

Sexual Behavior and HIV Infection over the Life Course in Rural Malawi

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Abstract

Although HIV/AIDS research and policy has typically focused on men and women of reproductive ages (15-49), recent reports suggest that HIV infection risk also applies to individuals over age 50. Despite this most datasets in sub Saharan Africa are limited to individuals aged 15-49, particularly for women. Here we use a unique dataset from rural Malawi that contains a substantial percentage of individuals over age 50. Using this broad age range, we compare HIV prevalence and sexual behaviors between individuals in reproductive ages with the older Malawi population, and examine patterns of HIV risk and sexual behavior over the life course. We find that although some HIV/AIDS risk characteristics decline over age 50, others actually increase. Overall, we find that the over 50 population in rural Malawi is more relevant for HIV risk than sample restrictions would lead one to believe.

Introduction

Longstanding equating of sex to fertility has been reflected in the overwhelming focus of HIV research and programs on individuals of reproductive ages and children infected during birth or via breastfeeding. However the 2006 Joint United Nations Programme on HIV/AIDS (UNAIDS) announced that new estimates of HIV infections and AIDS mortality reveal a “substantial proportion” of AIDS cases among older adults (UNAIDS 2006; UNAIDS 2006). Subsequently, reporting of the number of HIV-positive people has shifted

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to refer to those aged over 14, but, like other prominent sources of data, no age-specific data are available for those aged over 49 (UNAIDS 2009). Among all sources, data pertaining to infection and prevalence of HIV at older ages is most lacking for sub-Saharan Africa where 67 percent of adult HIV infection worldwide occurs (UNAIDS 2009).

Recent research has provided estimates of HIV infection at older ages in sub-Saharan Africa extrapolated from nationally-representative data collected from 15-49 year olds, or on smaller samples of adults aged over 49. Extrapolating UNAIDS data on the number and prevalence of HIV infection among younger adults, Negin and Cumming estimated that in 2007 approximately 3 million people aged over 50 were living with HIV infection across sub-Saharan Africa. This represented 14.3% of the 21 million people aged over 14 years infected in the region. HIV infection among adults over 50 was identified as 4.0% compared to 5.0% among adults aged 15-49 (Negin and Cumming 2010). More locally, in rural Cameroon HIV prevalence among men and women aged 55-70 years was identified as 2.6% (Nyambi, Zekeng et al. 2002), and data collected from rural and urban Ethiopia revealed prevalence of HIV among men and women aged 50 to 91 as 5.6% and 4.7% respectively (Kassu, Mekonnen et al. 2004).

Incidence data are available from case reporting but anecdotal evidence suggests older adults are less likely than younger adults to access voluntary HIV counseling and testing facilities (Fylkesnes and Siziya 2004; HAI 2004) and that cases of HIV infection and related illness are more likely to go unrecognized at older age because of the difficulty distinguishing AIDS symptoms such as fatigue, weight loss, diminished appetite and dementia from symptoms of the ageing process (Whipple and Scura 1996; Lieberman 2000). Nevertheless, using case data from 26 national programs in sub-Saharan Africa, Knodel, Watkins and Van Landingham (2002) found 7.3% and 3.6% of the total number of male and female AIDS cases were among adults aged 50 and above (Knodel, Watkins et al. 2002). More recently in rural Kenya, AIDS was identified to be the leading cause of mortality among 1228 adults aged over 49, accounting for 27% of all deaths (Negin, Wariero et al. 2010).

In this research, we contribute to the sparse literature on HIV risk for populations over 50 in sub-Saharan Africa. To do so, we use data from rural Malawi to examine HIV prevalence, risk behavior, and risk perception for men and women over age 50, and also ages 65 and older. First, we examine differences in HIV prevalence, risk behavior, and risk perception

between rural Malawians of reproductive ages with the older populations. Next, we describe age patterns of HIV risk, prevalence and sexual behavior. While previous research suggests that HIV risk continues for the over 50 population, there are very few, if any, population-based surveys that offer empirical evidence of HIV risk, prevalence, and perceptions for older populations in sub-Saharan Africa.

Background: HIV Infection in the 50 and Older Population

HIV infection among older adults in Africa is likely to involve sexual contact, consistent with HIV epidemiology among younger cohorts. (Although in the future, the number of infected older adults will increase to reflect improved survival rates among younger adults receiving antiretroviral treatment in sub-Saharan Africa.) However there is very limited understanding about the extent and nature of sexual activity after age 49 years in this region. The INDEPTH network used data collected from four cohorts in Uganda, Zimbabwe and South Africa to consider the sexual behavior of adults aged up to 65 years. They identified decreasing sexual activity after age 40 for women and 60 for men. Nevertheless the study found that between 70 and 90% of men remained sexually active after 50 years and around 50% of women reported being sexually active by 50 years (Todd, Cremin et al. 2009).

Similarly unknown is the extent to which the dominant programmatic advice of abstinence, being faithful and condom use (ABC) presents a relevant or viable strategy for older adults at risk of infection. Very few data on extra-marital sex at older ages exist. Cross-sectional data collected from 400 older adults in Southwestern Nigeria give some indication of the likelihood of extra-marital sexual activity, the study finding that 26% of those aged 65-100 had extra-marital at least once as an older adult (Kinga, Issac et al. 2010).

Whilst these data suggest levels and nature of sexual activity probably do not vary dramatically by age, there is some evidence that older adults may be less likely to use condoms than younger adults. Older adults in the Nigerian study reported low condom use (6.8%) during extra-marital sex. More recent work by the INDEPTH network found that although the majority of respondents aged between 40 and 60 were sexually active, older men were significantly less likely to use condoms than younger men (the authors did not comment on condom use among women) (McGrath, Isingo et al. 2009), consistent with earlier findings comparing 40-54 year olds with younger adults in South Africa (McGrath, Hosegood et al. 2007).

The uptake and appropriateness of prevention messages for older adults is likely to relate to consumption of HIV/AIDS information, education and communication (IEC) messages. Typically directed towards younger audiences, messages may not be transferable to older audiences (Ingstad, Bruun et al. 1997; Williams and Tumwekwase 2001; HAI 2004). Using Demographic and Health Survey data for men aged between 50 and 64 from 39 counties in the region, Negin and Cumming have recently identified lower awareness and knowledge of HIV prevention measures than men aged 15-49 (Negin and Cumming 2010). Social and physiological barriers are further likely to limit the accessibility of messages. Research in Tanzania (HAI 2004) and Botswana (Ingstad et al. 1997) found few older people could interpret visual materials due to low levels of written and visual literacy. However, qualitative data recently collected among 50-100 year olds in rural Malawi has identified a less exaggerated decline in HIV prevention knowledge at older ages (Freeman 2010).

These studies have confirmed that adults aged beyond the typical 15-49 focus of data collection are at risk of HIV infection and that older adults remain sexually active as they age. However, with the exception of the qualitative studies highlighted (Ingstad, Bruun et al. 1997; Williams and Tumwekwase 2001) and the small study in Nigeria (Kinga, Issac et al. 2010), all current research on sexuality has focused on younger old adults, particularly men, aged between 40 and 65 years. Understanding sexual behavior and the prevalence of HIV infection at older ages is important because the speed of progression from HIV infection to AIDS increases with age (Collaborative Group on AIDS Incubation and HIV Survival and including the CASCADE EU Concerted Action 2000; Babiker, Peto et al. 2001). Data on the sexual behavior and HIV infection of older Africans are desperately needed.

Data

For this research, we use data from the Malawi Longitudinal Study of Families and Health (MLSFH)³, a longitudinal panel survey of approximately 6000 rural Malawians. MLSFH started the first wave of data collection in 1998, with interviews of 1,541 ever-married women aged 15-49 and 1,065 of their spouses. Follow-up surveys were conducted in 2001, 2004, 2006, 2008 and 2010. In 2004, MLSFH added two new components to data-collection: a new sample of approximately 1,500 adolescents; and offered HIV testing and

³ Previously known as the Malawi Diffusion and Ideational Change Project (MDICP)

test results to all respondents in 2004, a procedure for MLSFH fieldwork that continued until 2010. Response rates for HIV testing were over 90% for all years testing was offered (2004, 2006 and 2008). In 2008, MLSFH also added a sample of approximately 800 parents of respondents, many of whom are included in the elderly population of interest here. A description of the MLSFH data and sample is presented in Watkins, Behrman et al. 2003 ; Bignami-Van Assche, Reniers et al. 2003 and Anglewicz, Adams et al. 2009 provide an assessment of MLSFH data quality.

Several features of MLSFH make the data well-suited for our analysis. First, in 2008 MLSFH used data from MLSFH-4 (2006) to identify parents of respondents who were still alive and were residing in the same village as the respondent. These approximately 800 parents were added to the 2008 MLSFH sample. In addition, because the original 1998 sample consisted of women age 15-49, and their husbands, and this sample has been followed over time, a substantial percentage of the original MLSFH sample is over age 50. Thus, the elderly sample we use in the present analysis consists of (1) elderly respondents in the core sample of the MLSFH and (2) elderly parents of adults in the MLSFH sample. Furthermore, the 2010 MLSFH survey contains extensive data on sexual behavior. No older adults refused to answer these questions and the response rate for the survey overall was 98%.

Sample Characteristics

While most other surveys in sub-Saharan Africa consist primarily of individuals of reproductive age, the MLSFH sample provides a unique opportunity to investigate sexual behavior for older populations. The age structure of the MLSFH sample includes relatively large proportion of individuals over age 50.

Background characteristics for women and men in the 2010 MLSFH sample are shown in Table 1. The average age of men and women in the sample is just over 40 years old. Approximately one third of men and women are age 50 or over, and 12% of women and 13% of men are age 65 or older.

Several differences in background characteristics between men and women are apparent in Table 1. Women have generally less education than men, and are more likely to be currently

divorced or widowed. The sample of men and women are relatively evenly spread across the three districts in which MLSFH conducts data collection, one in each region of Malawi.

Figure 1 displays the age distribution in five-year intervals for men and women in the 2010 MLSFH sample. The largest percentages of men and women are between 20 and 29 years, and the age distribution decreases with age for both men and women. There are few differences in age structure by gender: slightly more women are 30-39 years old, and more men are 50 years and older.

As shown in Figure 2, the overall HIV prevalence was approximately 6% in 2008. By gender, 7.4% for women and 4.3% of men tested HIV positive. Figure 3 displays HIV prevalence by age and gender. The pattern of HIV infection for MLSFH resembles HIV prevalence found by the Malawi Demographic and Health Surveys in 2004 (MDHS 2004) for women, but not men. Women aged 30-39 in MDHS and MLSFH had the highest HIV prevalence. However, while men aged 30-39 also had the highest HIV in the 2004 MDHS, men age 50-59 have the highest prevalence in MLSFH.

Results

Differences in HIV Prevalence, Risk and Perception by Age

First we compare sexual behavior and HIV prevalence and risk perception for men and women of reproductive ages with (1) those age 50 and older, and (2) the 65 and older populations. The specific sexual behaviors we examine include: sexual experience in the past year, number of sexual partners in the past 12 months, suspected number of spouse's sexual partners in the past year and extramarital relations in the past year. In addition, we also compare HIV prevalence and worry about HIV infection for these populations.⁴

Results in Table 2 show both significant differences and similarities in HIV prevalence and sexual behavior by age. First, while HIV prevalence is significantly higher among women aged 15-49 (11.4%) than women age 50 and over (4.2%), there is no significant difference in HIV prevalence for men. In fact, HIV prevalence is 7.7% for men age 50 and older, compared to 6.5% for men of 'reproductive' age.

⁴ Data entry of the 2010 MLSFH survey is currently ongoing, and will be completed by November, 2010. Data for the analysis in this abstract includes only questionnaires entered through September 17th, which consists only of data for the first data collection site, Mchinji.

As with HIV prevalence, a gendered pattern is apparent in differences in sexual behavior by age. For example, women aged 50 and older are less likely to have had sex in the past 12 months, had fewer sexual partners, and were less worried about HIV infection than women aged 15-49 years old. While men over 50 years were less likely to have had sex in the past 12 months, there are no significant differences by age for number of sexual partners, suspected number of spousal sexual partners, worry of HIV infection, or infidelity.

There are more age differences when age groups are divided between 15-64 years old, and the 65 and older. HIV prevalence is significantly lower for both men and women over age 65, as is the likelihood of having sex in the past 12 months. However, several behaviors are not significantly different by age, including number of sexual partners, suspected number of spouse's sexual partners, extramarital partners and worry of HIV infection for men; and suspected spouse's sexual partners for women.

The lack of data on populations over age 50 in sub-Saharan Africa might lead one to believe that sexual risk behavior and HIV prevalence is negligible for this age group. However, we find quite the opposite: HIV prevalence is in fact higher for men over age 50, and many sexual risk behaviors are not different for the over 50, or over 65 population in rural Malawi.

Sexual Behavior, HIV Prevalence and Risk Perception over the Life Course

The above analysis dichotomizes age into two categories for the purposes of a general comparison of behaviors by age. However, it is our intention to show patterns by age, in addition to illustrating age differences. In the next step of our analysis, we used non parametric weighted regressions that smooth the sexual behaviors and HIV prevalence over the ages included in the MLSFH survey. These regressions allow one to better understand age patterns of sexual behavior for men and women, and also lend support to our findings above that the over 50 and over 65 populations are quite relevant for research on HIV infection.

Figures 2 and 3 show age patterns for likelihood of HIV infection over the life course for women and men. As the results above suggest, there are very different patterns for men and women. Age patterns of HIV infection for women peak in the early 30s and decline steadily thereafter. For men the greatest likelihood of HIV infection is more than 10 year later, and

doesn't decline until the mid 50s. Despite these differences, one clear consistency between men and women is that HIV infection is far from negligible over age 50.

The gendered differences in age patterns in Figures 4 and 5, which show the likelihood of having had sex in the previous 12 months, likely reflect the different ages of marriage for men and women in rural Malawi. Since the average age of marriage is later for men, it is not surprising that the likelihood of having had sex in the past 12 months increases until the mid-30s before declining around age 40. For women, the likelihood of having sex in the past 12 months declines steadily throughout the life course for respondents in the MLSFH sample. Again, although numbers of respondents reporting having sex in the past year are lower after age 50 than at younger ages, there are still relatively large percentages of individuals reporting to have sex over age 50, for both men and women.

Interestingly, although men having sex in the past year declines over age 50, the number of sexual partners in the past year increases with age. Figure 7 shows that, in striking contrast to the percentage having had sex in the past year, the number of sexual partners in the past year increases steadily for men, particularly after age 50. This pattern perhaps reflects the increasing polygamy among men over age 50. By contrast, the age pattern for women (shown in Figure 6) declines in a manner similar to Figure 3.

In addition to reporting their own number of sexual partners in the past year, respondents were also asked to estimate the number of sexual partners for their spouse. Since many of the men and women in the MLSFH sample are married to others in the sample, a comparison of self-reported number of sexual partners with estimated spouses' number of partners provides insight into how well individuals know about or report their spouse's behavior. The pattern of wife's number of partners for men (Figure 9) matches the steady decline of women's self-reports. However, women's reports of husbands' number of sexual partners show a decline after age 50 (Figure 8), whereas men's own reports actually increase after age 50. This result may mean that while men over age 50 are not less likely to have extramarital partners than those under 50, their wives may be less aware of these extramarital partners.

Worry of HIV infection also has very different shapes for men and women over the life course. As with actual HIV infection, worry of HIV infection (shown in Figure 10) reaches a peak before age 40 for women and declines thereafter. For men, HIV worry (Figure 11)

declines until the early 50s, and then increases with age- a surprising contrast from most of the other figures shown for life course HIV risk characteristics.

Finally, the age pattern of extramarital partnerships follows a similar pattern for MLSFH men and women, in contrast to the gender differences observed in other characteristics. Age patterns of extramarital partnerships reach a peak around age 40 and then decline with age (Figures 12 and 13). However despite the similar shape, the level of extramarital partnerships are very different for men and women; the number of women who report having had an extramarital partner is much lower than the number of men reporting having had extramarital partners.

Discussion and conclusions

Our analysis of HIV among older Malawians shows that although HIV prevalence among both men and women declines at older old ages, there remains a considerable risk of HIV infection after the typical 15-49 focus of HIV data collection. Among men, HIV prevalence in fact increases after age 49. Prevalence of HIV among women aged over 49 is 4.2% (compared to 11.4% among 15-49 year olds) and among men is 7.7% (compared to 6.5% among 15-49 year olds).

These findings are consistent with our data concerning sexual activity among older Malawians suggesting that HIV infection at older ages is likely to be associated with sexual contact, as expected. Reflecting HIV infection after age 49, the level of sexual activity reported by MLSFH respondents declines steadily at older ages but remains considerable. As HIV infection data, level of reported sexual activity is related to gender and is higher among older men than women.

Sexual behaviours considered to increase the risk of HIV infection - number of recent extramarital partners and respondents' reports of their spouses' recent sexual partners – were not significantly different after age 50 from those reported before age 50. This suggests that the nature of older men and women's sexual behavior may not alter with age. Further, looking across the life course using non parametric weighted regressions, we identify that for men, the number of sexual partners in the past year in fact increases after age 50.

Our study challenges the widely held view that sexual behavior and HIV data collection is difficult at older ages (Levy and Albrecht 1989). We demonstrate that in Malawi questions about sexuality and HIV testing can be offered in population based studies without the risk of high non-response bias. This is consistent with previous findings in Thailand (Knodel and Chayovan 2001) and therefore suggests that this may be the case in a number of quite different settings. This, coupled with our findings of considerable levels of HIV infection and sexual activity among older Malawians, suggests that individuals aged beyond 49 should and can be included in HIV/AIDS research and prevention efforts in sub-Saharan Africa.

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Figures and Tables

Table 1: Background Characteristics, 2010 MLSFH Men and women

| | Women | Men |
|--------------------------------|--------------|------------|
| Age (mean) | 41.0 | 42.8 |
| 50+ years | 28.9% | 32.8% |
| 65+ years | 11.9 | 13.4 |
| Education | | |
| No education | 26.3% | 12.3% |
| Primary | 67.2 | 68.2 |
| Secondary or higher | 6.5 | 19.5 |
| Region of residence | | |
| Central | 33.5% | 32.8% |
| South | 35.0 | 36.4 |
| North | 31.6 | 30.9 |
| Marital characteristics | | |
| Currently married | 76.2% | 86.6% |
| Never married | 1.3 | 7.9 |
| Divorced or separated | 10.0 | 3.5 |
| Widowed | 12.5 | 2.0 |
| HIV positive | 9.3% | 7.3% |
| N= | 2126 | 1514 |

Figure 1: Age Distribution MLSFH 2010

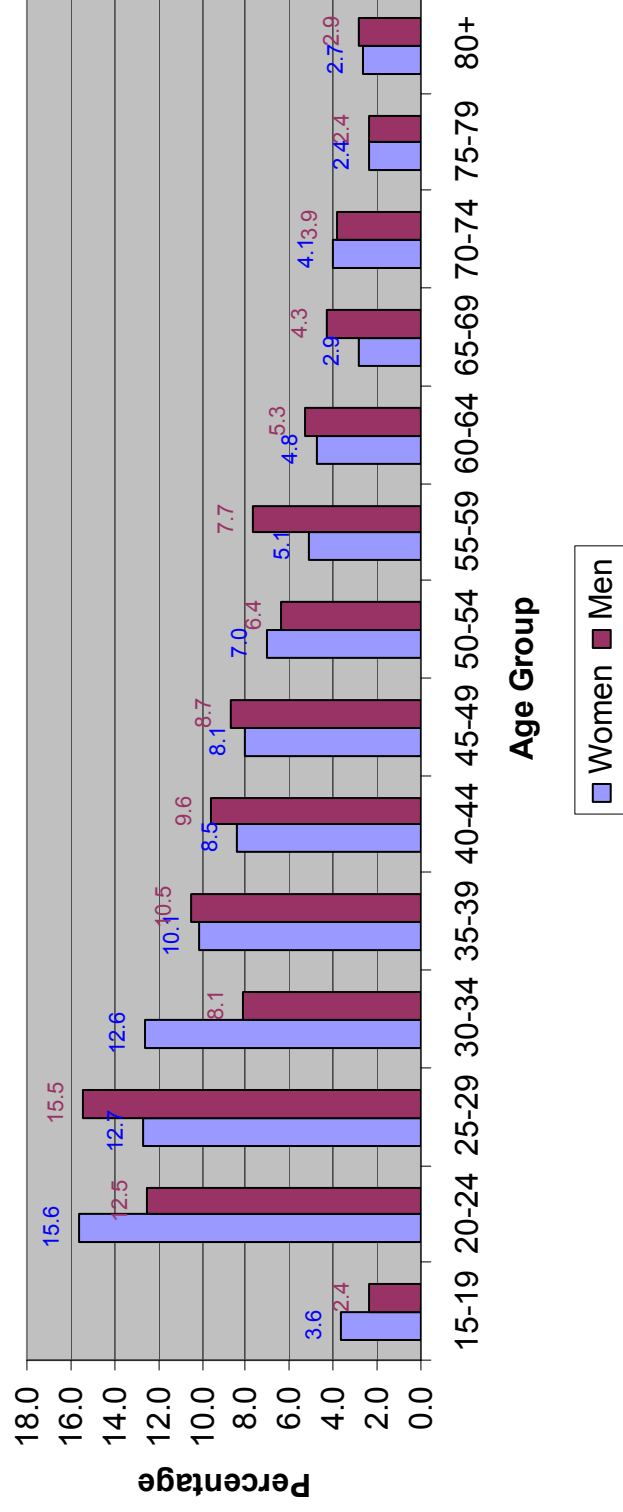


Table 2: Differences in HIV prevalence and sexual behavior by age for 2010 MLSFH men and women

| | Women | | | Men | | |
|--|-----------|-----------|-----------|-----------|-----------|-----------|
| | Age Group | Age Group | Age Group | Age Group | Age Group | Age Group |
| HIV prevalence | 15-49 | 50+ | 15-49 | 50+ | 15-64 | 65+ |
| Had sex in past year | 11.4% | 4.2%** | 6.5% | 7.7% | 10.3% | 0.9%** |
| Number sexual partners in past year | 72.2% | 43.7%** | 75.6% | 66.5* | 68.6% | 27.9%** |
| Suspected number of spouse's partners in past year | 1.16 | 0.61* | 1.17 | 1.14 | 1.03 | 0.38* |
| Worried a lot about HIV infection | 1.40 | 1.27 | 0.85 | 0.77 | 1.43 | 0.74 |
| Extramarital partners in past two years | 13.2% | 4.4%** | 7.6% | 5.8% | 11.9% | 1.2%** |
| | 1.2% | 1.1% | 17.3% | 12.3% | 1.4% | 0.0% |
| | | | | | 16.3% | 12.7% |

Significant at ** 1% level, *5% level

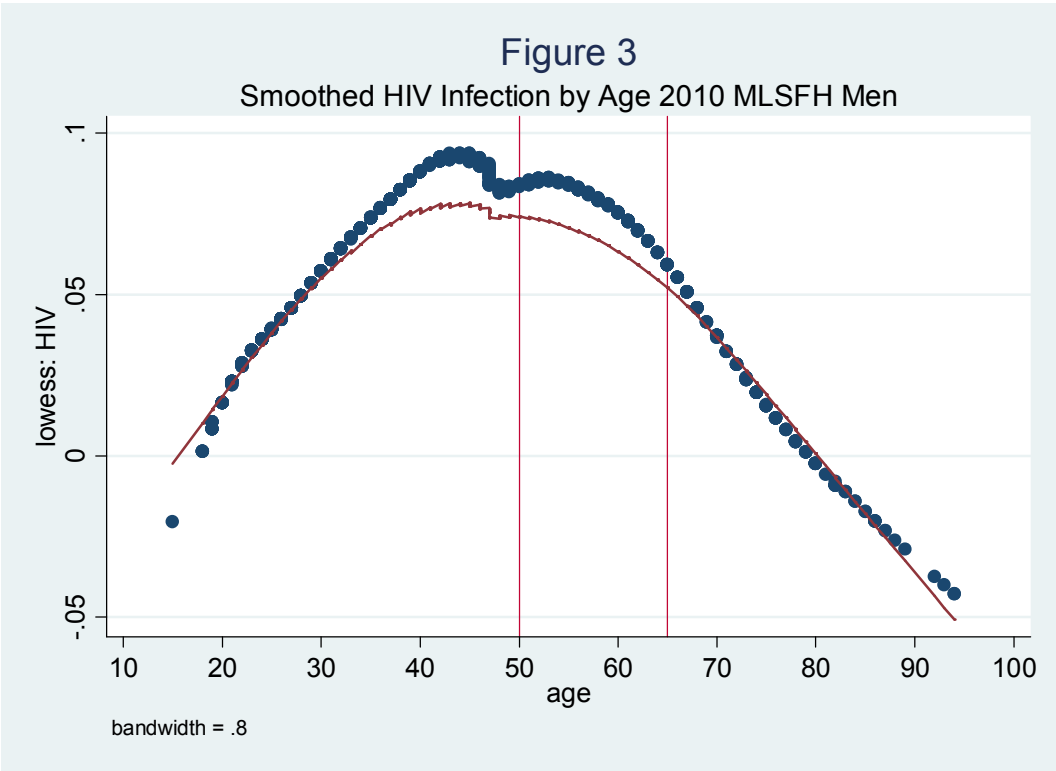
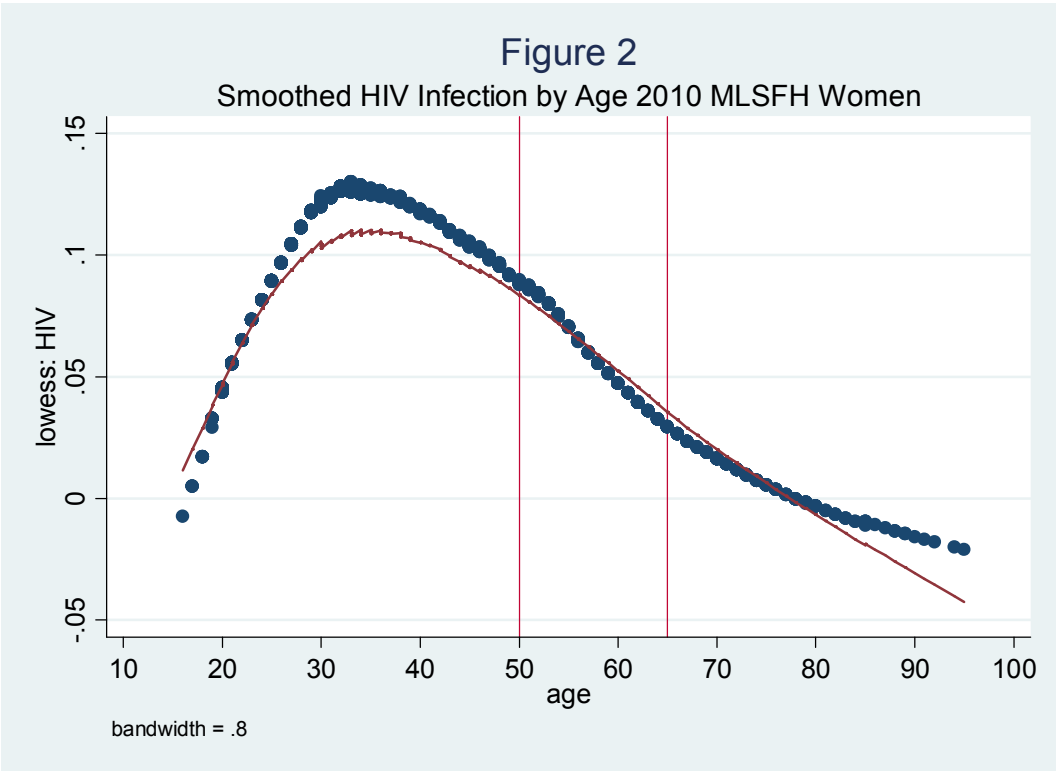


Figure 4

Smoothed Sex in Past Year by Age 2010 MLSFH Women

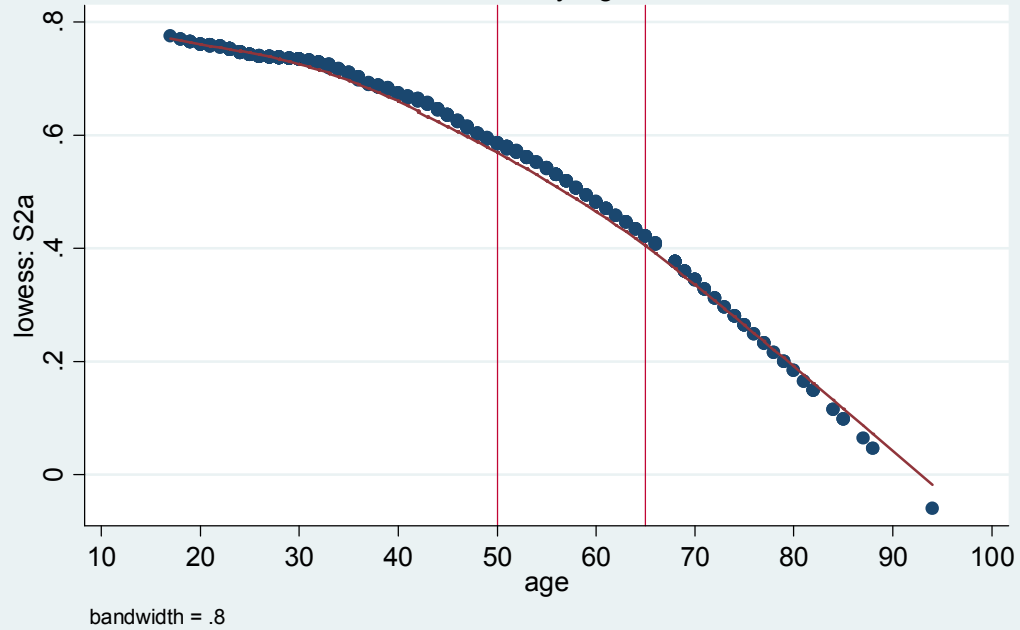


Figure 5

Smoothed Sex in Past Year by Age 2010 MLSFH Men

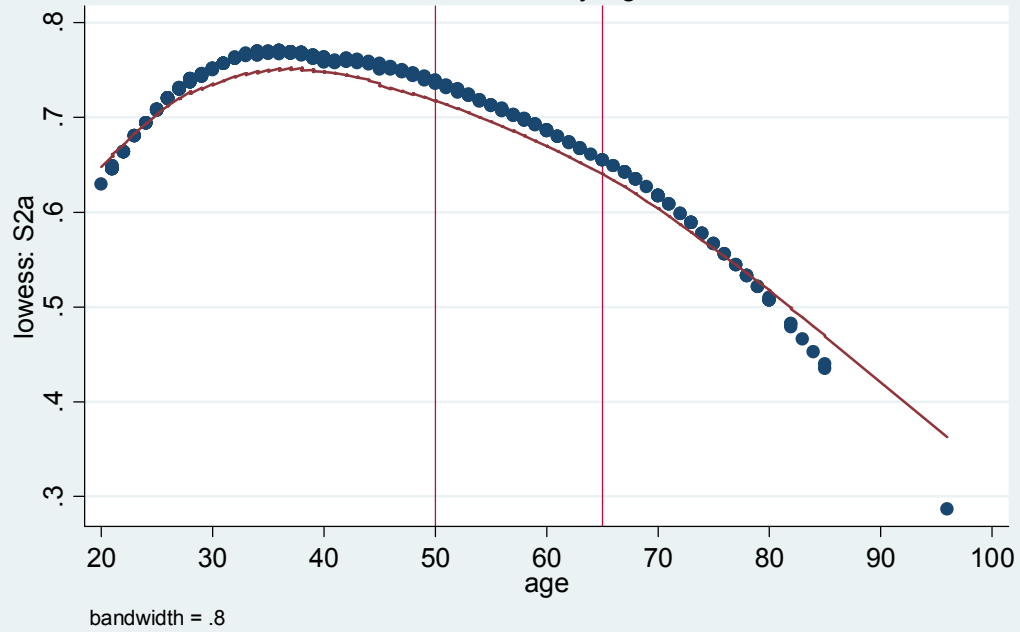


Figure 6

Smoothed Number Partners Past Year by Age 2010 MLSFH Women

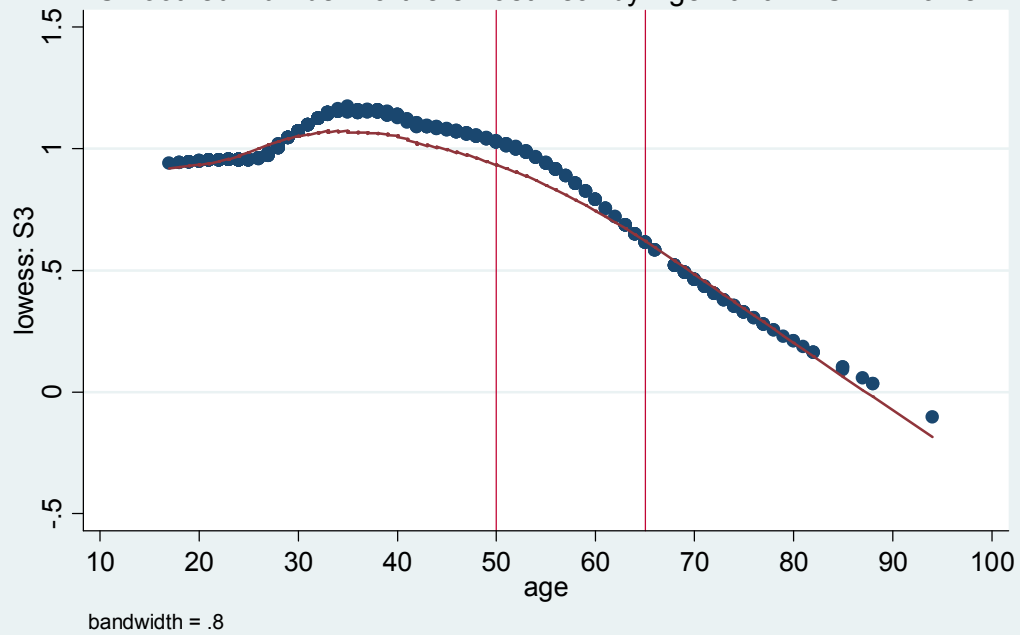


Figure 7

Smoothed Number Partners Past Year by Age 2010 MLSFH Men

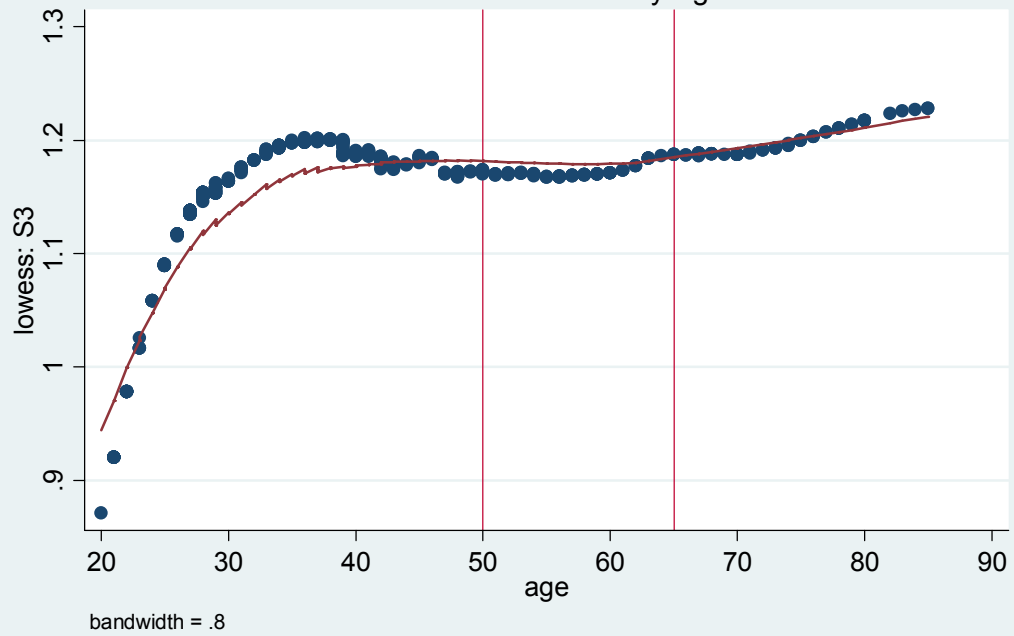


Figure 8

Smoothed Number Spouse Partners Past Year by Age 2010 MLSFH Women

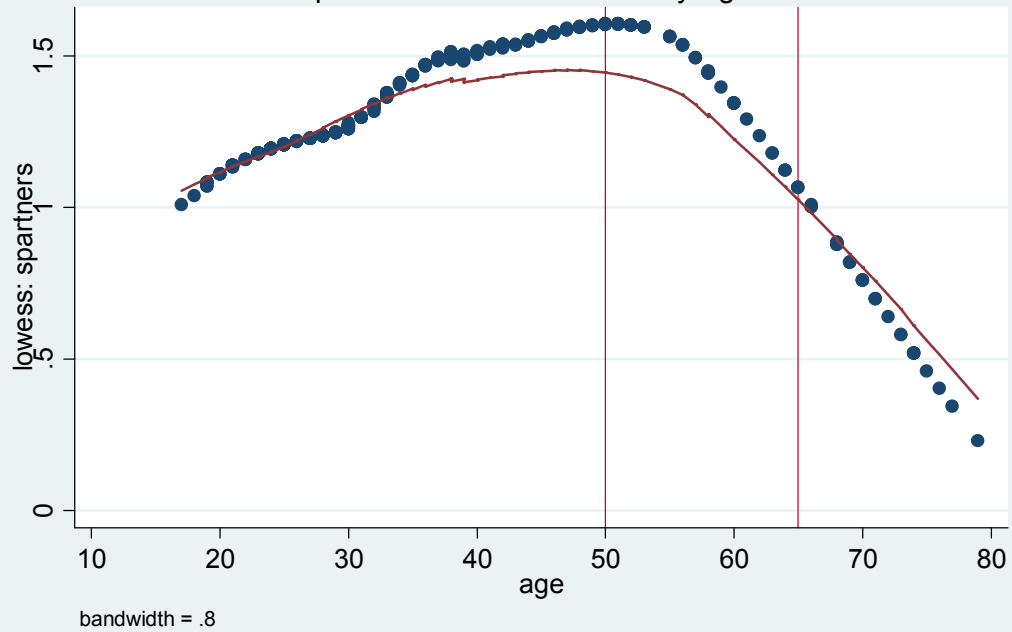


Figure 9

Smoothed Number Spouse Partners Past Year by Age 2010 MLSFH Men

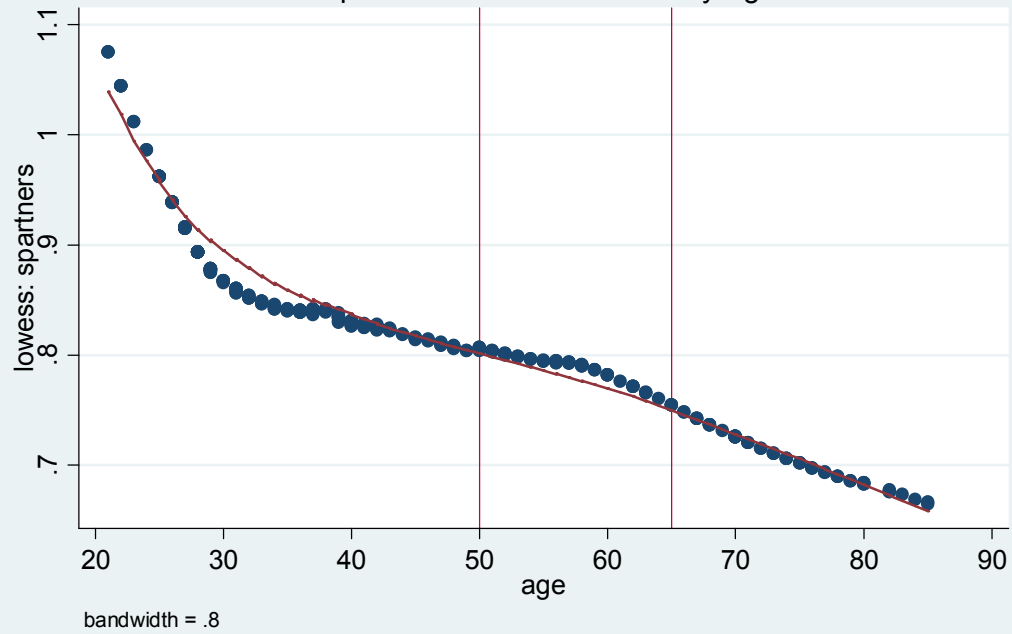


Figure 10

Smoothed AIDS Worry by Age 2010 MLSFH Women

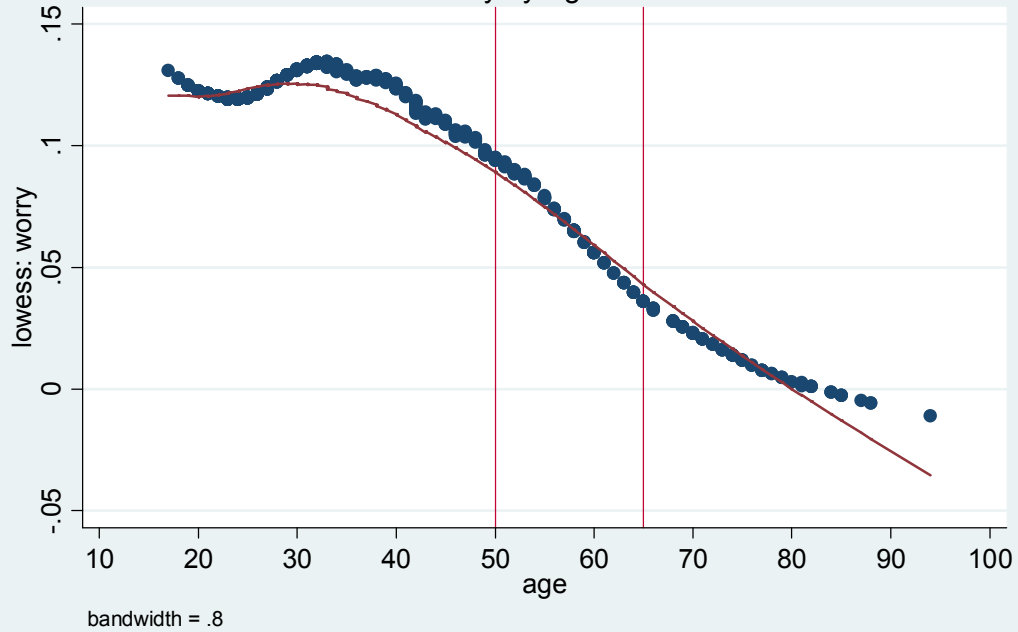


Figure 11

Smoothed AIDS Worry by Age 2010 MLSFH Men

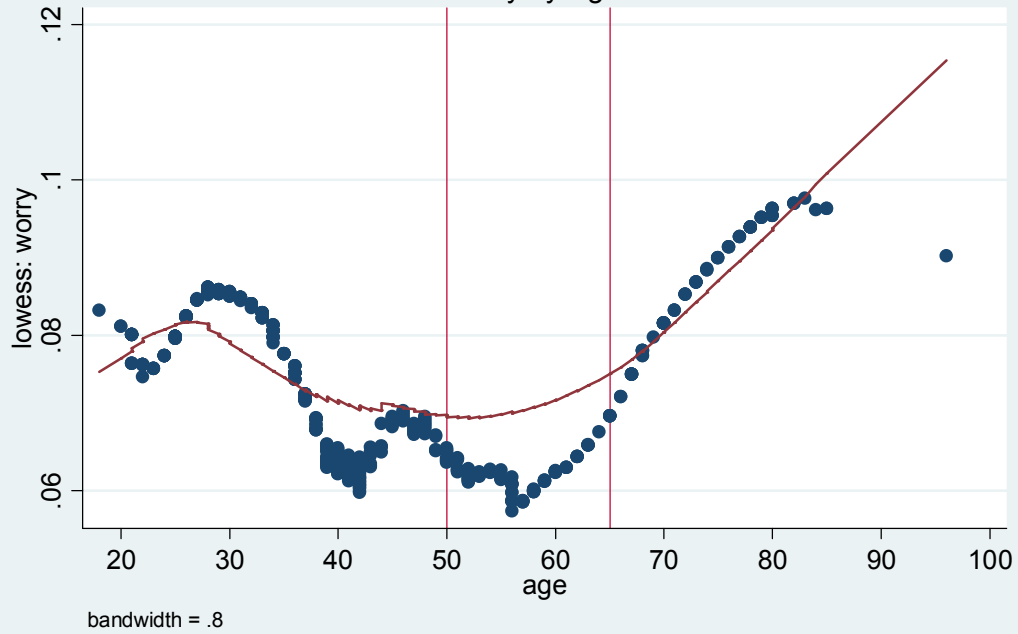


Figure 12

Smoothed Had Extramarital Partner by Age 2010 MLSFH Women

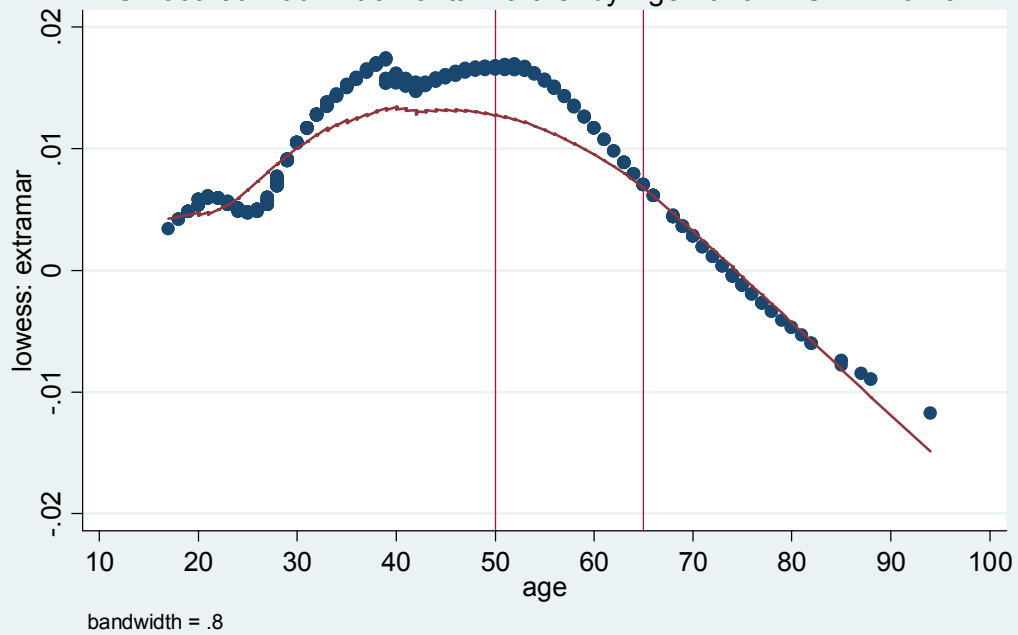


Figure 13

Smoothed Had Extramarital Partner by Age 2010 MLSFH Men

