NEW EVIDENCE ON GAY AND LESBIAN HOUSEHOLD INCOMES

CHRISTOPHER CARPENTER*

Using independent data from the Centers for Disease Control, the author tests a key assumption of previous research on gay and lesbian incomes: that same-sex unmarried partner households are, indeed, gay or lesbian. The author shows that this independent data suffers from less severe underreporting of same-sex unmarried partner households than the 1990 Decennial Census. Furthermore, individual level information on sexual behavior and family planning is used to show that these households exhibit sexual behavior that is systematically different from married and different-sex couples and that is consistent with a large body of public health and HIV literature on gay men and lesbians. Finally, the author replicates, confirms, and extends previously published Census-based results on the household income penalty faced by gay male couples, showing that these results are not an artifact of deficient data. He finds similar results for lesbian couples. (JEL J1, J3)

I. INTRODUCTION

Recent research on the relative economic status of gay men and lesbians has used individuals in same-sex unmarried partner (SSUP) households in the 1990 Decennial Census to identify a sample of gay and lesbian couples (Allegretto and Arthur, 2001; Clain and Leppel, 2001). The assumption that these households are truly gay or lesbian, however, it is untestable using Census data. The prior research has only been able to offer the fact that men in SSUP households are more likely than other men to report they are never married as suggestive evidence that these individuals are indeed gay (Allegretto and Arthur, 2001). Although authors have been explicit about

this key shortcoming with respect to the Census, the use of such differences as evidence for sample validity is to some degree unsatisfying in that these studies could never reject or confirm that these households exhibited gay or lesbian behavior on more relevant margins. Moreover, because SSUP households represent an extremely small proportion of all households, there are serious implications if the assumption is violated. If the reasons why households choose to identify their relationship as unmarried partners, for example, are correlated with observable determinants of earnings, then estimated returns to those characteristics may be biased.

The present study addresses several of these concerns. First, the author identifies public health data that can recreate a Census-like sample to test the assumption that SSUP households are indeed gay or lesbian with respect to relevant sexual behaviors. Members of same-sex (SS) couples are shown to exhibit

---

ABBREVIATIONS

BRFSS: Behavioral Risk Factor Surveillance System
DS: Different-Sex
GSS: General Social Survey
MSA: Metropolitan Statistical Area
OLS: Ordinary Least Squares
SS: Same-Sex
SSUP: Same-Sex Unmarried Partner

---

sexual behavior that is systematically different from never-married individuals, different-sex (DS) cohabitors, and married couples. Moreover, the SS respondents report behavior consistent with a large public health literature on the sexual behaviors of gay men and lesbians.

Next, these independent data are used to show that two previously published Census-based results documenting differences in household resources for gay and lesbian couples are confirmed. By replicating and confirming both Klawitter and Flatt (1998) and Allegretto and Arthur (2001), the data limitations of the 1990 census are shown to be *not* responsible for the observed differences in resources across couple type. The author extends these studies by showing that the results are generally robust to excluding potential misreports based on the information afforded in the sexual behavior and family planning data. Finally, the author extends the analysis of decomposing income differentials to women.

II.   PREVIOUS LITERATURE

In her pioneering work, Badgett (1995, 2001) considered wage discrimination against individuals who were behaviorally gay or lesbian in the General Social Survey (GSS). She found that behaviorally gay men (defined a number of ways, depending on the proportion of previous sexual activity that was SS) earned between 11% and 27% less than their heterosexual male counterparts, with ambiguous results for lesbians. A family of follow-up studies using more recent waves of the GSS and alternative definitions of sexual orientation have found lesbian earnings premia.[1]

Klawitter and Flatt (1998) use the SSUP approach in the 1990 Census and document that SS female cohabiting couples and DS cohabiting couples have significantly lower household incomes than their married counterparts even after controlling for a large number of observable characteristics. Allegretto and Arthur (2001) also use the SSUP approach and document a gay male wage gap in earnings relative to married men. They also exploit unmarried heterosexual men in cohabiting

relationships as a comparison sample to more precisely identify the independent effect of marital status, which they suggest explains the bulk of the observed gap. Notably, their analysis is for men only.

Finally, it is worthwhile to note that Black et al. (2000) have also considered various data reliability checks on the SSUP households in the census. In particular, they find that the spatial distribution of male SSUP households in the census is highly correlated with AIDS death rates in 1990, which they interpret as suggestive evidence for the validity of the sample.[2] Despite this, there appears to be no published work using microdata on sexual behavior, HIV risk behavior, and family structure to offer more direct evidence on the validity of the identification approach.[3]

III.   DATA DESCRIPTION

The Centers for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) is a large, annual, state-administered, telephone-based, nationally representative data source containing detailed information on a variety of risk factors and health issues for individuals residing in private residences in every state. The data contain household income (in ranges), as well as substantial individual-level demographic information such as age, education, sex, race, and geographic location. The author considers the period 1996–2000 by pooling data on adults.[4]

Respondents are classified as members of SS cohabiting couples, DS cohabiting couples, and married couples. A man is defined to be a member of a male SS cohabiting couple if he reports there are exactly two adults in the

---

1. See, for example, Blandford (2003), Black et al. (2003), and Berg and Lien (2002).

2. Note that this relationship could also arise if there exists systematic variation in reporting attitudes that are correlated with AIDS death rates.

3. The current approach for demonstrating data reliability would not be necessary if there existed a data source with direct information on sexual orientation, household structure, and detailed marital status. The National Health and Social Life Survey, which explicitly asks individuals to state sexual orientation, produces extremely small samples of gay and lesbian individuals. The GSS has information on SS sex, but does not contain detailed household structure and marital status information to create the relevant Census-like sample for purposes of comparison.

4. The author also considered the time period 1993–95, and results were generally similar. Because the BRFSS changed several key demographic questions in the 1996 survey, results for the later time period are the focus.

household, that both adults are men (i.e., that there are no adult women in the household), and that he is a member of an unmarried couple.[5] This approach assumes, nontrivially, that the other adult in the household is indeed the other member of the couple. The author defines a woman to be a member of a female SS cohabiting couple similarly.[6] DS cohabiting couples are identified when a respondent reports s/he is a member of an unmarried couple and that there are exactly two adults in the household: one man and one woman. Finally, an individual is coded as married if the household structure and composition mirrors that of the DS cohabiting couple but the respondent reports s/he is "married."[7]

There are several key advantages of the BRFSS with respect to identifying SS cohabiting couples relative to the Decennial Census. First, the BRFSS likely suffers from fewer false responses due to antigovernment sentiments, stigma, or other institutional reasons, because confidentiality concerns are much less salient.[8] The BRFSS is also more recent and has more frequent periodicity than the Census, allowing more detailed information on changes in economic progress over time.[9]

Finally, the BRFSS allows an important test of data validity. Whether the SSUP couples in the Census are truly gay or lesbian cannot be falsified, as has been explicitly acknowledged in previous research.[10] Because the BRFSS contains information on sexual and family planning behaviors, however, it has the benefit that the researcher can confirm whether the combination of SS cohabitation and unmarried couple status is systematically correlated with behaviors known to be disproportionately associated with gay men and lesbians. More precisely, the approach considered here could *reject* the SSUP strategy for identifying gays and lesbians if it is found that these couples exhibited sexual practices that were (1) inconsistent with behavioral notions of what it means to be gay or lesbian or (2) not systematically different than those of DS and married couples.

IV.   DATA RELIABILITY

Perhaps the most serious criticism of the 1990 Census sample of SSUP households is that they represent such an extremely small proportion of the households with a marriage-like relationship. The article first shows that the BRFSS data is superior in this respect. Table 1 re-creates an informative table from the Klawitter and Flatt (1998) study that shows the proportions of each couple type the various data sources produce relative to the BRFSS data. The top row shows that the data considered here put the estimate of SS male couples at 0.43% of all households with a marriage-like relationship, with the relevant estimate of 0.40% for women. These proportions are 100% to 150% higher than those produced by

5. Specifically, the BRFSS asks the respondent to state her current marital status; in addition to the "unmarried couple" response, an individual can choose "married," "separated," "divorced," "never married," "widowed," or "refused." The author considered that some gay and lesbian couples in long-term relationships who consider themselves essentially married may report this to the interviewer and as a result appear in the data as an SS married household. Indeed, there are nontrivial numbers of these households: over 1000 for each gender. Their responses to the sexual behavior questions, however, were almost uniformly inconsistent with being gay or lesbian and in most cases mirrored those of DS cohabitors and married couples. The author suspects this is likely measurement error (administrative or otherwise), and as one can reject that they are likely gay or lesbian, these households are excluded from the empirical analysis.

6. Note that this approach, like all cohabitation approaches, necessarily excludes gay and lesbian individuals living alone. It also excludes those in relationships who do not choose "member of an unmarried couple" to describe their relationship.

7. Note throughout that the author excludes all households with more than two adults, because one cannot determine which adults are involved in the marriage-like relationship. Tabulations in Black et al. (2000) indicate that such living arrangements represented an extremely small proportion of households containing an SS, marriage-like relationship.

8. The BRFSS questioner makes clear to the respondent that "we do not ask for your name, address, or other personal information that identifies you. The phone number is erased once we finish all interviews at the end of the year. There are no risks or benefits to you being in this survey. Taking part is up to you."

9. Because the BRFSS is a health survey, however, the income and employment questions are quite limited (income is reported only in broad ranges, and there is no information on occupation, for example).

10. This lack of sexual behavior information in the Census would not be so problematic were it not for the distressingly low rate the census identifies SSUP households (0.18%). As Black et al. (2000) note, with such a small proportion of these households identified, even small errors can have serious potential effects on statistical inference. Showing that these households exhibit systematically different sexual behaviors will suggest that at least some of the signal in the "gay" indicator is valid, because if it were all measurement error, there would be no observational difference on these margins.

TABLE 1
Census, GSS, NORC, and BRFSS Proportions of People in Cohabiting Couples

	Men	Women	All
Same-sex couples			
BRFSS	0.0043	0.0040	0.0042
Confidence interval	(0.0038–0.0048)	(0.0036–0.0045)	(0.0038–0.0045)
N	150,702	187,215	337,917
Census	0.0021	0.0016	0.0018
GSS	0.0106	0.0075	0.0086
N	2,058	2,531	4,589
BRFSS/census	**2.05**	**2.50**	**2.33**
BRFSS/GSS	0.41	0.53	0.49
Different-sex couples			
BRFSS	0.0335	0.0338	0.0336
Confidence interval	(0.0320–0.0349)	(0.0324–0.0351)	(0.0326–0.0346)
N	150,702	187,215	337,917
Census	0.0385	0.0379	0.0382
GSS	0.0506	0.0748	0.0640
N	2,058	2,531	4,589
BRFSS/census	**0.87**	**0.89**	**0.88**
BRFSS/GSS	0.66	0.45	0.53

Notes: The GSS same-sex couples are those who had at least one same-sex partner in the last year and were living with "nonfamily," "other family," or "unsure." Klawitter and Flatt (1998) note that these are likely to be overestimates. The NORC same-sex couples are those who identified as gay, lesbian, or bisexual and who were living with a same-sex partner. The non-BRFSS information was taken directly from Table A.5, Klawitter and Flatt (1998).

the Census.[11] Furthermore, the BRFSS offers a count of DS households that is quite consistent with the Census. Taken together, this suggests the BRFSS does a better job than the census in representation of SSUP households.

Turning to HIV risk behavior, Table 2 reports the proportion of each group who respond that they have ever been tested for

HIV.[12] Public health studies show that men who have sex with men get tested for HIV at significantly higher rates than heterosexual men (either married or unmarried).[13] The BRFSS data in Table 2 support this: men in SS couples have been tested for HIV at substantially higher rates ($\sim$80%) than all other comparison groups, though nontrivial proportions of all groups have been tested.[14] Moreover, these proportions fall well within

11. Another way to think about the severity of the underreporting in the Census would be to back out what the Census rate would imply about the incidence of homosexuality in the overall population. Using conservative estimates from the literature on cohabitation (20% of gay men and lesbians and 50% of heterosexuals), the Census numbers would imply that the overall rate of homosexuality in the population were 0.005, or one half of 1% of the population. The BRFSS partnership rate with the same thought experiment would imply an overall rate of homosexuality in the population of approximately 1%. The latter is much closer to (but still well below) the estimates of 2.5% (men) and 1.4% (women) as suggested in Black et al. (2000). This implied fraction gay is calculated as: observed relative partnership rate $=$ [0.5 (gay partnership rate * fraction gay)/ [0.5 (gay partnership rate * fraction gay) $+$ 0.5 (straight partnership rate * fraction straight)]], where fraction straight $=$ [1 $-$ fraction gay].

12. These numbers measure the stock of respondents tested for HIV for any reason, including routine check-ups, surgical procedures, immigration, and several other options that offer little insight into sexual orientation.

13. Berrios et al. (1993), for example, report that data from the National AIDS Behavioral Surveys shows that only 23% of married men and 15% of married women under age 75 report having ever been tested for HIV, whereas the relevant proportion for men who have sex with men was 60%.

14. The higher testing rates in the BRFSS are likely due to its later time frame, as HIV testing has increased over time with AIDS awareness. Also, gay couples in monogamous relationships may correctly report that they are not at high risk for HIV and therefore do not get tested.

TABLE 2
Data Reliability Comparisons: Sexually Transmitted Disease Behavior

Percent Reporting	Same-Sex Cohabitors		Never-Married Individuals		Different-Sex Cohabitors		Married	
	Men	Women	Men	Women	Men	Women	Men	Women
Ever had blood tested for HIV (age 18 to 65) # Observations in parentheses								
1996–97	80.7	60.9	44.9	47.5	52.5	57.7	43.0	40.1
	(162)	(194)	(20,477)	(20,461)	(1,570)	(1,869)	(40,695)	(52,629)
1998–2000	79.1	51.3	47.7	46.8	58.3	60.7	46.1	46.3
	(307)	(296)	(27,029)	(28,791)	(1,921)	(2,718)	(48,003)	(73,562)
Main reason last tested for HIV is (percent, excluding those who report "blood donation" as reason):								
To apply for a marriage license	0	0.2	0.1	0.1	0.7	0.7	5.7	3.6
For military induction or military service	5.9	1.2	8.9	1.7	6.6	0.4	12.2	1.4
Just to find out if infected	43.6	36.5	36.2	31.9	36.9	26.3	12.9	10.6
Because of pregnancy	0.3	19.8	0.5	19.2	0.6	31.4	0.9	38.6
Because I am at risk for HIV	4.8	1.4	1.9	1.3	1.4	0.6	0.5	0.4
Other	10.2	8.1	7.8	5.7	7.4	4.6	5.5	3.9
Have you changed your sexual behavior in the past 12 months based on what you know about HIV?	41.6	21.3	30.4	29.5	19.8	16.1	4.1	2.5
Do any high risk situations apply?: IV drugs, treated for an STD or VD in past year, tested positive for having HIV, or had anal sex without a condom in past year (percent yes)	47.3	12.1	7.4	7.6	4.8	7.8	2.7	2.6
In past five years, have you been treated for a sexually transmitted or venereal disease? (percent yes)	21.0	12.7	5.2	7.8	3.3	7.9	1.2	1.6

Notes: Sample is 1996–2000 BRFSS, all individuals over age 16. Columns do not add up to 100% because only the relevant response choices have been tabulated. Means are weighted by BRFSS final sampling weight.

the ranges from nationally representative surveys that include information on SS sexual behavior. Moreover, when asked the main reason they were last tested for HIV, male SS cohabitors respond because they are at risk at a rate three to ten times greater than the other groups. This is consistent both with the pure statistics that AIDS and HIV have had profoundly greater effects within the gay male community, as well as studies suggesting heterosexual men underestimate HIV risk (see Stall et al., 2000; Catania et al., 1995).

Finally, it is informative that male SS cohabitors report HIV risk behavior, including anal sex without condoms and testing positive for HIV, at rates 6 to 9 times higher than their male counterparts (17.5 times higher than married men).[15] These systematic differences in HIV risk behaviors by household type coupled with existing evidence about the relationships between sexual orientation, SS sex, and HIV-related behavior are particularly supportive of the idea that the SS male cohabitors in unmarried partner relationships are more likely to be gay.[16]

Another potentially informative margin for determining data validity is monogamy, because one might expect sexual monogamy to be correlated with marriage-like partnership. In particular, one might be skeptical of the approach if the degree of monogamy between SS cohabitors were not comparable to that for married couples. Table 3 reports the proportion of SS cohabitors, DS cohabitors, never-married individuals, and married individuals who respond that they have had sexual intercourse with exactly zero persons or exactly one person in the past 12 months. The SS cohabitors are less likely than married

or DS cohabitors to report "one person," but the differences are not large.[17]

Questions about sex partners that explicitly refer to sexual "intercourse" pose serious problems for identification of lesbian households. Specifically, a lesbian who interprets intercourse as penile penetration may respond she has had zero sexual intercourse partners, despite the fact that she is sexually active. Indeed, Table 4 reveals strong evidence of such a phenomenon. Women in SSUP households, though substantially less likely than never-married women to report zero partners for sexual intercourse, are more than four times as likely to report zero intercourse partners relative to their arguably more "comparable" counterparts.[18]

Turning to condom use, the BRFSS allows the author to identify whether the respondent reports condom use at last intercourse, and if so, the reason why. Strictly speaking, if SS cohabiting couples who are having *exclusively* SS sexual relationships have been correctly identified, these individuals should not report contraception as a reason for condom use. Table 3 shows that a larger proportion of SS male cohabiting couples report condom usage than any other couple type. Never-married men report the highest rates of condom use, and condom use among all cohabitors is quite low. Interestingly, 21.7% of respondents in SS female cohabiting couples report condom usage as well.[19]

---

15. A study of a large sample of Californians in 1991 revealed that less than 5% of married individuals and less than 10% of heterosexual individuals in a "serious relationship" engage in anal sex, and approximately 60% of the heterosexual sample reported never using condoms for anal sex (Erickson et al., 1995). Contrastingly, a study of gay men in 1991 revealed that 51% of men in "boyfriend" relationships reported unprotected anal sex in the previous two months (Hays et al., 1997). A similar approach in the San Francisco Men's Health Study for 1985 to 1989 found that 32.6% of gay men in "relationships" engaged in unprotected anal intercourse.

16. There is a relative paucity of literature on the HIV related sexual behavior of lesbians. Einhorn and Polger (1994) discuss some HIV risk behavior of lesbians and bisexual women, but the data used are from the mid-1970s and 1980s. Their research suggests that a majority of lesbian women do not use safer-sex practices with respect to HIV.

17. There are, of course, several reasons why a correctly identified couple might not respond in this manner, including different sexual norms surrounding monogamy in gay/lesbian versus heterosexual communities.

18. This suggests the more relevant margin for an informative comparison about monogamy is the proportion of individuals in each household type that reports "zero or one" sexual intercourse partner in the past year. Indeed, this comparison substantially reduces the differences between SS couples and their relevant coupled counterparts (92.5% of SS female cohabitors versus 94.7% and 99% of female DS cohabitors and married women reports zero or one sexual intercourse partner, respectively). A similar phenomenon could also occur for gay couples who do not interpret their sexual behavior as intercourse per se. This appears to be less of an issue in this sample, however.

19. A recent study of self-identified lesbians in 1993 suggests that these might not constitute misreports: nontrivial proportions of lesbians in their sample reported some use of latex dams (7%), condoms (16%), latex gloves (6%), and plastic wrap (1%) (Morrow and Allsworth, 2001). Moreover, the question asks about condom use during the last time a woman had intercourse. Therefore, a partnered lesbian who has had condom-protected intercourse with a man may interpret intercourse to refer to the DS sexual experience.

TABLE 3
Data Reliability Comparisons: Sexual Partners, Condom Use, Birth Control

Proportion Reporting Affirmative	Same-Sex Cohabitors		Never-Married Individuals		Different-Sex Cohabitors		Married	
	Men	Women	Men	Women	Men	Women	Men	Women
During the past 12 months, with how many people have you had sexual intercourse? (age 18 to 50)								
Percent reporting exactly zero	1.7	11.9	26.8	31.2	1.5	2.7	2.9	2.6
Percent reporting exactly one	64.7	80.6	41.9	54.4	89.3	92.0	95.5	96.4
How many new sex partners did you have during the past 12 months?								
Percent reporting zero	53.3	82.6	46.8	66.7	79.3	82.7	92.8	93.8
Percent reporting one or two	18.9	14.5	36.1	29.8	18.9	15.8	6.5	6.1
Was a condom used the last time you had sexual intercourse? (percent yes)	43.0	21.7	62.3	49.8	23.6	25.1	12.0	11.6
The last time you had sexual intercourse, was the condom used:								
To prevent pregnancy	2.9	36	16.4	17.7	47.1	39.9	78.5	79.4
To prevent diseases (like syphilis, gonorrhea, AIDS)	40.5	11.5	9.0	7.4	6.1	5.8	2.8	2.8
For both of these reasons	46.7	46.8	72.7	73.7	43.1	50.3	15.5	14.9
Other	9.9	5.6	1.6	1.1	3.7	3.9	2.5	2.7
Are you or your husband/partner using any kind of birth control now? (age 18 to 45, nonpregnant) What kinds?	NA	41.7	NA	55.5	NA	78.4	NA	71.1
Vasectomy		0		1.0		2.4		17.0
Pill		39.7		47.5		50.1		31.5
Condoms		55.0		26.6		19.2		14.7
What are your reasons for not using birth control now?								
I am not having sex		1.9		51.4		2.1		2.5
I want to get pregnant		13.6		5.2		27.5		30.0
I don't think I can get pregnant		3.5		3.0		9.8		13.4
Other		73.1		21.5		30.2		34.2

Notes: See notes to Table 2.

TABLE 4
Key Variable Means

Variable	Same-Sex Male Cohabitors	Same-Sex Female Cohabitors	Different-Sex Male Cohabitors	Different-Sex Female Cohabitors	Married Men	Married Women
Frac employed	0.744	0.719	0.740	0.663	0.637	0.521
Employed householders: est. annual HH Income (in 1996 dollars)	53,096	45,993	39,000	40,538	51,482	51,025
Education						
Frac less than high school	0.047	0.076	0.154	0.070	0.075	0.048
Frac high school graduate	0.202	0.153	0.331	0.271	0.296	0.296
Frac some college	0.279	0.237	0.269	0.346	0.263	0.296
Frac college degree	0.472	0.533	0.246	0.312	0.366	0.360
Age	34.02	33.77	32.10	31.87	40.49	39.80
Frac white	0.828	0.836	0.805	0.842	0.857	0.869
Frac black	0.055	0.089	0.110	0.077	0.072	0.070
Frac Hispanic	0.142	0.144	0.204	0.129	0.094	0.076
Frac Asian	0.010	0.024	0.010	0.019	0.029	0.027
Region (Frac)						
Northeast	0.226	0.249	0.173	0.203	0.170	0.174
Midwest	0.189	0.208	0.220	0.226	0.260	0.276
South	0.235	0.222	0.274	0.235	0.359	0.359
West	0.350	0.321	0.333	0.336	0.211	0.199
Frac large MSA	0.488	0.498	0.417	0.414	0.333	0.318
Frac with children under 4 years	0.044	0.121	0.272	0.206	0.313	0.243
Frac with children age 5–12	0.039	0.174	0.253	0.210	0.381	0.349
Frac with children age 13–17	0.023	0.083	0.100	0.121	0.204	0.215
Frac with any kids under 18	0.080	0.283	0.464	0.401	0.631	0.578
N	407	440	3,013	3,165	80,731	82,636

Notes: Sample is 1996–2000 BRFSS. Means are weighted. Couple types are defined in text. The race categories are not mutually exclusive and therefore do not add up to 100%.

When asked the reason for condom use, it is instructive that male SS cohabitors report that disease prevention, not contraception, was the main reason at rates 7 to 13 times their male counterparts. In this same group, however, almost half of the respondents who used a condom reported contraception as *a* reason, which is behaviorally inconsistent with these couples being correctly identified as gay. Although the sample sizes of male couples who respond to this question are very low, these couples are the most likely to be misclassified. Similarly, over 80% of SS-female cohabitors report contraception as a reason for condom use, though the relevant sample size is again extremely small. One might interpret these households in the strictest sense to be most likely misclassified. As expected, large proportions of DS and married couples who report condom usage do so exclusively for contraception (47.1% for DS male cohabitors and 78.5% for married men).

Despite the apparent misclassification of these select SS households, the potential overall problem appears quite small. Although it is true that half of male SS respondents offer a condom-related response that appears contradictory, this amounts to 11 households out of 29 condom-using households out of 85 households with no missing data in the topical module on sexual behavior. Put differently, one can credibly claim that only 11 out of 81 SS male households, (∼13.6%) offered responses that appear inconsistent with the definitions of a gay couple and are therefore most likely to have been misclassified. The relevant number for SS female households is just over 14.1% (adopting the strictest position that a SS female household that reports any condom use cannot be truly lesbian).[20]

Finally, the author can examine the other modes of contraception for SS female cohabitors using information in a topical module on family planning. Unfortunately, there are several reasons women may use birth control that have little or nothing to do with preventing pregnancy.[21] Despite this limitation, Table 3 supports this classification method: the proportion of women in married couples (71%) and DS cohabitation (78%) reporting birth control use is much larger than the proportion of SS female cohabitors reporting birth control use (42%).[22] Furthermore, it is instructive that no SS female households report vasectomy as the main form of birth control. The pill and condoms are the main reasons offered by SS female households, both of which could be behaviorally consistent with lesbianism. These comparisons are again consistent with the idea that SS female households have less need for birth control, possibly because they biologically cannot get pregnant through their current sexual practices.[23]

V. EMPIRICAL APPROACH

Having concluded the data is sufficiently credible to warrant further analysis of household income, the author proceeds by describing the empirical approaches.[24] The author begins

20. In the full sample household income regressions (à la Klawitter and Flatt, 1998) that follow, results are generally robust to excluding potentially miscoded households. For example, excluding male SS cohabitors who report contraception as a reason for condom use and female SS cohabitors who report any condom use leaves the results qualitatively unchanged, though the SS coefficients are less precisely estimated. These results are not too surprising, because as discussed the likely degree of misclassification is small. Restricting the analysis to households with complete information on sexual behavior results in a huge loss of sample size (∼85%), because only a handful of states ask the Sexual Behavior Topical Module in any given year. Results for this sample were not representative of the full sample estimates, likely because there are simply not enough SS cohabiting couples in the remaining subsample to identify these effects.

21. For example, it is not uncommon for a woman to use the birth control pill to establish regular menstrual cycles or benefit from clearer skin. Moreover, a partnered lesbian may incorrectly report that because she cannot get pregnant through her current sexual activity, this is a de facto method of birth control. A partnered lesbian could also have had her tubes tied from a previous DS relationship and therefore respond she is using birth control. In these cases, she would be incorrectly coded as offering a somewhat contradictory response.

22. Roberts et al. (1998) use retrospective medical records to show that heterosexual women are significantly more likely than lesbian women to use birth control pills, though nontrivial proportions of all women report ever having used the pill (60% for heterosexual women versus 39% for lesbians).

23. Because the Family Planning module was only asked since 1998 to a handful of states, the extremely small sample sizes of households with information on family planning (∼5% of the full sample size) do not permit one to reestimate the empirical models on this subsample. As with the sexual behavior caveat, however, results from the full sample that exclude SS female cohabiting households who report any contraception use were qualitatively similar to the unrestricted full sample estimates.

24. The following empirical section does *not* alter the sample based on the investigations in section IV. This is out of considerations for sample size, as well as the previously discussed issue that essentially all of the likely misreports *could* be consistent with a gay orientation.

with the basic specification in Klawitter and Flatt (1998) that includes all households in the sample (not stratified by sex of respondent). The dependent variable is the log of total household annual income, including labor and nonlabor income (in 1996 dollars). As income is reported in ranges, the midpoint of each range is used, and individuals in the highest income group are coded as having an annual income of $82,500.[25] The basic regression is of the form:

$$(1) \quad \log(y_i) = \alpha + \beta_1 X \\ + \beta_2(SS\ Male\ Cohabitor) \\ + \beta_3(SS\ Female\ Cohabitor) \\ + \beta_4(DS\ Cohabitor) + \varepsilon,$$

where y_i is household income and X is a vector of demographic information that includes age, age squared, education categories (less than high school, high school, some college, college degree or more), an indicator for black, an indicator for Hispanic, an indicator for Asian, four region dummies, an indicator for residing in a large metropolitan statistical area (MSA), an interaction of the large MSA indicator with an indicator for being a member of a SS cohabiting couple, and the number of children.[26] The household type measures are all indicator variables. ε Is assumed to be a well-behaved error term, $\varepsilon \sim N(0, \sigma^2)$.[27]

25. More sophisticated methods have been shown to produce results that are very similar to using the midpoint approach. See, for example, Badgett (1995), Blandford (2003), and Berg and Lien (2002).

26. Also tested are specifications with unrestricted state fixed effects instead of region dummies, with little change in the results. The data before 1996 do not include MSA code, and therefore those household income regressions do not include a control for large MSA or its interaction with SS cohabitation. Ideally, one would also control for occupational category. Previous research by sociologists and economists has suggested that certain occupational strategies are important predictors of individual earnings for these groups (Badgett and King 1997). The BRFSS does not contain industry or occupation information.

27. In the empirical work that follows, the author explicitly attempted to account for selection into the employment participation by using the presence of children as an excluded variable that affects probability of employment but not household income. For a number of reasons related to poor income measures, the author chooses to report straightforward, uncorrected ordinary least squares household income regressions. As neither Klawitter and Flatt (1998) nor Allegretto and Arthur (2001) explicitly control for selection, this is also for comparability.

To decompose household income differences into its relevant components, the author estimates a series of pooled regressions stratified by sex. The specifications generally follow equation (1), in each case excluding the non-relevant household type indicator(s). For example, to assess the degree to which sexual orientation matters independently of marital status, a variant of equation (1) is estimated that includes the indicator for SS male cohabitation but excludes that for DS cohabitation on the male sample that excludes married men. The coefficient on the SS male cohabitor indicator variable could be interpreted to reflect that portion of the household income penalty attributable to sexual orientation per se. Similar pooled regressions on each of the remaining permuted subsamples by sex should provide information on the relative contributions of cohabitation and sexual orientation to household resources.

VI. RESULTS

Table 4 presents means (weighted by the BRFSS final sampling weight) for variables used in this study. At first glance, SS male couples have higher average household incomes than DS cohabitors and married couples.[28] SS female couples have average household incomes that fall between those of their DS cohabitors and married couples. SS couples of both sexes, however, also appear to have higher levels of education and are more likely to live in large urban areas, both of which likely contribute to their greater household resources. The large majority of the entire sample is white, and married respondents are significantly older than all cohabiting couples. The myth that SS couples have no kids is also contradicted in the data, especially for SS female households: although married couples and DS cohabiting couples are more likely to have children in the household, a substantial portion of SS female households also have children.[29]

28. It is reassuring that household income reported by married men is very similar to that reported by married women. A similar phenomenon holds for DS cohabiting couples. This suggests that response issues arising from only having information on one member of the household may not be too salient.

29. These children could be the respondent's own children from a previous marriage or adopted children.

Table 5 presents coefficients from an ordinary least squares (OLS) regression of equation (1) for 1996 to 2000.[30] The results in Table 5 are notably consistent with the Klawitter and Flatt (1998) study and document a large and significant household income penalty for SS cohabiting female couples, even after controlling for purely exogenous characteristics. The coefficients on the SS cohabitation indicators become larger in magnitude (and significant for men) when the author includes controls for residence in a large MSA and its interaction with the SS indicator. This suggests that regional variation is important for the income determination process for gays and lesbians. DS cohabiting couples also experience large and robust household income penalties relative to married couples.[31] In results not reported, all other control variables had the predicted effects and were highly significant in all specifications.[32] This relatively simple specification explains over 32% of the overall variation in household income.[33]

To further decompose the household resource differences, Table 6 presents relevant coefficients on the SS or gay indicator variable from a variety of specifications for both men (upper panel) and women (lower panel). The two columns represent the comparisons (separated by sex) of the SS sample with either the married sample (first column) or the unmarried heterosexual sample (second column). The first row of each panel shows the coefficient on the SS indicator from an unadjusted regression of log household annual income with no control variables. The subsequent rows cumulatively add more explanatory variables, beginning with purely exogenous characteristics captured by age and race. Although the estimates in Table 6 are not always stable, they are consistent with the findings in Allegretto and Arthur (2001): the large observed income penalty faced by SS households appears to be driven by marital status.

Table 7 presents coefficient estimates from various pooled samples to provide further evidence on the relative contributions of unmarried versus SS to the household income differences observed. Columns (1) and (4) include all household types for each sex and allow an examination of the marriage premium. In particular, the author includes indicator variables for married and gay to provide evidence on the returns relative to being a DS cohabitor. For men, the coefficient on married is 0.149, whereas for women the coefficient is 0.203. Both estimates are highly significant.[34]

Columns (2) and (5) of Table 7 present results from pooled samples of gay individuals and married individuals for men and women, respectively. In these regressions, the married indicator has been excluded to allow examination of the relative contribution of SS in explaining the resource premia experienced by married couples documented. In particular, if it were the case that all SS couples would be married if possible, one might expect a coefficient on SS in these specifications that were

---

30. Ordered probit models are also considered to capture the categorical nature of the dependent variable, and interval regressions are performed by maximizing a likelihood function that explicitly takes into account the values of the intervals in the data. All three approaches yielded qualitatively and quantitatively similar results. The author follows Badgett (1995) and present OLS for exposition.

31. As this specification confounds male/female differences and married/unmarried differences, the author also allowed for interactions of gender with the individual level demographic characteristics, including education. The interactions were highly significant, but they did not affect the main results.

32. The author also estimated a variant of equation (1) for the sample including DS cohabitors but excluding the indicator for *DSCOHAB*. This reflects the idea that SS couples might choose to cohabit prior to marriage if they were legally allowed. Results were very similar to the baseline estimates. The same was true when all DS cohabitors were excluded, which would be the correct specification if all SS households would be married if possible. Results are also generally robust to restricting the sample to householders under age 35 to limit the likelihood of father/son and mother/daughter pairs, though small sample sizes of gay male cohabitors limit precise estimation.

33. Adding individual year dummies for the period 1996–2000 leaves the results qualitatively and quantiatively unchanged, despite that the standard errors increase for the female SSUP dummy. The author also performed similar regressions of equation (1) for the period 1993–95. This earlier time period does not include information on ages of children or urbanicity. There are also fewer SSUP households (both absolutely and relatively) compared with the 1996–2000 time period. Results, however, were broadly consistent with those reported in Table 5: female SSUP households and DS cohabitors had significantly lower household income, and male SSUP households did not

have significantly greater resources once standard controls were included. The magnitude of the penalty for lesbian and DS couples was larger for the period 1993–95.

34. Note throughout that because the income measure pertains to the household, an apparent "marriage premium" for the female sample is not surprising, because her husband's income (which presumably includes the premium) is also included in the dependent variable. In most studies of individual earnings, there is no such marriage premium for women (indeed, in many cases there exists a marriage penalty for females).

TABLE 5
OLS Estimates of Log Annual Household Income

	(1) Baseline	(2) 1 + Age, Race	(3) 2 + Education	(4) 3 + Children	(5) 4 + Region	(6) 5 + Large MSA	(7) 6 + Large MSA*SS Cohab
Different-sex cohab	−0.321*** (0.018)	−0.184*** (0.013)	−0.153*** (0.012)	−0.161*** (0.013)	−0.165*** (0.013)	−0.174*** (0.013)	−0.174*** (0.013)
Same-sex male cohab	−0.030 (0.066)	0.045 (0.063)	−0.021 (0.061)	−0.039 (0.059)	−0.043 (0.058)	−0.059 (0.061)	−0.101* (0.056)
Same-sex female cohab	−0.194*** (0.035)	−0.089*** (0.031)	−0.167*** (0.027)	−0.178*** (0.027)	−0.185*** (0.026)	−0.201*** (0.026)	−0.244*** (0.037)
Controls for							
Age, age sq, race?		X	X	X	X	X	X
Education?			X	X	X	X	X
Children?				X	X	X	X
Region?					X	X	X
Large MSA?						X	X
Large MSA* Same sex?							0.086 (0.063)
Adjusted R^2	0.0149	0.1291	0.3058	0.3068	0.3094	0.3244	0.3245
N	170,792	170,792	170,792	170,792	170,792	170,792	170,792

Notes: Sample is 1996–2000 BRFSS employed householders. Income data are measured in 1996 dollars. Observations have been weighted by the BRFSS sampling weight. Robust standard errors, reported below in parentheses, have been calculated to assume that observations are independent across states but not necessarily within a state. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

TABLE 6
Range of Estimates of Sexual Orientation on Log Annual Household Income

	Sample: Male SSUP Householders and Married Men (Upper Bound)	Sample: Male SSUP Householders and Male DS Cohabitors (Lower Bound)
Gross effects: coefficient on Same Sex from equations with no controls	−0.035 (0.069)	0.307*** (0.097)
Coefficient on same sex from equations with controls for		
Age and race...	0.057 (0.063)	0.236*** (0.077)
and Education	−0.018 (0.061)	0.087 (0.062)
and Region	−0.022 (0.061)	0.085 (0.064)
and Urbanicity	−0.036 (0.064)	0.079 (0.067)
and Kids	−0.057 (0.063)	0.066 (0.063)
and Interaction of large MSA * same sex	−0.135** (0.062)	−0.006 (0.069)

Women	Sample: Female SSUP Householders and Married Women (Upper Bound)	Sample: Female SSUP Householders and Female DS Cohabitors (Lower Bound)
Gross effects: coefficient on same sex from equations with no controls	−0.188*** (0.036)	0.109*** (0.030)
Coefficient on same sex from equations with controls for		
age and race...	−0.103*** (0.031)	0.096*** (0.028)
and Education	−0.164*** (0.027)	−0.002 (0.026)
and Region	−0.172*** (0.026)	−0.008 (0.026)
and Urbanicity	−0.188*** (0.026)	−0.015 (0.024)
and Kids	−0.197*** (0.027)	−0.020 (0.024)
and Interaction of Large MSA * Same Sex	−0.196*** (0.032)	−0.017 (0.033)

Notes: See notes to Table 5.

equal in magnitude but of the opposite sign relative to the coefficient on married in columns (1) and (4) of Table 7. For men, the associated household income penalty from this exercise is −0.135. For women, the associated penalty is −0.196. Notably, these differences are only slightly smaller in magnitude (but easily within sampling error) to the marriage premia noted above.

Finally, columns (3) and (6) of Table 7 extend the analysis to the sample of gay individuals and DS cohabitors for men and women, respectively. This exercise may be interpreted as providing a lower bound to the household income penalty associated with SS households. Because the entire sample is unmarried, the coefficient on gay in this case represents the portion of the household income difference between these two groups attributable to the SS composition of these households. The coefficient on gay in this specification is −0.016 and −0.007 for men and women,

TABLE 7
OLS Coefficient Estimates of Pooled Samples

	(1) Full Sample: Men	(2) Gay Men & Married Men	(3) Gay Men & Straight Unmarried Men	(4) Full Sample: Women	(5) Lesbian Women & Married Women	(6) Lesbian Women & Straight Unmarried Women
Same sex	0.011 (0.066)	− 0.135** (0.062)	− 0.006 (0.069)	0.004 (0.032)	− 0.196*** (0.032)	− 0.017 (0.033)
Married	0.149*** (0.015)	—	—	0.203*** (0.018)	—	—
Adjusted R^2	0.3500	0.3388	0.3713	0.2988	0.2898	0.3157
N	84,151	81,131	3,420	86,641	83,076	4,005

Notes: See notes to Table 5. All specifications control for age, age squared, race, education, residence in a large MSA (and its interaction with the same-sex cohabiting couple indicator), region, and children.

respectively. Neither of these estimates is significantly different from zero.[35]

How should these results be interpreted in the context of identifying the degree of sexual orientation based labor market discrimination? Note that one might observe the Allegretto and Arthur (2001) result (replicated and extended here) even in the *presence* of sexual orientation–based earnings discrimination. This would be true, for example, if the gay sample were positively selected and the unmarried heterosexual sample were negatively selected with respect to economic status.[36] Moreover, the specification presented in Table 5 is highly suggestive of a demand side phenomenon because the SS cohabitation penalties remain even during a period of strong macroeconomy and among subsamples for which research shows virtually everyone exhibits labor force attachment. Put differently, because the penalties remain for 25- to 50-year-olds without children, it is less damaging that one does not observe information on the other member of these household because they are almost surely working. Finally, the presence of the well-known gender earnings gap means that observing household income in SS male cohabiting couples that is not statistically different from that for DS cohabiting couples may very well be consistent with sexual orientation discrimination. This arises because two men's incomes should, ceteris paribus, be larger in total than the household income of one man and one woman. For these reasons, the results here and in Allegretto and Arthur (2001) are quite inconclusive with respect to

labor market discrimination against gay men and lesbians.[37]

For comparison purposes, the results in Tables 6 and 7 correspond to household income gaps for SS households at between −0.006 and −0.135 for men and −0.017 and −0.196 for women. Although there exist substantial differences between the Census-based earnings study and the one considered here, the estimated ranges are remarkably similar to those for men in Allegretto and Arthur (2001). Unlike the previous study, however, the unexplained difference in household income between gay/lesbian individuals in cohabiting relationships and their straight, unmarried counterparts in cohabiting relationships cannot be statistically distinguished from zero for either men or women.[38]

VII. CONCLUSION

The primary goals of this article were to test a key assumption of previous Census-based research on gay and lesbian household incomes and to confirm, replicate, and extend these results using independent data that addresses some important limitations of the 1990 Census. The author demonstrates that SS cohabiting couples are indeed likely behaviorally gay and lesbian by using supplemental information on sexual behavior and family planning as well as complementary evidence from a large body of public health and AIDS-related research. This independent data is also shown to suffer from far less severe underreporting than the census.

The article confirms the basic result from Klawitter and Flatt (1998) that SS female households experience large and robust resource penalties relative to married couples.

35. As with the regressions in Table 5, all the control variables had the predicted sign and significance. An alternative "lower bound" measure might compare same-sex unmarried partner households with same-sex roommates (two men and two women living together who do not choose unmarried partner to describe their relationship). Without knowing the reference group the respondent considers for reporting household income, however, this comparison could produce an invalid comparison simply because unmarried partners likely use a different reference group than roommates (noncoupled) who do not pool income.

36. Note that this issue is both about potential reporting differences by household type (e.g., if SS couples who disclose their partnership status experience less discrimination—in labor and nonlabor income—on average than those who choose not to disclose, as is plausible) and about how partnered gays differ from nonpartnered gays (e.g., if only highly educated gays were coupled and cohabiting).

37. A related issue is that because the BRFSS income measure includes both labor and nonlabor income, the observed differentials reflect disparate treatment (including, potentially, discrimination) from sources such as transfer payments, returns to wealth, inheritance, and so on. For example, because programs such as traditional welfare and EITC (Earned Income Tax Credit) assistance provide much larger benefits to households with children (or even explicitly require the presence of a child for eligibility), this likely contributes to the observed differential because same-sex households are substantially less likely to have children.

38. This is likely an artifact of small sample sizes of gay men and lesbians. Allegretto and Arthur's sample includes over 4000 men in SSUP relationships which permits more precise empirical analysis.

The author also finds the same basic earnings-based result in Allegretto and Arthur (2001): even after controlling for several observable determinants of household income, men in DS cohabiting couples and SS cohabiting couples experience significantly lower household incomes than men who are married. The bulk of this observed gap appears to be associated with marriage per se. The latter analysis is extended to include women and find qualitatively similar results, though the lesbian household income penalty is larger than that for their gay male counterparts.

In addition to the caveats about how to interpret these income differentials, other issues remain. For example, very little is known about how partnered gay men and lesbians differ from their nonpartnered counterparts, and it is plausible that earnings and income discrimination exert differential effects by partnership status. Furthermore, labor market discrimination against gays and lesbians might be salient on other margins, both qualitative and quantitative. For example, neither industrial or occupational segregation, workplace victimization, nor gay "glass ceilings" would be detectable with this data. Finally, the author has not considered bisexual or transgendered individuals or couples in this analysis. Though it is impossible to identify these households through cohabitation status, these individuals could impact the data reliability analysis of sexual behavior.

Despite these limitations, this research represents an important conceptual and methodological contribution to our understanding of gay and lesbian economic status. Moreover, the benefits of this research are not limited to the BRFSS, because other data sources are now including the "unmarried partner" option to describe household relationships. This research also highlights a key policy recommendation: the need for alternative approaches for identifying gay men and lesbians in social science data. Government officials and other data administrators should also consider including direct questions about sexual orientation in data sources. Although the potential nonresponse problem from stigma will induce some measurement error, the potential benefits are huge, precisely because the self-reported sexual orientation is almost surely more closely associated with workplace disclosure, the key missing link for evaluating the discrimination hypothesis.

REFERENCES

Allegretto, S., and M. Arthur. "An Empirical Analysis of Homosexual/Heterosexual Male Earnings Differentials: Unmarried and Unequal?" *Industrial and Labor Relations Review*, 54(3), 2001, 631–46.

Badgett, M. V. L. "The Wage Effects of Sexual-Orientation Discrimination." *Industrial and Labor Relations Review*, 48(4), 1995, 726–39.

———. *Money, Myths, and Change: The Economic Lives of Lesbians and Gay Men*. Chicago: University of Chicago Press, 2001.

Badgett, M. V., and M. King. "Occupational Strategies of Lesbians and Gay Men," in *HomoEconomics: Capitalism, Community and Lesbian and Gay Life*, edited by A. Gluckman and B. Reed. New York: Routledge, 1997.

Berg, N., and D. Lien. "Measuring the Effect of Sexual Orientation on Income: Evidence of Discrimination?" *Contemporary Economic Policy*, 20(4), 2002, 394–414.

Berrios, D., N. Hearst, T. Coates, R. Stall, E. Hudes, H. Turner, R. Eversley, and J. Catania. "HIV Antibody Testing among Those at Risk for Infection." *Journal of the American Medical Association*, 270(13), 1993, 1576–80.

Black, D., G. Gates, S. Sanders, and L. Taylor. "Demographics of the Gay and Lesbian Population in the United States: Evidence from Available Systematic Data Sources." *Demography*, 37(2), 2000, 139–54.

Black, D., H. Makar, S. Sanders, and L. Taylor. "The Effects of Sexual Orientation on Earnings." *Industrial and Labor Relations Review*, 56(3), 2003, 449–469.

Blandford, J. "The Nexus of Sexual Orientation and Gender in the Determination of Earnings." *Industrial and Labor Relations Review*, 56(4), 2003, 622–642.

Catania, J., D. Binson, M. M. Dolcini, R. Stall, K.-H. Choi, L. Pollack, E. Hudes, J. Canchola, K. Phillips, J. Moskowitz, and T. Coates. "Risk Factors for HIV and Other Sexually Trasmitted Diseases and Prevention Practices among US Heterosexual Adults: Changes from 1990 to 1992." *American Journal of Public Health*, 85(11), 1995, 1492–99.

Clain, S. H., and K. Leppel. "An Investigation into Sexual Orientation Discrimination as an Explanation for Wage Differences." *Applied Economics*, 33(1), 2001, 37–47.

Einhorn, L., and M. Polgar. "HIV-Risk Behavior among Lesbians and Bisexual Women." *AIDS Education and Prevention*, 6(6), 1994, 514–23.

Erickson, P., R. Bastani, A. Maxwell, A. Marcus, F. Capell, and K. Yan. "Prevalence of Anal Sex among Heterosexuals in California and Its Relationship to Other AIDS Risk Behaviors." *AIDS Education and Prevention*, 7(6), 1995, 477–93.

Hays, R., S. Kegeles, and T. Coates. "Unprotected Sex and HIV Risk Taking among Young Gay Men within Boyfriend Relationships." *AIDS Education and Prevention*, 9(4), 1997, 314–29.

Klawitter, M., and V. Flatt. "The Effects of State and Local Antidiscrimination Policies on Earnings for Gays and Lesbians." *Journal of Policy Analysis and Management*, 17(4), 1998, 658–86.

Morrow, K., and J. Allsworth. "Sexual Risk in Lesbians and Bisexual Women." *Journal of the Gay and Lesbian Medical Association*, 4(4), 2000, 159–65.

Roberts, S., S. Dibble, J. Scanlon, S. Paul, and
    H. Davids. "Differences in Risk Factors for Breast
    Cancer: Lesbian and Heterosexual Women."
    Journal of the Gay and Lesbian Medical Association,
    2(3), 1998, 93–101.

Stall, R., R. Hays, C. Waldo, M. Ekstrand, and
    W. McFarland. "The Gay '90s: A Review of Research
    in the 1990s on Sexual Behavior and HIV Risk among
    Men who Have Sex with Men." *AIDS*, 14(sup3), 2000,
    S101–S114.