

## THE USE OF REAL-TIME LANGUAGE TRANSLATION SERVICES IN RDD TELEPHONE SURVEYS

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**ABSTRACT.** Nearly three million households were determined in the 1990 census to be linguistically isolated<sup>1</sup>. The percentage of these households varies by area of the country. For example, 13 percent of the households in Los Angeles county were determined to be linguistically isolated<sup>2</sup>. Of these households, 92 percent were found to have a phone. One-third (33.7 percent) spoke a language other than English or Spanish. The SLICHS study is an ongoing large-scale RDD survey on early childhood immunization that is designed to produce reliable immunization coverage estimates for 78 areas within the United States. In an attempt to reduce possible bias that may result from not including non-English, non-Spanish speaking households, interviews for the SLICHS have been conducted using the AT&T Language Line for real-time translation of the interview into many of the 140 languages available. Results of the SLICHS effort using this service will be presented including the frequency of use, languages encountered, location of other-language households, interview completion rates by language and a cost/benefit analysis.

### I. Introduction

Immigration continues at a rapid rate in American, so accessing and representing this melting pot in the research of today requires addressing the special needs and characteristics of this varied population. On the State and Local Area Immunization Coverage and Health Study (SLICHS), we chose to look at translation of our instruments beyond the more common English to Spanish as a means of more accurately representing as broad a spectrum of our population in our data as possible.

After deciding that coding such households among the non-response rate due to language barrier would potentially skew the data by under representing this minority's experiences, several alternatives were considered. These included: hiring bilingual interviewers for a variety of languages or multi-lingual interviewers and allowing "on-the-fly" translation, or investing in translation of the SLICHS' instrument into additional languages. Four main objections surfaced for these alternatives: 1) lead time, 2) costs, 3) quality control in hiring and testing for fluency, and 4) potential bias in selecting only a few additional languages.

Having a recruiting effort that allowed for sourcing the correct applicants with fluent bilingual capabilities who could and would work as interviewers

seemed more than could be accomplished in the two and a half months prior to the start-up of the project.

We were concerned about increasing costs occurring in two areas: the staffing process and interviewer pay rates. Defining the correct publications, crafting the appropriate advertisements, and placing sufficient numbers, frequently enough to ensure casting a wide enough net to draw the right sorts of candidates was determined to be too costly. Determining a pay rate that would be consistent with this staff's rare capabilities, the limited need for each individual's skills, and our ability to ensure the most capable accepted this type of job posed additional cost problems.

Third, the ability of our organization to provide testing for fluency in multiple languages was limited, and sourcing sufficiently diverse groups to provide that quality control appeared costly and time consuming as well.

Finally, because of the costs and limited time, it seemed reasonable to consider winnowing the list of potential alternative languages to a few that would reach the greatest additional portions of the population. Making this selection was not easy. Finding specific numbers of people who did not speak English well, and determining the language that was spoken within their household from past research ended inconclusively. As well, determining how to

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<sup>1</sup> A household in which no person age 14 years or over speaks only English and no person age 14 or older who speaks a language other than English speaks English "very well".

<sup>2</sup> 1990 Public Use Microdata Files 5% (CDROM), Bureau of the Census.

choose among the languages that might be representative of others still untapped could not withstand scientific scrutiny. A criteria on which some languages would be included, yet others would not, could not be established with confidence; hence, consideration of the use of the AT&T Language Line services for the SLICHS project.

## II. Background and Methods

In order to understand how the translation relates to and impacts the SLICHS project it is important to have some context about the background and methods of the study. At the beginning of the second quarter of 1994, Abt Associates Inc. began the SLICHS data collection, which will end with the final quarter of 1997. The study is being conducted to establish baseline estimates of vaccination levels of children between the ages of 19 and 35 months of age and to monitor changes in these levels over the four years of data collection. The study is being conducted in 78 Immunization Action Plan (IAP) areas, geographic subsets of the United States including: 27 major metropolitan areas, the District of Columbia, and the 50 states. Each quarter, telephone numbers are generated randomly in replicates of 500 for each IAP and then a list-assisted process is applied to pre-screen working versus non-working status, and household versus business assignment by the telephone companies.

The telephone numbers that are identified as potential working, residential are then released to the telephone center for the conduct of a computer-assisted telephone screening. Where an eligible household is discovered an interview is conducted. All respondents are asked to use their child's shot records for reporting the types, numbers and dates of the five antigens (DTP -diphtheria, tetanus, pertussis, Polio, MMR - measles, mumps, rubella, Hib - Haemophilus influenzae type b, and hepatitis B). Parents are locating and using the shot record to complete the SLICHS survey about 50% of the time. Beyond this, respondents are asked some important demographic information that relates to the probabilities of the child being up-to-date, and to provide information and consent for contact of the provider(s) of the vaccinations.

Because telephone coverage correlates to geographic region, minority status and immunization coverage, high response rates, including number resolution, household screening, and interviewing, were set for SLICHS. As a mitigating step against

high non-response and under representation of minorities, Abt decided that they would use real-time translation through the AT&T Language Line as a means of broadening access to households in which language might otherwise be a barrier. For the SLICHS, use of AT&T translation services began in mid-December 1994 effecting the fourth quarter data collection and has been continued into the first and second quarters of 1995.

## III. Description of the Service

Because resolving individual numbers, identifying whether they are working or not and whether they are categorized as residential or not, is as critical to the success of the study as collecting immunization information, both screening and interviewing are conducted through the AT&T translation service. Abt is achieving a 97% resolution rate of the numbers released to the computer-assisted telephone interviewing system (CATI). The numbers released to CATI are only those that were not identified as non-working or businesses through the identification process described above. The use of the AT&T language line contributes a little less than 1% to that rate. Resolution of the number is usually accomplished through a simple 3-step process within three attempts after the number is designated as needing translation.

Through the resolution process we are able to determine that numbers requiring translation are rarely non-residential, 40 out of 1464 in quarter 4 (2.73%). Refusals after the determination is made that translation is required are low, 2.19% (32 of 1464). This compares with a non-residential rate of XX.X% and refusal rate of XX.X% in the general case pool.

The service is used to complete screeners with about 1400 households quarterly, resulting in an average of 115 completed immunization interviews. Because the SLICHS requires that the interview be conducted with the member of the household who is most knowledgeable about the child's vaccination history and encourages waiting or calling back for shot records, the average number of attempts to finalization for translation cases is 7 attempts.

#### IV. Process

The process begins with an initial call made to the SLICHS sample telephone number in which the interviewer attempts to conduct the screening instrument in English. If language appears to be the problem, the interviewer asks if anyone in the household speaks English. If not, there are five ways we determine the language requiring translation: 1) the respondent tells the interviewer the language they speak or their country of origin; 2) a key word or two spoken by the respondent is understood allowing identification of the particular language; 3) the interviewer offers countries or languages to the respondent and receives confirmation; 4) someone else, a friend, relative, or co-worker provides the language; or 5) through the translator's evaluation.

In the simplest of transactions the respondent declares within the introduction that they do not speak English, and when asked what language they speak are able to answer.

Often respondents who speak a different language use greetings and phrases from that language when they pick up the phone, expecting someone familiar on the telephone line. These distinctive words and phrases have been given to our interviewers as a tool for identifying the language. Upon hearing them, the interviewer makes every attempt to confirm their language selection with the respondent.

The third method is attempted on calls in which neither of the first two experiences has been encountered. Here the interviewer tries to keep the respondent on the phone long enough to assess the words, cadence, and combination of vowels and consonants used in the language. The interviewer attempts to narrow from the general to the specific. Making an initial identification of the type of language; for example, asian, the interviewer begins naming the various countries from which the respondent may have come, slowly eliminating possible languages or options until the person indicates that we have reached the right one.

On rare occasion, respondents ask that we call back on a specific day or a certain time, or give us a name and telephone number to reach a relative, friend or co-worker who knows something about their household. It is through these secondary sources that we are able to determine the language of the household and to set-up an appointment to conduct the screening or interview.

For these first four scenarios, the interviewer closes the call thanking the respondent and indicating

that someone who speaks their language will call again. After concluding the conversation, the interviewer sets the disposition to a status that indicates translation is required and notes in the comments the language indicated by the respondent. The common case disposition then allows for these cases to be collected and handled by a designated group of interviewers.

Subsequently an interviewer, trained in the use of the Language Line, calls the AT&T 800 number, provides the Abt account code and the language translation required. The initial connection with AT&T allows for preparation time between the interviewer and translator about the needs of the project and the purpose of the call. The interviewer then connects the respondent and when the telephone is answered the three-way conversation begins. This way the translator does not learn the telephone number or name of the respondent unless the household is eligible and the data is collected or verified in the final sections of the questionnaire.

In situations where the respondent's language remains ambiguous despite the interviewers' efforts, Abt's specially trained interviewers will call the translation service and ask for assistance. Once the translator is on-line, he or she often goes through steps one through three above in a language other than English and is able to determine the correct language. If the translator is not fluent in the respondent's language, a subsequent translator for the respondent's spoken language is acquired, and the screening and interviewing is conducted within that call.

For all cases in which the interviewer encounters someone who does not speak English well enough to complete the screening, they ask if anyone else in the household speaks English. If a member of the household is able, they are asked to answer the questions as it is the preferred method of completing the survey. It is for those approximate 1,400 cases per quarter where no English speaking member is found that the AT&T Language Line is used.

The languages used to date include: amharic, arabic, armenian, cambodian, creole, czech, slovak, cantonese, mandarin, chinese, dutch, ethiopian, farsi, french, french creole, german, greek, gutarati, hindi, pakistani, kudurati, punjabe, urdu, hungarian, italian, japanese, kodiac, korean, lithuanian, laotian, mein, mong, tagalog, el lucano, phillipino, polish, portuguese, portuguese creole, rumanian, russian, serbian, serbo-croatian, croatian, somalian, spanish, taldean, thai, turkish, ukrainian, vietnamese, and yiddish.

## V. Training

A subset of Abt interviewers were randomly selected to participate in the use of the AT&T Language Line. In addition to the Basic Interviewer training, CATI instruction and project specific materials, they received a structured 8-hour training conducted by project staff which included materials and a video tape provided by AT&T which visually demonstrates the experience the interviewers would be encountering. Ongoing trainings build on our past experiences and use audio tapes of interviews now conducted by Abt interviewers. Mock interviews are conducted and practice sessions are held within the day's training.

Once interviewers are trained, 100% of their first day's efforts are monitored and feedback is provided immediately after the calls. Interviewers do self-taping and review the tapes with their supervisor. Monitoring then continues over the first week eventually dropping to 5% observation. The supervisors of the effort hold periodic meetings with the interviewing team to share ideas that can improve the process and to continue skill building in the handling of these special cases.

The interpreters receive training from AT&T and interviewing guidelines from the Abt interviewers. The formalized training provided on telephone translation from AT&T includes presentations on: client handling, phone courtesy, confidentiality, and quality control among other topics. Fluency tests are conducted for AT&T by academic scholars who are fluent in the specific languages using a uniform test approved by the American Council on the Teaching of Foreign Languages and the Defense Language Institute.

Abt provides specific guidelines to the interpreters about word-for-word translation, and handling respondent questions and interviewer probes. Interpreters receive a brief summary of the purpose and importance of the project at the beginning of each call.

## VI. Quality Control

A key component of all of the research Abt conducts is quality assurance. For this assurance we applied our standard audio and visual monitoring, combined with periodic taping by trained supervisors and monitors and by the interviewers themselves. Supervisors and monitors received the same training as the interviewers on the use of the Language Line

services so that they could understand the expected procedures. This allows them to grade the Abt interviewers against that procedure and against the standard of basic interviewing technique that should not vary.

In addition, we took three steps to ascertain that the quality of the translation was of a sufficiently high standard and that the experience of the respondents who were exposed to the translation service was as similar as possible to that of individuals requiring no translation at all. This was accomplished by: 1) comparing AT&T Spanish/English translation of multiple operators to the hardcopy translation created at Abt, 2) comparing the translation made in other languages through real time or taped observations by fluent bilingual staff and outside sources, and 3) assessing the frequency and similarity of questions asked by the respondents and translators to those found in verbatim review of interviews not requiring translation.

The first step in quality control was to compare several "on-the-fly" translations of English to Spanish by the AT&T translators as a marker of their capabilities. The SLICHS uses an on-line version of the Spanish document, created through translation of the original document into Spanish and verification by translating the Spanish translation to English through an independent second party. Bilingual supervisors used the monitoring equipment to initially observe test sessions of the translation and retain long-term responsibility for periodic tests of the accuracy of the translation. Our findings were that most of the time, differences in translation were due to acceptable dialectic influences that did not substantially change the meaning for the respondent.

Abt tracks the translator number for each caseid to allow for review by case, translator, language used, case status, or Abt interviewer for our quality control. Abt has excluded specific translators through their translator number. These exclusions are applied if the translator had seemed uncooperative, unprofessional, unable to handle the content of the interview, or failed Abt's translation quality control evaluation in the past.

Once a successful translator for a particular language is found, cases are often grouped or strung together in a single session so that the interviewer and translator work through all of the cases for a specific language at one time. This allows the translator to become more proficient in the interviewing instrument as well and often aids in cost control.

The assumption was that AT&T could probably find a fair number of people who were fully fluent in

Spanish and so the next level of testing was required to be sure that the quality attained in their translation of Spanish was met or exceeded in their other translation capabilities. Taping of interviewer and respondent interactions is a regular part of the quality assurance plan upheld at Abt in the telephone center. Taping the interactions that included outside translation was a simple extension. Professional and interviewing staff who had been tested on their fluency were used as monitors of the translation activity for languages other than Spanish. Our tests were conducted in Polish, French, Turkish, and French Creole. We continue to make efforts to broaden our ability to test additional languages to be sure that all questions and answers are presented as written to minimize bias. To date these tests suggest that the translation is sufficiently consistent across a variety of languages for us to continue to use the service.

An on-going, yet incomplete analysis contains a comparison of the frequency and content of the questions asked in translation to those expressed in the other interviewing interactions.

AT&T has an overarching quality control plan that starts with the selection and screening, based on education and work experience of its translators, and continues with periodic on-line monitoring and review of their translators. Applicants for the position of telephone translator must pass proficiency tests in each English and the second language. Once working, translation interactions are monitored and taped. A standardized form rates their performance on such issues as translation and voice quality, but also their handling of the call in general in such areas as courtesy and helpfulness.

## **VII. Confidentiality**

As is common, SLICHS requires a confidentiality pledge from all persons who have access to the project sample and data, including project staff, subcontractors, support staff, and the interviewers.

AT&T translators are used in business and governmental situations that require confidentiality. AT&T makes the pledge to all of their Language Line users that transactions will be kept confidential. No taping of conversations occurs that could be related to others and interpreters sign pledges of confidentiality in their employment contract. In fact, the structure of the SLICHS interview does not require disclosure of the person's name or address until the very last section of the interview, and all screening as described above

is done with the AT&T translator having no identifying information, including the telephone number.

## **VIII. Costs**

The costs for the service are three-fold: an initial start-up fee, a monthly service fee, and a connect time charge for the translation. The one-time initiation fee of two hundred dollars is assessed for each identification number requested by the company, and includes a monthly statement of all charges. The monthly charge of fifty dollars is a minimum fee for maintenance of the account that is applied against line charges once that amount is exceeded. For utilization, AT&T offers a four-tiered costing system based on the languages used in translation which is applied by the minute.

The first level is for English to Spanish translation, their most commonly used service. The rate charge, per minute, is \$2.20 for peak hours in addition to the usual connect time charges, be they local, long distance, or overseas. The second level rate is for either Cantonese or Mandarin Chinese, French, Japanese, Korean, Russian and Vietnamese. The third tier includes: Armenian, Cambodian, German, Haitian Creole, Italian, Polish and Portuguese. The final rate is all the less commonly used languages, e.g., Farsi, Tagalog, Thai or Urdu, that therefore require more effort to find capable translators. For this final group, appointments may have to be set to use the service as the number of translators is limited and therefore so is their availability.

In all, AT&T offers translation from English into more than 140 languages. Table 1 provides the break down of costs per minute by tier and whether the call is placed during peak or non-peak hours. AT&T defines peak hours as Monday through Friday from 5 a.m. to 5 p.m. Pacific Standard Time (PST). Non-peak hours are comprised of: weekends, New Year's Day, Presidents Day, Independence Day, Labor Day, Thanksgiving and Christmas holidays, and 5 p.m. through 5 a.m. (PST), Monday through Friday.

**Table 1: AT&T Language Line Rate Schedule**

	<b>Tier 1</b>	<b>Tier 2</b>	<b>Tier 3</b>	<b>Tier 4</b>
	Spanish	Chinese Cantonese Mandarin French Japanese Korean Russian Vietnamese	Armenian Cambodian German Haitian Creole Italian Polish Portuguese	Farsi Tagalog Thai Urdu Some Native American languages  And all other languages offered by Language Line services
<b>PEAK</b>	\$2.20	\$2.40	\$2.50	\$2.60
<b>NON-PEAK</b>	\$2.50	\$3.10	\$3.80	\$4.50

After using the service for 6 months across three quarters, on average the effort adds about \$14 per telephone number that is worked to completion with the assistance of a translator. Completion includes numbers that are screened out as businesses or ineligible households as well as completed immunization interviews.

Comparing the costs of the real-time translation to potential costs for providing on-site translation would have to account for:

placement and wording for specialized advertisements; screening, testing and hiring of bilingual or multilingual interviewers with fluent staff; and paying the increased hourly rate the interviewers would require for doing most of their interviewing in English or providing scheduling that allowed for limited use of these expensive resources. The calculations must also assume that for a percentage of the bilingual interviewers this would be a repeated effort accounting for the attrition over 4 years.

Ongoing analysis of system timings has not been completed for SLICHS cases for four cross-sections: no translation required, required Spanish translation by Abt interviewers, required Spanish translation using AT&T Language Line, required translation other than Spanish by AT&T Language Line services. However, a review of the interviewers' time and tally sheets suggest that the AT&T process requires double the interviewing and connect time just to complete the immunization interview.

When comparing the costs to conduct these interviews with our own staff while balancing the additional connect time charges, our current assessments indicate that the AT&T Language Line is more cost efficient.

## **IX. Impact**

Overall, the use of the Language Line has resulted in about 1400 telephone numbers being resolved quarterly on household status and 115 immunization interviews completed for the same period. SLICHS has a goal of 110 interviews per IAP per quarter. While some IAPs received no interviews from this effort, on average they gained 1.47 completes per IAP, and some received as much as 9% (10) of their completes in a single quarter from the translation effort. At the DHHS region level, the impact is presented in Table 2 which uses quarter 4 data, ranging from a third of a percent to slightly more than four and a half percent of the completes expected for the quarter.

One of the objectives in using the translation service was to be sure that minorities were correctly represented in the SLICHS data. The contribution by race and ethnicity is summarized in Table 3. In viewing this breakdown it is important to remember that most, but not quite all, Spanish translation is completed by bilingual Abt interviewers.

**Table 2: Translation Completes Aggregated by DHHS Region**

DHHS Region	Complete Interviews	Number of Expected Completes (110 x number of IAPs for the region)	Percent of expected completes
1	15	770	1.95%
2	13	440	2.29%
3	4	880	4.55%
4	7	1540	0.45%
5	16	1210	1.32%
6	6	550	1.09%
7	8	1100	0.73%
8	2	660	0.30%
9	30	880	3.41%
10	10	550	1.82%

**Table 3: Hispanic by Race Breakdown for Language Line Completes**

Frequency	White	Black	Asian	Other	Don't Know	Refused	Total
Non-Hispanic	16	6	43	6	0	0	71
Hispanic	8	1	1	4	10	18	42
Total	24	7	44	10	10	18	113



Most notably, of the 113 immunization interviews conducted in Quarter 4, 39.8% were done with people of asian descent. This is an important contribution to the total of XXX interviews completed with asian households per quarter, fully XX.X%.

## **X. Conclusion**

Can we afford to ignore subgroups of our population that enrich our diverse society in so many ways and affect it in countless others? Undoubtedly we need to continue to evaluate the possibilities to overcome non-response by not accepting language barrier as a final outcome. In an effort to do that, Abt's plans for continued research potentially include: multi-lingual translation of answering machine messages, remail of translated advance letters, increased guidelines for AT&T translators, and continued quality control and cost review of this effort.