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Matching survey data with administrative records to evaluate reports of same-sex married couple households

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Since they are a relatively small population among all households, same-sex couple households are difficult to estimate accurately. In Census 2010, an issue affecting the measurement of same-sex couple households was discovered. Mismarks on the sex question by opposite-sex married couples led to inflated estimates of same-sex couple households, especially in the problematic nonresponse follow-up form (NRFU) of the questionnaire (O’Connell and Feliz 2011). This working paper follows up on that research and links American Community Survey (ACS) 2010 data and Census 2010 data with administrative records in order to have a closer look at the accuracy of reported sex in survey data by couple type.

This paper has four sections. In the first, we match ACS 2010 data with Social Security data (Census Numident)¹ and look at consistency of reported sex by couple type. Next, we do the same for decennial 2010 data. In the third section, we look at whether assigning sex based on the reported first name matches with the sex entry in the Census Numident. In the final section, we compare the characteristics of couples who have mismarked sex with those who have not.

Research questions

This paper follows up on earlier research done with decennial 2010 data, which found error in estimates of same-sex couple households (O’Connell and Feliz 2011). The earlier work used a first names index to try to quantify the error and adjust the estimates. This paper checks survey reports against administrative data in order to quantify the error and evaluate the use of the first names index to adjust the estimates.

The research questions we evaluate here include:

1. How often is there a mismatch between reported sex in Census survey data and the sex entry on the Numident? Is the level of mismatch in ACS as high as in Census 2010?
2. Can we isolate the source of error in the estimates of same-sex married couples?

¹ Census Numident is derived from the Social Security Numident and contains additional recodes. We will refer to this file as the Numident in this paper.

3. When sex is assigned based on a first name index, how accurate is it?

4. Do the characteristics of same-sex married couples whose sex is not mismarked differ from those of other couples?

The level of mismatch between reported sex and the sex entry in administrative data is important since a low level of mismarks by opposite-sex married couple households can result in a significant inflation in the estimates of same-sex couple households, especially those for same-sex married couples (O’Connell and Feliz 2011). This is a statistical problem that arises because there are far more opposite-sex married couples than same-sex married couples. The first group makes up an estimated 56 million households, while the second is estimated at about 180,000 households in the 2012 ACS data (See Tables 1 and 2 online at: <http://www.census.gov/hhes/samesex/files/ssex-tables-2012.xls>). If just 1 percent of this larger group mismarked the sex of one spouse, it would translate into 560,000 “same-sex” married couples.

This type of problem is not unique to estimates of same-sex married couples; it would also occur for estimates of other small populations. For example, suppose we were to estimate the number of widowed people under age 30. According to ACS 2012 1-year data, there were some 49,000 widowed men and women age 15 to 29. However, it is possible that if a small rate of the rest of the adult population were to misreport their age or marital status inadvertently, this population might appear to be larger than it really is. Suppose just 0.1 percent of widowed adults age 30 and over were to mistakenly report their age to be under 30. This would result in roughly an additional 14,946 people being added to the estimate of widows under age 30.

Data Sources

Census 2010

We use both unedited and edited variables from the decennial 2010 file. Census 2010 was discovered to have error in estimates of same-sex married couples due to mismarks on sex by opposite-sex married couples. This problem was especially pronounced in the nonresponse followup (NRFU) mode. For details, see the report available online at: <<http://www.census.gov/hhes/samesex/files/ss-report.doc>>. The decennial census was mainly self-response, with nonresponse followup conducted by field representatives.

ACS 2010

We use both unedited and edited variables from the American Community Survey 2010 1-year file. The 2010 file includes the revised form layout implemented in 2008 which helps reduce, but does not eliminate mismarks on sex as were present in the Census 2010 NRFU form. ACS is mainly self-response,

with nonresponse follow-up conducted by field representatives. Note that the analyses conducted in this report use unweighted ACS data.²

Numident 2010

The Numident is an administrative data set which contains the value of sex recorded by the Social Security administration. We match this data set to our survey data using a set of individual characteristics, but are unable to match using Social Security Number. So there may be some false matches, as well as some cases in the survey data that we are unable to match to the Numident file.

Mismatch between reported sex in ACS 2010 and the Numident

We use the unedited relationship and sex items in ACS data to identify people who report being in same-sex and opposite-sex couple households. There were 1,999,996 people who were reported as a householder, spouse or partner. Of these, 86,433 could not be matched to the Numident. So we were able to match about 96 percent of the records overall. Since we consider couples during most of this analysis, further description of the sample is in those terms. There were 999,084 unweighted couples³ in the 2010 ACS. Out of these couples, we drop 8,511 in which either the householder and/or the partner is missing on the sex item in the ACS. Of the remaining 990,573 couples, we also drop 1,615 households that report multiple spouses and/or partners. This leaves us with 988,958 unweighted coupled households in the ACS. We then drop 65,566 couples because in the Numident either the spouse and/or partner is missing on the sex item. We are left with 923,392 couples, about 92 percent of reported coupled households with valid sex entries in the Numident for both partners, and in which both members matched the Numident. Results presented in this study are not intended to represent the U.S. population.⁴

Table 1 and Figure 1 show unweighted numbers of coupled households in ACS by whether their sex reports in the ACS match the Numident entries. Of the 923,392 coupled households, 843,202 reported as married, and 80,190 reported as unmarried. Among those reporting as married couple households, 57.3 percent of those reporting as same-sex married couples are opposite-sex couples in the Numident. This compared with 0.9 percent of those reporting as opposite-sex married couples, who are same-sex couples in the Numident. For those reported as unmarried partner households, 7 percent of those who reported as same-sex in ACS are opposite-sex in the Numident. The corresponding percentage of those who differed for opposite-sex unmarried partner households is 1.6 percent. So, while mismatch rates are generally low, the problem of opposite-sex married couples mismatching their sex and appearing to

² Weights are not used since this study is not using the ACS to estimate the larger US population, but rather evaluating reports of sex in ACS using administrative records data. For more information about matching between ACS and the Numident, see Luque & Bhaskar 2014.

³ At least one spouse or unmarried partner was reported in the household, and they matched to the Numident.

⁴ Weights in the ACS are meant to produce representative estimates of the underlying population. However, it is not clear whether they would produce representative estimates of the underlying population that matches to administrative records. This is because the matching subset may be different from the ACS sample in a non-random manner. It could also be argued that this non-randomness may be exacerbated for the subset who can be matched.

report as a same-sex married couple has a large effect on the estimates of same-sex married couples in ACS data.

Table 2 provides more details about the number of partners whose sex report in ACS does not match their Numident record. Most often, either the householder *or* their partner's report does not match. However, in a very small percentage of cases, *neither* report matches the Numident record. If the error is due to respondents mismarking sex, this means that they have misreported sex for both people. Among opposite-sex couples, a higher percentage shows neither partner matching the Numident sex value than those in which only one partner does not match. We need to consider this group separately from couples in which one has apparently misreported their sex, in case those in which neither report matches are a distinct group.

While the mismarking of sex on ACS by respondents or interviewers creates a problem in the estimates of same-sex married couples, it is not the only source of error. It is difficult to believe that very many respondents manage to mismark sex for both members of the couple. It is possible that these couples reflect matches between ACS 2010 and the Numident that are false positives—they appear to match, but perhaps are in error. To facilitate matching the ACS to the Numident, we do not have social security numbers, which would provide the highest quality match. The match is done using other characteristics, such as address, name, and age. So it is possible that sometimes the files appear to match, but we have not successfully matched to the same person in the Numident. Since there are only two possible valid values for sex in the Numident, we have only a 50/50 chance of the sex report matching between the two files if the match is a false positive.

While Census Bureau staff in the Center for Administrative Records Research and Applications (CARRA) have investigated the extent of false positive matches to federal administrative data and to commercial data, we are not aware of any studies that have evaluated the false positive match rate to federal survey data.⁵ The rate of false positives is estimated to be less than 1 percent for federal administrative data, but as high as 13 percent for commercial data (Layne, Wagner, Rothhaas 2013). False positive match rates for federal survey data presumably fall somewhere between these two types of data. There are likely to be more false positives than in administrative data, which may be verified for eligibility, but it is also likely that the rate is not as high as for commercial data, since respondents are notified that their participation is required by law.

It is also possible that some of these cases reflect errors in the Numident file. It is hard to imagine that the rate at which sex is incorrectly recorded on the Numident is very high, though, since it is the value from the Social Security record. In addition, a mismatch rate of 2 percent would still be quite low.

In previous research, O'Connell and Feliz (2011) showed that error rates differed by mode in 2010 decennial data. The layout of the sex question in the NRFU form was prone to mismarks. Table 3 shows

⁵ By federal administrative data, we mean data collected as part of administering federal programs such as Social Security, or birth/death records collected from states. Administrative data include everyone to whom the program applies, and are often legal records. By federal survey data, we mean data collected by the federal government by asking a sample of the public to respond either on a paper questionnaire, or by answering questions posed by an interviewer in person or on the phone.

the breakdown of responses by mode in ACS, whether paper or computer assisted telephone (CATI) and computer assisted personal interviews (CAPI). Mail response is self-response, where the respondent is marking a paper form in order to indicate their answers. In mail response, 59 percent of those reported as same-sex married couples in ACS show up as opposite-sex couples in the Numident. This compares with 7 percent of those reported as same-sex unmarried couples whose sex reports do not match the Numident (including couples where one or both do not match). Percentages of couples whose reports of sex do not match Numident are much lower for opposite-sex couples, at 2 percent for married couples and 3 percent for unmarried couples.

CATI/CAPI questionnaires are interviewer administered. In comparison with self-response modes, the interviewer may serve as a knowledgeable interpreter of the questions for the respondent, and serve to reduce errors. At the same time, interviewers are only human, and may also inadvertently mismatch an answer. In addition, there is an automated check that pops up in the CATI/CAPI when a same-sex married couple is reported, which asks the interviewer to confirm. It does not ask the interviewer to read the check to the respondent, however. Mismatch rates for CATI/CAPI responses were lower for same-sex married couples than in the paper form, but higher than the paper form for other couple types: 46 percent for same-sex married couples, 13 percent for same-sex unmarried couples, 4 percent for opposite-sex married couples, and 4 percent for opposite-sex unmarried couples. The automated check may help explain why mismatch rates were lower for same-sex married couples in CATI/CAPI than in paper.

In summary, the mismatch between sex reports in ACS and sex entries in the Numident for same-sex married couples is worse than we believed in ACS. Since the estimates from ACS are lower than decennial 2010 estimates, this may mean that an even higher percentage than we previously estimated based on the names index comparison may have been reported in error on Census 2010.

As mentioned previously, misreporting of sex on the ACS form by respondents is not the only source of mismatch. The Numident is a high quality administrative data set, but it is not perfect. One indication of this is the 'gendif' flag provided on the file. This flag indicates individuals whose sex value in the Social Security file has switched over time. This could be due to an administrative error which the person has had corrected, or because the person purposely worked to have their sex report changed to reflect a sex transition. Table 4 shows individuals in the various couple groups and whether the householder and/or their partner has had a sex switch in the Numident. Roughly 1 percent of the couples have at least one member whose sex value has switched: 0.5 percent of unmarried same-sex couples (adding 0.2, 0.3 and 0.0 from Table 4); 1.2 percent of married same-sex couples; 1.0 percent of opposite-sex unmarried couples; and 0.8 percent of opposite-sex married couples. This paper uses the most recent report of sex on the individual's record. Other research has found that as of 2010, roughly 1.45 million people born between 1895 and 2010 had ever changed their sex value on their Social Security record. This would be very roughly 0.5 percent of the US population in 2010, although it also includes children, and those in the Social Security file for whom we do not have a date of death, but who had already died.⁶ So while it

⁶ Harris, Benjamin C. 2013. "Consistency of person-level sex reporting in the SSA Numident," CARRA Internal Memo, U.S. Census Bureau.

is a small percentage, it is another contributor to a mismatch between the ACS survey report and the sex value on the Numident. Changes to sex in the Social Security file could also be the result of administrative error.

Mismatch between reported sex in Census 2010 and the Numident

In this section, we turn to a comparison of sex reports in Census 2010 data with the Numident file. Previous research (O’Connell and Feliz 2011) identified significant levels of sex misreporting in decennial 2010 data that affected estimates of same-sex couple households. By matching Census 2010 data to the Numident, we hope to evaluate the extent of this misreporting, as well as evaluate the methods used to produce the “preferred estimates” of same-sex couples, which were adjusted using sex probabilities based on first name reports. We use the unedited relationship and sex items in Census 2010 data to identify people who report being in same-sex and opposite-sex couple households. Similarly to ACS 2010, we were able to match about 95 percent of individual people who reported being a householder, spouse, or partner in households with a spouse or partner to the Numident file. Looking at those couples who matched the Numident, there were 63,107,488 couples⁷ in Census 2010. Out of these couples, we drop 832,426 in which either the householder and/or the partner is missing on the sex item in Census 2010. Of the remaining 62,275,062 couples, we also drop 201,189 households that report multiple partners and/or spouses. This left us with 62,073,873 coupled households in Census 2010. We then drop 4,575,198 couples because in the Numident either the spouse and/or partner were missing on the sex item. Finally we are left with 57,498,675 couples, about 91 percent of reported coupled households with a sex value in the Numident for both partners who could be matched to the Numident.

Table 6 shows unweighted numbers of coupled households by whether their sex report in the decennial matched the Numident. Overall, of the 306,587 households reported as same-sex married in 2010 decennial, 73 percent are opposite-sex in the Numident. In comparison, of households reported as opposite-sex married in 2010 decennial, 0.56 percent were same-sex in the Numident. For those reported as unmarried partner households, 7 percent of those who were same-sex in decennial were opposite-sex in the Numident. The corresponding percentage of those who differed for opposite-sex unmarried partner households was .79 percent. This very high rate of mismatch for same-sex married couples mirrors the findings in previous work, although it is a bit higher (O’Connell, Feliz 2011). Note also that the mismatch rate for same-sex couples is higher than found between ACS and the Numident for same-sex married couples, but is substantively the same for same-sex unmarried couples, which are a larger group.

Table 6 also details the number of partners whose sex report in 2010 decennial does not match their Numident record. Of those couples whose report does not match the Numident, most often, *either* the householder or their partner’s report does not match. As we saw when matching ACS and the Numident, in a very small proportion of cases, *neither* report matches the Numident record. There are multiple sources of error that might contribute to this, including a false match between decennial and

⁷ At least one spouse or unmarried partner was reported in the household.

the Numident, and a mismatch between the sex recorded on the Numident record and the current gender the person chooses to express. The proportion of couples where *neither* person's sex matches to the Numident is lower in decennial than in ACS. For unmarried couples, about 0.04 percent have neither partner's report matching in decennial and the Numident, while it is 0.03 percent for those who reported as married couples, including opposite and same-sex couples.

Decennial 2010 data were collected mainly through self-response (paper form), with followup conducted by interviewers using a different paper form, which contained a problematic vertical layout of the answer categories for the sex question. The sex question on the NRFU form was prone to mismarking. Unlike the CATI/CAPI followup in ACS, there was no check that alerted the interviewer to verify households that reported same-sex married couples. For those reported as opposite-sex couples in 2010 decennial, regardless of mode, mismatch rates between their decennial report and the Numident are very low—1.0 percent or less (Table 7). This low rate was also regardless of whether the couple reported as spouses or unmarried partners. Mismatch rates between decennial and the Numident vary far more widely for those who were reported in decennial as same-sex couples. The majority of same-sex married couples in 2010 decennial did not match their sex reports in the Numident: 67 percent from the mail form, 87 percent from non-response follow-up (NRFU), and 53 percent of those from other types of response forms (for example: TQA (telephone question instrument), Be Counted forms, Military Census Report, Shipboard Census Report). Mismatch rates for unmarried same-sex couples were far lower, but still higher than for couples who reported as opposite-sex in decennial 2010. While 4 percent of those reported as same-sex unmarried couples on the mail form in 2010 decennial did not match their sex reports in the Numident, this was true for 26 percent of these couples in NRFU, and 8 percent in other response forms.

While this analysis supports earlier work showing that sex misreporting by opposite-sex married couples in the NRFU form was likely the significant factor in creating many of the households that appear to have reported as same-sex married couples in 2010 decennial data (DeMaio, Bates & O'Connell 2013), it also shows that the mail form did not function well. The vertical layout of the answer categories for the sex question in the NRFU form was especially error prone, but mismarking was also a significant problem in other modes.

As we saw in ACS, the idea that the couples whose sex reports do not match the Numident are not matching due to changes to their sex is not supported. Table 8 shows the 'gendif' flag provided on the Numident file, which indicates individuals whose sex value in the Social Security file has switched over time. This could be due to an administrative error that was corrected, or because the person purposely worked to have their sex report changed to reflect a sex transition, or because a new administrative error was introduced. Roughly 1 percent of the couples have at least one member whose sex value was switched: 0.9 percent of unmarried same-sex couples (adding 0.4, 0.5 and 0.0 on Table 8); 1.2 percent of married same-sex couples; 1.1 percent of opposite-sex unmarried couples; and 0.9 percent of opposite-sex married couples. These low rates of couples with someone whose sex report has switched over time in the Numident are comparable to what we saw in the ACS-Numident match, and they do not explain the relatively higher level of mismatches we see between sex reports in decennial 2010 data and the Numident for same-sex couples, especially those who reported as householders and spouses.

Mismatch between sex assigned based on first name index and the Numident

After discovering that the estimates of same-sex coupled households in Census 2010 data were likely inflated by misreports of sex by opposite-sex couples, Census Bureau researchers used a first names index in order to adjust the estimates. The adjusted estimates are referred to as the “preferred estimates” in published materials and the methodology is described in detail in the O’Connell and Feliz (2011) report. An index is created which tallies the number of times a particular name is reported as male. If a name was reported as male 95 percent of the time, then the report of sex for that person was set to male. The same was done for names reported as female. An “ambiguous” name means that the sex could not be assigned based on the 95 percent rule. This included names that were male less than 95 percent, and more than 5 percent of the time, as well as names that were unique, or cases in which the name field was blank. Using this methodology, the estimate of same-sex coupled households in Census 2010 dropped from 901,997 to 646,464. In this section, we compare Census 2010 and the Numident, but instead of comparing the unedited report of sex for those in coupled households as we did above, we now compare their sex if it were assigned based on the first name index with the sex entry in the Numident. This will allow us to evaluate the use of the first name index to adjust 2010 estimates. “Preferred estimates” were released that were adjusted based on the first name index. By evaluating the names index against the Numident sex entries, we can evaluate whether this adjustment method indeed compensated for the mismatch errors.

Table 9 shows results for householders and partners or spouses.⁸ For those in married and unmarried couples, a very high percentage of those whose sex is assigned based on their first name matches the sex entry in the Numident. Most of the match rates are at 97 or 99 percent. Among those who reported as same-sex married couples, the rates are 98 percent for female names and 97 percent for male names. Across all couple types, 12 to 15 percent had first names that could not be assigned based on the 95 percent rule, and so are labeled ambiguous. Those who report as same-sex married couples had a higher percentage with ambiguous names (15 percent compared with 12-13 percent).

Tables 10 and 11 show name and sex match rates by mode, first for householders (Table 10) and then for partners/spouses (Table 11). Results are similar for householders and spouses/partners, but we show these as separate tables in order to illustrate this similarity. Match rates are close to 100 percent, except for householders in same-sex married couple households in the ‘Other’ mode. This mode includes a variety of miscellaneous types of forms, but constituted a small proportion of responses overall. Even so, the match rate was high—at 87 to 89 percent. The same group had a slightly higher proportion of first names that were ambiguous and the 95 percent rule could not be used to assign sex. It is also possible that the first name was blank in some of these form types, since these forms were less likely to be self-response.

⁸ Lofquist, Daphne A. and Jamie M. Lewis. 2014. “Improving Measurement of Same-sex Couples.” Paper presented at the Population Association of America annual meeting, May 2014, Boston, MA

In summary, using first name reports to assign sex, for the roughly 85 percent of those who have reported a name that is 95 percent male or 95 percent female in the overall sample is highly effective. This method of assigning sex matches the sex entry in the Numident in a very high percentage of cases—often 96 percent or higher. Statistics Canada used a probabilistic names index method to assign sex for those who reported as same-sex married couples in their 2006 Census (<http://www12.statcan.gc.ca/census-recensement/2006/ref/rp-guides/families-familles-eng.cfm#DQ>). While first name reports are currently used in the ACS edit to assign sex when it is not reported at all, they are not currently used to verify sex reports. However, verifying the reported sex of persons in a same-sex married couple could address part of the error in the estimated number of same-sex married couples.

In the final section of the paper, we take a look at the characteristics of those who misreport sex in the ACS. Since decennial data have very few characteristics available, we turn back to ACS 2010 data in order to explore the characteristics of couples who mismatch sex. We compare characteristics of those whose sex reports in ACS match their sex entries in the Numident file with those who do not. We want to see whether there are notable differences among the groups. Do those whose sex reports in ACS do not match their administrative records look like a different group than those who do?

Characteristics of those whose sex report matches the Numident compared with those who do not

We suspect that same-sex married couples whose sex reports do not match are really opposite-sex couples who have inadvertently misreported. We want to understand how actual same-sex married couples and opposite-sex married couples differ in order to then compare each group to reported same-sex couples who do not match. The left portion of Table 12 shows householders and spouses in reported same-sex married couples, and the right side shows those in reported opposite-sex married couples. Couples whose sex reports in ACS match their sex report in the Numident for both partners “do match,” while those where one or both partners have mismatching sex reports “do not match.” Compared with opposite-sex married couple householders whose ACS sex reports match those in the Numident, same-sex married couple householders who do match are younger, have smaller households, live in the Midwest less often, are more often White, and less often foreign-born. They have higher average household incomes, are more likely to have at least a bachelor’s degree, and when they do speak a language other than English, they are more likely to speak English very well than those opposite-sex married couple householders who do match.

In contrast, same-sex married couple householders whose sex reports in ACS do *not* match those in the Numident differ markedly from same-sex married couple householders whose sex reports do match. They are significantly older—householders whose sex reports do *not* match are 57 years old, on average, compared with 46 years old for householders in same-sex married couples whose sex reports do match their administrative records. They live in the Midwest in proportions that are not statistically different from opposite-sex married couple householders whose sex reports do match, but are significantly different from same-sex married couple householders whose sex reports match. Same-sex married

couple householders who do *not* match are more likely to be Black and Asian than same-sex married couple householders who do match. They are more likely to be foreign-born than either opposite-sex married couple householders who do match, or same-sex married couple householders. They are more likely than either group to own their home free and clear, which is likely related to the fact that they are older.

The remaining group, those who reported as opposite-sex married couple householders in ACS, but one or both members of the couple do *not* match their sex report in the Numident, appear to have characteristics that are distinct from the other groups. They are a little older than the same-sex married couple householders whose sex reports match, but younger than the other two groups. They live in the Midwest at rates that are statistically different from opposite-sex married couple householders whose sex reports do match administrative records. Among the 4 groups of householders, they are least likely to be White, and most likely to be Asian or Hispanic, and to be foreign born. A higher percentage of them speak a non-English language at home, and they are less likely to speak English very well than either group that matches their sex reports.

Looking further into these differences, we separated those couples where *one* does not match their sex report from those couples where *neither* match their sex report in the Numident. Recall that for opposite-sex couples who do *not* match their sex report in the Numident, the sex report did not match for *either* person in more than half of these couples (see Table 2). So it does not appear that most of these are actually same-sex married couples. However, there are still some 500,000 opposite-sex married couples where the sex of one spouse does not match the Numident, and some of these are potentially same-sex married couples. Looking at Table 12A, we see that opposite-sex married couples where one does *not* match their sex report are closer in age to same-sex married couples whose sex reports *do* match, but report having smaller households, on average, than opposite-sex married couples who do match. They also have percentages with at least a bachelor's degree that are lower than both couple types who do match, and live in the Midwest at a rate that is more similar to opposite-sex married couples than same-sex married couples.⁹ They are less likely to be White than either group who does match. For same-sex couple householders where one does not match, at least 14 percent are foreign born, which does not differ statistically from opposite-sex couple householders who do match. Opposite-sex couples where one does not match have household incomes that are lower than the other groups.

As an additional check, we include a characteristic labeled "sex does not match name" (Table 13). This estimate is generated using a variable that indicates what sex value would have been assigned in the ACS edit if they had not reported sex. The value to be assigned is based on the probability that the respondent's first name is male. Not all names have a value on this variable, however. Overall, some 92 percent of the sample has a value on this variable. This includes sex assignment based on a proportional assignment when the name is not at least 95 percent male or female. So, if a name is reported male 60 percent of the time, those who have this name would be assigned as male 60 percent of the time. We

⁹ Same-sex couple householders where one does not match their sex report are not statistically different from opposite-sex couple householders who do match.

compare whether the reported sex matches the sex value associated with the name in order to find out how often those who reported as same-sex married couples have names that support that conclusion.

The “sex does not match name” category shows clearly that those who report as same-sex married couples, but whose sex reports do *not* match the Numident are very likely to have a first name that does not match their reported sex. This is much higher than for any of the other couple groups. This is another confirmation that a high proportion of those who reported as same-sex married couples are actually opposite-sex married couples who inadvertently mismarked the form. Even for the group of roughly 500,000 couples who reported as opposite-sex married, but in which one member’s sex report does not match, a relatively low percentage of those whose first name can be used to assign sex (about 3 percent) have names that do not match their sex report. It is possible that this group reflects a higher percentage of people for whom the match between ACS and the Numident may be false. The rate of false matches is not known. Comparing the listed characteristics of the two groups suggests that most of these opposite-sex couples where one member does not match their sex report were not actually same-sex married couples.

CONCLUSIONS

This paper further investigates the problem of inadvertent misreports of sex by opposite-sex couples that lead to inflation of the estimates of same-sex couples. The estimation problem is especially pronounced for same-sex married couples, since they are the smallest group, and because the differential between the number of same-sex married and opposite-sex married couple households is much larger than the differential between same-sex unmarried partner and opposite-sex unmarried partner households. This is a statistical problem inherent in the estimates of any relatively small group. A small error in the large group results in significant inflation of the estimates of the small group. Presumably there is some small constant rate of error resulting in accidental mismarks for many questions. These types of errors are only visible when looking at estimates of the smaller group. The interrelationship between the sex and relationship items allows us to see this error.

We draw the following conclusions based on our work in this paper to quantify the error:

1. While Census 2010 error rates for same-sex married couples are higher than for ACS, the error in ACS is still unacceptably high.
2. There are multiple sources of error that make it difficult to establish a definitive estimate of same-sex married couples. These sources of error include: the mismarking of gender (and possibly relationship) in survey data, false matches between survey data and the administrative Social Security record, and inaccuracies in the Social Security record.
3. Adjusting sex reports based on the probability that a first name is male is highly effective for those whose names are male or female at least 95 percent of the time.

In ACS data, the very low rate of error among opposite-sex married couple households (2.5 percent, see Table 2) results in large overestimates of same-sex married couple households, since the latter group is so much smaller. Recall from Table 2 that a substantial portion of the opposite-sex couples in ACS who do not match their sex entry do not match for *either* person (1.6 percent of all opposite-sex married couples). So they still show up as opposite-sex couples in the edited data, and do not inflate the estimates of same-sex married couples. The proportion in which neither spouse matches their sex entry is higher in ACS than in decennial data. It is impossible to know whether this is because ACS respondents actually mismark sex for both people more often, or because the match to administrative data may not function quite as effectively for ACS as for decennial data. We have no indication that either possibility is predominant.

Among those couples reported as same-sex married in ACS 2010 who we can match to the Numident, some 58 percent appear to be opposite-sex married couples. Since we were not able to match all those who reported as same-sex married couples in the unedited ACS 2010 data, and because there is likely some level of false positive matches between ACS and the Numident, this may translate into a very rough estimate of half of those reported as same-sex married couples actually being opposite-sex married couples who inadvertently misreported on the sex item.

Using administrative records, this paper has confirmed the high level of error in the estimates of same-sex married couples in Census 2010 data described by O'Connell and Feliz (2011). Although the level of error in ACS is lower than in Census 2010, it is still substantial. We have also confirmed that the use of first name reports to assign sex is highly effective for the roughly 85 percent of people who have a name that is either reported as male 95 percent of the time, or female 95 percent of the time. In addition, we have shown that those who mismark sex have distinct characteristics compared with those whose sex entry on the administrative file confirms their sex report on ACS.

This investigation into the details of how misreports of sex by opposite-sex married couples affect the estimates of same-sex married couples will inform ongoing research as we continue to work to improve estimates of same-sex couple households, especially same-sex married couples. Since 2010, the Census Bureau, as part of the OMB-led Interagency group on Measuring Relationships in Federal Household Surveys, has worked to improve measurement of same-sex coupled households. A recently released paper describes the group's work.¹⁰ DeMaio, Bates and O'Connell (2013) documents the Census Bureau's development of revised questions. Several quantitative tests of these questions were held in 2013 and 2014, with several more planned for 2015 and 2016.

¹⁰ The working paper is located on the webpage of the Federal Committee on Statistical Methodology, at: http://fcs.m.sites.usa.gov/files/2014/04/MRFHS_StatisticalPolicyWorkingPaper201408.pdf

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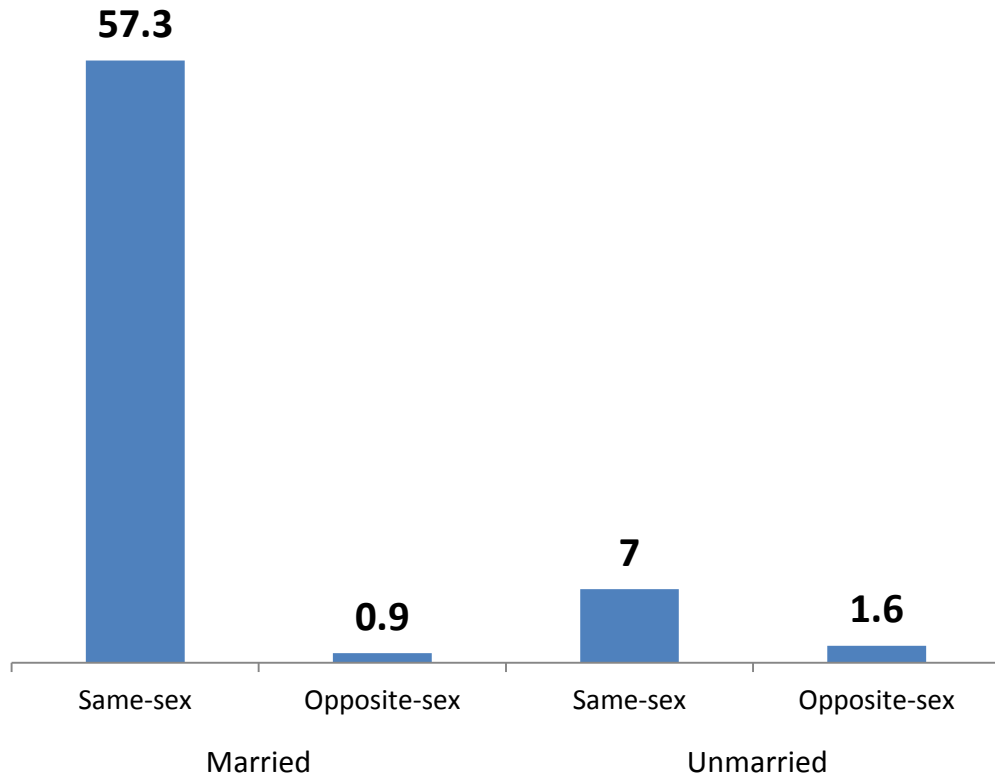
Table 1. Same-sex and opposite-sex couples by data file

ACS ¹	Numident		Total
	Same-sex	Opposite-sex	
Total	15,303	908,089	923,392
Same-sex	79.0	21.0	100.0
Opposite-sex	0.9	99.1	100.0
Married	8,309	834,893	843,202
Same-sex	42.7	57.3	100.0
Opposite-sex	0.9	99.1	100.0
Unmarried	6,994	73,196	80,190
Same-sex	93.0	7.0	100.0
Opposite-sex	1.6	98.4	100.0

¹ The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source.

Source: U.S. Census Bureau, American Community Survey 2010 1-year data file; 2010 Numident.

Figure 1. Sex as reported in ACS¹ compared with sex entry in Social Security record: percent inconsistent



¹ The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source. The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source.

Source: U.S. Census Bureau, American Community Survey 2010 1-year data file

Table 2. Same-sex and opposite-sex couple matches, Numident and ACS¹

	Same-sex	Opposite-sex	Total
Married	2,411	840,791	843,202
Both match	42.3	97.5	97.4
1 partner doesn't match	57.3	0.9	1.0
Neither match	0.4	1.6	1.6
Unmarried	6,265	73,925	80,190
Both match	92.6	96.3	96.0
1 partner doesn't match	7.0	1.6	2.0
Neither match	0.4	2.1	2.0

¹ The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source.

Source: U.S. Census Bureau, American Community Survey 2010 1-year data file; 2010 Numident.

Table 3. Same-sex and opposite-sex couple matches between Numident and ACS¹ 2010

	Same-sex	Opposite-sex	Total
Mailout/Mailback	7,455	700,783	708,238
Married	2,124	650,994	653,118
Both match	40.8	97.8	97.6
1 partner doesn't match	58.8	0.8	1.0
Neither match	0.4	1.4	1.4
Unmarried	5,331	49,789	55,120
Both match	93.5	96.7	96.4
1 partner doesn't match	6.2	1.4	1.8
Neither match	0.4	1.9	1.8
CATI/CAPI	1,221	213,933	215,154
Married	100	100	100
Both match	53.7	96.5	96.4
1 partner doesn't match	46.0	1.2	1.3
Neither match	0.3	2.3	2.3
Unmarried	934	24,136	25,070
Both match	87.5	95.5	95.2
1 partner doesn't match	11.9	2.0	2.4
Neither match	0.6	2.4	2.4

¹ The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source.

Source: U.S. Census Bureau, American Community Survey 2010 1-year data file; 2010 Numident.

Table 4. People in ACS¹ 2010 same-sex and opposite-sex couples with sex change in the Numident

Sex change for partner/spouse	Sex change for householder		
	No	Yes	Total
Married			
Same-Sex	4,796	26	4,822
No	98.8	0.5	99.2
Yes	0.7	0.1	0.8
Opposite-Sex	1,673,942	7,640	1,681,582
No	99.2	0.5	99.6
Yes	0.4	--	0.4
Unmarried			
Same-Sex	12,500	30	12,530
No	99.5	0.2	99.7
Yes	0.3	--	0.3
Opposite-Sex	146,972	878	147,850
No	99.0	0.6	99.5
Yes	0.5	--	0.5

¹ The results presented use unweighted ACS data and may not fully account for sampling and nonsampling error found in the ACS. For this reason, some results could relate to the ACS being a sample survey rather than question wording. In addition, the data shown here are limited to the 96% of ACS couples that were matched between ACS and the administrative data source. -- Represents that the estimate or standard error is zero or rounds to zero

Source: U.S. Census Bureau, American Community Survey 2010 1-year data file; 2010 Numident.

Table 5. Same-sex and opposite-sex couples by data file

Decennial 2010	Numident		Total
	Same-sex	Opposite-sex	
Total	842,851	56,655,824	57,498,675
Same-sex	66.7	33.3	100.0
Opposite-sex	0.6	99.4	100.0
Married	372,650	50,948,874	51,321,524
Same-sex	27.5	72.5	100.0
Opposite-sex	0.6	99.4	100.0
Unmarried	470,201	5,706,950	6,177,151
Same-sex	93.0	7.0	100.0
Opposite-sex	0.8	99.2	100.0

Source: U.S. Census Bureau, 2010 Census; 2010 Numident.

Table 6. Same-sex and opposite-sex couple matches, Numident and Census 2010

	Same-sex	Opposite-sex	Total
Married	306,587	51,014,937	51,321,524
Both match	27.3	99.4	99.0
1 partner doesn't match	72.5	0.6	1.0
Neither match	0.2	--	--
Unmarried	456,979	5,720,172	6,177,151
Both match	92.9	99.2	98.7
1 partner doesn't match	6.4	0.8	1.3
Neither match	--	--	--

-- Represents that the estimate or standard error is zero or rounds to zero

Source: U.S. Census Bureau, 2010 Census; 2010 Numident.

Table 7. Same-sex and opposite-sex couple matches, Numident and Census 2010 by form type

	Same-sex	Opposite-sex	Total
Mailout/Mailback	549,278	44,852,208	45,401,486
Married	173,878	40,825,451	40,999,329
Both match	33.4	99.5	99.2
1 partner doesn't match	66.4	0.5	0.8
Neither match	0.2	--	--
Unmarried	375,400	4,026,757	4,402,157
Both match	96.2	99.2	99.0
1 partner doesn't match	3.8	0.8	1.0
Neither match	--	--	--
NRFU	172,720	8,919,058	9,091,778
Married	109,487	7,499,585	7,609,072
Both match	13.4	99.1	97.8
1 partner doesn't match	86.3	0.8	2.0
Neither match	0.3	0.2	0.2
Unmarried	63,233	1,419,473	1,482,706
Both match	73.8	99.0	97.9
1 partner doesn't match	26.1	0.9	2.0
Neither match	0.2	0.1	0.1
Other	41,568	2,963,843	3,005,411
Married	23,222	2,689,901	100.0
Both match	47.3	99.3	98.8
1 partner doesn't match	52.4	0.7	1.1
Neither match	0.3	--	--
Unmarried	18,346	273,942	292,288
Both match	91.6	99.1	98.6
1 partner doesn't match	8.3	0.9	1.4
Neither match	0.1	--	--

-- Represents that the estimate or standard error is zero or rounds to zero

Source: U.S. Census Bureau, 2010 Census; 2010 Numident.

Table 8. Same-sex and opposite-sex couples in Census 2010 with sex change in the Numident

Sex change for partner/spouse	Sex change for householder		
	No	Yes	Total
Married			
Same-Sex	304,628	1,959	306,587
No	98.8	0.6	99.4
Yes	0.6	--	0.6
Opposite-Sex	50,762,248	252,689	51,014,937
No	99.1	0.5	99.6
Yes	0.4	--	0.4
Unmarried			
Same-Sex	454,676	2,303	456,979
No	99.1	0.5	99.6
Yes	0.4	--	0.4
Opposite-Sex	5,685,275	34,897	5,720,172
No	98.9	0.6	99.5
Yes	0.5	--	0.5

-- Represents that the estimate or standard error is zero or rounds to zero

Source: U.S. Census Bureau, 2010 Census; 2010 Numident.

Table 9. Consistency between sex assigned based on first name and sex entry in administrative data

People	Numident		
	Total	Male	Female
Married			
Same-sex	606,404	290,033	316,371
Name is female	263,630 100.0	1.8	98.2
Name is male	250,911 100.0	97.4	2.6
Name is ambiguous	91,863 100.0	44.4	55.6
Opposite-sex	102,006,563	50,998,973	51,007,590
Name is female	44,024,175 100.0	0.5	99.5
Name is male	45,008,578 100.0	99.4	0.6
Name is ambiguous	12,973,810 100.0	46.4	53.6
Unmarried			
Same-sex	912,689	433,891	478,798
Name is female	410,665 100.0	0.6	99.4
Name is male	390,208 100.0	99.2	0.8
Name is ambiguous	111,816 100.0	39.6	60.4
Opposite-sex	11,436,818	5,711,551	5,725,267
Name is female	4,865,940 100.0	0.6	99.4
Name is male	5,039,788 100.0	99.3	0.7
Name is ambiguous	1,531,090 100.0	44.5	55.5

Source: U.S. Census Bureau, 2010 Census; 2010 Numident.

NOTE: Name is female includes cases in which the name was reported as female 95 percent of the time; name if male includes cases in which the name was reported as male 95 percent of the time. Name is ambiguous includes all remaining cases.

Table 10. Householders in same-sex and opposite-sex couples with name that suggests respondent is male or female in Census 2010 compared to the Numident by mode

People	Numident								
	Mailout/Mailback			NRFU			Other		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Married									
Same-sex	125,663	48,215	173,878	69,244	40,243	109,487	13,037	10,185	23,222
Name is female	3.2	96.8	39,920	2.7	97.3	32,939	10.9	89.1	7,520
Name is male	97.9	2.1	109,988	97.9	2.1	60,129	87.0	13.0	11,320
Name is ambiguous	69.9	30.1	23,970	57.8	42.2	16,419	54.2	45.8	4,382
	35,155,239	5,670,212	40,825,451	5,395,824	2,103,761	7,499,585	2,240,132	449,769	2,689,901
Opposite-sex									
Name is female	1.9	98.1	4,901,581	1.1	98.9	1,782,114	2.2	97.8	380,587
Name is male	99.7	0.3	31,215,546	99.5	0.5	4,700,400	99.6	0.4	1,928,874
Name is ambiguous	83.6	16.4	4,708,324	68.5	31.5	1,017,071	81.6	18.4	380,440
Unmarried									
Same-sex	182,785	192,615	375,400	26,164	37,069	63,233	7,642	10,704	18,346
Name is female	0.6	99.4	167,251	1.0	99.0	31,066	2.1	97.9	9,093
Name is male	99.3	0.7	166,553	98.4	1.6	23,334	96.8	3.2	6,837
Name is ambiguous	39.4	60.6	41,596	32.8	67.2	8,833	34.5	65.5	2,416
Opposite-sex	2,026,534	2,000,223	4,026,757	776,757	642,716	1,419,473	126,340	147,602	273,942
Name is female	0.5	99.5	1,713,329	0.7	99.3	538,759	0.8	99.2	124,842
Name is male	99.3	0.7	1,812,440	99.3	0.7	685,860	99.1	0.9	111,149
Name is ambiguous	43.3	56.7	500,988	47.3	52.7	194,854	40.2	59.8	37,951

Source: U.S. Census Bureau, 2010 Census; 2010 Numident. NOTE: Name is female includes cases in which the name was reported as female 95 percent of the time; name if male includes cases in which the name was reported as male 95 percent of the time. Name is ambiguous includes all remaining cases.

Table 11. Partners/spouses in same-sex and opposite-sex couples with name that suggests respondent is male or female in Census 2010 compared to the Numident by mode

People	Numident								
	Mailout/Mailback			NRFU			Other		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Married									
Same-sex	41,561	131,245	172,806	35,394	73,217	108,611	5,134	13,266	18,400
Name is female	0.9	99.1	111,938	0.8	99.2	60,390	2.1	97.9	10,923
Name is male	97.9	2.1	35,528	98.5	1.5	29,903	96.4	3.6	4,043
Name is ambiguous	22.7	77.3	25,340	29.7	70.3	18,318	29.2	70.8	3,434
Opposite-sex	5,660,590	35,161,849	40,822,439	2,099,596	5,395,262	7,494,858	447,592	2,226,737	2,674,329
Name is female	0.3	99.7	30,518,815	0.5	99.5	4,554,385	0.4	99.6	1,886,693
Name is male	97.6	2.4	4,971,682	98.9	1.1	1,813,767	98.4	1.6	378,309
Name is ambiguous	13.6	86.4	5,331,942	25.3	74.7	1,126,706	16.6	83.4	409,327
Unmarried									
Same-sex	182,772	192,440	375,212	26,976	35,978	62,954	7,552	9,992	17,544
Name is female	0.5	99.5	165,059	0.6	99.4	29,845	0.5	99.5	8,351
Name is male	99.3	0.7	163,219	98.9	1.1	23,674	99.0	1.0	6,591
Name is ambiguous	42.3	57.7	46,934	35.9	64.1	9,435	37.9	62.1	2,602
Opposite-sex	1,995,472	2,030,760	4,026,232	639,558	778,443	1,418,001	146,890	125,523	272,413
Name is female	0.6	99.4	1,730,108	0.6	99.4	652,968	0.8	99.2	105,934
Name is male	99.2	0.8	1,747,275	99.1	0.9	556,843	99.3	0.7	126,221
Name is ambiguous	45.9	54.1	548,849	40.2	59.8	208,190	51.5	48.5	40,258

Source: U.S. Census Bureau, 2010 Census; 2010 Numident. NOTE: Name is female includes cases in which the name was reported as female 95 percent of the time; name if male includes cases in which the name was reported as male 95 percent of the time. Name is ambiguous includes all remaining cases.

Table 12. Weighted Characteristics of Same-sex and Opposite-sex Couples in the ACS 2010 unedited data matched with Numident file

	Report as Same Sex Married in ACS 2010				Report as Opposite-sex Married in ACS 2010			
	Do NOT match sex report		Do match sex report		Do NOT match sex report		Do match sex report	
	Householder	Spouse	Householder	Spouse	Householder	Spouse	Householder	Spouse
Total	76,874	77,369	61,829	62,275	1,390,949	1,397,518	49,130,914	49,188,577
Age (average)	57.2	55.7	46.0	44.4	48.0	47.2	51.5	50.5
Age allocated	3.4	7.2	2.4	2.8	1.0	1.6	0.8	1.2
Year of birth allocated	3.1	3.3	3.3	2.7	4.3	4.8	2.0	2.3
Percent male	42.1	42.1	45.9	45.6	57.9	42.7	68.0	32.5
Average household size	2.9	2.9	2.7	2.7	3.4	3.4	3.1	3.1
Has at least a bachelor's degree	28.6	27.1	58.0	51.4	31.9	28.5	36.3	31.3
Lives in the midwest	22.1	22.5	10.7	10.7	22.2	22.1	23.6	23.6
Race								
White	80.6	80.6	86.7	85.7	70.4	69.4	84.3	83.6
Black	10.3	9.7	4.5	4.6	10.7	10.7	6.7	6.8
American Indian or Alaska Native	0.7	0.5	0.3	0.3	2.3	2.2	0.5	0.5
Asian	3.9	4.7	2.7	2.3	7.3	8.3	4.7	5.2
Native Hawaiian or Pacific Islander	0.1	0.3	0.1	0.1	0.9	0.9	0.1	0.1
Some other Race	2.3	2.5	2.9	4.2	4.5	4.9	2.3	2.6
Two or more races	2.1	1.6	2.8	2.8	4.0	3.6	1.3	1.3
Hispanic	8.8	9.0	9.3	10.7	16.2	16.4	9.2	9.7
Foreign-born	14.7	13.8	7.9	9.6	20.1	22.6	13.0	14.7
Non-English spoken at home	16.6	17.8	14.8	16.0	24.2	25.7	15.9	17.1
Speaks English very well	59.1	54.7	73.1	74.0	53.9	48.7	58.4	54.9
Average adjusted household income	86,887	86,961	124,853	124,230	87,690	87,756	95,102	95,101
Tenure								
owns/mortgage	52.5	52.7	60.4	60.1	57.6	57.7	60.3	60.2
owns free/clear	33.0	32.9	13.2	13.4	17.9	18.0	23.3	23.3
rents	14.5	14.4	26.3	26.5	24.5	24.3	16.4	16.5

Source: U.S. Census Bureau, American Community Survey 2010 and 2010 Numident

Table 12a. Weighted Characteristics of Same-sex and Opposite-sex Couples in the ACS 2010 unedited data matched with Numident file

	Report as Same Sex Married in ACS 2010				Report as Opposite-sex Married in ACS 2010			
	One does NOT match sex report		Both do NOT match sex report		One does NOT match sex report		Both do NOT match sex report	
	Householder	Spouse	Householder	Spouse	Householder	Spouse	Householder	Spouse
Total	76,222	76,739	652	630	505,620	507,405	889,532	890,113
Age (average)	57.4	55.8	43.1	43.2	46.8	45.6	48.7	48.2
Age allocated	3.3	7.3	12.0	0.0	0.8	1.5	1.1	1.6
Year of birth allocated	3.1	3.3	0.0	0.0	3.9	4.7	4.5	4.8
Percent male	42.1	42.0	50.3	53.8	63.9	36.6	54.5	46.2
Average household size	2.9	2.9	3.0	3.0	3.4	3.4	3.3	3.3
Has at least a bachelor's degree	28.5	27.1	32.7	16.5	28.8	27.2	33.6	29.2
Lives in the midwest	22.1	22.4	25.6	25.7	20.0	20.2	23.4	23.2
Race								
White	81.0	80.7	25.6	72.1	67.5	67.1	72.0	70.7
Black	10.1	9.7	32.7	9.0	13.0	12.4	9.4	9.7
American Indian or Alaska Native	0.7	0.5	0.0	0.0	1.8	1.7	2.6	2.5
Asian	3.9	4.8	0.0	0.0	8.1	8.9	6.9	7.9
Native Hawaiian or Pacific Islander	0.1	0.3	0.0	0.0	0.8	0.6	0.9	1.1
Some other Race	2.2	2.4	19.8	18.9	5.8	6.2	3.7	4.1
Two or more races	2.0	1.6	21.9	0.0	3.1	3.0	4.5	4.0
Hispanic	8.6	8.9	31.1	28.9	19.4	20.0	14.4	14.4
Foreign-born	14.5	13.7	41.0	29.0	25.1	27.5	17.3	19.8
Non-English spoken at home	16.2	17.6	55.2	47.6	29.5	31.6	21.2	22.4
Speaks English very well	60.1	55.1	25.8	39.0	50.2	45.6	56.9	51.1
Average adjusted household income	87,121	87,172	59,560	61,218	79,755	79,917	92,201	92,225
Tenure								
Owns/mortgage	52.2	52.4	88.7	90.0	55.1	55.2	59.0	59.2
Owns free/clear	33.3	33.2	0.0	0.0	15.3	15.3	19.4	19.5
Rents	14.5	14.4	11.3	10.0	29.6	29.5	21.7	21.3

Source: U.S. Census Bureau, American Community Survey 2010 and 2010 Numident

Table 13: Percent whose sex assigned based on first name does NOT match their sex report in ACS, for coupled households

Sex report match with Numident	Report as Same-sex Married in ACS 2010				Report as Opposite-sex Married in ACS 2010			
	Householder		Spouse		Householder		Spouse	
	Percent	Margin of Error	Percent	Margin of Error	Percent	Margin of Error	Percent	Margin of Error
ACS sex report does not match Numident	53.2	2.9	40.9	2.4	5.9	0.4	6.2	0.4
Sex report does match	3.3	1	4.6	1.3	1.7	--	1.7	--
One spouse does not match Numident	53.6	3	41	2.4	2.6	0.4	2.8	0.5
Both do not match	13.3	22.7	30.2	29.4	7.8	0.6	8.1	0.5

-- Represents that the estimate or standard error is zero or rounds to zero

Source: U.S. Census Bureau, American Community Survey 2010 and 2010 Numident

NOTE: To illustrate how to interpret this table, here is an example describing the bolded 53.2 percentage. Among householders in couples who reported as same-sex married in ACS 2010, and whose sex report in ACS did NOT match their Numident record, 53.2 percent had a first name which did NOT match their sex report.

Appendix A. Margins of Error for Table 12 - Weighted Characteristics of Same-sex and Opposite-sex Couples in the ACS 2010 unedited data matched with Numident file

	Report as Same Sex Married in ACS 2010				Report as Opposite-sex Married in ACS 2010			
	Do NOT match sex report		Do match sex report		Do NOT match sex report		Do match sex report	
	Householders	Spouses	Householders	Spouses	Householders	Spouses	Householders	Spouses
Total	3,590	3,576	3,478	3,488	19,549	19,045	154,374	153,445
Age (average)	0.8	0.9	0.9	1.0	0.2	0.2	0.0	0.0
Age allocated	1.0	1.4	0.9	1.0	0.1	0.2	0.0	0.0
Year of birth allocated	0.9	1.1	1.1	1.3	0.3	0.3	0.0	0.0
Percent male	2.8	2.8	3.0	2.9	0.7	0.6	0.1	0.1
Average household size	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Has at least a bachelor's degree	2.6	2.5	2.6	2.8	0.7	0.7	0.1	0.1
Lives in the midwest	2.0	2.0	1.6	1.6	0.6	0.6	0.1	0.1
Race								
White	2.0	1.9	2.2	2.1	0.8	0.8	0.1	0.1
Black	1.5	1.4	1.5	1.5	0.4	0.4	0.1	0.1
American Indian or Alaska Native	0.4	0.3	0.2	0.3	0.2	0.2	0.0	0.0
Asian	1.0	1.0	0.9	0.8	0.4	0.4	0.0	0.0
Native Hawaiian or Pacific Islander	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0
Some other Race	0.9	0.9	1.2	1.5	0.3	0.3	0.0	0.0
Two or more races	0.7	0.7	1.1	1.2	0.3	0.2	0.0	0.0
Hispanic	1.9	1.7	1.6	2.0	0.6	0.6	0.1	0.1
Foreign-born	2.2	1.9	2.1	1.8	0.6	0.6	0.1	0.1
Non-English spoken at home	2.2	1.9	2.3	2.5	0.7	0.7	0.1	0.1
Speaks English very well	7.5	6.7	8.4	5.5	1.4	1.2	0.3	0.3
Average adjusted household income	4,946	4,770	7,146	7,087	1,159	1,122	194	194
Tenure								
Owns/mortgage	2.6	2.5	3.0	3.1	0.7	0.7	0.1	0.1
Owns free/clear	2.3	2.4	1.9	1.9	0.5	0.5	0.1	0.1
Rents	2.0	2.0	2.7	2.7	0.6	0.7	0.1	0.1

Source: U.S. Census Bureau, American Community Survey 2010 and Numident file

Appendix B. Margins of Error for Table 12a - Weighted Characteristics of Same-sex and Opposite-sex Couples in the ACS 2010 unedited data matched with Numident file

	Report as Same Sex Married in ACS 2010				Report as Opposite-sex Married in ACS 2010			
	One does NOT match sex report		Both do NOT match sex report		One does NOT match sex report		Both do NOT match sex report	
	Householders	Spouses	Householders	Spouses	Householders	Spouses	Householders	Spouses
Total	3,588	3,583	385	364	12,790	12,489	16,249	16,417
Age (average)	0.8	0.9	8.5	6.4	0.3	0.3	0.2	0.2
Age allocated	5.5	1.4	19.7	34.3	1.3	0.2	1.9	0.2
Year of birth allocated	0.9	1.1	35.5	34.3	0.5	0.5	0.4	0.4
Percent male	2.8	2.8	31.6	31.7	1.1	1.1	0.8	0.8
Average household size	0.1	0.1	0.4	0.4	0.0	0.0	0.0	0.0
Has at least a bachelor's degree	2.6	2.6	34.4	19.6	1.0	1.0	0.8	0.8
Lives in the midwest	2.0	2.0	34.6	34.5	0.9	0.8	0.7	0.7
Race								
White	2.0	1.9	24.4	28.7	1.2	1.3	0.8	0.9
Black	1.5	1.4	32.3	14.4	0.7	0.8	0.5	0.5
American Indian or Alaska Native	0.4	0.3	35.5	34.3	0.3	0.3	0.2	0.3
Asian	1.0	1.0	35.5	34.3	0.6	0.7	0.5	0.5
Native Hawaiian or Pacific Islander	0.1	0.2	35.5	34.3	0.2	0.2	0.2	0.2
Some other Race	0.9	0.9	23.4	21.9	0.6	0.7	0.3	0.4
Two or more races	0.7	0.7	26.2	34.3	0.4	0.4	0.3	0.3
Hispanic	1.9	1.7	28.0	25.9	1.1	1.1	0.7	0.7
Foreign-born	2.2	1.9	31.6	27.2	1.0	1.2	0.6	0.7
Non-English spoken at home	2.2	2.0	33.1	30.5	1.2	1.3	0.7	0.7
Speaks English very well	7.9	6.9	32.0	41.6	1.9	1.9	1.9	1.7
Average adjusted household income	4,985	4,807	16,897	16,889	1,546	1,532	1,586	1,525
Tenure								
Owns/mortgage	2.6	2.6	18.0	15.5	1.2	1.2	0.8	0.8
Owns free/clear	2.4	2.4	35.5	34.3	0.8	0.8	0.6	0.5
Rents	2.0	2.0	18.0	15.5	1.2	1.2	0.8	0.7

Source: U.S. Census Bureau, American Community Survey 2010 and Numident file

