Title: Interpersonal influence on beliefs and behaviours concerning childbirth location in rural Senegal: evidence from the Niakhar social networks pilot survey

In less developed areas of the world the setting in which women give birth to their children, at home or in an institution such as health facility or hospital has a significant association with the likelihood of neonatal, infant and maternal mortality (Thaddeus and Maine 1994; Lawn, Cousens, and Zupan 2005). In many of these areas, however, the majority of women do not deliver their children in health facilities or with the help of trained medical personnel. In sub-Saharan Africa for example, less than 40% of women do so (Laum Cousens and Zupan 2005). For this reason, understanding the mechanisms behind differential use of health care facilities for childbirth may be critical to increasing child and maternal survival.

Factors previously found to influence the likelihood of institutionalized delivery of children in less developed contexts include mothers' age and education, cost of services, urban residence, distance to an appropriate health facility, ethnicity and socioeconomic status (Say and Raine 2007; Bhatia and Cleland 1995; Thaddeus and Maine 1994). Though there is widespread acceptance that decisions about pursuing particular medical interventions are influenced by cultural and interpersonal understandings of health and illness as well (Montgomery 2000; Rutenberg and Watkins 1997), to our knowledge no research to date has examined interpersonal influences on the choice of venue for childbirth. Using a unique source of social network data linked to a demographic surveillance system, this research addresses questions of interpersonal influence through social and kin networks on beliefs concerning the best place to give birth and the choice of childbirth venue among members of a rural population in Senegal.

The potential importance of interpersonal influence on demographic and health behaviour more generally, particularly through social networks has been the subject of intense research in the last decade. Previous research in this area however has been hampered by problems with the measurement of social networks. These include truncation bias related to the number of network members (alters) respondents are allowed to name as well as bias and measurement error in alter characteristics (such as for example, where their children were born) as reported by respondents among others (Rytina et al. 2008). The data employed here addresses these problems. It is the most extensive and comprehensive demographic social networks collected to date. It addresses the problem of measurement of alter characteristics by tying identification of alters (and kin) to high quality prospectively collected data on childbirth, including the location of each birth, for the entire population of the Niakhar surveillance area in rural Senegal over a period of 30 years (Delaunay et al. 2002).

As part of the network survey respondents were asked a question concerning where they thought was the best place to give birth to a child, at home or in a maternity clinic or hospital. One third or respondents said home would be best; two-thirds answered a maternity clinic or hospital. In the first analysis presented, we model beliefs among respondents concerning the best place to give birth to a child as in part a function of social network alters' and kin members' childbirth histories derived from the surveillance data. Controlling for respondents' age, sex, education, residence in a town or rural area and the distance to the closest maternity clinic, we contrast the association between beliefs concerning the best place to give birth to a child and this interpersonally available information to that derived from aggregate measures of maternity clinic/hospital use at the residential compound and village level of the type commonly used in multilevel models of community effects.

Next, on the subset of respondents who had previously had children, we examine the association between whether, for each birth, it had taken place at home or in a clinic or hospital and the child birth practices and those of their alters and kin precedent to the birth, again controlling for community and individual level structural covariates.

Because some social network members' experiences may carry more influence than others, in both analyses we present alternative estimates weighted for subjective social proximity as derived from name interpreters in the survey instrument. We also explore in the association between temporal ordering of childbirth experiences among alters and kin in the construction of beliefs concerning the best place to give birth and the choice of childbirth venue.

References

Bhatia, Jagdish C., and John Cleland. 1995. "Determinants of maternal care in a region of South India." http://hdl.handle.net/1885/41182 (Accessed September 17, 2010).

Delaunay, Valerie, Adama Marra, Pierre Levi, and J.F. Etard. 2002. "Niakhar demographic surveillance system, Senegal." in *Population, health and survival in INDEPTH sites*, vol. 1, *INDEPTH Monograph Series :demographic surveillance systems for assessing populations and their health in Developping Countries*. Ottawa.

Lawn, Joy E, Simon Cousens, and Jelka Zupan. 2005. "4 million neonatal deaths: When? Where? Why?." *The Lancet* 365:891-900.

Montgomery, Mark R. 2000. "Perceiving Mortality Decline." *Population and Development Review* 26:795-819.

Rutenberg, Naomi, and Susan Cotts Watkins. 1997. "The Buzz Outside the Clinics: Conversations and Contraception in Nyanza Province, Kenya." *Studies in Family Planning* 28:290-307.

Rytina, Steven, John Sandberg, Valerie Delaunay, and Richard Lalou. 2008. "An Improved Egocentric Network Methodology: the Niakhar Social Networks Pilot Survey." in *Population Association of America Annual Meetings*. New Orleans, LA.

Say, Lale, and Rosalind Raine. 2007. "A systematic review of inequalities in the use of maternal health care in developing countries: examining the scale of the problem and the importance of context." *Bulletin of the World Health Organization*.

Thaddeus, S, and D Maine. 1994. "Too far to walk: maternal mortality in context." *Social Science & Medicine (1982)* 38:1091-1110.