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***WORKING PAPER***

## **Nesting semi-structured interviews in surveys or censuses: More than the sum of the parts**

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**Nesting semi-structured interviews in surveys or censuses: More than the sum of the parts**

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**Abstract:** Researchers collecting surveys or census data in demographic surveillance systems gain substantially from nesting qualitative studies within these projects. This paper outlines a particular type of mixed-method research—sampling respondents for semi-structured interviews from survey or census lists. Quantitative data available on the larger population enables the selection of representative (or purposeful) qualitative samples and generalizable results. While substantive findings may be similar to other qualitative methods, inference is potentially more robust due to knowledge of similarities and differences between qualitative respondents and the larger population. The qualitative project does not just provide insight for improving quantitative analyses and future measures; the available quantitative data also increase possible sampling strategies and provides background on respondents for the qualitative project. This paper provides examples from two

nested semi-structured interview projects, one in Malawi and one in South Africa, to show how nested qualitative research addresses a number of quantitative researchers' reservations about qualitative methodologies, while providing better grounding for both quantitative and qualitative findings.

## **Introduction**

For quantitative researchers collecting data through surveys or censuses in demographic surveillance sites (DSS), there are real advantages to nesting qualitative studies within those projects, advantages that add up to more than the sum of the parts. There has been tremendous growth in the presence of mixed-methods research in the last twenty years (Creswell 2009). In much of the current mixed-method research, survey or census data collection serves as the core methodology, supplemented by qualitative data collection (Bryman 2006). A number of papers and studies show the utility of mixed-methods research by outlining the benefits and challenges of this approach (e.g. Knodel 1997; Obermeyer 1997; Pearce 2002; Sieber 1973) and by highlighting the added value of mixed-methods approaches to particular socio-demographic topics (some examples include: Seeley, Biraro, Shafer, Nasirumbi, Foster, Whitworth, and Grosskurth 2008a; Short, Chen, Entwisle, and Zhai 2002; Stewart, Makwarimba, Barnfather, Letourneau, and Neufeld 2008; Watkins 2004). Yet, few texts provide quantitative researchers with concrete explanations of how to enhance their projects by incorporating qualitative methods (Leahey 2007). This paper is directed at encouraging a very particular audience, researchers currently involved in quantitative data collection – whether through surveys or demographic surveillance sites—to include nested qualitative projects in their existing data collection strategies. The aim is to provide these researchers with evidence of the added value of this mixed-methods approach and tools to help implement semi-structured interviews with a sub-sample of their project population.

Detractors often argue that mixed-methods approaches are stymied by competing epistemologies (for discussions of the “paradigm wars” see Rossman and Wilson 1985; Sale and Brazil 2004; Schwandt 2006), or due to the practical limitations of access to data collection sites (Leahey 2007). However, a significant group of researchers have moved beyond the paradigm wars

(Creswell 2009), viewing mixed-methods research as a third key research approach, adding to the existing qualitative and quantitative paradigms (Johnson, Onwuegbuzie, and Turner 2007). Thus, rather than a passing fad, mixed-method research has become both legitimate and widespread in the last decade.

This movement toward mixed-method research includes donor pressure to conduct it, making it essential to provide quantitative researchers, already armed with strong quantitative skills, with models of how to conduct quality mixed-methods projects. Nesting semi-structured qualitative interviews within larger quantitative projects is one way to adhere to quantitative interests in larger samples and generalizability (Knodel 1997). By slightly adapting this already accessible and popular mixed-methods approach of combining survey data and semi-structured interviews (Bryman 2006; Knodel 1997), nesting can improve the quality of both the qualitative and quantitative projects. This paper adds to the growing call for mixed-method demographic research (e.g. Knodel 1997; Obermeyer 1997; Pearce 2002; Randall and Koppenhaver 2004). Nesting high quality qualitative studies within high quality quantitative projects broadens the range of methodological approaches for studying, uncovering, and understanding social and demographic phenomenon.

The nesting approach can attend to quantitatively trained researchers concerns about sampling, inference and generalizability due to the ability to generate random samples from survey/census lists, to examine similarities and differences between the samples and sub-samples, and feel more confident in the generalizability of such representative qualitative samples particularly if results are corroborative or elaborative of the quantitative findings. The paper outlines the author's research methods from two mixed-method projects—nested semi-structured interviews in two longitudinal research settings: a panel of surveys in rural Malawi and a

demographic surveillance site in rural South Africa—highlighting the added value of this mixed-method approach.

The paper will begin by outlining the two projects that provide case studies for this mixed-method approach. The following section will provide more in depth description of how nesting was employed in each of the case study projects. It will outline potential insights and benefits that can be drawn from the way the studies were set up, how this approach to mixed-methods research can expand sampling strategies, enhance qualitative fieldwork through locating respondents and building rapport, and boost analytical inference through sample/sub-sample comparison. The final section will provide a variety of examples from research in various contexts suggesting ways that this approach might be applied to other topics and in other data collection platforms; it also will address some limitations of this method and provide practical suggestions of how to implement this approach.

### **Background of the two case studies: Women’s status in Malawi/Older women in South Africa**

In each case study outlined below, the quantitative portion preceded the qualitative work providing a sampling frame and the infrastructure for the smaller more focused project. The first case study pairs the Malawi Diffusion and Ideational Change Project (MDICP), a multi-wave study in rural Malawi surveying married individuals of reproductive age about issues related to family planning and AIDS<sup>1</sup>, with the qualitative Gender Context Study. The qualitative study re-interviewed MDICP couples to examine unexpected first wave survey results revealing women in the southern predominantly matrilineal area to be less autonomous than women in the northern principally patrilineal area (Schatz 2002; Schatz 2003; Schatz 2005). The second case study links Agincourt Health and Demographic Surveillance System (Agincourt) census data with the Gogo

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<sup>1</sup> See [http://www.malawi.pop.upenn.edu/Level%203/Malawi/level3\\_malawi\\_main.html](http://www.malawi.pop.upenn.edu/Level%203/Malawi/level3_malawi_main.html) for more information on this project, and to access other papers written using these data.

[Grandmother] Project, semi-structured interviews with older women in Agincourt households explored their roles, responsibilities and kin relationships in rural South Africa (Ogunmefun and Schatz 2009; Schatz 2007; Schatz 2009, in press; Schatz and Ogunmefun 2007). In the HIV/AIDS era, older women in particular have become caregivers to their ill adult children and orphaned next generation. The Agincourt census provided a sampling frame and contextualized the situation of older persons through trend data over the previous decade. In each project, qualitative and quantitative data collection and analyses have been conducted separately; in addition, the data sources have been triangulated to enhance analyses and broaden findings.

*Modified team ethnography:* In both Malawi and South Africa, the author used a modified form of team-ethnography, where she hired, trained and closely supervised a team of local interviewers. In each setting, the local interviewers conducted, translated and transcribed the interviews, and kept fieldnotes about the households in which their interviews took place. This method allowed for interviewing in places where the author was not able to speak the local languages well enough to conduct the interviews herself. In addition, by working with a team, the author was able to yield relatively large qualitative samples –approximately 90 respondents in Malawi, and 60 in South Africa. This type of data collection may be both more accessible and attractive to traditionally quantitative researchers because it enables collecting qualitative data despite language limitations, and potentially produces large samples.

Given the likely social distance between the researcher and the study population in most qualitative studies by Northern (or even most Southern) researchers in the global South, it may actually improve the study to have local researcher assistants conduct the interviews, focus groups or participant observations in place of the principal investigator (PI). One of the disadvantages of modified team ethnography, however, is the loss of control of the interviewing process. One

solution is to conduct multiple interviews with each respondent, with the PI responding to translated transcripts before the research assistant(s) return to the field to conduct additional interviews. This gives the PI the opportunity to highlight issues important to the study that the research assistant missed, investigate new issues that emerge from the data but were not originally designated as central to the study, and correct any misunderstandings the research assistant has in presenting the study to the respondents. This is the approach the author employed in the studies in Malawi and South Africa. The author reviewed each interview transcript, created unique follow-up interviews based on the previous interview(s) for that respondent, and added new topics to the general interview guide based on issues raised in earlier transcripts.

*MDICP/Gender Context Study:* In 2000, the author conducted the Gender Context Study in one northern and one southern district of rural Malawi. The focus of the project was to explore gendered mechanisms and processes of family life—particularly of marriage, divorce, and household relations. One of the aims was to understand quantitative findings from the 1998 MDICP survey, which were opposite of expectations: women in the southern predominantly matrilineal area reported “less autonomous” responses than women in the northern principally patrilineal area. By reexamining the survey questions through open-ended responses and gaining a more nuanced understanding of the settings, gender dynamics and family life, this project was able to provide an explanation for the contradictory results and provide insights into gendered norms and mechanisms in each setting (Schatz 2002; Schatz 2003; Schatz 2005).

During the 10 weeks of fieldwork, the author trained local interviewers, who conducted repeated semi-structured interviews with 91 respondents (50 women and 41 men)—half in each site. The Gender Context Study sample selected respondents for heterogeneity in age, marital status and type, and lineage and residence patterns. This purposeful sample helped provide various

perspectives on women and men's roles in marriage and divorce, local customs around marriage and divorce, and gendered attitudes about family planning and HIV/AIDS. In addition, comprehension about these topics clarified how gender as a cultural construct shapes local opinions about demographic outcomes, such as contraceptive use and worry about HIV/AIDS. As described above, the author read each interview before conducting additional interviews with each respondent.

*Agincourt/Gogo Project:* In 2004, the author oversaw the Gogo Project in several villages within the MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt) fieldsite, the home to the Agincourt Health and Demographic Surveillance System, which administers an annual census in 21 villages. The focus of this study was the roles, responsibilities and relationships of older women in the HIV/AIDS era. Little research had been published at that time on the social and structural impacts of AIDS on older persons, who are more likely to be affected by AIDS than infected (HelpAgeInternational 2003; HelpAgeInternational 2004a; HelpAgeInternational 2004b). Older women, in particular, often take on caregiving roles for ill adult children, and fostered and later orphaned grandchildren (Dayton and Ainsworth 2002; Ferreira 2004; WHO 2002). The aim of the project was to explore the perceptions of older women about AIDS and how it impacts their lives.

Using the census as a sampling frame, the project created a nonproportional stratified random sample to select three strata of households with an older women (aged 60+), 20 households in each strata (60 households total). The three strata included: (1) households with an adult HIV/AIDS-related death in the 2001-2003 period, (2) households with a non-HIV/AIDS-related adult death in this period, or (3) household with no death during this period. Approximately one-third of the 70,000-plus individuals living in the Agincourt site are of Mozambican-descent, and in theory this group has access to fewer resources than the native-born population (Schatz 2009, in

press). In order to explore these differences, half of the women in each strata of the sample had self-identified as Mozambican on the census.

The Gogo Project fieldwork took place over four months, six weeks of which the author spent in the field, the remainder of the time the author supervised the project manager, a University of the Witwatersrand PhD student, via email and phone. Prior to data collection, the author trained the project manager and three local interviewers in qualitative methods and the themes of the project. Each interviewer then conducted repeated semi-structured interviews with 20 older women, fully translating and transcribing each interview. As in the Gender Context Study, the author reviewed each interview prior to the second and third interview with each respondent.

In this study, rather than responding to particular quantitative results, the goal was to uncover new information about the role of the state-funded non-contributory pension for households with older persons, as well as more general impressions of older women's lives and wellbeing. Since the effects of HIV/AIDS on their lives was a key interest the qualitative sample was stratified by household-level mortality experience, using verbal autopsies to determine cause of death (Kahn 2006; Kahn, Tollman, Garenne, and Gear 2000). Contrary to expectations, there were few differences across these different types of households. Instead, one of the primary findings of the study was the interconnectivity of households, such that nearly all households and individuals in the site are affected by HIV/AIDS through their kin networks, even when a recent HIV/AIDS death has not occurred within a household (Schatz 2007; Schatz and Ogunmefun 2007).

### **Nesting in Malawi and South Africa: Enhancing sampling, fieldwork, and generalizability**

Quantitative researchers often are uncomfortable with non-probability sampling techniques frequently used in qualitative research. While these approaches usually are employed to maximize the collection of particular types of information, this practice is frowned upon in the more positivist

quantitative fields. An additional critique among quantitative researchers is related to this assessment of non-probability sampling, the discomfort with generalizing results from a small non-representative sample. Nested qualitative projects, even when using purposive samples, can address this discomfort and provide the possibility for greater trust in generalizing results from a small N. While the focus of this paper is to encourage quantitative researchers to incorporate quality qualitative data collection in their research, there are ways that nesting can improve the quality of qualitative data collection as well. Existing quantitative data can provide a foundation for finding appropriate respondents, and building rapport with them. These sections outline the ways in which nesting the two case study projects within quantitative data collection environments allowed the author to address issues related to sampling, qualitative fieldwork, and generalizability.

*Sampling:* The project aims and conceptual framework for each of the two case studies helped shape the sampling strategy for that project. While in certain ways the sampling procedures differed greatly between the two projects, in each case, the ability to work from a survey/census list that included extensive information about individuals, couples and households provided an important foundation for the building of the qualitative samples. The sampling strategy in Malawi was purposeful and dependent on a variety of demographic characteristics, while the strategy in South Africa was based on a non-proportional stratified random sampling approach, which necessitated having knowledge of households' membership and mortality experiences.

Using the MDICP survey list and data, for the Gender Context Study the author created a purposeful sub-sample of 50 couples from the MDICP 1998 survey. The purposeful sample assured variation in age (under 25/between 25-35/35+), marriage type (married/divorced/widowed, monogamous/polygynous), lineage (matrilineal/patrilineal), and residence patterns (matrilocal/patrilocal). When an individual or couple could not be found or interviewed because

he/she had moved away or were out of the area during the course of the study, the author replaced that couple with another couple that was as similar as possible in terms of the main sampling criteria. Overall, 76% of the originally sampled couples were found and interviewed. After replacing the unfound couples, the couple response rate was 98%; there was one refusal.

For the Gender Context Study it was important to be able to sample a variety of ‘types’ of individuals; access to the MDICP data on individual respondents made this possible. For this project, having various “types” of couples in the sample allowed the author to examine if these characteristics influenced individuals’ understanding and interpretation of the survey questions, as well as their level of status or autonomy. Their qualitative narratives then could be compared to their survey responses helping to elucidate the meaning behind responses to questions about reasons for divorce, freedom of movement, and family planning decision-making, and assess if they mean something different to women in different circumstances.

In the Gogo Project in South Africa, the author was interested in the roles and responsibilities of older women, but also in the ways that HIV/AIDS was impacting their lives. Access to verbal autopsy and household level data through the Agincourt census, enabled the selection of a nonproportional stratified random sample of households with a woman over the age of 60 (the pension eligibility cut-off) in the Agincourt site for the qualitative study. The study began with a theory about the importance both of older women’s roles as caregivers and pension receipt to households experiencing crises or shocks. The HIV/AIDS literature suggested that older women in households with an HIV/AIDS death would have increased burdens of caregiving for both adult children and later for orphaned grandchildren. By specifying three household strata, those where an HIV/AIDS-related adult death had occurred in the recent past (1-3 years prior to the study), those in which some other type of adult death had occurred in the period, and those in which no adult death

had occurred in the period, the qualitative sample enabled the comparison of caregiving, use of pensions, household relationships, and older women's wellbeing across what seemed meaningful categories. This type of respondent selection would be very difficult to create outside of longitudinal study sites due to the need for regularly updated information on mortality in household membership.

While the author succeeded in interviewing 60 respondents for the Gogo Project, of the 60 originally sampled, 49 were interviewed; alternates within each stratum were sampled when the original sample list was created. In only one case was the reason for non-response a refusal. Three women on the sample list had died since the previous census, and one was too ill to participate. Two women were away visiting family and did not return during the study, and one had moved out of the sampled household. Finally, in order to respect local mourning practices, no interviews were conducted in three households with a death within the previous 12 months. Since this project was interviewing older persons and was working off census lists approximately a year old, there was a risk of increased non-response due to individuals who having died or moved in the interim. This might be less problematic in nested studies that quickly follow-up a survey (e.g. Messersmith, Kane, Odebiyi, and Adewuyi 2000). Using existing survey/census lists from which to sample might make the response rate appear worse than it would for other qualitative studies where the non-response is usually limited to refusals. The advantage, however, is the ability to select individuals with certain characteristics, and to see how representative those individuals are of others in the population in the study area, as well as having extensive existing data on non-respondents.

*Using existing quantitative data to enhance qualitative fieldwork:* Having a rich history on individual respondents from survey/census data improves qualitative fieldwork in a number of ways. It provides information on where to find respondents, who else might be living in their

households, and particular experiences of those individuals or households (e.g. migration or mortality experiences) or even the way an individual answered particular questions on a survey. This information can be used to shape the overall project, as well as to build rapport with respondents and to determine the direction of questioning with particular individuals.

The Gender Context Study made use of local interviewers previously trained in survey and qualitative data collection for other MDICP projects. These interviewers were knowledgeable about the area and due to visits from MDICP in the previous two years, were familiar to the respondents. While repeated visits can lead to respondent fatigue (discussed in more detail below), the ability to identify the Gender Context Project with a larger known entity seemed to ease entry into the community and into individual households.

The Gender Context Study also provided an opportunity to allow respondents to clarify why they answered questions in the MDICP women's status module in a particular way. While the qualitative portion of the study occurred a year or more after the original survey, the opportunity to get individuals to explain in their own words their responses, or how and why they would answer the question now (and what/why it changed) provides great insight into the content validity of the questions.

The Gender Context Study narratives related to one of the MDICP divorce questions highlight the ways that qualitative data can clarify what individuals might have been thinking about when they answered a particular closed-ended question. Only about 27% of the female MDICP sample, and 13% of the women in the sub-sample reported on the 1998 survey that it was permissible to leave a man who does not support his family financially. Yet, in the Gender Context Study nearly the entire female sample, and many male respondents, mentioned this reason spontaneously during the in-depth interviews. In these qualitative interviews, however, women

generally specified that *not* supporting one's family financially alone is not a divorceable offense, but squandering the family's money was. Men who actively sought an income, but found none were not in danger of divorce. If a woman thought her husband was wasting money on beer and girlfriends, however, she deemed this behavior inappropriate and said that the man deserved to be divorced. The fixed-choice responses on the survey hid important subtleties about what "supporting one's wife" meant to respondents and what particular circumstances individuals were considering when they thought about what might lead to divorce. A man technically is not supporting his wife and family financially in either of these cases, but women see one scenario as excusable, while the other is not. This distinction appears to have made a significant difference in the way women heard and answered the question; knowledge of this from the qualitative data may make divorce in this case an even more autonomous action because it is in response to feeling neglect. This result has important implications for quantitative analysis related to this variable.

The type of data available from the Agincourt census differed from the MDICP survey; however, there was information useful for finding respondents, building rapport with them, and crosschecking information. Agincourt provided access to detailed village maps, which greatly assisted in finding respondents. And, again, being associated with the Agincourt research group, which annually conducts a household census, generally provided legitimacy to the project, and promoted willingness of respondents to participate. Occasionally there were comments or questions about researchers gathering information on a regular basis, but the community getting little in return. Agincourt tries to address this by having regular community feedback about research results, and working with local government to address issues that arise through the research.

In order to understand more about household composition and decisions related to living arrangements, the author made use of existing census data to write specific questions querying

reasons for in and out migrations of individuals who moved into/out of the household in the previous years. In addition, the census data had information about relationships of members of the household to one another, so it was possible to target questions about the caregiving responsibilities older women took on for specific children whose mothers were not in the household, whether she had died or was simply living elsewhere. This was particularly helpful since several respondents said that they did not live with or take care of fostered or orphaned grandchildren, even though the census list identified a number of children in the household who were there without mothers. It was therefore possible to use the lists to clarify relationships, as well as the responsibilities the older woman took on for that child.

For example, one widowed respondent was asked with whom she stayed, to compare her list to the one supplied by the census. She said, "I stay with seven people, two are my children and two are my grandchildren and they have children also. One has two and the other one has one [3 great grandchildren]... Some are those who their mothers are not married, and they have children also, and these grandchildren are also not married. That is the reason they are here." Her listing of household members matched the 2003 census list the interviewer brought to the interview. But later in the first interview, when asked about providing care for orphaned or fostered children in her home, she said that she never had done this. When the interviewer returned for a later interview, she was instructed to reask this question and probe the issue. In response to this, the respondent described how she assists her family and her relationship with her grand (and great-grand) children in the following way: "I manage to buy mealie-meal, sugar, and washing powder. When it comes to cooking, [my child] cooks food and green vegetables from the land. I don't have money to buy meat... I don't remember the year [that I started looking after them], but it's long because they are born and bred here in my house... It's difficult [to care for them], but I am bound to look after them

because there is no one [else] to look after them.” The combination of knowledge from the census about household membership along with the opportunity to review early interviews and assess the consistency of responses with existing data related to key questions provided the opportunity to have respondents expand on topics central to this project in later interviews.

In each study, having access to existing data on individual respondents made it possible to be purposeful in the selection of unique questions for each respondent. In these situations, respondents are given the opportunity to provide their own examples and clarify their thought processes in ways not possible in closed-ended questions on surveys and censuses. This open-ended discussion provides the opportunity to elucidate the ways in which respondents hear, understand and answer certain questions or respond to certain topics. This integration of the two data sources on the ground, and later in analysis, strengthens the content validity of future iterations of survey questions and the connotation of findings.

*Enhancing generalizability and inference:* One of the main aims of mixed-methods research is to contribute to inductive inference, the “process of creating meaningful and consistent explanations, meanings, conceptual frameworks, and/or theories”

(<http://www.fiu.edu/%7Ebridges/glossary.htm>). In nested studies, this entails examining the qualitative work alongside existing (or later collected) quantitative work. The unique feature of nested studies is the ability to directly compare qualitative sub-samples to the larger samples or populations from which they were drawn. Below are examples from each case study of how sample/sub-sample comparisons improve inference quality and transferability<sup>2</sup> (Tashakkori & Teddlie 1998, 2003). Quantitative researchers may feel a greater confidence in generalizing results

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<sup>2</sup> Definitions from <http://www.fiu.edu/%7Ebridges/glossary.htm>: “**Inference quality:** This is proposed as a mixed methods term to incorporate the QUAN term internal validity and the QUAL terms trustworthiness and credibility of interpretations (Tashakkori & Teddlie, 1998, 2003).” “**Inference transferability:** This refers to generalizability or applicability of inferences obtained in a study to other individuals or entities... It subsumes the QUAN terms external validity and generalizability as well as the QUAL term transferability.”

from small qualitative samples to a larger quantitative population in nested projects because of the ability to clearly see and articulate the ways in which the sub-sample is, or is *not*, representative of the larger population.

The sample in Malawi due to purposeful selection of individuals was not necessarily intended to be representative; however, what makes the nested study unique is the ability to check for representativeness after the sampling or study occurs. Of the 50 ever-married women in the Gender Context Study sample, 48 of these completed the MDICP survey in 1998, two had refused. Table 1 shows that women in the qualitative sub-sample are much like women in the larger MDICP sample in terms of demographic characteristics and responses on the MDICP 1998 survey. [For a similar table for men in the qualitative sub-sample and MDICP sample, see Schatz 2002.] The qualitative respondents were on average slightly older, more educated, and have given birth to approximately one more child than women in the larger survey sample. The distribution in marital status is very similar despite having sampled on this variable.

Table 1 presents respondents' aggregated responses to variables related to contraceptive use, worry about HIV/AIDS, and questions on women's status—all issues central to both the qualitative and larger quantitative study. A higher percentage of women in the sub-sample had ever-used a modern method of contraception compared to those in the MDICP sample. Unmet need in the two samples is quite similar, however. The statistics on the level of worry about contracting HIV/AIDS is also similar: 77% in the sub-sample and 75% in the MDICP sample.

For the majority of questions relating to women's situation from the MDICP survey, the qualitative sub-sample and the MDICP sample are generally analogous, as the last section of Table 1 shows. A smaller percentage of women in the qualitative sub-sample answered "autonomously" to all five of the divorce attitudes questions than in the MDIC sample. The two freedom of movement

variables are similar for the two samples. The percentage of women responding in the affirmative for the family planning decision-making variables was fairly similar across samples, although no consistent pattern in emerges. Considering the size of the GCS sample, the differences do not point to troubling discrepancies between the two samples.

**Table 1: Comparison of Gender Context Study sub-sample & MDICP 1998 sample**

	Gender Context Study sub-sample	MDCIP 1998 survey sample
<b><i>Demographic Characteristics</i></b>		
Mean age	33.5	31.3
Mean number CEB	5.0	4.2
Mean years schooling	4.6	4.1
<b><i>Marital status</i></b>		
Married	84%	86%
Divorced/Separated	12%	11%
Widowed	4%	3%
<b><i>Reproductive Health Variables</i></b>		
Ever-used contraception (modern methods)	38%	34%
Unmet Need (of those who want no more children)	71% (21)	73% (302)
Worry about HIV/AIDS (% very worried)	77%	75%
<b><i>Women's Situation Variables</i></b>		
<i>Women can divorce husband if:</i>		
He provides no financial support	13%	27%
He beats her	56	67
He is unfaithful	60	64
She suspects he has AIDS	19	22
He won't allow family planning (FP)	21	22
<i>Can go without permission:</i>		
Market	17%	17%
Health Center	23	19
<b><i>Family Planning Decision Making</i></b>		
If H doesn't want FP, find way	63%	58%
Can get way if wants to space	52	55
Can get way if wants to stop	38	35
Would use secretly if had to	56	57
N	48	994

The similarity in the two samples suggests that it is not unreasonable to generalize from Gender Context Study narratives to the MDICP population. In some ways, where the sub-sample's responses are "less autonomous", e.g. in the divorce questions, this allows for an even stronger comment on how these questions might have been interpreted by survey respondents in the larger MDICP sample. In the qualitative data women explain in detail the reasons why women can leave their spouses. Since these are women who gave "less autonomous" answers to the fixed-choice questions, one can assume that the autonomy and power the Gender Context Study respondents communicate in the in-depth interviews would be even greater among women who gave "more autonomous" answers on the survey. The ability to extrapolate the themes and concepts that arise in the qualitative data relating to sexual and reproductive health, and their relationship to women's status enhances the results from both the Gender Context Study and the MDICP.

The quantitative data from Agincourt are from a census of the area that has been conducted for over a decade. The census data provide both a historical view of households (Madhavan and Schatz 2007), and the ability to compare all current households in which an older woman lives to those that were part of the sub-sample (Schatz 2007).

Few differences in the attitudes about and experiences with HIV/AIDS were found among women in the different strata. This appears to be due to the ubiquitous nature of AIDS such that even households that had not experienced an HIV/AIDS-related death were affected by such deaths in neighboring or kin-network households, or through the need to care for fostered or orphaned children, or were currently caring for sick adult children. Due to the random nature of the sampling strategy, the author and colleagues can feel more confident that this lack of difference is likely to be representative of other households in the area, and not simply an artifact of a purposively or conveniently sampled group of households.

Additionally, it is possible to compare information about the Gogo Project households to the larger population, particularly other households where an older woman is living, to see if there are similarities or differences in terms of other factors that might be related to vulnerability, i.e. household structure (e.g. mean size, and mean number of children) and composition (e.g. households with at least one child, at least one fostered child, or at least one orphan). Table 2 shows that the households in the Gogo Project sub-sample are perhaps “more vulnerable” for each variable—the mean household size is larger, as is the mean number of children in the household, a greater percentage of the sub-sample households include at least one child under 15, foster child, or orphaned child living in the household. In this case, rather than increasing the confidence of generalizability of results, the sample comparison highlights ways in which caution needs to be taken in assuming that the sub-sample households are the same as the households in the larger population.

In comparing the Gogo Project sub-sample to Agincourt census data, it is important to remember that the sample was purposefully nonproportional, and that some of the differences between the samples may be an artifact of this decision. In fact, the oversampling of Mozambican households (half of the sub-sample compared to about 30% of households with an older woman) and the oversampling of households with households with a recent death (two-thirds of the sub-sample compared to 14% of the larger population of households with an older woman) both contribute to these differences (not shown in table). Both Mozambican households and those with a death are on average larger, have more children, and are more likely to have a child in the household (not shown in table). And, South African households where an HIV/AIDS-related death occurred formed a much greater percentage of households in both the sub-sample and the larger

population with at least one maternal orphan than any of the other types of households (not shown in table).

**Table 2: Comparison of Agincourt and Gogo Project Households**

	Agincourt households with 60+ woman	Gogo Project sub-sample
Mean household size	7.0 (1-40)	8.6 (1-24)
Mean number of children under 15 in household	2.3 (0-18)	3.6 (0-13)
Households with at least one child under 15	76.2%	86.7%
Household with at least one fostered child	26.5%	33.3%
Household with at least one maternal orphan	8.3%	20.0%
Total N	2,671	60

While there are limitations in terms of generalizing from the nonproportional Gogo Project sub-sample, there are still advantages to having oversampled households with HIV/AIDS-related *and* other types of adult deaths. If the sampling strategy for the Gogo Project had been to randomly select among all households with a woman over the age of 60 in order to make the sample more representative of the population, there would be less leverage to use the findings from the qualitative work to infer that differences between strata were smaller than might be expected. In a random sample the number of households with a death, especially HIV/AIDS-related deaths, would have been very few. Like with oversampling in a survey, oversampling households with a death, and where Mozambicans were living, in the qualitative project provided more power for comparing these groups within the qualitative sample. Thus, the nonproportional random stratified sample allowed more confidence in the transferability of findings that there are not substantial differences across these strata of households in terms of older women’s pension usage, caregiving responsibilities, and wellbeing despite the fact that as a whole the sample was not as representative as a quantitative researcher might ideally like.

The evidence of similarities *and* differences between the samples in the two case studies might not appear necessary or more convincing to qualitative researchers, who generally trust and see value in grounded theory as a reliable source for examining how a community experiences or understands an issue. Quantitative researchers and audiences, however, are more likely to trust these results. The sample/sub-sample comparison provides a level of transparency about the qualitative sample. The comparison draws attention to the generalizability to the larger population, or provides insight into the ways in which the qualitative sample may be biased.

### **Applying nesting to other settings and topics: advantages and limitations**

The procedures outlined in this paper are illustrated with a study of women's status in rural Malawi and a study of older women's roles and responsibilities in a demographic surveillance system in rural South Africa; however, the approach itself can be tailored to fit other substantive research interests and types of quantitative projects. The author has focused on repeated semi-structured interviews, but focus groups or participant observation could replace semi-structured interviews in an adapted form of this mixed-method approach. Other scholars have outlined the ways surveys contribute to qualitative research and vice versa (e.g. Bryman 2006; Knodel 1997; Sieber 1973), and how qualitative research provides insight for demographic studies (Obermeyer 1997; Randall and Koppenhaver 2004). Here the focus is on nested qualitative studies—ways in which these projects are conducted and how they can contribute to the understanding of socio-demographic realities.

Nesting qualitative work within quantitative projects provides unique opportunities to improve the quality of both qualitative and quantitative data from the study site. There are two main nesting strategies. While both make use of existing quantitative data, the first simply nests a qualitative study in the geographic area of interest, usually an area where survey work has already

taken place (examples include Adato, Lund, and Mhlongo 2007; Short, Chen, Entwisle, and Zhai 2002; Watkins 2004). The second, like the case studies outlined above, makes direct use of survey/census lists and data to select households or individuals for more in-depth investigation on a particular topic (examples include Casterline, Perez, and Biddlecom 1997; Madhavan, Townsend, and Garey 2008; Pearce 2002; Seeley et al. 2008a). While some advantages are common to both types of nesting, the latter type more fully exploits the benefits of the approach. The three core themes from the case studies through which this practical and accessible technique can address concerns quantitative researchers may have with qualitative research are echoed below, highlighting other research and ways to implement them. For each theme, advantages and limitations are discussed.

***Theme 1: Using existing survey/census data to pick a topic, population, and sample***

As in many mixed-method approaches, nested studies benefit from existing quantitative studies to provide a setting for the work, and statistics profiling the individuals and community in which the study is situated. This information can draw attention to important topics to explore and highlight which groups or individuals to target for the more focused nested study. For example, Short, Chen, Entwisle, and Zhai (2002) conducted focus groups and in-depth interviews as a follow-up to the China Health and Nutrition Survey in the same areas that provided the primary sampling units for the survey. The qualitative follow-up focused on using cognitive interviewing strategies to assess the validity of measures in the CHNS and household members' perspectives on the relationship between childcare and women's work. Similarly, in an effort to understand what the survey data was measuring and/or missing in relation to poverty and wealth, Adato, Lund and Mhlong (2007) used panel surveys to develop poverty-status categories in KwaZulu-Natal, South

Africa, and then selected a small number of households to represent each of the four poverty-status categories in which they collected extensive qualitative data from multiple household members.

In AIDS related research sensitive topics are hard to capture in surveys; Watkins (2004) and the Life and Death Project (Posel, Kahn, and Walker 2007) provide examples, from the same research sites as the author's own projects, that used information about research site populations to help shape how to reach individuals in their projects. Watkins (2004) outlines the journal project, where former interviewers from the MDICP recorded in notebooks informal conversations they had had and had overheard about AIDS in the MDICP study areas; they were paid per notebook. The MDICP survey suggested these conversations were occurring but other forms of data collection were unable to capture their content. The Life and Death Project conducted a total of twelve focus groups, separately by sex, with young adults ages 18-21, adults ages 22-35, and adults ages 45-60, and six key informant interviews to understand the impact of the large number of HIV/AIDS-related deaths on the Agincourt community (Posel, Kahn, and Walker 2007). The choice of focus group configurations and participants, and of key informants was shaped by knowledge of the local setting paired with trend data from Agincourt's verbal autopsies and census data.

While it is not necessary to nest qualitative studies in a longitudinal data collection environment, there are advantages to doing so. Several of the studies referenced above and below are situated in longitudinal panel or demographic surveillance sites, including the two case studies. A few of the qualitative projects are longitudinal in nature themselves. This allows for a more iterative process between the qualitative and quantitative work. Not only can the quantitative study help set up the qualitative project in ways outlined above, but there are also feedback loops, where the qualitative project can help inform future data collection instruments, and topics for further examination at the population level. In Uganda, Seeley and colleagues have used the longitudinal

nature of both the qualitative and quantitative work to track socioeconomic changes to households related to HIV/AIDS and other deaths, and to continue to report on the health and wellbeing of the oldest old, who are rarely included in studies on AIDS (Seeley, Kajura, and Mulder 1995; Seeley et al. 2008a; Seeley, Wolff, Kabunga, Tumwekwase, and Grosskurth 2008b).

One limitation in regards to making use of survey or census data to select topics and groups to target is that the decisions made through this process are only as good as the data from which they are derived. Thus, if the content validity of certain questions is not accurate, or if important segments of the population were not included in the original quantitative sample, the results can be misleading such that the relevance of the topic or the selection of the targeted sub-sample may be problematic. While longitudinal mixed-methods projects provide rich data, one must assess the time, energy and funding available since these types of projects entail great amounts of each of these resources.

In nested qualitative work, existing quantitative data on individuals and households within the site can be used to target specific individuals for inclusion in a sample. Simple random sampling, or a stratified random sample, is the preferred method for selecting respondents among many quantitative researchers. Nesting provides information from a previous census or survey to select respondents for qualitative projects through random selection, addressing some of the potential selection bias issues arising from convenience or quota sampling (sampling methods used in many qualitative studies). Thus, being able to randomly select individuals within designated strata gives representativeness otherwise not available in qualitative research. In addition, rather than being limited to selecting respondents based solely on straightforward demographic characteristics, this approach allows researchers to define the sample based on responses to pertinent survey questions.

The access to information about all members of the target population also can limit the tendency to overlook certain constituencies (Sieber 1973). Thus, knowledge about the population and individuals within that population can also be used to develop samples with certain groups over-represented, e.g. outliers, anomalous cases, or simply those with characteristics underrepresented within the population. In the Philippines, Casterline, Perez, and Biddlecom (1997) made use of survey data to select survey respondents with and without unmet need for contraception to assess whether or not unmet need was an artifact of survey data. The selection of those with outlier responses may help explain anomalous cases, as Pearce (2002) did in Nepal with the intent of explaining the relationship between religion and fertility preferences.

In Uganda, knowledge about household structure and composition from a previous survey, allowed Seeley and colleagues to oversample female-headed households due to an interest in learning more about poor women's risk of HIV infection (Seeley, Kajura, and Mulder 1995; Seeley et al. 2008a). The Children's Wellbeing and Social Connections study (Madhavan and Townsend 2007), in the Agincourt study site, made use of existing data on communities and households in another way. The researchers used knowledge about village resources to limit the sampling frame to one village above and one below the median level of access to services in the area. They then used the previously mentioned Agincourt census to randomly select households within various socio-economic strata (low, medium, high) where a child aged 10-11 was currently living. These households acted as the starting point for the study rather than the endpoint, by social-mapping and collected data on all children in the initial contact households, as well as children in households with a social connection to the contact household. While the "contact children" numbered just 12, the final number of children in the sample was closer to 300.<sup>3</sup>

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<sup>3</sup> See Madhavan, Townsend and Garey (2008) for a detailed description of sampling and the various data collection methods, which included both quantitative and qualitative techniques.

One limitation of using survey or census lists to generate random samples is that this strategy may miss populations that are difficult to define or find. If there are sensitive issues which individuals are likely to over or under report (e.g. number of sexual partners), this might not be an ideal way to target usually hidden or difficult to define populations. In addition, although nesting can include purposively selecting anomalous cases, if a simple or stratified random sampling technique is used, it is less likely that outliers will be captured in the sub-sample.

***Theme 2: Using existing survey/census data to enhance qualitative fieldwork***

Working on a nested project with previously collected survey or census data can ease locating respondents, as well as shorten the interviewing process by reducing the need to ask standard demographic background questions. The existing data also may provide a basis on which to build rapport between the interviewer and respondent. Employing research assistants or interviewers who have experience collecting data in the study site may further hasten both the locating of respondents and the building of rapport with them. Pearce (2002) highlighted how project maps and working with project staff who had been involved in the survey made finding respondents easier than it might have been otherwise, and that making use of this team with whom the respondents were already familiar assisted with building rapport. Mensch, Bagah, Clark and Binka (1999) made use of the Navrongo Demographic Surveillance System's (NDSS) census lists to generate random stratified lists of subjects for focus-group discussions and in-depth interviews on the changing nature of adolescence in Ghana. Although not explicitly stated in their paper, since the NDSS returns to households regularly, the project was most likely assisted further by maps with information on where respondents lived when last enumerated, making it easier to locate particular respondents and likely improving the response rate.

The information garnered from existing quantitative data about individuals and their households are likely to make this strategy even more powerful when using semi-structured individual interviews as the primary qualitative data collection too. Information about individuals can help shape the actual questions asked of that person, and can be used to check consistency across data types. This type of foundation for the interviews is something that might not be as appropriate or useful for focus group discussions, and to which qualitative work that must “cold-call” respondents would rarely have access.

While there are clear advantages, there may be ethical considerations with returning to interview individuals who were previously part of a study and making use of their information drawn from existing data. During the consent process of most studies respondents agree to have researchers use their information to conduct analyses, but rarely do they give permission to return to the respondents to reinterview them, or *carte blanc* to use the data in other ways. For this reason, it is important to consider the possibility of adding a qualitative component early in the project research design process. The researcher can ensure that individuals know that a research team may return to reinterview them and that their information may be used in this way when they originally consent to be participants. Another consideration is respondent fatigue—particularly those who oversee the study site must ensure that the same individuals and households are not overburdened with requests to participate in studies.

In longitudinal studies like the MDICP, respondents were told in the first round of the survey that researchers would be back to ask them more questions in subsequent years. Thus, Miller, Zulu, and Watkins (2001) were able to select couples with discordant answers on certain questions to re-interview in order to understand why married individuals sometimes give different answers to seemingly straightforward questions. They made use of MDIP survey data in both

sample selection and as an entry point into conversations with respondents. Messersmith and colleagues (2000) were even more explicit about their intention to conduct more in-depth qualitative interviews by asking at the end of the survey if the respondent would be willing to participate in in-depth interviews shortly thereafter. For these in-depth interviews, knowledge of respondents sexual histories, whether they had been involved in risky sexual behavior or not, directly impacted the sample selection, the interview guide and direction of the qualitative interviews.

While the potential for respondent fatigue is very real and too often overlooked, there is a further methodological opportunity when returning to households already part of a survey or census. When qualitative respondents from a nested study refuse to participate in a study or are untraceable (either due to being away, working, or moved away), the nested nature of the project allows the researcher to examine differences between those who refused or did not participate and those who did. Using information collected in the previous survey/census, the researcher can assess non-response error that would otherwise be a black box. Comparing the qualitative sub-sample respondents and non-respondents, it is possible to explore what types of people refuse or are not interviewed, and what constraints may lead to the refusal or inability to participate (age, work status, past marital, education or migration status, etc). The issue of non-response is raised as a possible pitfall of qualitative research in the Randall and Koppenhaver (2004). While nesting may increase the likelihood of respondent fatigue, and thus increase non-response, it also provides a fairly straightforward solution to assessing this problem.

### ***Theme 3: Mixed-method analysis-improving the overall strength of results***

In addition to the methodological advantages outlined above, there are analytical advantages to nesting—ways in which the integration of data sources provide both more nuanced and representative portraits of the phenomenon and individuals under study. One of the reasons one

could argue that inference is more robust in nested studies is the ability to statistically comparing qualitative samples with the population from which it was drawn to assess representativeness. Messersmith, Kane, Odebiui and Adewuyi (2000) show the value of this type of comparison among survey samples and nested qualitative sub-samples in their paper on condom use in Nigeria. The authors compare demographic characteristics, responses to questions about sexual activity and STDs, as well as lifetime sexual partners between their population-based survey, a sub-sample of high-risk respondents, a sub-sample of low-risk respondents, and a sample of sex worker clients (not respondents in the survey). While neither sub-sample was representative of the survey population, the visual comparison provided information about the ways in which the samples differed that might lend to interpretation of results. One disadvantage here is the overwhelming nature of large amounts of data with very different attributes. Being focused in the structuring of analyses and honing in on where the comparisons are actually adding more value than single method analysis are crucial to making the most of this or any mixed-method approach.

Rossmann and Wilson (1985) outline three ways that mixed-methods research might improve conclusions: corroboration, elaboration, and initiation. Corroboration uses data from multiple sources to assess “convergence” in the results. Elaboration provides a place for one data source to expand the findings of the other, often strengthening the overall conclusions. Initiation highlights places where data sources are in conflict forcing further investigation to uncover new interpretations and conclusions. Examples of each follow: Casterline, Perez and Biddlecom (1997) used their qualitative findings mainly to compare, confirm and validate quantitative results about what might be the basis for unmet need in the Philippines. Short et al. (2002) made use of qualitative data to elaborate on the direction of causality in their quantitative findings. One contribution of the Children’s Wellbeing and Social Connections mixed-method project is to initiate a new way to

explore social connection between children and their fathers, showing that it is greater than has been reported through other methods (Madhavan, Townsend, and Garey 2008; Townsend, Madhavan, and Garey 2006). In addition, these data help highlight the importance of finding new methods to capture and assess living arrangements, parental financial support, and family composition (Madhavan and Townsend 2007).

In the analysis and write up stage of this mixed-method approach, there is perhaps an even greater need for awareness about protecting the anonymity of respondents than in single method studies. The possibility of disclosure and identification of research subjects is even greater due to the combination of detailed demographic information and geographic data (Leahey 2007). Ethnographers and qualitative researchers often protect their respondents' individual identities by guarding their geographic location through a pseudonym at that level. Quantitative researchers often disclose geographic locations, but protect individuals by presenting analyses in the aggregate. When presenting nested studies, both geographic locations (due to knowledge of where the survey/census took place) and un-aggregated information are presented. In such cases, researchers must be vigilant in not divulging information that would allow locals or outsiders to pinpoint the individual or household from whom certain information came.

## **Conclusions**

Nesting qualitative projects in larger data quantitative projects has a number of advantages that are less accessible to stand alone qualitative projects. These benefits happen to be things that are likely to be particularly attractive to quantitatively trained researchers. First, a survey or census provides the opportunity to know a significant amount about a population prior to defining the topic or target population for the qualitative study. Having access to a survey or census list allows the selection of random, stratified, or purposeful samples of respondents. Second, having the research

infrastructure and survey or census data on individual respondents eases the locating of respondents, speeds rapport building, and improves knowledge about non-response. Additionally, having information about individual respondents provides a starting point and direction for clarifying certain types of survey responses or census data. Third, having quantitative data on all persons in the category of interest, as well as on those actually sampled, gives the researcher the power to compare the qualitative sample with the population from which it was drawn, thus arming the researcher with the knowledge of the representativeness of the sample. Access to contextual information on trends and patterns within the study population over time can further provide a picture of the “forest” while the qualitative data provide information on individual “trees”—together the combination strengthens the confidence in and breadth of the results.

As the two case studies showed, whether nested qualitative samples are purposively or randomly selected, there are ways to maximize the added value of situating the project within an existing quantitative project. Making use of the existing data to assist in sampling, fieldwork, and improving inference is one way to take advantage of the combined strengths of the two methods at each stage of the research process. When done well, nesting can improve the quality of resulting qualitative fieldwork conducted by quantitatively trained individuals, broadening the scope and potential for understanding socio-demographic topics.

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