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Sensitive Questions, Spillover Effects, and Asking about Citizenship on the US Census

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Many topics social scientists study are sensitive in nature. Although we know some people may be reluctant to respond to sensitive questions in surveys, we know less about how such questions could influence responses to other questions appearing later in a survey. In this study, we use the Trump administration's proposal to include a citizenship question on the 2020 Census to demonstrate how such spillover effects can undermine important survey-based estimates. Using a large survey experiment ($n = 9,035$ respondents), we find that asking about citizenship status significantly increases the percentage of questions skipped and makes respondents less likely to report that members of their household are Hispanic. Not only does this demonstrate that sensitive questions can have important downstream effects on survey responses, but our results also speak to an important public policy debate that will likely arise in the future.

Many topics of substantive political importance are sensitive in nature, meaning that researchers often must ask uncomfortable questions to better understand political behavior. Scholarship shows that question sensitivity is often influenced by three factors: social (un)desirability of the answers (Krumpal 2013), invasion of privacy (Singer, Van Hoewyk, and Neugebauer 2003), and risk of disclosure to third parties (Tourangeau and Yan 2007). Underlying each of these factors is the supposition that some behaviors are more acceptable than others. For example, when researchers ask questions about “taboo” topics, respondents may suspect an invasion of privacy. Other questions may raise

fears about the consequences of disclosing information to certain agencies or individuals, with respondents suspecting answers could be used against them. In such instances, even when survey administrators promise confidentiality, participants may be skeptical, especially when they believe they are distinctively at risk.

Although previous studies have shown sensitive questions can increase nonresponse rates (Rosenfeld, Imai, and Shapiro 2016) and produce less truthful responses (Tourangeau and Yan 2007), less attention has been paid to how such questions can potentially affect answers to other items appearing later in the same survey, even ones seemingly unrelated.

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These “spillover” effects are important because one sensitive question could have broad effects on later important responses and, thus, on substantive research conclusions. In this study, we use a meta-analysis, simulation study, and an experiment centered around one such sensitive question—the Trump administration’s proposal to include a citizenship question on the 2020 US Census—to demonstrate how these spillover effects can undermine important survey-based estimates, like the number of Hispanics in the United States.

Evidence supporting such a relationship can be found in studies that show anonymity produces higher response rates and more truthful answers than confidentiality assurances (e.g., Ong and Weiss 2000). Although researchers assure respondents that their answers will remain private, the risk of exposure—however small—is higher when they provide identifying information. We argue similar concerns also lead sensitive questions to have downstream effects, adding an important new dimension to our understanding of survey research.

BACKGROUND ON QUESTION SPILLOVER EFFECTS

According to Tourangeau and Yan (2007), question answers are produced in several stages beginning with comprehension of the survey item and ending with a selected response once the respondent retrieves relevant material from memory. Spillover effects occur when previous survey questions affect the probability certain information enters into active memory when respondents formulate subsequent responses. Unlike traditional models, which assume that answers are based on pre-existing evaluations stored in memory, we argue responses are actively formed when each question is asked (Tourangeau, Rips, and Rasinski 2000), meaning that prior survey items can affect subsequent questions by influencing the accessibility of certain types of information. Ultimately, this can lead respondents to change their responses or drop out of a survey altogether (De Leeuw, Hox, and Huisman 2003).

This literature suggests sensitive questions appearing earlier in a survey could make later questions more sensitive than they would be otherwise. To borrow from the US Census context, respondents might believe that answering questions about the citizenship status of themselves or members of their household could increase their chances of being investigated by the government, particularly if they live in a household with people identified as “Hispanic, Latino, or Spanish Origin” (to use the Census language). This concern could enter their active memory, making them more likely refuse to answer general household composition questions, regardless of actual citizenship status.

Although related to previous work on sensitive questions (e.g., Rosenfeld et al. 2016), this example demonstrates the

focal point of this study. Instead of considering increased nonresponse to the sensitive question itself, we aim to understand how sensitive questions can influence later answers to cognitively associated questions. The US Census Bureau’s proposal to include a question about citizenship status on the 2020 Census is useful in this regard because answers to a citizenship question could be cognitively linked to later questions about household composition. These answers are then used by federal and state governments to allocate funding and apportion congressional districts. If the spillover effects described in this study affect survey accuracy, then the citizenship question provides an important example of how such inaccuracies can carry meaningful policy consequences.

APPLICATION: CITIZENSHIP AND THE 2020 US CENSUS

Research design

To test how asking a sensitive question—such as citizenship status of the respondent or members of his or her household—can affect responses later in the survey, we designed a pre-registered survey experiment that mirrored the US Census short form.¹ We randomly assigned half of the respondents ($n = 4,497$) to receive a “citizenship treatment” in which we asked, for each member of their household, “Is this person a citizen of the United States?” The other half ($n = 4,538$) did not receive the citizenship question for any household member. We independently randomized item order within each block of questions about different household members, thereby also randomizing the position of the citizenship question.

A third-party vendor (Qualtrics) recruited the survey panel and implemented the study in two waves. The first wave ($n = 4,104$) began on October 19, 2018, and targeted non-Hispanics (employing an English survey instrument), using self-reported demographic information maintained by Qualtrics. The race/ethnicity of the respondents and their country of origin is also determined using these data. The second wave ($n = 4,931$) began approximately one week later (on October 25, 2018) and targeted Hispanics (using English and Spanish survey instruments) in order to facilitate meaningful subgroup inferences. In appendix S2 (apps. S1–S3 are available online), we report balance statistics and demographic breakdowns for both survey waves.

An obvious difference between our study and the actual US Census is our status as academic researchers, which might lead to confidence among respondents that data would not be used for immigration enforcement purposes. To assess this, we also

1. In app. sec. S1.7, we explain differences between our approach and that of the Census. We also show in this section that our main results are not substantially influenced by these differences.

Table 1. Treatment Effects on Item Nonresponse

	Treatment	Control	Difference	<i>t</i>	<i>p</i>
Percentage of All Questions Skipped					
All	30.03	26.88	3.15	3.897	<.001
Hispanic	38.84	34.35	4.49	3.674	<.001
Mexico/Central America	19.18	8.97	10.21	3.153	.002
Puerto Rico/Cuba	12.96	12.10	.86	.276	.783
Non-Hispanic	20.94	18.99	1.95	1.973	.049
Percentage of Respondents Who Skipped at Least 80% of the Questions					
All	21.70	18.36	3.35	3.978	<.001
Hispanic	29.98	24.91	5.06	3.862	<.001
Mexico/Central America	11.11	2.33	8.79	2.800	.006
Puerto Rico/Cuba	6.25	3.77	2.48	.853	.395
Non-Hispanic	13.16	11.42	1.73	1.753	.080

Note. Treatment mean, control mean, and the difference between the two are shown in the first three columns. Last two columns report results from two-sample *t*-tests. Since the citizenship treatment was not introduced until question 5, we only consider questions appearing after this question when assessing treatment effects. More details about the measures used in this table can be found in app. sec. S1.4.

randomly assigned half of the respondents ($n = 4,454$) to receive a “census prompt” treatment, independent of the first randomization, consisting of a short note at the bottom of their consent form saying, “Your responses will be shared with the U.S. Census Bureau” and requiring respondent consent. The other half ($n = 4,581$) received no prompt. (Additional details on survey logistics can be found in apps. S1 and S2.)²

Results

If sensitive questions increase concerns over exposure to risk, then respondents should be less willing to give identifying information or information that could attract government suspicion. Although the average respondent is unlikely aware of the increasing risk of Census reidentification, fears over confidentiality leading up to the 2020 Census support our underlying mechanism (Brown et al. 2018). We therefore expect the citizenship question will (1) increase item nonresponse and (2) lead to fewer Hispanic household members being reported. Moreover, these effects should be more pronounced among Hispanic respondents, especially those born outside the

United States, since these groups have been found to be especially sensitive to the citizenship question (Brown et al. 2018).

Treatment effects on item nonresponse

In table 1, we operationalize survey item nonresponse as the percentage of the survey questions for which the respondent did not submit a response. Since our citizenship treatment was not introduced until question 5, we only consider questions appearing after this question when assessing treatment effects. Using this measure, we find that receiving the citizenship treatment increases the share of questions skipped after question 5 by 3.15 percentage points ($t = 3.897$, $p < .001$). We find similar results when the dependent variable is the percentage of respondents who completed at least 80% of the questions after question 5, with the citizenship treatment increasing this percentage by 3.35 percentage points ($t = 3.978$, $p < .001$). These patterns suggest that introducing a sensitive question—like a question about US citizenship—not only increases item nonresponse but also leads to more respondents skipping a substantial proportion of the survey.³

Consistent with expectations, we also find this effect was more pronounced for Hispanics, who skipped 4.49 percentage

2. Our experimental design was preregistered with EGAP (Evidence in Governance and Politics) and added to the registry on October 23, 2018 (ID 20181016AA). Additional hypotheses not discussed in the main text are discussed in app. secs. S3.2 and S3.3. In these sections, we also explain a few deviations from our original preanalysis plan, most notably our hypotheses related to the census prompt, which were difficult to test given the survey ultimately approved by Qualtrics.

3. We find that the census prompt does not significantly affect the share of questions skipped after question 5 ($t = 1.570$, $p = .116$). However, in the appendix, we show that the census prompt does significantly increase the percentage of questions 1–4 skipped ($t = 2.433$, $p = .015$) before the citizenship question is introduced.

Table 2. Treatment Effects on Percentage of Household Reported as Being Hispanic

	Treatment	Control	Difference	<i>t</i>	<i>p</i>
All	31.01	35.04	-4.03	4.224	<.001
Hispanic	53.43	59.38	-5.95	4.360	<.001
Mexico/Central America	75.35	83.67	-8.32	1.932	.055
Puerto Rico/Cuba	81.33	85.74	-4.41	1.077	.283
Non-Hispanic	8.43	9.81	-1.38	1.664	.096

Note. Treatment mean, control mean, and the difference between the two are shown in the first three columns. Last two columns report results from two-sample *t*-tests. More details about the measures used in this table can be found in app. sec. S1.4.

points more of the questions after the citizenship treatment was introduced ($t = 3.674$, $p < .001$). When we subset the data to Hispanics from Mexico or Central America, we find the percentage of questions skipped increases further, to 10.21 percentage points ($t = 3.153$, $p = .002$). Since Hispanics who originate from Puerto Rico and Cuba tend to be US citizens, we also preregistered this subgroup as an important point of comparison. As anticipated, the corresponding effect among Hispanics who listed Puerto Rico or Cuba as their birth country was far smaller: .86 percentage points ($t = .276$, $p = .783$). We also found a smaller difference of 1.95 percentage points for non-Hispanics ($t = 1.973$, $p = .049$).

Treatment effects on percentage of household reported as being Hispanic

In table 2 we consider the effect of the citizenship question on the share of household members identified by the respondent as being of “Hispanic, Latino, or Spanish Origin.” That is, we consider the percentage of household members identified as Hispanic (as opposed to other ethnicities or nonresponses) by each respondent. We again only consider household members whose race/ethnicity is assigned by the respondent after our citizenship treatment is introduced.

Table 2 shows—again consistent with spillover effects—that those receiving the citizenship treatment reported fewer Hispanic household members (31.01% of households) compared to those in the control condition (35.04%; $t = 4.224$, $p < .001$). Hispanic respondents receiving the citizenship treatment reported 5.95 percentage points fewer household members of Hispanic origin than their counterparts in the control conditions (59.38 vs. 53.43; $t = 4.360$, $p < .001$). The corresponding difference among non-Hispanic respondents is smaller and less significant 1.38 points (8.43 vs. 9.81; $t = 1.664$, $p = .096$).

We again see larger, significant effects for Hispanics listing Mexico or a country in Central America as their country of birth. Here, respondents receiving the citizenship treatment

reported 8.32 percentage points fewer household members of Hispanic origin (75.35%, compared to 83.67% in the control condition; $t = 1.932$, $p = .055$). Once again, among Hispanics who listed either Puerto Rico or Cuba as their birth country, the corresponding difference is smaller (4.41 points; 81.33 vs. 85.74 in the control condition) and insignificant ($t = 1.077$, $p = .283$).

EXTRAPOLATING TO THE 2020 US CENSUS

We now show how the downstream effects we outlined above could influence important survey-based estimates, like the number of Hispanics in the United States. Since our survey purposefully oversampled Hispanics (51.10% of our sample) relative to the US population (16.35%, as reported by the 2010 US Census), we first created poststratification weights to produce more nationally representative estimates. (We provide more details in apps. S2 and S3.) Applying the estimated national-level treatment effect to the US population, as reported by the 2010 US Census (308,745,538), we estimate that asking about citizenship would reduce the number of Hispanics reported in the 2020 Census by 6,072,068, or 12.03% of the 2010 Hispanic population (50,477,594). The 95% confidence interval surrounding our estimate is 5,761,284–6,382,820, which represents a decrease of 11.41%–12.64% relative to the 2010 Hispanic population. Although higher, our results are also consistent with a recent randomized trial conducted by the US Census Bureau (Poehler et al. 2020).⁴

EXTRAPOLATING TO OTHER SENSITIVE QUESTIONS

We finally consider how spillover effects could affect inferences made in other substantive applications. In appendix section S3.7, we found 185 articles (or 13.63%) published from

4. Appendix sec. S3.10 explains why our estimates differ from this study. Notably, Poehler et al. (2020) use pretreatment questions to estimate their effects, and the Supreme Court ruled against the citizenship question during their study.

2015 to 2020 in the *American Journal of Political Science*, *American Political Science Review*, and *Journal of Politics* that included at least one demographic variable previously identified in the literature as sensitive. This suggests the generalizability of the results reported in tables 1 and 2, even in studies unrelated to the US Census. For example, Rosenfeld et al. (2016) asked indirect questions about a 2011 Mississippi abortion ballot initiative before respondents were asked directly whether they voted for the measure. The direct question always appeared later in the survey because “respondents refrained from answering indirect questions about politics at higher rates after the direct question was administered” (787). In appendix section S3.6, we find evidence consistent with this statement. Specifically, we show that respondents were more likely to change their party identification when they were repeatedly asked sensitive questions, and this effect is more pronounced for individuals who are most likely to be sensitive to ballot initiative questions.

However, these additional “doses” of sensitivity are different in nature from the treatment we used in our main application. In appendix section S3.8, we therefore simulate how our treatment effect might influence the conclusions of eight studies selected from the aforementioned meta-analysis.⁵ We ultimately find that, for each percentage point increase in sensitivity—as represented by the percentage of respondents who dropped out of the survey after receiving a sensitive question—the confidence intervals surrounding the model coefficients presented in the papers would increase on average by 37.62%. When our simulation was conducted using the data from the two studies that actually included a citizenship question, the confidence intervals on the model coefficients increased by, on average, 111.39%. This means that we found the largest sensitivity effect in those studies that included a citizenship question.

DISCUSSION AND CONCLUSION

On July 21, 2020, President Donald Trump signed a memorandum barring undocumented immigrants from being used in congressional apportionment following the 2020 Census. Although the Biden administration repealed the Trump memo, questions related to citizenship status and the US Census are likely to continue for the foreseeable future. Using this example as an application and a companion simulation, we find

that sensitive questions can increase item nonresponse, decrease the reporting of certain demographic information, and dramatically increase the size of confidence intervals around key quantities of interest, ultimately making inference more difficult. We also find that, when applied to something as important as the 2020 US Census, such spillover effects can have important policy implications. Finally, similar effects likely also affect other studies, including the 185 published studies we identified in appendix section S3.7.

Scholars sometimes need to know answers to uncomfortable questions in order to address important research topics. As we show here, however, sensitive survey questions could have important unintended consequences. This is not to say that such questions should be avoided. Rather, our study suggests caution: researchers should think carefully about how sensitive items could influence subsequent questions. We offer the citizenship question as one important example of how such effects can affect important policy outcomes, but additional work is needed to see whether other policy issues that rely on sensitive questions are similarly affected.

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5. These eight were selected on the basis of availability of reproducible code/data and diversity of methods. We also only considered surveys of the United States and chose studies across the various journals. See app. sec. S3.8 for more details.