IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF MARYLAND

ROBYN KRAVITZ, et al.,

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF COMMERCE, *et al.*,

No. 8:18-cv-01041-GJH

Defendants.

DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

Defendants hereby move pursuant to Federal Rule of Civil Procedure 56 for summary judgment in their favor on the ground that there are no material facts in dispute and Defendants are entitled to judgment as a matter of law. The reasons for this Motion are set forth in the accompanying Memorandum in Support of Defendants' Motion for Summary Judgment and the exhibits filed therewith. Dated: November 12, 2018

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that on this 12th day of November, 2018, I caused a copy of the foregoing

Defendants' Motion for Summary Judgment and accompanying memorandum and exhibits to be sent to all parties receiving CM/ECF notices in this case.

/s/Carol Federighi

Carol Federighi

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MEMORANDUM OF LAW IN SUPPORT OF DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

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INTRODUCTION

Following a formal request from the Department of Justice, the Secretary of Commerce made a reasonable decision to reinstate a question about citizenship on the decennial census, consistent with historical practice dating back to 1820 and the Secretary's nearly unfettered discretion over the format and content of the census. If included, the citizenship question will be one of several demographic questions (including questions inquiring about race, gender, and relationship status) on the census form sent to every household. Plaintiffs lack standing to bring this challenge seeking to vacate that decision, and their claims regarding that decision are belied by the record.

As a threshold matter, Plaintiffs have suffered no Article III injury traceable to the Secretary's decision. They cannot definitively show that the reinstatement of a citizenship question will result in a differential undercount of the population (and thus putative detrimental effects on apportionment and federal funding). Indeed, their lengthy and attenuated chain of causation is rendered particularly speculative after accounting for the Census Bureau's extensive follow-up operations, massive outreach communications plan, and processes for imputation and does not establish that any potential decline in self-response will result in any material effect on apportionment or federal funding. Plaintiffs' claims of injury are impermissibly speculative and remote, and their claims are not fit for resolution by an Article III court.

But even assuming the Court finds it has jurisdiction, Defendants are entitled to summary judgment on the merits. Plaintiffs' claim under the Enumeration Clause that the inclusion of a citizenship question will interfere with an "actual" Enumeration fails because the Secretary will conduct a person-by-person headcount, and the Enumeration Clause is not at all implicated by the inclusion of demographic questions, any of which may implicate their own sensitivity concerns and which have appeared uninterrupted since the first census. Plaintiffs' claims under the Administrative Procedure Act ("APA") also fail because the Secretary of Commerce articulated a reasonable explanation for his decision to reinstate a citizenship question based on the record before him—that

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obtaining more precise citizenship data via the decennial census will be useful to DOJ in enforcing the Voting Rights Act. That decision falls well within the Secretary's broad discretion in overseeing the decennial census and is fully in compliance with the Constitution and applicable laws. The APA requires no more. Even if the Court were to look behind the Secretary's decision for any additional motivations, there is no evidence that the Secretary acted with any improper motivation.

Defendants are therefore entitled to summary judgment.

BACKGROUND

I. Constitutional and Statutory Authority for the Census

The Constitution requires that an "actual Enumeration" of the population be conducted every ten years in order to allocate representatives in Congress among the States and vests Congress with the authority to conduct that census "in such Manner as they shall by Law direct." U.S. Const. art. I, § 2, cl. 3. The Census Act, 13 U.S.C. § 1 *et seq.*, delegates to the Secretary of Commerce the responsibility to conduct the decennial census "in such form and content as he may determine," and "authorize[s] [him] to obtain such other census information as necessary." *Id.* § 141(a). The Census Bureau assists the Secretary in performing this duty. *See id.* §§ 2, 4. The Act directs that the Secretary "shall prepare questionnaires, and shall determine the inquiries, and the number, form, and subdivisions thereof, for the statistics, surveys, and censuses provided for in this title." *Id.* § 5. Nothing in the Act directs the content of the questions included on the decennial census.

With the exception of 1840, decennial censuses from 1820 to 1880 asked for citizenship or birthplace in some form, and decennial censuses from 1890 through 1950 specifically requested citizenship information.¹ In 1960, the Census Bureau asked 25% of the population for the

¹Beginning in 1820, the census was used to tabulate citizenship by inquiring of each household the number of "foreigners not naturalized." *See* U.S. Census Bureau, Measuring America: The Decennial Censuses From 1790 to 2000, at 6-7, https://www2.census.gov/library/publications/2002/dec/pol_02-ma.pdf ("Measuring America"). No question regarding birthplace or citizenship status was included in the 1840 Census. *Id.* at 8. In the 1850, 1860, and 1880 enumerations, the

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respondent's birthplace and that of his or her parents. Measuring America at 72-73. Between 1970 and 2000, the Bureau distributed a more detailed "long-form questionnaire" to a sample of the population in lieu of the "short-form questionnaire" sent to the majority of households. U.S. Census Bureau, Questionnaires, https://www.census.gov/history/www/through_the_decades/ questionnaires/. The long-form questionnaire, which was generally sent to 1 in 6 households, included questions about the respondent's citizenship or birthplace; the short form did not. Measuring America at 78, 91-92.

Beginning in 2005, the Census Bureau began collecting the more extensive long-form data including citizenship—through the American Community Survey (ACS), which is sent yearly to about one in 38 households. *See* U.S. Census Bureau, Archive of American Community Survey Questions, https://www.census.gov/programs-surveys/acs/methodology/questionnaire-archive.html (noting citizenship questions on every ACS questionnaire). The introduction of the yearly ACS enabled the 2010 census to be a "short-form-only" census. The 2020 census will also be a "short-form-only" census. The ACS will continue to collect additional data each year, including information on the citizenship status of respondents. Because the ACS collects information from only a small sample of the population, it produces annual estimates only for "census tracts" and "census-block groups." The decennial census is designed to undertake a full count of the people and produces other, limited information down to the smallest geographic level, known as the "census block." As in past years, the 2020 census will pose a number of questions beyond the total number of individuals residing at a location, including questions regarding sex, Hispanic origin, race, and relationship status.

On March 26, 2018, the Secretary of Commerce issued a memorandum reinstating a

questionnaires asked for place of birth. *Id.* at 9, 11, 13. The census included an express question regarding citizenship in 1870. *Id.* at 13, 15. Decennial censuses from 1890 through 1950 specifically requested citizenship information more consistently, including asking for place of birth and (for some respondents) naturalization status and birthplace of parents. *Id.* at 22-62.

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citizenship question on the 2020 census questionnaire. Administrative Record ("AR") 1313-20.² The Secretary's reasoning and the procedural background are set out in that memorandum and in a supplemental memorandum issued on June 21, 2018. *Id.* 1321. The Secretary explained that, "[s]oon after [his] appointment," he "began considering various fundamental issues" regarding the 2020 census, including whether to reinstate a citizenship question. *Id.* As part of his deliberative process, he and his staff "consulted with Federal governmental components and inquired whether the Department of Justice (DOJ) would support, and if so would request, inclusion of a citizenship question as consistent with and useful for the enforcement of the Voting Rights Act." *Id.*

In a December 12, 2017 letter, DOJ responded that citizenship data is critical to its enforcement of Section 2 of the Voting Rights Act ("VRA") for several reasons, and that the decennial census would provide more-useful citizenship voting age population ("CVAP") data than that provided by the annual ACS survey. AR 663-665 [hereinafter Gary Letter]. In the letter DOJ "formally request[ed] that the Census Bureau reinstate into the 2020 Census a question regarding citizenship." *Id.* 665.

After receiving DOJ's formal request, the Secretary "initiated a comprehensive review process led by the Census Bureau," AR 1313, and asked the Bureau to evaluate the best means of providing the data identified in the letter. The Census Bureau initially presented three alternatives. *Id.* 1277-85. After reviewing those alternatives, the Secretary asked the Census Bureau to consider a fourth option, which would combine two of the options the Bureau had presented. *Id.* 1316. Ultimately, the Secretary concluded that this fourth option—reinstating a citizenship question on the census while simultaneously linking available administrative-record data to Census Bureau files—would "provide DOJ with the most complete and accurate CVAP data in response to its request." *Id.* at 1317.

² The Administrative Record ("AR") can be found at ECF Nos. 25 & 26.

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The Secretary also observed that collecting citizenship data in the decennial census has a long history and that the ACS has included a citizenship question since 2005. AR 1314. The Secretary therefore found, and the Census Bureau confirmed, that "the citizenship question has been well tested." *Id.* He further confirmed with the Census Bureau that the census-block-level citizenship data requested by DOJ are not available from the ACS. *Id.* The Secretary "carefully considered," but was unpersuaded by, concerns that reinstating a citizenship question would negatively impact the response rate for non-citizens. AR 1317. While the Secretary agreed that a "significantly lower response rate by non-citizens could reduce the accuracy of the decennial census and increase costs for non-response follow up ('NRFU') operations," he concluded that "neither the Census Bureau nor the concerned stakeholders could document that the response rate would in fact decline materially" as a result of a citizenship question. *Id.* 1315. Based on his extensive process of consultation and review, the Secretary determined that, to the best of everyone's knowledge, there is limited empirical data on how reinstating a citizenship question might affect response rates. *Id.* 1316.

The Secretary also emphasized that "[c]ompleting and returning decennial census questionnaires is required by Federal law," meaning that concerns regarding a decline in response rates were premised on speculation that some will "violat[e] [a] legal duty to respond." AR 1319. Despite the hypothesis "that adding a citizenship question could reduce response rates, the Census Bureau's analysis did not provide definitive, empirical support for that belief." *Id.* 1316. The Secretary further explained that the Census Bureau intends to take steps to conduct respondent and stakeholder outreach in an effort to mitigate any impact on response rates of including a citizenship question. *Id.* 1318. The Secretary also determined that even a decline in self-response several orders of magnitude greater than that estimated by the Census Bureau would still be remediated by the substantial contingency funding he had secured from Congress as part of the revised Lifecycle Cost Estimate. *Id.* 1319. In light of these considerations, the Secretary concluded that "even if there is some impact on responses, the value of more complete and accurate [citizenship] data derived from surveying the

entire population outweighs such concerns." Id. 1319.

II. Procedural History

Plaintiffs³ filed suit against Defendants on April 11, 2018, and filed their first amended complaint on May 3, 2018. Compl., ECF No. 1; 1st Am. Compl., ECF No. 17. Defendants sought dismissal based on Plaintiffs' lack of standing, the political question doctrine, lack of justiciability under the APA, and Plaintiffs' failure to state an Enumeration Clause claim. *See* Defs.' Mot. Dismiss, ECF No. 24-1. The Court denied this motion to dismiss. Order Denying Mot. Dismiss, ECF No. 49. Plaintiffs subsequently amended their complaint again on September 5, 2018. 2d Am. Compl. (SAC), ECF No. 55-2. This Motion for Summary Judgment is filed pursuant to the schedule entered by the Court on September 7, 2018. Corrected Scheduling Order, ECF No. 57.

LEGAL STANDARDS

"The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). "Claims seeking review of an agency action under the APA 'are adjudicated without a trial or discovery, on the basis of an existing administrative record . . . [and accordingly] are properly decided on summary judgment." *Johnson v. Sessions*, No. CV RDB-15-3317, 2018 WL 2762562, at *5 (D. Md. June 8, 2018) (citation omitted), *appeal filed* No. 18-1737 (4th Cir. Jul. 2, 2018). The court must uphold an agency decision unless it is found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," "contrary to constitutional right," "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right," or "without observance of procedure required by

³ Plaintiffs are individuals residing in Maryland, Arizona, Texas, Nevada, and Florida: Robyn Kravitz, Michael Kravitz, Catherine Nwosu, Nnabugwu Nwosu, Joanne Wilson, Alejandro Chavez, Richard McCune, Jose Moreno, Diana Alexander, Lauren Rachel Berman, Sarah Bryan, Virginia Garcia, Linda Rivas, Martha Sanchez, Sonia Casarez Shafer, Michael Kagan, Yamile Labori, Lazara Yoelvis Magadan, Elizabeth Buchanan, Jacob Cunningham, and Maegan Ortiz. *See generally* SAC & ¶ 3.

law." 5 U.S.C. § 706(2). "[T]he focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court." *Camp v. Pitts*, 411 U.S. 138, 142 (1973) (*per curiam*).

ARGUMENT

I. <u>Defendants Are Entitled to Summary Judgment Because Plaintiffs Cannot</u> Establish Their Standing.

Plaintiffs claim that they will be injured because the citizenship question will result in a decrease in self-response rates on the census, which will result in an undercount, which will lead to the states they live in being apportioned fewer congressional seats than they should otherwise have, the legislative districts in which they reside in those states being incorrectly sized, and the communities they live in receiving less federal funding. SAC ¶¶ 10, 118-49, 155-61, 168-73.

At summary judgment, Plaintiffs must bring forward specific evidence about the harms on which they seek to rely. Plaintiffs cannot meet this burden because there is no evidence that any of the feared harms will actually come to pass with sufficient certainty. Plaintiffs could only be harmed if (1) the citizenship question itself *causes* individuals to neglect their legal duty to respond to the 2020 census, such that a decrease in the initial self-response rate occurs because of the reinstatement of the citizenship question, (2) such a decline is not corrected by the Census Bureau's repeated efforts to encourage self-response, (3) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive non-response follow up ("NRFU") efforts, (4) such a decline is not corrected by the Census Bureau's extensive of imputation for any remaining uncounted households after NRFU, (5) to the extent that any net undercount remains after these comprehensive operations, Plaintiffs' *particular states and localities* are undercounted more than others (*i.e.*, there is a differential net undercount), and (6) any such differential net undercount actually changes the apportionment or funding of Plaintiffs' specific states and localities in light of both the magnitude of the differential net undercount and the national distribution of the differential net undercount. This long chain of

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are injured strains credulity and demonstrates both the very speculative nature of their purported injuries and their inability to directly attribute those hypothetical injuries to the addition of the citizenship question.

A. <u>Plaintiffs Bear the Burden of Establishing Their Article III Standing.</u>⁴

The doctrine of constitutional standing, an essential aspect of an Article III case or controversy, demands that a plaintiff have "a personal stake in the outcome of the controversy [so] as to warrant his invocation of federal-court jurisdiction." *Warth v. Seldin*, 422 U.S. 490, 498 (1975) (internal citation omitted). At its "irreducible constitutional minimum," the doctrine requires a plaintiff, as the party invoking the Court's jurisdiction, to establish three elements: (1) a concrete and particularized injury-in-fact, either actual or imminent; (2) a causal connection between the injury and defendants' challenged conduct, such that the injury suffered will be redressed by a favorable decision. *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560-61 (1992). The standing inquiry is "especially rigorous" where "reaching the merits of the dispute would force [the court] to decide whether an action taken by one of the other two branches of the Federal Government was unconstitutional." *Clapper v. Amnesty Int'l USA*, 568 U.S. 398, 408 (2013) (quoting *Raines v. Byrd*, 521 U.S. 811, 819-20 (1997)).

⁴ In an APA case, "the district judge sits as an appellate tribunal," *Am. Bioscience v. Thompson*, 269 F.3d 1077, 1083 (D.C. Cir. 2001), and claims are typically "properly decided on summary judgment" because they are "adjudicated without a trial or discovery, on the basis of an existing administrative record." *Johnson v. Sessions*, No. CV RDB-15-3317, at *5 (quoting *Audubon Naturalist Soc'y of the Cent. Atl. States, Inc. v. Dep't of Transp.*, 524 F. Supp. 2d 642, 659 (D. Md. 2007)). This case should be no different. In the event that the Court concludes an evidentiary hearing on standing is appropriate, that hearing should be limited to standing only (rather than the merits). The question on the merits, of course, is whether the Secretary's action was supported by the administrative record and consistent with the APA standard of review, and Plaintiffs should not be permitted to import their experts' post hoc criticisms of the Secretary's decision. *See Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc.*, 435 U.S. 519, 549 (1978) (stating the question in an APA case as "whether the challenged rule . . . finds sufficient justification in the administrative proceedings that it should be upheld by the reviewing court").

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The standing requirement of "injury in fact" requires a plaintiff to establish that it "'has sustained or is immediately in danger of sustaining a direct injury" as a result of the challenged action. *Spokeo, Inc. v. Robins*, 136 S. Ct. 1540, 1552 (2016) (citations omitted). The injury must be "concrete and particularized," *Lujan*, 504 U.S. at 560 (citations omitted), and not "merely 'conjectural' or 'hypothetical' or otherwise speculative." *Summers v. Earth Island Inst.*, 555 U.S. 488, 505 (2009) (quoting *Lujan*, 504 U.S. at 560). Thus, an alleged future injury must be "certainly impending"; "[a]llegations of possible future injury' are not sufficient." *Clapper*, 568 U.S. at 409 (quoting *Whitmore v. Arkansas*, 495 U.S. 149, 158 (1990), emphasis in *Clapper*).

The "fairly traceable" prong of standing requires Plaintiffs to prove that their certainly impending injuries "fairly can be traced to the challenged action of the defendant, and not injury that results from the independent action of some third party not before the court." *Simon v. E. Ky. Welfare Rights Org.*, 426 U.S. 26, 41-42 (1976). In the census context, merely a showing of differential net undercount is not enough, as there has never been a perfect census count. *See Carey v. Klutznick*, 653 F.2d 732, 735 (2d Cir. 1981). Plaintiffs instead must prove by a preponderance of the evidence that there will be an increase in the differential net undercount specifically attributable to the citizenship question.

"[T]here can be no genuine issue as to any material fact" where a party "fails to make a showing sufficient to establish the existence of an element essential to that party's case, and on which [it] [bears] ... the burden of proof." *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986). Thus, at the summary judgment stage, plaintiff must "set forth' by affidavit or other evidence 'specific facts" establishing standing" rather than merely presenting general factual allegations of injury, *White Tail Park, Inc. v. Stroube*, 413 F.3d 451, 459 (4th Cir. 2005) (quoting *Lujan*, 504 U.S. at 561), or else "Rule 56(c) mandates the entry of summary judgment" against them, *Celotex*, 477 U.S. at 322 (quoting Fed. R. Civ. P. 56(e)).

B. <u>Plaintiffs Cannot Show That the Citizenship Question Will Result in an Undercount.</u>

As an initial matter, Plaintiffs cannot show that the months-long census process, which includes aggressive and targeted advertising campaigns that not only educate the public on the census but also reinforce that all responses remain confidential under the law, will result in an undercount even assuming, arguendo, that the citizenship question resulted in any additional hesitancy to respond among certain individuals. First, those who choose not to respond to the citizenship question alone, or who cease completing questions on the census after they reach the citizenship question, will still be enumerated and, thus, would not contribute to any undercount. Second, the Census Bureau has extensive techniques to encourage individuals who did not initially respond, and provides at least five additional opportunities to self-respond. Third, for those who still have not responded, the Census Bureau will employ its NRFU process, one of the largest peacetime mobilizations in our Nation's history, which includes sending enumerators out to collect information from non-responders in Fourth, where enumeration efforts still fail, the Census Bureau uses high-quality person. administrative records from other federal agencies to enumerate individuals. As the Census Bureau's Chief Scientist and Associate Director for Research and Methodology therefore concluded, "there is no credible quantitative evidence that the addition of the citizenship question would affect the accuracy of the count." Declaration of John M. Abowd, Ph.D. ¶ 13 ("Abowd Decl."), Ex. A; see also id. ¶ 20 ("It is important to stress that the estimated decrease in self-response rates does not translate into an increase in net undercount, and the use of our estimates as if they did is wholly inappropriate."). As discussed below, these extensive procedures will ameliorate any risk of injury to Plaintiffs. Plaintiffs' speculative claimed injuries are far from "certainly impending" because they could come to pass only if every step described below fails. *Clapper*, 568 U.S. at 409.

This Court has previously held that Plaintiffs sufficiently alleged standing to survive a motion to dismiss, but that "[d]iscovery, and potential expert testimony, may later make it clear that these efforts [by the Census Bureau] will suffice to eliminate any potential undercount." Mem. Op. (MTD

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Order) at 14, ECF No. 48 at 14. Discovery has now closed, and Defendants present such evidence from their expert, Dr. Abowd. Plaintiffs will be unable to meet their burden at summary judgment to "set forth evidence of an injury in fact in addition to that provided in the complaint." *Pye v. United States*, 269 F.3d 459, 467 (4th Cir. 2001).

1. Individuals Are Prompted Multiple Times to Respond to the Census, and Their Responses Are Counted Even If They Are Incomplete or Do Not Respond to the Citizenship Question.

Even before its NRFU efforts begin, the Census Bureau has comprehensive plans in place to maximize self-response. Instructions to complete the census online or by telephone will initially be sent to most households, with the remaining households (those deemed less likely to have Internet access) receiving a paper questionnaire in the first mailing. 2020 Census Operational Plan: A New Design for the 21st Century, at 18, 21, 91, 95 (Sept. 2017, v.3.0), https://www2.census.gov/programssurveys/decennial/2020/program-management/planning-docs/2020-oper-plan3.pdf ("2020 Census Operational Plan"); Abowd Decl. ¶ 25-29. All households will receive a letter as a second contact reminding them to respond. Abowd Decl. 9 29. If households still do not self-respond, they will receive a postcard as the third contact, a letter and the paper version of the questionnaire as the fourth contact, and another postcard as the fifth contact. Id. ¶ 30; 2020 Census Operational Plan at 99. Each household can thus receive up to six mailings. 2020 Census Operational Plan at 99; see also Abowd Decl. ¶ 30. In addition to online instructions, all mailings include a toll-free number that provides assistance in self-responding. Abowd Decl. ¶ 30. Moreover, the 2020 census will be the first to rely extensively on digital methods and automation, and it will be the first census where individuals are encouraged to respond online. 2020 Census Operational Plan at 15, 18-19, 26, 88. The Census Bureau also engages in advertising and outreach efforts to inform people about the census and encourage them to self-respond. 2020 Census Operational Plan at 21, 92-94; Abowd Decl. ¶ 61 & n.52.

Furthermore, the actual enumeration could only be affected by households that completely choose not to respond—if a household simply skips the citizenship question (*i.e.*, so-called "item

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nonresponse," where a particular item on the questionnaire is left blank) or stops filling out the census questionnaire once they reach the citizenship question (*i.e.*, "breakoff") they will nonetheless be fully counted. *See* Abowd Decl. ¶ 35-38.

2. Any Households that Do Not Self-Respond Will Be Enumerated by NRFU Efforts.

If a household does not self-respond during the steps described above, which span six weeks, it does not mean that that household will not be enumerated. Instead, the Census Bureau's extensive NRFU operations will kick in, starting with the assignment of an enumerator to each nonresponding household address. Abowd Decl. ¶¶ 38-39; 2020 Census Operational Plan at 114. Enumerators physically visit housing unit addresses in order to enumerate households through an in-person interview. Abowd Decl. ¶ 39. Enumerators are dispatched utilizing a state-of-the-art optimizer that efficiently assigns cases and provides routes for field work.⁵ Census Operational Plan at 114; *see also* Abowd Decl. ¶¶ 45-51. The Census Bureau "considers the demographic characteristics of each unique geographic area" in selecting enumerators, and works to retain local enumerators, as well as enumerators with the language skills required to communicate with residents in each area. Abowd Decl. ¶¶ 49-50. Enumerators also have access to remote translation services for 59 non-English languages. *Id.* ¶ 50. If an enumerator is not able to connect with a resident during an in-person visit, the enumerator will leave a Notice of Visit form providing information about how the household can complete the 2020 census. *Id.* ¶ 51. A household may be visited by an enumerator up to 6 times. *Id.* ¶ 53 & n.43.

If the enumerator is unable to make contact with a household, and the household does not complete the 2020 census questionnaire as per the Notice of Visit, the Census Bureau will still enumerate that household. The Census Bureau will use administrative records if reliable records are

⁵ The increased efficiency from these technological advances will enable the Census Bureau to target advertising and NRFU resources toward areas with low response rates.

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available. Census Operational Plan at 22, 114, 117; Abowd Decl. ¶ 53. If such reliable data is not available, then the enumerator will attempt to contact a nearby proxy (such as a neighbor or building manager), and will enumerate the non-responding household through data provided by that proxy. Abowd Decl. ¶ 53 & n.41. As necessary, the most experienced and effective enumerators will be tasked to identify proxies. Census Operation Plan at 22, 114, 117; Abowd Decl. ¶ 53. Although proxy efforts, as well as imputation, may result in lower quality data for *demographic* questions relative to data from self-responses, they should not cause an undercount. *See* Abowd Decl. ¶ 53 ("The Census Bureau is not aware of any credible quantitative evidence suggesting that proxies in the census provide a greater net undercount or differential net undercount in comparison to self-response or in-person interviews."); *id.* ¶ 56 ("The Census Bureau is not aware of any credible quantitative data suggesting that imputation in the census leads to a greater net undercount or differential net undercount comparison to self-response or in-person interviews.").

The Census Bureau's NRFU operations are dynamic and, based on self-response rates, will be adjusted in real-time to ramp up media efforts and hire additional enumerators in areas of demonstrated need. *Id.* ¶¶ 64-67. If necessary, the Census Bureau can also assign enumerators to work overtime, shift enumerators between geographic regions, and even extend the NRFU period to obtain a full enumeration. *Id.* ¶¶ 66-67.

3. The Census Bureau's Combined Enumeration Efforts (Encouraging Self-Response, NRFU, Proxy Data, and Imputation) Will Correct Any Possible Decline in Initial Self-Response and Completely Enumerate the Population.

The Census Bureau expects that the completion of the exhaustive NRFU efforts described above "will result in a complete enumeration." $Id. \P 24$. In other words, there will be no undercount, differential or not. And, the Census Bureau has more than sufficient resources available to complete these steps, even in a worst-case scenario for self-response. $Id. \P 78$ ("The Census Bureau is prepared to conduct the 2020 Census NRFU operation and believes that those efforts will result in a complete enumeration.").

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The 2020 Census Life Cycle Cost Estimate ("LCCE") includes an estimated fiscal year 2020 cost for NRFU of approximately \$1.5 billion. *Id.* ¶ 58. This estimate is based on numerous factors, including the self-response rate at the start of the operation; self-responses received after the start of the operation; occupied, vacant and non-existent cases in the workload that are removed using administrative information; late additions to the workload; the number of days worked by enumerators; the average hours the enumerators work per day; the number of contact attempts to conduct the interview; training hours for enumerators; mileage travelled by enumerators; and other miscellaneous expenses. *Id.* ¶ 58. In fiscal year 2020, there will also be an additional \$1.7 billion in contingency funding that may be spent on NRFU. *Id.* ¶ 59.

The self-response rate built into the LCCE is in the range of 55.5% to 65.5%. And although the Census Bureau expects a self-response rate of 60.5%, all NRFU planning—including hiring of field staff and enumerators—is based on the lower bound of this estimate, 55.5%. For each percentage point increase or decrease in the overall self-response rate, the LCCE estimates \$55 million will be saved or spent. *Id.* ¶ 60. This estimate includes, for example, the cost of additional or less numerous field supervisors and enumerators, hours in the field, mileage, training costs, provisioning and usage of handheld devices, and impacts on printing, postage, and paper data capture operations.⁶

Under any conceivable scenario in which self-response rates may decline due to the citizenship question, the Census Bureau is fully equipped and funded to enumerate all those who would be enumerated absent a citizenship question. For example, even if there is a 10% decline in self-response among potential noncitizen households in 2020, and if 28.6% of households in the country match that description (a high estimate), *id.* ¶ 69, then the predicted increase in the NRFU workload would be

⁶ The estimate assumes that the increased or decreased percentage of housing unit addresses self-responding is not easier or harder to count than a representative percentage of those not responding to the census.

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approximately 3.6 million addresses, which would increase NRFU costs by \$137.5 million, far below the \$1.7 billion in fiscal year 2020 contingency funding.

C. <u>Even if an Undercount Occurred, Plaintiffs Cannot Show that It Would Affect Them</u> <u>Through Any Material Impact on Apportionment or Federal Funding.</u>

As discussed in detail above, the Census Bureau's plans to encourage self-response and to use NRFU efforts—including personal visits by enumerators and, eventually, imputation—to supplement that self-response will result in a complete enumeration, and thus Plaintiffs will not be injured. Even if, however, there was an undercount, Plaintiffs cannot show that it would be differential such that their specific states and localities would suffer a negative effect in apportionment or funding.

Indeed, to the contrary, Defendants' expert Dr. Stuart Gurrea has shown that there would likely be no effect on apportionment, and a highly uncertain, and minimal, effect on funding. Dr. Gurrea concluded that if the 2020 NRFU efforts were as successful as the 2010 NRFU efforts, using the scenarios put forth by Plaintiffs, "congressional apportionment does not change due to reinstatement of a citizenship question," even without considering additional mitigation efforts, such as imputation. Rule 26(A)(2)(B) Expert Report and Declaration of Stuart D. Gurrea, Ph.D. ¶ 12, 65-67 ("Gurrea Decl."), Ex. B. Similarly, assuming the 2010 NRFU success rate, Dr. Gurrea examined the funding scenarios put forth by Plaintiffs and estimated the funding decreases for the programs identified by Plaintiffs (Medicaid, CHIP, Supplemental Food Grants, WIC, Social Services Block Grants, Title I funding, and Surface Transportation Block grants) at most between one-hundredth of one percent and three tenths of one percent, again, without considering additional mitigation efforts, such as imputation. *Id.* ¶¶ 12, 64-97. This would hardly represent a material change. In light of this evidence, Plaintiffs cannot meet their burden to show an imminent, nonspeculative injury by a preponderance of the evidence based on either apportionment or funding.

D. <u>If Any Potential Injuries Existed, Plaintiffs Cannot Show that They Are Traceable to</u> the Citizenship Question or Redressable by That Question's Removal.

Finally, Plaintiffs cannot show that any injury—if one existed—is traceable to the addition of the citizenship question or would be redressed if the question were removed. First, Plaintiffs' supposition that the citizenship question will cause an undercount relies on individuals violating their legal duty to respond to the census. As the Secretary emphasized in his decision memo, "[c]ompleting and returning decennial census questionnaires is required by Federal law." AR 1319; 13 U.S.C. § 221. Defendants should not be held to blame for such hypothetical illegal acts.

Second, Plaintiffs must show that their claimed concerns will lead households which would respond to the census if it did not include a citizenship question to not respond to any part of the census because of the inclusion of a citizenship question at the end of the form. In other words, if households have confidentiality concerns in the current political climate such that they will decide not to respond to the census with or without a citizenship question, any resulting undercount cannot be deemed to be attributable to the Secretary's decision to add a citizenship question. And, as discussed above, households that leave the citizenship question blank but otherwise respond or break off at the citizenship question will still be enumerated, avoiding Plaintiffs' purported harms. "An injury sufficient to meet the causation and redressability elements of the standing inquiry must result from the actions of the respondent, not from the actions of a third party beyond the Court's control." Doe v. Va. Dep't of State Police, 713 F.3d 745, 755 (4th Cir. 2013) (quoting Mirant Potomac River, LLC v. EPA, 577 F.3d 223, 226 (4th Cir. 2009)). Indeed, Plaintiffs refer to concerns about a pre-existing "widespread climate of fear among citizen and noncitizen immigrants" and that certain groups "have become even more suspicious and distrustful of government efforts to collect personal data since President Trump took office." SAC ¶ 1, 111. Of course, concerns driven by the overall political climate, current immigration policy, or any other event except the presence of a citizenship question on the census are not traceable to Secretary Ross's actions and would not be redressed by the outcome of this lawsuit.

II. Defendants Are Entitled to Summary Judgment on the Enumeration and Apportionment Clause Claims Because the Secretary Will Conduct a Person-by-Person Enumeration.

Even if the Court concludes that Plaintiffs have established standing, the Court should grant judgment in favor of Defendants on the Enumeration Clause claim. Plaintiffs allege that Defendants violate the Enumeration Clause by including the citizenship question on the 2020 census because the question will diminish the response rates of non-citizens and their citizen relatives. SAC ¶¶ 151-56. This Court has already concluded "that when the Census Bureau unreasonably compromises the distributive accuracy of the census, it may violate the Constitution." MTD Order at 24. Defendants respectfully disagree with that conclusion.⁷ But even applying the Court's standard, Plaintiffs cannot meet their burden at summary judgment. Rather than challenging the 2020 census for unreasonably failing to conduct a person-by-person headcount of the population, Plaintiffs argue that reinstatement of a citizenship question will interfere with the actual enumeration by causing a differential undercount

New York, et al. v. Dep't of Commerce, et al., 18-cv-2921 (S.D.N.Y. July 26, 2018), ECF No. 215 at 58; NYIC, et al. v. Dep't of Commerce, et al., 18-cv-5025 (S.D.N.Y. July 26, 2018), ECF No. 70 at 58. This Court should likewise reject Wisconsin for this proposition.

⁷ *Wisconsin*, the authority cited by the Court for this proposition, is inapposite here. As Judge Furman recognized:

To read *Wisconsin* as Plaintiffs suggest would, therefore, lead ineluctably to the conclusion that each and every census—from the Founding through the present—has been conducted in violation of the Enumeration Clause. That would, of course, be absurd, and leads the Court to conclude instead that the Wisconsin standard applies only to decisions that bear directly on the actual population count. Notably, the Supreme Court's own language supports that limitation, as it held only that "the Secretary's decision not to adjust" the census count "need bear only a reasonable relationship to the accomplishment of an actual enumeration of the population." [Wisconsin,] 517 U.S. at 20 (emphasis added). That is, the Court did not purport to announce a standard that would apply to a case such as this one.

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of certain demographic groups. SAC ¶¶ 108, 111. But as this Court has made clear, the mere contention "that the citizenship question will affect the accuracy of the census does not automatically render the question unconstitutional" because "[t]he Census Bureau is not obligated, nor expected, to conduct a perfectly accurate count of the population." MTD Order at 23. Instead, Plaintiffs must establish, under this Court's prior ruling, that inclusion of a citizenship question on the 2020 census "*unreasonably compromises* the distributive accuracy of the census." MTD Order at 24 (first emphasis added). This they cannot do.

As discussed above, the undisputed material evidence shows that the Census Bureau's comprehensive NRFU procedures will attempt to contact nearly every person in the country, utilizing up to six mailings and multiple in-person visits by an enumerator. 2020 Census Operational Plan, at 88-92, 112-21. The operations in place for 2020 are more wide-ranging and more advanced than the operations performed in any previous census. Moreover, the Census Bureau is fully prepared and budgeted to conduct its extensive NRFU operations. As discussed above, Plaintiffs cannot sufficiently establish that—even if the citizenship question caused a decline in initial self-response—the Census Bureau's NRFU efforts, including imputation and proxy data, would not correct the decline and result in a complete enumeration.

While the possibility of an undercount exists in every census, the Constitution does not require perfection. *See Utah v. Evans*, 536 U.S. 452, 504 (2002) (Thomas, J., concurring in part and dissenting in part) (canvassing the history of census undercounts, including the first census in 1790); *Wisconsin v. City of N.Y.*, 517 U.S. 1, 6 (1996) ("Although each [of the 20 past censuses] was designed with the goal of accomplishing an 'actual Enumeration' of the population, no census is recognized as having been wholly successful in achieving that goal."); *Gaffney v. Cummings*, 412 U.S. 735, 745 (1973) (census data "are inherently less than absolutely accurate"); *Senate of the State of Cal. v. Mosbacher*, 968 F.2d 974, 979 (1992) (describing the 1990 census as "one of the best ever taken in this country" despite counting "approximately 98 percent of the population"); *City of L.A. v. Evans*, No. 01-cv-1671, 2001 WL

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34125617, at *2 (C.D. Cal. Apr. 25, 2001) ("Like all of its predecessors, Census 2000 produced less than perfect results."). As long as the Secretary has established procedures for counting every resident of the United States and there is no "unreasonable" impact on distributive accuracy, any undercount is a constitutionally permissible result of attempting to enumerate upwards of 325 million people across 3.8 million square miles. See U.S. & World Population Clock, https://www.census.gov/popclock/.

Thus, given the history of including demographic questions—including about citizenship on the census and the Census Bureau's extensive outreach campaign and NRFU operations to counteract any decline in self-response rates, Plaintiffs cannot establish that the citizenship question "*unreasonably* compromises the distributive accuracy of the census." MTD Order at 24. To the extent Plaintiffs' Enumeration Clause claim hinges on the contention that the decisionmaking *process* for reinstating a citizenship question "*unreasonably* compromises the distributive accuracy of the census," MTD Order at 24, that contention simply duplicates their claim that the Secretary's decision was arbitrary and capricious under the Administrative Procedure Act. Accordingly, the Court should grant judgment in favor of Defendants on Plaintiffs' Enumeration Clause claim.

III. <u>The Court Should Grant Judgment to Defendants on the APA Claims Because</u> the Secretary's Decision Was Reasonable and Within His Lawful Discretion.

The Court should grant judgment in favor of Defendants on the Plaintiffs' claims under the APA. The complaint alleges that the Secretary's decision to reinstate a citizenship question was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," "contrary to constitutional right," "in excess of statutory jurisdiction, authority, or limitations, or short of statutory right," and "without observance of procedure required by law." 5 U.S.C. § 706(2); *see, e.g.*, SAC ¶ 163. But Plaintiffs' claims fail because the Secretary's decision was reasonable and fully in accord with the Constitution and relevant statutes.

A. <u>The Secretary's decision was reasonable and easily survives arbitrary-and-capricious</u> review under the APA.

1. Agency actions are reviewed only for reasonableness.

In deciding an arbitrary-and-capricious claim under the APA, the question for the Court is whether the agency's decision "was the product of reasoned decisionmaking." Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 52 (1983). "Review under the APA is highly deferential," and "the agency action enjoys a presumption of validity and regularity." Outdoor Amusement Bus. Ass'n, Inc. v. Dep't of Homeland Sec., No. 16-cv-1015 (ELH), 2018 WL 4361800, at *9 (D. Md. Sept. 12, 2018) (citing Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 415 (1971)). The question before the Court is limited to "whether the agency's decision 'was based on a consideration of the relevant factors and whether there has been a clear error of judgment." Sierra Club v. Dep't of the Interior, 899 F.3d 260, 270 (4th Cir. 2018) (quoting Marsh v. Or. Nat. Res. Council, 490 U.S. 360, 377 (1989)). "That requirement is satisfied when the agency's explanation is clear enough that its 'path may reasonably be discerned."" Encino Motorcars, LLC v. Navarro, 136 S. Ct. 2117, 2125 (2016) (quoting Bowman Transp., Inc. v. Ark-Best Freight Sys, Inc., 419 U.S. 281, 286 (1974)). "[T]he Court may not substitute its policy judgment for that of the agency when the policy is rational." Johnson v. Dep't of Educ., No. 17-cv-2104 (RDB), 2018 WL 3420016, at *3 (D. Md. July 13, 2018); see also FERC v. Elec. Power Supply Ass'n, 136 S. Ct. 760, 782 (2016) ("A court is not to ask whether a regulatory decision is the best one possible or even whether it is better than the alternatives.").

The Court's review must be particularly deferential here because Plaintiffs challenge the Secretary's wide discretion over the census. "The text of the Constitution vests Congress with virtually unlimited discretion in conducting the decennial 'actual Enumeration," and "there is no basis for thinking that Congress' discretion is more limited than the text of the Constitution provides." *Wisconsin v. City of N.Y.*, 517 at 19 (quoting U.S. Const. art. 1, § 2, cl. 3) (emphasis added); *see also, e.g.*, *Baldridge v. Shapiro*, 455 U.S. 345, 361 (1982) (discussing the broad congressional authority in the area

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of the census). Congress, in turn, "has delegated its broad authority over the census to the Secretary." *Wisconsin*, 517 U.S. at 19 (citing 13 U.S.C. § 141(a)). The Census Act authorizes the Secretary to "take a decennial census of population . . . in such form and content as he may determine" and "obtain such other census information as necessary." 13 U.S.C. 141(a); *see also, e.g., Utab*, 536 U.S. at 472. Given this broad grant of discretion, "so long as the Secretary's conduct of the census is 'consistent with the constitutional language and the constitutional goal of equal representation,' it is within the limits of the Constitution." *Wisconsin*, 517 U.S. at 19-20 (quoting *Franklin v. Massachusetts*, 505 U.S. 788, 804 (1992)).

Lastly, the Court's review of Plaintiffs' APA claim should be confined to the record before the Secretary and resolved on summary judgment. "[W]hen a party seeks review of agency action under the APA, the district judge sits as an appellate tribunal." *Doe v. Tenenbaum*, 127 F. Supp. 3d 426, 436 n.2 (D. Md. 2012) (quoting *Rempfer v. Sharfstein*, 583 F.3d 860, 865 (D.C. Cir. 2009)). Thus, "the Court would appropriately dispose of the case on summary judgment even if, as a general matter, [a] dispute [of fact] were genuine." *Id.; see also Klock v. Kappos*, 731 F. Supp. 2d 461, 465 (E.D. Va. 2010) ("[I]n an action brought under the APA, there is no material fact at issue but only a question of law[.]"). That is because "a court must only consider the record made before the agency at the time the agency acted" and "may look only to [the agency's] *contemporaneous* justifications in reviewing the agency action," which means that "facts and justifications for agency action provided to a reviewing court for the first time are generally not to be considered." *Dow AgroSciences LLC v. Nat'l Marine Fisheries Serv.*, 707 F.3d 462, 467-68 (4th Cir. 2013); *see also Fort Sumter Tours v. Babbitt*, 66 F.3d 1324, 1335 (4th Cir. 1995) ("Judicial review of administrative action is generally confined to the administrative record.").

To the extent Plaintiffs seek to introduce expert testimony going to the merits, that testimony is not a proper subject of APA review. The opinions of these experts cannot properly be considered part of that record because they were not before the Secretary at the time of his decision and irrelevant to his decisionmaking process. *Camp*, 411 U.S. at 142; *see also, e.g., San Luis & Delta-Mendota Water*

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Auth. v. Locke, 776 F.3d 971, 993 (9th Cir. 2014) (concluding that the district court abused its discretion "when it used several extra-record declarations to question [the agency's] scientific judgments" and "open[ed] the administrative record as a forum for the experts to debate the merits"). Indeed, courts cannot "simply substitute the judgment of plaintiff's experts for that of the agency's experts." *Ohio Valley Envtl. Coal. v. Aracoma Coal Co.*, 556 F.3d 177, 201 (4th Cir. 2009). Moreover, the Court "cannot … determine who among competing experts presents the most reliable information or reaches the most correct conclusions." *Hart & Millers Islands Area Envtl. Grp., Inc. v. Corps of Eng'rs of the U.S. Army*, 505 F. Supp. 732, 747 (D. Md. 1980) (citing *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976)).

2. The Secretary reasonably explained his decision to reinstate a citizenship question on the decennial census.

Here, the record establishes that the Secretary articulated a satisfactory explanation for his reasonable decision, including a "rational connection between the facts found and the choice made." *State Farm*, 463 U.S. at 43. The Secretary explained in his decision memorandum that the census is an accepted means of collecting citizenship data. AR 1313-20. The Commerce Department's review of the issue showed "that collection of citizenship data by the census has been a long-standing historical practice," including through regular inclusion in the decennial census through 1950, in the long-form census through 2000, and in the ACS since 2005. *Id.* 1314. As the Secretary observed, "the decision to collect citizenship information from Americans through the decennial census was first made centuries ago." *Id.* 1319. Further, the inclusion of a citizenship question is far from unusual in comparative perspective; the United Nations recommends that nations inquire about citizenship and other countries include a citizenship question on their censuses. *Id.* Given the ubiquity of citizenship questions, the reinstatement of a question on the 2020 census was a subject under consideration by various government officials. *Id.*

Against this backdrop, the Secretary solicited DOJ's views on the subject and, in December 2017, received DOJ's formal request "that the Census Bureau reinstate on the 2020 Census

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questionnaire a question regarding citizenship." AR 663. The Gary Letter explains that citizenship data is "critical" to DOJ's Voting Rights Act enforcement because DOJ "needs a reliable calculation of the citizen voting-age population in localities where voting rights violations are alleged or suspected." *Id.* According to the Gary Letter, collecting such data through the decennial census, which would provide block-level CVAP data, is preferable to currently available ACS data. *Id.* 664-65. The Gary Letter therefore concluded that "the decennial census questionnaire is the most appropriate vehicle for collecting [citizenship] data, and reinstating a question on citizenship will best enable the Department to protect all American citizens' voting rights under Section 2." *Id.* 663.

The Secretary "set out to take a hard look at the request" and ensure that he "considered all facts and data relevant to the question." AR 1313. The Commerce Department and the Census Bureau "began a thorough assessment that included legal, program, and policy considerations." *Id.* This review included, for example, the preparation by the Census Bureau of a technical review of the request, *id.* 1277-85; a detailed exchange between the Commerce Department and the Census Bureau about the technical review, *id.* 1286-97; multiple meetings between the Secretary and Census Bureau leadership to discuss the Census Bureau's "process for reviewing the DOJ request, their data analysis, [the Secretary's] questions about accuracy and response rates, and their recommendations," *id.* 1313; and extensive engagement with stakeholders, *id.* 763-1276. At the conclusion of this process, the Secretary determined that the "census-block-level citizenship data requested by DOJ [was] not available" from existing surveys conducted by the Census Bureau. *Id.* 1314. The Secretary also reasonably accepted DOJ's determination that, because "DOJ and the courts use CVAP data for determining violations of Section 2" of the VRA, "having these data at the census block level will permit more effective enforcement." *Id.* 1313.

The Secretary thus proceeded to evaluate the available options. AR 1317. Through extensive consultation with the Census Bureau, the Secretary identified four alternatives: making no change in data collection but assisting DOJ with statistical modeling ("Option A"); reinstating a citizenship

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question on the decennial census ("Option B"); obtaining citizenship data from administrative records for the whole census population ("Option C"); and, at the request of the Secretary after receiving the Census Bureau's analysis, a combination of reinstating a question on the census and utilizing administrative-record data ("Option D"). *Id.* 1314-17. With the goal of "obtaining complete and accurate data" on citizenship, *id.* 1313, the Secretary concluded that Option D—"placing the question on the decennial census and directing the Census Bureau to determine the best means to compare the decennial census responses with administrative records"—would "provide DOJ with the most complete and accurate CVAP data in response to its request." *Id.* 1317.

Thus, the Secretary traced the steps from the facts found during the agency's extensive review of DOJ's request to his ultimate decision. AR 1313-20. Despite Plaintiffs' allegations that the Secretary failed to conduct an adequate review or adequately explain his reasoning, SAC ¶ 166, this reasonable explanation of the decisionmaking process is all that is required to survive arbitrary-and-capricious review. Even if the Court doubts that the Secretary's conclusions necessarily follow from the facts found, the Court "should 'uphold a decision of less than ideal clarity if the [Secretary's] path may reasonably be discerned." *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 513-14 (2009) (quoting *Bowman Transp., Inc.*, 419 U.S. at 286); *see also, e.g., Nat'l Elec. Mfrs. Ass'n v. U.S. Dep't of Energy*, 654 F.3d 496, 514-15 (4th Cir. 2011). And here, the Secretary's path is readily understood from his memorandum, including a "rational connection between the facts found and the choices made." *State Farm*, 463 U.S. at 43.

3. The Secretary engaged in an appropriate process, including the consideration of alternatives, and explained his rationale.

To the extent Plaintiffs suggest that the Secretary's decision was arbitrary and capricious because he "relied on factors which Congress has not intended [him] to consider," "failed to consider an important aspect of the problem" or "offered an explanation for its decision that runs counter to the evidence before the agency," *id.*, those claims are clearly belied by the record. The Secretary

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engaged in a process that identified various issues, considered alternative proposals, and explained his rationale for rejecting or accepting the different options presented based on the evidence before him. What matters for APA review is that the Secretary engaged in this process and deliberately considered the options—not whether his decision was "the best one possible or even whether it [was] better than the alternatives." *Elec. Power Supply Ass'n*, 136 S. Ct. at 782.

First, Plaintiffs cannot show that the Secretary failed to consider alternatives to reinstating a citizenship question. SAC ¶ 166. The Secretary considered four proposals and reasonably concluded that Option D would provide DOJ with the most complete and accurate CVAP data. AR 1314-17. That the Census Bureau recommended Options A or C, *id.* 1277, and expressed reservations about Option D, *id.* 1312, does not render the Secretary's decision unreasonable. Given the broad deference afforded the Secretary by virtue of the congressional delegation of broad discretion over the census, "the mere fact that the Secretary's decision overruled the views of some of his subordinates is by itself of no moment in any judicial review of his decision." *Wisconsin*, 517 U.S. at 23. The Secretary, "like all agency heads, usually makes decisions after consulting subordinates, and those subordinates often have different views." *St. Marks Place Hous. Co. v. Dep't of Hous. & Urban Dev.*, 610 F.3d 75, 83 (D.C. Cir. 2010). All that is required is that the Secretary consider the important issues—including those highlighted by his subordinates—and provide a rational explanation for his decision. *State Farm*, 463 U.S. at 43.

Plaintiffs also cannot show, for example, that the Secretary failed to consider effects on the response rates. SAC ¶¶ 108-17, 166. The Secretary reviewed the available materials and concluded that "no one provided evidence that reinstating a citizenship question on the decennial census would materially decrease response rates." AR 1315, 1317. The Secretary further explained that the Bureau could address any nonresponse through NRFU and, in any event, "the value of more complete and accurate data derived from surveying the entire population outweighs such concerns." *Id.* 1319. That judgment was informed by the fact that there is a legal duty to respond to the census, 13 U.S.C. § 221,

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and the Secretary concluded that the value of providing accurate data to DOJ was "of greater importance than any adverse effect that may result from people violating their legal duty to respond." AR 1319. Regardless, to help minimize any effect on response rates, the Secretary decided that the citizenship question should be the last question on the form. *Id.* 1320.

Plaintiffs also cannot show that the Secretary failed to consider the issue of testing for the reinstatement of a citizenship question. SAC ¶¶ 97-98, 166. When the Census Bureau receives a request from other agencies for a new question on the ACS, the Bureau typically "work[s] with the other agencies to test the question (cognitive testing and field testing)." AR 1296. In reviewing DOJ's request to reinstate a citizenship question, the Bureau concluded that, "[s]ince the question is already asked on the American Community Survey, [it] would accept the cognitive research and questionnaire testing from the ACS instead of independently retesting the citizenship question." *Id.* 1279. In his memorandum, the Secretary thus reasonably concluded that "the citizenship question has already undergone the cognitive research and questionnaire testing required for new questions." *Id.* 1319.

Lastly, to the extent Plaintiffs suggest the Secretary's decision was pretextual, SAC ¶ 166, they cannot demonstrate that he did not believe the rationale set forth in his decision memorandum or that his initial policy preferences, whatever they may have been, render his ultimate decision arbitrary and capricious. Even if the Secretary had additional reasons for reinstating a citizenship question or expressed interest in adding a question before hearing from DOJ, the APA analysis would remain unchanged. *Jagers v. Fed. Crop Ins. Corp.*, 758 F.3d 1179, 1186 (10th Cir. 2014) (rejecting argument that "the agency's subjective desire to reach a particular result must necessarily invalidate the result, regardless of the objective evidence supporting the agency's conclusion"). It is utterly unremarkable for an agency head to enter office with predispositions toward certain policy choices. That the Secretary thought reinstatement of a citizenship question "could be warranted," AR 1321, asked his staff to explore such an action, and decline to accept some of his other staff's recommendations is neither unexpected nor evidence of improper decisionmaking. *Wisconsin*, 517 U.S. at 23 ("[T]he mere

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fact that the Secretary's decision overruled the views of some of his subordinates is by itself of no moment in any judicial review of his decision."). As Justice Gorsuch explained, "there's nothing unusual about a new cabinet secretary coming to office inclined to favor a different policy direction, soliciting support from other agencies to bolster his views, disagreeing with staff, or cutting through red tape." *In re Dep't of Commerce*, _____ S. Ct. ___, 2018 WL 5259090, at *1 (Oct. 22, 2018) (Gorsuch, J., concurring in part and dissenting in part).

B. <u>The Secretary's decision was not otherwise unlawful.</u>

Plaintiffs also argue that the Secretary's decision was unlawful because it did not conform to the requirements of the Constitution or federal statute. To the extent Plaintiffs again argue that the Secretary will fail to conduct an actual enumeration, or otherwise violated constitutional mandates, SAC ¶ 166, those claims are unavailing for the reasons set forth above. Plaintiffs also contend that the Secretary violated the Information Quality Act (IQA), Pub. L. No. 106-554, § 1(a)(3) (Dec. 21, 2001) (published at 44 U.S.C. § 3516 note); directives issued by the Office of Management and Budget (OMB) pursuant to the Paperwork Reduction Act (PRA), 44 U.S.C. §§ 3501-21; and a provision of the Census Act governing the contents of certain reports to Congress, 13 U.S.C. § 141(f)(3). SAC ¶¶ 96, 105-07, 166.

First, as to the IQA and the relevant OMB directives, neither provides a basis for judicial review of the Secretary's decision to reinstate a citizenship question. The Fourth Circuit rejected just such a claim that an agency violated the IQA in *Salt Institute v. Leavitt*, 440 F.3d 156 (4th Cir. 2006), *aff'g Salt v. Thompson*, 345 F. Supp. 2d 589, 602 (E.D. Va. 2004). "By its terms, this statute creates no legal rights in any third parties," the court explained, and consequently Plaintiffs cannot "establish an injury in fact sufficient to satisfy Article III." *Id.* at 159. Any putative injury is not properly traced to information-quality standards, nor would an order from this Court directed at those standards remedy any of Plaintiffs' alleged injuries. In any event, as courts have repeatedly held, the IQA and relevant OMB guidelines do not provide the substantive standards necessary to review under the APA, *see* 5

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U.S.C. § 701(a)(2), and this Court has no basis by which to judge a putative violation of informationquality standards. *See, e.g., Styrene Info. & Research Ctr., Inc. v. Sebelius*, 944 F. Supp. 2d 71, 82 (D.D.C. 2013); *Family Farm All. v. Salazar*, 749 F. Supp. 2d 1083, 1092 (E.D. Cal. 2010); *Ams. for Safe Access v. Dep't of Health & Human Servs.*, No. 07-cv-1049 (WHA), 2007 WL 4168511, at *4 (N.D. Cal. Nov. 20, 2007). There is therefore no APA cause of action. *See, e.g., Habitat for Horses v. Salazar*, No. 10-cv-7684, 2011 WL 4343306, at *7 (S.D.N.Y. Sept. 7, 2011). Thus, Plaintiffs' information-quality claims are unreviewable and, in any event, they lack standing to bring them.

Plaintiffs' allegations of purported violations of 13 U.S.C. § 141(f)(3), meanwhile, are factually incorrect and beyond the scope of this Court's jurisdiction. As an initial matter, the Secretary notified Congress of Defendants' intent to reinstate a citizenship in March 2018 after the Secretary received DOJ's request, satisfying any reporting obligation the Secretary may have had under § 141(f) and negating any suggestion that Congress was not fully informed. In any event, the APA "does not provide judicial review for everything done by an administrative agency," Invention Submission Corp. v. Rogan, 357 F.3d 452, 459 (4th Cir. 2004) (quoting Hearst Radio v. FCC, 167 F.2d 225, 227 (D.C. Cir. 1948)), and the adequacy of Defendants' § 141(f) reports is not subject to judicial review. Under the APA, a plaintiff "must identify some 'agency action' that affects him in the specified fashion," Lujan, 497 U.S. at 882, and "agency action" is a term of art, defined as "the whole or a part of an agency rule, order, license, sanction, relief, or the equivalent or denial thereof, or failure to act." 5 U.S.C. § 551(13). Here, a report to Congress is none of the enumerated actions subject to judicial review, nor is it "the equivalent ... thereof." Id. A report does not determine Plaintiffs' rights or obligations; rather, it conveys information to Congress. Guerrero v. Clinton, 157 F.3d 1190, 1195 (9th Cir. 1998); see also, e.g., Nat. Res. Def. Council, Inc. v. Hodel, 865 F.2d 288, 316-19 (D.C. Cir. 1988). In any event, any purported defects in Defendants' reports do not create the sort of redressable Article III injury necessary to sustain the Court's jurisdiction. Any relief addressed at a putative violation of a reporting requirement cannot be shown to have any concrete effect on Congress that would redress an alleged injury.

Guerrero, 157 F.3d at 1194 (explaining that "nothing that [the Court] could order with respect to the reports or their adequacy can make Congress do anything"); *see also, e.g., Renee v. Duncan*, 686 F.3d 1002, 1016-17 (9th Cir. 2012) (explaining that the courts could not redress an injury based on an alleged violation of a requirement "to file an annual report to Congress"); *Wilderness Soc'y v. Norton*, 434 F.3d 584, 591 (D.C. Cir. 2006). There is no dispute of material fact that prevents the Court from entering judgment for Defendants on these purely legal issues.

CONCLUSION

For the foregoing reasons, summary judgment should be granted in Defendants' favor on Plaintiffs' claims, and this case should be dismissed with prejudice.

Dated: November 12, 2018

Respectfully submitted,

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Counsel for Defendants

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EXHIBIT A
IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF CALIFORNIA SAN FRANCISCO DIVISION

ROBYN KRAVITZ, <i>et al.,</i> Plaintiffs,	Civil Action No. 8:18-cv-01041-GJH
v. UNITED STATES DEPARTMENT OF COMMERCE, <i>et al.</i> , Defendants.	
LA UNIÓN DEL PUEBLO ENTERO, <i>et al.,</i> Plaintiffs,	Civil Action No. 8:18-cv-01570-GJH
v.	
WILBUR L. ROSS, JR., et al.,	
Defendants.	

Declaration of John M. Abowd, Ph.D.

November 7, 2018

I. Introduction

Qualifications

- 1. I am the Chief Scientist and Associate Director for Research and Methodology at the United States Census Bureau. I have served in that capacity since June 2016. My position is covered by an Intergovernmental Personnel Act (IPA) agreement between Cornell University and the Census Bureau. At Cornell, I am the Edmund Ezra Day professor of economics, professor of statistics and information science, and director of the Labor Dynamics Institute.
- 2. In 1977, I received my Ph.D. in economics from the University of Chicago with specializations in econometrics and labor economics. My B.A. in economics is from the University of Notre Dame.
- 3. I have been a university professor since 1976. My first appointment was assistant professor of economics at Princeton University. I was also assistant and associate professor of econometrics and industrial relations at the University of Chicago Graduate School of Business. In 1987, I was appointed associate professor of industrial and labor relations with indefinite tenure at Cornell University, where I am still employed.
- 4. I am a member and fellow of the American Statistical Association, Econometric Society, and Society of Labor Economists (president 2014). I am an elected member of the International Statistical Institute. I am also a member of the American Economic Association, International Association for Official Statistics, National Association for Business Economists, American Association for Public Opinion Research, and American Association of Wine Economists. I regularly attend and present papers at the meetings of all of these organizations.
- 5. I currently serve on the American Economic Association Committee on Economic Statistics. I have also served on the National Academy of Sciences Committee on National Statistics, the Conference on Research in Income and Wealth Executive Committee, and the Bureau of Labor Statistics Technical Advisory Board for the National Longitudinal Surveys (chair: 1999-2001).

Relevant professional experience

- 6. In 1998, the Census Bureau and Cornell University entered into the first of a sequence of IPAs and other contracts under which I served continuously as Distinguished Senior Research Fellow at the Census Bureau until I assumed my current position in 2016, under a new IPA contract. While I was a senior research fellow, I worked with numerous senior executives. This includes Directors (Martha Riche, Kenneth Prewitt, C. Louis Kincannon, Stephen Murdoch, Robert Groves, and John Thompson), Deputy Directors (Hermann Habermann, Thomas Mesenbourg, and Nancy Potok), Chief Scientists (Roderick Little and Thomas Louis), and numerous other associate directors, assistant directors, and division chiefs. I also worked with Chief Economists John Haltiwanger, J. Bradford Jensen, Daniel Weinberg, and Lucia Foster, and researchers in all program areas.
- 7. I was one of three senior researchers who founded the Longitudinal Employer-Household Dynamics (LEHD) program at the Census Bureau. This program produces detailed public-use statistical data on the characteristics of workers and employers in local labor markets using large-scale linked administrative, census and survey data from many different sources. The program is acknowledged as the Census Bureau's first 21st Century data product: built to the specifications of local labor market specialists without additional survey burden, and published using state-of-the-art confidentiality protection. In addition to very substantial financial support from the Census Bureau, this project was

supported by a \$4.1 million grant from the National Science Foundation (NSF) on which I was the lead Principal Investigator.

- 8. From 2004 through 2009, I was the lead Principal Investigator on the \$3.3 million NSF-supported collaborative project with the Census Bureau to modernize secure access to confidential social science data. This project led to the first production implementation worldwide of differential privacy¹ for OnTheMap—a product of the LEHD program. It also produced prototype confidential data access systems with public-use synthetic micro-data supported by direct analysis of the confidential data on validation servers. These projects were the precursors to the Census Bureau's current program to implement central differential privacy for all publications from the 2020 Census of Population and Housing, which will be the first large-scale production implementation worldwide.
- 9. From 2011 until I assumed my position as Chief Scientist at the Census Bureau in 2016, I was the Principal Investigator of the Cornell University node of the NSF-Census Research Network (NCRN), one of eight such nodes that worked collaboratively with the Census Bureau and other federal statistical agencies to identify important theoretical and applied research projects of direct programmatic importance to the agencies. The Cornell node produced the fundamental science explaining the distinct roles of statistical policymakers and computer scientists in the design and implementation of differential privacy systems at statistical agencies.
- 10. I have published more than 100 scholarly books, monographs, and articles in the disciplines of economics, econometrics, statistics, computer science, and information science. I have been the principal investigator or co-principal investigator on 35 sponsored research projects. My full Curriculum Vitae is attached to this report.

What I was asked to analyze

- 11. I was asked to provide expert analysis in three areas:
 - a. Is there credible quantitative evidence that the addition of a citizenship question on the 2020 Census would affect the cost and quality of that census?
 - b. Are the activities of the Census Bureau appropriate and adequate to address any cost and quality consequences that might arise during the conduct of the 2020 Census?
 - c. Did the Census Bureau follow appropriate statistical quality standards when it placed the citizenship question from the American Community Survey onto the proposed questionnaire in the 2020 Census without further testing?

Key conclusions

12. The Census Bureau produced credible quantitative evidence that the addition of a citizenship question to the 2020 Census could be expected to lower the self-response rate in an identifiable and large sub-population—households that may contain non-citizens. The lower self-response rate can be expected to increase Nonresponse Followup (NRFU) costs and lower the quality of census data other than the count itself. Therefore, the Census Bureau can and will make appropriate adjustments to various components of the 2020 Census, including NRFU and the Integrated Partnership and Communications Program to mitigate these effects.

¹ Differential privacy is the leading privacy-enhancing data publication method in computer science.

- 13. Neither the Census Bureau nor any external expert has produced credible quantitative evidence that the addition of a citizenship question to the 2020 Census would increase the net undercount or increase differential net undercounts for identifiable sub-populations. Therefore, there is no credible quantitative evidence that the addition of the citizenship question would affect the accuracy of the count.
- 14. The citizenship question on the American Community Survey was thoroughly tested, most recently in 2006. Neither the Census Bureau's Quality Standards nor the Office of Management and Budget Statistical Policy Directives require further testing of this question before it can be used on the 2020 Census. If the OMB believes that further testing is necessary, it may request and provide clearance for such testing before issuing the clearance for the 2020 Census.

II. Quantitative evidence on the effects of the citizenship question

- 15. The purpose of the Decennial Census of Population and Housing is to conduct an actual enumeration of the population and disseminate the results to the President, the states, and the American people. The Census Bureau conducts the census in the 50 states, the District of Columbia, Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands. When conducting a decennial census, our goal is to count everyone once, only once, and in the right place.
- 16. The 2020 Census has been in testing, development and implementation for almost a full decade. On December 12, 2017, the Department of Justice requested the addition of a question on citizenship for the purpose of producing block-level statistics on the citizen voting-age population in support of enforcement of the Voting Rights Act. On March 26, 2018, the Secretary of Commerce instructed the Census Bureau to add a question on citizenship to the 2020 Census.
- 17. In the course of the deliberations and research that occurred at the Census Bureau between December 15, 2017, when we were notified of the Department of Justice (DoJ) request, and the present, I supervised the preparation of a sequence of technical responses to the DoJ request (AR 1277-1285, 1308-1312) and the work of a team of researchers who subsequently released a technical working paper in August 2018 (COM_DIS00009833–989). I will only summarize them here.
- 18. First, at the time those memos and research papers were written, I was not aware of any randomized controlled trial (RCT) that provided credible quantitative information about the effects of the addition of a citizenship question on the net undercount in the decennial census. That is still the case. Randomized controlled trials are the gold standard for internal validity, and none exist that can address the potential consequences for net undercount (the coverage measure of choice for assessing the accuracy of a decennial census). Even if such an RCT had existed, there would remain the question of generalizability of its results. However, disagreement about the generalizability of an internally valid RCT estimate of an effect of the citizenship question on the net undercount should be a discussion based on specific evidence rather than an expert opinion based on accumulated experience.
- 19. Second, the internal Census Bureau research relies on an alternative to RCTs, called a *natural experiment* or *difference-in-difference* estimator, to quantify the potential effect of a citizenship question on the *unit self-response rate*—the rate at which households voluntarily complete the census questionnaire and return it to the Census Bureau. The research statistically isolates a particular sub-population—households that contain at least one non-citizen or at least one person with unknown citizenship status—and compares it to a different sub-population—households that contain only citizens. The details of the way those sub-populations were isolated can be found in the technical

paper. The salient result is that households containing at least one noncitizen or person of unknown citizenship status may be less likely to self-respond to the 2020 Census if it contains a question on citizenship. Putting the question on the census is therefore likely to depress self-response on average if the control group—households that contain all citizens—do not change their self-response rates. Because we must rely on a natural experiment, however, we have no evidence on control group behavior. That is because we cannot design the estimator to produce the quantity we seek to address (overall effect on self-response) and must work with the quantity we can estimate (the differential effect on self-response in the households with non-citizens compared to households with citizens). These estimates of the effect of the presence of a citizenship question on self-response rates are used in the next section to estimate the increased NRFU costs (discussed below).

- 20. It is important to stress that the estimated decrease in self-response rates does not translate into an increase in net undercount, and the use of our estimates as if they did is wholly inappropriate. Controlling net undercount depends critically on the Census Bureau's ability to fully enumerate the housing stock in the country, and then to determine which housing units are occupied, vacant, or nonexistent. Once a housing unit is known to be occupied, the quality of the data recorded for the occupants of that housing unit depends critically on self-response. Voluntary self-response produces much more accurate measures of the age, sex and other variables measured by the questionnaire. This is distinct from the process by which the Census Bureau ensures that it gets an accurate count in the NRFU operation (as measured by the net undercount statistics in the coverage evaluation program).
- 21. Third, our research clearly showed that there is a serious issue regarding the accuracy of self-reported citizenship status. We did this by using record linkage methods to compare the answers on surveys to the citizenship status recorded in high quality administrative data. For individuals identified as citizens in the administrative data and who answer the citizenship question in the ACS, over 99 percent self-report that they are citizens. For individuals identified as noncitizens in the administrative data, a substantial minority (30 to 35 percent, depending on the year) report that they are citizens.
- 22. Given the cost and data-quality concerns, the Census Bureau consistently recommended using administrative records rather than a citizenship question. However, this recommendation does not imply that asking the citizenship question will result in a less accurate count. We have no credible quantitative evidence to support that conclusion.

III. Nonresponse followup consequences of the citizenship question

23. Nonresponse followup (NRFU) is the largest of the decennial census field data collection operations. The primary purpose of NRFU is to conduct in-person contact attempts at each and every housing unit address that did not provide a response to the decennial census questionnaire using an online questionnaire, by returning a completed paper questionnaire, or by providing response information to a Census customer service representative over the telephone. We estimate, after providing approximately six weeks for individuals to respond, that the self-response rate will be 60.5 percent of all housing units.² This self-response rate estimate means that we also estimate that 39.5 percent of the housing unit addresses in the universe will not initially respond.³ In NRFU,

² U.S. Census Bureau (2017d) page 15.

³ Calculated value – 100 percent minus 60.5 percent.

field representatives (known as enumerators) attempt to locate each nonresponding housing unit address, determine its status (occupied, vacant, non-existent), and for occupied housing unit addresses conduct an interview with a knowledgeable person who can provide responses to the decennial census questionnaire.

24. The Census Bureau is prepared to conduct the 2020 Census NRFU operation and believes that those efforts will result in a complete enumeration. The Census Bureau has demonstrated the ability to successfully conduct a NRFU operation in previous censuses and in the 2018 End-to-End Census Test, the last field test prior to the 2020 Census. It has tested the operational design in evaluations over the course of the decade. The evaluations, along with historical data from past censuses and the American Community Survey, have informed the Census Bureau's operational design and the assumptions supporting that design. These evaluations have identified factors that could impact the operational implementation of NRFU. They have also provided evidence on the effects of an operational outcome such as a lower than estimated self-response rates.⁴ Contingency funding to handle deviations from the planned operations are built in to the Life Cycle Cost Estimate (LCCE). The decision to include a question on citizenship has not impacted the NRFU operational design, but it will modify the execution of that design, if the self-response rate at the start of NRFU is below the estimate built into the LCCE. As documented in Section II, there is no evidence, to date, that the addition of the citizenship question will result in a less accurate enumeration. We are, however, prepared to react, adjust, and complete NRFU to ensure an accurate count and deliver the highest quality census data.

Background

- 25. To understand how the NRFU efforts work, one must first understand the basic methodology used for counting individuals for purposes of the decennial census. To conduct the census, the Census Bureau must consider all places where someone lives or could live as of April 1, 2020 (Census Day). We classify these places as one of two types of *living quarters*: housing units and group quarters. Living quarters are usually found in structures intended for residential use, but also may be found in structures intended for nonresidential use as well as in places such as tents, vans, hotels/motels, and emergency and transitional shelters.
- 26. A *housing unit* is a structure such as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or, if vacant, intended for occupancy) as *separate living quarters*. Separate living quarters are those in which the occupants live separately from any other individuals in the building and that have direct access from outside the building or through a common hall. For the 2020 Census, there are approximately 144.3 million⁵ housing unit addresses. *Group quarters* comprise a diverse range of group living arrangements, and include, for example: college or university student housing, residential treatment centers, skilled nursing facilities, group homes, correctional facilities, maritime vessels, workers' dormitories, domestic violence shelters, emergency shelters, and soup kitchens. Resident services are provided at group quarters and may

⁴ For example, preliminary analysis of the 2018 End-to-End Census Test suggests that shortfalls in recruiting NRFU enumerators can be partially or fully offset by efficiency gains from the Field Operational Control System.

⁵ Internal Document: August 14, 2018 2020 Census Type of Enumeration Areas (TEA) – Final TEA Delineations for Approval, page 3 "Total" row rounded to the nearest 100,000.

include custodial or medical care as well as other types of assistance. Residency is commonly restricted to those receiving these services. For the 2020 Census, there are approximately 300,000 group quarter addresses.⁶

Methods of Enumeration

27. In the 2020 Census, there are six ways in which occupants of a housing unit can be enumerated. Respondents can complete the census⁷ by: using the online questionnaire, using the paper questionnaire, providing their information to a Census customer service representative over the telephone, or providing their information in-person when a Census field representative visits their address. Occupants of a housing unit can also be counted through the use of high-quality administrative data or proxy interviews. As discussed in detail below, if an individual does not provide an initial self-response to the census, NRFU efforts are used to ensure that an actual enumeration takes place, and in the small percent of housing units for which we are unable to obtain an enumeration, we impute⁸ the information for these housing units. I discuss below the various steps the Census Bureau takes to ensure that a complete enumeration occurs.

Initial Contact

Mail Delivery Areas

- 28. In geographic areas where the United States Postal Service (USPS) delivers mail to the majority of the addresses, and the majority of the housing units have a house number and street name, commonly called a *city-style address*, the Census Bureau mails information to occupants instructing them as to how to respond to the census. These areas are more likely to be urban and suburban parts of the country. Approximately 137.5 million⁹ housing unit addresses of the 144.3 million housing unit addresses, or 95.3 percent¹⁰, will be enumerated using a contact strategy consisting of five mailings. The mailing activities, known as mailout, occur between mid-March and the end of April 2020.
- 29. There are two approaches to the first mailing. Approximately 80 percent of the addresses will receive a letter inviting the occupants to complete the 2020 Census questionnaire online.¹¹ For the remaining 20 percent of the housing unit addresses, the first mailing contains a paper questionnaire along with

⁶ Internal Document: September 29, 2017 version of the 2020 Census Lifecycle Cost Estimate Assumptions Table 12, sum of Rows "Group Quarters Enumeration", "Service-based Enumeration -Shelters", "Service-based Enumeration - Soup Kitchens" and "Service-based Enumeration - Targeted Non-Shelter" in the "Workload" column rounded to the nearest 100,000.

⁷ Data collected in the 2020 Census include name, relationship, sex, age, date of birth, Hispanic origin, race, citizenship, and tenure.

⁸ Imputation is a well-established statistical methodology for filling in responses when they are missing, either for individual items or for all the items at the address including the population count.

⁹ Internal Document: August 14, 2018 2020 Census Type of Enumeration Areas (TEA) – Final TEA Delineations for Approval, page 3 "TEA 1 – Self Response" row rounded to the nearest 100,000.

¹⁰ Calculated value – 137.5 divided by 144.3 then multiplied by 100 rounded to one decimal place.

¹¹ Calculated value – 100 percent minus 20 percent, see next reference.

the invitation to complete the questionnaire online.¹² Areas that receive the paper questionnaire in the first mailing are tracts¹³ where the Census Bureau observed low self-response rates in the American Community Survey¹⁴ and where respondents are more likely to send back a paper form. In addition, in deciding to mail a paper questionnaire, the Census Bureau also added tracts with high concentrations of people aged 65 or over or with relatively low internet access.¹⁵

30. The remaining four mailings (mailings two through five) are reminders to encourage households to respond. The second mailing is a letter; the third mailing is a postcard; the fourth mailing is a letter, but also contains a paper questionnaire; and the fifth mailing is a postcard. The first two mailings are delivered four days apart and are sent to all housing unit addresses, regardless of whether they have may have already responded to the census using the online questionnaire, using the paper questionnaire, or provided their information to a Census customer service representative over the telephone. The remaining three mailings are sent only to nonresponding housing unit addresses. All the mailings include information on how to complete the questionnaire online, along with toll-free telephone numbers to obtain assistance in completing the questionnaire. When speaking with the Census customer service representative, a respondent may be provided the opportunity to complete a questionnaire over the phone. If an eligible occupant of the housing unit does not complete the online questionnaire, the paper questionnaire, or provide their information over the telephone, a Census field representative will visit the address to determine the housing unit status (occupied, vacant, or non-existent) and, if occupied, conduct the interview in person. These in-person interviews are conducted during the NRFU operation. For some nonresponding cases, the Census Bureau will use administrative data if we are unable to conduct the in-person interview.

¹² Internal Document: September 29, 2017 version of the 2020 Census Lifecycle Cost Estimate Assumptions Table 6, 2020 Printing Information Sub-Table in the "Initial Questionnaire" column heading.

¹³ A Census tract is generally a contiguous set of blocks with a population size between 1,200 and 8,000 people, with a target size of 4,000 people. Census blocks are statistical areas bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads. Generally, census blocks are small in area; for example, a block in a city bounded on all sides by streets. Census blocks in suburban and rural areas may be large, irregular, and bounded by a variety of features, such as roads, streams, and transmission lines. In remote areas, census blocks may encompass hundreds of square miles. Census blocks cover the entire territory of the United States, Puerto Rico, and the Island Areas. Census blocks nest within all other tabulated census geographic entities and are the basis for all tabulated data. (https://www.census.gov/geo/reference/gtc/gtc_block.html)

¹⁴ The American Community Survey is a nationwide survey designed to provide communities with reliable and timely social, economic, housing, and demographic data every year. The Census Bureau uses data collected in the American Community Survey to provide estimates on a broad range of population, housing unit, and household characteristics for all geographic areas in the United States, including states, counties, cities, American Indian and Alaska Native areas, tribal sub-division areas, school districts, Congressional Districts, census tracts, and block groups.

¹⁵ Federal Communications Commission (FCC) data were used in determining areas with low internet access.

Hand Delivery Areas

31. In geographic areas where the Census Bureau has concerns about accurate mail delivery by the USPS, Census field representatives hand deliver information to occupants on how to respond to the census. These areas are more likely to be rural parts of the country with a combination of city-style and non-city-style addresses.¹⁶ Approximately 6.5 million housing unit addresses¹⁷ of the 144.3 million housing unit addresses, or 4.5 percent¹⁸, will be enumerated using the approach where Census field representatives deliver a paper questionnaire along with the invitation to complete the 2020 Census online. The delivery activities, known as Update Leave, for this approach occur between mid-March and mid-April 2020. In addition, the USPS delivers to all mailable addresses a reminder letter on April 1, 2020, followed by a reminder postcard on April 20, 2020. The materials include the toll-free telephone numbers to obtain assistance in completing the questionnaire. When speaking with the Census customer service representative, the respondent may be provided the opportunity to complete a questionnaire over the phone. If the occupant of the housing unit does not complete the online questionnaire, the paper questionnaire, or provide their information over the telephone, a Census field representative will visit the address in NRFU to determine the housing unit status (occupied, vacant, or non-existent) and, if occupied, conduct the interview in person. For some nonresponding cases, the Census Bureau will use administrative data if we are unable to conduct the in-person interview.

Remote Areas

32. In geographically remote areas with low housing unit density that are sparsely populated or have challenges with accessibility, a Census field representative will visit addresses to conduct an inperson interview in lieu of a mailing. These areas are very rural parts of the country and include remote areas of Alaska. These geographic areas contain approximately 35,000¹⁹ housing unit addresses of the 144.3 million housing unit addresses, less than 0.02 percent²⁰ of the addresses in the country.

¹⁶ Non-city-style addresses are not house number and street name formatted, for example: Rural Route 4 Box 12.

¹⁷ Internal Document: August 14, 2018 2020 Census Type of Enumeration Areas (TEA) – Final TEA Delineations for Approval, page 3 "TEA 6 – Update Leave" row rounded to the nearest 100,000.

¹⁸ Calculated value – 6.5 divided by 144.3 then multiplied by 100 rounded to one decimal place.

¹⁹ Internal Document: August 14, 2018 2020 Census Type of Enumeration Areas (TEA) – Final TEA Delineations for Approval, page 3 sum of "TEA 2 – Update Enumerate" and "TEA 4 – Remote Alaska" rows rounded to the nearest 1,000.

 $^{^{20}}$ Calculated value – 0.242 divided by 144.3 then multiplied by 100 rounded to two decimal places.

U.S. Military Bases

33. Finally, housing units owned by the U.S. Military on bases will be enumerated through administrative records provided by Defense Manpower Data Center.²¹ There are approximately 242,000²² housing unit addresses of the 144.3 million housing unit addresses on military bases, about 0.2 percent²³ of the addresses in the country.

Self-Response Rates

34. For the planning purposes in the 2020 Census, we are projecting a national self-response rate in areas where the USPS or Census field representatives deliver materials in the range of 55.5 percent to 65.5 percent.²⁴ After allowing approximately six weeks for self-response, NRFU will begin.²⁵ At the start of the NRFU operation, the Census Bureau estimates a national self-response rate of 60.5 percent, the midpoint of the range noted above. This means we estimate that 39.5 percent of the housing unit addresses will not self-respond by the start of NRFU operations. The estimated self-response rate of 60.5 percent, 61 percent, and 64 percent in the 1990, 2000, and 2010 Censuses, respectively, at equivalent dates in their planning cycles.²⁶ The breakdown of the estimated self-response rate from the three data collection modes that support self-response is 45.0 percent through the Internet, 11.2 percent by paper, and 4.3 percent by telephone.²⁷

Missing Data

35. It is important to draw a distinction between *item nonresponse* and *total/unit nonresponse*, particularly as it relates to those cases that are included in the 2020 Census NRFU workload. *Item nonresponse* refers to the absence of an answer to one or more questions on the census questionnaire. Item nonresponse can occur for self-responses (Internet, telephone, or paper) and can also occur with in-person collected responses. For example, item nonresponse occurs when the occupant of a

²¹ Defense Manpower Data Center serves under the Secretary of Defense to collate personnel, manpower, training, financial, and other data for the Department of Defense; and provides information on military personnel and their families living on Military bases.

²² Internal Document: August 14, 2018 2020 Census Type of Enumeration Areas (TEA) – Final TEA Delineations for Approval, page 3 "TEA 5 – Military" row rounded to the nearest 1,000.

 $^{^{23}}$ Calculated value – 6.5 divided by 144.3 then multiplied by 100 rounded to one decimal place.

²⁴ U.S. Census Bureau (2017d) page 15.

²⁵ In some geographic areas around college and university campuses where the spring semester ends prior to the start of NRFU in mid-May, we will conduct what we refer to as early NRFU. Early NRFU will begin in early April. This is done in an attempt to reach students and faculty who might otherwise have returned home or moved elsewhere by the time the Census Bureau begins NRFU in earnest. For the bulk of the country, we determine the initial NRFU universe in early May and begin the field work to reach nonresponding housing unit addresses around mid-May.

²⁶ Bates (2017) page 876 Figure 1.

²⁷ Internal Document: September 29, 2017 version of the 2020 Census Lifecycle Cost Estimate Assumptions Table 2, row "After 6 weeks – Cut NRFU Workload", "Mid" columns for "Internet %", Mail %" and "Phone %".

housing unit address answers the online questionnaire but does not provide a response to the race question or does not provide a response to the age and date of birth questions for one or more occupants in the housing unit.

- 36. Self-responses with item nonresponse are not included in the NRFU workload.²⁸ For example, if the Census Bureau receives a self-response where the respondent answered all the questions except the citizenship question, the housing unit address associated with that self-response would not be included in the NRFU workload. Item nonresponse does not impact the accuracy of the count. After the total person counts have been established, missing item data are then imputed to ensure that all persons have characteristic values for the purpose of tabulating other census information products such as the PL94-171 redistricting data.
- 37. In contrast, *total/unit nonresponse* refers to cases for which the Census Bureau has received no self-response data for a housing unit address. This means that the Census Bureau has no information about how many people may live at the housing unit address and has no information about any person(s) who may be living at the housing unit address including names, relationship, sex, age, dates of birth, Hispanic origin, race, citizenship, and tenure.
- 38. Housing unit addresses with total/unit nonresponse are included in the NRFU workload. Without the additional efforts undertaken in the NRFU operation to determine the status (occupied, vacant, non-existent) and, when occupied, to collect response data, the Census Bureau's goal of counting everyone once, only once, and in the right place is not achievable. However, at the conclusion of NRFU, total/unit nonresponse cases that remain unresolved are subject to imputation to assign status and household size. And, as stated above, once the total person counts have been established, missing item data are imputed to ensure all persons have characteristic values. In the 2010 Census, 0.38 percent or approximately 522,000 housing unit addresses had an imputed population count.

The 2020 Census Nonresponse Followup Operation

39. The Census Bureau implements robust field data collection operations, known as Nonresponse Followup, to ensure a complete enumeration of nonresponding housing unit addresses. NRFU is conducted in areas where the USPS or Census field representatives (known as enumerators) deliver materials notifying the occupants to respond to the 2020 Census. Of the 144.3 million housing unit addresses nationwide, approximately 144.0 million²⁹ housing unit addresses or 99.8 percent³⁰ are in these areas.³¹ While the options to self-respond using the online questionnaire, a paper questionnaire, or over the telephone are readily available, there are many housing unit addresses that require the Census Bureau to send an enumerator to conduct an interview in person because an initial response to the questionnaire was not received by the time the Census Bureau begins NRFU. The 2020 Census

²⁸ Some self-responses with item nonresponse do go to NRFU. The Census Bureau maintains a set of sufficiency criteria that determine whether enough information has been supplied on a self-response to keep the occupied housing unit out of NRFU. These criteria vary by collection mode. The specifications for the sufficiency criteria are still in flux for the 2020 Census.

²⁹ Calculated value – 137.5 million plus 6.5 million.

 $^{^{30}}$ Calculated value – 144.0 divided by 144.3 then multiplied by 100 rounded to one decimal place.

 $^{^{31}}$ The remaining 0.2 percent of the housing unit addresses are in Remote Areas or on U.S. Military bases. Calculated value – 100 percent minus 99.8 percent.

NRFU operation is designed to enumerate these households and will occur between early April and the end of July 2020. The primary purposes of NRFU are:

- a. To determine or resolve the housing unit status (occupied, vacant, or non-existent) for addresses for which the Census Bureau has not received an initial self-response via the online questionnaire, a paper questionnaire, or by telephone.
- b. To collect census response data for housing units determined to be occupied.
- 40. NRFU was one of the 24 operations³² successfully implemented in the 2018 End-to-End Census Test conducted in Providence County, Rhode Island.³³ This demonstrated our ability to conduct the NRFU.
- 41. The 2020 Census has a multi-tiered approach to managing the field operations, starting with the Census Bureau Headquarters in Suitland, Maryland; through six Regional Census Centers in New York, Philadelphia, Atlanta, Chicago, Dallas, and Los Angeles; to 248 Area Census Offices³⁴ that are located across the country.³⁵
- 42. At the Area Census Offices, there is also a multi-tiered approach to managing the field operations, starting with the Area Census Office Manager (ACOM); to the Census Field Managers (CFM); to the Census Field Supervisors (CFS); to the enumerators that actually visit addresses that did not respond online, by paper, or over the telephone. At the national level, to support NRFU, the Census Bureau plans to hire 248 ACOMs, about 1,400 CFMs, about 15,000 CFSs, and about 295,000 enumerators.³⁶ On average, at the national level, each ACOM supervises 5.5 CFMs, who each supervise 10.8 CFSs, who each supervise 20 enumerators.³⁷
- 43. The Census Bureau determined the number of Area Census Offices through a data-driven process based on the number of Census field staff needed for the NRFU operation. The Census Bureau used several data sources to estimate the number of field staff needed, such as historical response rates from the 2010 Census, the estimated NRFU workload, and the locations of group quarters. The Census Bureau then used the following criteria to delineate the Area Census Office boundaries:
 - At least one Area Census Office per state
 - Must not split Indian Reservations (regardless of county, state, or regional boundaries)
 - Must not split Military bases
 - Must not cross state or regional boundaries (with noted exceptions above)
 - Will align with county boundaries (except for counties with multiple Area Census Offices)

³² Internal Document: 2018 End-to-End Census Test Plan, page 4.

³³ The 2020 Census operational design involves 35 distinct but integrated operations and 52 integrated systems.

³⁴ U.S. Census (2017c) page 1. There are an additional five offices, one each in American Samoa, Guam, and the Northern Mariana Islands, and two offices in the U.S. Virgin Islands.

³⁵ This includes the 50 states, the District of Columbia, and Puerto Rico.

³⁶ Internal email: August 10, 2018.

³⁷ Internal email: August 10, 2018.

- Will contain at least one major city
- Must consider compactness, transportation networks, and impassable features/water bodies
- 44. Given these criteria, it was not possible to delineate Area Census Offices with similar NRFU workloads. The estimated Area Census Office workloads range from about 64,000 to 494,000³⁸ with an average workload of approximately 228,000³⁹ cases. Given the variation in the estimated workloads, the number of CFMs, CFSs, and enumerators allocated to each Area Census Office will vary to account for the differences in the NRFU workloads. Therefore, offices with smaller workloads will be allocated fewer field managers, supervisors, and enumerators; and offices with larger workloads will be allocated more staff.
- 45. For the first time in a decennial census, the Census Bureau will provide enumerators with iPhone 8 smart phones for their work on the 2020 Census NRFU operation. Their devices will be pre-loaded with several applications for use in their day-to-day activities:
 - Field Data Collection Application Used by enumerators to enter work availability, view their daily case load, conduct the interview, and complete payroll activities. The data collection application is available in English and Spanish.
 - Field Data Collection Training Application Used to train enumerators on how to complete activities in the Field Data Collection Application.
 - E-Quest Training Application Used to teach enumerators about the Census, the NRFU operation, and day-to-day activities they will perform in their position.
 - MOJO Mapping Displays an enumerator's daily caseload on a map.
 - Apple Maps Used by enumerators to get turn-by-turn directions to their assigned cases.
- 46. The NRFU operation workload is primarily managed via the Field Operational Control System,⁴⁰ which is an automated system that tracks information on both enumerators and NRFU cases. One feature of Field Operational Control System is an optimizer that determines the most efficient set of cases to assign the enumerators and determines the most efficient routing of their field work. For example, the optimizer will assign cases to enumerators whose home addresses are closest to the addresses that require an in-person interview. The optimizer will also route enumerators to their assigned cases in an order that takes into consideration the best time to contact a particular household.
- 47. Each evening, enumerators will enter their work availability into the field data collection application to indicate the hours they are able to work for the following five days. The optimizer will, in overnight processing, analyze the enumerators' availability and the other critical information regarding the case, enumerators' home locations, their hours of availability, and best times to contact

³⁸ Internal Document: NRFU Workload Estimates by ACO, minimum and maximum rounded to the nearest 1,000.

³⁹ Internal Document: NRFU Workload Estimates by ACO, sum of the estimated ACO NRFU workloads divided by 248 rounded to the nearest 1,000.

⁴⁰ In every decennial census, we develop and utilize capabilities to manage the field operational data collection processes. In the 2010 Census, the capabilities existed within a system referred to as the Paper-based Operational Control System (PBOCS). For the 2020 Census, the capabilities exist within the Field Operational Control System. The capabilities can and do differ from census to census; however, the capabilities are at their core fundamentally similar. The Field Operational Control System is new development and not simply a re-use of the 2010 Census PBOCS code.

the case. Based on the optimizer's analysis, the enumerators are assigned nonresponding cases to work. When enumerators log into their iPhones in the morning, their assignments will be loaded onto their devices to enable their work for the day. The cases will be sorted in the optimal order to ensure the enumerators travel to their cases and conduct interview attempts in the most efficient manner possible. This system was among the systems successfully tested in the 2018 End-to-End Census Test.

- 48. Enumerators will use the field data collection application and mapping applications (MOJO mapping and Apple maps) that are loaded onto the iPhones to conduct their interviews. The data collection application will guide the enumerators through their activities for completing interviews. It provides them with scripting for the introduction and the specific census questions and it also provides extensive help screens for answering any questions the respondents may ask during the interview. Enumerators conduct interviews with household respondents when they successfully make contact. The field data collection application was among the systems successfully tested in the 2018 End-to-End Census Test.
- 49. The Census Bureau recognizes that some housing unit addresses in the NRFU workload can be more difficult to locate or interview. This could be due to a lack of awareness about the Census, language barriers, concerns about providing sensitive information, or other reasons. With regard to language barriers, the Census Bureau's recruiting strategy considers the demographic characteristics of each unique geographic area. The Census Bureau attempts to recruit and hire enumerators from the communities where they live and where they will work. In so doing, we also consider the language skills enumerators may need to communicate with the residents of nonresponding addresses.
- 50. If an enumerator encounters a language barrier and there is no one available at the address who speaks English, the enumerator shows the respondent a Language Identification Card that displays a message in 59 non-English languages. The respondent uses the card to identify the language s/he speaks. The enumerator captures information on the language spoken. If the respondent identifies one of the 12 non-English languages supported by our Internet Self-Response application or the Census Bureau's Census Questionnaire Assistance centers, the enumerator will provide the respondent information regarding how to provide their responses online or over the telephone. In addition, the NRFU enumeration application is available in both English and Spanish. Should subsequent contact attempts at nonresponding housing unit addresses with language barriers be necessary, the Census Bureau will assign the case to an enumerator who possesses the necessary language skills and/or engage an interpreter who can accompany an enumerator to assist in the collection of the census response data.
- 51. If the enumerators are unable to make contact with a knowledgeable respondent, they leave a Notice of Visit form at the address. The Notice of Visit provides the household with their census identification number and instructions as to how they can self-respond to the 2020 Census. It also informs the household that someone will return at a future time to attempt to collect their census responses.
- 52. With regard to providing sensitive information, the Census Bureau recognizes that some nonrespondents may be concerned about providing their information to the enumerator during an inperson interview. The design of the NRFU operation provides these nonresponding households with the capability to participate in the census without having to provide their information to the enumerator. As stated earlier, the Notice of Visit form provides the household with its census identification number and instructions as to how they can self-respond to the 2020 Census. Once the

Census Bureau receives a household's information it will remove the household from the NRFU workload. These Notice of Visit forms have proven to be an effective tool to remind households that they can still self-respond to the census and did increase the overall self-response rate. In the 2018 End-to-End Census Test, about 9 percent of the NRFU households were resolved when a self-response was received during the NRFU operation. In addition, if during the in-person interview the respondent refuses to answer a question, for any reason, the question will be left blank.

- 53. The Field Operational Control System maintains information on the number of contact attempts for each case. How an enumerator handles a case depends on the number of previous attempts to conduct the interview. For example, once an enumerator has attempted to contact and interview a household a particular number of times, s/he is able to contact a proxy⁴¹ respondent to collect information about the persons living in the nonresponding housing unit. The Census Bureau is not aware of any credible quantitative evidence suggesting that proxies in the census provide a greater net undercount or differential net undercount in comparison to self-response or in-person interviews. Similarly, once a NRFU case has received a maximum threshold for attempts, final attempt procedures may be used to ensure that sufficient data are recorded for that household. If the Census Bureau has high quality information on the household from reliable administrative records sources,⁴² those data will be used for households that cannot be successfully contacted and interviewed in the first NRFU visit. For other cases that reach the maximum attempt threshold,⁴³ but for which there are not reliable data from administrative records sources, additional attempts will be made by the most experienced and effective enumerators to contact the household or proxy respondents to gather the necessary information.
- 54. At the end of each day, enumerators will enter the hours worked, mileage traveled, and any other expenses incurred while conducting interviews that day into the field data collection application. The information they provided is validated and approved by the CFSs and informs payroll activities.

55. At the conclusion of NRFU every case in the initial NRFU workload will receive a final outcome:

- Removed from the workload because a self-response was obtained during NRFU;
- Completed interview with a household respondent;
- Completed interview with a proxy respondent;
- Partial interview with a household respondent;
- Partial interview with a proxy respondent;
- Enumerated using administrative records;
- Vacant or nonexistent status;
- Unresolved.
- 56. For cases that remain unresolved after all attempts have been made to contact and interview the household, the housing unit will be enumerated through imputation. The Census Bureau is not aware

⁴¹ Examples of a proxy respondent are a neighbor or building manager.

⁴² Examples of administrative records are information from the Internal Revenue Service or the Social Security Administration.

⁴³ The maximum number of attempts is six.

of any credible quantitative data suggesting that imputation in the census leads to a greater net undercount or differential net undercount in comparison to self-response or in-person interviews.

57. The NRFU operation is expected to be the source of census data for approximately 37.5 percent⁴⁴ of housing unit addresses for the 2020 Census, so the quality of the data collected during the operation is critical to the quality of the census overall. Therefore, a rigorous quality control program is implemented as part of the NRFU operation. A sample of NRFU cases is reinterviewed to verify that the enumerators conducted the interview and, if not, to obtain the data. Data from these reinterviews are compared to the original interviews to detect discrepancies that could be indicative of errors, procedural violations, or data falsification. If any errors are detected, rework is implemented as necessary to ensure accurate data are secured for all followup households. In the 2010 Census, nearly 2 million cases were selected to be reinterviewed and about 100,000 of those were determined to be in error and required recontact and enumeration.⁴⁵

The Nonresponse Followup Operation Budget

- 58. The NRFU operation is the most expensive of the decennial census field data collection operations. The 2020 Census Life Cycle Cost Estimate (LCCE) includes an estimated fiscal year 2020 cost for NRFU of approximately \$1.5 billion.⁴⁶ The variables that inform this estimate are factors impacting the NRFU workload such as the self-response rate at the start of the operation, self-responses received after the start of the operation, occupied, vacant and non-existent cases in the workload that are removed using administrative information, late adds, reinterview, re-works, and Field Verification⁴⁷ workloads. There are additional factors that inform the cost estimate such as the number of days the enumerators work, the average hours the enumerators worked per day, the number of contact attempts to conduct the interview, training hours for the CFSs and enumerators, mileage, and miscellaneous expenses.
- 59. All of these variables contribute to the 2020 Census NRFU cost estimate and each has some degree of uncertainty associated with it. Quantifying the effects of the uncertainty associated with each variable impacting the NRFU costs is part of a programmatic assessment and calculation of contingency. Although the Census Bureau does not attribute specific contingency dollars to each operational component, contingency funds are available in the event it needs to react to any number of unexpected events, including, but not limited to a lower than expected self-response rate. The

⁴⁴ The 37.5 percent is based on an estimated 60.5 percent self-response rate at the start of NRFU and an estimated additional 2 percent self-response during NRFU that will be removed from the workload.

⁴⁵ U.S. Census Bureau (March 21, 2013) page 12 Table 5 column 2 rows 3 and 7 rounded to nearest million and nearest 100,000, respectively.

⁴⁶ Internal Document: September 29, 2017 version of the 2020 Census Lifecycle Cost Estimate Assumptions Table 3, NRFU Operation Costs Sub-Table, "Total Cost" row "Total" column.

⁴⁷ Field Verification is a component of the NRFU workload where we have received a self-response that requires confirmation that the address exists.

2020 Census Program has an estimated \$2.6 billion⁴⁸ in contingency built into the Life Cycle Cost Estimate. In fiscal year 2020,⁴⁹ the program will have approximately \$1.7 billion⁵⁰ in contingency.

60. The 2020 Census Lifecycle Cost Estimate for the incremental cost or savings from a one percentage point decrease or increase in the self-response rate for the 2020 Census is \$55 million.⁵¹ The estimate is derived from the proportional costs of conducting the NRFU operation per percentage of nonresponding housing unit addresses. This includes the cost of additional or lowered field supervisors and enumerators, hours in the field, mileage, training costs, provisioning and usage of handheld devices, and impacts on printing, postage, and paper data capture operations. The estimate assumes that the increased or decreased percentage of housing unit addresses self-responding is not easier or harder to count than a representative percentage of those not responding to the census. It also assumes no change in the number of Area Census Offices or the levels of Area Census Office and Regional Census Center staff to support field operations.

Adjusting to Change

61. There is an inverse relation between the self-response rate and the NRFU workload. As the self-response rate increases, the NRFU workload decreases. There are several factors that could result in lower than expected self-response rates. For instance, a decrease in confidence by the public in the Census Bureau's ability to keep their information private. This could occur as the result of cyber incidents (perceived or actual) at the Census Bureau, another Federal agency, or the private sector. Additionally, negative stories about the 2020 Census in the press, in social media, or by *trusted voices*⁵² can also adversely impact self-response. If respondents are unaware of the census, they may not self-respond to the 2020 Census. Respondents also may simply be unwilling to self-respond. Finally, natural disasters can prevent the USPS and/or Census field staff from delivering materials to respondents.

⁴⁸ Internal email: September 11, 2018.

⁴⁹ NRFU is conducted in fiscal year 2020.

⁵⁰ Internal email: September 11, 2018. Of the \$1.7 billion in contingency, approximately \$1.1 billion is risk-based and the remaining \$0.6 billion is Secretarial-based. To use the risk-based contingency, the 2020 program needs approval from the Census Bureau's 2020 Census Executive Steering Committee and concurrence from the Under Secretary. To use the Secretarial-based contingency, the 2020 program needs approval from the Census Bureau's 2020 Census Executive Steering Committee, the Under Secretary and the Secretary of Commerce. For both contingencies, the program is required to notify the Office of Management and Budget and Congressional Committees if we plan to use the money.

⁵¹ Internal email: September 11, 2018.

⁵² Through our Integrated Partnership and Communications Program, the Census Bureau works closely with national, state, local, and tribal stakeholders that people trust to help communities understand the importance of responding to the Census. Census partners are major organizations, like the National Congress of American Indians, the National Association of Latino Elected Officials, and the National Urban League and community-based organizations like churches or other religions organizations, health clinics, and legal offices. Hundreds of thousands of Census partners join together during the Census to carry the message forward that participating in the census is safe and important. They are the *trusted voices* that help people understand that being included in the final count is critical for their communities.

- 62. To address these challenges, the Census Bureau takes steps to ensure that it meets its self-response rate goals at both the national and Area Census Office levels. The techniques are employed before and during NRFU. On the cybersecurity front, the Census Bureau has a robust multi-tiered cyber security plan that engages cyber security partnerships and external experts aimed at reducing the possibility of an incident. The Census Bureau also establishes partnerships with trusted voices to help in promoting the 2020 Census. The communication, advertising, and partnership efforts, known collectively as the Integrated Partnership and Communications Program, are implemented at the national and sub-national levels with the goals of maximizing self-response and encouraging cooperation during NRFU. In addition, before the start of NRFU, the Census Bureau can deploy Census field staff in the communities to assist with self-response, implement supplemental mailings in targeted areas, and blitz areas with paper questionnaires.
- 63. The Census Bureau employs a comprehensive process to prepare for the NRFU operation, including steps to estimate workload and the staffing required to support and complete the operation in the time allotted. The recruiting strategy is based on current environmental factors (such as the unemployment rate and local wage rates) and historical experience. The Census Bureau plans to recruit multiples of the estimated number of people needed to conduct the operation. For example, in the 2010 Census, to meet a target employment of approximately 857,000 people, it recruited approximately 3,900,000 applicants.⁵³ This recruiting target allows for applicants who may not ultimately be employed for any number of reasons while providing a suitable applicant pool of qualified candidates from which to select, train and deploy supervisors and enumerators to the field. Additionally, if the Census Bureau is challenged in meeting its recruiting and hiring targets it has the ability to increase local pay rates to meet its staffing needs.
- 64. The Census Bureau conducts real-time monitoring of the self-response rates at different geographic levels; i.e., at the national level and at local levels.⁵⁴ Daily monitoring is done leading up to the start of NRFU, as well as during the operation. Monitoring the self-response rates provides the information to take actions through the Integrated Partnership and Communications Program to increase self-response before the NRFU operation, encourage cooperation with our NRFU field staff, and ramp up efforts to encourage self-response during the operation. The Census Bureau can also increase hiring targets to account for increases in the NRFU workload.
- 65. As stated above, the Census Bureau's contact strategy in self-response areas⁵⁵ involves multiple contacts aimed at raising awareness and encouraging participation. It also provides respondents multiple ways of self-responding, with and without their census identification number. Respondents can provide their information online or over the telephone without having to provide the census identification number (NonID processing). Especially in areas where the Census Bureau is challenged in reaching households due to natural disasters, NonID processing can compensate for the failure to deliver a form or reach the household with an enumerator. Beginning before the peak self-response operations, and continuing through the end of NRFU, the Census Bureau will also employ a multi-faceted communication and advertising campaign focused on an extensive range of strategies aimed at also raising awareness and encouraging participation.

⁵³ U.S. Census Bureau (2011) page 23 Table 4.

⁵⁴ Local level represents areas at and below the Area Census Office level.

⁵⁵ This includes mail delivery and hand delivery areas.

- 66. In the event that it does not achieve its target 2020 Census self-response rate, contingency strategies are available to allow the Census Bureau to deploy enumerators to areas where the NRFU workload is higher than expected. As mentioned above, the Census Bureau's recruiting strategy is designed to provide an ample pool of resources from which it can pull, providing it the flexibility needed to expand beyond the number of CFMs, CFSs and enumerators it estimated it would need. In addition, although the Census Bureau's preference is to have enumerators work in the geographic areas where they live, it has the ability to assign work to enumerators in other areas. In some instances, this could mean assigning work in areas within the Area Census Office in which they were hired or even assign work in other Area Census Offices. The important flexibility is that the Census Bureau can "move" people to the areas at any point in time. Another contingency strategy, should it fall short of staffing needs in certain geographic areas, is the ability to authorize overtime for the enumerators. Providing the opportunity for enumerators to work overtime increases the number of hours available for completing the NRFU operation.
- 67. Finally, if needed, the Census Bureau has the ability to extend the period of time allocated for completing the NRFU operation. Extending the data collection period, either alone or in combination with the strategies above, allows enumerators to continue working to complete the necessary follow-up with all nonresponding addresses. As noted above, the 2020 Census Life Cycle Cost Estimate considers the uncertainty around each of the variables and allows an estimated \$2.6 billion in contingency, including approximately \$1.7 billion in contingency for fiscal year 2020. These contingency funds will be used to pay for increased NRFU should any of the events noted above occur.

Assessment of the Effects of Potential Outcomes

Possible Decrease in Self-Response Rates

- 68. As noted in the discussion of Brown et al. (2018) in Section II, they estimated the potential increase in the NRFU workload as a result of the citizenship question under several scenarios. Their method assumed that households⁵⁶ containing only citizens would have self-response rates that are unaffected by the inclusion of the citizenship question. Thus, the NRFU workload for these households would not be impacted. This assumption is known as a "counterfactual." It is a maintained assumption that permits the analysis of the effects of other changes. It is not a prediction about the behavior of these households. As noted in Section II, the Census Bureau has limited credible quantitative evidence about the overall effect of the inclusion of a citizenship question on the decennial census.
- 69. The households that are potentially impacted are those with at least one non-citizen or at least one person with unknown or missing citizenship status.⁵⁷ Brown et al. (2018) estimated that between 9.8 percent and 28.6 percent⁵⁸ of such households⁵⁹ could potentially contain at least one non-citizen. Of these households, they estimated the possible reduction in the self-response rate from the inclusion

⁵⁶ Households are occupied housing units.

⁵⁷ There is a large overlap between households potentially containing at least one non-citizen and households with at least one Hispanic. Households potentially including at least one non-citizen or at least one Hispanic are 33.6 percent of the households.

⁵⁸ Brown et al. (2018) page 42.

⁵⁹ The estimated number of households is 126 million addresses from Brown et al. (2018) page 42.

of the citizenship question to be between 5.1 and 5.8 percentage points.⁶⁰ This resulted in a potential increase in the NRFU workload between 0.6 million and 2.1 million housing unit addresses.⁶¹ Thus, there is a potential decrease in the national self-response rate between 0.4 and 1.5 percentage points.⁶² The increased cost to NRFU for each percentage point decrease in the national self-response rate is approximately \$55 million. Therefore, the increase in the NRFU cost would range between \$22.0 million and \$82.5 million⁶³, which is well under the \$1.7 billion in fiscal year 2020 contingency.

- 70. I now consider some alternative cost estimates based upon varying parameters of the estimates in the previous paragraph. If one were to assume a reduction in self-response of only 2.0 percentage points among households with at least one noncitizen or person of unknown citizenship status and use the larger estimate of 28.6 percent of such households in the population, then the predicted increase in the NRFU workload would be approximately 0.7 million⁶⁴ addresses. The potential decrease in the overall self-response rate would be 0.5 percentage points⁶⁵, leading to a predicted increase of \$27.5 million⁶⁶ in NRFU costs. If one were to assume a reduction in self-response of 10.0 percentage points among affected households and using the upper bound of 28.6 percent of such households in the population, then the predicted increase in the NRFU workload would be approximately 3.6 million⁶⁷ addresses. The potential decrease in the overall self-response rate would be 2.5 percentage points⁶⁸, leading to a predicted increase of \$137.5 million⁶⁹ in NRFU costs. All of the estimates in this paragraph fall well below the \$1.7 billion in fiscal year 2020 contingency.
- 71. An example of a randomized controlled trial that directly addresses differences in self-response rates from the presence or absence of a single question occurred after the 1990 Census. As a result of declining mail self-response rates in that census compared to those from the 1980 Census, the Census Bureau investigated various approaches to increase mail back self-response. This RCT compared an abbreviated short form with and without a question asking for the respondent's Social Security Number. Collecting the Social Security Number would allow direct linkage to administrative records

 62 Calculated value – 0.6 divided by 144.0 then multiplied by 100 rounded to one decimal place and 2.1 divided by 144.0 then multiplied by 100 rounded to one decimal place.

⁶³ Calculated value – \$55 million times 0.4 rounded to one decimal place and \$55 million times 1.5 rounded to one decimal place. Also, Brown et al. (2018) reported cost estimates of \$27.5 million and \$91.2 million, respectively, for these two cases. The minor differences in their cost estimates compared to the ones reported here are due to differences in the base housing unit addresses to which the NRFU costs apply.

 64 Calculated value – 2.0 divided by 5.8 then multiplied by 2.1 then multiplied 100 rounded to one decimal place.

 65 Calculated value – 0.7 divided by 144.0 then multiplied by 100 rounded to one decimal place.

⁶⁶ Calculated value – \$55 million times 0.5 rounded to one decimal place.

 67 Calculated value – 10.0 divided by 5.8 then multiplied by 2.1 then multiplied 100 rounded to one decimal place.

 68 Calculated value – 3.6 divided by 144.0 then multiplied by 100 rounded to one decimal place.

⁶⁹ Calculated value – \$55 million times 2.5 rounded to one decimal place.

⁶⁰ Brown et al. (2018) page 42.

⁶¹ Brown et al. (2018) page 42.

that could provide response data for the eliminated questions, thus reducing respondent burden, costs, and staffing requirements. However, the collection of Social Security Number turned out to be highly sensitive. The experiment was conducted as part of a Mail Response Evaluation for the Simplified Questionnaire Test. The experimental evaluation was a randomized controlled trial of the impact on the self-response rate of including a question to collect Social Security Number compared to an identical instrument without the Social Security Number question. (U.S. Census Bureau, 1992). The national results showed a 3.4 percentage point⁷⁰ decrease in the self-response rate when the Social Security Number question was asked compared to the rate for the comparable form that did not ask the Social Security Number question. The sensitivity around the collection of Social Security Number impacted the entire population. The 1992 randomized controlled trial was internally valid but may still not be generalizable to the current census climate. Using the results from this RCT, I estimate the effect on 2020 Census NRFU costs from the potential national decrease in the self-response rate of 3.4 percentage points to be \$187.0 million⁷¹. Again, the estimate falls well below the \$1.7 billion in fiscal year 2020 contingency.⁷²

	2% Decrease in	5.8% Decrease in	10% Decrease in	
	Non-Citizen Self-	Non-Citizen Self-	Non-Citizen Self-	1992 Simplified
	Response Rate	Response Rate	Response Rate	Questionnaire
	(Affects 28.6% of	(Affects 28.6% of	(Affects 28.6% of	Test (Affects All
	Households)	Households)	Households)	Households)
Decrease in Overall	0.50	1.50/	2.5%	2.404
Self-Response Rate (in	0.5%	1.5%	2.5%	3.4%
percentage points)				
Increase in NRFU	0.7	0.1		4.0 111: 73
workload	0.7 million	2.1 million	3.6 million	4.9 million ⁷⁵
(in housing units)				
Increase in Cost	\$27.5 million	\$82.5 million	\$137.5 million	\$187.0 million

72. These NRFU cost effects are summarized in the following table:

73. Therefore, the possible increase in the NRFU cost could range between \$22.0 million and \$187.0 million, all of which are well below the \$1.7 billion in fiscal year 2020 contingency.

Example Scenario for an Area Census Office

74. It is important to consider an example for an Area Census Office that illustrates the NRFU. For this discussion, I will focus on the El Paso, TX Area Census Office. There are approximately 521,000 housing unit addresses for the El Paso office where the USPS or Census field representatives will

⁷⁰ U.S. Census Bureau (1992) page 4 Table 3.

⁷¹ Calculated value - \$55 million times 3.4 rounded to one decimal place.

⁷² The Census Bureau has no credible data for comparing the general sensitivity of a question about Social Security Numbers to a question about citizenship.

 $^{^{73}}$ Calculated value – 3.4 multiplied by 144.0 million then divided by 100 rounded to one decimal place.

deliver materials notifying the occupants to respond to the 2020 Census.⁷⁴ The current working estimate of self-response rate for the El Paso Area Census Office is 64.3 percent.⁷⁵ Given this rate, the estimated NRFU workload is about 186,000 housing unit addresses.⁷⁶ Based on these estimates we will set recruiting and hiring goals for the CFMs, CFSs and enumerators to ensure the completion of the operation within the time allotted. Examples of factors that help determine the number of enumerators is the average number of hours worked each week and the productivity rate. We estimate the average number of hours an enumerator will work each week at 22.85 hours with a productivity rate of 1.146 cases per hour.⁷⁷

- 75. Before and during the self-response phase of the 2020 Census the communication, advertising, and partnership efforts are focused on raising awareness about the census with the goal of maximizing the self-response. These efforts will be conducted at the national level and sub-national level. Households in the El Paso Area Census Office will be exposed to national messaging, targeted messaging for population sub-groups, local messaging and engagements through the community-based partnership efforts, and targeted advertising efforts at the local level. At the same time, the Census Bureau will be monitoring the self-response rates for the El Paso Area Census Office and geographic areas below the office level down to the tract level. If we determine that the 64.3 percent target self-response rate may not be achieved, we might, for example, schedule additional partnership events and increase the messaging activities. For example, we could increase local advertising efforts or place stories in the El Paso media market or in social media. These outreach activities, part of the Integrated Partnership and Communications Program, will be geared to raise awareness and encourage households to self-respond.
- 76. Immediately before the start of NRFU, the Census Bureau conducts enumerator training. If it is concerned that the NRFU workload will be larger than expected, the Census Bureau still has the ability to hire and train additional enumerators from the recruiting pool at this stage. Given the recruitment pool targets, which are set much earlier but which are several multiples of the expected enumerator hiring, we are still able to onboard and train additional enumerators above the original target even immediately before the onset of NRFU. For example, if the self-response rate for the El Paso Area Census Office was projecting to be lower than the plan, we would select additional recruits, send them to training, and deploy them to the field. The projected reduction in the self-response rate would be used in combination with the average number of hours an enumerator works each week and the productivity rate in determining the number of additional enumerators needed to conduct NRFU.
- 77. During NRFU, the Census Bureau monitors the operation. This monitoring occurs at the national level, the Regional Census Center level, the Area Census Office level, the CFM level, and the CFS level. For the El Paso Area Census Office, the ACOM, the CFMs and the CFSs are monitoring and managing the operation to ensure that it is on track with respect to quality and completeness. In

⁷⁴ Internal Document: NRFU Workload Estimates by ACO for El Paso Area Census Office rounded up to the nearest 1,000.

 $^{^{75}}$ Calculated value – 521,000 minus 186,000 then divided by 521,000 then multiplied by 100 rounded to the nearest decimal. This estimate might be refined as we get closer to the 2020 Census.

⁷⁶ Internal Document: NRFU Workload Estimates by ACO for El Paso Area Census Office rounded to the nearest 1,000.

⁷⁷ Internal email: September 11, 2018.

addition, staff at Headquarters and in the Regional Census Centers are also monitoring all of the Area Census Offices, including the El Paso office. If there are concerns that El Paso might not complete the operation on schedule the Census Bureau could consider asking enumerators to work more than the 22.85 hours each week. We also could authorize overtime or assign enumerators cases that are further from their residence. In addition, the communication, advertising, and partnership efforts transition to raising awareness that enumerators will be contacting nonresponding housing unit addresses, promoting cooperation with these enumerators, and engaging people to respond. Finally, if these efforts prove to be unsuccessful we can extend the operation up to a month without impacting the downstream data processing activities too severely. Extending the operation provides the Area Census Office additional time to complete the enumeration activities.

Overall Assessment

- 78. The Census Bureau is prepared to conduct the 2020 Census NRFU operation and believes that those efforts will result in a complete enumeration. The Census Bureau has demonstrated the ability to successfully conduct a NRFU operation in previous censuses and in the 2018 End-to-End Census Test. It has tested the operational design in various tests over the course of the decade. The tests, along with historical data from past censuses and the American Community Survey, have informed the Census Bureau's operational design and the assumptions supporting that design; it has identified factors that could impact the operational implementation of NRFU; it has identified how it will react should an event such as a lower than estimated self-response rate be realized. Contingency funding to handle deviations from the assumed design parameters are built in to the Life Cycle Cost Estimate. The decision to include a question on citizenship has not impacted the NRFU operational design. In addition, there is no evidence, to date, that the addition of the citizenship question or any other factor will result in a less accurate count. We are, however, prepared to react, adjust, and complete NRFU to ensure an accurate enumeration.
- 79. The Census Bureau is projecting a national self-response rate in the range of 55.5 percent to 65.5 percent with an estimated self-response rate of 60.5 percent at the time the NRFU workload is determined. Real-time monitoring of the self-response rate at national and local levels in the time frame leading up to the start of NRFU, as well as during the NRFU data collection timeframe, will inform actions that the Census Bureau takes to increase self-response and encourage cooperation with its NRFU enumerators.
- 80. The 2020 Census Life Cycle Cost Estimate assumptions supporting the completion of the NRFU workload are as follows:

	Counts of Addresses in Millions ⁷⁸	Percent of NRFU Workload ⁷⁹
Initial NRFU Workload ⁸⁰	61.3	100.0%
Late Self-Response: Pre-Attempt 1 ⁸¹	1.5	2.4%
Administrative Records Vacant/Delete	4.7	7.7%
Attempt 1 Completions	15.0	24.5%
Late Self-Response: Post-Attempt 182	1.5	2.4%
Administrative Records Enumeration	6.6	10.8%
Attempt 2 Completions	8.7	14.2%
Attempt 3 Completions	10.8	17.6%
Attempt 4 Completions	5.8	9.4%
Attempt 5 Completions	3.1	5.0%
Attempt 6 Completions	3.7	6.0%

- 81. In the event that we do not achieve our target 2020 Census self-response rate, contingency strategies have been identified and funding is available. The deployment of those strategies will be determined in response and reaction to the timing and magnitude of the situation.
- 82. The 2020 Census NRFU Operation, as designed and planned, is sufficiently budgeted to support a full and accurate count and, when combined with the Integrated Partnership and Communications Program, to maximize self-response.

IV. Testing of the citizenship question

83. The Census Bureau's statistical work is guided by, and complies with, the U. S. Census Bureau Statistical Quality Standards. In 2005, after conducting a benchmarking study of the standards of

⁸¹ The Life Cycle Cost Estimate assumes an additional one percent of the 144.3 million housing unit addresses will self-respond after the NRFU workload has been determined, but before any contacts have been made in the NRFU operation. The Life Cycle Cost Estimate also assumes another one percent of the 144.3 million housing unit addresses will self-respond after the first NRFU contacts are made. Each of those one-percent assumptions translates into about 2.4 percent of the initial NRFU workload.

⁷⁸ Internal Document: September 29, 2017 version of the 2020 Census Lifecycle Cost Estimate Assumptions Table 3, Total Workload column rounded to the nearest 100,000.

⁷⁹ Calculated values using previous column data.

⁸⁰ At the start of the NRFU operation the workload is calculated based on 144.3 million housing unit addresses and a 60.5 percent self-response rate; this results in a workload of approximately 57 million addresses. To the 57 million addresses we add approximately 4 million addresses from other census operations. The additional addresses are either identified after the determination of the enumeration workload (e.g., new addresses from the USPS) or are addresses that require additional field follow-up for final resolution (e.g., paper questionnaires received with insufficient information).

⁸² The same qualification applies to this category as in the footnote above.

other statistical organizations, the Census Bureau's Methodology and Standards (M&S) Council⁸³ initiated a more coordinated approach for developing a comprehensive set of statistical quality standards. Beginning with existing written standards, the Council aimed to improve consistency and cohesion among the standards, as well as to reflect all the requirements of the OMB's Standards and Guidelines for Statistical Surveys, contained primarily in Statistical Policy Directive 2, in the context of the Census Bureau's programs, products, and processes. The Census Bureau began developing these comprehensive standards in May 2006. The process was completed in May 2010, when the Census Bureau issued its standards. These standards were officially revised in July 2013.

- 84. The Census Bureau's statistical quality standards apply to all information products released by the Census Bureau and all activities that generate those products, including products released to the public, sponsors, joint partners, or other customers. All Census Bureau employees and Special Sworn Status individuals must comply with these standards, including contractors and other individuals who receive Census Bureau funding to develop and release Census Bureau information products. The standards describe what is required without mandating specific procedures for how to satisfy the requirements.
- 85. Census Bureau management is charged with insuring compliance with the standards when producing and releasing information products to the public. The separate directorates are charged with ensuring compliance with the standards. When questions arise on whether a certain procedure or methodology is compliant, the Quality Program Staff (QPS) is asked for guidance on how to proceed. If the QPS staff is unsure, the matter is referred to the M&S Council for guidance. The M&S Council is empowered to issue waivers to all standards except those pertaining to confidentiality protection.

Decennial Census Questionnaire

- 86. From the 1940 Census through the 2000 Census, the decennial questionnaire consisted of long and short forms. Most of the population answered the short form, and a controlled percentage of randomly selected households answered the long form. When an agency requested the addition of a new decennial question, it was proposed for the long form. There was a defined process to add a question to the long form to ensure that the new question would collect the required information without causing undo respondent burden. In 2005, after more than a decade of planning and tests, the American Community Survey (ACS) replaced the long form.
- 87. The ACS is an annual survey that collects the information formerly collected on the long form, which was removed from the decennial census in the 2010 Census. There is now a well-defined process for adding questions to the ACS, as well as a regular content review program that is empowered to remove questions. No content had been added to the decennial census short form since the creation of the long form in the 1940 Census, although the questionnaire changed considerably as the Census Bureau moved from enumerators to self-response as the primary collection mode.
- 88. The Department of Justice's request to add a question to the 2020 Census was, therefore, the first request for new content on the decennial census short form since the creation of the long form. When the request arrived, the Census Bureau did not have a written policy that defined the process for adding a question to the short form because all known requests from agencies of the Executive Branch prior to the December 2017 DoJ request had been for the addition of questions on the long

⁸³ The M&S Council is chaired by the Chief Scientist and Associate Director for Research and Methodology and is composed of the senior mathematical statisticians and survey methodologists from all directorates of the Census Bureau. It is considered convened with a quorum when the Chair and at least three directorates are present.

form or ACS. There is at least one documented Congressional mandate to change a question on the 1990 Census, which I will discuss later in this section.

Adding Survey Questions

- 89. Standard A2-3 requires that data collection instruments and supporting materials be developed and tested in a manner that balances (within the constraints of budget, resources, and time) data quality and respondent burden. Testing in reference to compliance standards involves two aspects. The individual questions must be cognitively tested to ensure that the respondent will understand and answer the question in the manner desired. In addition, subject to certain exceptions, the questionnaire instrument must be tested for contextual effects to ensure that an individual question does not bias how another question on the form is answered.
- 90. More specifically and subject to the same exceptions, A2-3.3 requires that a data collection instrument be pretested with respondents to identify any problems with cognitive understanding of the questions. Pretesting of a specific question previously used on another survey however is not required (see the note to Standard Sub-Requirement A2-3.3.1). This note to Standard Sub-Requirement A2-3.3.1 was added to the standards because it is an accepted practice within the survey field and allows the Census Bureau and client agencies to save resources. The Census Bureau could borrow from other surveys that we conducted or from other agencies such as the National Center for Health Statistics (NCHS), which, like the Census Bureau, has resources devoted to testing questionnaires and questions. This exception for previously tested questions thus allows the Census Bureau to use questions that were already extensively tested for use in OMB-authorized surveys to be re-used without repeating the cost of testing.

Compliance and the Citizenship Question

- 91. The ACS questionnaire went through extensive testing in decade before it officially replaced the decennial census long form in 2005. This testing included the citizenship question as implemented on the 2000 Census long form. The question was found to gather the information intended, and has been used continuously since ACS's inception in 2005.
- 92. Tests conducted in 2006 determined that the citizenship question could be improved by including a write-in box for the year of naturalization. The 2006 testing indicated no issues with contextual effects. The write-in box for year of naturalization was implemented in 2008. This question in its current form has been used in ACS production for more than 10 years. As a consequence of the 2006 testing and 10 years of production success, the ACS citizenship question was deemed "adequately tested" and in compliance with the Census Bureau's 2014 Quality Standards for use on the 2020 Census by virtue of the exception for previously tested questions in Standard A2 3.3.1 (note).
- 93. The historical origins of that standard make it clear that it also waives any requirement for full-form testing because the use of the tested question on a previous Census Bureau or other OMB-approved survey necessarily involved contextual differences in the full survey form. These contextual differences do not imply contextual difficulties in the proposed new survey.
- 94. Senior Census Bureau experts determined that compliance with our standards required using the existing question exactly as it had been tested and implemented on the ACS. By using a question that fulfilled the requirements of the note to Standard A2-3.3.1, pretesting of the citizenship question was not required. To address the concern about potential contextual effects from adding the citizenship question to the 2020 Census forms, experienced Census Bureau statisticians determined that the current ACS citizenship question was used in the most similar manner and presentation to the proposed 2020 Census questionnaire. This determination was made by a group of senior statisticians at the Census Bureau who have worked on questionnaire design since the 1980's. Thus after this expert review, the ACS citizenship question was proposed, specifically with no changes to minimize

the possibility of contextual effects and maintain compliance with the standards. No new content, contextual or full-form tests were conducted.⁸⁴

- 95. Changes to the census questionnaire are not unprecedented. In the lead-up to the 1990 Census, the Census Bureau proposed a race question that included seven pre-specified categories. Separate writein spaces were provided for three of the categories—Asian or Pacific Islander, American Indian, and Other race. This format for the question appeared on the March 1988 proposed-question submission to Congress. The format for the proposed race question had been thoroughly tested during the 1980s.
- 96. In September and October 1988 considerable Congressional opposition to the proposed question emerged. No law was actually passed mandating a different form for the race question, but the "report language associated with [the Census Bureau's] fiscal year 1989 appropriate bill ... directed the Bureau to use prelisted categories for Asian and Pacific Islander groups." (App. A, U.S. Census Bureau 1988 at 1.)
- 97. The prelisted category format for the race question was untested. Internal Census Bureau records, delivered with this expert report, show that the senior management raised many of the same objections to using the untested question as have been raised regarding the current citizenship question. On a single day, December 5, 1988, Director John Keane instructed the 1990 Census to use the tested write-in format for Asian or Pacific Islander at 7:30am—in spite of the language in the appropriation act—then reversed himself at 4:30pm by issuing the instruction to use the untested prelisted category format for Asian or Pacific Islander.
- 98. The Department of Commerce weighed in the next day indicating that it would not be the Census Bureau's decision. The Census Bureau responded by saying that unless a decision was made by December 9, 1988, it would use the OMB-approved write-in format for Asian or Pacific Islander, effectively reversing itself again. On January 12, 1989, OMB approved the prelisted category version of the question, without requiring additional testing. On January 13, 1989, the Census Bureau notified Congress that it would use the prelisted category version of the race question for Asian or Pacific Islander. The prelisted category version of the race question for Asian or Pacific Islander was used on the 1990 Census short and long forms. In the final analysis, OMB had approved both the tested and untested versions of the question, and the Census Bureau used the untested version in deference to the wishes of Congress. Post-census evaluations indicated that the untested question did not cause measurement problems with the Asian or Pacific Islander category.⁸⁵
- 99. Importing a question from a previously tested survey has also happened before. In the lead-up to the 1970 Census, the Current Population Survey tested and implemented a new question on Hispanic origin by self-identification, as an alternative to the prevailing practice of using Spanish surnames

⁸⁴ While the Census Bureau was in compliance with its own Quality Standards, the issue is not settled. The final determination of whether the addition of a citizenship question to the 2020 Census is permissible rests with the OMB. The Census Bureau must first prepare the clearance package, then submit it to OMB for approval. Before completing the clearance package the Census Bureau must compile and reply to the more than 140,000 comments received by the August 7, 2018 deadline on *Federal Register* notice 83 FR 26643. If those comments suggest that further testing should be required, and if the OMB agrees, then the Census Bureau can be compelled to do further testing in order to receive the OMB clearance. If the OMB agrees that the question has been adequately tested, then it can issue the clearance without further testing. The OMB has not yet issued the Census Bureau a clearance number to conduct the 2020 Census.

⁸⁵ In the 1990 Census Content Reinterview Survey, 449 persons responded "Asian or Pacific Islander" and 80 responded "Other Asian or Pacific Islander." For both of these categories, the Census Bureau concluded that the relevant net error rate was not statistically significant different from zero. (U.S. Census Bureau 1993, page 21)

and country of birth (or parental country of birth) to determine Hispanic ethnicity. The question was also used on the 1970 Census long form, based the Current Population Survey testing and implementation. In the final analysis, the Census Bureau determined that it could use the testing program from what was, at the time, the flagship household survey to prepare content for the decennial census.

100. The 1970 and 1990 Census examples illustrate that neither using a question on the decennial census that has not undergone decade-long testing nor importing a tested question from a well-designed household survey onto the decennial census is unprecedented. Neither of these situations are "best practice," and the standards enforced by the Census Bureau's own quality reviews and the OMB clearance process are certainly intended to control the potential for unintended consequences caused by inadequate testing. My opinion is that the Census Bureau properly balanced cost, quality and risk concerns by using the tested ACS citizenship question in response to the Secretary's March 26, 2018 instruction to add such a question to the 2020 Census.

I declare under penalty of perjury that the foregoing is true and correct.

November 7, 2018

John M. Abowd, Ph.D.

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EXHIBIT B

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF MARYLAND

	X
ROBYN KRAVITZ, et al.	- : :
Plaintiffs, v.	:
U.S. DEPARTMENT OF COMMERCE, <i>et al.</i>	: : Case No. 8:18-cv-01041-GJH :
Defendants.	: : :
LA UNIÓN DEL PUEBLO ENTERO; et al.	:
Plaintiffs, v.	: : :
WILBUR L. ROSS, JR., sued in his official capacity as U.S. Secretary of Commerce; <i>et al.</i>	: : : Case No. 8:18-cv-01570-GJH
Defendants.	: : _:
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RULE 26(A)(2)(B) EXPERT REPORT AND DECLARATION

OF

STUART D. GURREA, PH.D.

November 7, 2018

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EXHIBITS

Exhibit 1 Curriculum Vitae of Stuart D. Gur

Exhibit 2 Documents and Data Reviewed and Considered

I. ASSIGNMENT

- My name is Stuart D. Gurrea. I have been asked by counsel for Defendants to perform a critical assessment of certain quantitative analyses offered in support of the legal actions brought forward by Robyn Kravitz and others, and La Unión del Pueblo Entero and others (collectively "Plaintiffs") against Wilbur L. Ross, Jr., the U.S. Department of Commerce, and others (collectively, "Defendants").¹ Plaintiffs' complaints arise from the reinstatement of a question about citizenship in the 2020 Census questionnaire.
- 2. Dr. Matthew Barreto, Mr. Kimball Brace, Ms. Lisa Carruth, Dr. Nora Gordon, Dr. Nancy Mathiowetz, Mr. Roger Mingo, Dr. William O'Hare, and Dr. Andrew Reamer, among others, submitted expert reports in support of Plaintiffs' actions.² Mr. Brace, Ms. Carruth, Dr. Gordon, Mr. Mingo and Dr. Reamer evaluate the impact of the reinstatement of a citizenship question in the 2020 census on the apportionment of congressional seats and on the distribution of certain federal funds. Their evaluations are predicated on a range of assumptions concerning the predicted undercount of certain population groups in the 2020 Census that purportedly would result from of the reinstatement of a citizenship question. Some of these analyses rely on predictions regarding self-response rates and undercounts offered by Dr. Mathiowetz, Dr. Barreto, and Dr. Bernard Fraga. Dr. Fraga is an expert retained in the related *California v. U.S. Department of Commerce* litigation whose assignment in that case was to assess "the impact of the addition of a citizenship

¹ First Amended Complaint for Declaratory and Injunctive Relief, *Robyn Kravitz, et al. v. United States Department* of Commerce, et al., United States District Court for the District of Maryland, Case No. 8:18-cv-01041, May 3, 2018; First Amended Complaint for Declaratory and Injunctive Relief, *La Unión del Pueblo Entero, et al. v. Wilbur L. Ross, et al.*, United States District Court for the District of Maryland, Case No. 8:18-cv-01570-GJH, July 9, 2018.

² Rule 26(A)(2)(B) Expert Report and Declaration of Matthew Barreto, PhD, October 5, 2018 (hereafter Barreto Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Kimball W. Brace, October 5, 2018 (hereafter "Brace Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Lisa Carruth, October 5, 2018 (hereafter "Carruth Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Nora Gordon, PhD, October 5, 2018 (hereafter "Gordon Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Dr. Nancy A. Mathiowetz, October 5, 2018 (hereafter "Mathiowetz Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Roger Mingo, October 5, 2018 (hereafter "Mingo Report"); Declaration of Dr. William O'Hare, October 3, 2018 (hereafter "O'Hare Report"); Rule 26(A)(2)(B) Expert Report and Declaration of Andrew Reamer, PhD, October 2, 2018 (hereafter "Reamer Report").

question on the 2020 Census population for California, and California's congressional apportionment [...]."³

- 3. Defendants asked me to recalculate Plaintiffs' experts' estimated impacts under an alternative scenario regarding the success rate of the Census Bureau in Non-Response Follow-Up operations ("NRFU"). Defendants also asked me to assess the reliability of certain assumptions underlying Plaintiffs' experts' impact evaluations and Dr. Barreto's interpretation of his survey data.
- 4. I am being compensated at a rate of \$575 per hour for my work in this matter; I will be compensated at the same rate if I am asked to testify at deposition or trial. My compensation does not depend in any way on the outcome of this matter or my opinions expressed herein.

II. QUALIFICATIONS

- 3. I am a Vice President at Economists Incorporated ("EI"), an economics consultancy founded in 1981 that provides applied economic analysis to clients. I have attached as Exhibit 1 to this report my *curriculum vitae*, which lists my academic background, publications, and prior professional experience.
- 4. I graduated from the University of Seville, Spain, with a Bachelor's degree in Economics; I received a Master's degree in economics from Northwestern University; and, I received my Ph.D. in economics from Northwestern University. My fields of specialization include econometrics—the application of mathematical and statistical models to the analysis of economic data. A significant part of my training as an economist consists of the development and application of quantitative methods to analyze data and measure the impact of an intervention on a population of interest.

³ Rule 26(A)(2)(B) Expert Report and Declaration of Bernard L. Fraga, PhD, in *State of California, County of Los Angeles, City of Stockton v. Wilbur L. Ross, Jr., U.S. Department of Commerce, Ron Jarmin and U.S. Census Bureau, September 19, 2018 (hereafter "Fraga Report")*, pp. 2 and 3.
- 5. I joined EI in September 2001 and I have been affiliated with EI ever since. My initial title at EI was Senior Economist, and I have held my current title of Vice President since 2010. In each of these positions, I have applied my experience and expertise in economics and data analysis to address a variety of issues, including the assessment of public policy and private business decisions. I have conducted analyses across a broad range of industries for businesses, individuals, non-profit organizations, government agencies, and industry associations.
- 6. During the course of my professional career, I have performed critical assessments of quantitative analyses and specifically impact evaluations at the request of policy makers, business managers, investors, corporate officers, or in the context of litigation. My assessments have involved the application of principles of statistics, econometrics, financial mathematics, and microeconomics, and the use of a variety of quantitative methods, including surveys, regression analysis, forecasting and projections, and simulations. More generally, most of my work as an economist is built on data analysis, including survey data.
- 7. In the context of litigation, I have conducted economic analyses in an advisory role for both plaintiffs and defendants and I have provided expert trial testimony rooted in the application of quantitative methods. This work typically has entailed a critical review and analysis of data sources and methods, actual analysis, and the development of conclusions based on these analyses.

III. SUMMARY OF OPINIONS

- 8. Plaintiffs' experts Mr. Brace, Ms. Carruth, Mr. Mingo, Dr. Gordon, and Dr. Reamer assess the impact of the reinstatement of a citizenship question in the 2020 Census on congressional apportionment and the distribution of certain federal funds. For this purpose, they rely on undercount scenarios that are either unsupported or unreliable.
- 9. Mr. Brace and Dr. Reamer assess the impact of a citizenship question in certain scenarios where population undercounts are estimated before NRFU and

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imputation. To the extent that initial undercounts from declines in self-response rates are mitigated through NRFU or imputation, their scenarios overstate undercounts and Mr. Brace's and Dr. Reamer's estimated impacts are overstated. In addition, Mr. Brace applies one of his pre-NRFU undercount scenarios to non-Hispanic non-citizens without any basis.

- 10. One of Mr. Brace's pre-NRFU scenarios assumes a differential decline in self-response rates among Hispanics and non-citizen non-Hispanics equal to the differential decline in self-response rates among Hispanics estimated by Dr. Barreto from his own survey data. Mr. Brace's application of Dr. Barreto's estimates for Hispanics to non-citizen non-Hispanics is unsupported. In addition, Dr. Barreto's estimate of the differential decline in self-response rates is overstated and unreliable. To compute this differential decline in self-response rates, Dr. Barreto assumes with no basis that certain of his survey respondents would not participate in the 2020 Census if a citizenship question is included. Dr. Barreto also assumes with no basis that item nonresponse would necessarily lead to an undercount. Finally, inconsistencies across questionnaire answers and Dr. Barreto's questionnaire design both call into question the reliability of Dr. Barreto's survey data.
- 11. Mr. Brace, Ms. Carruth, and Mr. Mingo rely on a scenario that assumes a differential two-percent undercount of Hispanic and non-Hispanic non-citizen populations. Dr. Gordon presents multiple scenarios relying on the two percent differential undercount as well as multiple scenarios relying on a 2.5 percent differential undercount of Hispanics and Latinos. Dr. Mathiowetz predicts that differential undercounts for Hispanic and non-citizen populations will be at least two percent. Dr. Mathiowetz's estimation of differential undercounts for non-citizens and her estimation of differential undercounts for Hispanics are unreliable, as they are predicated on unsupported assumptions.
- 12. Assuming a NRFU success rate in 2020 equal to the 2010 Census success rate, and assuming no additional mitigation of the undercount through imputation, congressional apportionment does not change due to the reinstatement of a citizenship question in any of Mr. Brace's scenarios. At this same NRFU rate

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(before imputation), my recalculation of Plaintiffs' experts' impact evaluations show that: Dr. Carruth's estimated loss of federal Medicaid funds to Texas in FY2025 is one one-hundredth of one percent of Texas' Medicaid spending; Dr. Mingo's estimates of losses of Surface Transportation Block Grant ("STBG") funds in one year are at most three tenths of one percent of the allocation without a citizenship question; Dr. Reamer's state-level estimates of losses of Medicaid, State Children's Health Insurance Program ("CHIP"), Supplemental Food Grants, Supplemental Nutrition Program for Women, Infants and Children ("WIC"), Social Services Block Grants ("SSBG"), and Title I funding do not exceed one tenth of one percent.

- In expressing the opinions contained in this report, I make the following reservations:
 - a. The opinions described below are based on my review of available documents, including Plaintiffs' experts' reports, and various analyses I have performed. I reserve the right to express additional opinions, supplement or amend the opinions in this report, or provide additional reasons for these opinions as additional documents are produced, the transcripts of expert and fact depositions become available, and new facts are introduced during discovery and trial.
 - b. In Exhibit 2, I list the documents and data I relied upon to prepare my expert report. In addition to these documents, I may use other exhibits as a summary or to support my opinions. I also may consider additional exhibits and work product introduced in connection with the testimony of other experts or witnesses, such as Plaintiffs' experts' workpapers, which I did not receive in a timely fashion, or other documents produced in this case, and I reserve the right to revise or amend my opinions accordingly.

IV. PLAINTIFFS' EXPERTS' ANALYSES

14. Mr. Brace, Ms. Carruth, Dr. Gordon, Mr. Mingo, and Dr. Reamer evaluate the impact of a citizenship question in the 2020 Census on congressional apportionment and the distribution of certain federal funds. To this end, they rely on Dr. Mathiowetz's, Dr. Barreto's, and/or Dr. Fraga's estimates of 2020 Census undercounts due to the reinstatement of a citizenship question, or on undercounts they were asked to assume.⁴

- 15. Dr. Mathiowetz predicts that Hispanics and non-citizens will have lower selfresponse rates due to a citizenship question and that the NRFU operation will not fully mitigate this differential.⁵ Dr. Mathiowetz also predicts that a share of noncitizen households will underreport their number of household members.⁶ Overall, she estimates that "the differential undercount for the Hispanic and noncitizen populations will be at least 2 percent."⁷
- 16. Dr. Barreto predicts that "the addition of a question about household member's citizenship will significantly reduce participation in the 2020 census, and ultimately will reduce the accuracy of the 2020 census."⁸ Dr. Barreto reaches this conclusion based on a literature review he conducts of certain articles published in the social sciences and on the results of a survey he conducted.⁹ From the responses to his survey, Dr. Barreto estimates that the percentage of those who will not respond to the 2020 census in light of the citizenship question will be between 7.1 and 9.7 percent.¹⁰ As to the expected success of Census NRFU, Dr. Barreto concludes from his survey questions that 45 percent of respondents who said they would not

⁴ Dr. O'Hare examines which demographic groups and states account for a larger share of households with one or more noncitizens and that as a result will be subject to a larger net undercount. Dr. O'Hare finds that Hispanics and Asians have a "higher share of population living in households with one or more noncitizens" and concludes that "Hispanics and Asians will therefore have greater net undercount and omission rates due to the inclusion of the citizenship question on the decennial Census." (O'Hare Report, p. 31.) Dr. O'Hare, however, does not offer exact predictions of the expected increase in net undercounts and omissions because of the reinstatement of a citizenship question. (O'Hare Report, p. 27.)

⁵ Mathiowetz Report, p. 3.

⁶ Mathiowetz Report, p. 31.

⁷ Mathiowetz Report, p. 3.

⁸ Barreto Report, p. 2.

⁹ Barreto Report, p. 1.

¹⁰ Barreto Report, ¶ 18.

respond to the census with a citizenship question would switch and respond after recontact and assurances of confidentiality.¹¹

17. Dr. Fraga estimates the undercount in the 2020 Census due to the reinstatement of a citizenship question in four scenarios.¹² Dr. Reamer relied on two of these four scenarios defined as follows:

5.8 percent non-response in households with at least one non-citizen, based on an August 6, 2018 report produced by the Census Bureau.

5.8 percent non-response in households with at least one non-citizen, with a non-response follow-up (NRFU) success rate of 86.63 percent, an estimate of NRFU success based on Census data and analyses.¹³

The first scenario is based on an estimated 5.8 percentage point difference in modeled rates of initial self-response for potential non-citizen households versus citizen households reported in a Census analysis.¹⁴ The second scenario is the same as the first but reduces the 5.8 percentage point estimate of self-response decline by 86.63 percent, which results in an undercount of 0.78 percent (5.8% * (100% - 86.63%) = 0.78%). Dr. Reamer describes the 86.63 percent NRFU success rate as based on Census data and analyses without any specific reference to any Census data or analysis.¹⁵ Dr. Fraga, who defined these scenarios, stated that he "was provided" with the 86.63 percent NRFU success rate without offering any other basis for this assumption.¹⁶

18. Mr. Brace evaluates "the impact of a differential undercount of certain demographic groups in the 2020 decennial census [...] on (i) the apportionment of Congressional seats following the 2020 Census, and (ii) the dilution of the votes of people living in

¹¹ Barreto Report, ¶ 20.

¹² Fraga Report, pp. 10-15.

¹³ Reamer Report, p. 27.

¹⁴ Fraga Report, § 5.2.1. See also, J. David Brown, Misty L. Heggeness, Suzanne Mr. Dorinski, Lawrence Warren, and Moises Yi, "Understanding the Quality Alternative Citizenship Data Sources for the 2020 Census," CES 18-38, August 6, 2018 ("Brown *et al.*, 2018"). The Census analysis compared households with all citizens to every other household, including those with uncertain citizenship status. (Brown *et al.*, 2018, pp. 34-36.)

¹⁵ Reamer Report, p. 27.

¹⁶ Fraga Report, § 5.2.2.

certain counties as a result of intrastate redistricting.²¹⁷ Mr. Brace "was asked to assess the effect on reapportionment of a differential undercount of 2, 5.8, and 8.09 percentage points for these [Hispanics and non-citizens] affected populations.²¹⁸ Mr. Brace understands that these estimates are based, respectively, on a differential undercount for Hispanics and non-citizens reported by Dr. Mathiowetz, a differential self-response rate estimated by the Census Bureau for households that potentially contain a non-citizen, and a differential undercount for Hispanics reported by Dr. Barreto.¹⁹

- 19. Ms. Carruth, Dr. Gordon and Mr. Mingo quantify the impact of the reinstatement of a citizenship question in the 2020 Census on the allocation of Medicaid, Title I and STBG funds, respectively.²⁰ For this purpose, Ms. Carruth and Mr. Mingo assume a two percent differential undercount of the Hispanic and non-Hispanic, non-citizen populations.²¹ This is the same percentage Dr. Mathiowetz predicts. Similarly, Dr. Gordon assumes differential undercounts for Hispanics and Latinos of 2 and 2.5 percent.²²
- 20. Dr. Reamer's assignment is to quantify the impact of the reinstatement of a citizenship question in the 2020 Census questionnaire on the distribution of domestic assistance funds associated with four federal programs: Traditional Medicaid, State CHIP, WIC, and SSBG.²³ To this end, Dr. Reamer relies on the estimated percentage of population undercount in each of the two scenarios defined

¹⁷ Brace Report, p. 1.

¹⁸ Brace Report, p. 6.

¹⁹ Brace Report, p. 6, footnote 4.

²⁰ I use "STBG" to refer to both the STBG suballocation and the transportation alternatives set-aside suballocation ("TA set-aside") analyzed in the Mingo Report.

²¹ Carruth Report, p. 1. Mr. Mingo assumes "(i) a differential undercount of the Hispanic population of 2.0 percentage points and (ii) a differential undercount for the non-Hispanic, non-citizen population of 2.0 percentage points, relative to the rest of the population [...]." Mingo Report, p. 1.

²² Gordon Report, pp. 7 and 8.

²³ Reamer Report, pp. 30-33.

by Dr. Fraga and described above (5.8 percent of potential non-citizen households and 0.78 percent of potential non-citizen households after NRFU).²⁴

21. Plaintiffs' experts' impact evaluations and undercount assumptions are summarized in Table 1.

Expert	Evaluation	Differential Undercount Assumptions			
Brace	Congressional	2% (Hispanics and non-citizen non-Hispanics)			
	apportionment	5.8% (Hispanics and non-citizen non-Hispanics)			
		8.09% (Hispanics and non-citizen non-Hispanics)			
Carruth	Medicaid	2% (Hispanics and non-citizen non-Hispanics)			
Gordon	Title I	2%-2.5% (Hispanics and Latinos)			
Mingo	STBG	2% (Hispanics and non-citizen non-Hispanics)			
Reamer	Medicaid, CHIP,	5.8% (non-citizen household)			
	WIC and SSBG	5.8% (non-citizen household) + 86.63% NRFU			

Table 1 Plaintiffs' Experts' Impact Evaluations

V. CAUSAL ATTRIBUTION IS NECESSARY TO CONDUCT A RELIABLE IMPACT EVALUATION

- 22. Mr. Brace, Ms. Carruth, Dr. Gordon, Mr. Mingo, and Dr. Reamer evaluate the impact of the reinstatement of a citizenship question in the 2020 Census on congressional apportionment and the distribution of federal funds. These impact evaluations rely on analyses of the impact on state population counts of the reinstatement of a citizenship question in the 2020 Census.
- 23. Impact evaluation is defined as:

An assessment of how the intervention being evaluated affects outcomes, whether these effects are intended or unintended. The proper analysis of impact requires a counterfactual of what those outcomes would have been in the absence of the intervention.²⁵

²⁴ Reamer Report, p. 27.

²⁵ "Outline of Principles of Impact Evaluation," OECD,

http://www.oecd.org/dac/evaluation/dcdndep/37671602.pdf.

- 24. For example, Dr. Reamer presents estimates of the impact of the reinstatement of a citizenship question on federal reimbursements for WIC in fiscal year 2016.²⁶ In this analysis, the intervention is the reinstatement of a citizenship question. The counterfactual is represented by a fiscal year 2016 baseline scenario assuming projected 2020 Census counts *without* a citizenship question.
- 25. To isolate the impact of an intervention it is necessary to separate the impact of the intervention from other confounding factors. For example, if the outcomes in the counterfactual differ from the baseline for reasons other than the intervention, then the total impact cannot be attributed to the intervention. Therefore, causal attribution (establishing the causal link between the intervention and the impact) is necessary to produce reliable findings through impact evaluation.
- 26. For example, Dr. Reamer presents estimates of the impact of the reinstatement of a citizenship question on the allocation of WIC funds for selected states under alternative scenarios. If the differences between the baseline estimates of WIC grant allocations *without* a citizenship question and the estimated allocations of WIC grants *with* a citizenship question cannot be attributed solely to the reinstatement of a citizenship question, then the differences between the baseline and alternative estimates will include other effects and will not quantify the impact of a citizenship question of WIC funds.

VI. DR. BARRETO OVERSTATES THE EXPECTED DECLINE IN CENSUS SELF-RESPONSE RATES DUE TO A CITIZENSHIP QUESTION

27. Dr. Barreto conducts a survey from which he quantifies the expected decline in census self-response rates due to the reinstatement of a citizenship question. His analysis of his survey data, however, overstates the expected decline in census self-response rates. First, Dr. Barreto assumes item-nonresponse always reduces census counts; and, second, he categorizes certain item nonresponses with no basis. More

²⁶ Reamer Report, p. 32.

generally, inconsistencies across individuals' survey responses and his survey design call into question the reliability of his survey data.

- 28. As a preliminary matter, Dr. Barreto uses his survey data without assessing the sources of nonresponse and the extent to which nonresponse may have affected his survey results. Dr. Barreto reports a 28.1 percent Response Rate-3.²⁷ According to Dr. Barreto, "response rates between 20 and 30 percent are considered to be accurate and in an accepted range [...]."²⁸ The Federal Judicial Center, National Research Council, Reference Manual on Scientific Evidence states with respect to the use of surveys: "It is incumbent on the expert presenting the survey results to analyze the level of and sources of nonresponse, and to assess how the nonresponse is likely to have affected the results."²⁹ This is important because survey results may reflect nonresponse bias, whereby only a portion of the selected sample with certain characteristics chooses to respond. This bias can render the sample unrepresentative of the population as a whole, making the sample unreliable for drawing inferences about the population as a whole. For example, if individuals with low incomes systematically do not respond to the survey, then the survey will not be representative of the population as a whole.
- 29. Dr. Barreto purports to calculate "the expected percentage of those who will not respond to the 2020 [C]ensus in light of the citizenship question."³⁰ To this end, he relies on data from three survey questions that purportedly provide self-response

²⁷ "Response Rate 3 (RR3) estimates what proportion of cases of unknown eligibility is actually eligible. In estimating e [estimated proportion of cases of unknown eligibility that are eligible], one must be guided by the best available scientific information on what share eligible cases make up among the unknown cases and one must not select a proportion in order to boost the response rate. The basis for the estimate must be explicitly stated and detailed. It may consist of separate estimates (Estimate 1, Estimate 2) for the sub-components of unknowns (3.10 and 3.20) and/or a range of estimators based of differing procedures. In each case, the basis of all estimates must be indicated." American Association for Public Opinion Research, "Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys," April 2015, https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions2015_8theditionwithchanges_April2015_logo.pdf, p 53.

²⁸ Barreto Report, ¶ 75.

²⁹ "Reference Manual on Scientific Evidence," Federal Judicial Center and National Research Council, Third Edition, p. 383.

³⁰ Barreto Report, ¶ 18.

data. One is a counterfactual question about participation *without* a citizenship question ("Q1"):

The Census is an official population count that is conducted every 10 years by the federal government. It requires all households to list the name, age, and race or ethnicity of every person living in the home and provide that information to the Census Bureau either online, by mail, or in-person with a census taker. The Census is required to keep this information confidential, and every single household in the country is required to participate.

In March 2020 you will receive an invitation from the U.S. Census to fill out the census form. Do you plan to participate and submit your household information?³¹

The other is a question about participation *with* a citizenship question ("Q2"):

In 2020, the federal government is adding a new question to require you to list whether you, and every person in your household is a U.S. citizen, or not a citizen. With the addition of a citizenship question, will you participate and submit your household information, or not?³²

Dr. Barreto's survey also includes a question about participation with a citizenship

question that includes assurances about confidentiality ("Q8"):

Now that you've heard a little bit about the 2020 Census let me ask you one final question about how likely you are to participate. If the government decides in 2020 to include a question about citizenship status, and asks you to report the race, ethnicity, age, gender and citizenship status of people living in your household, and the government provides assurances that your information will be kept confidential and ONLY used for purposes of counting the total population and nothing more, would you participate and fill out the 2020 Census form, or not?³³ (Emphasis in original.)

The response options to these questions in the survey are "Yes, will participate" or "No, will NOT participate."³⁴ Survey respondents may refuse to answer these questions.³⁵

³¹ Barreto Report, p. 76.

³² Barreto Report, p. 76.

³³ Barreto Report, p. 77.

³⁴ Barreto Report, p. 76.

³⁵ Barreto Report, p. 76.

30. Dr. Barreto defines the "drop-off" rate as the percentage of survey respondents who can be described as follows:

[a]ny individual who said "yes" to question 1 participation [Q1], but then changed their answer and no longer said "yes" at question 2 [Q2] when describing the 2020 census with a citizenship question is counted as a non-respondent.³⁶

Dr. Barreto also estimates a drop-off rate based on "people who planned to participate in the Census without a citizenship question ["Yes" to Q1]" and no longer said "Yes" to Q8.³⁷

A. Dr. Barreto Overstates the Expected Decline in Self-Response Rates by Assuming Item Nonresponse Always Reduces Counts

- 31. Dr. Barreto's survey questions do not provide enough information to determine how a citizenship question will affect self-response rates. Dr. Barreto's interpretation of his survey data overstates the expected reduction in self-response rates.
- 32. Dr. Barreto's survey questions conflate multiple issues. The American Association of Public Opinion Research ("AAPOR") best practices recommendations include "[t]ak[ing] care in matching question format and wording to the concepts being measured and the population being studied."³⁸ Dr. Barreto attempts to measure reductions in self-response rates, which does not require information about citizenship status. Dr. Barreto's survey questions do not match this concept as individual questions simultaneously ask about participation *and* disclosure of household citizenship status.
- 33. There are two types of self-response that generate valid counts. One is a self-response in which all questions are answered and the other is a self-response with "item nonresponse," in which some but not all questions are answered.³⁹ For example, with the reinstatement of a citizenship question in the 2020 Census, a self-

³⁶ Barreto Report, ¶ 77.

³⁷ Barreto Report, ¶ 80.

³⁸ "Best Practices for Survey Research," https://www.aapor.org/Standards-Ethics/Best-Practices.aspx.

³⁹ Expert Disclosure of John M. Abowd, September 21, 2018 ("Abowd Disclosure"), p. 9.

response that answers every question except a citizenship question will generate a valid count. As Dr. John Abowd – Chief Scientist and Associated Director for Research and Methodology at the United States Census Bureau – explains, "[i]tem nonresponse does not impact the accuracy of the count."⁴⁰

34. Respondents to Dr. Barreto's survey who say "yes" to Q1 but not to Q2 or Q8 may still provide enough information to the Census to generate a valid population count. "No, will NOT participate" responses to Q2 or Q8 may include respondents that will continue to participate in the Census but only fail to submit the citizenship information. As described above, these are item nonresponses that still generate valid Census counts. Q2 asks "[w]ith the addition of a citizenship question, will you participate and submit your household information, or not?" (Emphasis added.) Q8 similarly asks in regard to a Census with a question about citizenship status "would you participate *and fill out* the 2020 Census form, or not?" (Emphasis added.) Household information in Q2 includes a *required* listing of the citizenship status for every person in the household; the information to complete in Q8 incudes reporting the citizenship status of people living in the household. A respondent that decides to continue to participate but not submit "required" citizenship information may respond "No, will NOT participate" to Q2 as that response meets the first condition (will participate) but not the second (submit household information, including the required citizenship question). Similarly, this respondent may respond "No, will NOT participate" to Q8 as that response meets the first condition (will participate) but not the second (complete the 2020 Census from, including the required citizenship question). Such responses do not result in a reduction in self-response rates. As noted above, item nonresponse (in this case, nonresponse to a citizenship question) does not necessarily imply a reduction in population count. By assuming responses with item nonresponse always reduce the population count, Dr. Barreto overstates his estimate of the reduction in self-response rates from the reinstatement of a citizenship question.

⁴⁰ Abowd Disclosure, p. 9.

B. Dr. Barreto Overstates the Expected Decline in Self-Response Rates by Categorizing Certain Respondents with No Basis

- 35. Dr. Barreto purports to calculate "the expected percentage of those who will not respond to the 2020 census in light of the citizenship question."⁴¹ To this end, Dr. Barreto defines and calculates a drop-off rate, which overstates the decline in self-response rates by categorizing respondents' item nonresponses without any basis.
- 36. The response options to Q2 of Dr. Barreto's survey are "Yes, will participate" or "No, will NOT participate."⁴² Survey respondents may refuse to answer Q2.⁴³ Dr. Barreto defines the "drop-off rate" as the percentage of respondents that "said "yes" to question 1 [2020 Census] participation, but then changed their answer and no longer said "yes" at question 2, which describes the 2020 census with a citizenship question."⁴⁴ The drop-off rate as defined by Dr. Barreto includes both those who replied "No, will NOT participate" and those who "Refused to answer" to the second question after initially stating "Yes, will participate" to the first question.
- 37. Thus, Dr. Barreto's drop-off rate overstates the expected percentage of those who expect not to respond to the 2020 census in light of the citizenship question. Dr. Barreto's drop-off rate measures those who expect not to respond to the 2020 census in light of the citizenship question *and* those who did not respond to Q2 of *his* survey in light of the reference to a census citizenship question. Generally, without statistical support item nonresponse cannot be associated uniquely with one of the allowable responses. Dr. Barreto, however, does not offer any basis to assume that those who did not respond to Q2 of his survey in light of the reference to a census citizenship question in a manner that yields a valid count.
- 38. Dr. Barreto's data analysis shows the significance of this assumption. Dr. Barreto cites Census data indicating that the self-response rate in 2010 was 64 percent. Dr.

⁴¹ Barreto Report, ¶ 18.

⁴² Barreto Report, p. 76.

⁴³ Barreto Report, p. 76.

⁴⁴ Barreto Report, ¶ 77.

Barreto predicts that in 2020 the self-response rate will be as high as 56.86 percent due to the inclusion of a citizenship question. He calculates this percentage based on an estimated reduction in self-response rates of at least 7.14 percent (64% - 7.14% =56.86%).⁴⁵ This estimated reduction in the self-response rate (7.14 percent) is the sum of those who said "yes" to Q1 but then changed their mind and said "No, will NOT participate" to Q2 (4.78%) or then "Refused to answer" Q2 (2.36%). This 2.36 percent of responses that Dr. Barreto categorizes with no basis as not responding to the 2020 Census with a citizenship question represents 33 percent (2.36%/7.14%=33%) of Dr. Barreto's lower drop-off estimate.

Similarly, Dr. Barreto predicts that in 2020 the self-response rate will be as low as 54.31 percent due to the inclusion of a citizenship question. This lower estimate is based on an estimated reduction in self-response rates as high as 9.69 percent (64% - 9.69% = 54.31%).⁴⁶ This estimated reduction in the self-response rate (9.69 percent) is the sum of those who said "yes" to Q1 but then changed their mind and said "No, will NOT participate" to question 8 (Q8) (7.36 percent) or then "Refused to answer" Q8 (2.33 percent). Q8 is similar to Q2 in that it asks about willingness to participate in the 2020 Census with a citizenship question but offers assurances about confidentiality. This 2.33 percent of responses that Dr. Barreto categorizes with no basis as not responding to the 2020 Census with a citizenship question represent 24 percent (2.33%/9.69% = 24%) of Dr. Barreto's higher drop-off estimate.

C. Inconsistency Across Survey Responses Calls into Question the Reliability of Dr. Barreto's Survey Design, Data and Self-Response Rate Calculations

40. Dr. Barreto reports self-response rates based on survey responses that are inconsistent with each other. These inconsistencies among responses may be explained by the order of the questions in Dr. Barreto's survey and they call into question the reliability of Dr. Barreto's survey design and data.

⁴⁵ Barreto Report, ¶ 117.

⁴⁶ Barreto Report, ¶ 117.

- 41. According to Dr. Barreto "the [Barreto] survey reports an expected drop-off rate between 7.1% and 9.7% in 2020 due to the citizenship question."⁴⁷ As described above, the lower estimate measures switches from "yes" to "no" or no response between Q1 and Q2; the higher estimate measures switches between Q1 and Q8.
- 42. Q8 purportedly only adds assurances about the confidentiality of respondents' information to Q2. If this were the case, then it is reasonable to expect that the share of respondents who said "Yes" to Q1 but "No" to Q2 would be larger than those who said "Yes" to Q1 but "No" to Q8. Dr. Barreto's survey results, however, indicate the opposite: a larger percentage of respondents refuse to participate in the 2020 Census with a citizenship question if they are given assurances about confidentiality than if they are not.
- 43. Between Q2 and Q8, respondents are asked about their trust that the Trump administration will protect personal information, specifically:

Do you trust the Trump administration to protect your personal information, including the citizenship of you and members of your household, or do you think they will share this information with other federal agencies?⁴⁸

44. The introduction of these questions eliciting thoughts about distrust between Q2 and Q8 may explain the counterintuitive results described above. An important consideration in designing a questionnaire is that "[a]ttitude toward a question in a survey is very often set, or changed, by preceding questions that bear on the same topic."⁴⁹ Dr. Barreto's higher drop-off estimate of 9.7 percent is an estimate that is preceded by questions about distrust. While it is reasonable to expect that assurances about confidentiality would yield a lower drop-off rate, questions about distrust may have been sufficient to offset the expected effect of these assurances and yield the even larger drop-off rate that Dr. Barreto observed.

⁴⁷ Barreto Report, ¶ 18.

⁴⁸ Barreto Report, p. 76.

⁴⁹ Richard L Scheaffer, William Mendenhall and Lyman Ott, <u>Elementary Survey Sampling</u>, Third Edition, Duxbury Press, 1990, p. 42.

45. Dr. Barreto's higher drop-off estimate (9.7 percent) may not be a reliable estimate of the drop-off rate he purports to estimate. Rather, it may reflect that respondents were prompted to think about potential sharing of personal information among federal agencies.

VII. RELIABILITY OF PLAINTIFFS' EXPERTS' UNDERCOUNT SCENARIOS

46. The reliability of Plaintiffs' experts' analyses is largely determined by the reliability of estimates of the undercount in the 2020 Census due to a citizenship question. Plaintiffs' experts' impact evaluations are predicated on undercounts that they were instructed to assume. Impact evaluations that are based on Dr. Mathiowetz's estimates are unreliable.⁵⁰ Impact evaluations based on undercounts that do not account for mitigation (i.e., NRFU and imputation) in expected declines in self-response rates are overstated.⁵¹

A. Dr. Mathiowetz's Estimation of Undercounts is Unreliable

1. Dr. Mathiowetz's estimation of undercounts among noncitizens is unreliable

47. Dr. Mathiowetz concludes that "it is substantially likely that the citizenship question will cause a differential undercount among non-citizens of *at least* 2 percent."⁵² (Emphasis in original.) Dr. Mathiowetz reaches this conclusion by adding the "undercount that will result from the effect of intentionally omitting non-citizens among some percentage of the self-responding households" to "the differential undercount of the impacted population groups."⁵³ Dr. Mathiowetz's estimation of the portion of the undercount attributable to intentional omission of non-citizens among self-responding households is unreliable.

⁵⁰ Mr. Brace reports a two percent undercount scenario and acknowledges Dr. Mathiowetz as a source for this assumption. (Brace Report, p. 6.) Ms. Carruth, Mr. Mingo and Dr. Gordon report two-percent undercount scenarios but do acknowledge Dr. Mathiowetz's analyses.

⁵¹ Mr. Brace reports two scenarios (5.8 percent undercount and 8.09 percent undercount) and Dr. Reamer one scenario (5.8 undercount) without mitigation. (Brace Report, p. 6, and Reamer Report, p. 27.)

⁵² Mathiowetz Report, p. 32.

⁵³ Mathiowetz Report, p. 31.

- 48. To estimate the undercount attributable to intentional omission of non-citizens among self-responding households, Dr. Mathiowetz assumes that five percent of self-responding households do not enumerate one non-citizen "because it is similar to the Bureau's expectation that 5.8 percent of non-citizen households will not return the census questionnaire at all."⁵⁴ Dr. Mathiowetz does not provide any basis to assume that an estimated 5.8 decline in self-response rates among non-citizen households is a reliable proxy for the number of non-citizen households self-responding but underreporting the number of non-citizens in the household.
- 49. To the extent that the decline in self-response rates among non-citizen households differs from the number of non-citizen households self-responding but underreporting the number of non-citizens in the household, the analyses that rely on Dr. Mathiowetz's undercount estimates are incorrect.

2. Dr. Mathiowetz's estimation of undercounts among Hispanics is unreliable

50. Dr. Mathiowetz concludes that there is "credible empirical evidence to support a differential undercount of the Hispanic population from the citizenship question of at least 2 percent."⁵⁵ (Emphasis in original.) In support of this conclusion, Dr. Mathiowetz notes that "[a] similar increase in nonresponse for Hispanics [as the growth rate in nonresponse differential drop-off for non-citizens] since 2000 suggests that the increase in nonresponse cases among Hispanics due to the citizenship question could be in the range of 8 to 10 percentage points."⁵⁶ Dr. Mathiowetz provides no empirical evidence and fails to cite any study as a basis to assume a similar increase in nonresponse rates for Hispanics as for non-citizens since 2000.

⁵⁴ Mathiowetz Report, p. 31.

⁵⁵ Mathiowetz Report, p. 34.

⁵⁶ Mathiowetz Report, p. 33.

B. Scenarios that Do Not Account for Mitigation Overstate Undercounts

- 51. Certain undercount scenarios assume no mitigation of the expected decline in self-response rates from the citizenship question. To the extent that mitigation of the decline in self-response rates is expected, final undercounts will be smaller.
- 52. Two of Mr. Brace's three scenarios assume no mitigation: one assumes a 5.8 percent decline in self-response rates before NRFU among Hispanic and non-citizen non-Hispanic households based on estimates from the Census Bureau regarding self-response rates among non-citizen households; another relies on survey estimates of the differential decline in self-response rates (before NRFU and imputation) among Hispanics.⁵⁷ Similarly, Dr. Reamer assumes in one of his two scenarios a 5.8 percent decline in self-response rates among non-citizen households, based on estimates from the Census Bureau before NRFU.⁵⁸ It is unclear if and to what extent the scenarios reported by Ms. Carrath, Mr. Mingo, and Dr. Gordon are intended to account for mitigation.

1. The measurement of changes in net undercounts from the reinstatement of a citizenship question

53. The net undercount is defined as the difference between the official Census population count and the estimated number of people living in the United States at that time.⁵⁹

54. Based on this definition, it is possible to estimate the net undercount attributable to the reinstatement of a citizenship question. Designating a Census count that includes a citizenship question with an asterisk (*), and given the counterfactual Census count without a citizenship question, the change in population undercount attributable to the reinstatement of a citizenship question is:

⁵⁷ Mr. Brace does not provide any basis to apply the reported differential 5.8 percent decline in self-response rates among non-citizen households to Hispanic citizen households.

⁵⁸ Reamer Report, p. 27.

⁵⁹ https://www.census.gov/dmd/www/techdoc1.html.

*Net undercount** - *Net undercount* = *Census count** - *Census count* (Equation 2).

Therefore, the projected change in net undercount resulting from the reinstatement of a citizenship question in the 2020 Census is:

Projected 2020 Census count* - Projected 2020 Census count (Equation 3).

- 55. The projected 2020 count (*Projected 2020 Census count*) without a citizenship question can be estimated using historical data. The remaining term to estimate is the projected 2020 count with a citizenship question (*Projected 2020 Census count**), which depends on the sensitivity of the Census count to the reinstatement of a citizenship question.
- 56. Population counts are the combined result of self-responses *and* additional counts via NRFU and whole-person imputation.⁶⁰ As Dr. Abowd explains, "in the small percent of housing units for which we are unable to obtain an enumeration, we [the U.S. Census Bureau] *impute* the information for these housing units."⁶¹ (Emphasis added, citations omitted.) In equation form:

Census count = Self-response counts + NRFU counts + Imputed counts

(Equation 4).

- 57. By construction, NRFU and imputation mitigate self-response rates below 100 percent with the goal of ensuring complete enumeration. I refer to these efforts collectively as "mitigation."⁶²
- 58. To project how many individuals would be enumerated by the 2020 Census with a citizenship question, it is necessary to project "*self-response counts*," "NRFU *counts*," and "*imputed counts*." The U.S. Census "projected that approximately 40 percent of the

⁶⁰ NRFU efforts to achieve enumeration include in-person interviews, use of administrative records, and interviews with proxy respondents (neighbors or building manager). Abowd Disclosure, pp. 6-13.

⁶¹ See Abowd Disclosure, p. 6.

⁶² "The primary purpose of NRFU is to determine the housing unit status of a nonresponding address and to enumerate the households at nonresponding housing units." U.S. Census Bureau, https://census.gov/programs-surveys/decennial-census/2020-census/planning-management/memo-series/2020-memo-2018_10.html.

housing units in the 50 states, the District of Columbia, and Puerto Rico will not initially self-respond to the 2020 Census."⁶³

2. Certain undercounts assume no mitigation

- 59. As described above, Mr. Brace and Dr. Reamer evaluate the impact of an expected undercount in a scenario that assumes a 5.8 percent decline in self-response rates (before NRFU and imputation) among non-citizen households based on estimates from the Census Bureau. Mr. Brace also conducts his impact evaluation relying on Dr. Barreto's survey estimates of the differential decline in self-response rates (before NRFU and imputation) among Hispanics.
- 60. For simplicity, I assume in this section that all terms refer to 2020 projections, and express the predicted 2020 undercounts as:

(Equation 5).

61. Scenarios without NRFU assume that the Census will not mitigate the self-response decline and as a result the difference between Census 2020 population counts with and without a citizenship question is equal to the decline in self-response rates.⁶⁴ In these scenarios, NRFU and imputation are assumed to have no effect on reducing the self-response decline. Therefore:

2020 net undercount change = 2020 Census count* - 2020 Census count = Self-response counts* - Self-response counts

(Equation 6).

62. If mitigation is expected to reduce the self-response decline associated with a citizenship question, then these scenarios do not provide a reasonable basis to

⁶³ "2020 Census Detailed Operation Plan for: 18. Nonresponse Followup Operation (NRFU)," United States Census Bureau, April 18, 2018, p. 2.

⁶⁴ These scenarios assume that mitigation does not reduce unit nonresponse associated with the citizenship question.

project Census 2020 population counts. The survey evidence Mr. Brace relies on indicates that NFRU is likely to be successful in reducing the self-response decline with or without a citizenship question.⁶⁵ This expectation is consistent with the effectiveness of the NRFU operation in the 2010 Census.⁶⁶ This evidence indicates that Dr. Reamer's and Mr. Brace's three collective pre-mitigation scenarios are undercounted for reasons other than the reinstatement of a citizenship question.⁶⁷ In particular, these undercounts can be explained by unrealistic assumptions of zero mitigation and not only to the reinstatement of a citizenship question.

63. Moreover, all of these scenarios project that there will be no mitigation using statistical methods such as imputation or administrative records enumerations. If imputation is expected to reduce undercounts, then the three scenarios used by Dr. Reamer and Mr. Brace rely on undercounts also attributable to reasons other than the reinstatement of a citizenship question.

VIII. IMPACT EVALUATION UNDER AN ALTERNATIVE NRFU ASSUMPTION

- 64. The Census expects to fully mitigate any decline in self-response rates attributable to a citizenship question through NRFU and imputation: "[t]he Census Bureau is prepared to conduct the 2020 Census NRFU operation and believes that those efforts will result in a complete enumeration."⁶⁸ Plaintiffs' experts' scenarios do not reflect these expectations.
- 65. By definition, a full enumeration with a citizenship question will result in no undercount relative to the 2020 baseline population projections, which assume no

⁶⁵ Fraga Report, pp. 12 and 13. Dr. Barreto's survey data indicate that a larger proportion of respondents change from no participation with a citizenship question to participation with a citizenship question after follow-up than respondents that change from no participation without a citizenship question to participation without a citizenship question to participation without a citizenship question after follow-up.

⁶⁶ Memorandum from John Abowd and David Brown, September 28, 2018.

⁶⁷ This same conclusion applies to Dr. Gordon's, Ms. Carruth's and Mr. Mingo's scenarios to the extent that they do not account for mitigation.

⁶⁸ Abowd Disclosure, p. 5.

citizenship question. Therefore, if full enumeration is achieved, a citizenship question will have no impact on congressional seat apportionment or the distribution of federal assistance through programs reliant on Census counts.

- 66. To demonstrate how Plaintiffs' experts' predictions are impacted by their low assumed NRFU success rates, Defendants asked me to recalculate Plaintiffs' predictions assuming NRFU has the same success rate as it had in the 2010 Census, namely 98.58 percent ("Historical NRFU-Rate").⁶⁹ As described above, this assumption does not fully account for mitigation because it does not include imputation.
- 67. The results described below show that with a NRFU success rate equal to that of the 2010 Census, even before accounting for imputation, a citizenship question will have no impact on congressional seat apportionment and a small percentage effect on the distribution of federal funds within the programs evaluated by Plaintiffs' experts.

A. Recalculation of Mr. Brace's Impact Evaluation of Congressional Apportionment

- 68. Mr. Brace was asked to "assess the effect on reapportionment of a differential undercount of 2, 5.8, and 8.09 percentage points for these [Hispanic and non-citizen] affected populations."⁷⁰ As noted above, his 2 percent scenario is based on a speculative assumption. The other two scenarios do not account for NRFU. Also, the 8.09 differential undercount Dr. Barreto reports is for Latinos.⁷¹ Mr. Brace, however, applies this undercount differential to both Hispanics *and* non-Hispanic non-citizens. Mr. Brace offers no basis for assuming this undercount differential applies to non-Hispanic non-citizens.
- 69. The formula for computing congressional apportionment is based on a priority ranking using each state's population counts.⁷² The apportionment population

⁶⁹ Memorandum from John Abowd and David Brown, September 28, 2018.

⁷⁰ Brace Report, p. 6.

⁷¹ Barreto Report, ¶ 84.

⁷² https://www.census.gov/population/apportionment/about/computing.html.

includes resident population as enumerated by the decennial census. To the extent that Mr. Brace's population estimates understate or overstate resident population, his congressional seat apportionment analysis is more likely to be incorrect. Assuming the Historical NRFU-Rate, a citizenship question has no impact on congressional apportionment.

1. The apportionment of congressional seats

- 70. Apportionment to the U.S. House of Representatives is mandated by the Constitution, which provides that each state receives at least one congressional seat. Since 1941 (based on the 1940 Census) the remaining seats have been divided among the states according to the Method of Equal Proportions. Seats are assigned based on "priority values," calculated as each state's population divided by a multiplier equal to the geometric mean of the state's current and next seats.⁷³ Once priority values are calculated, they are ranked and the 51st through 435th seats are assigned based on ranking. The sum of seats for each state, including the one assigned per state, is the total seats in the House of Representatives apportioned to that state.
- 71. I created a spreadsheet calculator that replicates the 1990, 2000 and 2010 priority values and apportionment published by the Bureau of the Census.⁷⁴ The calculator can be used to estimate 2020 apportionment given inputs of each state's estimated apportionment population in 2020. I replicated Mr. Brace's baseline apportionment projections for 2020 Census population counts as reported in Table 1 of Exhibit 3 of

⁷³ <u>https://www.census.gov/topics/public-sector/congressional-apportionment/about.html;</u> <u>https://www.census.gov/topics/public-sector/congressional-apportionment/about/computing.html</u>. If 'n' is the number of seats a state will have if it gains a seat, the geometric mean of a state's current and next seats is $\sqrt{n(n-1)}$. The priority value for a state's second seat is its population divided by $\sqrt{2(2-1)}$ or 1.414, the priority value for its third seat is its population divided by $\sqrt{3(3-1)}$ or 2.449, etc. Each state's apportionment population is its total resident population including citizens and noncitizens, plus Armed Forces and federal civilian employees stationed outside the U.S. (and dependents living with them) that can be allocated back to a home state. The District of Columbia is excluded from apportionment population.

⁷⁴ <u>https://www.census.gov/data/tables/1990/dec/1990-apportionment-data.html,</u> <u>https://www.census.gov/data/tables/2000/dec/2000-apportionment-data.html</u> and <u>https://www.census.gov/data/tables/2010/dec/2010-apportionment-data.html</u> respectively.

the Brace Report.⁷⁵ I further used my calculator to estimate 2020 apportionment assuming the Historical NRFU-Rate.

2. Assuming the Historical NRFU-Rate there are no changes to congressional seat apportionment

- 72. I evaluated the impact of the reinstatement of a citizenship question on congressional apportionment assuming the Historical NRFU-Rate. To this end, I compared the projected apportionment given Dr. Brace's baseline 2020 Census population projections to the projected apportionment given population undercounts with the Historical NRFU-Rate and without imputation. In these scenarios, the reinstatement of a citizenship question has no effect on congressional apportionment.
- 73. To conduct this analysis, I relied on Mr. Brace's 2020 Census population projections and his projections of the percentages of Hispanics and non-Hispanic non-citizens by state. I applied the Historical NRFU-rate to estimate the number of individuals in a state who will not be counted after self-response and NRFU in each scenario. Thus, for the 2, 5.8 and 8.09 percentage point differential undercount scenarios, I mitigated the decline in self-response rates at the 2010 Census NRFU-rate and did not account for imputation.⁷⁶

⁷⁵ Mr. Brace's apportionment population projections exclude Armed Forces and federal civilian employees stationed outside the U.S. (and dependents living with them) that can be allocated back to a home state, as have been included in prior Census apportionment population counts.

⁷⁶ Dr. Mathiowetz's 2 percent scenario for non-citizens is based on the sum of undercounts by non-citizen households that self-respond and undercounts due to the ineffectiveness of NRFU to mitigate non-citizen households that do not self-respond. As noted above, Dr. Mathiowetz' estimation of the first component of her 2 percent estimate is speculative. As to the second component, she cites the Census 5.8 percent differential drop-off for non-citizens attributable to the citizenship question and other research as a basis to predict NRFU ineffectiveness. Dr. Mathiowetz does not attribute how much of the 2 percent undercount for non-citizens comes from each source of undercounts. For the purposes of my demonstration, I assume that her undercount comes equally from each source (one percentage point from underreporting and one percentage point from an unmitigated decline in self-responses). Therefore, adjusting the second component at the Historical NRFU-Rate scenario implies a 1.08 percent undercount for non-citizens (1% + (5.8% * (1-98.58%))). For Hispanics, Dr. Mathiowetz assumes a decline in self-response rates as high as 10 percent. Under the Historical NRFU-Rate scenario, the net undercount for Hispanics will be 0.14 percent (10% * (1-98.58%))).

- 74. In Table 2, I report 2020 baseline population projections and population projections by state assuming the Historical NRFU-Rate. For all undercount scenarios, assuming the Historical NRFU-rate and without imputation, the net undercounts are at most one tenth of one percent.
- 75. In Table 3, I report projected population and congressional seat apportionment by state for the 2020 baseline and assuming the Historical NRFU-Rate. At the Historical NRFU-Rate, there are no changes from baseline congressional seat apportionment for any state in any scenario due to a citizenship question.

3. Changes in statewide share of population for certain counties

- 76. Mr. Brace also was asked to assess whether individuals residing in 15 specific counties would see their votes diluted in each of his three scenarios (differential undercounts of 2, 5.8 and 8.09 percentage points, respectively). To this end, Mr. Brace estimates the reduction in each county's share of statewide population in each of his three scenarios.
- 77. I re-evaluated the impact of the reinstatement of a citizenship question on the population of these 15 counties relative to their state total by comparing the actual statewide share of population for each county of interest to the statewide share of population assuming the Historical NRFU-Rate.
- 78. To conduct this analysis, I relied on Mr. Brace's 2020 Census population projections by county and his projections of the percentage of Hispanic and non-Hispanic noncitizen population by county. I applied the Historical NRFU-Rate to estimate the undercount in each county.
- 79. In Table 4, I report the absolute and percentage change in share of statewide population for each county of interest at the Historical NRFU-Rate. The percentage change in any county's share of statewide population is at most one tenth of one percent assuming the Historical NRFU-Rate (and before imputation).

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B. Recalculation of Ms. Carruth's Impact Evaluation on the Distribution of Medicaid Funds

- 80. Ms. Carruth was asked to "(i) analyze the likely effects of an undercount caused by the inclusion of a citizenship question on the 2020 Census on the allocation of federal Medicaid funds to certain states, and (ii) examine the likely consequences of a reduction in federal Medicaid funding to certain states."⁷⁷ Ms. Carruth was asked to assume a differential undercount of Hispanics and non-Hispanic non-citizens relative to the rest of the population of 2.0 percentage points.⁷⁸ Under this assumption, Ms. Carruth estimated the loss of federal Medicaid funds to Texas in FY 2025. I recalculated the estimated loss of federal Medicaid funds to Texas in FY 2025 assuming a Historical NRFU-Rate Scenario.⁷⁹
- 81. In Ms. Carruth's calculations, larger undercounts for a state result in greater estimated losses in federal Medicaid funds for that state. Larger undercounts make the population count for a state artificially low. A state with artificially low population counts has an inflated per-capita income: "[t]he higher the state's per capita income is relative to the national average, the lower its FMAP [Federal Medical Assistance Percentage] and, therefore, the lower its federal reimbursement of Medicaid spending."⁸⁰ A state's FMAP determines the rate at which the federal government reimburses state Medicaid expenditures.⁸¹
- 82. I estimated the reduction in the Texas FMAP for FY2025 with a citizenship question assuming the Historical NRFU-Rate as the difference between the Texas FMAP for FY2025 assuming the baseline population projection (without a citizenship question on the 2020 Census) and the population projection with a citizenship question assuming the Historical NRFU-Rate. I derived the FMAP following Ms. Carruth's

⁷⁷ Carruth Report, p. 1.

⁷⁸ Carruth Report, p. 7.

⁷⁹ I recalculated undercounts in this scenario as described above for the Brace two-percent scenario with the Historical NRFU-Rate.

⁸⁰ Carruth Report, p. 3.

⁸¹ Carruth Report, p. 2.

methodology and assumptions other than the differential undercount percentage attributable to a citizenship question.⁸²

83. In the rightmost column of Table 5, I report the estimated reduction in the Texas FMAP for FY2025 with a citizenship question assuming the Historical NRFU-Rate applied to Ms. Carruth's two-percent undercount scenario. I also report in Table 5 the estimated loss of federal Medicaid funds to Texas in FY2025 by applying the estimated reduction in FMAP to Ms. Carruth's approximate estimate of \$50 billion in Texas Medicaid Spending for FY2025. This results in an estimated loss of federal Medicaid funds to Texas in FY2025 of \$2.89 million with a citizenship question under the Historical NRFU-Rate Scenario and before accounting for imputation.⁸³ This loss is equal to one one-hundredth of one percent of Texas' FY2025 Medicaid spending.

C. Recalculation of Mr. Mingo's Impact Evaluation on the Distribution of Surface Transportation Block Grant Funds

84. A portion of Mr. Mingo's assignment is to "[a]nalyze the likely effects of an undercount caused by the inclusion of a citizenship question on the 2020 Census on the allocation of federal transportation funds under the STBG Program to certain urbanized areas."⁸⁴ Mr. Mingo explains that "[a]lthough the distribution of STBG funds does not depend on decennial census data, the intrastate distribution of those STBG funds does. Each state must distribute approximately half of the STBG funds it receives to different areas of the state based on population"⁸⁵ In his evaluations, Mr. Mingo assumes a differential undercount for the Hispanic population and the non-Hispanic non-citizen population of two percentage points relative to the rest of the population.⁸⁶ I recalculated Mr. Mingo's estimated impact of a citizenship

⁸² Ms. Carruth's analyses rely on population estimates provided by Mr. Brace.

⁸³ If the 2 percent undercount assumption is interpreted as decline in self-response rates before NRFU, and if the Historical NRFU-Rate is applied, the loss in funds is \$2.22 million.

⁸⁴ Mingo Report, p. 1.

⁸⁵ Mingo Report, pp. 2 and 3.

⁸⁶ Mingo Report, p. 7.

question on the allocation of federal transportation funds assuming the Historical NRFU-Rate and no imputation.⁸⁷

- 85. To recalculate Mr. Mingo's estimated impact, I followed his methodology and assumptions other than the differential undercount percentage attributable to a citizenship question. Similar to Mr. Mingo, I relied on Mr. Brace's population projections and the percentages of Hispanic and non-Hispanic non-citizens in Mr. Mingo's selected urbanized areas and states to calculate undercount percentages per jurisdiction. I then allocated STBG funds to each jurisdiction following Mr. Mingo's population-share based calculations.⁸⁸ I estimated the loss of STBG funds in 2020 as the difference between STBG allocations assuming baseline population projections and the Historical NRFU-Rate as applied to Mr. Mingo's scenario.
- 86. I report in Table 6 the estimated undercounts per jurisdiction. Mr. Mingo explains that "[t]here are two different suballocations that depend on decennial census data: the STBG suballocation and the TA set-aside suballocation." In Table 7, I report separately the estimated dollar loss of STBG suballocation and TA set-aside suballocation with a citizenship question, adjusting Mr. Mingo's two percentage point differential undercount to reflect the Historical NRFU-Rate before imputation. Before accounting for imputation, the largest loss in one year is equal to three-tenths of one percent of the suballocation without the citizenship question.

D. Recalculation of Dr. Reamer's Impact Evaluation on the Distribution of Federal Domestic Assistance

87. Dr. Reamer estimates the impact of the reinstatement of a citizenship question in the 2020 Census on the distribution of funds for four federal programs. The allocation formulas for the four programs Dr. Reamer evaluates depend on Census population data. Dr. Reamer compares fund distribution based on projected 2020 population counts and state-level undercount estimates from the reinstatement of a citizenship

⁸⁷ I recalculated undercounts in this scenario as described above for the Brace two-percent scenario with the Historical NRFU-Rate.

⁸⁸ Mingo Report, pp. 7-9.

question in two scenarios. I recalculated Dr. Reamer's impact evaluations assuming the Historical NRFU-Rate but not accounting for imputation.

- 88. In Tables 8, 9, 10, and 11, I report fiscal year 2015 or fiscal year 2016 changes in grant amounts due to the estimated Census undercount by state for Traditional Medicaid, CHIP, WIC Supplemental Food Grants, and SSBG funds, respectively, as presented in Dr. Reamer's analyses and assuming the Historical NRFU-Rate.
- 89. Dr. Reamer reports estimates of changes in reimbursements for traditional Medicaid and CHIP in FY2015 for his undercount scenarios.⁸⁹ These estimates are derived from changes in the reimbursement rates states receive for Medicaid expenditures.⁹⁰ Reimbursement rates for a state's Medicaid expenditures are based on the state's FMAP.⁹¹ Similarly, Dr. Reamer explains that reimbursement rates for a state's CHIP expenditures are based on the state's enhanced FMAP ("E-FMAP").⁹² These rates are computed using population estimates based on the decennial Census.⁹³
- 90. In Table 8, I present the estimated change in FMAP and traditional Medicaid reimbursement assuming undercounts at the Historical NRFU-Rate Scenario along with Dr. Reamer's estimates. At the Historical NRFU-Rate, which does not account for imputation, the largest reduction in 2015 FMAP and federal reimbursement for traditional Medicaid is equal to one-tenth of one percent.
- 91. Similarly, in Table 9 I recalculate the estimated change in E-FMAP and CHIP reimbursement assuming undercounts at the Historical NRFU-Rate Scenario. At the Historical NRFU-Rate, which does not account for imputation, the largest reduction in 2015 E-FMAP and federal reimbursement for CHIP is also equal to one-tenth of one percent.

⁸⁹ Reamer Report, p. 30 and 31.

⁹⁰ Reamer Report pp. 18-22.

⁹¹ Reamer Report pp. 18-19.

⁹² Reamer Report, p. 21.

⁹³ Reamer Report pp. 19 and 22.

- 92. Dr. Reamer also reports estimates of changes in the allocation of FY2016 WIC and SSBG funds by state due to Census undercounts using his two undercount scenarios.⁹⁴ The estimated impact of a citizenship question on population counts per state directly affects the relative population sizes of each state and the funding allocations for each program.
- 93. In Tables 10 and 11, I report the FY2016 change in the allocation of WIC Supplemental Food Grant and SSBG funds, respectively, by state, assuming undercounts at the Historical NRFU-Rate Scenario before imputation. Following the reinstatement of a citizenship question and the associated undercount in this scenario, the state that would lose the highest percentage of its FY2016 WIC funds is California, with a 0.01 percent decline of its actual grant. Similarly, with the Historical NRFU-Rate Scenario (before imputation) applied to the distribution of FY2016 SSBG funds the state of California would experience the largest percentage loss (0.01 percent of its actual grant) of its allocation.
- 94. These results indicate that, if the undercount at the Historical NRFU-Rate Scenario is realized in the 2020 Census (and ignoring imputation), and if the FY2020 funding levels are similar to those analyzed by Plaintiffs' experts, then the losses presented above are indicative of the expected losses in funding by state before reducing undercounts for imputation.

E. Recalculation of the Impact Evaluation on the Allocation of Title I Funds

95. Dr. Gordon was asked to "[a]nalyze the likely effects of a differential undercount caused by the inclusion of a citizenship question on the 2020 Census on the allocation of Title I funds to certain school districts."⁹⁵ Dr. Gordon predicts that "many of the school districts at issue in the *Kravitz* and *LUPE* cases would

⁹⁴ Reamer Report, p. 32 and 33.

⁹⁵ Gordon Report, p. 1.

experience a decline in Title I funding dollars as a consequence of including the citizenship question on the 2020 Census."⁹⁶

- 96. Dr. Gordon's report does not provide enough information to replicate her predictions. I also did not receive Dr. Gordon's workpapers in a timely manner and was not able to replicate her predictions regarding the allocation of Title I funds at the district level with the materials produced by the time of the submission of this report.
- 97. To assess the impact of a citizenship question assuming the historical NRFU rate on the allocation of Title I funds, I report in Table 12 changes in Title I grant amounts for fiscal year 2016 by state. I reported these estimates in the *California v. U.S. Department of Commerce* litigation as a recalculation of Dr. Reamer's estimated impact on the allocation of Title I funds associated with the introduction of a citizenship question, assuming the Historical NRFU-Rate.⁹⁷ In that litigation, Dr. Reamer considered the same undercount scenarios he considers in the instant litigation. In Table 12, I also report a two-percent undercount scenario adjusted at the Historical NRFU Rate as described above. With NRFU at the Historical Rate, my results indicate that the largest loss in Title I funds among states is equal to one one-hundredth of one percent (5.8 percentage point undercount and Historical NRFU-Rate) and five one-hundredths of one percent (2 percentage point undercount and Historical NRFU-Rate) before accounting for imputation.

⁹⁶ Gordon Report, p. 2.

⁹⁷ Rule 26(A)(2)(B) Expert Report and Declaration of Stuart D. Gurrea, Ph.D., October 3, 2018, *State of California v. Wilbur L. Ross, Jr. et al.*, and *City of San Jose et al. v. Wilbur L. Ross Jr. et al.*, p. 28.

98. I declare under penalty of perjury that the foregoing report is true and correct.

Executed on November 7, 2018.

Shout Gueres

Stuart D. Gurrea, Ph.D.

Mathematry 2% Undersonant 3.6% Undersonant 8.0% Undersonant unb Historiad NRFU unb Historiad NRFU unb Historiad NRFU State Projection Population Undersonant (%) Population Undersonant (%) Abhams 4.906,593 4.906,020 -0.02% 4.906,550 -0.01% 742,495 -0.01% Abhams 4.906,503 -0.01% 742,495 -0.01% -0.01% Achanass 5.940,903 3.940,718 -0.01% 4.906,503 -0.01% Calorato 5.561,942 5.858,653 -0.01% 4.903,941,13 -0.01% 4.928,628 -0.03% Colorado 5.561,942 5.858,653 -0.01% 9.73,79 -0.01% 1.755,364 -0.02% Delavarce 9.87,717 5.97,478 -0.01% 1.975,396 -0.01% 1.975,396 -0.01% Bordia 2.204,871 1.755,356 -0.02% 1.755,356 -0.02% 1.755,356 -0.02% Brazia 1.436,627 1.727,2566 -0.02% 1.725,565 </th <th>Popu</th> <th>lation Projections</th> <th>Assuming NR</th> <th>FU-Rate and Proj</th> <th>ected Percenta</th> <th>ge Net Undercour</th> <th>its, Betore Imp</th> <th>outation</th>	Popu	lation Projections	Assuming NR	FU-Rate and Proj	ected Percenta	ge Net Undercour	its, Betore Imp	outation	
Interview with Haterial NRFU with Haterial NRFU with Haterial NRFU Brace Population Population Population Undercount (%) Population Undercount (%) Alabara 4,206,203 4,206,203 -0.02% 742,522 -0.00% 730,640 -0.01% Alabara 7,42,890 742,212 -0.03% 730,640 -0.01% 3,00,0178 -0.00% 730,640 -0.01% Actiona 3,040,0179 -0.03% 3,040,178 -0.00% 5,00,928 -0.01% Calfornia 2,024,897 5,374,87 -0.07% 3,576,545 -0.02% 5,56,455 -0.02% Connecticut 3,574,178 -0.07% 3,576,545 -0.02% 1,576,345 -0.02% Delvarae 9,375,44 987,075 -0.03% 1,035,805 -0.01% 1,0755,346 -0.02% Georgia 1,0750,667 10,751,868 -0.03% 1,300,266 -0.01% 1,302,264 -0.01% 1,302,264 -0.02% Habot 1,205,607 1,272,56			Mathiowetz	2% Undercount	5.8% l	Undercount	8.09% Undercount		
Brac: Projuticio Undercount (%) Population Undercount (%) Population Undercount (%) Alabara: 4/906/23 4/906/23 0.00% 4/906/23 0.00% Alasas: 7/13/407 7/30,818 -0.01% 7/42,522 -0.01% 7/42,495 -0.01% Arizona 7/31,3407 7/30,818 -0.07% 3/040,718 -0.00% 3/040,727 -0.01% California 40,18,943 40/27,4303 -0.01% 40,304,113 -0.00% 450,60,332 -0.02% Colorado 5,561,902 5,586,835 -0.00% 5,560,793 -0.02% 5,560,392 -0.02% Colorado 5,561,902 9,970,75 -0.08% 22,023,188 -0.03% 97,300 -0.01% Flowina 1,215,666 -0.02% 1,356,697 1,073,346 -0.02% 1,366,697 1,073,346 -0.02% Ilawia 1,236,607 1,073,1846 -0.02% 1,380,244 -0.01% 1,380,244 -0.01% Ilawia 1,228,565 <th></th> <th></th> <th colspan="2">with Historical NRFU</th> <th>with Histo</th> <th>orical NRFU</th> <th colspan="3">with Historical NRFU</th>			with Historical NRFU		with Histo	orical NRFU	with Historical NRFU		
Brace Popiation Popiation Undercount (%) Population Undercount (%) Abbarna 4006/793 4006/020 -0.02% 4006/583 0.00% 4006/500 -0.01% Abska 742,529 -0.01% 742,522 -0.01% 742,625 -0.01% Arizona 7,313,407 7,303,189 -0.07% 7,313,26 -0.01% 5,040,627 -0.01% California 40,318,943 40,274,303 -0.01% 40,004,113 -0.04% 5,040,627 -0.01% Connecticut 3,577,217 3,574,375 -0.00% 3,576,592 -0.02% 5,063,532 -0.01% Georgia 10,756,067 10,751,668 -0.00% 10,755,805 -0.01% 10,873,404 -0.02% Idaba 1,430,094 1,779,976 -0.05% 1,436,420 -0.01% 1,436,420 -0.02% Imaia 6,735,470 12,726,764 1-0.05% 3,182,770 -0.02% 1,436,420 -0.02% Imaia 1,236,241 -0.434,41 -0.02%									
Sale Projection Projection <th>State.</th> <th>Brace Population</th> <th>Description</th> <th>U. d. margaret (0/)</th> <th>Denvelopiere</th> <th>U. d. a de la de</th> <th>De serletis a</th> <th>U. d</th>	State.	Brace Population	Description	U. d. margaret (0/)	Denvelopiere	U. d. a de la de	De serletis a	U. d	
Analani	Alabama	4 006 702	4 006 020	0.02%	4 006 582	0.00%	4 006 500	0.01%	
Anzona $7_{2,05,190}$ $7_{2,05,180}$ $7_{2,05,140}$ $7_{2,05,140}$ $7_{2,05,140}$ $7_{2,05,140}$	Aladama	742 590	4,900,020	-0.0276	4,900,383	0.0078	4,900,500	-0.0176	
$ \begin{array}{c} \mbox{Arabina} & 1,31,300 & 1,008,189 & -0.07\% & 7,311,320 & -0.03\% & 7,00304 & -0.04\% \\ \mbox{Arabinas} & 3,040,050 & 3,040,179 & -0.01\% & 3,040,113 & -0.04\% & 40,282,58 & -0.05\% \\ \mbox{Connectican} & 3,577,217 & 3,574,787 & -0.07\% & 3,576,592 & -0.02\% & 3,576,345 & -0.02\% \\ \mbox{Connectican} & 3,577,217 & 3,574,787 & -0.07\% & 3,576,592 & -0.02\% & 3,576,345 & -0.02\% \\ \mbox{Delaware} & 987,534 & 987,075 & -0.05\% & 97,451 & -0.01\% & 97,590 & -0.01\% \\ \mbox{Fordia} & 22,034,897 & 22,017,405 & -0.08\% & 22,022,118 & -0.03\% & 22,027,116 & -0.04\% \\ \mbox{Georgia} & 10,756,967 & 10,751,868 & -0.05\% & 10,755,965 & -0.01\% & 10,953,844 & -0.02\% \\ \mbox{Hawaii} & 1,436,609 & 14,235,358 & -0.09\% & 1,436,402 & -0.01\% & 1,205,346 & -0.02\% \\ \mbox{Hawaii} & 1,2728,769 & 12,720,766 & -0.06\% & 12,726,543 & -0.02\% & 1,2725,665 & -0.02\% \\ \mbox{Hawaii} & 12,728,769 & 12,720,766 & -0.06\% & 12,726,543 & -0.01\% & 1,2725,665 & -0.02\% \\ \mbox{Hama} & 3,182,289 & 3,181,998 & -0.03\% & 3,182,770 & -0.01\% & 3,182,684 & -0.01\% \\ \mbox{Kanas} & 2,925,62 & -0.294 & 4,945,29 & -0.00\% & 4,94,466 & -0.01\% \\ \mbox{Kanas} & 2,925,41 & 1,342,161 & -0.01\% & 1,342,320 & 0.00\% & 1,342,316 & 0.00\% \\ \mbox{Maine} & 1,342,361 & 1,342,161 & -0.01\% & 1,342,329 & 0.00\% & 1,342,316 & 0.00\% \\ \mbox{Maine} & 1,342,361 & 1,342,161 & -0.01\% & 1,342,320 & 0.00\% & 1,342,316 & 0.00\% \\ \mbox{Mains} & 1,000,6,187 & 10,002,150 & -0.04\% & 1,0005,499 & -0.01\% & 1,012,217 & -0.02\% \\ \mbox{Mains} & 1,956,716 & 1,955,947 & -0.00\% & 6,953,085 & -0.02\% \\ \mbox{Meshgan} & 10,00,6,187 & 10,002,150 & -0.04\% & 1,005,499 & -0.01\% & 1,242,316 & 0.00\% \\ \mbox{Minssoth} & 6,164,890 & 6,948,463 & -0.00\% & 6,953,085 & -0.02\% \\ \mbox{Minssoth} & 1,000,6,187 & 10,002,150 & -0.00\% & 1,005,227 & -0.01\% \\ \mbox{Minssoth} & 1,005,6,71 & -0.01\% & 5,002,240 & -0.01\% \\ \mbox{Mesha} & 1,956,716 & 1,955,941 & -0.01\% & 5,002,240 & -0.01\% \\ \mbox{Mesha} & 1,956,761 & 1,955,941 & -0.01\% & 1,976,230 & -0.02\% \\ \mbox{Mesha} & 1,956,475 & 1,955,941 & -0.01\% & 1,776,230 & -0.01\% \\ Mel$	Aliaska	742,569	7 200 100	-0.0376	7 211 220	-0.01 /0	7 210 504	-0.0176	
Aradinsis 3,000,250 3,000,179 -0,017% 3,000,27 -0,017% Califormia 40,218,234 40,274,303 -0,017% 40,304,113 -0,017% 40,308,232 -0,037% Colonado 5,861,062 5,858,655 -0,007% 5,860,733 -0,027% 5,860,332 -0,037% Consecticut 3,577,345 987,075 -0,05% 987,431 -0,017% 987,390 -0,017% Delaware 987,534 987,075 -0,08% 22,022,318 -0,03% 2,027,116 -0,027% Idabo 1,0755,054 -1,075,168 -0,007% 1,436,402 -0,017% 1,436,303 -0,022% Idabo 1,800,404 1,729,256 -0,027% 1,800,304 -0,022% Illinois 1,2,728,769 12,728,763 -0,027% 1,318,264 -0,017% Karnsa 2,925,620 2,94,568 -0,04% 2,925,281 -0,017% 1,318,264 -0,017% Karnsa 2,925,621 2,925,620 2,94,568 -0,017% 3,182,	Arizona	7,515,407	7,508,189	-0.07%	7,511,520	-0.05%	7,510,504	-0.04%	
$ \begin{array}{c} \mbox{Adminital} & 40,113,240 & 40,17,00 & 40,17,00 & 40,047,113 & 40,047,113 & 40,017,0 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,33 & 40,027,0 & 5,800,33 & 40,027,0 & 5,800,32 & 40,007,0 & 5,800,32 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & 5,800,30 & 40,007,0 & $	Arkansas	3,040,950	3,040,179	-0.03%	3,040,718	-0.01%	5,040,627 40,208,258	-0.01%	
Catoratoo 3,801,702 3,578,345 -0.00% 3,500,793 -0.00% 3,576,345 -0.00% Delaware 987,753 997,075 -0.05% 987,431 -0.01% 997,390 -0.01% Florida 22,034,807 22,017,116 -0.04% 22,027,116 -0.04% Georgia 10,756,967 10,751,868 -0.05% 10,755,805 -0.01% 11,303,20 -0.02% Hawaii 1,436,609 1,435,358 -0.00% 1,436,402 -0.01% 1,202,266 -0.02% Illinois 1,272,8709 1,2120,766 -0.06% 12,2726,543 -0.01% 4,214,844 -0.01% Iowa 3,182,269 3,181,998 -0.03% 3,182,70 -0.01% 4,212,844 -0.01% Kennacky 4,404,713 4,415,248 -0.02% 4,716,902 -0.01% 4,214,2461 -0.02% Louisiana 4,714,571 4,716,278 -0.02% 4,716,902 -0.01% 4,716,801 -0.01% Marighta 6,128,2561 <td< td=""><td>California</td><td>40,518,945</td><td>40,274,505</td><td>-0.1170</td><td>40,504,115</td><td>-0.04%</td><td>40,298,258</td><td>-0.05%</td></td<>	California	40,518,945	40,274,505	-0.1170	40,504,115	-0.04%	40,298,258	-0.05%	
$\begin{array}{c} {\rm Contender 1} & 3,5 (7,21) \\ {\rm Contender 2} & 3,5 (7,24) \\ {\rm Contender 2} & 987,534 \\ {\rm Contender 2} & 987,534 \\ {\rm Contender 2} & 987,534 \\ {\rm Contender 2} & 987,537 \\ {\rm Contender 2} & 987,539 \\ {\rm Contender 2} & 987,537 \\ {\rm Contender 2} & 997,538 \\ {\rm Contender 2} & 997,538 \\ {\rm Contender 2} & 997,538 \\ {\rm Contender 2} & 997,537 \\ {\rm Contende 2} & 997,538 \\ {\rm Contender 2} & 997,538 \\ {\rm Contender 2} &$	Colorado	5,861,962	5,858,655	-0.06%	5,860,795	-0.02%	5,860,552	-0.05%	
Dataware 987,924 987,975 +0.01% 987,920 +0.01% Georgia 10,755,967 10,751,868 +0.08% 22,023,18 +0.01% 10,755,346 +0.02% Hawaii 1,436,609 1,435,358 +0.09% 1,436,402 +0.01% 1,436,320 +0.02% Ilaho 1,200,494 1,799,936 -0.03% 1,800,266 +0.01% 1,800,204 +0.02% Illinois 1,2728,769 12,720,766 +0.06% 12,726,543 +0.01% 5,743,44 +0.01% Ioara 3,182,989 3,181,998 +0.03% 3,182,770 +0.01% 3,182,684 +0.01% Kennsky 4,494,713 4,493,4329 +0.01% 4,494,529 +0.01% 4,494,452 +0.01% Louisiana 4,717,157 4,716,278 +0.02% 4,716,902 +0.01% 4,716,801 +0.01% Marphand 1,422,361 1,342,160 +0.00% 6,553,925 +0.01% 4,716,801 +0.01% Maryland 1,022,160 +0.04	D	5,577,217	5,574,787	-0.07%	5,576,592	-0.02%	3,570,345	-0.02%	
Florida 22,02,017,053 40,05% 22,02,017 40,05% 22,02,017 40,05% Georgia 10,755,057 10,751,868 40,05% 10,755,805 40,01% 14,36,320 40,02% Hawaii 1,360,609 1,455,358 40,00% 1,486,402 40,01% 1,436,320 40,02% Illinois 1,2728,769 12,720,766 -0,00% 12,726,543 -0,002% 12,725,665 -0,02% Indiana 6,733,572 6,732,893 -0,03% 6,734,570 -0,01% 3,182,264 -0,01% Kansas 2,925,620 2,924,568 -0,04% 2,925,281 -0,01% 2,925,147 -0,02% Kansas 4,944,713 4,493,341 -0,02% 4,716,902 -0,01% 4,716,301 -0,01% Maine 1,442,361 1,342,161 -0,01% 1,342,316 0,00% 6,127,266 -0,01% 4,716,301 -0,01% Maisschuetts 6,954,463 -0,00% 6,953,522 -0,02% 4,933,815 -0,02% 4,933,815	Delaware	987,534	987,075	-0.05%	987,431	-0.01%	987,390	-0.01%	
	Florida	22,034,897	22,017,695	-0.08%	22,029,318	-0.03%	22,027,116	-0.04%	
Hawan1,435,0091,435,258 -0.00% 1,436,402 -0.01% 1,436,201 -0.02% Ilaho1,800,4941,799,256 -0.03% 1,800,286 -0.01% 1,200,214 -0.02% Illinois12,728,76912,720,766 -0.06% $12,726,543$ -0.01% $12,725,665$ -0.02% Kansas2,925,6202,924,568 -0.04% $2,925,281$ -0.01% $3,182,2684$ -0.01% Kentacky4,494,713 $4,493,841$ -0.02% $4,494,526$ -0.01% $4,914,56$ -0.01% Louisiana $4,717,157$ $4,716,278$ -0.02% $4,716,002$ -0.01% $4,716,801$ -0.01% Maryland $6,128,312$ $6,124,806$ -0.06% $6,127,566$ -0.01% $4,124,2316$ 0.00% Maschusetts $6,954,503$ $6,948,463$ -0.00% $6,935,522$ -0.02% $6,955,3085$ -0.02% Michigan $10,006,187$ $10,002,150$ -0.04% $10,005,499$ -0.01% $10,005,227$ -0.01% Mississipi2,980,012 $2,07,9607$ -0.01% $5,092,286$ -0.00% $5,092,287$ -0.00% Mississipi2,980,012 $2,07,9607$ -0.01% $1,079,2912$ -0.00% $2,979,877$ -0.00% Mississipi2,990,814 -0.02% $6,164,457$ -0.01% $1,956,402$ -0.01% $1,956,402$ -0.01% New Lampshire $1,355,867$ $1,355,347$ -0.00% $1,355,777$ -0.01% $1,956,402$ -0.07% <td>Georgia</td> <td>10,756,967</td> <td>10,751,868</td> <td>-0.05%</td> <td>10,755,805</td> <td>-0.01%</td> <td>10,755,346</td> <td>-0.02%</td>	Georgia	10,756,967	10,751,868	-0.05%	10,755,805	-0.01%	10,755,346	-0.02%	
$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	Hawan	1,436,609	1,435,358	-0.09%	1,436,402	-0.01%	1,436,320	-0.02%	
$\begin{split} linos & 12, /28, /69 & 12, /20, /66 & -0.00\% & 12, /26, /43 & -0.02\% & 12, /25, /65 & -0.02\% \\ linos & 3, 182, 98 & 3, 181, 998 & -0.03\% & 3, 182, 770 & -0.01\% & 3, 182, 684 & -0.01\% \\ lowa & 3, 182, 98 & 3, 181, 998 & -0.03\% & 3, 182, 770 & -0.01\% & 2, 925, 147 & -0.02\% \\ Kanas & 2, 925, 620 & 2, 924, 568 & -0.02\% & 4, 944, 552 & 0.00\% & 4, 494, 456 & -0.01\% \\ Louisiana & 4, 717, 157 & 4, 716, 278 & -0.02\% & 4, 716, 902 & -0.01\% & 4, 716, 801 & -0.01\% \\ lowar & 3, 342, 361 & 1, 342, 161 & -0.01\% & 1, 342, 329 & 0.00\% & 1, 342, 316 & 0.00\% \\ Maryland & 6, 128, 312 & 6, 124, 806 & -0.06\% & 6, 953, 522 & -0.02\% & 6, 953, 085 & -0.02\% \\ Massachusetts & 6, 954, 630 & 6, 948, 463 & -0.09\% & 6, 953, 522 & -0.02\% & 6, 953, 085 & -0.02\% \\ Michigan & 10, 006, 187 & 10, 002, 150 & -0.04\% & 10, 005, 499 & -0.01\% & 10, 005, 227 & -0.01\% \\ Minnesota & 5, 602, 246 & 5, 600, 346 & -0.04\% & 6, 502, 402 & -0.01\% & 5, 602, 248 & -0.01\% \\ Missotari & 6, 164, 890 & 6, 163, 433 & -0.02\% & 6, 164, 580 & -0.01\% & 6, 164, 457 & -0.01\% \\ Notrata & 1, 070, 348 & 1, 0770, 221 & -0.01\% & 1, 0770, 307 & 0.00\% & 1, 0770, 291 & -0.01\% \\ New Hampshire & 1, 355, 587 & 1, 355, 381 & -0.04\% & 1, 355, 788 & -0.01\% & 1, 355, 787 & -0.01\% \\ New Horso & 2, 092, 538 & 2, 000, 834 & -0.08\% & 2, 091, 643 & -0.01\% & 1, 355, 787 & -0.01\% \\ North Carolina & 10, 588, 169 & 10, 583, 951 & -0.04\% & 10, 587, 109 & -0.01\% & 10, 586, 690 & -0.01\% \\ North Dakota & 771, 081 & 770, 821 & -0.03\% & 771, 037 & -0.01\% & 10, 586, 690 & -0.01\% \\ North Dakota & 771, 181 & 770, 821 & -0.03\% & 771, 037 & -0.01\% & 10, 1586, 690 & -0.01\% \\ North Carolina & 10, 588, 169 & 10, 583, 951 & -0.04\% & 11, 587, 169 & -0.02\% & 19, 91, 13, 322 & -0.03\% \\ North Carolina & 10, 588, 169 & 10, 583, 951 & -0.04\% & 11, 587, 109 & -0.01\% & 11, 718, 404 & 11, 717, 437 & -0.00\% & 11, 718, 404 & 11, 717, 437 & -0.00\% & 11, 718, 404 & 11, 717, 437 & -0.00\% & 11, 718, 406 & -0.02\% \\ North Dakota & 771, 181 & 770, 821 & -0.03\% & 771, 057 & -0.01\% & 10, 586, 690 & -0.01\% \\ North Dakota & 1718, $	Idaho	1,800,494	1,799,936	-0.03%	1,800,286	-0.01%	1,800,204	-0.02%	
$ Indiana 6,753,072 6,752,2893 -0.03\% 6,734,350 -0.01\% 6,734,354 -0.01\% \\ Kansas 2,925,620 2,924,568 -0.04\% 2,925,281 -0.01\% 2,925,147 -0.02\% \\ Kansas 2,925,620 2,924,568 -0.04\% 2,925,281 -0.01\% 2,925,147 -0.02\% \\ Kentucky 4,494,713 4,493,841 -0.02\% 4,494,529 0.00\% 4,494,456 -0.01\% \\ Louisiana 4,717,157 4,716,278 -0.02\% 4,716,902 -0.01\% 4,716,801 -0.01\% \\ Maine 1,342,361 1,342,161 -0.01\% 1,342,329 0.00\% 1,342,316 -0.00\% \\ Maryland 6,128,312 6,124,806 -0.00\% 6,953,522 -0.02\% 6,953,085 -0.02\% \\ Massachusetts 6,954,630 6,948,463 -0.09\% 6,953,522 -0.01\% 6,953,085 -0.02\% \\ Minsesota 5,692,816 5,609,346 -0.04\% 5,602,402 -0.01\% 10,005,227 -0.01\% \\ Minsesota 5,602,816 5,609,346 -0.04\% 5,602,402 -0.01\% 5,602,238 -0.01\% \\ Mississippi 2,980,001 2,979,697 -0.01\% 2,979,912 0.00\% 10,005,277 -0.01\% \\ Mississippi 2,980,001 2,979,697 -0.01\% 1,979,307 0.00\% 10,79,291 -0.01\% \\ Montana 1,079,348 1,079,221 -0.01\% 1,956,493 -0.01\% 1,956,405 -0.02\% \\ Nevada 1,355,671 1,355,381 -0.04\% 1,355,788 -0.01\% 1,355,757 -0.01\% \\ Nevada 3,159,442 3,157,024 -0.08\% 3,158,584 -0.03\% 3,158,245 -0.04\% \\ New Hampshire 1,355,867 1,355,381 -0.04\% 1,355,788 -0.01\% 1,355,757 -0.01\% \\ New Hampshire 1,355,867 1,355,381 -0.04\% 1,355,788 -0.01\% 1,355,757 -0.01\% \\ New York 19,919,166 19,901,172 -0.09\% 19,914,976 -0.02\% 19,913,322 -0.03\% \\ North Carolina 10,588,169 10,583,951 -0.04\% 71,037 -0.01\% 17,16,20 -0.01\% \\ North Carolina 10,588,169 10,583,951 -0.04\% 17,171,37 -0.01\% 71,020 -0.01\% \\ North 2,214,948 12,214,976 -0.03\% 71,1037 -0.01\% 71,020 -0.01\% \\ North 2,317,379 4,315,341 -0.05\% 4,316,804 -0.01\% 12,817,922 -0.01\% \\ North Carolina 10,588,169 10,583,951 -0.03\% 71,1037 -0.01\% 71,020 -0.01\% \\ North 2,417,94,43 12,715,49 -0.03\% 71,1037 -0.01\% 71,020 -0.01\% \\ North 2,214,948 12,214,976 -0.03\% 71,1037 -0.01\% 71,020 -0.01\% \\ North 2,214,943 12,814,576 -0.04\% 12,817,924 -0.01\% \\ $	Illinois	12,728,769	12,720,766	-0.06%	12,726,543	-0.02%	12,725,665	-0.02%	
	Indiana	6,735,072	6,732,893	-0.03%	6,734,550	-0.01%	6,734,344	-0.01%	
Kanass2.925,6202.924,568 -0.04% 2.925,281 -0.01% 2.925,147 -0.02% Kenucky4.494,7134.493,841 -0.02% 4.494,529 0.00% 4.494,456 -0.01% Maine1.542,3611.542,161 -0.02% 4.716,929 -0.00% 4.716,821 -0.01% Maine1.542,3611.542,361 -0.02% 6.127,566 -0.01% -0.02% Masschuests6.954,6306.948,463 -0.00% $6.953,522$ -0.02% -0.02% Michigan10,006,18710,002,150 -0.04% $10,005,499$ -0.01% $10,005,227$ -0.01% Mississipi2.80,0012.979,9767 -0.01% $5,692,402$ -0.01% $5,692,238$ -0.01% Mississuri6,164,8906,163,433 -0.02% $6,164,580$ -0.01% $5,692,402$ -0.01% $5,692,238$ -0.01% Montana1,079,3481,079,221 -0.01% $1,079,307$ 0.00% $1,979,291$ -0.01% Nebraska1.956,7161.955,947 -0.04% $1,355,788$ -0.01% $1,956,910$ -0.02% New Hampshire1.355,881 -0.04% $1,355,757$ -0.01% $1,955,493$ -0.09% $3,158,245$ -0.04% New Jerscio2.902,5382.900,834 -0.08% $2,916,63$ -0.02% $1,913,322$ -0.03% New Hexico2.922,5782.900,834 -0.08% $2,914,976$ -0.02% $1,913,322$ -0.03% North Carolina10,588,	Iowa	3,182,989	3,181,998	-0.03%	3,182,770	-0.01%	3,182,684	-0.01%	
Kentucky $4,494,713$ $4,493,841$ -0.02% $4,494,529$ 0.00% $4,716,801$ -0.01% Louisiana $4,717,157$ $4,716,278$ -0.02% $4,716,902$ -0.01% $4,716,801$ -0.01% Marine $1,342,361$ $1,342,161$ -0.00% $6,127,566$ -0.01% $6,127,271$ -0.02% Massachusetts $6,954,630$ $6,948,463$ -0.00% $6,953,5522$ -0.02% $6,953,085$ -0.02% Michigan $10006,187$ $10002,150$ -0.04% $10,005,299$ -0.01% $5,692,238$ -0.01% Minnesota $5,692,816$ $5,690,346$ -0.04% $5,692,402$ -0.01% $5,692,238$ -0.01% Missouri $6,164,890$ $6,163,433$ -0.02% $6,164,450$ -0.01% $1079,207$ -0.01% Montana $1,079,348$ $1,079,221$ -0.01% $1,079,307$ 0.00% $1,079,201$ -0.01% New Hampshire $1,355,784$ -0.08% $1,355,785$ -0.01% $1,355,785$ -0.02% New Hampshire $1,355,7867$ $1,355,781$ -0.04% $1,355,785$ -0.01% New Harpshire $1,355,7867$ $1,355,781$ -0.08% $2,901,663$ -0.04% $2,901,177$ -0.07% New Yark $19,919,166$ $10,981,951$ -0.08% $2,901,663$ -0.04% $2,901,177$ -0.07% New Yark $19,919,161$ $10,981,951$ -0.03% $71,1037$ -0.01% $71,020$ -0.01% New York $19,919,1$	Kansas	2,925,620	2,924,568	-0.04%	2,925,281	-0.01%	2,925,147	-0.02%	
Louisiana $4,716,278$ -0.02% $4,716,902$ -0.01% $4,716,901$ -0.01% Maine $1,342,361$ $1,342,323$ 0.00% $1,342,316$ 0.00% Maryland $6,122,812$ $6,124,806$ -0.01% $6,127,566$ -0.01% $6,512,721$ -0.02% Massachusetts $6,954,630$ $6,948,463$ -0.00% $6,955,522$ -0.02% $6,953,085$ -0.02% Mirchigan $10,006,187$ $10,002,150$ -0.04% $10,005,492$ -0.01% $10,005,227$ -0.01% Minesota $5,692,346$ $5,690,346$ -0.04% $5,692,402$ -0.01% $5,692,238$ -0.01% Missouri $6,164,890$ $6,163,433$ -0.02% $6,164,450$ -0.01% $5,692,238$ -0.01% Montara $1,079,221$ -0.01% $1,079,207$ 0.00% $1,079,291$ -0.01% Nevada $3,159,442$ $3,157,024$ -0.08% $3,158,584$ -0.03% $3,158,245$ -0.04% New Hampshire $1,355,851$ -0.00% $1,355,788$ -0.01% $1,355,672$ -0.03% New Hexico $2,092,538$ $2,090,834$ -0.08% $2,091,663$ -0.01% $2,901,317$ -0.06% New Mexico $2,092,538$ $2,090,834$ -0.08% $2,091,663$ -0.01% $1,913,322$ -0.03% New Mexico $2,092,538$ $2,090,834$ -0.08% $2,091,463$ -0.01% $10,586,690$ -0.01% North Dakota $771,081$ $770,821$ -0.03% <	Kentucky	4,494,713	4,493,841	-0.02%	4,494,529	0.00%	4,494,456	-0.01%	
Maine1,342,3611,342,161 -0.01% 1,342,329 0.00% 1,342,316 0.00% Maryland6,128,3126,124,806 -0.06% 6,127,256 -0.01% 6,127,271 -0.02% Massachusetts6,954,6306,948,463 -0.09% 6,953,5522 -0.02% 6,953,0585 -0.02% Michigan10,006,18710,002,150 -0.04% 10,005,499 -0.01% 6,953,522 -0.01% 6,953,9585 -0.02% Missouri6,164,8406,163,433 -0.02% 6,164,450 -0.01% 6,164,457 -0.01% Missouri6,164,4806,163,433 -0.02% 6,164,457 -0.01% -0.01% Montana1,079,2481,079,221 -0.01% 1,079,307 0.00% 1,079,291 -0.01% Nevada3,158,4423,157,024 -0.08% 3,158,548 -0.01% 1,355,757 -0.01% New Hampshire1,355,8671,355,381 -0.09% 2,01,663 -0.02% 2,091,317 -0.06% New Mexico2,092,5382,090,834 -0.09% 2,091,663 -0.02% 1,901,322 -0.03% New Mexico2,092,5382,090,834 -0.09% 2,01,663 -0.02% 1,913,322 -0.03% North Carolina10,588,16910,583,951 -0.09% 10,1587,109 -0.01% 10,586,690 -0.01% North Dakota771,081770,821 -0.03% 717,037 -0.00% 11,717,612 -0.01% Oregon4,317,3794,315,341 -0.0	Louisiana	4,717,157	4,716,278	-0.02%	4,716,902	-0.01%	4,716,801	-0.01%	
$\begin{split} & \text{Marylard} & 6,128,312 & 6,124,806 & -0.00\% & 6,127,566 & -0.01\% & 6,127,271 & -0.02\% \\ & \text{Massachusetts} & 6,954,630 & 6,948,463 & -0.00\% & 6,953,522 & -0.02\% & 6,953,085 & -0.02\% \\ & \text{Minsesota} & 5,692,816 & 5,690,346 & -0.04\% & 5,692,402 & -0.01\% & 10,005,227 & -0.01\% \\ & \text{Minsesota} & 5,692,816 & 5,690,346 & -0.04\% & 5,692,402 & -0.01\% & 5,692,238 & -0.01\% \\ & \text{Mississippi} & 2,980,001 & 2,979,697 & -0.01\% & 2,979,912 & 0.00\% & 2,979,877 & 0.00\% \\ & \text{Missouri} & 6,164,890 & 6,163,433 & -0.02\% & 6,164,580 & -0.01\% & 1,079,221 & -0.01\% \\ & \text{Notataa} & 1,079,348 & 1,079,221 & -0.01\% & 1,079,201 & -0.01\% \\ & \text{Nebraska} & 1,956,716 & 1,955,947 & -0.04\% & 1,956,493 & -0.01\% & 1,956,405 & -0.02\% \\ & \text{Nevada} & 3,159,442 & 3,157,024 & -0.08\% & 3,158,584 & -0.03\% & 3,158,245 & -0.04\% \\ & \text{New Hampshire} & 1,355,867 & 1,355,381 & -0.04\% & 1,355,788 & -0.01\% & 1,355,757 & -0.01\% \\ & \text{New Jersey} & 9,063,461 & 9,055,123 & -0.09\% & 9,061,433 & -0.02\% & 9,066,632 & -0.03\% \\ & \text{New York} & 19,91,166 & 19,901,172 & -0.09\% & 19,914,976 & -0.02\% & 19,913,322 & -0.03\% \\ & \text{North Carolina} & 10,588,169 & 10,583,951 & -0.04\% & 10,587,109 & -0.01\% & 17,1020 & -0.01\% \\ & \text{Ohio} & 11,718,404 & 11,715,409 & -0.03\% & 71,1037 & -0.01\% & 17,102 & -0.01\% \\ & \text{Ohio} & 11,718,404 & 11,715,409 & -0.03\% & 71,1037 & -0.01\% & 71,102 & -0.01\% \\ & \text{Ohio} & 11,718,403 & 12,814,576 & -0.02\% & 1,063,863 & -0.02\% \\ & \text{Ponsylvania} & 12,819,483 & 12,814,576 & -0.04\% & 12,818,564 & -0.01\% & 4,316,578 & -0.02\% \\ & \text{South Carolina} & 5,214,916 & 5,213,808 & -0.02\% & 5,214,606 & -0.01\% & 13,85,758 & -0.02\% \\ & \text{South Carolina} & 5,214,916 & 5,213,808 & -0.02\% & 5,214,606 & -0.01\% & 12,817,922 & -0.01\% \\ & \text{Rhode Island} & 1,064,112 & 1,063,451 & -0.05\% & 4,316,804 & -0.01\% & 4,316,578 & -0.02\% \\ & \text{Fermorylarai} & 12,819,483 & 12,814,576 & -0.02\% & 5,214,606 & -0.01\% & 5,214,483 & -0.01\% \\ & \text{Carolina} & 5,214,916 & 5,213,808 & -0.02\% & 5,214,606 & -0.01\% & 5,214,483 & -0.01\% \\ & \text{Temassee} & 6,881,637 & 6,879,815 & -0.03\%$	Maine	1,342,361	1,342,161	-0.01%	1,342,329	0.00%	1,342,316	0.00%	
Masschusetts $6,954,630$ $6,948,463$ -0.09% $6,953,522$ -0.02% $6,953,085$ -0.02% Michigan $10,006,187$ $10,002,150$ -0.04% $10,005,499$ -0.01% $5,02,238$ -0.01% Minesota $5,692,2816$ $5,600,346$ -0.04% $5,692,402$ -0.01% $5,622,238$ -0.01% Mississippi $2,980,001$ $2,979,697$ -0.01% $2,979,977$ 0.00% $2,979,877$ 0.00% Missouri $6,164,890$ $6,163,433$ -0.02% $6,164,457$ -0.01% $1,956,405$ -0.02% Montana $1,079,248$ $1,079,221$ -0.01% $1,956,405$ -0.02% -0.02% Nevada $3,159,442$ $3,157,024$ -0.08% $3,158,584$ -0.03% $3,158,245$ -0.04% New Hampshire $1,355,867$ $1,355,381$ -0.04% $1,355,787$ -0.01% $1,956,405$ -0.02% New Jersey $9,063,461$ $9,055,123$ -0.09% $9,061,433$ -0.02% $9,060,632$ -0.03% New York $19,919,166$ $19,901,172$ -0.09% $19,914,976$ -0.02% $19,913,322$ -0.03% North Carolina $10,588,169$ $10,583,951$ -0.04% $10,587,109$ -0.01% $10,586,690$ -0.01% North Carolina $10,583,158$ -0.03% $17,17,837$ -0.00% $17,17,612$ -0.01% Ohio $11,717,840$ $11,715,409$ -0.03% $11,717,837$ -0.01% $12,817,922$ -0.01% <tr< td=""><td>Maryland</td><td>6,128,312</td><td>6,124,806</td><td>-0.06%</td><td>6,127,566</td><td>-0.01%</td><td>6,127,271</td><td>-0.02%</td></tr<>	Maryland	6,128,312	6,124,806	-0.06%	6,127,566	-0.01%	6,127,271	-0.02%	
Michigan $10,006,187$ $10,002,150$ -0.04% $10,005,499$ -0.01% $10,005,227$ -0.01% Minnesota $5,692,216$ $5,690,346$ -0.04% $5,692,402$ -0.01% $5,692,238$ -0.01% Mississippi $2,990,001$ $2,979,697$ -0.01% $2,979,877$ 0.00% $2,979,877$ 0.00% Missouri $6,164,4890$ $6,163,433$ -0.02% $6,164,580$ -0.01% $1,079,291$ -0.01% Montana $1,079,248$ $1,079,221$ -0.01% $1,079,307$ 0.00% $1,079,291$ -0.01% Nevada $3,159,442$ $3,157,024$ -0.08% $3,158,584$ -0.01% $1,555,757$ -0.01% New Hampshire $1,555,587$ $1,555,581$ -0.04% $1,555,788$ -0.01% $1,555,757$ -0.01% New Jersey $9,063,461$ $9,055,123$ -0.09% $2,091,663$ -0.04% $2,091,137$ -0.06% New York $19,919,166$ $19,901,172$ -0.09% $10,57,109$ -0.01% $19,913,322$ -0.03% North Carolina $10,584,691$ $10,581,951$ -0.04% $10,57,109$ -0.01% $10,71,020$ -0.01% North Dakota $771,081$ $770,821$ -0.03% $771,037$ -0.01% $771,020$ -0.01% Ohio $11,718,404$ $11,715,409$ -0.03% $11,717,837$ 0.00% $11,717,612$ -0.01% Oregon $4,317,379$ $4,315,381$ -0.03% $5,214,606$ -0.01% $4,316,578$	Massachusetts	6,954,630	6,948,463	-0.09%	6,953,522	-0.02%	6,953,085	-0.02%	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Michigan	10,006,187	10,002,150	-0.04%	10,005,499	-0.01%	10,005,227	-0.01%	
Mississippi 2,980,001 2,979,697 -0.01% 2,979,912 0.00% 2,979,877 0.00% Missouri 6,164,890 6,163,433 -0.02% 6,164,580 -0.01% 6,164,457 -0.01% Montana 1,079,348 1,079,221 -0.01% 1,079,307 0.00% 1,079,291 -0.01% Nebraska 1,956,716 1,955,947 -0.04% 1,956,493 -0.01% 1,956,405 -0.02% Nevada 3,159,442 3,157,024 -0.08% 3,158,584 -0.03% 3,158,245 -0.04% New Hampshire 1,355,867 1,355,381 -0.04% 1,355,788 -0.01% 1,355,757 -0.01% New Yerk 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,588,169 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% Ohio 11,718,404 11,715,409 -0.03% 71,037 -0.01% 3,982,219 -0.01%	Minnesota	5,692,816	5,690,346	-0.04%	5,692,402	-0.01%	5,692,238	-0.01%	
Missouri $6,164,890$ $6,163,433$ -0.02% $6,164,580$ -0.01% $6,164,457$ -0.01% Montana $1,079,348$ $1,079,221$ -0.01% $1,079,507$ 0.00% $1,079,291$ -0.01% Nebraska $1,955,142$ $3,155,947$ -0.04% $1,956,493$ -0.01% $1,956,405$ -0.02% Nevada $3,159,142$ $3,157,024$ -0.08% $3,158,584$ -0.00% $3,158,245$ -0.04% New Hampshire $1,355,867$ $1,355,381$ -0.04% $1,355,757$ -0.01% New Jersey $9,063,461$ $9,055,123$ -0.09% $2,091,663$ -0.04% $2,091,317$ -0.06% New Mexico $2,092,538$ $2,000,834$ -0.08% $2,091,663$ -0.04% $2,091,317$ -0.06% New York $19,919,166$ $19,901,172$ -0.09% $19,914,976$ -0.02% $19,913,322$ -0.03% North Carolina $10,588,169$ $10,583,951$ -0.04% $10,587,109$ -0.01% $10,586,690$ -0.01% Ohio $11,718,404$ $11,715,409$ -0.03% $11,717,837$ 0.00% $11,717,612$ -0.01% Ohio $11,718,404$ $11,715,409$ -0.03% $3,982,384$ -0.01% $3,982,219$ -0.01% Oregon $4,317,379$ $4,315,341$ -0.05% $4,316,804$ -0.01% $4,316,578$ -0.02% Ned Island $1,064,112$ $1,063,451$ -0.06% $1,063,934$ -0.01% $12,817,922$ -0.01% South Ca	Mississippi	2,980,001	2,979,697	-0.01%	2,979,912	0.00%	2,979,877	0.00%	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Missouri	6,164,890	6,163,433	-0.02%	6,164,580	-0.01%	6,164,457	-0.01%	
Nebraska 1,956,716 1,955,947 -0.04% 1,956,493 -0.01% 1,956,405 -0.02% Nevada 3,159,442 3,157,024 -0.08% 3,158,584 -0.03% 3,158,245 -0.04% New Hampshire 1,355,867 1,355,381 -0.04% 1,355,788 -0.01% 1,355,777 -0.01% New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.02% 19,913,322 -0.03% New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.02% 19,913,322 -0.03% New York 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,588,169 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% Ohio 11,718,404 11,715,409 -0.03% 11,717,837 0.00% 11,717,612 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02%	Montana	1,079,348	1,079,221	-0.01%	1,079,307	0.00%	1,079,291	-0.01%	
Nevada 3,159,442 3,157,024 -0.08% 3,158,584 -0.03% 3,158,245 -0.04% New Hampshire 1,355,367 1,355,381 -0.04% 1,355,788 -0.01% 1,355,757 -0.01% New Jersey 9,063,461 9,055,123 -0.09% 9,061,433 -0.02% 9,060,632 -0.03% New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.04% 2,091,317 -0.06% New York 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% Ohio 11,718,404 11,715,409 -0.03% 11,717,837 0.00% 11,717,612 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% Pennsylvania 12,819,483 12,814,576 -0.04% 12,818,364 -0.01% 4,316,578 -0.02% S	Nebraska	1,956,716	1,955,947	-0.04%	1,956,493	-0.01%	1,956,405	-0.02%	
New Hampshire 1,355,867 1,355,381 -0.04% 1,355,788 -0.01% 1,355,757 -0.01% New Jersey 9,063,461 9,055,123 -0.09% 9,061,433 -0.02% 9,060,632 -0.03% New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.04% 2,091,317 -0.06% New York 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,588,169 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% Ohio 11,718,404 11,715,409 -0.03% 71,1037 -0.01% 11,717,612 -0.01% Oklahoma 3,982,803 3,981,598 -0.03% 3,982,384 -0.01% 3,982,219 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% South Carolina 5,214,916 5,213,808 -0.02% 5,214,606 -0.01% 5,214,483 -0.01% <	Nevada	3,159,442	3,157,024	-0.08%	3,158,584	-0.03%	3,158,245	-0.04%	
New Jersey 9,063,461 9,055,123 -0.09% 9,061,433 -0.02% 9,060,632 -0.03% New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.04% 2,091,317 -0.06% New York 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,588,169 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% North Dakota 771,081 770,821 -0.03% 771,037 -0.01% 771,020 -0.01% Ohio 11,718,404 11,715,409 -0.03% 11,717,837 0.00% 11,717,612 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% Pennsylvania 12,819,483 12,814,576 -0.04% 12,818,364 -0.01% 5,214,483 -0.01% South Carolina 5,214,916 5,213,808 -0.02% 5,214,606 -0.01% 5,214,483 -0.01% <	New Hampshire	1,355,867	1,355,381	-0.04%	1,355,788	-0.01%	1,355,757	-0.01%	
New Mexico 2,092,538 2,090,834 -0.08% 2,091,663 -0.04% 2,091,317 -0.06% New York 19,919,166 19,901,172 -0.09% 19,914,976 -0.02% 19,913,322 -0.03% North Carolina 10,588,169 10,583,951 -0.04% 10,587,109 -0.01% 10,586,690 -0.01% North Dakota 771,081 770,821 -0.03% 771,037 -0.01% 771,020 -0.01% Ohio 11,718,404 11,715,409 -0.03% 11,717,837 0.00% 11,717,612 -0.01% Oklahoma 3,982,803 3,981,598 -0.03% 3,982,384 -0.01% 3,982,219 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% Pennsylvania 12,819,483 12,814,576 -0.04% 12,818,364 -0.01% 5,214,606 -0.01% 5,214,405 -0.02% 10,63,863 -0.02% 5,014,606 -0.01% 5,214,483 -0.01% 5,814,34	New Jersey	9,063,461	9,055,123	-0.09%	9,061,433	-0.02%	9,060,632	-0.03%	
New York $19,919,166$ $19,901,172$ -0.09% $19,914,976$ -0.02% $19,913,322$ -0.03% North Carolina $10,588,169$ $10,583,951$ -0.04% $10,587,109$ -0.01% $10,586,690$ -0.01% North Dakota $771,081$ $770,821$ -0.03% $771,037$ -0.01% $771,020$ -0.01% Ohio $11,718,404$ $11,715,409$ -0.03% $11,717,837$ 0.00% $11,717,612$ -0.01% Oklahoma $3,982,803$ $3,981,598$ -0.03% $3,982,384$ -0.01% $3,982,219$ -0.01% Oregon $4,317,379$ $4,315,341$ -0.05% $4,316,804$ -0.01% $4,316,578$ -0.02% Pennsylvania $12,819,483$ $12,814,576$ -0.04% $12,818,364$ -0.01% $12,817,922$ -0.01% Rhode Island $1,064,112$ $1,063,451$ -0.06% $1,063,934$ -0.02% $1,063,863$ -0.02% South Carolina $5,214,916$ $5,213,808$ -0.02% $5,214,606$ -0.01% $5,214,483$ -0.01% South Dakota $888,634$ $888,504$ -0.01% $888,600$ 0.00% $888,586$ -0.01% Tennessee $6,881,637$ $6,879,815$ -0.03% $6,881,211$ -0.01% $8,81,043$ -0.01% Texas $29,604,237$ $29,577,697$ -0.09% $29,593,704$ -0.04% $29,589,545$ -0.05% Utah $3,259,702$ $3,258,304$ -0.02% $621,801$ 0.00% $621,793$ 0	New Mexico	2,092,538	2,090,834	-0.08%	2,091,663	-0.04%	2,091,317	-0.06%	
North Carolina10,588,16910,583,951-0.04%10,587,109-0.01%10,586,690-0.01%North Dakota771,081770,821-0.03%771,037-0.01%771,020-0.01%Ohio11,718,40411,715,409-0.03%11,717,8370.00%11,717,612-0.01%Oklahoma3,982,8033,981,598-0.03%3,982,384-0.01%3,982,219-0.01%Oregon4,317,3794,315,341-0.05%4,316,804-0.01%4,316,578-0.02%Pennsylvania12,819,48312,814,576-0.04%12,818,364-0.01%12,817,922-0.01%Rhode Island1,064,1121,063,451-0.06%1,063,934-0.02%1,063,863-0.02%South Carolina5,214,9165,213,808-0.02%5,214,606-0.01%5,214,483-0.01%South Dakota888,634888,504-0.01%888,6000.00%888,586-0.01%Texnesce6,881,6376,879,815-0.03%6,881,211-0.01%6,881,043-0.01%Texas29,604,23729,577,697-0.09%29,593,704-0.04%29,589,545-0.05%Utah3,259,7023,258,304-0.02%621,8010.00%621,7930.00%Vermont621,822621,673-0.02%621,8010.00%621,7930.00%Wisconsin7,751,2381,787,061-0.01%7,750,256-0.01%7,749,804-0.02%West Virginia1,787,238	New York	19,919,166	19,901,172	-0.09%	19,914,976	-0.02%	19,913,322	-0.03%	
North Dakota 771,081 770,821 -0.03% 771,037 -0.01% 771,020 -0.01% Ohio 11,718,404 11,715,409 -0.03% 11,717,837 0.00% 11,717,612 -0.01% Oklahoma 3,982,803 3,981,598 -0.03% 3,982,384 -0.01% 3,982,219 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% Pennsylvania 12,819,483 12,814,576 -0.04% 12,818,364 -0.01% 12,817,922 -0.01% Rhode Island 1,064,112 1,063,451 -0.06% 1,063,934 -0.02% 1,063,863 -0.02% South Carolina 5,214,916 5,213,808 -0.02% 5,214,606 -0.01% 888,564 -0.01% South Dakota 888,634 888,504 -0.01% 888,600 0.00% 888,586 -0.01% Texas 29,604,237 29,577,697 -0.09% 29,593,704 -0.04% 29,589,545 -0.05%	North Carolina	10,588,169	10,583,951	-0.04%	10,587,109	-0.01%	10,586,690	-0.01%	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	North Dakota	771,081	770,821	-0.03%	771,037	-0.01%	771,020	-0.01%	
Oklahoma 3,982,803 3,981,598 -0.03% 3,982,384 -0.01% 3,982,219 -0.01% Oregon 4,317,379 4,315,341 -0.05% 4,316,804 -0.01% 4,316,578 -0.02% Pennsylvania 12,819,483 12,814,576 -0.04% 12,818,364 -0.01% 12,817,922 -0.01% Rhode Island 1,064,112 1,063,451 -0.06% 1,063,934 -0.02% 1,063,863 -0.02% South Carolina 5,214,916 5,213,808 -0.02% 5,214,606 -0.01% 5,214,483 -0.01% South Dakota 888,634 888,504 -0.01% 888,600 0.00% 888,586 -0.01% Tennessee 6,881,637 6,879,815 -0.03% 6,881,211 -0.01% 6,881,043 -0.01% Texas 29,604,237 29,577,697 -0.09% 29,593,704 -0.04% 29,589,545 -0.05% Utah 3,259,702 3,258,304 -0.04% 3,259,082 -0.02% Vermont 621,822 <td>Ohio</td> <td>11,718,404</td> <td>11,715,409</td> <td>-0.03%</td> <td>11,717,837</td> <td>0.00%</td> <td>11,717,612</td> <td>-0.01%</td>	Ohio	11,718,404	11,715,409	-0.03%	11,717,837	0.00%	11,717,612	-0.01%	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Oklahoma	3,982,803	3,981,598	-0.03%	3,982,384	-0.01%	3,982,219	-0.01%	
Pennsylvania $12,819,483$ $12,814,576$ -0.04% $12,818,364$ -0.01% $12,817,922$ -0.01% Rhode Island $1,064,112$ $1,063,451$ -0.06% $1,063,934$ -0.02% $1,063,863$ -0.02% South Carolina $5,214,916$ $5,213,808$ -0.02% $5,214,606$ -0.01% $5,214,483$ -0.01% South Dakota $888,634$ $888,504$ -0.01% $888,600$ 0.00% $888,586$ -0.01% Tennessee $6,881,637$ $6,879,815$ -0.03% $6,881,211$ -0.01% $6,881,043$ -0.01% Texas $29,604,237$ $29,577,697$ -0.09% $29,593,704$ -0.04% $29,589,545$ -0.05% Utah $3,259,702$ $3,258,304$ -0.04% $3,259,258$ -0.01% $3,259,082$ -0.02% Vermont $621,822$ $621,673$ -0.02% $621,801$ 0.00% $621,793$ 0.00% Virginia $8,612,962$ $8,608,624$ -0.05% $8,612,024$ -0.01% $8,611,654$ -0.02% Washington $7,751,401$ $7,745,994$ -0.07% $7,750,256$ -0.01% $7,749,804$ -0.02% Wisconsin $5,836,321$ $5,834,726$ -0.03% $5,835,896$ -0.01% $5,835,728$ -0.01% Wivoming $575,566$ $575,520$ -0.02% $575,603$ -0.01% $575,583$ -0.01%	Oregon	4,317,379	4,315,341	-0.05%	4,316,804	-0.01%	4,316,578	-0.02%	
Rhode Island $1,064,112$ $1,063,451$ -0.06% $1,063,934$ -0.02% $1,063,863$ -0.02% South Carolina $5,214,916$ $5,213,808$ -0.02% $5,214,606$ -0.01% $5,214,483$ -0.01% South Dakota $888,634$ $888,504$ -0.01% $888,600$ 0.00% $888,586$ -0.01% Tennessee $6,881,637$ $6,879,815$ -0.03% $6,881,211$ -0.01% $6,881,043$ -0.01% Texas $29,604,237$ $29,577,697$ -0.09% $29,593,704$ -0.04% $29,589,545$ -0.05% Utah $3,259,702$ $3,258,304$ -0.04% $3,259,258$ -0.01% $3,259,082$ -0.02% Vermont $621,822$ $621,673$ -0.02% $621,801$ 0.00% $621,793$ 0.00% Virginia $8,612,962$ $8,608,624$ -0.05% $8,612,024$ -0.01% $8,611,654$ -0.02% Washington $7,751,401$ $7,745,994$ -0.07% $7,750,256$ -0.01% $7,749,804$ -0.02% Wisconsin $5,836,321$ $5,834,726$ -0.03% $5,835,896$ -0.01% $5,835,728$ -0.01% Wixoming $575,566$ $575,520$ -0.02% $575,5603$ -0.01% $575,583$ -0.01%	Pennsylvania	12,819,483	12,814,576	-0.04%	12,818,364	-0.01%	12,817,922	-0.01%	
South Carolina $5,214,916$ $5,213,808$ -0.02% $5,214,606$ -0.01% $5,214,483$ -0.01% South Dakota $888,634$ $888,504$ -0.01% $888,600$ 0.00% $888,586$ -0.01% Tennessee $6,881,637$ $6,879,815$ -0.03% $6,881,211$ -0.01% $6,881,043$ -0.01% Texas $29,604,237$ $29,577,697$ -0.09% $29,593,704$ -0.04% $29,598,545$ -0.05% Utah $3,259,702$ $3,258,304$ -0.04% $3,259,258$ -0.01% $3,259,082$ -0.02% Vermont $621,822$ $621,673$ -0.02% $621,801$ 0.00% $621,793$ 0.00% Virginia $8,612,962$ $8,608,624$ -0.05% $8,612,024$ -0.01% $8,611,654$ -0.02% Washington $7,751,401$ $7,745,994$ -0.07% $7,750,256$ -0.01% $7,749,804$ -0.02% Wisconsin $5,836,321$ $5,834,726$ -0.03% $5,835,896$ -0.01% $5,835,728$ -0.01% Wixoming $575,566$ $575,570$ -0.00% $575,5603$ -0.01% $575,5783$ -0.01%	Rhode Island	1,064,112	1,063,451	-0.06%	1,063,934	-0.02%	1,063,863	-0.02%	
South Dakota 888,634 888,504 -0.01% 888,600 0.00% 888,586 -0.01% Tennessee 6,881,637 6,879,815 -0.03% 6,881,211 -0.01% 6,881,043 -0.01% Texas 29,604,237 29,577,697 -0.09% 29,593,704 -0.04% 29,589,545 -0.05% Utah 3,259,702 3,258,304 -0.04% 3,259,258 -0.01% 3,259,082 -0.02% Vermont 621,822 621,673 -0.02% 621,801 0.00% 621,793 0.00% Virginia 8,612,962 8,608,624 -0.05% 8,612,024 -0.01% 8,611,654 -0.02% Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% Wisconsin 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01%	South Carolina	5,214,916	5,213,808	-0.02%	5,214,606	-0.01%	5,214,483	-0.01%	
Tennessee $6,881,637$ $6,879,815$ -0.03% $6,881,211$ -0.01% $6,881,043$ -0.01% Texas $29,604,237$ $29,577,697$ -0.09% $29,593,704$ -0.04% $29,589,545$ -0.05% Utah $3,259,702$ $3,258,304$ -0.04% $3,259,258$ -0.01% $3,259,082$ -0.02% Vermont $621,822$ $621,673$ -0.02% $621,801$ 0.00% $621,793$ 0.00% Virginia $8,612,962$ $8,608,624$ -0.05% $8,612,024$ -0.01% $8,611,654$ -0.02% Washington $7,751,401$ $7,745,994$ -0.07% $7,750,256$ -0.01% $7,749,804$ -0.02% Wisconsin $5,836,321$ $5,834,726$ -0.03% $5,835,896$ -0.01% $5,835,728$ -0.01% Wixoming $575,566$ $575,520$ -0.02% $575,603$ -0.01% $575,583$ -0.01%	South Dakota	888,634	888,504	-0.01%	888,600	0.00%	888,586	-0.01%	
Texas 29,604,237 29,577,697 -0.09% 29,593,704 -0.04% 29,589,545 -0.05% Utah 3,259,702 3,258,304 -0.04% 3,259,258 -0.01% 3,259,082 -0.02% Vermont 621,822 621,673 -0.02% 621,801 0.00% 621,793 0.00% Virginia 8,612,962 8,608,624 -0.05% 8,612,024 -0.01% 8,611,654 -0.02% Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% Wisconsin 5,836,321 5,834,726 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,756,66 575,520 -0.02% 575,5603 -0.01% 5,835,728 -0.01%	Tennessee	6,881,637	6,879,815	-0.03%	6,881,211	-0.01%	6,881,043	-0.01%	
Utah 3,259,702 3,258,304 -0.04% 3,259,258 -0.01% 3,259,082 -0.02% Vermont 621,822 621,673 -0.02% 621,801 0.00% 621,793 0.00% Virginia 8,612,962 8,608,624 -0.05% 8,612,024 -0.01% 8,611,654 -0.02% Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% West Virginia 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.02% 575,5603 -0.01% 5,835,728 -0.01%	Texas	29,604,237	29,577,697	-0.09%	29,593,704	-0.04%	29,589,545	-0.05%	
Vermont 621,822 621,673 -0.02% 621,801 0.00% 621,793 0.00% Virginia 8,612,962 8,608,624 -0.05% 8,612,024 -0.01% 8,611,654 -0.02% Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% West Virginia 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01% Wyoming 575,566 575,520 -0.02% 575,5603 -0.01% 5,755,583 -0.01%	Utah	3,259,702	3,258,304	-0.04%	3,259,258	-0.01%	3,259,082	-0.02%	
Virginia 8,612,962 8,608,624 -0.05% 8,612,024 -0.01% 8,611,654 -0.02% Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% West Virginia 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01% Wyoming 575,666 575,520 -0.02% 575,603 -0.01% 5,755,583 -0.01%	Vermont	621,822	621,673	-0.02%	621,801	0.00%	621,793	0.00%	
Washington 7,751,401 7,745,994 -0.07% 7,750,256 -0.01% 7,749,804 -0.02% West Virginia 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01% Wyoming 575,566 575,520 -0.02% 575,5603 -0.01% 5,835,728 -0.01%	Virginia	8,612.962	8,608.624	-0.05%	8,612.024	-0.01%	8,611.654	-0.02%	
West Virginia 1,787,238 1,787,061 -0.01% 1,787,209 0.00% 1,787,198 0.00% Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01% Wyoming 575,556 575,520 -0.02% 575,603 -0.01% 575,583 -0.01%	Washington	7,751.401	7,745.994	-0.07%	7,750.256	-0.01%	7,749.804	-0.02%	
Wisconsin 5,836,321 5,834,726 -0.03% 5,835,896 -0.01% 5,835,728 -0.01% Wyoming 575,656 575,520 -0.02% 575,603 -0.01% 575,583 -0.01%	West Virginia	1 787 238	1 787 061	-0.01%	1 787 209	0.00%	1 787 198	0.00%	
575656 575520 $-0.02%$ 575603 $-0.01%$ 575583 $-0.01%$	Wisconsin	5 836 321	5 834 726	-0.03%	5 835 896	-0.01%	5 835 728	-0.01%	
	Wyoming	575 656	575 520	-0.02%	575 603	-0.01%	575 583	-0.01%	

Table 2

1. Brace Report.

2. NRFU Success Rate.docx

Note: Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

Apportionment Projections for 2020 Assuming Historical NRFU-Rate, Before Imputation									
			Mathiowetz	2% Undercount	5.8%	Undercount	8.09% Undercount		
			with Hist	orical NRFU	with Historical NRFU		with Historical NRFU		
		Baseline							
	Brace Population	Apportionment		Apportionment		Apportionment		Apportionment	
State	Projection	Projections 2020	Population	Projections 2020	Population	Projections 2020	Population	Projections 2020	
Alabama	4,906,793	6	4,906,020	6	4,906,583	6	4,906,500	6	
Alaska	742,589	1	742,212	1	742,522	1	742,495	1	
Arizona	7,313,407	10	7,308,189	10	7,311,326	10	7,310,504	10	
Arkansas	3,040,950	4	3,040,179	4	3,040,718	4	3,040,627	4	
California	40,318,943	53	40,274,303	53	40,304,113	53	40,298,258	53	
Colorado	5,861,962	8	5,858,635	8	5,860,793	8	5,860,332	8	
Connecticut	3,577,217	5	3,574,787	5	3,576,592	5	3,576,345	5	
Delaware	987,534	1	987,075	1	987,431	1	987,390	1	
Florida	22,034,897	29	22,017,695	29	22,029,318	29	22,027,116	29	
Georgia	10,756,967	14	10,751,868	14	10,755,805	14	10,755,346	14	
Hawaii	1.436.609	2	1.435.358	2	1.436.402	2	1.436.320	2	
Idaho	1.800.494	2	1.799.936	2	1.800.286	2	1.800.204	2	
Illinois	12.728.769	17	12,720,766	17	12,726,543	17	12,725,665	17	
Indiana	6.735.072	9	6.732.893	9	6,734,550	9	6,734,344	9	
Iowa	3,182,989	4	3.181.998	4	3,182,770	4	3.182.684	4	
Kansas	2.925.620	4	2.924.568	4	2.925.281	4	2.925.147	4	
Kentucky	4,494,713	6	4.493.841	6	4.494.529	6	4.494.456	6	
Louisiana	4.717.157	6	4.716.278	6	4.716.902	6	4.716.801	6	
Maine	1.342.361	2	1.342.161	2	1.342.329	2	1.342.316	2	
Maryland	6 1 28 31 2	8	6 1 2 4 806	8	6 127 566	8	6 127 271	8	
Massachusetts	6 954 630	9	6 948 463	9	6 953 522	9	6 953 085	9	
Michigan	10.006.187	13	10,002,150	13	10 005 499	13	10,005,227	13	
Minnesota	5 692 816	7	5 690 346	7	5 692 402	7	5 692 238	7	
Mississioni	2 980 001	4	2 979 697	4	2 979 912	4	2 979 877	4	
Missouri	6 164 890	8	6 1 6 3 4 3 3	8	6 164 580	8	6 164 457	8	
Montana	1 079 348	1	1 079 221	1	1 079 307	1	1 079 291	1	
Nebraska	1,079,340	3	1,075,047	3	1,079,507	3	1,075,201	3	
Nevada	3 1 59 442	4	3 1 57 024	4	3 1 58 584	4	3 158 245	4	
New Hampshire	1 355 867	2	1 355 381	2	1 355 788	2	1 355 757	2	
New Jersey	9.063.461	12	9.055.123	12	9.061.433	12	9,060,632	12	
New Mexico	2,002,538	3	2 090 834	3	2 091 663	3	2 091 317	3	
New York	19 919 166	26	19 901 172	26	19 914 976	26	10 013 322	26	
North Carolina	10 588 169	14	10 583 951	14	10,587,109	14	10,586,690	14	
North Dakota	771.081	1	770 821	1	771.037	1	771.020	1	
Obio	11 718 404	15	11 715 409	15	11 717 837	15	11 717 612	15	
Oklahoma	3 982 803	5	3 981 598	5	3 982 384	5	3 982 219	5	
Oregon	4 317 379	6	4 315 341	6	4 316 804	6	4 316 578	6	
Penneylyania	12 810 483	17	12 814 576	17	12 818 364	17	12 817 922	17	
Phodo Island	1.064.112	1	1 063 451	1	1.063.034	1	1 063 863	1	
South Carolina	5 214 016	7	5 213 808	7	5 214 606	7	5 214 483	7	
South Dalvota	999 624	1	5,215,606	1	2,214,000	1	000 502	1	
Tomposoo	600,034	1	600,304	1	6 991 211	1	6 991 043	1	
Termessee	20 604 237	30	20 577 607	30	20 503 704	30	20 580 545	30	
Litah	29,004,237	39	29,577,097	39	29,595,704	39	29,589,545	39	
Vormont	3,239,702	4	3,238,304 631 (72	4	3,239,238	4	3,239,082	4	
Vincinia	021,822	11	021,0/3	1	021,801	1	021,/93	1	
virginia Washington	7 751 401	10	0,000,024	11	0,012,024	11	7 7 40 904	11	
Wast Wast	1,797,229	10	1,797,074	10	1,797,200	10	1,747,804	10	
west virginia	1,/8/,238	2	1,/8/,001	2	1,/8/,209	2	1,/8/,198	2	
wisconsin	5,830,321	8	5,834,726	8	5,855,896	8	5,635,/28	8	
wyoming	5/5,656	1	5/5,520	1	S/S,603	1	5/5,583	1	

Table 3

1. Brace Report.

2. NRFU Success Rate.docx

 $3.\ https://www.census.gov/data/tables/2010/dec/2010-apportionment-data.html.$

Note: Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

	Select Counties' Pro	ojections with Ci	tizenship Questi	on and Historica	al NRFU, Before	Imputation	
		Mathiowetz 2	8.09% L	8.09% Undercount			
		with Histor	ical NRFU	with Historical NRFU		with Historical NRFU	
		Absolute Change	Percentage	Absolute Change	Percentage	Absolute Change	Percentage
		in Statewide	Change in	in Statewide	Change in	in Statewide	Change in
		Share of	Statewide Share	Share of	Statewide Share	Share of	Statewide Share
State	County	Population	of Population	Population	of Population	Population	of Population
	Maricopa County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Aritrona	Santa Cruz County	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%
Alizolia	Yuma County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
California	Los Angeles County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Camonia	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Florida	Miami-Dade County	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%
Fiorida	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Magyland	Prince George's County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
waryland	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada	Clark County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INCVALIA	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Norr Loreou	Hudson County	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%
INEW Jeisey	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Dalvata	Todd County	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%
South Dakota	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Dallas County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
T	El Paso County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Harris County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1 CX45	Hidalgo County	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%
	Webb County	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%
	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Washington	King County	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
wasnington	Rest of State	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

				Table 4				
Select	Counties' Pro	ections with	Citizenship	Question an	d Historical	NRFU,	Before Ir	nputat

1. Brace Report.

2. NRFU Success Rate.docx

Note: Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

	Carruth 2% Undercount Scenario	Carruth 2% Undercount with Historical NRFU
Estimated Texas FMAP for FY 2025 in the Baseline Scenario	64.14	64.14
Estimated Texas FMAP for FY 2025 in the Undercount Scenario	63.84	64.14
Estimated Reduction in the Texas FMAP for FY 2025 with Citizenship Question	0.30	0.006
Estimated Loss of Federal Medicaid Funds to Texas in FY 2025 (Millions)	\$153.84	\$2.89

 Table 5

 Estimated Loss of Federal Medicaid Funds to Texas in FY 2025, Before Imputation

1. Carruth Report and Appendix B.

2. Brace Report Tables 4A-4C.

3. NRFU Success Rate.docx.

Notes:

1. Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

2. If the 2 percent undercount assumption is interpreted as decline in self-response rates before NRFU, and if the Historical NRFU rate is applied, the loss in funds is \$2.2 million.
| | Jurisdiction Undercount Percentage | | |
|--|------------------------------------|---|--|
| Insidiction | Brace 2% Scepario | Brace 2% Scenario
with Historical
NIREU | |
| Urbanized Area | Drace 270 Sectiano | | |
| Atlanta, GA | 0.31% | 0.05% | |
| Houston, TX | 1.03% | 0.18% | |
| Laredo, TX | 2.30% | 0.35% | |
| Las VegasHenderson, NV | 0.81% | 0.13% | |
| Los AngelesLong BeachAnaheim, CA | 1.14% | 0.17% | |
| McAllen, TX | 2.20% | 0.32% | |
| Miami, FL | 1.20% | 0.20% | |
| PhoenixMesa, AZ | 0.71% | 0.10% | |
| Texas portion of El Paso, TXNM | 1.93% | 0.26% | |
| New Jersey portion of New YorkNewark, NYNJCT | 0.57% | 0.09% | |
| Maryland portion of Washington, DCVAMD | 0.53% | 0.11% | |
| State | | | |
| Arizona | 0.69% | 0.07% | |
| California | 0.89% | 0.11% | |
| Florida | 0.61% | 0.08% | |
| Georgia | 0.26% | 0.05% | |
| Maryland | 0.28% | 0.06% | |
| Nevada | 0.66% | 0.08% | |
| New Jersey | 0.52% | 0.09% | |
| Texas | 0.86% | 0.09% | |

Table 62020 Projected Undercounts Due to Citizenship Question by Jurisdiction, Before Imputation

1. Brace Report.

2. NRFU Success Rate.docx.

Notes:

1. Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

2. If the 2 percent undercount assumption is interpreted as decline in self-response rates before NRFU, and if the Historical NRFU rate is applied, undercounts are smaller than in the two scenarios reported.

STBG			
	Suballocation With		
	Citizenship	Estimated Loss of	Estimated Loss of
Jurisdiction	Question	Funds in One Year	Funds in Ten Years
	101 005 107		
Arizona	101,995,187	-	-
PhoenixMesa, AZ	59,287,637	\$15,/63	\$157,630
	483,278,974	-	-
Los AngelesLong BeachAnaheim, CA	153,287,240	\$94,191	\$941,910
Florida	2/9,143,510	-	-
Miami, FL	/9,586,900	\$100,077	\$1,000,770
Georgia	182,501,376	-	-
Atlanta, GA	89,869,381	\$4,872	\$48,718
Maryland	82,765,607	-	-
Maryland portion of Washington, DCVAMD	25,452,935	\$12,294	\$122,935
Nevada	50,716,546	-	-
Las VegasHenderson, NV	36,052,055	\$20,189	\$201,891
New Jersey	136,305,870	-	-
New Jersey portion of New YorkNewark, NYNJCT	96,212,589	\$5,854	\$58,537
Texas	524,615,050	-	-
Texas portion of El Paso, TXNM	13,904,364	\$23,956	\$239,562
Houston, TX	104,905,673	\$91,406	\$914,058
Laredo, TX	4,747,947	\$12,202	\$122,023
McAllen, TX	14,773,534	\$33,874	\$338,738
TA Set-Aside			
	Suballocation With		
	Citizenship	Estimated Loss of	Estimated Loss of
Jurisdiction	Question	Funds in One Year	Funds in Ten Years
	2 000 / 5 /		
Arizona	7,890,154	-	-
PhoenixMesa, AZ	4,586,379	\$1,219	\$12,194
California	35,121,538	-	-
Los AngelesLong BeachAnaheim, CA	11,139,909	\$6,845	\$68,452
Florida	24,565,457	-	-
Miami, FL	7,003,883	\$8,807	\$88,071
Georgia	16,265,395	-	-
Atlanta, GA	8,009,589	\$434	\$4,342
Maryland	5,712,358	-	-
Maryland portion of Washington, DCVAMD	1,756,723	\$848	\$8,485
Nevada	2,559,337	-	-
Las VegasHenderson, NV	1,819,315	\$1,019	\$10,188
New Jersey	8,612,879	-	-
New Jersey portion of New YorkNewark, NYNJCT	6,079,470	\$370	\$3,699
Texas	38,911,747	-	-
Texas portion of El Paso, TXNM	1,031,314	\$1,777	\$17,769
Houston, TX	7,781,064	\$6,780	\$67,798
Laredo, TX	352,165	\$905	\$9,051
McAllen TV	1 095 783	\$2.512	\$25125

 Table 7

 Estimated Loss of STBG and TA Set-Aside Funds to Select Urbanized Areas Due to Citizenship Question on 2020

 Census Assuming Historical NRFU, Before Imputation

1. Roger Mingo Expert Report.

2. Kim Brace Expert Report Tables 5-6

3. NRFU Success Rate.docx

Note: Baseline population, percent Hispanic and percent non-Hispanic/non-citizen are rounded.

							C 112 137 12 11	
	2015				Change in Federal I	Reimbursements for	raditional Medicaid	
	FMAP	(Change in 2015 FMA	Р		FY2015		
		Dr. Beamer's	Dr. Beamer's	Historical NRFU	Dr Beamer's	Dr. Beamer's	Historical NRFU -	
		5 804 undercount	5 90/ undercount	F 8% undersount	5 804 undersount	5 80% undercount	5 8% undersount	
		5.8% undercount	5.8% undercount	5.8% undercount	5.8% undercount	5.876 undercount	5.8% undercount	
		non-citizens	non-citizens +	non-citizens +	non-citizens	non-citizens +	non-citizens +	
		(before NRFU)	86.63% NRFU	98.58% NRFU	(before NRFU)	86.63% NRFU	98.58% NRFU	
Texas	58.05	-0.39	-0.05	-0.0052	-\$137,212,179	-\$18,038,574	-\$1,841,198	
Florida	59.72	-0.15	-0.02	-0.0065	-\$31,436,206	-\$4,971,724	-\$1,359,839	
Arizona	68.46	-0.10	-0.02	-0.0049	-\$8,530,021	-\$1,385,017	-\$409,498	
Nevada	64.36	-0.36	-0.05	-0.0061	-\$7,830,546	-\$1,052,553	-\$131,892	
Hawaii	52.23	-0.22	-0.03	-0.0067	-\$3,248,492	-\$477,341	-\$99,375	
Washington	50.03	-0.03	-0.01	-0.0033	-\$2,353,501	-\$595,758	-\$255,511	
Illinois	50.76	-0.01	0.00	-0.0020	-\$1,116,116	-\$384,496	-\$284,387	
North Carolina	65.88	0.19	0.02	-0.0007	\$24,671,301	\$2,900,135	-\$91,851	

Table 8
Estimated Change in FMAP and Traditional Medicaid Reimbursement
Under Undercount Scenarios, Losing States, EV2015

1. REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx

2. Reamer analysis -- FMAP and state share.xlsx

Note: This analysis caps adjusted FMAP at 50 if below 50 and at 70 for DC in accordance with Dr. Reamer's methodology.

	2015 E-	• /			, ,		
	FMAP	Change in 2015 E-FMAP		Change in Federal Reimbursements for CHIP FY2015			
				Historical NRFU			Historical NRFU -
		Dr. Reamer's	Dr. Reamer's	Rate Scenario	Dr. Reamer's	Dr. Reamer's	Rate Scenario
		5.8% undercount	5.8% undercount	5.8% undercount	5.8% undercount	5.8% undercount	5.8% undercount
		non-citizens	non-citizens +	non-citizens +	non-citizens	non-citizens +	non-citizens +
		(before NRFU)	86.63% NRFU	98.58% NRFU	(before NRFU)	86.63% NRFU	98.58% NRFU
Texas	70.64	-0.28	-0.04	-0.009	-\$4,188,200	-\$616,302	-\$130,831
Florida	71.8	-0.10	-0.01	-0.001	-\$794,412	-\$99,091	-\$4,193
Nevada	75.05	-0.25	-0.03	-0.002	-\$143,966	-\$18,357	-\$1,296
Hawaii	66.56	-0.15	-0.02	-0.004	-\$105,207	-\$14,866	-\$2,544
Arizona	77.92	-0.07	-0.01	-0.001	-\$71,255	-\$9,835	-\$1,450
Washington	65.02	-0.02	0.00	-0.001	-\$39,665	-\$8,560	-\$2,538
Illinois	65.53	0.00	0.00	0.001	-\$19,363	\$560	\$3,286
North Carolina	76.12	0.13	0.01	-0.005	\$679,388	\$61,545	-\$23,364
Louisiana	73.44	0.29	0.03	-0.004	\$716,569	\$78,204	-\$9,890
Arkansas	79.62	0.17	0.02	-0.004	\$204,105	\$20,748	-\$4,507
Idaho	80.23	0.14	0.01	-0.005	\$116,102	\$10,543	-\$3,983
Colorado	65.71	0.07	0.01	-0.001	\$175,299	\$18,030	-\$3,527
Mississippi	81.51	0.24	0.03	-0.001	\$673,417	\$79,091	-\$3,052
New Mexico	78.76	0.05	0.00	-0.003	\$42,745	\$2,932	-\$2,525
West Virginia	79.95	0.28	0.03	-0.004	\$190,471	\$20,992	-\$2,445
Iowa	68.88	0.29	0.03	-0.001	\$522,817	\$61,584	-\$1,973

 Table 9

 Estimated Change in E-FMAP and Children's Health Insurance

 Program Under Undercount Scenarios, Losing States, FY2015

1. REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx

2. Reamer analysis -- FMAP and state share.xlsx

3. CHIP.xlsx

Notes:

1. This analysis caps adjusted FMAP at 50 if below 50 and at 70 for DC in accordance with Dr. Reamer's methodology.

2. 2015 E-FMAP is rounded to match Dr. Reamer's methodology.

due to Census Undercount, by State, FY2016 Ranked					
			Historical NRFU -		
	Dr. Reamer's	Dr. Reamer's	Rate Scenario		
	5.8% undercount	5.8% undercount	(5.8% undercount		
	non-citizens	non-citizens +	non-citizens +		
State	(before NRFU)	86.63% NRFU	98.58% NRFU)		
California	-\$6,411,831	-\$850,759	-\$90,263		
Texas	-\$1,348,106	-\$178,875	-\$18,978		
New York	-\$1,035,875	-\$137,446	-\$14,583		
Florida	-\$295,665	-\$39,231	-\$4,162		
New Jersey	-\$266,955	-\$35,421	-\$3,758		
Nevada	-\$150,348	-\$19,949	-\$2,117		
Arizona	-\$90,639	-\$12,027	-\$1,276		
Hawaii	-\$32,187	-\$4,271	-\$453		

Table 10
Change in Fair Allocation of WIC Supplemental Food Grants
due to Census Undercount, by State, FY2016 Ranked

1. REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx

2. NRFU Success Rate.docx

3. REAMER_000050_WIC 09-17-18.xlsx

4. https://fns-prod.azureedge.net/sites/default/files/wic/2013%20State-Level-Estimates-of-Infants-and-Pre-School-Age-Children-at-or%20....pdf

due to Census Undercount, by State, FY2016 Ranked					
			Historical NRFU -		
	Dr. Reamer's	Dr. Reamer's 5.8%	Rate Scenario		
	5.8% undercount	undercount non-	(5.8% undercount		
	non-citizens	citizens + 86.63%	non-citizens +		
State	(before NRFU)	NRFU	98.58% NRFU)		
California	-\$1,683,013	-\$223,450	-\$23,709		
Texas	-\$623,855	-\$82,828	-\$8,789		
New York	-\$351,201	-\$46,628	-\$4,948		
Florida	-\$182,317	-\$24,206	-\$2,568		
New Jersey	-\$137,277	-\$18,226	-\$1,934		
Nevada	-\$71,482	-\$9,491	-\$1,007		
Arizona	-\$52,963	-\$7,032	-\$746		
Hawaii	-\$15,904	-\$2,112	-\$224		
Washington	-\$14,209	-\$1,887	-\$200		
Maryland	-\$7,285	-\$967	-\$103		
Illinois	-\$6,266	-\$832	-\$88		
Massachusetts	-\$3,351	-\$445	-\$47		

Table 11
Change in Allocation of Social Services Block Grants
tue to Census Undercount by State EV2016 Ranked

1. REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx

2. NRFU Success Rate.docx

3. REAMER_000053_Social Service Block Grants 09-17-18.xlsx

State	Dr. Reamer's 5.8% undercount (non- citizens)	Dr. Reamer's 5.8% undercount non- citizens + 86.63% NRFU	Historical NRFU - Rate Scenario (5.8% undercount non-citizens + 98.58% NRFU)	Mathiowetz 2% Undercount with 98.58% NRFU
California	-\$15,278,566	-\$2,028,420	-\$215,226	-\$855,707
Texas	-\$6,281,372	-\$833,930	-\$88,484	-\$380,789
New York	-\$4,081,573	-\$541,880	-\$57,496	-\$325,485
Florida	-\$1,437,825	-\$190,889	-\$20,254	-\$130,464
New Jersey	-\$1,058,374	-\$140,512	-\$14,909	-\$103,592
Nevada	-\$601,183	-\$79,815	-\$8,469	-\$17,682
Arizona	-\$530,756	-\$70,464	-\$7,477	-\$32,874
Hawaii	-\$110,966	-\$14,732	-\$1,563	-\$12,598
Washington	-\$87,233	-\$11,581	-\$1,229	-\$19,257
Maryland	-\$41,825	-\$5,553	-\$589	\$9,545
Illinois	-\$36,997	-\$4,912	-\$521	-\$7,164
Massachusetts	-\$13,244	-\$1,758	-\$187	-\$64,221
New Mexico	\$148,655	\$19,736	\$2,094	-\$25,055
District of Columbia	\$39,162	\$5,199	\$552	-\$7,913
Connecticut	\$104,672	\$13,897	\$1,474	-\$7,402
Rhode Island	\$24,520	\$3,255	\$345	-\$130

Table 12 Change in Allocation of Title I LEA Grants due to Census Undercount, by State, FY2016 -- Ranked

1. REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx

2. NRFU Success Rate.docx

3. REAMER_000049_Title I 09-17-18.xlsx

4. https://www.census.gov/data/datasets/2014/demo/saipe/2014-state-and-county.html

5. Brace Report.

Note: Baseline population, percent Hispanic and percent non-Hispanic/non-citizen from Brace Report are rounded.

Exhibit 1

Curriculum Vitae of Stuart D. Gurrea, Ph.D.

STUART D. GURREA

Office Address

Economists Incorporated 101 Mission Street, Suite 1000 San Francisco, CA 94105 (415) 975-3225 gurrea.s@ei.com

Education

Ph.D., Economics, Northwestern University, July 2001 Dissertation: *The Economics of International Airline Code Sharing*

M.A., Economics, Northwestern University, June 1996

B.A., Economics, University of Seville, Spain, June 1994

Fellowships, Honors, and Awards

Fall 2000: Transportation Center Dissertation Fellowship, Northwestern University

1995 - 1997: Northwestern University Graduate Fellowship

Fields of Concentration

Industrial Organization, Applied Econometrics and Finance

Professional Experience

2001 - present: Vice President, Economists Incorporated, San Francisco, CA

1997 – 2000: Research Assistant, Department of Economics and Kellogg Graduate School of Business, Northwestern University, Evanston, IL

1999: Global Markets Research Analyst, Zacks Investment Research, Inc., Chicago, IL

1997: Teaching Assistant, Department of Economics, Northwestern University, Evanston, IL

1994 – 1995: Economic Analyst, Official Chamber of Commerce, Seville, Spain

Publications

"Has Collusion Hindered Financial Market Reform?" (with Jonathan A. Neuberger), *The Exchange*, Insurance and Financial Services Committee, American Bar Association, Section of Antitrust Law, Spring 2018

"Financial Markets Reform and Alleged Dealer-Bank Collusion," *Economists Ink* (with Jonathan A. Neuberger), Winter 2018

"Chapter 8: Overcharges," (with Henry McFarland, Kelsey Shannon and Clarissa Yeap) in <u>Proving Antitrust Damages</u>, American Bar Association, Section of Antitrust Law, 3d ed., 2017

"Goldman Sachs Settles Allegations of Derivatives Benchmark Rate Manipulation," *Economists Ink* (with Jonathan Neuberger), Spring 2017

"Different Competitive Effects in Financial Rate-Setting Cases," *Economists Ink* (with Jonathan Neuberger), Summer 2016

"Perspectives On Four Years Of The CFPB's Consumer Complaints Database," (with Jonathan A. Neuberger), *The Exchange*, Insurance and Financial Services Committee, American Bar Association, Section of Antitrust Law, Spring 2016

"Foreign Exchange Manipulation and Economic Harm," *Economists Ink* (with Jonathan Neuberger), Summer 2015

"Foreign Exchange Manipulation and Economic Harm," (with Jonathan A. Neuberger), *The Exchange*, Insurance and Financial Services Committee, American Bar Association, Section of Antitrust Law, Spring 2015

"Rate Manipulation and Antitrust Liability," *Economists Ink* (with Jonathan Neuberger), Summer 2014

"Economic Harm and LIBOR Manipulation," *The Exchange*, Section of Antitrust Law, Insurance and Financial Services Committee, The American Bar Association (with Jonathan Neuberger), Spring 2013

"The (Mis)Use of Screens in Economic Analysis," *Economists Ink* (with Jonathan Neuberger), Spring 2012

<u>Market Power Handbook: Competition Law & Economic Foundations (</u>2d ed.) American Bar Association, Section of Antitrust Law, (contributor), March 2012

Publications (Continued)

"Economic Harm and the LIBOR Scandal," *Economists Ink* (with Jonathan Neuberger), Winter 2012

"The Economics of Google's Acquisition of ITA Software," *Icarus, The Newsletter of the Communications & Digital Technology Industries Committee* (with Gloria Hurdle), ABA Section of Antitrust Law, Spring 2011

"Remedies in Google's Acquisition of ITA Software," *Economists Ink* (with Gloria Hurdle), Spring 2011

"Sensitivity Analysis in Economic Modeling," *Economists Ink* (with Jonathan A. Neuberger), Winter 2010

"The Two Faces of Credit Default Swaps: Risk Management Versus Speculation," *Economists Ink* (with Jonathan A. Neuberger), Summer 2010

"The Determinants of Broadband Adoption: The Chinese and Indian Experience," Icarus, The Newsletter of the Communications & Digital Technology Industries Committee, ABA Section of Antitrust Law, Fall 2009

"Comparing China's New Antimonopoly Law and India's Amended Competition Act," *Economists Ink* (with Su Sun), Spring 2009

"China's New Antimonopoly Law and India's Amended Competition Act: How New Antitrust Regimes in These Important Emerging Markets May Impact High Tech Companies," *Icarus, The Computer & Internet Committee Newsletter* (with Su Sun), ABA Section of Antitrust Law, November 2008

"Price Squeezes – Are They Detrimental to Consumer Welfare?" *Communications Industry Committee Newsletter*, American Bar Association, Section of Antitrust Law, Fall 2008

"Imperfect Information, Entry, and the *Merger Guidelines*," (with Barry C. Harris and Allison M. Ivory) in <u>Issues in Competition Law and Policy</u>, Volume 2, pp. 1589-1611, American Bar Association, Section of Antitrust Law, 2008

"Imperfect Information, Entry and The Merger Guidelines," *Economists Ink* (with Barry C. Harris and Allison M. Ivory), Summer 2006

Publications (Continued)

"International Airline Code Sharing and Entry," in Darin Lee, ed., <u>Advances in</u> <u>Airline Economics</u>, Chapter 5, Vol. 1, Elsevier, 2006

"The Antitrust Economics of Intellectual Property," (with Phil B. Nelson and Robert D. Stoner), in <u>Antitrust and Intellectual Property: A Guide for</u> <u>Practitioners</u>, American Bar Association, Section of Antitrust Law, 2006

"Using Simulation And Econometric Models to Estimate The Effects of a Trade Restraint," *Economists Ink* (with Henry B. McFarland and Robert D. Stoner), Spring 2005

"The Economic Effects of the Filed Rate Doctrine on Wholesale Electricity Markets," *The Energy Antitrust News*, (with Manny A. Macatangay), Spring 2005

"EU Guidelines on Competition and Technology Transfer Agreements," *Economists Ink*, Spring 2004

"Economic Analysis and Sampling of Populations," Economists Ink, Winter 2004

"Event Study Methodology in Securities Litigation," *Economists Ink,* Winter 2004

"Coordinated Interaction and Clayton §7 Enforcement," *George Mason Law Review*, Volume 12, number 1, pp. 89-118, Fall 2003, (with Bruce M. Owen)

"Coordinated Effects and Merger Policy Enforcement," *Economists Ink,* (with Bruce M. Owen), Fall 2003

<u>The Economics of Innovation: A Survey</u>, American Bar Association, Section of Antitrust Law, (contributor), July 2002

"The Intersection of Antitrust and Intellectual Property Law," *Economists Ink* (with Tessie Su), Spring/Summer 2001

"Measuring the Competitive Effects of International Airline Code Sharing," *Economists Ink*, Fall 2001

Presentations

"Financial Derivatives," presented at The U.S. Department of Justice, Washington D.C., October 11, 2017

"Financial Innovation, Banking and The Subprime Financial Crisis," presented at The U.S. Department of Justice, Washington D.C., May 13 and 14, 2010

"Strategic Departure-time Differentiation And Low Cost Carrier Competition," presented at the panel on airline economics, Annual Meeting of The Southern Economic Association, Charleston, SC, November 18, 2006

Discussant of "An Empirical Investigation into The Causes of Flight Delays" by Nicolas Rupp, and chaired panel on airline economics at The Annual Meeting of The Southern Economic Association, Charleston, SC, November 18, 2006

"Economic Tools in Antitrust Analysis. The Use of Econometric Tools in Antitrust," presented at the Second Coloquio Foro Competencia, October 21, 2005, Buenos Aires, Argentina

"Low Cost Carrier Competition And Flight Departure-Time Differentiation," presented at the Third Conference of the Japan Economic Policy Association, Meiji University, Tokyo, Japan, November 13, 2004

"Airline Code Sharing and Entry Deterrence." Paper delivered at the 7th Conference of Industrial Organization, Universitat Pompeu Fabra, Barcelona, September 2001

"Cooperation Among Competitors: Evidence from Airline Alliances." Paper delivered at Northwestern University's Transportation Center, Fall 2000

Expert Witness Deposition and Trial Testimony

William A. Leonard, Jr. Chapter 7 Trustee for the Estate of Paul Anthony Morabito v. Paul Anthony Morabito et al. – For Plaintiff, conducted valuation review and offered valuation opinion of spectrum-related lines of business. Filed expert report, United States Bankruptcy Court, District of Nevada, October 2016. Testified at Deposition, May 2017

Fridman v. Wells Fargo Bank, N.A. – For defendant, analysis of economic damages related to dispute over mortgage payments and mortgage records. Testified at deposition and trial, Superior Court of the State of California, County of Los Angeles, Central District, April 2015 and July 2015

Selected Consulting Matters

State of California v. Wilbur L. Ross, Jr. et al., and City of San Jose et al. v. Wilbur L. Ross Jr. et al. – For Defendants, analysis of the impact of population undercounts associated with the inclusion of a citizenship question in the 2020 Census on congressional apportionment and the distribution of federal funds

Loreley Financing (Jersey) NO. 28, Limited vs. Merrill Lynch, Pierce, Fenner & Smith Incorporated et al. – For Plaintiff, analysis of causation and damages in relation to alleged misrepresentations and omissions in the marketing and sale of notes of a collateralized debt obligation

Loreley Financing (Jersey) NO. 3, Limited et al. vs. Wells Fargo Securities, LLC, et al. – For Plaintiff, analysis of causation and damages in relation to alleged misrepresentations and omissions in the marketing and sale of notes of collateralized debt obligations

BNSF Railway Company and Norfolk Southern Railway Company vs. First Energy Generation LLC – For Defendant, valuation of liquidated damages claim related to dispute over rail transportation agreement

Wye Oak Technology Inc. v. The Republic of Iraq, et al. – For Plaintiff, estimation of damages related to breach of contract, including estimation of expected future profits under the contract

Gloria J. Jackson et al. v. The United States of America – For Defendants, economic analysis of the determination of the appropriate prejudgment interest rate in class action lawsuit related to alleged takings of residential property

For U.S. Department of Justice and FDIC – Economic analysis of trading behavior in spot and options foreign exchange markets in relation to criminal investigation of front running allegations against investment bank

FirstEnergy Generation, LLC v. BNSF Railway Company and CSX Transportation, Inc. – For Plaintiff, determination of appropriate discount rate to bring to the present a stream of future liquidated damages payments

For Intuit/QuickBooks – analysis of financial disclosures and determination of the consistency of certain financial calculations with The Truth in Lending Act as implemented by the Board of Governors of the Federal Reserve System's Regulation Z

For U.S. Department of Justice and U.S. Customs and Border Protection – Construction of database and estimation of value of vehicles imported to the U.S. by foreign car manufacturer in relation to violations of customs regulations and the Clean Air Act

Federal Deposit Insurance Corporation v. PricewaterhouseCoopers LLP and Crowe Horwath LLP – For plaintiff, quantification of economic harm in banking fraud case resulting from alleged failure to detect fraud

China Development Industrial Bank v. Morgan Stanley & Co. et al. – For plaintiff, economic analysis of mortgage securitization, structured finance, and conflicts of interest in relation to the marketing and sale of a mortgage-backed collateralized debt obligation and alleged misrepresentations

Navajo Health Foundation – Sage Memorial Hospital, Inc. v. Silvia Mathews Burwell, et al. – For defendant, The United States of America, analysis of damages claims related to alleged breach of contract related to the provision of hospital services in Navajo hospital

Always at Market, Inc. v. United States – For defendant, conducted analysis of plaintiff's econometric model of new registrations on on-line auction site and responded to damages claims based on this model

Entergy Nuclear Vermont Yankee, LLC, v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pickup of spent nuclear fuel

Southern California Edison Company v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pickup of spent nuclear fuel

Gilberte Jill Kelley, and Scott Kelley, M.D. v. The Federal Bureau of Investigation et al. – For defendant, economic analysis of lost earnings claim related to alleged violation of the Privacy Act and the General Petreaus scandal

The West Virginia Investment Management Board and The West Virginia Consolidated Public Retirement Board v. The Variable Annuity Life Insurance Company – For defendant, analysis of alleged damages to retirement fund resulting from receiving fragmented distribution of investment funds rather than lump sum payment

LaDon Powell and Margeret Dennis vs. Ocwen Loan Servicing – For defendant, economic analysis of late payment fees in response to breach of contract claims related to reinstatement agreement. Filed expert report, United States District Court for the District of Wyoming, May 2015

In re Goldman Sachs Group, Inc. Securities Litigation – For plaintiff class, economic analysis of mortgage securitization, structured finance, and conflicts of interest in relation to the creation of four mortgage-backed collateralized debt obligations

Clear-View Technologies v. John H. Rasnick et al. – For plaintiff, estimated damages related to interference in funding of startup business. Computation required conducting business valuation

Matthew Burnett et al. v. Robert Bosch LLC, USA – For defendant, conducted statistical analysis to assess impact on sparkplug prices of alleged false marketing practices to evaluate the economic basis for class certification

Valuation of Mitchell Woods Pharmaceuticals LLC – Conducted economic valuation of early stage pharmaceutical company developing drug to combat various types of cancer

Starr International Company Inc. v. The United States of America – For defendants, economic analysis of the determination of the appropriate prejudgment interest rate in class action lawsuit related to alleged takings of AIG stock during the 2008-2009 financial crisis

For Millicom International Services, LLC. – Co-authored the study "Assessing the Competitiveness of the Mobile Telephone Industry in Paraguay"

Scott J. Bloch v. U.S. Office of Personnel Management – For defendants, economic assessment of lost income and lost reputation monetary claims

Weili Dai, Sehat Sutardja, and Sutardja Family Partners v. Goldman Sachs & Co., Bradley Defoor, and Graham Brandt – For claimants in FINRA arbitration, quantification of economic damages related to margin calls in the midst of the 2007-2008 financial crisis

The Economic Impact of the SEC's Proposed Rule on Required Pay Ratio Disclosure – For the Center On Executive Compensation, study of the economic effects of mandatory compensation disclosures pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act

In re Text Messaging Antitrust Litigation – For plaintiffs, economic analysis of liability and damages related to alleged collusion among wireless SMS text messaging service providers in the U.S.

Rothschild Capital Partners, LP, et al., v. Gorfine, Schiller & Gardyn, P.A., et al. – For defendants, economic analysis of damages claim related to lost business opportunities

Meda AB v. 3M Company, 3M Innovative Properties Company, and Riker Laboratories, Inc. – For plaintiffs, quantification of damages associated with the withholding of material information during the purchase of 3M's European pharmaceutical business

Securities and Exchange Commission v. Brian H. Stoker – For plaintiff, analysis of adverse selection in creation of a synthetic collateralized debt obligation squared

Entergy Gulf States, Inc. and Entergy Louisiana, LLC v. The United States of America – For defendant, economic analysis of plaintiffs claim for interest on damages

Portland General Electric Company et al. v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pickup of spent nuclear fuel

Sacramento Municipal Utility District. v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pickup of spent nuclear fuel

Kenneth D. Klaas et al., v. Vestin Mortgage Inc., et al. – For defendants, economic analysis of contract damages claims in hard money lending industry

Entergy Corporation and Affiliated Subsidiary Companies vs. Commission of Internal Revenue – For defendants, analysis of plaintiffs' evaluation of decommissioning funds transferred as part of the nuclear plant acquisition

Novartis Pharmaceuticals Corporation v. Mylan Pharmaceuticals Inc. and Mylan Inc. – For defendants, evaluation of competitive effects of foreclosure of generic fluvastatin drug

Tyr Sport, Inc. v. Warnaco Swimwear, Inc. United States Swimming, Inc. et al. – Analysis on behalf of defendants in response to antitrust liability claims

In re Korean Airlines Co., Ltd. Antitrust Litigation – For plaintiffs, economic analysis of alleged agreement between Korean Air Lines Co., Ltd. and Asiana Airlines, Inc. to raise prices and the effects of that agreement on purchasers of airline services in class action suit

Kansas Gas And Electric v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pick-up of spent nuclear fuel

Burlington Northern Santa Fe Railway - Study estimating the cost of capital

Pacific Gas And Electric Company v. The United States of America – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pick-up of spent nuclear fuel in remanded case

Yankee Atomic, Connecticut Yankee Atomic Power Company, Maine Yankee Atomic Power Company v. United States – For defendant, economic assessment of the development of a market and subsequent trading of allocation rights for pick-up of spent nuclear fuel in remanded case

United States of America v. Ralph Cioffi and Matthew Tannin – Economic analysis of hedge fund operations

Charles Felton et al., v. Vestin Realty Mortgage II, et al. – For defendants, economic analysis of contract damages claims in hard money lending industry

National Fire Insurance Co. of Pittsburgh, PA vs. Puget Plastics Corporation et al. – Economic analysis of lost profits and diminution in business value

Consolidated Edison Company of New York And Entergy Nuclear Generation Company v. The United States of America – For defendant, economic analysis of alleged diminution in proceeds from sale of nuclear assets because of partial breach of contract

Arizona Public Service Company v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy ("DOE")

Deutscher Tennis Bund, et al., v. ATP Tour Inc. – Analysis of antitrust liability on behalf of ATP in response to claims of monopolization

Southern California Company v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy ("DOE")

Dominion Resources, Inc. v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy ("DOE")

MGP Ingredients, Inc. v. Mars, Inc. and S&M NuTec, LLC – Analysis of damages for defendant in patent infringement and misappropriation of trade secrets suit in the pet food industry

Dairyland Power Cooperative v. The United States of America – Economic assessment of the development of a market and subsequent trading of allocation rights for pick-up of spent nuclear fuel

Boston Edison Company And Entergy Nuclear Generation Company v. The United States of America – For defendant, economic analysis of alleged diminution in proceeds from sale of nuclear assets because of partial breach of contract

Clinton Reilly v. Medianews Group et al. – Analysis of the effects of the acquisition of several newspapers in the San Francisco Bay Area in response to antitrust suit

Republica Oriental del Uruguay v. Chemical Overseas Holdings, Inc. et al. – For plaintiff, calculation of economic injury in the midst of the Argentine financial crisis in fraud suit

Pacific Gas And Electric Company v. The United States of America – Economic assessment of the development of a market and subsequent trading of allocation rights for pick-up of spent nuclear fuel

Northern States Power Company v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy ("DOE")

Hawaii Renewable Portfolio Standards – For The Public Utilities Commission of the state of Hawaii, optimal policy design to implement renewable portfolio standards

An Economic Analysis of the Competitive Effects of the SBC/AT&T and Verizon/MCI Mergers on the Internet Backbone Market – Paper submitted before the Infocomm Development Authority of Singapore (IDA) and to the U.S. Federal Communications Commission

British Telecommunications Analysis – Analysis of competitive effects in the market for special local access, provision of enterprise telecommunications services and Internet backbone following the proposed mergers between SBC and AT&T, and Verizon and MCI

Southern Nuclear Operating Company v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy

DRAMS – On behalf of Respondent Hynix Semiconductors, paper submitted before the Japanese Ministry of Finance and Ministry of Economy, Technology and Industry in response to econometric analysis evaluating the price effects of alleged subsidies in the market for DRAMs

Video Rental Industry Competition Analysis – Statistical analysis for delineating relevant markets and estimating unilateral effects in relation to the acquisition of Hollywood Entertainment. Analysis in the context of Hart-Scott-Rodino review by the Department of Justice

Dr. Steven Nadler v. Aspen Valley Hospital, Inc. et al. – For defendant, analysis of monopolization and exclusionary conduct allegations in emergency professional orthopedic services

Martin Leach v. Ford Motor Company – For defendant, economic analysis of the reasonableness of a non-compete clause and event study analysis to evaluate the impact of direct competition from former executives

Advertising Effectiveness – Statistical analysis of survey data to determine effectiveness of alternative advertising campaigns in influencing teenager's attitudes, beliefs and intentions toward smoking and tobacco

Canadian Lumber International Trade Study – Study of the effect of the U.S.-Canada Softwood Lumber Agreement ("SLA"), a tariff- rate quota, on the volume and price of Canadian lumber imports. Presented before the U.S. International Trade Commission

Westways World Travel, et al. v. AMR Corp. – For defendant, economic analysis of damages claims in class action suit related to American Airlines' ticketing

Consumer Product Merger – Demand estimation using scanner sales data for delineating relevant markets and estimating unilateral effects of the merger

Barron Aircraft, L.L.C. v. Dassault Falcon Jet Corp. – For plaintiff, design, implementation and statistical analysis of survey of business-jet aircraft professionals

Tobacco Merger – Demand estimation using scanner sales data for delineating relevant markets and estimating unilateral effects of the merger

EchoStar Satellite L.L.C. vs. Viacom Inc., et al. – For defendants, economic analysis of EchoStar's allegation that Viacom illegally tied the sale of some of its cable programs to its CBS broadcast retransmission rights

Federal Communications Commission Inquiries into Broadcast Television – Econometric analyses regarding media ownership rules prepared on behalf of Fox, NBC, and Viacom/CBS for FCC filings

Daisy L. Holoman et al. v. Pfizer Inc. and Warner Lambert Corporation – For defendants, quantification of damages in class action suit related to a diabetes prescription medication

Indiana Michigan Power Company v. The United States of America – For defendant, analysis of damages in connection with partial breach of the contract for disposal of spent nuclear fuel between plaintiff and the Department of Energy

Diane L. Walter-Brock v. Ford Motor Company et al. – For defendants, analysis of the economics of punitive damages in a product liability suit

Julia Tennin and Patricia Alexander v. Ford Motor Company – For defendants, analysis of the economics of punitive damages in a product liability suit

For defendant (an internet service provider marketing cell phone service) analyzed plaintiff's damages claims for compensation in a cell phone service false advertising class action suit

R. Straman Co. and Newport Convertible Engineering, Inc. v. Volkswagen of America, et al. – For defendants, analysis concerning antitrust liability and antitrust injury in monopolization claim

Bureau of Public Enterprises, Federal Republic of Nigeria – Report and recommendations for competition policy and anti-trust reform in Nigeria

Newhall Land and Farming Co. v. Kerr McGee Operating Corporation, et al. – For defendant, analysis concerning the economics of punitive damages

Thayer/Patricof Education Funding L.L.C. v. Fred Pryor et al. – For Plaintiff, analysis of damages related to an acquisition in an accounting fraud suit

Marzia Spielholz, et al. v. Los Angeles Telephone Company, et al. – For defendant, analyzed plaintiff's damages claims for compensation in a cell phone service false advertising class action suit

Cardiac Institute General Partnership v. Banner Health System et al. – Competition analysis for defendant in monopolization claim

Braintree Laboratories, Inc. v. Schwarz Pharma, Inc. – For defendant (and counter-claim plaintiff), demand estimation for delineation of relevant antitrust product market and analysis of market power in pharmaceuticals patent infringement and monopolization suit

William H. McKee and Paul R. Estrada v. Heller, Ehrman, White & *McAuliffe et al.* – For defendants, business valuation of Monsterbook.com in a negligent misrepresentation and fraud suit

Exxon Chemical Plant Fire – For defendant, analysis concerning the economics of punitive damages

Karlsson et al. v. Ford Motor Company et al. – Analysis for defendants of liability in a product liability suit and the economics of punitive damages

Michael Meitus, et al. v. Dain Rauscher Wessels, Dain Rauscher Corporation and Dain Rauscher Inc. – Competitive analysis of the brokerage industry and valuation of acquired investment bank

American Institute of CPAs – Study of the provision of non-audit services by auditors evaluating efficiency effects and impact on audit quality

Competition for Video Programming – Analysis of the effects of exclusive distribution contracts and the FCC's restrictions affecting cable operators

New Skies Satellites Position Paper – Analysis of the adverse competitive impact of Export-Import Bank financing of iPSTAR satellite on the Asian satellite services market

ID Security Systems Canada v. Checkpoint Systems, Inc. – Analysis for defendant of restraint of trade and tying claims in security tag systems

Professional Societies

American Economic Association

American Finance Association

American Bar Association, Antitrust Section

Exhibit 2

Documents and Data Relied Upon and Considered

Depositions, Exhibits, and Other Testimony

Defendants' Rule 26(A)(2)(C) Expert Disclosure of John M. Abowd, State of New York, et al., v. United States Department of Commerce, et al., No. 18-cv-2921 (SDNY), September 21, 2018.

Declaration of Dr. William O'Hare, Civil Action No. 8:18-cv-01570-GJH (DMd), October 3, 2018.

Rule 26(A)(2)(B) Expert Report and Declaration of Andrew Reamer, PhD, Civil Action No. 8:18-cv-01570-GJH (DMd), October 2, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Andrew Reamer, PhD, Case No. 3:18-cv-01865 and 5:18-cv-02279 (NDCA), September 18, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Bernard L. Fraga, PhD, Case No. 3:18-cv-01865, September 19, 2018.

Rule 26(A)(2)(B) Expert Report and Declaration of Dr. Nancy A. Mathiowetz, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Kimball W. Brace, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Lisa Carruth, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Matthew Barreto, PhD, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Nora Gordon, PhD, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Roger Mingo, Civil Action No. 8:18-cv-01041-GJH and 8:18-cv-01570-GJH (DMd), October 5, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Stuart D. Gurrea, PhD, Case No. 3:18-cv-01865 and 5:18-cv-02279, October 3, 2018.

Articles, Books, and Other Sources

Memorandum from John Abowd and David Brown, September 28, 2018 ("NRFU Success Rate.docx").

"2020 Census Detailed Operation Plan for: 18. Nonresponse Followup Operation (NRFU)," United States Census Bureau, April 18, 2018.

"Understanding the Quality of Alternative Citizenship Data Sources for the 2020 Census," J. David Brown, et al., CES 18-38, August 2018.

"Best Practices for Survey Research," https://www.aapor.org/Standards-Ethics/Best-Practices.aspx.

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"Outline of Principles of Impact Evaluation," OECD, http://www.oecd.org/dac/evaluation/dcdndep/37671602.pdf.

"Reference Manual on Scientific Evidence," Federal Judicial Center and National Research Council, Third Edition.

American Association for Public Opinion Research, "Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys," April 2015, https://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions2015_8theditionwithchanges_April2015_logo.pdf.

Richard L Scheaffer, William Mendenhall and Lyman Ott, <u>Elementary Survey Sampling</u>, Third Edition, Duxbury Press, 1990.

Thomas Mule, "Census Coverage Measurement Estimation Report: Summary of Estimates of Coverage for Persons in the United States," Decennial Statistical Studies Division, https://www.census.gov/coverage_measurement/pdfs/g01.pdf.

Robyn Kravitz, et al., v. United States Department of Commerce, et al., Case No. 18-cv-01041, First Amended Complaint, May 3, 2018.

LA UNIÓN DEL PUEBLO ENTERO, et al., v. Wilbur L. Ross, et al., Case No. 8:18-cv-01570-GJH, First Amended Complaint, July 9, 2018.

https://fns-prod.azureedge.net/sites/default/files/wic/2013%20State-Level-Estimates-of-Infants-and-Pre-School-Age-Children-at-or%20....pdf.

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https://www.census.gov/data/tables/1990/dec/1990-apportionment-data.html.

https://www.census.gov/data/tables/2000/dec/2000-apportionment-data.html.

https://www.census.gov/data/tables/2010/dec/2010-apportionment-data.html.

https://www.census.gov/dmd/www/techdoc1.html.

https://www.census.gov/population/apportionment/about/computing.html.

https://www.census.gov/topics/public-sector/congressional-apportionment/about.html.

https://www.census.gov/topics/public-sector/congressional-apportionment/about/computing.html.

U.S. Census Bureau, <u>https://census.gov/programs-surveys/decennial-census/2020-census/planning-management/memo-series/2020-memo-2018_10.html</u>.

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