The Recent Rapid Change in Sexual Behaviors Among South African Adolescents: An Expanded View of Trends in Risky Adolescent Behaviors

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INTRODUCTION

Very high prevalence of HIV/AIDS and teen pregnancy in South Africa has prompted policymakers to expend substantial public resources toward reducing risky sexual behaviors among the nation's adolescents. Unfortunately, there is relatively little research on recent trends in indicators of risky sexual behavior among adolescents. The few prior studies that examine trends do so by comparing behavioral indicators of pooled samples of adolescents from cross-sectional surveys that are spaced only a few years apart, which could obscure rapid change over short periods because of excessive smoothing. A more preferred method for examining trends is to compare birth cohort estimates. Using recently released panel data collected from a large sample of adolescents living in Cape Town, I am able to construct and compare birth cohort estimates of two indicators of risky sexual behavior: timing and contraceptive use at sexual debut. Also, because recent studies are divided, I examine recent trends in teen pregnancy.

I find that risky adolescent sexual behaviors changed considerably in a relatively short amount of time. For example, younger cohorts are much less likely to sexually debut by age 18, are more likely to use contraception the first time they have sex, and are less likely to become pregnant in their early teenage years. However, there was no reduction in sexual debut at earlier ages, suggesting that efforts to reduce risky sexual behaviors have been most influential for adolescents who are on the margins of riskiness.

BACKGROUND

Teenage Pregnancy, HIV/AIDS, and Risky Adolescent Sexual Behaviors

Teenage pregnancy is pervasive among large subsets of the South African population. Overall the teenage fertility rate is 61 births for every 1,000 girls, but there are wide disparities by racial group (Panday et al. 2009). The negative health, educational, economic, and social consequences of early pregnancies are well known and reverberate across the life course of the mother and child. For a review of the consequences of teen pregnancy as they pertain specifically to the South African context, see Panday, et al. (2009); and for developing contexts more generally, see Zabin and Kiragu (1998).

In addition to teenage pregnancy, HIV/AIDS is a very serious problem. In 2009, an estimated 5.6 million people in the country were living with HIV, making the epidemic in South Africa the world's largest (United Nations Programme on HIV/AIDS 2010). Antenatal prevalence rates, obtained by surveying pregnant women who visit public clinics, stand at about 30% and overall prevalence is estimated to be 17.8% for adults aged 15-49 (South Africa Department of Health 2010; South Africa Department of Health 2012). Among those most at risk for contracting HIV are young women between the ages of 15 and 24 (Shisana et al. 2009; South Africa Department

of Health 2010; South Africa Department of Health 2012); low-SES individuals, people living in informal settlements, migrants, school drop-outs, and people with disabilities (Shisana et al. 2009; South Africa Department of Health 2010; South Africa Department of Health 2012); people living or working along national roads and highways (South Africa Department of Health 2012); men who have sex with men (Burrell et al. 2010; Parry et al. 2008; Rispel and Metcalf 2009; Shisana et al. 2009; South Africa Department of Health 2012); and sex workers, heavy alcohol users, and IV drug users (Needle et al. 2008; Parry et al. 2008; South Africa Department of Health 2012; van Loggerenberg et al. 2008). The negative consequences of HIV are well known and, like teenage pregnancy, reverberate across the life course. In addition to the negative health impacts and associated early mortality, those with HIV often experience financial stresses associated with the costs of medical treatment or job loss. Many who die leave children behind. In 2009 there were about 1.9 million orphans in the country, most resulting from HIV (South Africa Department of Health 2010).

The link between risky sexual behaviors and unwanted pregnancy/sexually transmitted infections (STIs) is well known. Early sexual debut lengthens the amount of time adolescents are exposed to the risk of pregnancy and STIs, and is known to be associated with other sexual risk-taking behaviors such as inconsistent use of contraceptives, which further increases exposure (Blanc and Way 1998; O'Donnell, O'Donnell and Stueve 2001; South Africa Department of Health 2012). Other well known risk-taking behaviors include: multiple sexual partners, age-disparate partnerships, alcohol and drug use, lack of accurate knowledge, and low self-perceived risk (South Africa Department of Health 2012).

Public Efforts to Influence Adolescent Sexual Behaviors

The South African government invests substantial public funds to address the high prevalence of teenage pregnancy and HIV. During fiscal year 2011-2012, 7.8 billion Rands ($922 million USD), accounting for nearly 10 percent of the total national budget in that year, was allocated to fund related programs designed to "increase the demand and uptake of services, promote healthy behaviors, and address norms and behaviors that put people at risk for HIV, STIs and TB" (National Treasury of South Africa 2012). Figure 1 shows the upward trend in public funds devoted to this part of the national budget.

[Figure 1 about here]

Heterosexual sex is a proximal determinant of pregnancy and is the most common vehicle for the spread of HIV in South Africa (Shisana et al. 2009; South Africa Department of Health 2010; South Africa Department of Health 2012). The National Strategic Plan, formulated by the South Africa National AIDS Council and responsible for steering national efforts in the fight against HIV, specifically identifies young women aged 15-24 as a key population that is vulnerable to unwanted pregnancy and HIV (South Africa Department of Health 2012). As such, publically funded initiatives are aimed at delaying sexual debut and promote effective and consistent contraceptive use among adolescents. Two such initiatives, called *Lovelife* and *SoulCity*, aim to reduce HIV, STIs, and teen pregnancy via mass media awareness and educational efforts to encourage responsible sexual behaviors. For more information about the *Lovelife* program, visit

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http://www.lovelife.org.za/index.php. For more information about the *SoulCity* program, visit http://www.soulcity.org.za/.

Trends in Adolescent Sexual Behaviors in South Africa

Research on trends in adolescent sexual behaviors is limited because of the lack of sufficient population-level data necessary for making such observations. Unfortunately, an understanding of population-level trends in adolescent sexual debut and contraceptive use is precisely what is needed in order to assess the progress of large-scale campaigns aimed at influencing adolescent sexual behaviors. Early research indicates that adolescents in the late 1990s were debuting earlier than did their older counterparts (Bakilana 2005), but more recent research may suggest a reversal. According to one study, the proportion of individuals who debuted before age 15 remained fairly constant at 8.4 percent in 2005 and 8.5 percent in 2008 (Shisana et al. 2009). Unfortunately, these estimates are moving averages and not birth cohort estimates, which would be more useful for assessing recent, rapid changes. Another limitation is that trends in sexual debut beyond age 15 are ignored, which could obscure changes in less-risky behaviors.

Research on recent trends in adolescent contraceptive use in South Africa is also relatively sparse, but studies that exist indicate a clear upward trend. The proportion of 15-24 year olds who used contraception during their previous sexual encounter has increased substantially. In 2002, 57.1 percent of males and 46.1 percent of females used contraception the last time they had sex compared with 87.4 percent of males and 73.1 percent of females in 2008 (Shisana et al. 2009). Again, these estimates are moving averages and cohort estimates would be more indicative of the actual depth of change in adolescent contraceptive practices over time.

Research examining trends in HIV prevalence is much more common. The literature convincingly denotes a decline in incidence (new cases) and stabilizing prevalence, with the strongest declines among older individuals (South Africa Department of Health 2010). Incidence among 18-year-olds decreased from 1.8 percent in 2005 to 0.8 percent in 2008, with similar trends for all 15-20 year olds (Shisana et al. 2009; United Nations Programme on HIV/AIDS 2010). Among women aged 15-24, incidence dropped from 5.5 percent in 2003-2005 to 2.2 percent in 2005-2008 (United Nations Programme on HIV/AIDS 2010). In 2009, the HIV prevalence among 15-24 year olds remained unchanged from the previous year at 21.7 percent (South Africa Department of Health 2010).

Research on recent trends in teenage pregnancy is divided. Using information about pregnancies among students from the Education Management Information System (EMIS), researchers found an increase in teenage pregnancies from 2004 to 2008 (Panday et al. 2009). This increase is contrary to findings from other studies that identify a long, slow decline in teenage pregnancy since the mid-1990s (McGrath and Moultrie 2007; Moultrie and Timaeus 2003; Statistics South Africa 2008). A reversal in the nearly decade-long decline in teenage fertility is alarming because it may indicate that public efforts to reduce teenage pregnancy are ineffective. Further research is needed in order to understand these trends.

The Current Investigation

This study seeks to update knowledge of trends in risky adolescent sexual behaviors and teenage pregnancy. I address two major research questions. First, has the prevalence of risky sexual behaviors among adolescents recently changed? Second, have teenage pregnancy rates recently changed? Because of the substantial public investment in initiatives aimed at influencing the sexual behaviors of South African adolescents, I hypothesize that risky adolescent sexual behaviors have declined, and that teen pregnancy rates follow suit. Although not a formal evaluation, the results from this analysis may indicate whether or not national programs aimed at influencing adolescent sexual behaviors have been successful.

To resolve these questions I examine two important indicators of risky sexual behavior (age and contraceptive use at sexual debut) and teenage pregnancy. Instead of relying upon moving averages derived from cross-sectional data sources, I utilize recently released panel data in order to develop birth cohort estimates of the three outcomes. These birth cohort estimates are a better method for identifying trends because the smoothing effect of moving averages may obscure rapid changes, especially over a short period of time. Given the uptick in resources dedicated to influencing adolescent sexual behaviors among adolescents, such a rapid change in behaviors is possible.

DATA AND METHODS

In order to complete this study, I rely upon data from several waves of the Cape Area Panel Study (CAPS). CAPS is a longitudinal study of young adults living in metropolitan Cape Town, South Africa. The study commenced in 2002 and initially included 4,752 adolescents between the ages of 14 and 22. The full sample was interviewed again in 2005 and 2006 using the same core questions on household composition, parental characteristics, education, work, sexual behavior, and childbearing history. Data for this analysis come from several different components of the CAPS data, including: CAPS waves 1-2-3-4 integrated data, CAPS waves 1-2-3-4 derived data, and CAPS wave 1 calendar data. For more information on CAPS or to access the data, visit http://www.caps.uct.ac.za/data/html. Also, see Lam et al. (2008).

In order to construct key measures of interest, I utilize self-reported data from three waves of the panel study, collected in the years 2002, 2005, and 2006. Respondents are asked if they have ever had penetrative sex. If they respond affirmatively, they are queried for details about their first sexual experience, including the age at which it occurred and whether or not they used contraception. Female respondents are asked if they have ever been pregnant, and if so, are asked to elaborate on the experience. It is from these questions that I am able to determine the age of sexual debut, contraception use at first sex, and age of first pregnancy.

The advantage of using panel data for an analysis such as this one is that the data allow for the tracking of individuals' behavior over a long period of time. Individuals who had not debuted in 2002 but did so after would report on the experience in subsequent waves. By the 2006 wave, all the survey respondents reached age 18, yielding rich information on the sexual behaviors of a very large group of adolescents. It is with this data that I am able to produce birth cohort estimates of trends in the key measures described above.

A problem associated with longitudinal panel studies is that, at times, conflicting responses are offered for time invariant items in different waves. For example, a respondent may offer differing responses for the age of sexual debut, even though this event is time invariant. I settle these conflicts by privileging the response from the earliest wave. Only a small number of within-individual, across-wave conflicts exist in these data, and, in most cases, respondent reports are sunnier over time (i.e. age of sexual debut and contraceptive use at first sex tend to increase). Another problem with panel studies is with attrition over time. Sample weights are provided in order to adjust for attrition over time.

I divide the sample into eight cohorts, each representing a differing birth year. The original CAPS sample consists of 14-22 year olds in 2002, meaning sample members represent birth cohorts from the years 1980-1988. Individuals born in these years would turn 18 years old as early as 1998 and as late as 2006. Averages for key variables are estimated for each birth cohort, yielding a comparable trend over time. All estimates are calculated using sample weights and procedures provided by the CAPS documentation (Lam et al. 2008).

Going beyond simple descriptive statistics, I use linear regression techniques to examine whether trends in the outcomes are explained by changes in important individual and family characteristics. In addition to basic demographic information, I include information about known protective factors in all regressions. A wide body of research on the determinants of risky sexual behaviors identifies protective factors as school enrollment, living in a two-parent household, positive and involved parenting, and religiosity. For a review of the research on risk factors as it pertains to South Africa see Eaton et al. (2003) and Panday et al. (2009), and for developing contexts more broadly, see Blum (2004).

I construct controls that measure a respondents' gender, age, race, age at puberty/menarchy, urban vs. rural birth origin, and religiosity. An index (mean=0, standard dev = 1) that indicates a 'troubled or abusive home life' is constructed from several questions that ask a respondent whether they grew up in a home with physical or substance abuse (Cronbach's alpha = 0.7). To construct other controls, I rely on information from the CAPS life history calendars. During the initial interview in 2002, respondents were asked to describe their household structure and school enrollment in each year all the way back to birth. Using this information, I construct a variable that indicates whether or not an individual was enrolled in school every year continuously through the age of 14. I also create a variable that indicates whether an individual lived with both biological parents through the age of 14. Valid sample members are individuals who were observed until age 18 with non-missing information on all variables of interest and whose first sexual experience was not forced. The year coefficients in the model represent cohort differences (compared to the oldest cohort) left unexplained by the controls, indicating behavior change net of shifts in the compositional attributes of the population of adolescents.

RESULTS

Descriptive statistics on the sample members are provided in Table 1. In total, 4,003 individuals meet the selection criteria for inclusion in the analytic sample. According to the table, the cohorts are generally similar on observed characteristics with a few noteworthy exceptions. Younger cohorts are more likely to be urban born, more likely to count themselves a part of a religious

group, and tend to reach puberty/menarche earlier than older counterparts. There have not been major changes in educational and family attributes across the eight birth cohorts – about three quarters of respondents are enrolled in school and about half live with both biological parents until the age of 14.

[Table 1 about here]

Sexual debut by age 18 was less common for younger versus older cohorts, but there was no change in earlier debut, indicating a decline in behaviors on the margins of riskiness. Figure 2 shows the proportion of adolescents who debuted at differing ages, separately by birth cohort. According to the figure, debut by age 18 was very common for adolescents born in 1980 at 63%, but declined to 41% for the 1988 birth cohort. Earlier debut, an indicator of heightened risk-taking, was relatively flat across cohorts with about a third of adolescents debuting by age 16 and about a fifth by age 15.

[Figure 2 about here]

The observed decline in sexual debut by age 18 persists even after accounting for differences in important individual and family characteristics. Table 2 shows estimates from a logistic regression with debut age as the predicted outcome. According to the first column of results in Table 2, adolescents in the 1988 and 1987 cohorts were significantly less likely than their older 1980 counterparts to debut by 18. The second and third columns of results show no significant change across cohort in earlier debut, although the coefficients point in the direction of declining prevalence. When I estimate models separately by gender or employ a survival analysis approach, i.e. using Cox-proportional hazard models with time-varying controls for enrollment and family structure, I obtain essentially the same results (not shown).

[Table 2 about here]

Contraceptive use at first sex increased steadily and substantially for younger birth cohorts. Figure 3 shows the trend in the proportion of sexually active adolescents who used contraceptives the first time they had sex. Contraceptive use quickly became common, increasing from 40% of sexually active adolescents in the 1980 cohort to 61% in the 1988 cohort.

[Figure 3 about here]

The strong upward trend in contraceptive use at first sex persists even after accounting for changes in important individual and family characteristics. Table 3 shows estimates from a logistic regression with contraceptive use at debut as the predicted outcome. The positive and statistically significant year coefficients indicate a higher likelihood of contraceptive use at first sex for adolescents born after 1980 and are especially large among the youngest cohorts.

[Table 3 about here]

Prevalence of early teenage pregnancy among females was low and diminished across successive birth cohorts; however, later teenage pregnancy followed a more erratic trend. Figure 4 shows

the proportion of female adolescents who became pregnant by age 15, 16 and 18. According to the figure, there is a period of increase in teen pregnancy by age 15 or 16 until about 1982-1983, followed by decline. The proportion of females who became pregnant by age 15 (age 16) was about 6% (9%) for the 1980 cohort compared to <1% (3%) for the 1988 cohort. Teenage pregnancy by age 18 followed a less coherent trend, with a period of increase until roughly 1982-1983, followed by erratic increases and declines for subsequent birth cohorts.

[Figure 4 about here]

For black and coloured respodents, the decline in early teen pregnancy (by age 15 or 16) persists even after accounting for changes in important individual and family characteristics. Table 4 shows estimates from a logistic regression with pregnancy by age 15, 16, and 18 as the predicted outcome. White respondents are excluded from the analysis because of very low prevalence of teenage pregnancy, especially at early ages. The statistically significant cohort coefficients in the second and third columns of results indicate that *early* teenage pregnancy rates for the youngest cohorts were lower than those for the oldest cohort. The cohort coefficients in the first column of results also indicate declining rates of *later* teenage pregnancy for youngest vs. oldest cohorts, but the difference is on the margins of statistical significance.

[Table 4 about here]

Cross-cohort changes in risky sexual behaviors explain much but not all of the difference in teen pregnancy rates between the youngest and oldest cohorts. Table 5 shows estimates from a logistic regression of teen pregnancy on covariates for sexually active black and coloured females. In these models, I include controls for age and contraceptive use at sexual debut in order to account for risky sexual behaviors. According to the year coefficients in the first and second column of results, cohort differences in teen pregnancy by age 18 and 16 are not significantly significant after accounting for changes in risky sexual behaviors. The coefficients in the third column of results indicate that early debut and contraceptive use at debut are strong predictors of pregnancy by age 15, but do not completely explain the difference in prevalence between females in the youngest vs. oldest cohorts. Potential explanations are offered in the concluding section.

[Table 5 about here]

DISCUSSION

The South African government's strategy for combating high prevalence of teenage pregnancy and HIV is moving "from a mainly curative approach to a more preventative one that promotes health" (National Treasury of South Africa 2012). Efforts to curb risky sexual behaviors among adolescents are a prominent component of this preventative approach. Although the National Strategic Plan calls for monitoring and evaluation of several indicators, population-level information on risky adolescent sexual behaviors is not routinely collected and the resulting lack of data poses difficulties for estimation of trends. This paper contributes to the knowledge of adolescent risk-taking behaviors by examining recent trends in timing of sexual debut and contraceptive use at first sex. Although not a formal evaluation, the results from this analysis

may indicate whether or not national programs aimed at influencing adolescent sexual behaviors have been successful.

Summary of Findings

I find that risky adolescent sexual behaviors have changed considerably in a relatively short amount of time. Younger cohorts are much less likely to have sexually debuted by age 18 and are more likely to have used contraception the first time they had sex, even after accounting for individual and family characteristics. However, there was no similar decline across cohorts for *earlier* sexual debut, which may suggest that large-scale efforts to reduce risky sexual behaviors have been most influential for adolescents who are on the margins of riskiness.

Previous studies on adolescent sexual debut have not detected the same rapid substantial reduction in later-teen debut as I do because they ignore behaviors on the margins of riskiness, opting instead to focus on more risky behaviors like debut by age 15. Like others, I find that early teen debut *did not* change very much over the observation period. This may imply that adolescents who engage in very risky behaviors are more resistant to behavioral change campaigns; unfortunately, these are an important subset of adolescents the behavioral campaigns hope to reach.

Even though there were not significant declines across cohort in (more-risky) debut by age 15 or 16, my results suggest that the reduction in later-teen debut may have still contributed to reductions in pregnancy and, it would follow, HIV transmission. The fact that reductions in less-risky behaviors pay dividends in terms of preventing teenage pregnancy is positive news because despite extremely high prevalence of teen pregnancy and HIV, South African adolescents are actually *less* risky than adolescents from low-prevalence contexts like the United States (Pettifor et al. 2011). Unfortunately, the declines in pregnancy I observe are limited to early and not later teen years, suggesting a delay in pregnancy but not prevention.

I also find evidence that risky sexual behaviors are stronger predictors of early rather than later teen pregnancy. Demographic and family characteristics alone explain very little of the overall variation in teen pregnancy among females (under 10%, according to Table 4). When risky sexual behaviors are taken into account in addition to individual and family characteristics, up to a third of the variation in teen pregnancy among sexually active females is explained (according to Table 5). The association between sexual risk-taking behaviors is strongest for early rather than late teen pregnancy, affirming the notion that even modest changes in less-risky behaviors can, at the very least, delay early teen pregnancy and, it follows, HIV transmission. Even after accounting for risk factors, I find lower rates of teenage pregnancy for members of the youngest cohort (third column of results in Table 5). The differential could be because of reductions in unobserved indicators of risky sexual behavior, i.e. because youngest cohorts experience lower accumulation of risky behavior after their initial sexual debut. Regardless, the significant reduction in teen pregnancy for younger cohorts probably indicates some success on the part of behavior-change campaigns as opposed to being solely driven by compositional shifts in the population of adolescents.

Finally, the results of these analyses underscore the importance of the family, school and religiosity as protective factors against risky sexual behaviors. According to the results in Tables 2 and 3, living in a two-parent family that is free of negative abuses, enrollment in school, and positive religious identification are all protective factors against early adolescent sexual debut and non-use of contraceptives at first sex. The protective effects are strongest for less-risky debut (at 18) and diminish with earlier debut except for in the case of school enrollment, which is highly protective against early teen debut (at 15). The positive protective effect of school against risky sexual behaviors and negative outcomes is well known, and my findings only serve to underscore the importance of efforts to keep kids in school.

Limitations

The main limitation of this analysis concerns external validity. The CAPS data are representative of adolescents in the metropolitan Cape Town area and estimates derived from these data are not representative of the wider population of South African adolescents. At 6.2%, HIV prevalence in the Western Cape is low compared to other provinces; Kwa-Zulu Natal, for example, has the highest HIV prevalence, reaching over 40% in some sectors (South Africa Department of Health 2010). Despite having very differing levels, *trends* in HIV prevalence since 1990 have been consistent across provinces (Shisana et al. 2009; South Africa Department of Health 2010), and the risk factors known to influence early sexual debut among adolescents in rural and urban areas are similar (McGrath et al. 2009). This suggests that even if the *level* of outcomes of interest might be different (lower) in Cape Town than in other areas of South Africa, *trends* in behaviors are probably similar across provinces.

A second potential limitation of this analysis is that is relies very heavily upon self-reports of sexual behaviors. Because of the personal nature of information concerning an individuals' sexual behavior, responses may be subject to biases stemming from dishonest reporting, or "social desirability." An alternative explanation for my results might be that younger people are more influenced by social desirability and are more likely to upwardly bias the age at which they debuted (Palen et al. 2008). However, I find little evidence that individual reports of sexual behaviors changed as respondents aged – most respondents provided consistent answers about sexual behaviors at three different opportunities across four years. If young people were more influenced by social desirability, then I would have expected to see more individuals revise their age at sexual debut downward in subsequent waves of the survey.

Finally, although the measures I employ represent the best effort to account for factors known to be important to the process of adolescent sexual debut, they are far from ideal. Potentially most problematic is the lack of a time-varying measure of household income and resources; however, I expect that broad differences in income are captured in the regressions by accounting for race. Despite the crudeness of the measures, the results are strong and robust to changes in model specification and alternative constructions of the measures.

Conclusion

The biggest barrier to estimating trends in sexual behavior in South Africa is the lack of appropriate population-level data. In order to examine continually evolving trends in adolescent

sexual behaviors, population-level data must be collected on a regular basis. Specifically, cross-sectional studies of individuals who have recently completed adolescence or panel studies that follow individuals through adolescence, both with large enough samples to allow for the calculation of birth cohort estimates, are required. The CAPS data represent one such data source, but there are few other legitimate panel studies in South Africa that examine sexual behaviors in-depth and none that are more recent than CAPS. Collection of data is a crucial requirement for monitoring the evolution of myriad issues in South Africa, and efforts to acquire nationally representative data on adolescent sexual behaviors is strongly encouraged.

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Figure 1: Public spending (in billions of Rands) on HIV/AIDS prevention and treatment. Source: National Treasury of South Africa
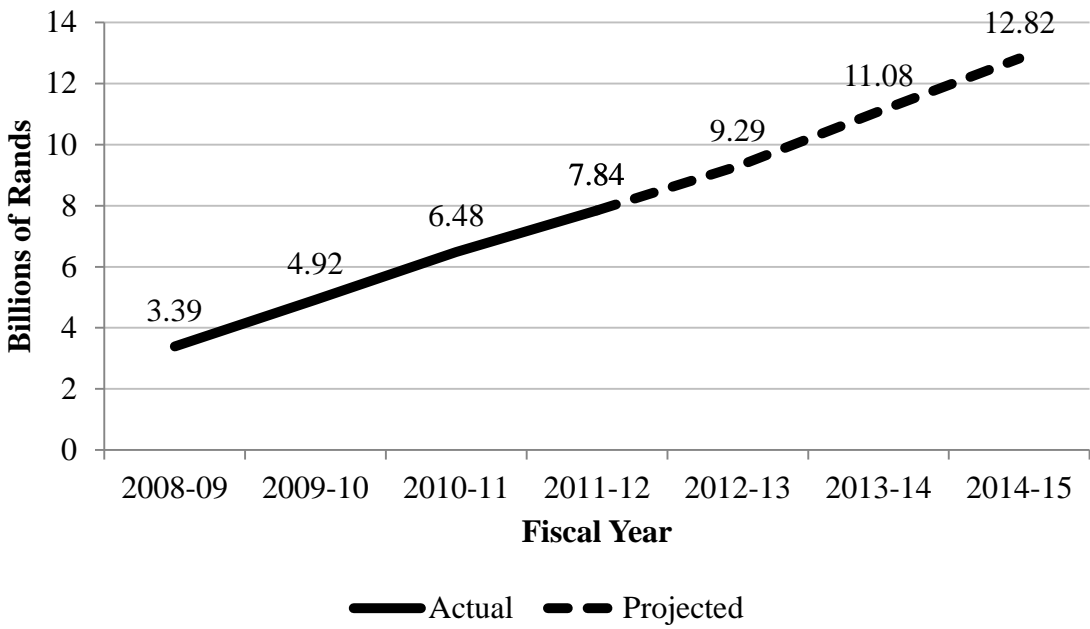
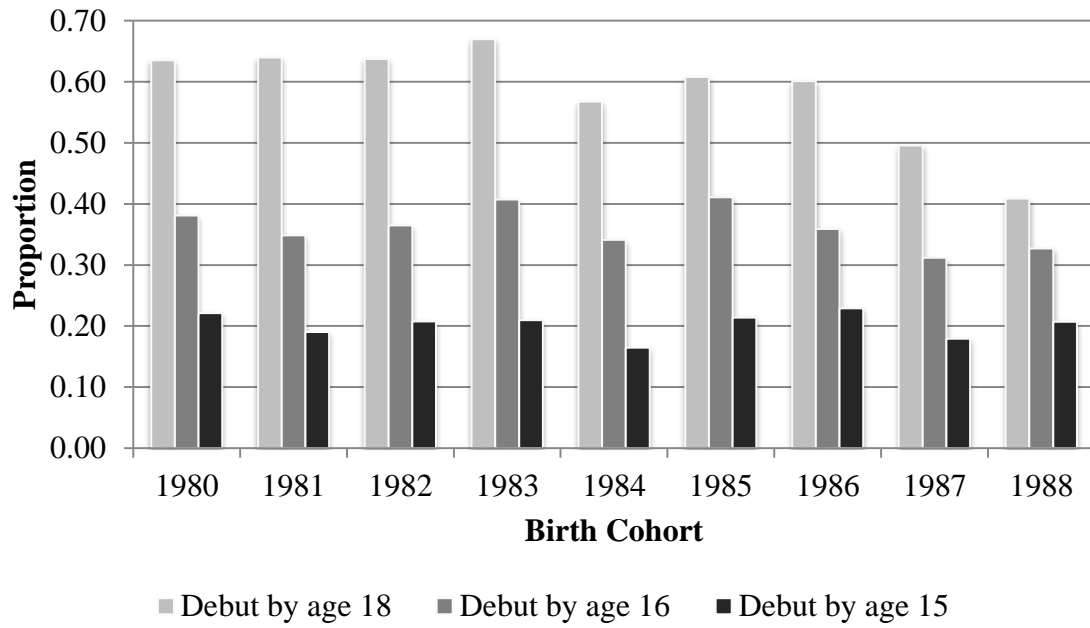Figure 2: Adolescent sexual debut by birth cohort, full sample

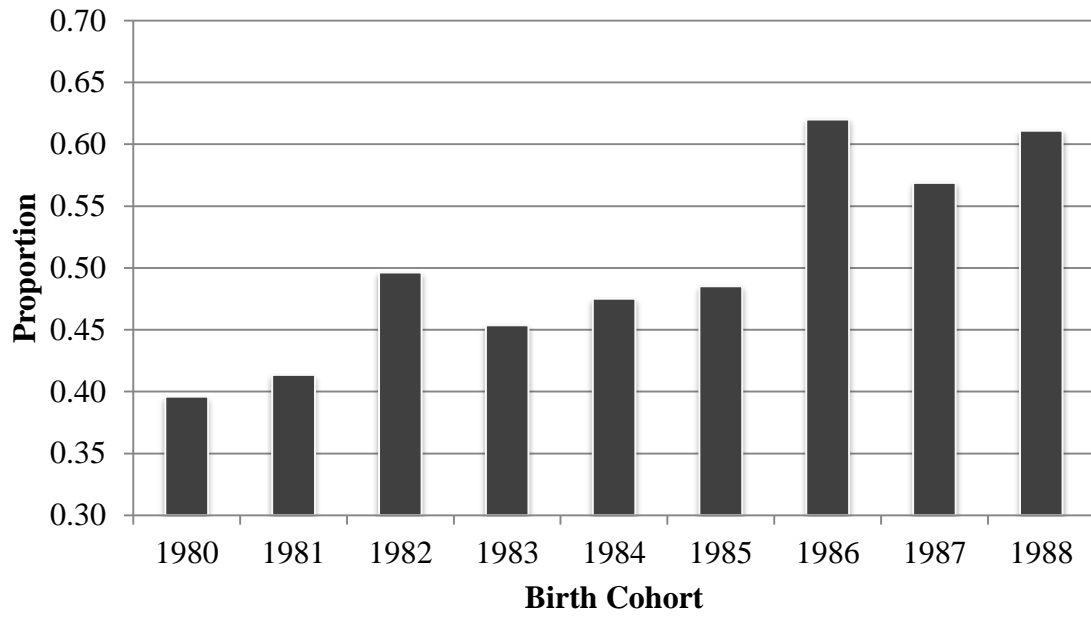Figure 3: Contraceptive use at sexual debut by birth cohort, sexually active only

Figure 4: First pregnancy by birth cohort, sexually active females only
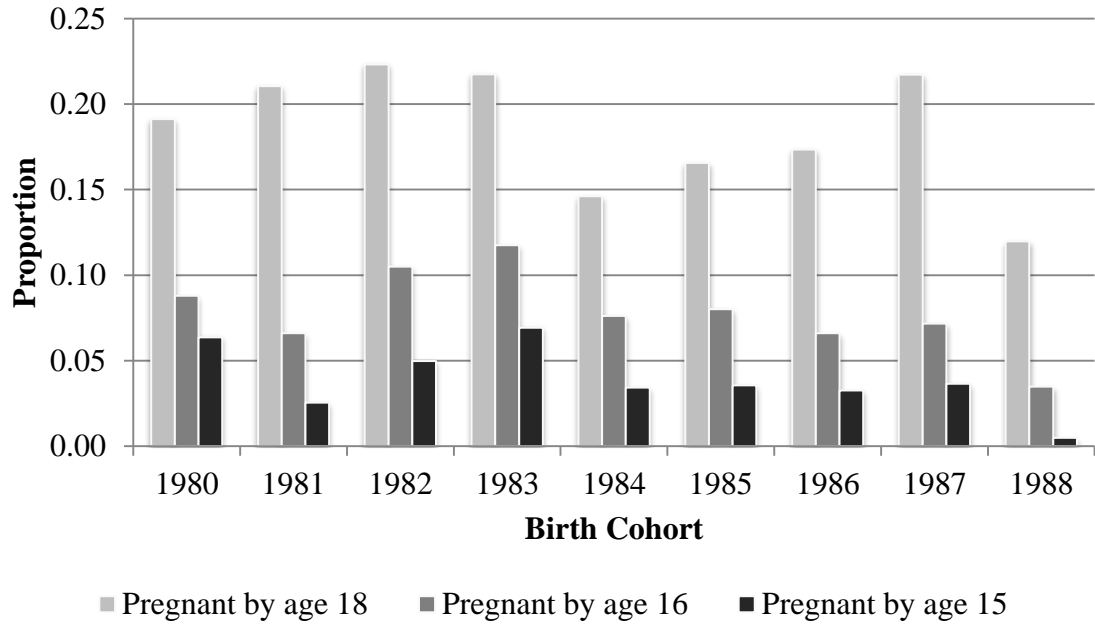
Table 1: Descriptive statistics for full sample

Year of Birth	1980	1981	1982	1983	1984	1985	1986	1987	1988	1980-1988
Year of 18th Birthday	1998	1999	2000	2001	2002	2003	2004	2005	2006	1998-2006
Gender										
% Female	0.55	0.57	0.50	0.52	0.57	0.53	0.53	0.51	0.52	0.53
% Male	0.45	0.43	0.50	0.48	0.43	0.47	0.47	0.49	0.48	0.47
Population Group										
% Black	0.32	0.25	0.30	0.31	0.27	0.24	0.27	0.22	0.24	0.27
% Coloured	0.48	0.56	0.55	0.51	0.54	0.62	0.58	0.60	0.61	0.56
% White	0.20	0.19	0.15	0.17	0.19	0.15	0.16	0.19	0.15	0.17
Location of Upbringing										
% Urban	0.80	0.86	0.83	0.84	0.84	0.89	0.91	0.91	0.94	0.87
% Rural	0.20	0.14	0.17	0.16	0.16	0.11	0.09	0.09	0.06	0.13
Age of Puberty/Menarche	13.78	13.69	13.98	13.63	13.57	13.41	13.18	13.14	12.74	13.48
% In a Two Parent Family Thru Age 14	0.50	0.55	0.58	0.49	0.53	0.54	0.49	0.53	0.48	0.52
Troubled Home Life Index	0.01	0.02	0.02	0.01	-0.02	0.04	0.02	0.08	-0.01	0.00
% Enrolled in School Thru Age 14	0.96	0.97	0.97	0.98	0.97	0.96	0.97	0.97	0.96	0.97
% Religious	0.84	0.90	0.89	0.88	0.92	0.91	0.91	0.93	0.94	0.91
n=	370	403	449	510	533	485	458	460	335	4003

Table 2: Estimates from logistic regression of age of sexual debut on covariates, full sample

	Debut by 18			Debut by 16			Debut by 15		
	Coef	Sig	SE	Coef	Sig	SE	Coef	Sig	SE
Birth Cohort [Omitted = 1980]									
1981	0.16		0.20	0.00		0.18	-0.04		0.21
1982	0.01		0.19	-0.06		0.18	-0.04		0.20
1983	0.18		0.19	0.10		0.17	-0.11		0.19
1984	-0.20		0.18	-0.09		0.17	-0.32		0.19
1985	-0.04		0.18	0.22		0.17	0.02		0.20
1986	-0.09		0.19	-0.10		0.17	0.04		0.19
1987	-0.53	***	0.18	-0.29		0.18	-0.26		0.20
1988	-0.97	***	0.20	-0.30		0.19	-0.19		0.22
Male	0.53	***	0.09	0.93	***	0.08	1.00	***	0.10
Population Group [Omitted = Black]									
Coloured	-1.64	***	0.12	-1.45	***	0.10	-1.53	***	0.11
White	-2.09	***	0.15	-2.40	***	0.18	-2.83	***	0.27
Urban vs. Rural	-0.15		0.16	-0.16		0.12	-0.09		0.12
Age of Puberty/Menarche (centered)	0.01		0.03	-0.14	***	0.03	-0.22	***	0.03
Two Parents to Age 14	-0.34	***	0.08	-0.33	***	0.08	-0.32	***	0.09
Troubled Home Life Index	0.48	***	0.07	0.34	***	0.07	0.32	***	0.07
Enrollment in School to Age 14	-0.60	**	0.25	-1.04	***	0.22	-1.30	***	0.21
Religious	-0.67	***	0.18	-0.53	***	0.14	-0.39	***	0.13
Constant	3.16	***	0.34	2.01	***	0.29	1.23	***	0.28
n	4,003			4,003			4,003		
Pseudo r-squared	0.122			0.152			0.162		

Note: ***=p<-.01, **=p<0.05, *=p<0.1

Table 3: Estimates from logistic regression of contraceptive use at sexual debut on covariates, sexually active only.

	Coef	sig	SE
Birth Cohort [Omitted = 1980]			
1981	-0.02		0.20
1982	0.58	***	0.20
1983	0.36	*	0.19
1984	0.52	***	0.20
1985	0.67	***	0.19
1986	1.35	***	0.20
1987	1.15	***	0.20
1988	1.51	***	0.24
Male	0.42	***	0.10
Population Group [Omitted = Black]			
Coloured	-0.26	**	0.11
White	1.76	***	0.23
Urban vs. Rural	0.41	***	0.11
Age of Puberty/Menarche (centered^)	-0.02		0.03
Two Parents to Age 14	0.19	**	0.09
Troubled Home Life Index	-0.21	**	0.08
Enrollment in School to Age 14	0.50	**	0.25
Religious	0.42	***	0.13
Age at Sexual Debut (centered^)	0.26	***	0.03
Constant	-3.10	***	0.33
n		3,043	
Pseudo r-squared		0.145	

Note: ***=p<-.01, **=p<0.05, *=p<0.1

^Centered around age 13

Table 4: Estimates from logistic regression model of teen pregnancy on covariates, black and coloured females only

	Preg by 18			Preg by 16			Preg by 15		
	Coef	Sig	SE	Coef	Sig	SE	Coef	Sig	SE
Birth Cohort [Omitted = 1980]									
1981	0.20		0.25	-0.22		0.34	-0.85	*	0.46
1982	0.10		0.25	0.16		0.32	-0.31		0.45
1983	0.17		0.24	0.39		0.31	0.10		0.37
1984	-0.39		0.26	-0.18		0.35	-0.69	*	0.41
1985	-0.27		0.26	-0.16		0.34	-0.68		0.43
1986	-0.23		0.25	-0.44		0.35	-0.88	**	0.45
1987	0.12		0.25	-0.23		0.38	-0.60		0.56
1988	-0.56	*	0.33	-0.97	**	0.48	-2.66	**	1.05
Population Group [Omitted = Black]									
Coloured	0.25		0.16	-0.10		0.27	-0.41		0.39
Urban vs. Rural	-0.46	**	0.19	-0.79	***	0.30	-0.79	**	0.39
Age of Puberty/Menarche (centered^)	-0.02		0.04	-0.19	***	0.05	-0.28	***	0.07
Two Parents to Age 14	-0.11		0.13	0.04		0.18	-0.25		0.27
Troubled Home Life Index	0.56	***	0.10	0.55	***	0.13	0.60	***	0.18
Enrollment in School to Age 14	-0.70	**	0.27	-0.98	***	0.33	-0.63		0.44
Religious	-0.37	*	0.21	-0.22		0.29	-0.32		0.37
Constant	0.03		0.37	-0.38		0.48	-0.70		0.63
n		1,997			1,997			1,997	
Pseudo r-squared		0.043			0.063			0.091	

Note: ***=p<-.01, **=p<0.05, *=p<0.1

^Centered around age 13

Table 5: Estimates from logistic regression model of teen pregnancy on covariates, sexually active black and coloured females only

	Preg by 18			Preg by 16			Preg by 15		
	Coef	Sig	SE	Coef	Sig	SE	Coef	Sig	SE
Birth Cohort [Omitted = 1980]									
1981	0.08		0.30	-0.39		0.42	-0.99	*	0.55
1982	0.07		0.30	0.13		0.39	-0.49		0.55
1983	0.23		0.29	0.43		0.37	0.01		0.46
1984	-0.15		0.31	0.15		0.43	-0.52		0.56
1985	-0.27		0.32	-0.16		0.41	-0.74		0.55
1986	-0.07		0.32	-0.50		0.44	-1.06	*	0.58
1987	0.61	*	0.33	-0.26		0.41	-0.69		0.54
1988	0.23		0.41	-0.65		0.64	-2.46	**	1.09
Population Group [Omitted = Black]									
Coloured	1.42	***	0.19	0.97	***	0.27	0.53		0.37
Urban vs. Rural	-0.23		0.18	-0.56	**	0.26	-0.58	*	0.33
Age of Puberty/Menarche (centered^)	0.03		0.05	-0.15	**	0.07	-0.21	**	0.09
Two Parents to Age 14	0.22		0.15	0.40	**	0.20	0.04		0.30
Troubled Home Life Index	0.24	**	0.12	0.17		0.17	0.25		0.24
Enrollment in School to Age 14	0.06		0.35	-0.20		0.41	0.09		0.51
Religious	-0.10		0.26	0.15		0.33	0.05		0.38
Used Contraception at First Sex	-0.99	***	0.16	-1.58	***	0.29	-1.71	***	0.45
Age of Sexual Debut (centered^)	-0.58	***	0.05	-0.88	***	0.08	-0.97	***	0.11
Constant	0.79	*	0.47	0.98	*	0.58	0.85		0.71
n	1,564			1,564			1,564		
Pseudo r-squared	0.228			0.326			0.343		

Note: ***=p<-.01, **=p<0.05, *=p<0.1

^Centered around age 13