

## Biases in internet sexual health samples: Comparison of an internet sexuality survey and a national sexual health survey in Sweden

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### Abstract

The internet is becoming a favored technology for carrying out survey research, and particularly sexual health research. However, its utility is limited by unresolved sampling questions such as how biased internet samples may be. This paper addresses this issue through comparison of a ‘gold standard’ random selection population-based sexual survey (The Swedish Sexual Life Survey) with an internet-based survey in Sweden which used identical demographic, sexual and relationship questions, to ascertain the biases and degree of comparability between the recruitment methods. On the internet questionnaire, there were significant differences between males and females on all the measured indices. There were no significant differences in proportions of males and females, or nationality, between the two samples. However, the internet samples for both males and females were significantly more likely to be younger, originally from and currently living in a major city, better educated, and more likely to be students and less likely to be retired. Relationship variables were less likely to be significantly different between samples: there were no differences for males or females between the SSS and the internet samples on having been in a committed relationship, and how they met their present partner, nor for males in having discussed separation in the past year. However, there was a higher proportion of people attracted to the same sex, and higher numbers of sex partners (as well as a higher proportion of people reporting no sex) in the past year, in the internet sample. These data suggest that apart from the demographics of age, location, and education, currently being in a committed relationship, and the number of sex partners in the past year, internet samples are comparable for relationship characteristics and history with a national sexual life survey. Comparison of internet data with random survey data in other western countries should occur to determine if these patterns are replicated.

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## Introduction

The internet is becoming a favored technology for carrying out survey research, and particularly sexual health research. Not only do computer-based questionnaires have the advantage of significantly improving honesty in reporting on potentially stigmatized areas such as human sexuality, along with providing the perception of anonymity (Turner et al., 1998), but the internet is also a favored mechanism for exploration of sexual themes and contacts. A significant advantage of the internet is based on the Quin-A engine: Cooper (1998) has identified the factors of *accessibility*, *affordability* and *anonymity* as driving the internet's popularity for sexual interactions. King (1999) added the high *acceptability* of the internet, and Tikkanen and Ross (2003) and Ross and Kauth (2002) have included the ability of people using the internet to *approximate*, or experiment with, different aspects of sexuality or sexual practices on-line rather than in person.

The increase in the importance of the internet as a medium for studying sexuality and sexual health has, however, been limited by sampling questions. While it has been claimed that the internet is inherently biased toward people who are male, younger, wealthier and more highly educated (Hewson, 2003), data from a study comparing men who have sex with men (MSMs) accessed through a traditional sampling of a major national gay organization, and through the same organization's website, demonstrated somewhat the opposite (Ross, Tikkanen, & Månsson, 2000). Men who used the internet were more likely to be significantly younger, less well educated, located more often in smaller towns and rural areas, and more bisexually identified and bisexual in their sexual practices. They were also significantly less likely to be "out" as gay or bisexual, although there were very few significant differences in HIV-risk practices.

These studies raise the methodological question as to *how* biased internet samples might be in collecting data on human sexual health. Interpretation of such data is contingent upon an assessment of the nature and degree of sampling from a medium in which it is almost impossible to assess the denominator and thus completion rate. Even if this can be done, it is usually assessed at around 0.7% of hits leading to entry into a survey (Ross, Daneback, Månsson, Cooper, & Tikkanen, 2003). With such a low response rate (although given the level of traffic on the internet, high *n*), traditional approaches to assessing non-completion bias are difficult to apply. Further, there are markedly higher drop-out rates in internet surveys than conventional studies, due to the nature of the medium, which are an additional unique factor in considering potential bias (Ross et al., 2003). Thus, a key question in social science

research into sexuality is the comparability of internet and national random sampling, and specifically the characteristics of those who use the internet. A second key question relates to the importance of such differences in indicating increased access to populations who may be more "hidden" or difficult to access for sexuality-related health interventions such as HIV/STD prevention programs.

Given the intense interest in using the internet for sexual health education (DeGuzman & Ross, 1999) and recent data indicating that STD transmission in some locales has been fuelled by internet-mediated sexual contacts (Klausner, Wolf, Fischer-Ponce, Zolt, & Katz, 2000), an understanding of the population base of the internet based on those who fill out internet-based surveys also provides useful information on who internet-based sexual health programs such as HIV/STD risk reduction might target. We report on a comparison of data from the Swedish National Sexual Life Survey (SSS) and an internet survey in Sweden that used identical demographic questions to the SSS, in order to compare a "gold standard" random selection population-based sexual survey with an internet-based sexual survey in the same country to ascertain the biases and degree of comparability between the two recruitment methods.

## Methods

### *National SSS*

A full report of the SSS is available (Lewin, Fugl-Meyer, Helmius, Lalos, & Månsson, 2000) in English and Swedish. The study was carried out in January–October 1996, by the University of Uppsala and the Swedish Institute of Public Opinion Research (SIFO). The sample was based upon a population-based sample of 5250 individuals residing in Sweden in December 1995 aged between 18 and 74. After excluding those who were not able to speak and read Swedish, and those deceased, emigrated or abroad, in prison, with sensory defects that would limit their participation, those who had moved and had unknown new addresses, and those with long-term illness or senility, the remaining (net) sample was 4781 individuals. An introductory letter describing the study was sent to the sample in January 1996 and potential respondents were contacted by a trained interviewer to determine their willingness to participate and to schedule an appointment. The anonymous interview took approximately 1½ h. Interviews were conducted at a place and time agreed on by the respondent, the majority in their home. The questionnaire, which was interviewer-administered, contained questions relating to social background, lifestyle, health, sexual knowledge, attitudes, sexual behavior,

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