

Improving the Survey Quality with a CATI System: A Quality Control Approach

Angus, Weng Hin Cheong
University of Macau

The Symposium on Information Statistics of
the Internet in Asian-Pacific Region
September 26-27, 2003, Beijing
• China Internet Network Information Center (CNNIC)

Outline

- Introduction of the Internet survey in Macao.
- Issues on improving the survey quality.

The Nature of the WIP-Macao survey

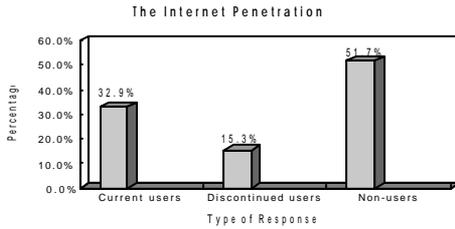
- WIP-Macao is one of the partners of the World Internet Project (WIP);
- Survey Method: Telephone Interview with a CATI system;
- Sampling: Phone numbers were randomly selected from the combination of Macau residents phone database and the "plus 2" method (e.g., 820222+2=820224);
- Complete sample: 1,002 aged between 18 and 74, Chinese speaking residents;
- Survey period: January 17 to 21, 2002;

The Nature of the Survey

- AAPOR response rate 3 (RR3): 40.2%;
- Cooperation rate 4 (COOP4): 63.5%;
- Sampling error: 3.16% at 95% confidence level;
- Questionnaire: WIP common questions + specific questions;
- Ave. complete time per Q: 22min.

Descriptive Findings

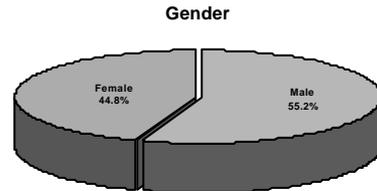
• Internet Users



•(WIP's definition: Are you currently using the Internet?)

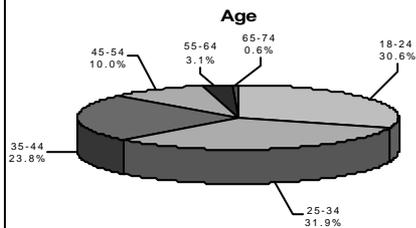
Descriptive Findings

• Internet Users' Gender



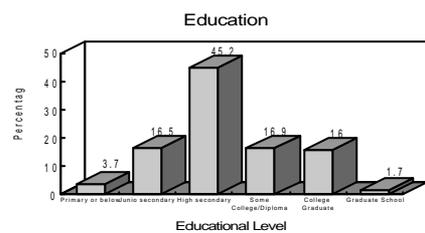
Descriptive Findings

• Internet Users' Age



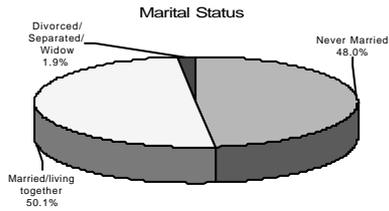
Descriptive Findings

• Internet Users' Education



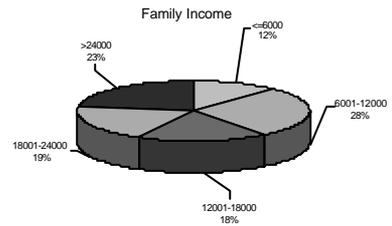
Descriptive Findings

Internet Users' Marital Status



Descriptive Findings

Internet Users' Family Income



Current Methods of Data Collection

Method of Contact	Paper-and-Pencil	Computer-Assisted
Telephone	Conventional telephone	Computer-assisted telephone interviewing (CATI) Touchtone data entry (TDE) Voice recognition entry (VRE)
Mail	Self-administered questionnaire (SAQ)	Disk by mail (DBM)
E-mail/Internet	-	Prepared data entry (PDE)/Web surveys
In person	Paper-and-pencil interviewing (PAPI) (Face-to-face) Self-administered questionnaire (SAQ) Audio self-administered questionnaire (ASAQ)	Computer-assisted personal interviewing (CAPI) Computer-assisted self-administered interviewing (CASI) Audio computer-assisted self-administered interviewing (ACASI)

The effect of Computer Assistance

(Tourangeau, Rips, & Rasinski, 2000)

- Research found that missing data has been removed comparing to non-CA methods.
- Studies suggested that CA reduces variability in interviewers' behavior, thus reducing their effects on the answers.

What is a CATI system?

- Computer-Assisted Telephone Interviewing system.
- In 1971, Chilton Research Services conducted the first CATI survey for AT & T.
- The questionnaire takes the form of a computer program that displays the items to the interviewer on the computer screen;
- The interviewer then reads the questions to the respondent and enters the answers by pressing the appropriate keys.
- CATI has become the standard method for collecting data in telephone surveys in the US and many other countries.

The Advantages of the CATI system

1. CATI gives us control of our research
 - Questionnaires and sample are administered exactly as we intend, callbacks are made as scheduled, and quota cells are closed automatically.
 - And, we can check sample status and quotas quickly.

The Advantages of the CATI system

2. CATI gives us control of our costs
 - We can detect interviewer problems and track productivity through reports and remote monitoring;
 - We can readily and consistently track our interviewing costs.

The Advantages of the CATI system

3. Higher Quality Data
 - Little missing data or no out-of-range responses, and responses can be automatically cross-checked for consistency.

The Advantages of the CATI system

4. Faster Results
 - Immediate data input and results output.
5. Increased Productivity
 - Fewer supervisor and interviewer hours are needed.

The Advantages of the CATI system

6. Sophisticated Survey Design Possible
 - Execute more elaborated questionnaire designs and sampling procedures than can be done on paper.

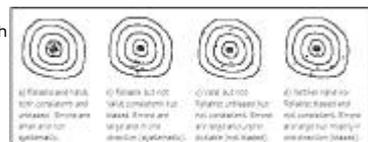
Challenges for the survey quality

- Challenges:
 - Validity and reliability
 - Is our measure valid?
 - What is it supposed to measure?
 - Is our measure reliable?
 - How consistent is the measure?
- A matter of conceptualization and operation.

Challenges for the survey quality



How to make his shooting is very much dependent on the hunter himself.



The issues beyond: quality control

- Technical control: Using the CATI to handle various types of questions to reduce human errors and response effects.
- Human control: Training the interviewers and monitor the interviewing process in order to reduce human bias.

Quality control: Using the CATI system

- Time questions
- Multiple items questions
- Attitudes questions
- Open-ended questions

Calculation of the “ time” questions

- We can set the logical formulae for the questions asking how much of time the respondents spend on the various media activities in order to avoid misreported or mistyped results.

Auto randomization of the multiple items of a question.

- The many items of a question can be automatically randomized to ask in order to avoid response order effects.

Auto-randomization of the attitude questions

- A set of attitude questions can be automatically randomized to ask in order to avoid context and/or priming effects.

Direct input of texts for open-ended questions

- We can directly and simultaneously input the text as the respondents provide the answers for easy and rapid coding later on.

Quality Control: the interviews

- Training
- Checking
- Monitoring
- Evaluating: interviewers and respondents

Training the interviewers

- Issues of interviewing skills and morality
 - Operation of the CATI system
 - Understanding the questionnaire
 - Dealing with tough interviews
 - Practicing with the CATI system with the practice mode.

Double checking the completed cases

- More than 50% of the completed cases were double checked by asking a few questions.

Monitoring the interviews

- Signing the agreement prior to actual interviews.
- Checking the performance report from the CATI system.
- Grading the interviewers' performance.

Evaluating the interviews

- Evaluating the interviewers' interviewing performance during double-check process from the respondents' assessment.
 - From 1 to 5 points, how do rate your satisfaction of the interviewing attitude of our interviewer? 1 meaning very satisfied, 5 meaning very unsatisfied.
 - Mean=1.8, suggesting a satisfaction of the interviewers' attitude.

Evaluating the interviews

- Assessing the respondents' answering status during interviews by the interviewers.
 - Is the respondent well aware of what you are asking?
 - Is the respondent cooperative?

Q119 Q119 訪問經驗

	Frequency		Cumulative	
	Percent	Valid Percent	Percent	Percent
Valid 1 體驗非常清楚	467	46.6	46.6	46.6
2 體驗一般清楚	438	43.7	43.7	90.3
3 體驗不大清楚	95	9.5	9.5	99.8
4 無法判斷	2	.2	.2	100.0
Total	1002	100.0	100.0	

Q120 Q120 受訪者的合作程度

	Frequency		Cumulative	
	Percent	Valid Percent	Percent	Percent
Valid 1 合作	780	77.8	77.8	77.8
2 一般	200	20.0	20.0	97.8
3 不合作	22	2.2	2.2	100.0
Total	1002	100.0	100.0	

Presentation of the CATI system

- Interviewer screen
- Supervisor screen
- Data output screen

Thank you.

Appendix I

Response order effects (Krosnick & Ahn, 1987)

- Recency effect:
 - The tendency to choose options at the end of the list.
 - questions are presented verbally.
- Primacy effect:
 - The tendency to prefer options at the beginning of the list over those at the end.
 - Options are presented visually.

Appendix II

Context effects

- The same question often produces different answers depending on the context ((Tourangeau, Rips, & Rasinski, 2000).
- Context is varied by changing the order of two or more questions.
- Opinions about abortion:
 - There is a strong chance of a serious defect in the baby.
 - Woman is married and does not want any more children.

Priming effects

(Tourangeau, Rips, & Rasinski, 2000; Tourangeau, Rasinski, & D'Andrade, 1991; Judd et al., 1991)

- Prior questions about an issue affect how quickly respondents answer a subsequent attitude question on the same issue.
- The size of this effect depends on how closely related the two items are.

AAPOR RR3 回應率計算公式：

$$RR3 = I / (I + P) + (R + NC + O) + e(UH + UO)$$

I: 完成
P: 部份完成
R: 拒訪
NC: 無法接觸
O: 其他
UH: 無法判斷合格: 忙線、沒人接聽
UO: 無法判斷合格 - 其他: 留言電話、技術問題等
e: 無法判斷是否合格者中估計值

AAPOR COOP4 合作率計算方式：

$$COOP4 = I + P / (I + P) + R$$

I: 完成
P: 部份完成
R: 拒訪