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How Representative are Snowball Samples? Using the Ethnosurvey to Study Guatemala–U.S. Migration

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Abstract

This analysis draws on binational data from an ethnosurvey conducted in Guatemala and in the United States in Providence, Rhode Island, to develop a refinement of the weighting scheme that the Mexican Migration Project uses. The alternative weighting procedure distinguishes between temporary and settled migrants by using a question on household location in the Guatemala questionnaire that is not used in the MMP. Demographic characteristics and integration experiences of the most recent U.S. trip are used to assess the composition and representativeness of the U.S. sample. Using a composite index of migrant integration to compare the impact of alternative U.S. sample weights on point estimates, I find that although the U.S. sample is broadly representative across a range of background characteristics, the MMP sample weighting procedure biases estimates of migrant integration downward.

Measuring the social and economic processes of migration has always been a challenge, particularly when migrants are dispersed across international borders. The challenges are even greater in the case of undocumented migrants who have a powerful incentive to avoid detection and conceal their status in places of destination (Hill 1985). Recent efforts to measure the stock and flow of Mexico-U.S. migrants have relied on combinations of census data and nationally representative surveys from both countries (Hill and Wong 2005; Rendall, Brownell, and Kups 2011). Studying the social and economic dynamics of migration, however, requires specialized migration surveys that collect a greater breadth of data at the individual and household level than do censuses and national surveys (Escobar and Roberts 1998).

To study the full range of mobility patterns and appropriately estimate migration probabilities, migration surveys need to include households in the place of origin that have no migrants, households in the place of origin that have active or return migrants, individual migrants in the place of destination, and migrant households in the place of destination (Groenwold and Bilsborrow 2008, 295). Sample surveys conducted in places of origin miss

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out-migrant households, and sample surveys conducted in places of destination miss migrants and migrant households that return back to their place of origin. Binational surveys conducted in migrant places of origin and destination, what Rallu (2008) calls “both-ways migration surveys,” reduce the bias found in origin or destination surveys caused by the omission of settled or return migrants.

A major challenge to surveying migrants in places of destination is finding them, especially if they are a small minority of the destination population. In the case of undocumented migration, the problem is compounded by the fact that the migrants may not want to be found. The Mexican Migration Project (MMP) ethnosurvey overcomes many of the problems of migrant underenumeration through the use of simple random sampling in Mexican origin communities and snowball sampling in U.S. places of destination to construct a bi-national sample (Durand, Massey, and Zenteno 2001; Massey 1985; Massey and Capoferro 2004; Massey and Zenteno 1999). Snowball or other referral sampling methods have been proven to be effective for recruiting hidden or hard-to-find populations such as undocumented migrants (Sudman and Kalton 1986). However, because they are nonprobabilistic samples, snowball samples suffer from potential problems of sample bias due to the under- or overenumeration of particular segments of the target population (McKenzie and Mistiaen 2009). A closely related problem is determining the size of the out-migrant community in the destination country to appropriately weight the destination sample for pooled analysis with the origin sample. The MMP has developed a method for calculating U.S. sample weights that uses information on the prevalence of U.S. migration among the independent adult children of household heads interviewed in the origin community to estimate the size of the out-migrant community.

In this article we use binational data from an MMP-style ethnosurvey conducted in Guatemala and in the United States in Providence, Rhode Island, to develop a refinement of the MMP sample weights. Our proposed weighting procedure makes an important distinction between temporary and settled migration status by using a question on household location in the Guatemala questionnaire that is not used in the MMP. We use selected demographic characteristics and experiences of economic and social integration on the most recent U.S. trip to assess the composition and representativeness of the U.S. sample. We also develop a composite index of migrant integration to compare the impact of alternative U.S. sample weights on point estimates. We find that although the U.S. sample is broadly representative of adult U.S. migrant children of household heads on a range of background characteristics, the MMP sample weights bias downward estimates of migrant integration in the United States.

Guatemala Study Design

The Guatemala Survey of Population Dynamics collected data from 552 randomly sampled households in two adjacent municipalities in the department of Quiché, western Guatemala between 2000 and 2002. The sample included the two municipal town centers and five rural communities. An additional twenty surveys were completed in 2002 in the primary U.S. destination area, Providence, Rhode Island, using snowball sampling. The Guatemala interviews were completed by a team of male and female bilingual interviewers (Spanish-

Quiche) who were enrolled in a regional satellite degree program of the University of San Carlos. The interviewers were not members of the study communities, but were familiar with the indigenous Mayan dialects spoken in the communities. The interviews in the United States were completed by one of the survey field supervisors. The Guatemala sample interviews were conducted in Quiche or Spanish depending upon the preference of the respondent. The questionnaires were printed in Spanish, and simultaneous translation from Spanish into Quiche was conducted with Quiche-speaking respondents. Intensive interviewer training before the start of interviewing and daily supervision and team meetings in the field ensured consistency in translations and the application of the questionnaire.

At the outset of fieldwork in each community permission was secured to conduct the interviews from the town mayors and the village authorities. In the rural communities the research team donated school supplies to the local primary school prior to the start of interviewing. No compensation was provided to survey respondents. Following the standard practice of the MMP, sampling frames for the communities were constructed by conducting a street-by-street enumeration of dwellings, and then using a random number generator to randomly select households for interviews. In four of the five rural communities attempts were made to interview all households. The response rates were generally high and ranged from 85 to 95 percent in six of the seven communities, with corresponding low refusal rates ranging from 2 to 10 percent. In one rural community the refusal rate was 27 percent. At the time of the survey this small indigenous community had recently been defrauded of funds that had been raised to finance the electrification of the community. As a consequence, the interviewers encountered considerable suspicion and resistance to being interviewed.

Interviewing for the U.S. sample was conducted over a four-week period during the months of October and November using snowball sampling. Initial telephone contact was made with several migrants using phone numbers provided by family members resident in the origin municipality. These initial interviews led to referrals to other migrants from the study area. Migrants from the study area were concentrated in one neighborhood of Providence, and in several instances migrants occupied multiple apartments in the same building. This spatial concentration of migrants also made it possible to recruit respondents from the study area through direct contact in apartment buildings and in public places in the neighborhood.

The survey questionnaire followed the standard format of the MMP ethnosurvey and used a household registry to collect basic demographic characteristics and information about first and last U.S. trips for all household members, and independent adult children of the household head who were members of other households. The questionnaire also collected detailed information about the most recent U.S. trip for migrant household heads. In contrast to the standard ethnosurvey questionnaire, the Guatemala Survey of Population Dynamics recorded the primary place of residence of the households of independent adult children with the question: "Where does [NAME] normally live, that is where is his/her home and family located?" This question on usual place of residence in combination with the standard MMP questions on household membership and current migration status allows us to distinguish between independent adult children who are in the United States and have families resident in Guatemala, and independent adult children who are settled with their families in the

United States. This distinction is important for identifying settled migrants in the United States among all migrants in the United States at the time of the survey.

Sample Characteristics

All of the migrants interviewed in the U.S. sample came from one of the two surveyed municipalities. In this article we restrict our analysis to the 302 households in the town and two rural communities from this municipality, in addition to the 20 households in the U.S. sample. We begin our analysis by using data on adult children of the household head age 16 and older recorded in the household registries of the Guatemala sample. Table 1 presents the distribution of these 662 adult children by U.S. migration status, current household membership status, and usual place of residence. We define three migration statuses: nonmigrants who have never been to the United States, return migrants who have been to the United States and are back in Guatemala at the time of the survey, and migrants who are in the United States at the time of the survey. These three migration statuses are cross-tabulated by four household membership and residency statuses: adult children who are nonhead members of households in the origin municipality, adult children who are members of other households in the the origin municipality, adult children who are members of households resident in other places in Guatemala, and adult children who are members of households resident in the United States. Four adult children in the sample were resident in countries other than Guatemala and the United States and are included in the other places in the Guatemala category. If we assume that all adult children who are members of independent households are either the heads of those households or the spouse of the head, then the bottom three rows of the table constitute a parallel sample of household heads and spouses to the Guatemala sample of household heads and spouses. However, in contrast to the survey sample of household heads and spouses, the independent adult children sample contains household heads and spouses who have moved away from the community to other locations in Guatemala and the United States.

Approximately 14 percent of adult children of household heads were in the United States at the time of the survey, with slightly more than one-half of these children reported as members of independent households resident in the United States. These independent adult children in U.S. households correspond to the household heads and spouses who are missed by surveys conducted in origin communities and who are the primary target of the MMP U.S. sample. The smallest group of adult migrant children (0.5 percent) was made up of members of households resident in the origin municipality. This group of migrants corresponds to migrant heads of households in the origin community for whom the spouse is a proxy respondent. In terms of migration categories these two groups roughly correspond to settled and temporary migrants. This distinction is made possible by the inclusion in the Guatemala survey of the question on household place of residence for independent (nonmember) adult children. The distinction is relevant for estimating the size of the out-migrant settled community in the United States, and can be consequential for calculating sample weights.

The sample of all adult children in the United States at the time of the survey shown in the third column of Table 1 is approximately the population of migrants from the origin

municipality who are at risk of inclusion in the U.S. sample. We use these migrants as a reference group for making comparisons with the adult migrants captured in the U.S. sample. Table 2 compares the sample of adult migrant children reported in the Guatemala sample (Column 3 of Table 1), to the sample of adults age 16 and older from the origin municipality who were reported in the household registry of the U.S. sample as resident in the United States. This comparison is informative of the relative inclusion of different types of migrants in the U.S. sample. For example, roughly one-half of each the respective samples of migrants comprises settled migrants, that is migrants living in the United States with their households. However, the U.S. sample contains a much higher percentage of household heads separated from their spouse and children in Guatemala (21.9 percent) compared to the Guatemala sample of adult children (3.3 percent), and it contains a smaller percentage of nonhead adult children separated from their parents (25.0 percent compared to 40.2 percent).

The differences in the two samples in the relative percentages of household heads and nonheads who are members of households resident in Guatemala are due to differences in sampling error, selection probabilities, and how respondents in Guatemala and in the United States identify household membership status and usual place of residence. It is notable that the U.S. sample includes a broad cross-section of migrants of different household membership and residency statuses. At a minimum 53.1 percent of the U.S. sample are settled migrants, and some portion of the 25.0 percent of adult children who identify themselves as nonhead members of households in Guatemala appear to be settled migrants in the sense that they will not return to Guatemala. Although a portion of the 21.9 percent of migrant heads of households resident in Guatemala may eventually be joined in the United States by other household members, none could be considered settled migrants at the time of the survey based on the location of their spouse and children.

Household membership status and place of primary residency are dynamic and to a degree ambiguous statuses that are open to different definitions and understandings, especially when comparing self-reports and proxy respondent reports. In many cases there is no clear moment in time that marks the transition from temporary to settled status, or in the case of unmarried adult migrant children that marks the transition into independence. As alternative points for comparison we use the background and migration experiences of the Guatemala adult migrant children sample and the U.S. sample. Table 3 presents means and percentages for selected sociodemographic characteristics and U.S. migration experience reported in the household registry. Column 1 contains the Guatemala sample that was presented in column 1 of Table 2, and column 2 contains the U.S. sample that was presented in column 2 of Table 2.

The Guatemala sample of adult migrant children has a slightly higher percentage of males (79.3 percent) than the U.S. sample (68.8 percent), and it has a lower percentage of currently married (51.1 percent compared to 71.9 percent). Adult migrant children in the Guatemala sample also tend to be slightly younger and more educated on average than migrants in the U.S. sample. The two samples also differ with respect to ethnic composition, with the U.S. sample containing a higher percentage of Mayans than the Guatemala sample. With respect to U.S. migration experience, the mean number of trips in both samples is similar, with the

large majority of migrants making only one trip. The vast majority of migrants in both samples are also in the United States without legal documentation, although the prevalence of U.S. documents is higher among migrants in the U.S. sample. Overall, the U.S. sample is more heavily weighted than the Guatemala sample of migrant children toward characteristics that are typically associated with settlement in the United States, such as a higher prevalence of women, older ages, more currently married, and a greater prevalence of documentation. The greater prevalence of Mayans in the U.S. sample may stem from the ethnic composition of the initial seeds in the U.S. snowball sample. Social relations in Guatemala are highly ethnically stratified. Because snowball sampling relies on social networks to recruit respondents, ethnic divisions present in the origin community are likely to lead to ethnically differentiated social networks in the destination, making it difficult to survey both ethnic groups in the United States in proportions that are similar to their respective proportions in the origin community.

In the MMP study design the destination snowball sample is intended to capture settled migrants rather than a cross-section of all active migrants. Columns 3 and 4 of Table 3 present only members of U.S. resident households among independent adult children in the Guatemala sample and adults in the U.S. sample, respectively. These two groups are the same groups shown in the bottom row of Table 2 and are subsets of columns 1 and 2 in Table 3. Based on household place of residence they are considered settled migrants and are missed by household surveys conducted in the origin community. Similar to what we found in the comparisons of all migrants, settled migrants in the U.S. sample compared to the Guatemala sample have a higher prevalence of characteristics typically associated with settlement, and even more so than was the case with the entire U.S. sample. In particular, 41 percent of the adult settled migrants in the U.S. sample have legal documents and approximately one-half are women.

If we treat the independent adult children of household heads in the Guatemala sample who are resident in the United States (column 3) as the group the U.S. sample is designed to capture, then it is the U.S. sample of all adults, irrespective of household membership or residency status (column 2) that comes closest to matching this group on most sample characteristics. On five of the seven characteristics listed in Table 3 the full U.S. sample is closer to the sample of adult out-migrant children in the Guatemala sample than the restricted U.S. sample of settled migrants. Even though the full U.S. sample captures a broad cross-section of temporary and settled migrants, at least on the background and migration characteristics reviewed in Table 3 the sample matches relatively well out-migrant adult children reported in the Guatemala survey. In part this result may reflect the fact that the distinction between temporary and permanent migration is not hard and fast. Not all the migrants in the U.S. sample who identify themselves as members of households resident in Guatemala will return to Guatemala, and some of the migrant households that are defined as settled in the United States will return to Guatemala. Temporary and settled migrants may also not be differentially selected on these observed characteristics.

Calculating Sample Weights

The MMP uses the relative prevalence of U.S. migration among independent adult children of household heads in the origin community to calculate sample weights for households in the U.S. sample. The relative prevalence of out-migration, defined as households that leave the home community for the United States, is estimated by forming the ratio of the number of independent adult children of household heads who are in the United States at the time of the survey to the number of independent adult children who are in the origin community. We have shown that the sample of independent adult migrant children in the Guatemala sample contains temporary and settled migrants in proportions that are different from the U.S. sample, and that the U.S. sample also contains migrants who still consider themselves as members of their parent's household in Guatemala. Nevertheless, we also show that for the purpose of representing the settled out-migrant community in the United States, this mismatch may not be very consequential. In our final exercise we present selected characteristics of the last U.S. trip for household heads and compare the pooled Guatemala and U.S. samples using alternative sample weights. This exercise is designed to assess the sensitivity of survey results to sample weights based on alternative ways of treating the different categories of migrants in the two samples.

Table 4 presents fourteen selected characteristics of last U.S. trip for household heads. Many of these characteristics have been used in other studies to measure immigrant integration and can be divided into four domains of integration: financial, employment, social, and linguistic (Barry 2001, 2005; Bijl et al. 2008; Entzinger and Biezeveld 2003; Kurthen and Heisler 2009; Rhine and Greene 2006). Financial integration is measured by whether the migrant had a bank account and a credit card in the United States. Employment integration is measured by whether the migrant was paid with a check, had social security taxes withheld, had federal taxes withheld, and submitted a tax return. Social integration is measured by whether the migrant was friends outside of work with African Americans, Asians, and whites. Linguistic integration is measured by whether the migrant used some or a lot of English at home, at work, with friends, and in the neighborhood. The percentages shown in Table 4 are based on binary versions of the friendship and English usage variables, which in their original form are ordinal variables. We also used principal components analysis to construct a composite index of integration from the fourteen characteristics using the ordinal versions of the nonbinary variables.

Column 1 presents results for the unweighted pooled Guatemala and U.S. sample of migrant household heads. In general the results reveal relatively low levels of integration and are indicative of the undocumented status of most of the migrants. Approximately one in ten migrants had a credit card and even fewer had a bank account in the United States. Although two-thirds of the migrants reported being paid with a check, a minority thought that social security and federal taxes were withheld from their pay and only 10 percent submitted tax returns. Virtually none of the migrants reported friendships with African Americans, Asians or whites outside of work, and while most migrants reported using some or a lot of English at work, only 8 percent reported speaking and understanding English a little or well. Chronbach's alpha, which provides a measure of the intercorrelations of the fourteen items is relatively high at 0.836. With a range of 0 to 1, values of Chronbach's alpha between 0.8

and 0.9 indicate a good level of internal consistency among the items and are good candidates for a composite index (Jackman 2008, 124–125). We used principal components analysis to construct a standard normal integration index. The mean values of the composite index for the Guatemala and U.S. samples, calculated from the unweighted pooled sample, are very close to one another (–0.059 and 0.082 respectively), indicating that the two samples are also close to one another on the fourteen measures of integration.

Column 2 of Table 4 presents the results for the pooled Guatemala and U.S. sample using sample weights based on the MMP procedure. Using MMP sample weights has a relatively small impact on the pooled sample point estimates, with many of the estimates remaining virtually the same as in the unweighted pooled sample. The difference in the mean values of the integration index for the Guatemala and U.S. samples is also small. The closeness of the composite index for the two samples and the relative absence of any impact of the MMP weights suggest that the experience of Guatemala migrants in the study area who returned to Guatemala and those who were in the United States at the time of the survey are on the whole very similar. This result is also consistent with the fact that the U.S. sample, as already noted, contains a cross-section of migrants and not only settled migrants.

The MMP procedure for calculating the U.S. sample weights assumes that the independent adult migrant children reported in the Guatemala survey and the adult migrants captured in the U.S. survey are members of U.S.–based households. We have seen that for both samples this assumption is not true. We next derive alternative U.S. sample weights that treat migrants in the United States who are members of households in Guatemala differently from migrants who are members of U.S.–based households. Our distinction between Guatemala and U.S.–based migrants enters into the calculation of sample weights at two points. First, in the estimation of the prevalence of U.S. migration among independent adult children reported in the Guatemala sample we include in the numerator only independent adult children who are members of U.S.–based households, rather than all independent adult children in the United States. Second, in the calculation and assignment of weights for the U.S. sample we base the calculation only on the number of U.S.–based households in the U.S. sample, and not all respondents in the U.S. sample. We also apply the U.S. sample weights only to the nine U.S.–based households in the U.S. sample, and we apply the weights from the Guatemala sample to the remaining eleven households in the U.S. sample for whom the respondents report being either members of their parents' household or heads of households in the origin municipality. These eleven Guatemala–based U.S. migrant households are represented by the Guatemala sample, and by assigning the Guatemala sample weights to them we are in effect treating the respondents as substitutes for household heads who were away in the United States at the time of the Guatemala survey and reported on by their spouse.

Column 3 of Table 4 presents point estimates from the pooled sample using these alternative, mixed sample weights. This alternative sample weight design places more relative weight on settled migrants in the U.S. sample compared to the MMP weights, and therefore will generate point estimates different from the MMP weights only to the extent that settled migrants have different integration experiences than temporary migrants. The estimates presented in column 3 do indeed suggest higher degrees of integration among settled U.S.

migrants than temporary migrants. On all fourteen items the percentages in column 3 are larger than the percentages in column 2 that are based on the MMP weights, and on half the items the percentages are 50 to 100 percent larger. The difference in the integration index between the Guatemala and U.S. samples also increases from 0.149 to 0.643.

Discussion

The independent adult migrant children reported in the household registries of the origin community survey include temporary migrants who are members of households in the origin community and settled migrants who are in the United States with their own household. The failure to differentiate between these two groups will generate over-estimates of the size of the U.S. out-migrant community. Snowball samples of migrants in the United States will potentially include three groups of migrants: temporary migrants who are members of their parent's household in the origin community, temporary migrants who are heads of households still resident in the origin community, and settled migrants who are members of households in the United States. Weighting all respondents in the U.S. sample as if they were settled migrants will generate point estimates that are biased toward temporary migrants since the experiences of temporary migrants are represented in both the origin community sample through the use of proxy respondents, and in the U.S. sample, where they are also over-weighted. The distinction between temporary and settled migrants among the independent adult children of household heads cannot be made with the current MMP data because no information is collected on the households of these children.

Restricting interviewing in the U.S. snowball sample to settled migrant households, the intended target of the sample, is too costly given the difficulty and already high cost of securing interviews with migrants, many of whom are undocumented. The very nature of snowball sampling is likely to yield a cross-section of different types of migrants. Removing temporary migrants from the U.S. sample at the analysis stage throws away valuable and difficult-to-secure information. An alternative solution that we present here involves the differential weighting of temporary and settled migrants in the U.S. sample. The distinction between temporary and settled migrants can be made in the U.S. sample with the current MMP data using information on the migration experience of all household members recorded in the household registry.

In our analysis of the binational Guatemala Survey of Population Dynamics we found that on a range of sociodemographic characteristics the U.S. sample was very close in composition to the independent adult migrant children reported in the Guatemala sample. This finding suggests that temporary and settled migrants are not differentially selected on these variables. We also suggested that the cross-section of migrants represented in the U.S. sample represents migrants at different stages in the settlement process, with at least some of the temporary migrants eventually transitioning into settled status. However, temporary and settled migrants differ with respect to their degree of financial, economic, social, and linguistic integration in the United States. Our comparison of point estimates of integration using the MMP weights and our proposed weights indicated that the MMP weights bias downward estimates of migrant integration in a pooled sample. An alternative solution to the use of weights when assessing migrant integration and experiences in the United States is to

stratify the analysis by temporary-settled migration status when the number of observations permits. The results that we present here are for just one community. The sensitivity of point estimates of a broad range of background characteristics and measures of migration experience will vary by the relative proportions of temporary and settled migrants in the origin community sample and in the U.S. sample.

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TABLE 1

U.S. Migration Experience of Adult Children Age 16 and Older of Household Heads by Household Membership Status and Current Place of Residence, Guatemala Sample, Guatemala Population Dynamics Survey, 2000–2002

	(1) Nonmigrants	(2) Return migrants	(3) In the United States
Nonhead members of sample households in origin Municipality	38.4%	2.1%	5.6%
Members of independent households in origin Municipality	30.2%	1.4%	0.5%
Members of independent households in other places in Guatemala	12.8%	1.2%	
Members of independent households in the U.S.			7.9%
	81.4%	4.7%	13.9%
Number of observations	539	31	92

TABLE 2

Adult U.S. Migrant Children Age 16 and Older Reported in the Guatemala Sample and Adults from the Origin Municipality Captured in the U.S. Sample, Guatemala Population Dynamics Survey, 2000–2002

	(1) Adult children of household heads: Guatemala sample	(2) Adults from Guatemala: U.S. sample
Nonhead members of sample households in origin Municipality	40.2%	25.0%
Members of independent households in origin Municipality	3.3%	21.9%
Members of independent households in the U.S.	56.5%	53.1%
Number of observations	92	32

TABLE 3

Selected Sample Characteristics of Adult U.S. Migrant Children Age 16 and Older Reported in the Guatemala Sample and Adults from the Origin Municipality Captured in the U.S. Sample, Guatemala Population Dynamics Survey, 2000–2002

	(1) Adult children of household heads: Guatemala sample	(2) Adults from Guatemala: U.S. sample	(3) Adult children of household heads & Member of independent household in U.S.: Guatemala sample	(4) Adults from Guatemala & Member of independent household in U.S.: U.S. sample
Male	79.3%	68.8%	75.0%	47.1%
Mean age	27.5 (8.8)	30.8 (10.5)	31.1 (9.5)	32.8 (7.6)
Mean years of education	6.6 (4.3)	4.2 (4.1)	7.0 (4.8)	6.0 (4.6)
Mayan	37.0%	50.0%	26.9%	35.3%
Currently married/consensual union	51.1%	71.9%	71.2%	94.1%
Mean number of U.S. trips	1.0 (0.3)	1.2 (0.5)	1.0 (0.2)	1.4 (0.7)
Undocumented in U.S.	85.4%	75.0%	78.0%	58.8%
Number of observations	92	32	52	17

NOTE: Standard deviations in parentheses.

TABLE 4

Experiences on Last U.S. Trip, Household Heads/Respondents Pooled Guatemala and U.S. Sample with Alternative Weights, Guatemala Population Dynamics Survey, 2000–2002

On last U.S. trip:	(1) Pooled Guatemala & U.S. sample: Unweighted	(2) Pooled Guatemala & U.S. sample: MMP weights	(3) Pooled Guatemala & U.S. sample: Mixed weights
	%	%	%
Had bank account	8.3	8.7	13.9
Had credit card	10.4	11.6	19.4
Was paid with check	66.7	66.3	76.2
Social security taxes withheld	43.8	40.3	50.4
Federal taxes withheld	39.6	34.7	44.1
Submitted tax return	10.4	14.1	22.8
Friends with African Americans outside of work	4.2	5.6	11.0
Friends with Asians outside of work	2.1	2.8	5.5
Friends with whites outside of work	2.1	2.8	5.5
Speaks good and understands a little English	8.3	11.2	17.3
Used some or a lot of English at home	12.5	16.9	28.3
Used some or a lot of English at work	64.6	62.2	66.7
Used some or a lot of English with friends	29.2	29.4	35.5
Used some or a lot of English in the neighborhood	45.8	39.4	43.9
Cronbach's alpha for 14 items	0.836	0.853	0.867
Mean integration index: Guatemala sample	−0.059	−0.084	−0.378
Mean integration index: U.S. sample	0.082	0.065	0.265
Observations	48	48	48