Surveying Hard-to-Reach Populations in Comparative Perspective

Tom W. Smith

NORC/University of Chicago

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Introduction

As Maranda (2004; Statistics Canada, 2004) has noted, "It is clear that surveying difficult-to-reach populations is a universal problem." It is universal in several senses. First, some populations, sub-groups, and individuals will always be hard to survey. Second, the reasons for populations and individual cases being challenging are quite diverse and complex. Difficulty is not simple, nor uni-dimensional. Finally, difficulty spans the globe. Wherever surveys are done, difficulties arise. But the specific mix of impediments can be very society specific and likewise the steps need to overcome them must be geared to the realities and complications that prevail in each survey in every country.

The total survey error paradigm can be used to examine the challenges in surveying hard-to-reach/hidden populations. Major components of total survey error that specifically relate to hard-to-reach/hidden populations include 1) sampling problems such as non-coverage or under-coverage and the need for special sample frames, 2) nonresponse, and 3) misreporting.

First, sampling problems include groups that are part of the target population, but which are not-covered or under-covered by available sample frames. If the sub-group is the focus of the study, an alternative sampling design often must be developed. Even if not undercovered, using a sampling design for the general population and screening down to the targeted sub-group may be inefficient and impractical. Dual or multiple frames or various follow-up or referral sampling methods will often be needed to adequately and efficiently cover small, hard-to-reach populations (i.e. "rare" populations)(Christman, 2009; Elliott et al., 2009; Ericksen, 1976; Johnson and Sabin, 2010; Kalsbeek, 2003; Kalton and Anderson, 1986; Reed, 1976-76; Rothbart, Fine, and Sudman, 1982; Sudman, 1972). What can be done for a given target populations will vary greatly from country-to-country depending on what information is available for sampling frames (McKenzie and Mistianen, 2009; Salganik and Heckathorn, 2004; Treiman, Lu, and Qi, 2009).

Second, while nonresponse is a problem for all surveys and all population groups, it is especially difficult for many hard-to-reach populations. Some of these populations involve groups that wish to avoid detection (e.g. sex workers, undocumented aliens), that are difficult to locate or contact (e.g. the homeless, nomads), or that are less able to do interviews (e.g. drug addicts, the mentally ill, alcoholics).

Finally, measurement error from misreports contributes to the omission of hard-to-reach respondents. Rather than refusing or avoiding interviews, hard-to-reach respondents may thwart surveys by misreporting their status. For example, sex workers may deny engaging in prostitution, bankrupts may fail to report their insolvency, or undocumented aliens may report legal residence in their adopted country.

Hard-to-reach populations have some combination of several attributes: 1) small size, 2) lack of identifying information to facilitate sampling, 3) difficulty in contacting, and 4) reluctance to cooperate (either to identify as member of target population or to participate once identified)(Brackertz, 2007; Marpsat and Razafindraftsima, 2010). "Hard- or difficult-to-reach" populations are general terms that apply to all of these reasons. The term "rare" population largely refers to the size dimension. "Hidden" populations especially describe sub-groups that are socially concealed. In many cases the groups are

actively in hiding because of the very attributes that makes them the center of research. This includes those engaged in illegal activities (e.g. sex workers, drug users and sellers, undocumented aliens), those who are members of stigmatized groups (e.g. homosexuals, alcoholics, epileptics), and others who do not wish to reveal their status (e.g. crime victims - especially of sexual assaults,Williams, 1984), the wealthy (D'Alessio and Faiella, 2020; Kennickell, 1998; Lohr, 2010)). As Bates and Edwards (2010) have noted, "The concept of who qualifies as 'hard to reach' is shifting." They indicate that historical groups like racial and ethnic minorities are being augmented by emergent groups such as cell-phone only households, undocumented aliens, survey cynics, and linguistic minorities.

In considering hard-to-reach/hidden populations cross-nationally, difficulties arise at the country-level, for social groups, and for individuals.

National Factors

Countries as a whole have characteristics that increase the size of or the ability to conduct surveys with hard-to-reach populations. First, there is an under-representation of countries with authoritarian governments (Smith, 2010). In some cases, such as North Korea, the ban on surveying is practically universal so the whole society is in effect a hard-to-reach/hidden population. Fortunately, the number of countries prohibiting surveys has diminished over time. In other cases, surveys are tightly regulated and their substance and content restricted (Afrobarometer, 2007). It may be impossible to survey specific sub-populations because the government does not approve access. Or targeting a group may be greatly handicapped by restrictions on content. For example, using a general population survey to screen for a sub-population is not possible in countries that do not permit the topic of the screening questions to be included in surveys. For example, Lebanon has not conducted a census since 1932 due to sensitivity over the size of and political representation of sectarian groups. In other countries questions about sexual orientation are not permitted.

Second, poorer countries are under-represented. There are several reasons for this. One major problem in poorer countries is resource or capacity constraints. Most survey research is indigenously funded and poorer countries often lack the resources to develop a survey-research infrastructure and/or to carry out much research. As a result, the major cross-national research programs over-represent developed countries and under-represent poorer countries (Smith, 2010). Moreover, even when covered, poorer countries are likely to have more hard-to-reach populations because of their limited resources. In general, when surveys have fewer resources, it will mean that all harder-to-reach groups/individuals will be more under-represented. For example, surveys with more limited resources are likely to restrict interviewing to a single main language, reduce the number of callbacks, shorten the field period, and omit special appeals to specific sub-populations. Such limitations will reduce coverage and lower the response rate and are likely to increase nonresponse bias by increasing the under-representation of hard-to-reach groups/individuals. Some of the developmental divide can be overcome when there is central funding and data-collection coordination as was the case with the World Fertility Survey in the late 1970s to early 1980s (Cleland and Scott, 1987). But most cross-national studies rely on local resources and data-collection infrastructure (Smith, 2010). In addition, even when

external support is available, creating an ad-hoc organization to field a survey is a daunting and costly task (Afrobarometer, 2007; Pennell et al, 2010; Feld, 2009; Hornbeck, n.d.; Hornbeck et al., 2009).

Surveys in poorer countries are also hampered by mode constraints (Pennell, Levenstein, and Lee, 2010; Skjak and Harkness, 2003). Almost all surveys in poor countries have to be done face-to-face since coverage via other modes (telephone, internet, postal) is not adequate to cover the general population. Telephone penetration is too low in general in many countries and especially inadequate to cover rural, tribal, and other difficult sectors. The Gallup World Poll for example uses the relatively less expensive telephone mode in developed countries and the more costly in-person interviews for developing countries (Tortora, Srinivasan, and Esipova, 2010). Likewise, low literacy levels hampers surveys in many countries. While a majority of countries have literacy rates of 90%+, in 14 countries literacy is below 50% and in another 22 countries it is between 50 and 69% (Feld, 2009; United Nations, 2009). This essentially rules out postal surveys for these less developed countries. Thus, general population surveys in poorer countries are essentially limited to the most expense mode, in-person interviewing. Of course lower labor costs still make surveys in these countries inexpensive compared to the cost in developed countries.

Infrastructure limitations beyond the lack of survey capacity also hinder surveys in poor countries (Pennell et al., 2010). For example, poor transportation makes it difficult to reach respondents. For example in Afghanistan, it "sometimes may take 18 hours or more to walk to the targeted respondents (Feld, 2009)." Likewise, consider the following general recommendations in such areas (Pennell, Levenstein, and Lee, 2010):

> Provide adequate transportation for staff and supplies.
>
> > If maps are unavailable or unreliable, consider use of local guides or GPS instruments.
> > Arrange to secure fuel and oil and to maintain the vehicles used by the field staff; this may present logistical problems in some…countries.
> > Arrange for emergency transport in the event that a field team member become sill or injured and needs immediate medical attention or it becomes unsafe to stay in an area.
> > Arrange for backup transportation.

Similarly, epidemics and poor sanitation presents serious health risks to interviewers in many regions.

Third, countries experiencing disruptions are under-represented. This includes problems caused by weather, natural disasters, civil disorder, and war. These may periodically affect whole societies or major regions (e.g. civil disorder in Somalia, Darfur, and the eastern Congo, annual floods in Bangladesh, winters in polar regions). Specifically designed to meet and overcome such challenges are disaster research that is often intended to study the aftermath of major natural disasters such as floods and earthquakes (Norris, 2006; Rodriquez, Quarantelli, and Dynes, 2007) and conflict or "danger zone" research (Feld, 2009; Hornbeck et al., 2009; Peng et al. n.d.) designed to cover areas undergoing civil war and related disturbances. One sub-set of conflict surveys are peace polls designed to help end such conflicts (Irwin, 2011). For example, three peace polls were carried out in Sri Lanka in 2008-2010. The

first two excluded the northern region where rebel activity and fighting were concentrated, but the third in 2010 was able to cover the entire country. A related social disruption is crime. For example, in Madang, New Guinea "interviewing in residential neighborhoods at night is too dangerous (Hornbeck, n.d.)." In Mexico, interviewers have been seized by drug gangs (WAPOR, 2011).

Fourth, countries with unique and/or multiple languages are underrepresented. Countries with isolated languages are harder to include since more local expertise is needed and there are no economies of scale by sharing questionnaires and other material across countries using the same language. So studies in the Caribbean and Latin American are more likely to include Spanish-speaking nations and less likely to be in Haiti with its French-based creole. Also, countries with multiple languages in general use are harder to include because to the higher cost of developing instruments in multiple languages and of recruiting multi-lingual interviewers.

Finally, very small countries are under-represented. For example, none of the micro-states of Europe (Andorra, Liechtenstein, Monaco, San Marino, or Vatican City) are included in European-wide surveys like the Europeans Social Survey or Eurobarometers. It is not the situation that small countries simply do not fall into "samples" of countries due to their low probability of inclusion. Rather they are de facto excluded because they a) typically lack a survey-research infrastructure and b) are not considered important enough to be sought out in cross-national studies (Tortora, Srinivasan, and Esipova, 2010).

Besides these general, socio-political attributes of countries that relate to hard-to-reach populations, there are country-level data and sampling resources that affect the conducting of surveys and the ability to reach specific sub-populations. First, the coverage of hard-to-reach populations varies across countries because of differences in the available sample frames (Haeder and Gabler, 2003). For example, in Scandinavian countries there are high-quality, population registers that include not only household residents, but also members of the non-household population in assisted-living facilities and include information on the age of people. Thus, the elderly in general and the non-household elderly in particular can be directly sampled. In most other countries dual frames and extensive screening would be needed to cover all of the elderly. In China people register their residences under the "hukou" system. But an estimated 221 million people, mostly migrant workers from rural areas, actually live in other areas. As a result, the official records do not adequately represent the general population and in particular are inadequate for sampling migrant workers. In other countries such as Iraq, Afghanistan, and Lebanon there are no recent census figures to inform sampling (Afrobarometer, 2007; Feld, 2009; Peng et al. n.d.). Often creative approaches such as by using satellite imagery are used to draw samples in such countries (Peng et al., n.d.; Treiman, Lu, and Qi, 2009).

Second, what statistics are collected by government censuses and statistical agencies strongly affect the ability to study hard-to-reach populations. In particular, disproportionate sampling typically relies on having some information on the geographic dispersion of target groups and the more detailed and accurate the information, the more efficient the sample design can be. But often countries do not collect crucial data. In the United States the Census does not measure religion and thus it cannot be used to sample small religious groups. In Germany no official statistics are kept on race or ethnicity.

Finally, demographic information useful for sampling hard-to-reach populations may exist, but not be shared with most survey researchers. In particular, small-area and even household-level information may be available to government surveys in some countries, but denied to all other surveys. The restrictions vary greatly from country-to-country.

Social Groups/Individuals

Besides country-level attributes, there are many social and individual-level attributes that tend to vary across countries and thus also contribute to cross-national differences in surveying hard-to-reach populations, the specific hard-to-reach populations of relevance, and what needs to be done to deal with those populations.

The distinction between group and individual attributes is a fluid and artificial one since any characteristic that individuals share might be seen as defining them as a group. But the distinction has some value. By groups we are referring especially to major social groupings which people identity with and which are typically recognized by both in-group and out-group members.

First, there are primitive or tribal populations that are socially isolated from the main society. The extreme examples are the so-called uncontacted tribes. For example, in Brazil 67 uncontacted tribes were recognized in 2007. It is the policy of the Brazilian government to minimize interaction between themselves and others and the uncontacted tribes. Such groups are also common in New Guinea and in some other countries as well. Next, there are tribes and primitive groups that do interact with the main society. These are still hard-to-reach populations due to their distinct culture (typically including wariness of outsiders), linguistic barriers, and usually remote location. Members of such groups often do not understand what a survey is. One survey in Kenya was associated with devil worship by some respondents (Weinreb, 2006). Even for tribal groups that are fairly integrated into the main society, special procedures are often needed. For example, in many African societies, it is considered necessary to gain approval from the village chief before attempting interviews among households in the community (AfroBarometer, 2007; Pennell et al., 2010; Van der Reis, 1997; Weinreb, 2006).

Second, isolated and remote locale makes populations hard to reach. In the United States before the advent of telephone surveys, almost all public opinion polls excluded Alaska and Hawaii. But even decades after telephone polling became the standard, most polls still omitted them (Smith, 2011a). In the United Kingdom, the British Social Attitudes Survey does not interview in Scotland north of the Caledonian Canal. Similarly, Statistics Canada usually excludes remote areas in the north. For example, the Canadian General Social Survey excludes the Northwest Territories, the Yukon, and Nunavut. In effect, these hard-to-reach area have be turned into uncovered areas. Also, countries with a large area will have a dispersed population with some segments long distances from the main population centers. Additionally, some specific locations will have limited access due to the lack of roads and other means of travel. In Alaska, for example, there are many areas only routinely serviced by float plane. Large countries and those with extensive mountains, deserts, swamps, and other inhospitable terrain have more hard-to-reach populations than compact and geographically-accessible countries.

Third, the poor are often a hard-to-reach population. This is especially true in countries with large shanty towns surrounding urban centers. Often these settlements are not legally established and roads and addresses not officially recognized. In the favelas of Brazil it is often necessary to get permission from local gang members before interviewers can conduct surveys. Another group of poor that is especially hard to interview are the homeless. Poorer countries and those without a developed system of shelters and public housing have larger homeless population that would have to be sampled by special methods going beyond household frames (Gelberg and Siecke, 1997; Iachan and Denis, 1993; Rossi, 1989).

The poor are also harder to reach when certain survey modes are employed. They are less likely to have telephone coverage and are thus undersampled in phone surveys. Likewise they are more likely to be illiterate and thus not easily reachable by postal surveys. To deal with illiteracy some modes such as computer assisted self-interviews (CASI) may need to be replaced with audio-CASI (Hewett, Erulkar, and Mensch, 2004). Likewise, certain question formats are more difficult for less educated and low literacy populations (van der Reis, 1997).

Fourth, at the other end of the income gradient, there are difficulties in interviewing the wealthy (D'Alessio and Faiella, 2002; Kennickell, 1998; Marpsat and Razafindratsima, 2010). The wealthy can often bar contact by living in gated communities or guarded buildings and/or by having access blocked by servants or other employees. In some countries, the risk of kidnapping for ransom is high and the well-to-do are especially leery of allowing access.

Fifth, certain elites (e.g. politicians, entertainers, business leaders) are reluctant to grant interviews because of high demand on their time in general, a concern that a survey may be a ruse to solicit information, or other reasons. It is unknown if this varies notably across countries.

Sixth, geographic mobility hinders interviewing. Nomads are the classic example and they are concentrated in certain less developed countries (Kalsbeek and Cross, 1982; Pedersen, 1995). Similar examples are displaced people such as the internal and external refugees from Darfur (Hagan, 2011). But even in developed countries mobility is a serious impediment involving frequent travelers with such people as pilots, sailors, long-distance truckers, and traveling salesperson being hard to contact.

Seventh, related to mobility are people who are infrequently at home, but not staying elsewhere (Kalton, 2003). This would include those working long hours, especially those with second jobs such as moonlighters working most evenings and those who frequently visit or socialize with others outside their household.

Eighth, there are illegals. Because of their illegal status, they often avoid participating in surveys. This can result from under coverage, nonresponse, or misreporting their status. There are two main groups: undocumented aliens and criminals. Undocumented aliens are large segments of some countries (Kelly, 1977; Sudman, 1972; Vigneswaran, 2007). In the United States estimates put undocumented aliens at around 11 million. Many other countries have few illegal immigrants. Criminals are undercounted both because some are incarcerated and removed from the household population and because those in the general population may be reluctant to agree to interviews. The United States

has the highest incarceration rate in the world. Most other countries have rates only half or less the American level. Drug users are one major category of criminals (Des Jarlais et al., 2006; Heckathorn, 2002; Kuebler and Hausser, 1997; Platt et al., 2006). Sex workers are another (Elmore-Meegan, Conroy, and Agala, 2004; Johnson and Sabin, 2010; Kanouse et a;., 1999; Vanderpitte et al., 2006). The ease of including these groups depends on the exact legal status of each group in a society and how the police enforce existing laws regarding illegal drugs and commercial sex.

Ninth, are the social isolates which include hermits and misanthropes. It is unknown how these groups vary across countries, but some countries do have large monastic and other isolated religious communities such as Mount Athos in Greece.

Tenth, are uncooperative, survey nonrespondents. In most countries, this group has expanded in recent years (Smith, 2011b; Stoop et al., 2010). The size of the group of refusers varies notably across countries. For example, in the ESS which strives to both obtain a maximum nonresponse rate of 30% in all countries and to minimize the range of nonresponse across countries, in round 3 nonresponse ranged from 54% in France down to 26.8% in Slovakia (Stoop et al., 2010). In some other surveys and countries nonresponse falls below 10% (Couper and de Leeuw, 2003). It is widely believed that differences in the "survey climate" (or the general propensity to cooperate and complete a survey) explain most of the cross-national variation in response rates. The size of the nonrespondent group also varies by the topic of the survey. Health surveys appear to frequently receive the highest response rat e across countries, while burdensome and/or sensitive topics get a lower response rate. However, what topics are seen as burdensome or sensitive varies across countries. For example, standards items in US survey on religious belief and behaviors are deemed to be sensitive in China. Likewise, questions about alcohol use are generally not problematic in most Western countries, but are threatening in conservative, Islamic nations.

Eleventh, busy people are hard to interview (Brackertz, 2007). This would include those working many hours away from home, those caring for dependents in the household (children, the ill or disabled, the elderly), those otherwise occupied with duties and obligations, and those with multiple responsibilities such as in Hochschild's second-shift women. Levels of participation in the labor force and working outside the home varies considerably across countries. In addition, household composition differs greatly across countries. Most European households are nuclear families with few, if any, children, while households in developing countries are more likely to involve both extended families and have dependent children.

Twelfth, the incapacitated are less likely to be interviewed. This includes the mentally unable (those suffering mental illnesses and the cognitively impaired), the physically ill, those with disabled communication senses (e.g. blind, deaf, mute), and substance abusers. Often these are groups of special interest to surveys (e.g. IDU users in AIDS/HIV studies, the mentally and physically ill in health studies). Both the size of these groups and their location in society varies across countries. For example, in developing countries the mentally ill are much more likely to live in households with relatives than in developed countries and deafness is more common in less developed countries.

Thirteen, linguistic minorities are less likely to be interviewed. For countries with well-established, multiple-language populations, surveys are routinely conducted in the main languages (e.g. English and French in Canada; Dutch and French in Belgium; French, German, and Italian in Switzerland). Of course the problem is greater in countries with many indigenous languages (e.g. South Africa or India). In addition, especially when involving immigrants, new minority languages may not be covered. In the US, the General Social Survey was not able to add Spanish until 2006. Currently in the US, bilingual surveys in English and Spanish are common, but except for studies focusing on immigrants or a specific, foreign ethnicity, surveys in additional languages are infrequent. About 7.5% of those 5 and older speak a language other than English or Spanish at home and many don't speak English (or Spanish) well enough to do an interview in either of those languages. In other countries with significant immigrant populations, surveys outside the national language are rare (e.g. German is usually used exclusively in surveys in Germany). The challenge is especially great when there is no written form of languages. This applies not only to less developed countries, but also to unwritten regional dialects in developed countries such as Swiss German.

Fourteen, stigmatized and marginalized groups are under covered in surveys. This includes both groups that fail to identify themselves as group members (e.g. closeted homosexuals, epileptics) and group members who are more likely than the general population to be nonrespondents (e.g. undocumented immigrants - Cornelius, 1982; the Romany in many European societies – Hajioff and McKee, 2000; Titterton and Clark, 2000; non-Muslims in some Islamic countries). Refugees also sometimes fall in this category (Bloch, 1999). What groups are stigmatized and the degree to which they try to remain hidden from surveys varies across societies (Michael and Lhomond, 2006).

Fifteen, political extremists are a difficult group to include. What groups are extremist and how "extreme" a particular group is of course varies across countries. For example, groups that might be considered Islamic extremists in the United States or Europe might well be classifies as mainstream in various Arab countries. Also, the more political tolerance there is in a society, the less likely extremist groups are to shun surveys in order to avoid political repression. This varies both across countries and across time within countries (Smith 2011c).

Sixteen, local customs make it harder to interview specific groups (Pennell, Levensein, and Lee, 2010). For example, in conservative Arab countries interviewers and respondents need to be gender matched (Benstead, 2010; Feld, 2009). In addition, in many of these countries the female interviewers need to be accompanied by a male relative. This makes surveys in general and especially surveys of females more difficult. Other customs affect other groups in different countries.

Finally, many non-household populations are often harder to interview. This includes those in eldercare facilities, the hospitalized, those incarcerated, those in other institutions, and the homeless. Often this is because there is no good sample frame for these sub-groups. But in countries with high-quality population registers, the elderly and those in many other types of institutions and group quarters can be readily sampled. Also, in some countries there are good sample frames of other non-household populations. What is possible varies notably from country-to-country. Only a few groups, like the

unsheltered homeless, generally present similar problems across countries. But there are major cross-national differences in the relative size of the homeless population.

What groups are covered by household populations varies greatly across countries. For example work camps and worker dormitories are fairly rare in most developed countries, but major institutions in some countries such as in the mining districts in Africa. Excluding such populations as "out-of-scope" has quite different impacts across countries and greatly affects the coverage of the labor force in surveys. Similarly, many countries exclude non-citizen from surveys. In several Persian Gulf countries this rule would eliminate a large part of and sometimes the majority of the labor force from surveys.

Also, certain populations are on the cusp of the household population are often missed when they should have been covered. Examples are residential motels with kitchens, single apartment in otherwise commercial structures, and various types of arrangements bordering on being group quarters (e.g. changing US Census definitions of how groups of unrelated people sharing a housing unit are counted).

The above factors have been presented as independent factors and each does have a demonstrable and separate impact on ease of obtaining an interview. But in actual practice, there is considerable overlap and individuals and groups tend to be affected by multiple, re-enforcing attributes that thwart inclusion. For example, small, underdeveloped, dysfunctional countries tend to be missed by surveys. Undocumented aliens are harder to interview not only because of their legal status, but also because of language limitations and poverty. The homeless are harder to locate with special sample designs needed and are more likely than others to be mentally ill and/or substance abusers. The wealthy are more likely to live in guarded residencies, more likely to be away from home, and more likely to be a member of a special elite group that wishes to avoid publicity.

Hard-to-reach/hidden populations may be the sole focus of a study, an important element in cross-group comparisons, or only a minor component in a broader general population study of no special interest. For example, a study of nomads needs to develop a study design to sample and interview this difficult, target population, while a general population study needs a study design that includes nomads along with all other segments of the general population.

Assuming that the goal is to interview a random, representative sample of a particular target population, different groups would have variable costs per case associated with them. A large group that does not have to be oversampled to get enough cases, which is well-covered by a standard sample frame, has a high response rate, and no appreciable misreporting of its status would have a low cost and good quality data. A small group that cannot be directly sampled via some special sample frame, has a low response rate, and has a high misreporting rate would have both a high cost and lower quality data. What sub-groups fall towards which end of this continuum will differ across countries.

Summary and Conclusion

The size and composition of hard-to-reach populations vary across countries. First, key attributes of countries such as their political system and level of development affect the ability to do

surveys in general as well as to cover specific sub-populations. Second, country-level statistical and survey-research infrastructure influences the conducting of surveys. Third, the characteristics of hard-to-reach populations differ notably across countries. Finally, the size of the hard-to-reach populations varies across countries. One needs to understand the specific challenges that are most serious in each country and the resources that exist in each country to deal with the challenges. One then adopts a study design that practically addresses the problems and allows the hard-to-reach populations to be sampled and interviewed. In some cases the very latest technological innovations can be utilized to overcome barriers in less developed countries (e.g. satellite images for sampling, GPS systems for locating sampling points, audio-computer assisted self-interviews to deal with illiteracy). A one-size-fits-all solution is not useful and careful attention to the specific needs and most viable approaches for each country and target population needs to be considered.

References

Afrobarometer Network, 2007,Afrobarometer Round 4 Survey Manual.

Bates, N. and Edwards, B. 2010, "International Conference on Methods for Surveying and Enumerating Hard-to-Reach Populations," unpublished report

Benstead, l. 2010, Effects of Interviewer Gender and Religious Dress on Survey Responses: Findings from a Nationally-Representative Field Experiment in Morocco, Paper presented to the Society for Political Methodology, Iowa City, IW.

Bloch, A. 1999, Carrying Out a Survey of Refugees: Some Methodological Considerations and Guidelines. *Journal of Refugee Studies*, 12: 367-383.

Brackertz, N. 2007, *Who IS Hard to Reach and Why?"* ISR Working Paper, Swinburne University of Technology.

Christman, M.C. 2009, Sampling Rare Populations, in D. Pfeffermann and C.R. Rao *(eds.), Handbook of Statistics*, Volume 29a. Amsterdam: North Holland.

Cleland, J. and Scott, C., eds., 1987, *The World Fertility Survey: An Assessment*. New York: Oxford University Press.

Cornelius, W. A. 1982, Interviewing Undocumented Immigrants: Methodological Reflections Based on Fieldwork in Mexico and the U.S., *International Migration Review* 16: 378-411.

Couper M. P. and De Leeuw, E. D., 2003,Nonresponse in Cross-Cultural and Cross-National Surveys, in Janet A. Harkness, Fons J.R. van de Vijver, and Peter Ph. Miller (eds.),*Cross-Cultural Survey Methods*. New York: John Wiley & Sons.

D'Alessio, G. and Faiella, I. 2002, Non-response Behaviour in the Bank of Italy's Survey of Household Income and Wealth, Bank of Italy Report No. 462.

Des Jarlaid, S. C. et al. 2006, Using Standardized Methods for Research on HIV and Injecting Drug Use in Developing/Transitional Countries: Case Study from the WHO Drug Injection Study Phase II, *BMC Public Health*, 6: 54ff.

Elliott, M. N. et al. 2009, Use of Expert Ratings as Sampling Strata for a More Cost-effective Probability Sample of a Rare Population, *Public Opinion Quarterly*, 73: 56-73.

Elmore-Meegan, M.; Conroy, R. M.; and Agala, C. B. 2004, Sex Workers in Kenya, Numbers of Clients and Associated Risks: An Exploratory Survey, *Reproductive Health Matters* 12: 50-57.

Ericksen, E. P. 1976, Sampling a Rare Population: A Case Study, *Journal of the American Statistical Association* 71: 816-822.

Feld, K. 2009, Research in a Danger Zone, *Research World* 9: 49-51.

Gelberg, L. and Siecke, N. 1997, Accuracy of Homeless Adults' Self-Reports, *Medical Care* 35: 287-290.

Haeder, S. and Gabler, S. 2003, Sampling and Estimation in Janet A. Harkness, Fons J.R. Van de Vijver, and Peter Ph. Mohler (eds.), *Cross-Cultural Survey Methods*. New York: John Wiley & Sons.

Hagan, J. 2011, Voices of the Darfur Genocide, *Contexts* 10 (Summer): 22-29.

Hajioff, S. and McKee, M. 2000, The Health of the Roma People: A Review of the Published Literature, *Journal of Epidemiology & Community Health* 54: 864-869.

Heckathorn, D. D. 2002, Respondent-Driven Sampling II: Deriving Valid Population Estimates from Chain-Referral Samples of Hidden Populations, *Social Problems* 49: 11-34.

Hewett, P. C.; Erulkar, A. S.; and Mensch, B. S. 2004, The Feasibility of Computer-Assisted Survey Interviewing in Africa, *Social Science Computer Review* 22: 319-334.

Hornbeck, S. n.d., Conducting Research in Papua New Guinea, unpublished report, D3 Systems.

Hornbeck, S. et al., n.d., Ensuring Data Quality in Conflict Zones, unpublished report, D3 Systems.

Iachan, R. and Denis, M.L. 1993, A Multiple Frame Approach to Sampling the Homeless and Transient Population, *Journal of Official Statistics*, 9: 747-764.

Irwin, C., 2011. "Peace Polls," www.peacepolls.org.

Johnston, L. G. and Sabin, K. 2010, Sampling Hard-to-Reach Populations with Respondent Driven Sampling, *Methodological Innovation Online*, 5 : 38-48.

Kalsbeek, W. D., Sampling Minority Groups in Health Surveys, *Statistics in Medicine*, 22: 1527-1549.

Kalsbeek, W. D. and Cross, A. R., 1982, Problems in Sampling Nomadic Populations, *Proceedings of the American Statistical Association, Survey Research Section*, American Statistical Association.

Kalton, G. 2003, Practical Methods for Sampling Rare and Mobile Populations, *Statistics in Transition*, 6: 491-501.

Kalton, G. and Anderson, D. W., 1986, Sampling Rare Populations, *Journal of the Royal Statistical Society, Series A* 149: 65-82.

Kanouse, D. E. et al., 1999, Drawing a Probability Sample of Female Street Prostitutes in Los Angeles County, *Journal of Sex Research* 36: 45-51.

Kelly, C. B., 1977, Counting the Uncountable: Estimates of Undocumented Aliens in the United States, *Population and Development Review* 3: 474-481.

Kennickell, A. B. 1998, Analysis of Nonresponse Effects in the 1995 Survey of Consumer Finances, Unpublished report, Federal Reserve System.

Kuebler, D. and Hausser, D., 1997, The Swiss Hidden Population Study: Practical and Methodological Aspects of Data Collection by Privileged Access Interviewers, *Addition*, 92: 325-334.

Lohr, Sharon L. 2010*, Sampling: Design and Analysis*. Boston: Brooks/Cole.

Maranda, F. 2004, Opening Remarks, *Symposium 2004: Innovative Methods for Surveying Difficult-to-Reach Populations Proceedings*. Ottawa: Statistics Canada.

Marpsat, M. and Razafindraftsima, N. 2010, Survey Methods for Hard-to-Reach Populations: Introduction to the Special Issue, *Methodological Innovation Online* 5: 3-16.

McKenzie, D. J. and Mistianen, J. 2009, Surveying Migrant Households: A Comparison of Census-based, Snowball, , and Intercept Point Surveys*, Journal of the Royal Statistical Society, Series A*, 172: 339-360.

Michaels, S. and Lhomond, B. 2006, Conceptualizations and Measurement of Homosexuality in Sex Surveys: A Critical Review, *Cadernos de Saude Publica*, 22: 1365-1374.

Norris, F. H. 2006, Disaster Research Methods: Past Progress and Future Directions*, Journal of Traumatic Stress*, 19: 173-184.

Pedersen, J. 1995, Drought, Migration, and Population Growth in the Sahel: The Case of the Malian Gourma, 1900-1991, *Population Studies*, 49: 111-126.

Peng, D. et al. n.d., Overcoming Challenges to Sample Design in Iraq: An Overview of D3's Iraq Sampling Methodology, Unpublished report, D3 Systems.

Pennell, B.-E.; Levenstein, R.; and Lee, H. J., 2010, Data Collection," Cross-Cultural Survey Guidelines, at ccsg.isr.umich.edu.

Pennell, B.-E. et al., 2010, Challenges in Cross-National data Collection, in Janet A. Harkness et al. (eds.), *Survey Methods in Multinational, Multiregional, and Multicultural Contexts*, Hoboken, NJ: John Wiley & Sons.

Platt, L. et al. 2006, Methods to Recruit Hard-to Reach Groups: Comparing Two Chain Referral Sampling Methods for Recruiting Injecting Drug Users Across Nine Studies in Russia and Estonia, *Journal of Urban Health* 82: Supplement 1, 39-53.

Reed, J. S. 1975-76, Needles in Haystack: Studying 'Rare' Populations by Secondary Analysis of National Sample Surveys, *Public Opinion Quarterly* 39: 514-522.

Rodriquez, H.; Quarantelli, E. L.; and Dynes, R. (eds.) 2007, *Handbook of Disaster Research*. New York: Springer Verlag.

Rossi, P. H. 1989, *Down and Out in American: The Origins of Homelessness*. Chicago: University of Chicago Press.

Rothbart, G. S.; Fine, M.; and Sudman, S. 1982, On Finding and Interviewing Needles in the

Haystack: The Use of Multiplicity Sampling, *Public Opinion Quarterly* 46: 408-421.

Salganik, M. J. and Heckathorn, D. D. 2004, Sampling and Estimation in Hidden Populations Using Respondent-Driven Sampling, *Sociological Methodology* 34: 193-239.

Skjak, K. K. and Harkness, J. 2003, Data Collection Methods, in Janet A. Harkness; Fons J.R. Van De Vijver; and Peter Ph. Mohler (eds), *Cross-Cultural Survey Methods*, HoboKen, NJ: John Wiley & Sons.

Smith, Tom W. 2010, The Globalization of Survey Research, in Janet A. Harkness et al. (eds.), *Survey Methods in Multinational, Multiregional, and Multicultural Contexts*, Hoboken, NJ: John Wiley & Sons.

Smith, Tom W. 2011a, Lessons on Developing Laws for Studying Societal Change, presented to the European Survey Research Association, Lausanne.

Smith, Tom W. 2011b, The Report on the International Workshop on Using Multi-level Data from Sample Frames, Auxiliary Databases, Paradata, and Related Sources to Detect and Adjust for Nonresponse Bias in Surveys, *International Journal of Public Opinion Research*, 23: 389-402.

Smith, Tom W. 2011c, Trends in Support for Civil Liberties, GSS Social Change Report No. 59, NORC.

Statistics Canada, 2004, *Symposium 2004: Innovative Methods for Surveying Difficult-to-Reach Populations Proceedings*. Ottawa: Statistics Canada.

Stoop, I.; Billiet, J.; Kohn, A.; and Fitzgerald, R., *Improving Survey Response: Lessons Learned from the European Social Survey*. Chichester: John Wiley & Sons.

Sudman, S. 1972, On Sampling of Very Rare Human Populations, *Journal of the American Statistical Association* 67: 335-339.

Titterton, M. and Clark, C. 2000, Working with Socially Excluded Romani Communities in Central and Eastern Europe: Lessons from Bulgaria, *Social Work in Europe*, 7: 38-45.

Tortora, R. D.; Srinivasan, R.; and Esipova, N. 2003, The Gallup World Poll, in Janet A. Harkness et al. (eds.), *Survey Methods inMultinational, Multiregional, and Multicultural Contexts*. New York: John Wiley & Son.

Treiman, D. J.; Lym, Y.; and Qi, Y. 2009, New Approaches to Demographic Data Collection, California Center for Population Research On-Line Working Paper Series.

United Nations, UN Development Program, 2009 at UNDP.org.

Van der Reis, P. 1997, Transportation Surveys Among Illiterate and Semiliterate Households in South Africa, presented to the International Conference on Transport Surveys, Grainau, Germany.

Vanderpitte, R. et al. 2006, Estimates of the Number of Female Sex Workers in Different Regions of the World, *Sexually Transmitted Infections*, 82: Supplement 3, 18-25.

Vigneswaran, D. 2007, Lost in Space: Residential Sampling and Johannesburg's Forced Migrants,

presented to the African Migrations Workshop, Accra, Ghana.

WAPOR, 2011, Pollsters Missing in Michoacan, Mexico, at http://wapor.unl.edu/wp-content / uploads/2011/08/Mexico-2011.pdf

Weinreb, A. A. 2006, The Limitations of Stranger-Interviewers in Rural Kenya, *American Sociological Review* 71: 1014-1039.