A Study of Infant Mortality Among Puerto Ricans

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The Population Research Institute at Penn State University and the Institute for Survey Research at Temple University are conducting a survey to study infant mortality among Puerto Ricans. Puerto Ricans have one of the highest infant mortality rates among Hispanic subgroups in the U.S. (9.0 per 1000 births in the U.S. and 12.9 in Puerto Rico in 1991). Unfortunately, infant mortality studies rarely include enough cases to allow exploratory data analysis among ethnic subgroups. The study is being funded by a grant from the National Institutes on Child Health and Human Development (NICHD) to Nancy S. Landale and R. Sal Oropesa at Penn State University that resulted from an RFA with a focus on health problems among Hispanic children.

The main focus of the study is a CAPI-based survey of Puerto Rican mothers sampled from vital records in Puerto Rico and six U.S. states with the highest rates of Puerto Rican births. We plan to complete a total of about 2600 personal interviews with women who gave birth to a living baby between July 1994 and December 1995. The sample is divided roughly into thirds, with Puerto Rico cases representing one third, New York City cases representing another third, and other U.S. locations collectively representing the remaining third. We expect about a 60/40 ratio of cases where the baby is still living to cases where the baby has died.

We have been in development for over a year, conducting focus groups, cognitive interviews, pretest interviews, and a 200 case pilot study in Puerto Rico, Pennsylvania, and New Jersey in September and October 1995. Completion of a pilot study for our work in Puerto Rico was absolutely essential. The size of the pilot study was far less important than the completion of a full dress rehearsal of all components of the tracing and fieldwork.

A. Translation of the questionnaire and field materials into Spanish

We developed the original instrument in English, because it was modeled after a questionnaire used in a national study of infant mortality sponsored by NCHS called the National Maternal and Infant Health Survey conducted in 1988. Our strategy was to focus our development efforts on the English instrument and to make the Spanish translation the clearest, most understandable version of the English instrument possible. As you may imagine, this led us into a series of problems, not the least of which was the protest that the Spanish language instrument ought to have a comprehensive integrity of its own.

Difficulties we faced in finding qualified translators

While we found many people willing to read and criticize, very few were willing or qualified or available to actually do the constructive work of translation at reasonable rates. We wanted to have one set of translators and one set of reviewers, but the work is too occasional for us to hire either one full-time, so we had to use part-time free lancers. The cast of translators available to us changed often, and we found ourselves at the mercy of their schedules and conflicting commitments. We also knew that we would want frequent translations of various drafts and changes as well as translations of our field materials, so we did not feel that we could afford to pay the highest rates for the work-- which might have been justified with a static document.

We explored several alternatives after unsuccessfully polling our contacts in Philadelphia, New York, and Puerto Rico.

a. Graduate students/ faculty at Temple
   The price we would have paid one Puerto Rican couple was $20 per page. For a 400 word page, that would be about 5 cents per word.
b. Graduate students/ faculty at the University of Pennsylvania. We paid $12 an hour and a total of around $800 for a translation that was not Puerto Rican Spanish.
c. Translation service through the University of Pennsylvania (called the Penn Language Center) 12 cents/ word or about $2000 for our questionnaire; 14 cents/ word for shorter documents
d. Berlitz Translation Services charges a base fee of $90 per submission plus 27 cents per word for regular work and 18 cents per word for larger projects.
e. We tested translation software, but found that we spent more time editing the translation than it would have taken to simply translate from scratch

f. We finally located two Puerto Rican Ph.D students in Spanish literature at Penn State who completed the full translation in about 80 hours of work. We paid them $12 per hour, which worked out to about 5 cents per word. They translated the entire questionnaire, later revisions, two lengthy documents for interviewing training, and focus groups transcripts.
g. We later discovered an American with an M.A. in Spanish translation from the University of Puerto Rico who now lives in San Juan. He was also willing to work for $12 an hour, and we had him complete the back translation and later supplemental work.
h. In sum, we found a wide variety in pricing from the free lancers we contacted. One native Puerto Rican woman wanted $50 an hour simply to review and critique the final translation.

The limitations of a back translation

A back translation will only tell you if the Spanish translation is literally correct, not understandably correct or idiomatically appropriate. It will tell you whether the meaning of the question was transferred into Spanish in such a way that it could be retrieved into English. We found that even people with graduate level training in Spanish made egregious errors in their work and that we had to carefully review even the most trivial revision suggestions.

In the end, we relied on two final arbiters who knew what our objectives were and understood the basic intent behind each question. These were people with an extensive familiarity with Puerto Rican Spanish and who had a significant commitment to the project. They reviewed all further changes to be made to the Spanish version before they were implemented, even though neither of them had anticipated such a role when the project began.

Other translation work

In the process of fielding the study, we made a point of including fluent Spanish speakers at every stage of development. All paper materials related to this study were translated into Spanish, including screening sheets, showcards, self-administered questionnaire, interviewer manual, computer guide, and administrative paperwork. The questionnaire program was also translated into Spanish, and allows the interviewer to toggle between Spanish and English during the course of the interview. All this translation meant having extra personnel review all typed, printed, and programmed material for accuracy and readability. It also meant adding some experienced trainers on a free-lance basis to help us conduct our interviewer trainings completely in Spanish. We have now completed two such trainings, one for the pilot study, and one for the main study.

B. Tracing from vital records

We received special permission from the Puerto Rico Department of Health to draw our sample from vital records of births and deaths within the focal time period. They gave us access to their computerized data files on these events.

Quality of address data from vital records

The file listings we were given included address fields and even a social security number field, so we thought we would have all the information we would need to locate our respondents. Unfortunately we discovered

1. that the address fields did include addresses, but that only about half (48%) of them were complete street addresses--the rest were incomplete street addresses (18%), P.O. boxes (13%), or rural carrier boxes that are not linked in any direct way to the housing units in the area (20%). The rural carrier boxes are a collection of 10 to 50 residential mail boxes clustered alongside a country road. Each box is numbered, but there may or may not be any houses in sight, and there is no indication of identity on the box other than the box number.
2. that the social security field was blank and had only been inserted for future use. Social security numbers were included for some of the 1995 cases.
3. that most public records in Puerto Rico, such as telephone books, use double surnames
   (e.g., Maria Gonzalez Muñoz=
   First Name/ Paternal Surname/ Maternal Surname
   or
   First Name/ Married Surname/ Paternal Surname),
   but all names in the vital records data use only a single surname. It was rather difficult to be sure were tracing the right person.

ISR's tracing strategies and data on success rates

1. We mailed a form to each respondent's post office, asking for address correction and a physical address to use in locating the respondent. (See Table 1.)
2. For the main study, we mailed the initial respondent letter directly to respondents about 12 weeks ahead of when we intended to field the study, and included an address correction sheet which asked for a physical address. Even though the percentages of address corrections are rather low, the quality of information received directly from respondents is much higher than that obtained from any other source. (See Table 1.)

3. We used database searching to check the postal service change of address database and other sources, though we were limited by the double surname problem. We also discovered that there is no database source that is unique to Puerto Rico, so we had to use our usual U.S. based sources. These sources are omitted from Table 1, because we had only scattered success with this approach.
4. Finally, we relied on field tracing by the interviewers, which primarily consisted of talking with neighbors, residential managers, and local service workers. We also found respondents' parents and other relatives to be important tracing sources. Many still lived at or near the address we were using even if the respondent had moved.

Table 1.
Respondent Address Information by Source
(Cell Entries are Row Percentages)

(1) Confirmed Address
(2) Gave New Address
(3) Disconfirmed Address

	(1)	(2)	(3)
Mailing to Post Offices			
Pilot study (n=200)	55.5%	6.0%	17.5%
Main study to date (n=1310)	49.1%	5.5%	18.1%
Mailing to Respondents			
Pilot study (n=200)	6.0%	1.0%	4.0%
Main study to date (n=1310)	7.6%	3.0%	5.8%

C. Cultural factors and cultural differences

Puerto Rican population Current estimates are that about 6.3 million people can be identified as Puerto Ricans. Approximately 3.6 million of these people live on the island of Puerto Rico, with about a third of them (1.2 million) living in metro San Juan. A large part of the remainder (more than 1.1 million) live in or around New York City. The 1990 Census reports 2.7 million Puerto Ricans living in the United States outside of Puerto Rico.

Low telephone coverage, high incidence of face to face interviewing 1990 Census data report the telephone coverage rate for households in Puerto Rico to be 64%, or about 30 percentage points lower than the U.S. coverage rate. The coverage rate is 68% in urban areas and 51% in rural areas. The main consequence of this low rate of telephone coverage for survey data collection is that it makes almost no sense to conduct probability-based sample surveys by telephone. Almost all survey data collection is done face-to-face, including political polling.

Intensively political population, distraction from elections Our contacts in Puerto Rico told us that political surveys are being done on the island every day. We were advised against using government sponsorship, especially in an election year (1996), since people are generally very suspicious of the government. Due to a rather high rate of welfare dependence, many respondents are especially wary of anyone who appears to be a welfare auditor.

There is also a prolonged and very intense political battle between the two leading political parties over the issue of statehood vs. commonwealth (quasi-independence). People favoring complete independence are in a small minority. 1992 election returns showed 50% support for the governor's party, favoring statehood; 46% support for the opposition, favoring the current commonwealth status; and 4% support for the party favoring complete independence for Puerto Rico. The two leading parties struggle for power much the way Labor and Likud have struggled in Israel-- each enjoys the support of around 45% of the electorate, and power changes hands frequently.

It is not uncommon to be passed by booming broadcasting trucks, to see political posters plastered on every telephone pole, and even to find relatively important thoroughfares temporarily blocked and impassable due to a political rally that spills across 4 and 6 lanes of highway. I was unable to get hard data on voter turnouts, but verbal estimates were in the high 70% to 80% range.

Love/hate political relationship with United States This tension is reflected in the political struggle over Puerto Rico's status relative to the United States, resentment over Puerto Rico's dependence on the U.S., and over the U.S. role in heavy handed responses to independence parties and partisans in the past. On the other hand, the U.S. is still the primary destination for Puerto Rican emigrants, and many Puerto Ricans would like their island to be the 51st state. Many Puerto Ricans are determined to maintain a distinctive Puerto Rican identity and culture, though tens of thousands of them have emigrated from the island to the United States. We have included measures of both

sentiment about Puerto Rican distinctiveness and migration history in the questionnaire.

High rates of crime, but also strong communities
One of the first fielding issues raised by our contacts in Puerto Rico was the public housing projects, called caserios. They are sprawling, low-rise, low-cost housing projects with a high crime reputation, especially for drug-related crimes. It is not uncommon to see military personnel with machine guns stationed at crossroads and corners within the caserios. The strong consensus among the interviewers is that you want to be leaving the caserios by mid-afternoon. One big plus for survey interviewing is that many residents of the residents are on welfare, so many of them are home during the day. If the respondent is not home, chances are good that someone who lives nearby is at home. Neighbors tended to know who lived at the designated address and were often willing and able to tell us when the residents could be expected to return.

Puerto Rico has a growing drug problem with drug-related crimes on a steady increase, especially in the larger San Juan area. Each governor promises to deal harshly with the problem, but it persists nonetheless. Execution-style murders are reported on a regular basis. Most residential areas on the island are walled, barred, or gated, and in wealthier areas, security guards stand watch.

We were very pleased to find that we had no unusual access problems and no reported problems with our laptops. We were concerned that the laptops might be stolen or feared as concealed weapons, but none of the interviewers reported either problem.

Economy, high incidence of poverty Industry has long since supplanted agriculture as the dominant sector of the Puerto Rican economy, accounting for 40% of GDP. Agriculture contributes only 1% of GDP. Encouraged by duty free access to the U.S. and by tax incentives, U.S. firms have invested heavily in Puerto Rico since the 1950s. By all accounts, Puerto Rico has one of the healthiest and most stable economies in the Caribbean, but it also has a persistent problem with high rates of poverty.

The proportion of Puerto Rican families living below the poverty line has fallen over the last 20 years from 65% in 1970 to 55% in 1990. However, despite this progress, the poverty rates in Puerto Rico are dramatically higher than those of mainland Hispanics. About 25% of mainland Hispanics lived below the poverty level in 1990.

There is also a marked reliance on public assistance as a source of income both in Puerto Rico and among Puerto Ricans in the U.S. 1990 Census data report that 31% of Puerto Rican households receive some form of public assistance in Puerto Rico and 27% do so in the U.S. An estimated 5.6% of the household population in Puerto Rico lives in public housing projects (caserios).

Table 2.
Poverty and Employment Data Comparing Puerto Rico to the United States

(1) Puerto Rico
(2) Puerto Ricans in U.S.
(3) U.S. Total

	(1)	(2)	(3)
Proportion living below the poverty line, 1990	55%	41%	14%
Sources of household income, 1989 (Percent yes)			
Earnings	66%	76%	80%
Public Assistance	31%	27%	8%
Social Security	30%	15%	26%
Retirement Income	8%	3%	16%
Interest/Dividend/Rent	3%	14%	40%
Other Sources	7%	10%	10%
Employment status of people 16 years or older, 1990			
In the Civilian Labor Force	47%	57%	68%
Not in Labor Force	53%	43%	33%
Unemployed	20.3%	12.8%	6.2%
(Base n: Civilian labor force)			
Unemployed	9.6%	7.3%	4.1%
(Base n: Population 16 years or older)			

Public health problems
High rate of infant mortality As discussed briefly above, Puerto Ricans have one of the highest infant mortality rates among Hispanic subgroups at 12.9% per thousand in Puerto Rico and 9.0% per thousand in the U.S. for 1991 (The comparable rate for White, Non-Hispanics is 7.1% per thousand; for Mexican-American is 7.5%). Repeating the same pattern from Table 2, Puerto Ricans in Puerto Rico are more disadvantaged than Puerto Ricans in the United States, who are in turn more disadvantaged than the general population in the United States.

High rate of AIDS cases Puerto Rico is second only to Washington DC among U.S. states and territories in 1995 AIDS rate. Washington DC is first with 186 cases per 1000, Puerto Rico is second with 70 per 1000, followed by New York (68), and New Jersey (56). City rates may give some further perspective--Jersey City has the highest rate (138), followed by San Francisco (130), New York City (122), and Miami (117). The national average was 28 cases per 1000.

D. Interviewing-- response rates, interviewer training

Study sponsorship We decided to negotiate a local sponsorship/ endorsement to enhance the credibility of our introductory letter to respondents. We eventually settled on the University of Puerto Rico School of Public Health after considering several other alternatives. We were strongly advised to avoid government sponsorship of the study due to the intensely political nature of the culture and due to fears about welfare auditors. We sent the introductory letter to respondents on University of Puerto Rico School of Public Health letterhead and listed a University of Puerto Rico School of Public Health faculty member's name and phone number for respondents to call with questions.

Interviewing staff We were referred to a local interviewing company whose business is primarily market research with some political polling work. They already had the island divided into territorial assignments and a staff of part time interviewers with 6-15 years of interviewing experience. We conducted our pilot study with their interviewers and staff and were so pleased that we have now fielded the main study with this same group. ISR has provided all interviewer training and we are managing our field work in Puerto Rico just as we would in the United States, but we have drawn our entire Puerto Rico field staff from the experienced interviewers working with this company.

This company is the largest market research company doing fieldwork with survey interviewers who work as independent contractors and who work under a field supervisor. Other companies in Puerto Rico travel to interviewing locations with a team of interviewers and stay on site with them there while the interviewing is being conducted. (E.g., the University of Puerto Rico School of Public Health's current study of reproductive health being conducted with interviewers placed on the University's full-time payroll)

We were strongly advised not to pay interviewers by the hour, so we were able to follow our usual policy of paying by the interview with case by case allowances made for difficult tracing cases. NHIS and the Reproductive Health Survey hire salaried interviewers, but the company through which we are working always pays its interviewers by the interview. Companies that pay by the hour are the ones that travel with teams of interviewers and stay on site with them while interviewing is going on.

Higher response rates in Puerto Rico We were initially concerned about field work in Puerto Rico, based on how poor the vital records address information was, and the fact that we did not have much field experience on the island. It turned out that we had less trouble with our work in Puerto Rico than we did with our work in the U.S. We realized that in Puerto Rico we were able to hire the best qualified and most experienced interviewers available. In the U.S., we have to hire from the much smaller pool of available bilingual interviewers.

Our response rate for cases worked was exceptionally high in both the U.S. and Puerto Rico at 92%. (See Table 3) Our greatest problem in the U.S. part of the sample was getting interviewers to complete their assignments. The "Workable Cases" row includes all cases fielded but not pursued by the interviewers. When we include these cases, our response rate in the U.S. drops to 62%, while our Puerto Rico response rate drops only to 89%. We had 37 cases that were fielded, but not actively pursued by the interviewers. When we consider all possible cases, the Puerto Rico response rate falls to 55%, while the U.S. response rate falls to 38%. The main reason for the large drop at this point is our underestimate of the time required to fully work the cases in both locations. Almost a quarter of our pilot study cases (23%) were coded as "Work suspended due to pilot study end". Another 25% of the cases in Puerto Rico were final coded as tracing problems due to the lingering effects of the poor address information we began with and to the brevity of time we had to trace these cases before fielding the pilot study. We ended up delaying the start of production interviewing four full months, from January 1996 to April 1996, in our efforts to make sure we started the main study work with better address information than we had in the pilot study.

Table 3.
Pilot Study Response Rates

United States	Response Rate	Base N
Worked Cases	0.92	75
Workable Cases	0.62	112
All Possible Cases	0.38	183

Puerto Rico	Response Rate	Base N
Worked Cases	0.92	118
Workable Cases	0.89	122
All Possible Cases	0.55	197

Denominators for the 3 response rates are as follows:
Worked Cases:
Interviews + Refusals + Non-Interview Other
Workable Cases:
Worked Cases + 00 code (No field activity)
All Possible Cases:
Workable Cases + Pilot limits + Tracing problems

Our low refusal rate in Puerto Rico (4%) refutes the expectation we were given regarding the general level of suspicion. It is also interesting to note that our refusal rate was the same across all relevant subgroups. It was 4% for birth and death cases and 4% for both Puerto Rico and U.S cases.

Other factors that help to explain the higher response rates in Puerto Rico include the greater availability of tracing information from neighbors and other local contacts, the use of local Puerto Rican interviewers, and the endorsement by the School of Public Health at the University of Puerto Rico.

E. Conclusions

Translation We had our best success with graduate student translators because of their time flexibility and their willingness to work within our budget. We did not know there was a program in Spanish translation at the University of Puerto Rico when we started, but I would definitely contact them if we were starting over. I think the benefits of a back translation are outweighed by its cost for a language as familiar as Spanish, as long as you have very competent arbiters making the final translation decisions. The final arbiters need to be thoroughly familiar both with survey research and the idiom into which you are translating.

Tracing We found that it is far better (and less costly) to delay the study and absorb continuing development costs in waiting for good quality address information than to rush a study into the field with sketchy address information when using a list-based sample. It is also a serious mistake and much more costly to field cases from a list-based sample before allowing enough time for centralized tracing (about twelve weeks by our estimates). By far the best source for address corrections is the local post office.

Culture and Interviewing On the whole, we found field work in Puerto Rico much more manageable than we expected. We also found respondents to be far less suspicious and far more likely to cooperate than we expected. Despite the greater frequency of face-to-face interviewing and the heavily political nature of much of the survey work, we found respondents very willing to participate, with a refusal rate no higher than our U.S. refusal rate of 4% in the pilot study.

I would highly recommend a pilot study when undertaking fieldwork in a different cultural context for the first time. We found it extremely useful to talk with a wide variety of advisors on cultural matters, since they often disagreed with each other. We tended to take their consensus more seriously than their individual opinions. I would also highly recommend locating a credible local sponsor for the study both to help answer respondents' questions and to legitimize the study on the local level. Joining forces with a group or organization already conducting fieldwork spared us many beginner's mistakes, although we still found plenty left to be made.

Primary Data Sources:
1990 U.S. Census of Housing, Detailed Housing Characteristics--Puerto Rico, 1990 CH-2-53
1990 U.S. Census of Population, Social and Economic Characteristics--U.S. 1990 CP-2-1; PR 1990 CP-2-53

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