we asked whether the respondent took time off work for any of their trips. We also asked if the respondent left from and returned to their permanent residence for all of the times that they fished. Finally, at the end of the interview, respondents who previously did not want a fish log, were asked once more if they now wanted a fishing log.

**Special procedures and questions:** Interviewers were required to read verbatim the questions that appeared on their CATI screen. If text appeared in parentheses, it was optional and read if needed. Because of the repetitive nature of the trip loop and site loop questions, many respondents would anticipate the questions and provided answers before the interviewer could read the question. These questions appeared in parentheses after the completion of the first loop in an interview. If a respondent anticipated the wrong question or did not anticipate a question, the interviewer would read the question in its entirety. This technique worked well in the pilot study, and the technique worked especially well for anglers using the fishing log.

To improve the accuracy of the information on the number of trips taken by each panel member, if a respondent could not provide complete details of all their trips, they were given an opportunity to revise their answers. At the start of each pass through the trip loop there was an option to leave the trip loop. The option was only used if the respondent did not want to answer further trip questions or could not remember anything about any more of their trips. If the trip loop was exited before all the trips were reported on, we would ask some special questions. First, respondents were asked if any of their remaining trips were overnight trips. If so, we would try to get the respondent to tell us about one more overnight trip. Finally, to verify the trip count, respondents were reminded of how many trips they initially reported that they took, and then respondents were informed about how many trips they reported the details of. Then, respondents were given an opportunity to revise their number of trips.

Some of the interview procedures differed for respondents who were and were not using the fish log during the interview. In the trip loop, if the respondent was using the fish log during the interview, the month and date of the fishing trips were elicited much more directly. If the respondent was not using the fish log, when we elicited the date of the trip we began by asking the day of the week and the month that they left for the trip. Then, a calendar programmed into the CATI was used to prompt the
respondent for the date. This was done by mentioning the dates associated with that day of the week for that month.

The ability to exit the trip loop also differed depending on the respondents use of the fish log. If the respondent was using the fish log, there was not an option of leaving the trip loop. If respondents using the fish log did not want to continue the trip loop, they were given the option of sending back the fish log. Section 5.4.3, more fully describes the fish logs and the procedures associated with the logs.

As mentioned above, in the first panel survey interview we asked the frequent and moderate anglers about the location of three sites they usually fished at. These individual-specific, usual sites were programmed into the survey instrument as hard coded responses for the destination of fishing trips. Because they were hard coded, the CATI program could count the number of times in any interview that a respondent visited each of the usual sites. The program tracked the number of single day, single site trips to each of the usual sites. Within any interview, if an angler who was not using the fishing log during the interview took more than two single day trips to one of the usual sites, the angler was asked if it was a typical trip to that site. If so, the interview would move on to the questions about the next trip.

**Other Waves:** The instrument for waves 1 through 6 were largely the same. A notable exception was the sequence of usual site questions which were only asked during a respondent's first interview. Similarly, wave 6 asked several additional questions about the respondent's fishing activities and personal characteristics that were outside the trip loop of the panel instrument. The questions which were added to wave 6 appear in the survey instrument provided in Section 6.2 of this appendix. General questions about an individuals fishing activities and preferences began with the letter S. The first of these questions asked about the individual's chances of fishing during the remainder of the season from the date of the interview until March of 1995. The individuals that indicated that they were somewhat or very likely to fish were slated to be called during the ice fishing (winter fishing) waves. The other additional general questions included license purchase, boat ownership, cabin location, species preferences, importance of various site attributes, usual travel modes, and usual lodging types.

Wave 6 also included a follow-up question requesting additional information about any fishing sites from an earlier wave that we were unable to locate. Section 6.1 of Appendix 1 discusses the site coding process in more detail. The question (H1) was formulated to ask for individual-specific
information which would help us locate the site. These questions were provided on a call sheet for each case. The call sheets listed the previously supplied site information (e.g., site name, nearest city, water body type, and county) followed by specific questions about the site. For example, if we were unable to locate a site because there were two similarly named sites in the vicinity of the city provided by the respondent, we would ask the respondent if the site was closer to city A or closer to city B. Any case that would be asked \( H1 \) was put on hold and distributed by supervisors along with that case's call sheet and question. The response was typed into the CATI as open ended text.

Wave 6 also included several questions about the employment situation of each respondent. Individuals who were working were asked a set of questions about a their job. The job questions all began with the letter \( J \), and, if applicable, another set of questions beginning with \( K \) for a second job. The questions were used in the estimation of time value discussed in Section 6.6 of Appendix 1. The job questions included months and hours worked, ability to set work hours, and the wage rate or salary.

Wave 6 was the last interview for all respondents who indicated they were unlikely to fish during the period from their wave 6 interview until March of 1995, the end of the fishing license year. Respondents who indicated they were likely to fish during the remainder of the license year were called in a final wave. While we sometimes refer to this as an ice fishing wave, any type of fishing that occurred during the period was covered by the interview. The instrument for this wave mirrors the instrument used on the other panel interviews. Originally, we planned two waves for the winter, one in January 1995 and one in April 1995. However, unseasonably warm temperatures through the end of 1994 limited ice formation on lakes. Therefore, we decided to limit the winter interviewing to a final wave in April of 1995.

5.4.2 Production

Table A2.8 presents some of the interview production statistics for the panel waves. The interview start and end dates are provided along with the date of the median interview. This information is provided by wave and group. Within any wave, the groups which got called differed, and the starting dates were generally staggered by group. For example, the calling for wave 2 began on June 3, 1994 for group 2 and on June 16, 1994 for group 1. The staggering enabled us to achieve the desired spacing of waves across groups. Also, for groups 1 and 2, SRD would set up the cases so that individuals who
Table A2.8: Production Statistics for Panel Waves.

<table>
<thead>
<tr>
<th>Wave #</th>
<th>Group</th>
<th>Start Date</th>
<th>Median Date</th>
<th>End Date</th>
<th>Completes</th>
<th>Refusals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave 1</td>
<td>1</td>
<td>4/26/94</td>
<td>5/3/94</td>
<td>6/3/94</td>
<td>487</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5/7/94</td>
<td>5/12/94</td>
<td>6/13/94</td>
<td>1161</td>
<td>21</td>
</tr>
<tr>
<td>Wave 2</td>
<td>1</td>
<td>6/3/94</td>
<td>6/8/94</td>
<td>7/1/94</td>
<td>453</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6/16/94</td>
<td>6/18/94</td>
<td>7/16/94</td>
<td>1125</td>
<td>8</td>
</tr>
<tr>
<td>Wave 3</td>
<td>1</td>
<td>7/5/94</td>
<td>7/7/94</td>
<td>7/31/94</td>
<td>442</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7/5/94</td>
<td>7/6/94</td>
<td>7/30/94</td>
<td>787</td>
<td>7</td>
</tr>
<tr>
<td>Wave 4</td>
<td>1</td>
<td>8/8/94</td>
<td>8/9/94</td>
<td>9/11/94</td>
<td>405</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8/18/94</td>
<td>8/25/94</td>
<td>9/19/94</td>
<td>1032</td>
<td>21</td>
</tr>
<tr>
<td>Wave 5</td>
<td>1</td>
<td>9/15/94</td>
<td>9/18/94</td>
<td>10/22/94</td>
<td>412</td>
<td>17</td>
</tr>
<tr>
<td>Wave 6</td>
<td>1</td>
<td>11/2/94</td>
<td>11/10/94</td>
<td>1/14/95</td>
<td>417</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11/1/94</td>
<td>11/9/94</td>
<td>1/11/95</td>
<td>1021</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11/1/94</td>
<td>11/4/94</td>
<td>1/14/95</td>
<td>697</td>
<td>39</td>
</tr>
</tbody>
</table>

completed interviews at the very end of the last wave were held for one week before they were set up for the next wave of calling. This was done to maintain some spacing between the calls.

Table A2.8 also presents the number of completed interviews and the refusals associated with each wave. The refusals listed in Table A2.8 were not called in subsequent waves of the panel. However, cases that could not be reached in a wave because they reached a calling limit (e.g., persistent calls yielding no answer, busy signals, or answering machines) were not dropped from subsequent waves. These cases were set up as valid cases in later waves. The calling limit within any wave was nine calls without any contact or 15 calls if some contact was made. Call scheduling and calling limits are discussed in more detail in Section 2.5.

During the waves, there were cases that were not reached because of a "bad number." A bad number disposition includes wrong numbers and numbers that are out of service without a forwarding number. For panel waves 1 through 5, if a case was unreachable because of a "bad number," we tried to
reach the respondent in two ways. First, we would use the respondents full name which was collected in the screening to call directory assistance in the respondent's last known area code to see if there was a new listing. If that was unsuccessful, we would try to send a letter to the respondent requesting information on their phone number. We were only able to send letters to respondents that had previously given us an address because they had requested a fishing log. The letters were sent by Lupi based on the addresses supplied to him by SRD staff. The letters included postage paid return envelopes addressed to SRD.

The final disposition codes for all the panel members are presented in Table A2.9. Some panel members were not called during wave 6 because they had previously refused or because there was some other problem with their case such as a persistent bad number. For these cases, we have reported the disposition code from the last wave in which an interview was attempted. Similarly, the refusals presented in Table A2.8 were derived from the final disposition codes, and they represent the number of the cases that received final disposition codes that are refusals which occurred in that wave.54

<table>
<thead>
<tr>
<th>Code</th>
<th>Disposition</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Completions</td>
<td>2,135</td>
</tr>
<tr>
<td>R</td>
<td>Refusals</td>
<td>151</td>
</tr>
<tr>
<td>I1</td>
<td>Ineligible (disabled/language problems)</td>
<td>213</td>
</tr>
<tr>
<td>I2</td>
<td>Ineligible (business/no adults)</td>
<td>70</td>
</tr>
<tr>
<td>B</td>
<td>Bad numbers</td>
<td>77</td>
</tr>
<tr>
<td>N</td>
<td>No answers/Mechanical device</td>
<td>1</td>
</tr>
<tr>
<td>T</td>
<td>Technical problems (temp. not in service, unresolved dialing mistakes)</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>2,675</strong></td>
</tr>
</tbody>
</table>

54 There were cases who refused an interview in one wave, but successfully completed an interview in a later wave. For example, a panel interview could be coded as a refusal, but review of the case notes might reveal that the refusal was made by the person who answered the phone and not by the panel member. Thus, all refusals are not listed in Tables A2.8 or A2.9. Table A2.8 only lists the number of cases per wave in which a refusal was noted that resulted in the case being retired.
5.5 Selected Survey Results

In this section we present selected survey results and summary statistics. The summary statistics are not weighted by the weights we created to correct for the screening stratification and the complete panel data. Therefore, the summary statistics are meant to characterize the sample, not the statewide population of anglers.

In all, we collected information on 8,288 trips. However, many of the individuals who reported taking trips did not complete the panel. We collected information on a total of 7,309 trips for people who completed the panel. Of these 7,309 trips, 6,401 (88%) provided trip details in the trip loop of the instrument ("trip details" is defined by cases providing valid responses for the trip length, for the number of sites, and for the month of the trip).

Recall that individuals who could not report details of all the trips they reported taking in a wave were given an opportunity to revise their trip count. Using the trip count before the correction would have indicated that there were 7,831 trips for cases who completed the panel. Thus, the opportunity to revise answers led to a 7% reduction in the total trip count (from 7,831 to 7,309).

As mentioned above, in their first interview, respondents from group 1 or 2 were asked about up to three sites that they usually fish at, though not all mentioned three sites. Overall, 55% of all trips in the panel were made to one of the usual sites even though not all panel members were asked about usual sites. Of those that were asked about the usual sites (groups 1 and 2), about 67% of the trips were to one of the usual sites. Of the trips to a usual site, 66% were made to the usual site respondents mentioned first; 24% were made to the usual site that was mentioned second; and 10% were made to the usual site that was mentioned third.

The usual sites were hard coded into the CATI program which permitted us to count repeat trips to usual sites within any wave. Within any wave, after two single day, single site trips to a usual site, respondents were asked if these repeat visits were "typical" trips to that site. If the respondent indicated it was a typical trip to that site, the interview skipped to the questions about the next trip. About 9% of the trips were classified as typical trips.

Table A2.10 presents a summary of total trips for individuals who completed the panel. These statistics are also presented for the different avidity groups and for anglers living in different zones of the state (see Figure A1.2 in Appendix 1 for a diagram of the zones). From the table, one can see that of the
Table A2.10: Summary of Total Trips for Respondents who Completed the Panel.

<table>
<thead>
<tr>
<th>Residence zone</th>
<th>Cases</th>
<th>Total trips</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>% who fished</th>
<th>Mean for trips&gt;0</th>
<th>Std. dev. trips&gt;0</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cases</td>
<td>2135</td>
<td>7309</td>
<td>3.42</td>
<td>6.88</td>
<td>58.8</td>
<td>5.82</td>
<td>8.16</td>
</tr>
<tr>
<td>Metro tri-county</td>
<td>414</td>
<td>1089</td>
<td>2.63</td>
<td>4.71</td>
<td>51.7</td>
<td>5.09</td>
<td>5.52</td>
</tr>
<tr>
<td>Mid Michigan</td>
<td>1112</td>
<td>3584</td>
<td>3.22</td>
<td>6.49</td>
<td>57.9</td>
<td>5.57</td>
<td>7.72</td>
</tr>
<tr>
<td>Upper Michigan</td>
<td>609</td>
<td>2636</td>
<td>4.32</td>
<td>8.53</td>
<td>65.2</td>
<td>6.64</td>
<td>9.82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Angler avidity group</th>
<th>Cases</th>
<th>Total trips</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>% who fished</th>
<th>Mean for trips&gt;0</th>
<th>Std. dev. trips&gt;0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent</td>
<td>417</td>
<td>3906</td>
<td>9.37</td>
<td>10.93</td>
<td>91.8</td>
<td>10.20</td>
<td>11.03</td>
</tr>
<tr>
<td>Moderate</td>
<td>1021</td>
<td>2730</td>
<td>2.67</td>
<td>3.87</td>
<td>67.3</td>
<td>3.97</td>
<td>4.12</td>
</tr>
<tr>
<td>Infrequent</td>
<td>697</td>
<td>673</td>
<td>0.97</td>
<td>4.87</td>
<td>26.5</td>
<td>3.64</td>
<td>8.94</td>
</tr>
</tbody>
</table>

three residence zones, Metro area panel members were least likely to fish and took the fewest trips on average, while Upper Michigan area panel members were most likely to fish and took the most trips on average. For the three residence zones, the unconditional mean trips by zone are significantly different at the 1% level, and the conditional means are significantly different at the 5% level based on an F test of equality. As expected, most of the frequent anglers in the panel fished and they took the most trips on average. The conditional and unconditional means for the avidity groups are significantly different at the 1% level. One interesting feature of the mean trips taken by group 1 is that these anglers all stated that they fished more than 20 times in the previous year, yet they averaged half that amount during the panel.

The majority of trips we collected information on are single day trips. In order to determine whether a trip was single day or multi-day, respondents had to report on the details of the trip in the trip loop of the panel survey instrument. Table A2.11 presents the cumulative distribution of nights away for all trips and for multi-day trips based on the trips for which respondents provided trip length in the trip loop of the panel instrument. Only 18.5% of these trips include an overnight stay. Overall, about 96% of all trips are three nights or less while 78% of the multi-day trips are three nights or less. The maximum observed trip length was 18 nights. The average nights away for all trips is 0.525 with a standard
deviation of 1.5. Thus, on average, trips are less than one night. Conditional on being a multi-day trip, the average nights away is 2.845 with a standard deviation of 2.3.

Differences in the distribution of day trips and multi-day trips for several key variables are presented in Table A2.12. The results in Table A2.12 are restricted to the 6,493 trips where trip length is known and the angler completed the panel. Trip length was determined based on the response to question B1d1 which asked if the trip was an overnight trip (overnight trips are considered multi-day trips). The table presents a series of "crosstabs" between trip length (day/multi-day) and the following variables listed in the first column: the number of sites fished at on a trip, the water type, the fish type, the trip purpose, the zone of the angler, the avidity group of the angler, and the month of the trip. Using Pearson's chi-squared test, independence of the distribution of day and multi-day trips is rejected at the 1% level for all the variables listed in the first column of Table A2.12.

The second column of Table A2.12 presents the valid number of cases for the intersection of that variable and trip length. For example, there are 6,251 cases where the water type is known along with the trip length. The third column presents the distribution of trips by each of the coding categories for the variables listed in the first column. The next column presents the distribution of single day trips by each of the coding categories for the variables listed in the first column. The fifth column does the same for multiple day trips. The fourth and fifth column are often referred to as "column percents" in standard tables of crosstabs. For each of the variables, the percents in these columns sum to one across the categories for any variable. The last two columns present the share of single and multiple day trips corresponding to that row of the table which are often referred to as "row percents." For any category (row), the row percents sum to one. In the first row, the percentage of trips which are day and multi-day are presented. Since this is not a crosstab with any variable, there are no column distributions for the first row.
Table A2.12: Trip Distribution for Key Variables by Day and Multi-Day Trips.

<table>
<thead>
<tr>
<th></th>
<th>Valid cases</th>
<th>Column distributions</th>
<th>Row distributions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% of all trips by category</td>
<td>% of day trips by category</td>
</tr>
<tr>
<td>Trip length</td>
<td>6,493</td>
<td></td>
<td></td>
</tr>
<tr>
<td># places fished at on trip</td>
<td>6,467</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 place</td>
<td></td>
<td>92.0</td>
<td>94.7</td>
</tr>
<tr>
<td>2 places</td>
<td></td>
<td>6.0</td>
<td>4.4</td>
</tr>
<tr>
<td>3 or more</td>
<td></td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Water type&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6,251</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Lakes</td>
<td></td>
<td>26.7</td>
<td>28.1</td>
</tr>
<tr>
<td>Inland Lakes</td>
<td></td>
<td>47.4</td>
<td>46.3</td>
</tr>
<tr>
<td>Rivers and Streams</td>
<td></td>
<td>25.9</td>
<td>25.6</td>
</tr>
<tr>
<td>Fish type&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6,348</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm</td>
<td></td>
<td>78.8</td>
<td>80.2</td>
</tr>
<tr>
<td>Cold</td>
<td></td>
<td>20.4</td>
<td>19.0</td>
</tr>
<tr>
<td>Mixed</td>
<td></td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Purpose&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6,454</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing</td>
<td></td>
<td>91.3</td>
<td>96.9</td>
</tr>
<tr>
<td>Non-fishing</td>
<td></td>
<td>8.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Zone of residence</td>
<td>6,493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Metro tri-county</td>
<td></td>
<td>14.6</td>
<td>13.3</td>
</tr>
<tr>
<td>2 Mid Michigan</td>
<td></td>
<td>50.2</td>
<td>48.9</td>
</tr>
<tr>
<td>3 Upper Michigan</td>
<td></td>
<td>35.2</td>
<td>37.9</td>
</tr>
<tr>
<td>Angler avidity group</td>
<td>6,493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Frequent</td>
<td></td>
<td>53.0</td>
<td>55.2</td>
</tr>
<tr>
<td>2 Moderate</td>
<td></td>
<td>39.8</td>
<td>38.0</td>
</tr>
<tr>
<td>3 Infrequent</td>
<td></td>
<td>7.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Month&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6,329</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>13.9</td>
<td>14.7</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td>21.4</td>
<td>22.2</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td>21.5</td>
<td>21.5</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td>15.2</td>
<td>13.8</td>
</tr>
<tr>
<td>August</td>
<td></td>
<td>13.0</td>
<td>12.7</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td>9.1</td>
<td>8.8</td>
</tr>
<tr>
<td>October</td>
<td></td>
<td>5.9</td>
<td>6.3</td>
</tr>
</tbody>
</table>

a. For the multiple site trips, the numbers reflect the type associated with the main site of the trip.
b. These numbers include the type associated with typical trips.
c. Trips from November were excluded (80 trips).
Table A2.13: Main Target Species for Trips, and Favorite Species to Catch and To Eat.

<table>
<thead>
<tr>
<th>Species of fish</th>
<th>Main specie for trips</th>
<th>Favorite specie to catch</th>
<th>Favorite specie to eat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass</td>
<td>16.5</td>
<td>22.8</td>
<td>5.0</td>
</tr>
<tr>
<td>Bluegill</td>
<td>11.3</td>
<td>7.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Brook &amp; brown trout</td>
<td>1.6</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Carp, catfish, &amp; suckers</td>
<td>2.4</td>
<td>1.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Chinook salmon</td>
<td>1.8</td>
<td>2.6</td>
<td>1.1</td>
</tr>
<tr>
<td>Coho salmon</td>
<td>1.6</td>
<td>2.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Lake trout</td>
<td>2.1</td>
<td>1.7</td>
<td>1.3</td>
</tr>
<tr>
<td>Northern pike/pike, muskie</td>
<td>3.6</td>
<td>6.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Panfish</td>
<td>5.6</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Perch</td>
<td>10.1</td>
<td>13.9</td>
<td>30.1</td>
</tr>
<tr>
<td>Salmon, unspecified</td>
<td>1.1</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Steelhead, rainbow trout</td>
<td>4.9</td>
<td>4.1</td>
<td>1.9</td>
</tr>
<tr>
<td>Trout, unspecified</td>
<td>6.2</td>
<td>7.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Walleye</td>
<td>16.4</td>
<td>17.3</td>
<td>23.0</td>
</tr>
<tr>
<td>Whatever's biting</td>
<td>9.8</td>
<td>0.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Other</td>
<td>5.0</td>
<td>1.4</td>
<td>4.6</td>
</tr>
<tr>
<td>No favorite</td>
<td>n/a</td>
<td>5.6</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Inspection of Table A2.12 reveals some interesting results. To begin with, most of the trips for anglers completing the panel are single day trips (81%). The majority of trips (92%) were to just one site. Day trips were much more likely to be single site trips (95%) than multi-day trips (81%). Most trips were to inland lakes (47%) with rivers/streams receiving about the same amount of trips as the Great Lakes. Multi-day trips were more likely to be at inland lakes (52%) than single day trips (46%). Most trips were for warm water species (79%), but multi-day trips were more likely to be for cold species (19%) than single day trips (27%). The majority of trips were for the primary purpose of fishing (91%). As expected, single day trips were much more likely to be primarily for purposes of fishing (97%) than multi-day trips (67%). In terms of the residence zones, (see Figure A1.2 in Appendix 1), upper Michigan anglers were less likely to take multi-day trips (13%) than mid Michigan anglers (21%) while Metro area residents were much more likely to take multi-day trips (26%). Frequent anglers were much more likely to take day trips (85%) than other anglers (78%). Finally, of the months in the open water season, July generates the largest percentage of multi-day trips (27%).
Table A2.14: Reasons for Fishing

<table>
<thead>
<tr>
<th>Valid Cases</th>
<th>Column % by reason</th>
<th>Row % of reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Be with people</td>
<td>Enjoy nature</td>
</tr>
<tr>
<td>All cases</td>
<td>2115</td>
<td></td>
</tr>
<tr>
<td>Residence zone*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Metro tri-county</td>
<td>410</td>
<td>27.1</td>
</tr>
<tr>
<td>2 Mid Michigan</td>
<td>1099</td>
<td>50.2</td>
</tr>
<tr>
<td>3 Upper Michigan</td>
<td>606</td>
<td>22.7</td>
</tr>
<tr>
<td>Angler avidity group*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Frequent</td>
<td>414</td>
<td>7.8</td>
</tr>
<tr>
<td>2 Moderate</td>
<td>1018</td>
<td>46.7</td>
</tr>
<tr>
<td>3 Infrequent</td>
<td>683</td>
<td>45.5</td>
</tr>
<tr>
<td>Fished during panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>865</td>
<td>46.3</td>
</tr>
<tr>
<td>Yes</td>
<td>1250</td>
<td>53.7</td>
</tr>
</tbody>
</table>

* Using Pearson's test of independence, the reasons differ significantly at the 1% level by angler avidity group and by residence zones, but do not differ significantly for those who did and did not fish during the panel.

Table A2.13 presents the distribution of the main fish species anglers reported they were trying to catch on a trip. Again, this information is reported for anglers who completed the panel, and only for trips which went through the trip and site loops of the panel instrument. Table A2.13 also presents the distribution of respondents' favorite species to catch and to eat. The favorite species distributions are across all respondents who completed the panel. Bass and walleye are the target of the largest shares of trips, and they are also mentioned as the top species to catch. Perch is the species mentioned as the favorite to eat by most panel members (30%), though perch are less often the target of trips (10%).

Respondents who completed the panel were asked about the reason which best describes why they fish (see Table A2.14). Overall, half the respondents chose the reason "to enjoy nature" while 30% chose the reason "to catch fish." These responses did differ by the angler's avidity group and by their zone of residence. More frequent anglers and anglers in the more rural areas were more likely to choose "to catch fish" and less likely to choose "to be with people." The percentage of respondents choosing
Table A2.15: Importance of Reasons for Choosing Where to Fish.

<table>
<thead>
<tr>
<th>S14.x</th>
<th>Reason:</th>
<th>Not at all important</th>
<th>Somewhat important</th>
<th>Very important</th>
<th>Mean †</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>S14.a</td>
<td>Site has plenty of parking spaces</td>
<td>45</td>
<td>34</td>
<td>21</td>
<td>1.8</td>
</tr>
<tr>
<td>S14.b</td>
<td>Site has good boat access</td>
<td>30</td>
<td>31</td>
<td>40</td>
<td>2.1</td>
</tr>
<tr>
<td>S14.c</td>
<td>Site has water that is clean enough to swim in</td>
<td>15</td>
<td>22</td>
<td>63</td>
<td>2.5</td>
</tr>
<tr>
<td>S14.d</td>
<td>Site has a variety of fish species</td>
<td>11</td>
<td>40</td>
<td>49</td>
<td>2.4</td>
</tr>
<tr>
<td>S14.e</td>
<td>Good chance to catch a trophy-sized fish at the site</td>
<td>44</td>
<td>35</td>
<td>21</td>
<td>1.8</td>
</tr>
<tr>
<td>S14.f</td>
<td>Good chance you will catch a lot of fish at the site</td>
<td>14</td>
<td>44</td>
<td>42</td>
<td>2.3</td>
</tr>
<tr>
<td>S14.g</td>
<td>Fish at site do not contain chemical residues</td>
<td>4</td>
<td>8</td>
<td>89</td>
<td>2.9</td>
</tr>
<tr>
<td>S14.h</td>
<td>Site is close to home</td>
<td>32</td>
<td>47</td>
<td>22</td>
<td>1.9</td>
</tr>
<tr>
<td>S14.i</td>
<td>Site has restroom facilities with running water</td>
<td>45</td>
<td>33</td>
<td>22</td>
<td>1.8</td>
</tr>
</tbody>
</table>

† The mean is calculated by assigning the following values: "not at all"= 1, "somewhat"=2, and "very"=3.

"enjoy nature" remained around 50% across the subcategories in Table A2.14. Responses for panel members who fished during the panel did not differ significantly from those who did not fish.

Respondents who completed the panel were also about the importance of various reasons for choosing where to fish (questions S14a to S14i in Section 6.2). The answers are summarized in Table A2.15. Environmental factors were rated very important by most panel members (i.e., S14c and S14g). Fish variety and quantity as well as boat access were very important for reasons choosing where to fish for many anglers (i.e., S14d, S14f and S14b), while parking, restroom facilities and trophy-sized fish were not at all important for many anglers (i.e., S14.a, S14.e and S14.i).
Appendix 2
Section 6: Survey Instruments

6.1 Screening

This section contains an abridged version of the instrument used in the screening interview for the 1994 panel study of Michigan anglers. The version presented here was edited with the objective of covering all the questions in the instrument without getting overwhelmed by computer code. The code that remains is found in the [ ] brackets. Comments that have been added for readers appear in the { } brackets. In addition to editing code, some questions which were alternative versions of the same basic question have been excluded, e.g., when question wording has been tailored to previous answers. When this occurs a note is made in the text.

In the instrument, words which appeared underlined on the interviewer's screens are surrounded by [u] and [n]. Text that appeared highlighted on screen is surrounded by [r] and [n]. IWER is an abbreviation for interviewer and precedes on-screen notes to the interviewers while R is an abbreviation for "respondent." As a general rule, text in parenthesis only got read to respondents on an as needed basis. Finally, all questions contained don't know and refused categories which have been have removed.

The actual sequence of the questions listed below depended on an individual's previous responses. People identified as potential anglers to recruit into the panel survey were asked a different sequence of questions than those identified as "non-anglers." The sequence of the screening questions was:

1. Potential anglers (R's we tried to recruit into panel):

   These R's received the front end questions, and questions U1, Q1 to Q3, followed by Q9 through Q11, then Q4 to Q8, and finally Q12.

2. Non-anglers (R's who were not recruited into panel):

   2.a. R's with odd phone numbers: the front end questions, U1, Q1 to Q8, Q11a, Q11f, and Q12.

   2.b. R's with even phone numbers: the front end questions, U1, Q1 to Q5, and Q12.

   (We only collected the full set of demographic variables for 1/2 of the non-anglers).
Screening questions

Front end: In the front end of the instrument, we determine the status of the number (e.g., residence or business), and we identify who we want to interview. In front end, everyone is asked the number of male & female adults in household. A random adult is chosen for the interview. If household has male and female adults, a male is chosen 66% of time. The male (female) with the most recent birthday is selected for the screening interview.

>Q1< Before we begin, let me assure you that any information you give me will be kept strictly confidential. Let me also tell you that your participation is completely voluntary. If we should come to any question you don't want to answer, just let me know and we'll go on to the next question.

>Q1< As best you can recall, would you say the last time you went fishing was [u]within[n] the last year, [u]more than 1 year ago but less than 5[n] years ago, [u]5 or more[n] years ago or have you never gone?

[r] IWER: LAST SUMMER IS 'WITHIN THE LAST YEAR'[n]
<1> WITHIN THE LAST YEAR
<2> MORE THAN 1 YEAR AGO BUT LESS THAN 5 YEARS AGO[goto Q3]
<3> 5 OR MORE YEARS AGO[goto Q3]
<4> NEVER GONE[goto Q3]

>Q2< Thinking of all the times you fished last year between April and November of 1993, Would you say you went fishing less than 5 times, 5 to 9 times, 10 to 20 times, more than 20 times, or didn't go?

<1> LESS THAN 5 TIMES
<2> 5 TO 9 TIMES
<3> 10 TO 20 TIMES
<4> MORE THAN 20 TIMES
<0> DIDN'T GO

>Q3< Thinking about the chances that you will go fishing in [u]Michigan[n] from April 1 of this year through November of this year, would you say you are [u]very[n] likely to go, [u]somewhat[n] likely to go, somewhat [u]unlikely[n] to go, or [u]very unlikely[n]likely to go?

[r] IWER: IF R SAYS HE/SHE WOULD LOVE TO GO, PLEASE PROBE: [n] [r] HOW LIKELY OR UNLIKELY DO YOU THINK IT IS THAT YOU WILL[n] [r] ACTUALLY GO FISHING? [n] [r] IF R SAYS S/HE JUST WENT, CODE IT A "1" WITHOUT PROBING[n]

<1> VERY LIKELY TO GO
<2> SOMewhat LIKELY TO GO
<3> SOMEWHAT UNLIKELY TO GO
<4> VERY UNLIKELY TO GO

{We determined who to recruit into the panel based on responses to Q1, Q2, and Q3. R's who didn't fish last year and were unlikely to fish this year were not recruited. R's who were recruited were grouped into three groups based on their expected level of activity. Group 1 consists of R's who fished more than 20 times last year and were likely to fish this year. Group 2 R's fished last year (but less than 20 times) and are likely to fish this year. Group 3 R's either "fished last year but are unlikely to go this year" or "they didn't fish last year but are likely to go this year."}

{R's in groups 1, 2, and 3 were asked Q9, Q10, and Q11 before the socio-demographic questions in Q4 through Q8. The full set of socio-demographic questions was only asked of half the R's who were not recruited.}
>Q4< We need to ask a few general questions about all individuals we interview whether or not they expect to go fishing.

How many children are there in your household under the age of 18?

.OrderBy: NONE
.OrderBy: CHILDREN

>Q5< RECORD SEX OF RESPONDENT {Only read if IWER couldn't tell}

.OrderBy: MALE
.OrderBy: FEMALE

>Q6< What was your age on your last birthday?

.OrderBy: 18-100> YEARS OLD

>Q7< What is the highest grade or level of education that you have completed?

.OrderBy: GRADE SCHOOL ONLY
.OrderBy: DID NOT FINISH HIGH SCHOOL
.OrderBy: HIGH SCHOOL DIPLOMA OR GED
.OrderBy: VOCATIONAL OR TECHNICAL SCHOOL
.OrderBy: SOME COLLEGE
.OrderBy: COLLEGE GRADUATE (BA, BS)
.OrderBy: POST GRADUATE WORK
.OrderBy: GRADUATE DEGREE (PHD, MD, MA, MBA)
.OrderBy: OTHER: SPECIFY[Specify]

>Q7a< Do you have a paying job?

.OrderBy: YES[goto Q8]
.OrderBy: NO

>Q7b< Which of the following best describes your current employment situation?

Would you say you are [u]retired[n], homemaker, [u]student[n], seasonally off work, or [u]unemployed[n]?

.OrderBy: RETIRED
.OrderBy: HOMEMAKER
.OrderBy: STUDENT
.OrderBy: SEASONALLY OFF WORK
.OrderBy: UNEMPLOYED
.OrderBy: OTHER[Specify](Specify)

>Q8< To get a picture of people's financial situation, we need to know the general range of incomes of all households we interview. Now, thinking about your household's total annual income from all sources before taxes, did your household receive $35,000 or more in 1993?

.OrderBy: YES[goto Q8c]
.OrderBy: NO[goto Q8h]

(We went through a skip pattern on income until we got a range. The categories went in increments of 5,000 from 10,000 to 60,000, then 75,000, and finally 100,000 or more. The skip pattern was designed to minimize the number of ranges that were asked. If they didn't know their yearly income we asked Q8k.)

>Q8k< PLEASE RECORD ANY OTHER INCOME INFORMATION IF R DOES NOT KNOW HOW TO ANSWER THE ABOVE QUESTIONS:

[{r}IWER: FOR EXAMPLE: HOURLY RATE, WEEKLY PAY, MONTHLY PAY, AFTER-TAX INCOME[n}]
Q9: We are conducting a study of fishing in Michigan. The study will help improve recreational opportunities and will document the importance of fishing related activities to the state's economy.

We would like you to participate in this study. If you participate, we will call you every 4-5 weeks until November. When we call, we'd ask a few questions about any times you may have gone fishing. The interview will take a couple minutes for each time you have fished.

Would you be willing to participate?

1. YES
2. NO

(The above wording for Q9 was used for group 1. The only difference for groups 2 and 3 was the stated frequency of callbacks. For group 2, we said "we will call you every other month until November." For group 3, we said "we will call you in July and again in November.")

Q10: Can we reach you at [fill AREA] [fill PNUM] the next time we call you?

1. YES
2. NO  {if no we asked for the number where we could reach them}

Q11: We have put together a fishing log that will help you keep track of the dates and locations of any fishing you do. We think that the fishing log will make the interviews easier. Would you like us to send you one?

1. YES[goto Q11b]
2. NO[goto Q11c]

Q11a: May I have your full name just in case my supervisor needs to verify the phone call?  [goto Q11c]

Q11b: May I have your full name? [allow 15][equiv Q11a]

(Your name and address will not be linked to your responses and will only be used so that we can send you the fishing log.)

Q11d: What is your street address or P.O. Box?

Q11e: In what city?

Q11f: What is your zip code?

<40000-99997> {All panel R's were asked their zip code whether or not they wanted the fish log.}

Q12: How many different phone numbers does your household have?

1-5> PHONE NUMBERS

END.
6.2 Panel Waves

The following is an abridged version of the instrument used in the waves of the 1994 panel study of
Michigan anglers. The panel instrument loops through a series of questions for each fishing trip a respondent
has taken since their last interview. Within each trip loop, there is a loop of questions about each site that
was visited on that trip. In the language of the CASES programming software these loops are referred to as
rosters. In addition to the questions in the previous waves, the November wave of the instrument contained
several questions that were asked of all households covering topics such as the respondent's chances of
fishing, fishing preferences, usual trip behavior, and employment information. These extra questions are
presented at the end of the edited version of the instrument.

As a result of the rostering and skip patterns, the instrument used in the panel waves is fairly complex.
The code and questions for the actual instrument exceeds 50 pages. The version presented here was edited
with the objective of covering all the questions in the instrument without getting overwhelmed by computer
code. The code that remains is found in the [ ] brackets. Comments that have been added for readers appear
in the { } brackets. In the comments, R is an abbreviation for "respondent."

In addition to editing code, several questions have been omitted from this version. Questions have been
omitted when they are straightforward repetitions of a question that is included in the document (e.g., when
a question repeats to allow multiple responses), only the first one is presented. When this occurs, comments
have been inserted offering explanation. Also, questions have been excluded when they are simply
alternative versions of the same basic question (e.g., when question wording has been tailored to previous
answers). All questions generally included response categories for "don't know" and "refused" which have
been edited to save space.

In the questions below, words which appeared underlined on the interviewer's screens are surrounded
by [u] and [n] (e.g., [u]this phrase is underlined[n])). Text that appeared highlighted on the screen is
surrounded by [r] and [n]. IWER is an abbreviation for interviewer and precedes on-screen notes to the
interviewers. As a general rule, text in parenthesis was only read to respondents on an as needed basis. One
exception to this rule is in the loops/roster for trip and sites. The first time through the loop the questions
in parenthesis were read verbatim. On subsequent loops, if the R anticipated the question and offered clear
information, the question need not have been read.
Panel Questions

>Ac1< First, I'd like to ask you a few questions about the locations of the three places that you usually go fishing.

What is the name of the lake or stretch of river you usually fish at most often?

[r] IWER: ENTER ONLY THE NAME OF THE WATERBODY HERE[n]

[r] PLEASE DO NOT ENTER '///' AT THE END [n]

>Ac2< (Is this a Great Lake, inland lake, or inland river?)

<l> GREAT LAKE, BAY OF A GREAT LAKE, OR LAKE ST. CLAIR
<l> INLAND LAKE
<l> RIVER/STREAM
<l> OTHER (SPECIFY)

>Ac3< What is the nearest town or city[n] to the place that you fish on [fill Ac1]?

[r] IWER: PLEASE DO NOT ENTER '///' AT THE END[n]

>Ac5< In what county is that?

[r] IWER: IF R DOESN'T KNOW, TYPE 'DK' [n]

[r] PLEASE DO NOT ENTER '///' AT THE END[n]

>Acl< What is the name of the lake or stretch of river you fish at second most often?

<l> MENTION
<l> NO MORE MENTION

(Continue asking site information through the third usual site. Usual site questions, Acl-3, are only asked of groups 1 and 2, and only in their first interview. The sites are used as coding categories for the fishing locations in the site roster portion of the instrument.)

>A1< Now let's talk about fishing since April 1st of this year.

For this study, "going fishing" means any time you personally went out to catch fish.

Have you gone fishing in Michigan since April 1st?

<l> YES
<l> NO {goto the end}

>A1a< Did you get the fish log we sent? (Only asked if they requested a log in the screening.)

<l> YES
<l> NO {If no, we verify their address}

>Alb< Would you like to use it during the interview?

[r] IWER: R MAY NEED A COUPLE OF MOMENTS TO GET THE LOG[n]

<l> YES {The routing and wording of questions is more direct if the R uses the log, e.g., we simply ask the date and bypass the calendar screens below.}
<l> NO

>A2< Now I'm going to ask you about the number of times you've gone fishing. Please, count every time you went fishing no matter how short or how long.
(If you went fishing close to home for an hour, count that as one time. Or, if you left home for several weeks and did some fishing, please count from the day you left to the day you returned as one time.)

How many times have you gone fishing in Michigan since April 1 of this year?

<1-97> TIMES SINCE APRIL 1

(After the R's first wave, in A1 & A2 we fill the date of the last interview instead of "since April 1." We also fill the date and location of the last fishing trip, if any.)

{Begin trip roster; Loop through for each time mentioned in A2}

>Blb< Thinking about the [ul][fill ifh+] most recent[n] time you went fishing, on what day of the week did you leave?

<1> SUNDAY {ifh+ fills 1st, 2nd, etc.}
<2> MONDAY
<3> TUESDAY
<4> WEDNESDAY
<5> THURSDAY
<6> FRIDAY
<7> SATURDAY

>Blw< (In what month did you leave?)

[r] IWER: PLEASE ENTER '0' HERE ONLY IF R DOES NOT WANT TO ANSWER[n]
[r] ABOUT ANY MORE TRIPS [n]

<4> APRIL {Months were added to the list as they became feasible in later waves}
<5> MAY

<0> R DOES NOT WANT TO ANSWER ABOUT ANY MORE TRIPS out of the roster.

>Blw< What was the month of the [fill ifh+] most recent time you went fishing? {Version for R's using fish log}

[r] IWER: WE ARE WORKING BACKWARDS THROUGH THE FISH [n]
[r] LOG FROM THE MOST RECENT TO THE FIRST TRIP[n]
[r] IWER: IF R DOES NOT WANT TO ANSWER ABOUT ANY MORE [n]
[r] TRIPS, OFFER TO HAVE R SEND IN LOG, WE'LL SEND [n]
[r] RETURN ENVELOPE, SKIP TO CALLBACK, FILL OUT [n]
[r] IMMEDIATE ACTION FORM [n]

<4> APRIL {Months were added to the list as they became feasible in later waves}
<5> MAY

>Blc< (What was the date when you left to go fishing?)

(Was it [fill day+] [fill ifmk+]... {fills the day and month}

[r] IWER: PLEASE LOOK AT CALENDAR AND PROBE FOR DATE OF DEPARTURE[n]

<table>
<thead>
<tr>
<th>APR 1994</th>
<th>MAY 1994</th>
<th>JUN 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Su  M  Tu  W  Th  F  Sa</td>
<td>Su  M  Tu  W  Th  F  Sa</td>
<td>Su  M  Tu  W  Th  F  Sa</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10</td>
<td>1 2 3 4 5 6 7 8 9 10 11</td>
<td>1 2 3 4 5 6 7 8 9 10 11</td>
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<td>17 18 19 20 21 22 23</td>
<td>24 25 26 27 28 29 30</td>
</tr>
<tr>
<td>22 23 24 25 26 27 28</td>
<td>29 30 31</td>
<td>29 30 31</td>
</tr>
</tbody>
</table>

<1-31> DATE

>Blc< (Were you gone overnight)

<1> YES
<5> NO [goto B12]
>Bld2< (How many nights were you away?)
   <0> OTHER (SPECIFY # WEEKS, MONTHS, ETC.)
   <1-7> NIGHTS

>B12< On this trip, how many lakes or stretches of river did you fish at?
   <1-6> DIFFERENT PLACES

{Begin site roster; Loop through for each site on this trip, B12}
>Cla< (Now we have some questions about places you went fishing on this trip.)
   What is the name of the [fill ifi++] lake or stretch of river you visited
   on this trip? {fills 1st, 2nd, etc.}
   [r] IWER: PLEASE FIELD CODE IF POSSIBLE[n]

<table>
<thead>
<tr>
<th>SITE</th>
<th>CITY</th>
<th>COUNTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1&gt;</td>
<td>[fill Ac1++], near [fill Ac3++], [fill Ac5++]</td>
<td></td>
</tr>
<tr>
<td>&lt;2&gt;</td>
<td>[fill Ac2a++], near [fill Ac3a++], [fill Ac5a++]</td>
<td></td>
</tr>
<tr>
<td>&lt;3&gt;</td>
<td>[fill Ac1b++], near [fill Ac3b++], [fill Ac5b++]</td>
<td></td>
</tr>
</tbody>
</table>

<97> OTHER SITE {If not one of the three usual site, we elicit the name, type, & location
   as in Ac1 - Ac5 for the usual sites.}

>Cc7< On this trip, how many days did you spend fishing at [u][fill C1][n]
   near [fill C2d]? {fills site name and city}
   NIGHTS AWAY: [fill dat1+].
   [r] IWER: "BLANK" NIGHTS MEANS R WAS AWAY[n]
   [r] FOR MORE THAN ONE WEEK [n]
   <0> OTHER (SPECIFY # WEEKS, MONTHS, ETC.)
   <1-7> DAYS

>Cc7a< On this trip, how many [u]total hours[n] did you fish at
   [fill C1] near [fill C2d]?
   <1-95> HOURS

>C11< (Now we are interested in all the different species of fish
   that you [u]personally[n] were trying to catch at [fill C1],
   whether or not you actually caught any.)

   What species of fish did you try to catch at (the)[fill C1]?
   FIRST MENTION:
   <1> BASS           <7> PANFISH
   <2> BLUEGILL       <8> PERCH
   <3> CHINOOK SALMON  <9> STEELHEAD, RAINBOW TROUT
   <4> COHO SALMON     <10> TROUT
   <5> LAKE TROUT      <11> WALLEYE
   <6> NORTHERN PIKE   <12> WHATEVER'S BITING
   <0> OTHER(SPECIFY)

>D1< Which of these were you primarily trying to catch?
   <97> NO PRIMARY SPECIES {Included same species listed in C11}

>D3< Were you fishing from a boat?
   <1> YES
   <5> NO
>C22< That's all the questions we have about your fishing at
[m] on this trip.
TYPE <g> TO CONTINUE
{End site roster}

>B10a< Which of the sites was the main fishing site for this trip if there were multiple sites?
[r]IWER: PLEASE USE F12 TO DISPLAY ALL THE SITES FOR [n]
[r] THIS TRIP AND ENTER THE LEFT MOST SITE NUMBER [n]
[r] AS R MENTIONS HERE [n]

<1.36> SITE

>B1ha< Was fishing the primary purpose of this trip?
<] YES {goto F1 if overnight trip, otherwise goto B5--based on B1d1.}
<5> NO

>B1gl< What was your [u]main[n] destination?
[r]IWER: GET THE NAME OF A PLACE: NEAREST CITY, A LAKE, [n]
[r] OR RIVER. [n]

>B1j< Would you have made this trip to [fill B1gl] even if you could not have gone fishing on this trip?
<] YES
<5> NO
{goto B5 if single day trip}

>F1< What types of lodging did you use for this trip to [fill CI]?

(DATE TRIP BEGAN: [fill Bla]/[fill Blc])

<1> HOTEL, MOTEL
<2> LODGE OR RENTAL UNIT
<3> CAMPGROUND, CAMPER, TENT
<4> CABIN, CONDOMINIUM, OR SECOND HOME
<5> A FRIEND OR RELATIVE'S CABIN, CONDOMINIUM, OR SECOND HOME
<6> OTHER (SPECIFY)

>F1b< For how many nights?

TOTAL NIGHTS AWAY: [fill dat1].
[r]IWER: "BLANK" NIGHTS MEANS R WAS AWAY FOR [n]
[r] MORE THAN A WEEK [n]
<0> OTHER (SPECIFY # WEEKS, MONTHS, ETC.)
<1-7> NIGHTS {if 1 night, goto BF4}

>F1a< What other types of lodging did you use for this trip?

<0> NO MORE MENTIONED
{Included same list of lodging as in F1}

>BF4< In total for this trip, how much did your household spend for lodging?
[r]IWER: ONLY ENTER DOLLARS HERE [n]

$ <0.9997> DOLLARS
BF4b< IWER, YOU HAVE INDICATED THE AMOUNT IS:  $ [fill BF4:,]
IS THIS CORRECT?
<1> CORRECT
<5> WRONG [r]THIS RETURNS TO BF4 FOR CORRECTION[n]
{Questions verifying the dollar amounts are for the interviewers; they do not get read to R.}

B5< What type of transportation did you use on this trip?

<1> CAR
<2> TRUCK/VAN/CAMPER
<3> WALK [goto cc14]
<6> OTHER VEHICLE(SPECIFY)
<7> OTHER NON-MOTORIZED VEHICLE (SPECIFY) [goto cc14]

B7< Thinking only about your share of the expense, how much did your household spend on gas and oil for this vehicle on this trip?
[r]IWER: ONLY ENTER DOLLARS[n]

$ <0-997> DOLLARS

B7a< [r]IWER, YOU HAVE INDICATED THE AMOUNT IS:[n]  $[fill B7:,]
[r]IS THIS CORRECT?[n]
<1> CORRECT
<5> WRONG [r]THIS RETURNS TO B7 FOR CORRECTION[n]

B9< How many households, including your own, shared the expenses for this vehicle on this trip?

<1-6> HOUSEHOLDS

B10< Did you tow a boat on this trip?  {Only asked if they fished from a boat on this trip.}

<1> YES
<5> NO

cc14< That's all the questions we have about your trip to [fill C1].
TYPE <g> TO CONTINUE  {End trip roster}

LH1< Now we have just a couple of general questions about all of your fishing and then we're done.

Did you take any time off work for any of these fishing trips?  {Only if R is employed.}

<1> YES
<5> NO [goto LH3]

LH2< How many total hours did you take off (for all these trips)?

<0> OTHER (SPECIFY # DAYS, WEEKS, MONTHS)
<1-40> HOURS

LH3< For all the times you fished, did you leave from your permanent residence and return to your permanent residence?

<1> YES [goto Q11]
<5> NO

LH4< Which trips did you not leave from and return to your permanent residence?

<1> MENTION  [specify]
<0> NO MENTION

LH4a< Where did you leave from?
[specify]
>LH4b< Where did you return to?
   [specify]

>lh5< Any others?
   <1> YES, MENTION [specify]  {Repeat LH3 - LH5 as needed}
   <0> NO

>Q11< We have put together a fishing log that will help you keep track of the
dates and locations of any fishing you do. We think that the fishing
log will make the interviews easier. Would you like us to send you one?
   <1> YES  {If yes, get address as in screening. Only asked if R did not want a log before.}
   <5> NO  {The questions get asked up to two times; once in screening and once in panel.}

END  {This was the end of the wave interview except for special questions mentioned below; also,
in wave 6 some additional questions, presented below, were asked of all respondents.}

Special Questions:

For R's who are not using the fish log, questions about repeat visits to the same site are limited. If an R takes two single
day trips to the same usual site in any wave, for each additional single day trip to that site, we ask if it was a typical trip
to that site. If yes, we skip to the next trip; if no, we ask all the questions about this trip.

>TYPT< Was this a typical trip to [fill C1]?
   (Did you do what you usually do?)
   
   <1> YES
   <5> NO

For people who are not using the trip log, we will ask the following series of questions if they do not want to tell us
about any more trips, i.e., option <0> is chosen at question B1a.

>B14< Were any of your other trips overnight trips?

   [r]IWER: PLEASE PROBE FOR INFORMATION ON OVERNIGHT TRIPS[n]
   
   <1> YES
   <5> NO  [goto BBB]

>B14a< How many overnight trips did you take?
   
   <1-20> OVERNIGHT TRIPS

>B14b< Information about overnight trips is particularly valuable for
this study. Could we at least ask you these questions about your
most recent remaining overnight trip?
   
   <1> YES {goes through one more loop in the trip roster.}
   <5> NO  [goto BBB]

>BBB< Now I'd just like to verify some information. You mentioned
that you went fishing [fill A2+] times since April 1st. So far,
you've told me about [fill 3add+] trips. Does [fill A2+] still
sound about right?
   
   <1> YES {goto questions following the trip loop, LH1.}
   <5> NO

>BB1< How many trips do you think you took now?
   
   <1-97> TRIPS  {goto questions following the trip loop, LH1.}

END  {except for wave 6 -- see the following questions}
Wave 6

(The remaining questions were only asked in wave 6 (November), and they were asked of everyone in groups 1-3. The questions came after the trip questions or after AI if they didn’t fish.)

>S1< Thinking about the chances that you will go fishing in [u]Michigan[n] from now until the end of this winter, would you say you are [u]very[n] likely to go, [u]somewhat[n] likely to go, somewhat [u]unlikely[n] to go, or [u]very[n] unlikely to go?

[r]WER: IF R SAYS HE/SHE WOULD LOVE TO GO, PLEASE PROBE:[n]
[r]HOW LIKELY OR UNLIKELY DO YOU THINK IT IS THAT YOU WILL[n]
[r]ACTUALLY GO FISHING?[n]

<1> VERY LIKELY TO GO
<2> SOMewhat LIKELY TO GO
<3> SOMEWHAT UNLIKELY TO GO
<4> VERY UNLIKELY TO GO

>S2< Did you purchase a Michigan fishing license this year?

<1> YES
<5> NO [goto S5]
<6> LIFETIME LICENSE HOLDER [goto S5]

>S3< Was that a daily license, an annual license, a senior license, or a sportsman's license?

<1> DAILY LICENSE [goto S5]
<2> ANNUAL LICENSE
<3> SENIOR LICENSE [goto S5]
<4> A SPORTSMAN'S LICENSE [goto S5]
<5> LIFETIME LICENSE HOLDER [goto S5]

>S4< Did you purchase a trout and salmon stamp?

<1> YES
<5> NO

>S5< Do you own a cabin or vacation home [u]in Michigan[n]?

<1> YES
<5> NO [goto S7]
<6> OTHER [goto S7]

>S6< What is the nearest town or city to your cabin or vacation home?

[r]WER: VERIFY THIS CITY IS IN MICHIGAN, IF NOT THEN <7>[n]
<1> MENTION
<5> NO MENTION
<7> NOT IN MICHIGAN

>S7< Do you own any boats that you use for fishing?

<1> YES
<5> NO [goto S11]
<6> OTHER [goto S11]

>S7a< Since April, have you kept any of your boats somewhere other than your permanent residence?

<1> YES
<5> NO [goto S11]
<6> OTHER [goto S11]
What is the nearest town or city to the place where you kept your boat(s)?

[r]IWER: VERIFY THIS CITY IS IN MICHIGAN, IF NOT THEN <7>[n]

<1> MENTION
<5> NO MENTION
<7> NOT IN MICHIGAN[go to S11]

During what months did you keep your boat(s) at this location?

[r]IWER: ENTER START MONTH HERE[n]

<0> ALL YEAR ROUND[go to S11]
<1> JANUARY
<2> FEBRUARY
<3> MARCH
<4> APRIL
<5> MAY
<6> JUNE
<7> JULY
<8> AUGUST
<9> SEPTEMBER
<10> OCTOBER
<11> NOVEMBER
<12> DECEMBER

(During what months did you keep your boat(s) at this location?)

[r]IWER: ENTER END MONTH HERE[n]

[Same categories as in S9.]

The next two questions are about your favorite type of freshwater fish. The first question refers to fish you like to try to catch, and the second question refers to fish you like to eat.

[r]IWER: IF R'S HAVE NOT RECENTLY GONE FISHING PROBE THEM TO ANSWER THE[n]
[r]FOLLOWING QUESTIONS ACCORDING WHAT THEY ARE MOST LIKELY TO [n]
[r]DO OR FEEL IF THEY DID GO FISHING[n]

What is your favorite species of fish to try to catch?

[Same fish categories as in C11.]

What is your favorite species of fish to eat?

[Same fish categories as in C11.]

Which of the following reasons best describes why you go fishing: To be with people, to enjoy nature, or to catch fish.

[r]IWER: IF R MENTIONS MORE THAN ONE, GET CATEGORY WHICH BEST DESCRIBES WHY THEY GO "MOST" OF THE TIME[n]

<1> TO BE WITH PEOPLE
<2> TO ENJOY NATURE
<3> TO CATCH FISH

We want to know what features of a fishing site are important to you when deciding where to fish. How would you rate the importance of the following reasons for choosing where to fish using the categories [u]not[n] at all important, [u]somewhat[n] important, or [u]very[n] important

The site has plenty of parking spaces

<1> NOT AT ALL IMPORTANT
<2> SOMewhat IMPORTANT
<3> VERY IMPORTANT
The site has good boat access. Is this very important, somewhat important, or not important at all?

(Not at all important, somewhat important, very important)

The site has water that is clean enough to swim in.

(Not at all important, somewhat important, very important)

The site has a variety of fish species.

There is a good chance to catch trophy-sized fish at the site.

There is a good chance you will catch a lot of fish at the site.

The fish at the site do not contain chemical residues.

The site is close to home.

The site has restroom facilities with running water.

The next few questions refer to what you usually do when you go fishing.

(What you do most of the time.)

When you go to the places you fish at, what type of transportation do you usually use?

(Car, truck/van/camper, walk, other vehicle, other non-motorized vehicle)

Do you usually tow a boat?

(Yes, no)

Do you usually share the vehicle expenses with other households?

(Yes, no)

Now we want to ask about fishing trips that lasted more than a day and the primary purpose of the trip was fishing.

Thinking of the last time you were on a fishing trip that lasted more than a day and the primary purpose of the trip was fishing, would you say it was within the last two years, 2 to 5 years ago, more than 5 years ago, or never?

(Within the last two years, 2 to 5 years ago, more than 5 years ago, never)
>S19< When you go on a fishing trip that lasts more than a day, what type of lodging do you usually use?

<1> HOTEL, MOTEL
<2> LODGE OR RENTAL UNIT
<3> CAMPGROUND/CAMPER/TENT
<4> CABIN, CONDOMINIUM, OR SECOND HOME
<5> A FRIEND OR RELATIVE'S CABIN, CONDOMINIUM, OR HOME
<6> OTHER

>Q< Now we have a few questions about your current employment situation and then we are done.

Your answers will help us learn how work time requirements affect the demand for fishing. Remember that everything you tell us is kept strictly confidential.

Do you have a paying job?

<1> YES [goto J3]
<5> NO

>Q< Have you had any paying job since April?

<1> YES[goto J4a]
<5> NO

>Q< Which of the following best describes your current employment situation?

Are [u]retired[n], homemaker, [u]student[n], seasonally off work, or [u]unemployed[n]?

<1> RETIRED [goto endK]
<2> HOMEMAKER[goto endK]
<3> STUDENT [goto endK]
<4> SEASONALLY OFF WORK [goto J4a]
<5> UNEMPLOYED [goto endK]
<6> OTHER [goto endK]

>Q< Do you have a second paying job?

<1> YES
<5> NO [goto J4a]

>Q< The following questions refer to your first job.

What is your occupation for your first job? [specify][goto J5]

>Q< How many months of the year do you work at this job?

<1.1> MONTHS PER YEAR
<12> MONTHS (ALL YEAR) [goto J7a]

>Q< What months are you off?

{Allow up to 11 mentions}

>Q< For the rest of the questions about this job, please tell us your answers only for the weeks when you [u]are[n] working at this job.

In most weeks, how many hours do you work per week?

<1-80> HOURS PER WEEK [goto J8]
>J7a< In most weeks, how many hours do you work per week?

<1.80> HOURS PER WEEK [goto J8]

>J8< Of the 52 weeks in a year, about how many weeks do you work more than [u][fill J7][n] hours per week?

<0> NEVER [goto J10]
<1.52> WEEKS

>J9< When you work more than [u][fill J7][n] hours, about how many hours do you work per week?

(YOU MENTIONED YOU WORK [u][fill J7][n] HOURS IN MOST WEEKS)

<1.80> HOURS PER WEEK

>J10< Not counting paid vacations, about how many weeks do you work less than [u][fill J7][n] hours per week?

<0> NEVER [goto J12]
<1.52> WEEKS

>J11< Not counting paid vacations, when you work less than [u][fill J7][n] hours, about how many hours do you work per week?

(YOU MENTIONED YOU WORK [u][fill J7][n] HOURS IN MOST WEEKS)

<0.80> HOURS PER WEEK

>J12< In a typical week, are you free to choose the hours you work?

<1> YES
<5> NO [goto ifj2]

>J13< If you did change the total hours you work per week, would it affect your pay?

<1> YES
<5> NO [goto ifj2]

>J14< How much would you be paid per hour for extra hours of work?

[r]IWER: ONLY ENTER DOLLARS HERE, ENTER CENTS AT J14a[n]

<0> ZERO, WOULD NOT GET PAID IF WORKED AN EXTRA HOUR[goto ifj2]
<1.997> DOLLARS

>J14a< ENTER CENTS HERE:

<0.99>

>J14b< IWER, YOU HAVE INDICATED THE AMOUNT IS: ${fill dollars}.${fill cents} IS THIS CORRECT?

<1> CORRECT[goto J16]
<5> WRONG[goto J14] [r]IWER: THIS RETURNS TO J14 FOR CORRECTION[n]

>ifj2< [If J3=1 & (J12=no or J13=no, or J14=0), then we asked J15. If R has 2 jobs (J3=1), we skip J16.]
Earlier you mentioned that you usually work about [u][fill J7][n] hours per week. Suppose you [u]could[n] choose how many hours per week you work, and any changes in your hours would affect your pay without affecting any benefits you currently receive.

For example, if you work 10% more hours per week, your earnings would go up 10%, and if you work 10% fewer hours per week your earnings would go down 10%, but either way your benefits would remain the same.

If you were free to choose, would you usually work more hours per week, the same hours per week, or fewer hours per week.

1. MORE HOURS PER WEEK
2. SAME HOURS PER WEEK
3. LESS HOURS PER WEEK

If they have 2 jobs (J3=1), we skipped J15. In the questions about their second job, we will only ask them a version of it if both of their jobs meet our criteria for “fixed hours,” i.e., J12=no or J13=no, or J14=0. If they do get asked about working more or less hours, the last part of the question is phrased “Keeping your hours at your first job fixed at their usual level, if you were free to choose your hours at your second job, would you usually work more hours per week, the same hours per week, or fewer hours per week.”

Are you paid hourly or are you on a salary?

1. HOURLY
2. SALARY [goto J19]
3. OTHER [goto J19x]

What is your hourly wage?

[r]IWER: ENTER DOLLAR HERE ONLY, ENTER CENTS AT J17a[n]

<1.997> DOLLARS

J17a< ENTER CENTS HERE:

<0.99>

J17b< IWER, YOU HAVE INDICATED THE AMOUNT IS: $ [fill dollars].[fill cents]
IS THIS CORRECT?
1. CORRECT [goto endj]
5. WRONG [goto J17]
[r]IWER: THIS RETURNS TO J17 FOR CORRECTION[n]

If they would not or couldn’t give their wage, we ask for ranges of their wage. The dollar ranges are (less than 6, 6-8, 8-10, 12-14, 14-16, 16-20, 20-25, 25-30, more than 30). The question started with $10 per hour and moved through the ranges in a manner similar to the routing of the income question from the screening.

What is your annual salary before taxes?

[r]IWER: ENTER DOLLAR HERE ONLY[n]

<0.999997> DOLLARS [goto J19a]

J19a< IWER, YOU HAVE INDICATED THE AMOUNT IS: $ [fill J19]
IS THIS CORRECT?
1. CORRECT [goto endj]
5. WRONG [goto J19]
[r]IWER: THIS RETURNS TO J19 FOR CORRECTION[n]

If they said “other” in J16, we ask a version of J19 that is worded: “What are your annual earnings before taxes for this job?” If they would not or could not give us their salary (earnings), we ask for ranges of their salary. The ranges and the skip pattern were the same as the ones used for income in the screening.

Repeat the job questions for the second job if they have one.
(Some R's (about 230), were asked for some additional information about one of the fishing sites they had visited in an earlier wave. We were unable to code the name and/or location of some of the sites mentioned in waves 1-5. For sites where we needed clarification on the data provided by the R in an earlier wave, we asked a question at hl. The questions were given to IWER's on separate sheets along with the information that the R had given us about the site.)

>hl< (We have been unable to locate a site you mentioned you fished at earlier this year. We would like to verify our information.)

[r]IWER: ASK THE RESPONDENT THE ADDITIONAL QUESTION FOUND ON[n]
[r]THE CALL SHEET AND RECORD THE ANSWER HERE:[n]

<1> MENTION
<5> NO MENTION

END
6.3 Fish Logs

During the screening interview for the full panel, we asked some respondents if they would like to receive a fishing log. The logs provided a place to record most of the information we will ask about a trip. The logs served as a memory aid which would help respondents keep track of any fishing trips. The logs were designed to complement the telephone interview. At the beginning of each interview, a respondent was asked if they would like to use the log during the interview. The elicitation of trip dates was more direct for respondents who used the log during an interview. Only anglers in groups 1 & 2 who agreed to be in the panel study were asked if they wanted a log. Anglers in group three were not asked if they wanted a log because most of the respondents in this group would not fish, and of those that would fish most only take a couple of trips.

The fish log allowed ample space to record the basic information associated with each fishing trip. A copy of the log is presented at the end of this section. The log had eight columns for the following information on each trip: the date, number of nights away if any, name of the site fished at, the nearest town/city to the site, days fished at site, the total hours fished at the site, the fish they tried to catch at the site, and whether a boat was used. The columns appeared in the order that the questions would be asked during the interview. The instructions asked respondents to fill out one line of the log for each time they go fishing in Michigan. If a trip included more than one site, the respondents were instructed to use a separate line to enter the name of each site. The log also contained a calendar in case the respondent wanted to check dates.

A respondent from groups 1 and 2 could get asked if they wanted a fish log up to two times. As mentioned above the first time was in the screening, and 88% wanted us to sent them one. Respondents who indicated in the screening that they did not want a log were asked again at the end of waves 1 and 2, but only if they had fished in those waves. The idea was that once a respondent went though the set of questions that were asked about each trip, the respondent might want the log. It turned out that most did; 89% of the cases that were asked a second time requested a log.

We tracked which respondents had asked for fish logs and which respondents had received them. At the beginning of the interview following a request for a fish log, the respondent was asked if they had received the log. If they hadn't, we verified their address and sent them another. If they had, they were offered the opportunity to use the fish log during the interview.

If, during an interview, a panel respondent indicated that they wanted to just mail back the log, their case was put on hold. We sent these respondents a postage paid return envelope along with a new fish log.
If the log was returned within two weeks, the log information was entered into the CATI instrument. The respondent was then called back to fill in any information not covered by the log. If the log was not returned, the respondent was called back and asked to complete the interview. Interviewers did not offer respondents the option of returning the fish logs unless the respondent brought up the idea or the respondent was refusing to answer all the trip loop questions.

All of the printing of mailing labels and mailing of the fish logs was handled by University Printing at Michigan State University. SRD staff maintained the address information for respondents requesting a new or additional log. SRD staff forwarded the address information to University Printing several times during the screening and each panel wave. SRD internally handled the mailing of return envelopes for those who wished to send in their fish logs.

The following pages present copies of the fish logs. First, we present the cover of the log which is depicted at full scale and contains the fish diagram over the State outline. All other sides of the cover were blank, and the cover was printed in yellow. Next, the first page of the log is also pictured at full scale. All facing pages of the log have been reduced to fit on a single page of this appendix. The final page contained a calendar and is presented in full scale.
Fish Log: Cover at full scale (printed in yellow; no text on back or inside pages of cover).
Fish Log: First page at full scale
Fish log: Pages 2 and 3 at 60% reduction
Fish log: Pages 3 and 4 at 60% reduction
Fish log: Pages 5 and 6 at 60% reduction