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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA, SAN FRANCISCO DIVISION

STATE OF CALIFORNIA, *et al.*,

Plaintiffs,

v.

WILBUR L. ROSS, JR., *et al.*,

Defendants.

Civil Action No. 3:18-cv-01865-RS

**DEFENDANTS' NOTICE OF MOTION
AND MOTION FOR SUMMARY
JUDGMENT; MEMORANDUM OF
POINTS AND AUTHORITIES IN
SUPPORT THEREOF**

Date: December 7, 2018
Time: 10:00 a.m.
Judge: Honorable Richard Seeborg
Dept.: 3

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

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INTRODUCTION

Following a formal request from the Department of Justice, the Secretary of Commerce made an eminently 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 ask this Court to vacate that decision, but lack standing to bring their claims, which in any event are belied by the record.

As a threshold matter, Plaintiffs have suffered no Article III injury traceable to the Secretary's decision. They cannot 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), particularly after accounting for the Census Bureau's extensive follow-up operations, massive outreach communications plan, and processes for imputation. Nor can they show that any such 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 implicated by the inclusion of demographic questions, which (including a citizenship question) 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 obtaining more precise citizenship data via the decennial census will be useful to the Department of Justice in enforcing the Voting Rights Act. That decision falls well within the Secretary's enormous discretion in overseeing the decennial census and is fully in compliance with the Constitution and applicable laws. The APA

1 requires no more. Even if the Court were to look behind the Secretary’s decision for any additional
2 motivations, there is no evidence that the Secretary did not believe his stated, reasonable rationale.

3 Defendants are therefore entitled to summary judgment.

4 BACKGROUND

5 I. FACTUAL BACKGROUND

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

16 With the exception of 1840, decennial censuses from 1820 to 1880 asked for citizenship or
17 birthplace in some form, and decennial censuses from 1890 through 1950 specifically requested
18 citizenship information.¹ In 1960, the Census Bureau asked 25% of the population for the
19 respondent’s birthplace and that of his or her parents. *Measuring America* at 72-73. Between 1970
20 and 2000, the Bureau distributed a more detailed “long-form questionnaire” to a sample of the
21 population in lieu of the “short-form questionnaire” sent to the majority of households. U.S. Census

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23
24 ¹ Beginning in 1820, the census was used to tabulate citizenship by inquiring of each
25 household the number of “foreigners not naturalized.” *See* U.S. Census Bureau, *Measuring America:
26 The Decennial Censuses From 1790 to 2000*, at 6-7, [https://www2.census.gov/library/publications/
27 2002/dec/pol_02-ma.pdf](https://www2.census.gov/library/publications/2002/dec/pol_02-ma.pdf) (“*Measuring America*”). No question regarding birthplace or citizenship
28 status was included in the 1840 Census. *Id.* at 8. In the 1850, 1860, and 1880 enumerations, the
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.

1 Bureau, Questionnaires, https://www.census.gov/history/www/through_the_decades/questionnaires/.
2 The long-form questionnaire, which was generally sent to 1 in 6 households, included questions about
3 the respondent's citizenship or birthplace; the short form did not. Measuring America at 78, 91-92.

4 Beginning in 2005, the Census Bureau began collecting the more extensive long-form data—
5 including citizenship—through the American Community Survey (ACS), which is sent yearly to about
6 one in 38 households. See U.S. Census Bureau, Archive of American Community Survey Questions,
7 <https://www.census.gov/programs-surveys/acs/methodology/questionnaire-archive.html> (noting
8 citizenship questions on every ACS questionnaire). The introduction of the yearly ACS enabled the
9 2010 census to be a “short-form-only” census. The 2020 census will also be a “short-form-only”
10 census. The ACS will continue to collect additional data each year, including information on the
11 citizenship status of respondents. Because the ACS collects information from only a small sample
12 of the population, it produces annual estimates only for “census tracts” and “census-block groups.”
13 The decennial census is designed to undertake a full count of the people and produces other, limited
14 information down to the smallest geographic level, known as the “census block.” As in past years,
15 the 2020 census will pose a number of questions beyond the total number of individuals residing at
16 a location, including questions regarding sex, Hispanic origin, race, and relationship status.

17 On March 26, 2018, the Secretary of Commerce issued a memorandum reinstating a
18 citizenship question on the 2020 census questionnaire. Administrative Record (“AR”) 1313-20. The
19 Secretary's reasoning and the procedural background are set out in that memorandum and in a
20 supplemental memorandum issued on June 21, 2018. *Id.* 1321. The Secretary explained that, “[s]oon
21 after [his] appointment,” he “began considering various fundamental issues” regarding the 2020
22 census, including whether to reinstate a citizenship question. *Id.* As part of his deliberative process,
23 he and his staff “consulted with Federal governmental components and inquired whether the
24 Department of Justice (DOJ) would support, and if so would request, inclusion of a citizenship
25 question as consistent with and useful for the enforcement of the Voting Rights Act.” *Id.*

26 In a December 12, 2017 letter, DOJ responded that citizenship data is important to its
27 enforcement of Section 2 of the VRA for several reasons, and that the decennial census would

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1 provide more-granular citizenship voting age population (CVAP) data than that provided by the
2 annual ACS survey. AR 663-665 [hereinafter Gary Letter]. In the letter DOJ “formally request[ed]
3 that the Census Bureau reinstate into the 2020 Census a question regarding citizenship.” *Id.* 665.

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

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

25 The Secretary also emphasized that “[c]ompleting and returning decennial census
26 questionnaires is required by Federal law,” meaning that concerns regarding a decline in response
27 rates were premised on speculation that some will “violat[e] [a] legal duty to respond.” AR 1319.

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1 Despite the hypothesis “that adding a citizenship question could reduce response rates, the Census
2 Bureau’s analysis did not provide definitive, empirical support for that belief.” *Id.* 1316. The
3 Secretary further explained that the Census Bureau intends to take steps to conduct respondent and
4 stakeholder outreach in an effort to mitigate any impact on response rates of including a citizenship
5 question. *Id.* 1318. In light of these considerations, the Secretary concluded that “even if there is
6 some impact on responses, the value of more complete and accurate [citizenship] data derived from
7 surveying the entire population outweighs such concerns.” *Id.* 1319.

8 **II. PROCEDURAL HISTORY**

9 Plaintiffs² filed suit against Defendants on March 26, 2018, and amended their complaint on
10 May 4, 2018. Compl. Decl. & Inj. Relief, ECF No. 1; 1st Am. Compl. Decl. & Inj. Relief (“State of
11 California, FAC”), ECF No. 12. Defendants sought dismissal based on Plaintiffs’ lack of standing,
12 the political question doctrine, lack of justiciability under the APA, and Plaintiffs’ failure to state an
13 Enumeration Clause claim. *See* Defs.’ Mot. Dismiss, ECF No. 37. The Court denied this motion to
14 dismiss. Order Denying Mot. Dismiss, ECF No. 75. Defendants lodged the Administrative Record
15 (“AR”) on June 8, 2018, as supplemented on June 21, 2018. Notice of Filing AR, ECF No. 23;
16 Notice of Filing Supplement to AR, ECF No. 33. This Motion for Summary Judgment is filed
17 pursuant to the schedule entered by the Court on August 30, 2018. Stip. to Case Sched. & Order as
18 Modified by the Court, ECF No. 79.

19 **LEGAL STANDARD**

20 “The court shall grant summary judgment if the movant shows that there is no genuine
21 dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R.
22 Civ. P. 56(a). Where claims call for judicial review under the APA, “summary judgment is an
23 appropriate mechanism for deciding the legal question” presented. *Ctr. for Emvtl. Health v. McCarthy*,
24 192 F. Supp. 3d 1036, 1040 (N.D. Cal. 2016) (citation omitted). The court must uphold an agency
25

26 ² Plaintiffs are the State of California, County of Los Angeles, City of Los Angeles, City of
27 Fremont, City of Long Beach, City of Oakland, and City of Stockton, as well as intervenor-plaintiff
Los Angeles Unified School District. Compl. Intervention, ECF No 47-1

1 decision unless it is found to be “arbitrary, capricious, an abuse of discretion, or otherwise not in
2 accordance with law,” “contrary to constitutional right,” or “in excess of statutory jurisdiction,
3 authority, or limitations, or short of statutory right.” 5 U.S.C. § 706(2).

4 ARGUMENT

5 I. Defendants Are Entitled to Summary Judgment Because Plaintiffs Have Not 6 Established Their Standing.³

7 Plaintiffs claim that they will be injured because the citizenship question will result in a
8 decrease in self-response rates on the census, which will result in an undercount, which will lead to
9 California being apportioned fewer congressional seats that it should otherwise have, and receiving
10 less federal funding. State of California, FAC ¶ 6; Compl. Intervention ¶ 6.

11 Plaintiffs are unable to meet their burden and demonstrate with sufficient certainty that any
12 of these harms will actually come to pass. Plaintiffs will only be harmed if (1) the citizenship question
13 itself *causes* individuals to neglect their legal duty to respond to the 2020 census, such that a decrease
14 in the initial self-response rate occurs, (2) such a decline is not corrected by the Census Bureau’s
15 repeated efforts to encourage self-response, (3) such a decline is not corrected by the Census Bureau’s
16 extensive Nonresponse Followup (“NRFU”) efforts, (4) such a decline is not corrected by the Census
17 Bureau’s use of imputation for any remaining uncounted households after NRFU, (5) if any net
18 undercount remains after these comprehensive operations, Plaintiffs’ *particular states and localities* will
19 be undercounted more than others (*i.e.*, there will be a differential net undercount), and (6) any such
20 differential net undercount actually changes the apportionment or funding of Plaintiffs’ specific states
21

22
23 ³ In an APA case, “the district judge sits as an appellate tribunal” and all issues—including
24 standing—generally are resolved at summary judgment. *McCrary v. Gutierrez*, No. C-08-015292, 2010
25 WL 520762, at *2 (N.D. Cal. Feb. 8, 2010) (quoting *Am. Bioscience v. Thompson*, 269 F.3d 1077, 1083
26 (D.C. Cir. 2001)). This case should be no different. In the event that the Court concludes an
27 evidentiary hearing on standing is appropriate, that hearing should be limited to standing only (rather
28 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”).

1 and localities in light of both the magnitude of the differential net undercount and the national
2 distribution of the differential net undercount. This long chain of necessary events before Plaintiffs
3 are injured demonstrates the speculative nature of their purported injuries and strains credulity, as
4 well as their inability to attribute those hypothetical injuries to the addition of the citizenship question.

5 **A. Plaintiffs Bear the Burden of Establishing Their Article III Standing.**

6 The doctrine of constitutional standing, an essential aspect of an Article III case or
7 controversy, demands that a plaintiff have “a personal stake in the outcome of the controversy [so]
8 as to warrant his invocation of federal-court jurisdiction.” *Warth v. Seldin*, 422 U.S. 490, 498 (1975)
9 (internal citation omitted). At its “irreducible constitutional minimum,” the doctrine requires a
10 plaintiff, as the party invoking the Court’s jurisdiction, to establish three elements: (1) a concrete and
11 particularized injury-in-fact, either actual or imminent; (2) a causal connection between the injury and
12 defendants’ challenged conduct, such that the injury is “fairly . . . trace[able] to the challenged action
13 of the defendant”; and (3) a likelihood that the injury suffered will be redressed by a favorable
14 decision. *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560-61 (1992). The standing inquiry is “especially
15 rigorous” where “reaching the merits of the dispute would force [the court] to decide whether an
16 action taken by one of the other two branches of the Federal Government was unconstitutional,”
17 *Clapper v. Amnesty Int’l USA*, 568 U.S. 398, 408 (2013) (quoting *Raines v. Byrd*, 521 U.S. 811, 819-20
18 (1997)).

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

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

8 “[I]here can be no genuine issue as to any material fact” where a party “fails to make a
9 showing sufficient to establish the existence of an element essential to that party’s case, and on which
10 [it] [bears] . . . the burden of proof.” *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986). Thus, “[a]t the
11 summary judgment stage,” plaintiffs “[a]re required to come forward with evidence demonstrating
12 concrete injury . . . based on the challenged action,” *Proyecto Pastoral at Dolores Mission v. Cty. of L.A.*,
13 22 Fed. App’x. 743, 744 (9th Cir. 2001), or else “Rule 56(c) mandates the entry of summary judgment”
14 against them. *Celotex*, 477 U.S. at 322 (quoting Fed. R. Civ. P. 56(e)).

15 **B. Plaintiffs Cannot Show That the Citizenship Question Will Result in an**
16 **Undercount.**

17 As an initial matter, Plaintiffs cannot show that the months-long census process will result in
18 an undercount, even assuming, *arguendo*, that the citizenship question resulted in any additional
19 hesitancy to respond among certain individuals. First, those who choose not to respond to the
20 citizenship question alone, or who cease completing questions on the census after they reach the
21 citizenship question, will still be enumerated and thus would not contribute to any undercount.
22 Second, the Census Bureau has extensive techniques to encourage individuals who did not initially
23 respond to respond through one of five additional opportunities. Third, for those who still have not
24 responded, the Census Bureau will employ its NRFU process, one of the largest peacetime
25 mobilizations in our Nation’s history in which includes sending enumerators out to collect
26 information from non-responders in person. Fourth, where enumeration efforts still fail, the Census
27 Bureau uses high-quality administrative records from other federal agencies to enumerate

1 individuals. As the Census Bureau’s Chief Scientist and Associate Director for Research and
 2 Methodology therefore concluded in his expert report, “there is no credible quantitative evidence
 3 that the addition of the citizenship question would affect the accuracy of the count.” Declaration of
 4 John M. Abowd, Ph.D. ¶ 13 (Abowd Declaration), Ex. A; *see also id.* at 4 (“It is important to stress
 5 that the estimated decrease in self-response rates does not translate into an increase in net
 6 undercount, and the use of our estimates as if they did is wholly inappropriate.”). As discussed
 7 below, these extensive procedures will ameliorate any risk of injury to Plaintiffs. Plaintiffs’
 8 speculative claimed injuries are far from “certainly impending” because they will come to pass only if
 9 every step described below fails. *Clapper*, 568 U.S. at 409.

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

13 Even before beginning its NRFU efforts, the Census Bureau has comprehensive plans in
 14 place to maximize self-response. Instructions to complete the census online or by telephone will
 15 initially be sent to most households, with the remaining households (those deemed less likely to have
 16 internet access) receiving a paper questionnaire in the first mailing. 2020 Census Operational Plan:
 17 A New Design for the 21st Century, at 18, 21, 91, 95 (Sept. 2017, v.3.0),
 18 [https://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-](https://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan3.pdf)
 19 [docs/2020-oper-plan3.pdf](https://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan3.pdf) (“2020 Census Operational Plan”); Abowd Declaration ¶¶ 25-29. All
 20 households will receive a letter reminding them to respond as a second contact. Abowd Declaration
 21 ¶ 29. If households do not initially self-respond, they will receive a postcard as the third contact, a
 22 letter and the paper version of the questionnaire as the fourth contact, and another postcard as the
 23 fifth contact. Abowd Declaration ¶ 30; 2020 Census Operational Plan at 99. Each household can
 24 thus receive up to six mailings. 2020 Census Operational Plan at 99; *see also* Abowd Declaration ¶ 30.
 25 In addition to online instructions, all mailings also include a toll-free number that provides assistance
 26 in self-responding. Abowd Declaration ¶ 30. In addition, the 2020 census will be the first to rely
 27 extensively on digital methods and automation, and it will be the first census where individuals are

1 encouraged to respond online. 2020 Census Operational Plan at 15, 18-19, 26, 88. The Census
2 Bureau also engages in advertising and outreach efforts to inform people about the census and
3 encourage them to self-respond. 2020 Census Operational Plan at 21, 92-94; Abowd Declaration
4 ¶ 61 & n.52.

5 Furthermore, the actual enumeration could only be affected by households that completely
6 choose not to respond—if a household simply skips the citizenship question (i.e., so-called “item
7 nonresponse,” where a person does not respond to a particular item on the questionnaire) or stops
8 filling out the census questionnaire once they reach the citizenship question (i.e., “breakoff”) they
9 will nonetheless be fully counted. See Abowd Declaration ¶ 35-38.

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

12 If a household does not self-respond during the steps described above, which span six weeks,
13 it does not mean that that household will not be enumerated. Instead, the Census Bureau’s extensive
14 NRFU operations will kick in, starting with the assignment of an enumerator to each nonresponding
15 household address. Abowd Declaration ¶¶ 38-39; 2020 Census Operational Plan at 114.
16 Enumerators physically visit housing unit addresses in order to enumerate households through an in-
17 person interview. Abowd Declaration ¶ 39. Enumerators are dispatched utilizing a state-of-the-art
18 optimizer that efficiently assigns cases and provides routes for field work.⁴ 2020 Census Operational
19 Plan at 114; see also Abowd Declaration ¶ 45-51. The Census Bureau “considers the demographic
20 characteristics of each unique geographic area” in selecting enumerators, and works to retain local
21 enumerators, as well as enumerators with the language skills required to communicate with residents
22 in each area. Abowd Declaration ¶¶ 49-50. Enumerators also have access to remote translation
23 services for 59 non-English languages. Abowd Declaration ¶ 50. If an enumerator is not able to
24 connect with a resident during an in-person visit, the enumerator will leave a Notice of Visit form

25
26
27 ⁴ The increased efficiency from these technological advances will enable the Census Bureau
to target advertising and NRFU resources toward areas with low response rates.

1 providing information about how the household can complete the 2020 census. Abowd Declaration
2 ¶ 51. A household may be visited by an enumerator up to 6 times. Abowd Declaration ¶ 53 & n.43.

3 If the enumerator is unable to make contact with a household, and the household does not
4 complete the 2020 census questionnaire as per the Notice of Visit, the Census Bureau will still
5 enumerate that household. Using its “final attempt” procedures, the Census Bureau will impute data
6 for a non-responding household if reliable administrative records are available. 2020 Census
7 Operational Plan at 22, 114, 117; Abowd Declaration ¶ 53. If such reliable data is not available, then
8 the enumerator will attempt to contact a nearby proxy (such as a neighbor or building manager), and
9 will enumerate the non-responding household through data provided by that proxy. Abowd
10 Declaration ¶ 53 & n.41. As necessary, the most experienced and effective enumerators will be tasked
11 to identify proxies. 2020 Census Operational Plan at 22, 114, 117; Abowd Declaration ¶ 53.
12 Although imputation and proxy efforts may result in lower quality data for demographic questions
13 relative to data from self-responses, they should not cause an *undercount*. See Abowd Declaration ¶ 53
14 (“The Census Bureau is not aware of any credible quantitative evidence suggesting that proxies in the
15 census provide a greater net undercount or differential net undercount in comparison to self-response
16 or in-person interviews.”); Abowd Declaration ¶ 56 (“The Census Bureau is not aware of any credible
17 quantitative data suggesting that imputation in the census leads to a greater net undercount or
18 differential net undercount in comparison to self-response or in-person interviews.”).

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

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

5 The Census Bureau expects that the completion of the exhaustive NRFU efforts described
6 above “will result in a complete enumeration,” Abowd Declaration ¶ 24—in other words, there will
7 be no undercount, differential or not. And, the Census Bureau has more than sufficient resources
8 available to complete these steps, even in a worst-case scenario for self-response. *See* Abowd
9 Declaration ¶ 78 (“The Census Bureau is prepared to conduct the 2020 Census NRFU operation and
10 believes that those efforts will result in a complete enumeration.”).

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

20 The self-response rate built into the LCCE is in the range of 55.5% to 65.5%. And although
21 the Census Bureau expects a self-response rate of 60.5%, all NRFU planning—including hiring of
22 field staff and enumerators—is based on the lower bound of this estimate, 55.5%. For each
23 percentage point increase or decrease in the overall self-response rate, the LCCE estimates \$55
24 million will be saved or spent. Abowd Declaration ¶ 60. This estimate includes, for example, the
25 cost of additional or lowered field supervisors and enumerators, hours in the field, mileage, training
26 costs, provisioning and usage of handheld devices, and impacts on printing, postage, and paper data
27

1 capture operations.⁵

2 Under any conceivable scenario in which self-response rates decline due to the citizenship
3 question, the Census Bureau is fully equipped and funded to enumerate all those who would be
4 enumerated absent a citizenship question. For example, even if there is a 10% decline in self-response
5 among potential noncitizen households in 2020, and if 28.6% of households in the country match
6 that description (a high estimate), Abowd Declaration ¶ 69, then the predicted increase in the NRFU
7 workload would be approximately 3.6 million addresses, which would increase NRFU costs by \$137.5
8 million, far below the \$1.7 billion in fiscal year 2020 contingency funding.

9 **C. Even if an Undercount Occurred, Plaintiffs Cannot Show that It Would Affect**
10 **Them Through Any Material Impact on Apportionment or Federal Funding.**

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

17 Plaintiffs raise two theories as to how they would be harmed by a differential undercount:
18 (1) a differential undercount will cause Plaintiffs to cause a dilution of their legislative representation,
19 and (2) a differential undercount will cause harm in the form of a loss of federal funding under certain
20 federal programs that use census data in part to determine funding amounts. *See, e.g.,* State of
21 California, FAC ¶ 6; Compl. Intervention ¶ 6, ECF No 47-1. However, Plaintiffs cannot prove, as
22 they must, that there is an imminent, concrete risk of either harm.

23 Indeed, to the contrary, Defendants' expert Dr. Stuart Gurra has shown that there would
24 likely be no effect on apportionment, and only a negligible effect on funding. Dr. Gurra concluded

25
26 _____
27 ⁵ The estimate assumes that the increased or decreased percentage of housing unit addresses
28 self-responding is not easier or harder to count than a representative percentage of those not
responding to the census.

1 that if the 2020 NRFU efforts were as successful as the 2010 NRFU efforts, “congressional
2 apportionment in any state (including California) does not change due to reinstatement of a
3 citizenship question,” even without considering additional mitigation efforts, such as imputation.
4 Rule 26(A)(2)(B) Expert Report and Declaration of Stuart D. Gurrea, Ph.D. ¶¶ 11, 66-70 (Gurrea
5 Declaration), Ex. B. Similarly, assuming the 2010 NRFU success rate and no additional imputation,
6 “the distribution of federal funds to the State of California is estimated to decline by 0.01 percent”
7 for Title I LEA Grants, WIC Supplemental Foods Grants, and Social Services Block Grants. Gurrea
8 Declaration ¶ 11. This would hardly represent a material change. In light of this evidence, Plaintiffs
9 cannot meet their burden to show an imminent, nonspeculative injury by a preponderance of the
10 evidence based on either apportionment or funding. The purported injuries of the state and locality
11 plaintiffs, as well as the Los Angeles Unified School District, are of course entirely based on changes
12 to apportionment and loss of federal funding. State of California, FAC, Compl. ¶ 41-46; Compl.
13 Intervention ¶ 32-36.

14 **D. If Any Potential Injuries Existed, Plaintiffs Cannot Show that They Are**
15 **Traceable to the Citizenship Question or Redressable by That Question’s**
16 **Removal.**

17 Finally, Plaintiffs cannot show that any injury—if one existed—is traceable to the addition of
18 the citizenship question, or would be redressed if the question were removed. First, Plaintiffs’
19 supposition that the citizenship question will cause an undercount relies on individuals violating their
20 legal duty to respond to the census. As the Secretary emphasized in his decision memo, “[c]ompleting
21 and returning decennial census questionnaires is required by Federal law.” AR 1319; 13 U.S.C. § 221.
22 Defendants should not be held to blame such hypothetical illegal acts. *See Salmon Spanning & Recovery*
23 *All. v. Gutierrez*, 545 F.3d 1220, 1228 (9th Cir. 2008) (finding that plaintiffs lacked causation for their
24 claims against the United States when the United States merely continued to participate in a treaty,
25 while plaintiffs were allegedly harmed by illegal overfishing outside the treaty). Second, Plaintiffs
26 must show that their claimed concerns will lead households who would currently respond to the
27 census if it did not include a citizenship question to not respond to *any part* of the census due to the

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1 inclusion of a citizenship question at the end of the form. In other words, if households exist that
2 have confidentiality concerns in the current political climate such that they will decide not to respond
3 to the census with or without a citizenship question, any resulting undercount is not attributable to
4 the Secretary's decision to add a citizenship question. And, as discussed above, households that leave
5 the citizenship question blank but otherwise respond or breakoff at the citizenship question will still
6 be enumerated, avoiding Plaintiffs' purported harms. Plaintiffs cannot show, absent "speculation or
7 guesswork," that the addition of a citizenship question is a "substantial factor" motivating any
8 decrease in initial non-response. *Mendina v. Garcia*, 768 F.3d 1009, 1012-13 (9th Cir. 2014), citing
9 *Bennett v. Spear*, 520 U.S. 154, 168-69 (1997)). Indeed, Plaintiffs refer to "new concerns about topics
10 like the "Muslim ban," discomfort "registering" other household members by reporting their
11 demographic characteristics, the dissolution of the "DACA" (Deferred Action for Childhood Arrival)
12 program, repeated references to Immigration and Customs Enforcement (ICE), etc." State of
13 California, FAC ¶ 37 (internal citations omitted). Of course, concerns driven by the so-called
14 "Muslim ban," dissolution of DACA, and events other than the presence of a citizenship question
15 on the census are not traceable to Secretary Ross's actions and would not be redressed by the outcome
16 of this lawsuit.

17 **II. Defendants Are Entitled to Summary Judgment on the Enumeration Clause Claim**
18 **Because the Secretary Will Conduct a Person-by-Person Enumeration.**

19 The Court should grant judgment in favor of Defendants on the Enumeration Clause claim.
20 Plaintiffs allege that Defendants violate the Enumeration clause by including the citizenship question
21 on the 2020 census because the question will diminish the response rates of non-citizens and their
22 citizen relatives. State of California, FAC ¶ 49. This argument is fatally flawed because the
23 Constitution neither requires nor prohibits the census from asking whether a person is a U.S. citizen.
24 Rather, the Constitution's reference to "actual Enumeration" requires only that the population be
25 determined by a person-by-person headcount, rather than through estimate or conjecture. U.S.
26 Const. art. I, § 2, cl. 3. There is no dispute that the 2020 census seeks to do a person-by-person
27 headcount. *See* State of California, FAC ¶ 35. Therefore, the Enumeration Clause is satisfied.

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1 Rather than challenging the 2020 census for failing to do a person-by-person headcount, the
 2 only requirement under the Enumeration Clause, Plaintiffs make the novel argument that the “effect”
 3 of the citizenship question is so sensitive in the current political climate that it interferes with the
 4 actual enumeration. State of California, FAC ¶ 37; *see also* ECF No. 75 at 27. This theory, taken to
 5 its logical conclusion, would mean that the Enumeration Clause prohibits any demographic questions
 6 that may theoretically reduce response rates and cause some differential undercount.⁶ But, from the
 7 beginning, the census has asked demographic questions that may disproportionately deter
 8 respondents in certain areas of the country.⁷ *See* Census Act of 1790, § 1, 1 Stat. 101 (1790) (specifying
 9 six questions, including the number of slaves). This includes citizenship-related questions—as early
 10 as 1820—that may have had a disproportionately deterrent effect similar to what Plaintiffs allege will
 11 result from the 2020 census citizenship question. For example, the census has previously asked
 12 questions relating to the “[n]umber of foreigners not naturalized,” even though such people would
 13 not be equally distributed across the United States. *See, e.g.*, Census Act of 1820, 3 Stat. 548 (1820)
 14 (question on the “[n]umber of foreigners not naturalized”); Census Act of 1830, 4 Stat. 383 (1830)

15
 16 ⁶ To the extent Plaintiffs rely on the *Wisconsin* standard for this proposition, it is inapposite
 here. As Judge Furman recognized:

17 To read *Wisconsin* as Plaintiffs suggest would, therefore, lead ineluctably to the
 18 conclusion that each and every census—from the Founding through the
 19 present—has been conducted in violation of the Enumeration Clause. That
 20 would, of course, be absurd, and leads the Court to conclude instead that the
 21 *Wisconsin* standard applies only to decisions that bear directly on the actual
 population count. Notably, the Supreme Court’s own language supports that
 22 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 v. New York*] 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.

23 *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;
 24 *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.

25 ⁷ As Judge Furman noted, “the longstanding practice of asking questions about the populace
 of the United States without a direct relationship to the constitutional goal of an ‘actual Enumeration’
 26 has been blessed by all three branches of the federal government.” *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 51; *NYIC, et al. v. Dep’t of Commerce, et al.*,
 18-cv-5025 (S.D.N.Y. July 26, 2018), ECF No. 70 at 51.

1 (question on “[t]he number of White persons who were foreigners not naturalized”); Census Act of
 2 1850, 9 Stat. 428 (1850) (governing the censuses of 1850–1870 and asking place of birth); Act
 3 Providing for the Fourteenth Census, 40 Stat. 1291 (1919) (questions on place of birth and parents’
 4 places of birth; if foreign-born, what year the person immigrated and the person’s naturalization
 5 status).

6 The “current political climate” does not alter this analysis, nor have Plaintiffs put forth
 7 evidence that the citizenship question in fact will preclude an actual enumeration in the current
 8 political climate. There is no support for the proposition that an otherwise constitutional census
 9 question becomes unconstitutional due to the political climate at a particular time. Quite the
 10 opposite, citizenship-related questions have been asked to some or all of the population, in varying
 11 political climates, for nearly two hundred years. And no one contends that citizenship questions—
 12 asked since 1820—and race-related questions—asked in every census since 1790—were
 13 unconstitutional prior to the Civil War,⁸ during World War II,⁹ or during the Cold War,¹⁰ all turbulent
 14 political times when census demographic questions allegedly would diminish response rates.

15 To the extent the Court is concerned about the accuracy of the enumeration, the Census
 16 Bureau’s comprehensive NRFU procedures, set forth above, will attempt to contact nearly every
 17 person in the country, utilizing up to six mailings and multiple in-person visits by an enumerator.
 18 2020 Census Operational Plan, at 88-92, 112-21. The operations in place for 2020 are more wide-
 19 ranging and more advanced than the operations performed in any previous census. Moreover, the
 20 Census Bureau is fully prepared and budgeted to conduct its extensive NRFU operations. As
 21 discussed above, Plaintiffs cannot sufficiently establish that—even if the citizenship question caused

23 ⁸ Census Act of 1850, 9 Stat. 428 (1850) (1850 census questions); *see also* James Oliver Horton
 24 & Lois E. Horton, *A Federal Assault: African Americans and the Impact of the Fugitive Slave Law of 1850*,
 25 68 Chi.-Kent L. Rev. 1179, 1183 (1993) (“Blacks who grew to maturity under the shadow of the
 eighteenth-century law, even if they themselves had not been threatened with capture, were aware
 that both fugitive slaves and free blacks were in danger.”).

26 ⁹ U.S. Census Bureau, *Measuring America: The Decennial Censuses From 1790 to 2000*, at 62,
https://www2.census.gov/library/publications/2002/dec/pol_02-ma.pdf (“Measuring America”)
 (1940 census questions).

27 ¹⁰ *Measuring America* at 66-69 (1950 census questions), 72-73 (1960 census questions).

1 a decline in initial self-response—the Census Bureau’s NRFU efforts, including imputation and proxy
2 data, would not correct the decline and result in a complete enumeration.

3 While the possibility of an undercount exists in every census, the Constitution does not
4 require perfection. See *Utah v. Evans*, 536 U.S. 452, 504 (2002) (Thomas, J., concurring in part and
5 dissenting in part) (canvassing the history of census undercounts, including the first census in 1790);
6 *Wisconsin v. City of New York*, 517 U.S. 1, 6 (1996) (“Although each [of the 20 past censuses] was
7 designed with the goal of accomplishing an ‘actual Enumeration’ of the population, no census is
8 recognized as having been wholly successful in achieving that goal.”); *Gaffney v. Cummings*, 412 U.S.
9 735, 745 (1973) (census data “are inherently less than absolutely accurate”); *Senate of the State of Cal. v.*
10 *Mosbacher*, 968 F.2d 974, 979 (1992) (describing the 1990 census as “one of the best ever taken in this
11 country” despite counting “approximately 98 percent of the population”); *City of L.A. v. Evans*, No.
12 01-cv-1671, 2001 WL 34125617, at *2 (C.D. Cal. Apr. 25, 2001) (“Like all of its predecessors, Census
13 2000 produced less than perfect results.”). As long as the Secretary has established procedures for
14 counting every resident of the United States—and there is no dispute of material fact that he has
15 not—any undercount is a constitutionally permissible result of attempting to enumerate upwards of
16 325 million people across 3.8 million square miles. See U.S. & World Population Clock,
17 <https://www.census.gov/popclock/>. Accordingly, the Court should grant judgment in favor of
18 Defendants on Plaintiffs’ Enumeration Clause claim.

19 **III. The Court Should Grant Judgment to Defendants on the APA Claims Because the**
20 **Secretary’s Decision Was Eminently Reasonable and within His Lawful Discretion.**

21 The Court should grant judgment in favor of Defendants on the Plaintiffs’ claims under the
22 APA. The complaint alleges that the Secretary’s decision to reinstate a citizenship question was
23 “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law,” “contrary to
24 constitutional right,” and “in excess of statutory jurisdiction, authority, or limitations, or short of
25 statutory right.” 5 U.S.C. § 706(2); see, e.g., *State of California*, FAC ¶ 54. But Plaintiffs’ claims fail
26 because the Secretary’s decision was eminently reasonable and fully in accord with the Constitution
27 and relevant statutes.

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1 **A. The Secretary’s decision was eminently reasonable and easily survives arbitrary-and-**
 2 **capricious review under the APA.**

3 **1. Agency actions are reviewed only for reasonableness.**

4 In deciding an arbitrary-and-capricious claim, the question for the Court is whether the
 5 agency’s decision “was the product of reasoned decisionmaking.” *Motor Vehicle Mfrs. Ass’n of U.S.,*
 6 *Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 52 (1983). “This standard of review is highly
 7 deferential, presuming the agency action to be valid and affirming the agency action if a reasonable
 8 basis exists for its decision.” *Pacific Dawn LLC v. Pritzker*, 831 F.3d 1166, 1173 (9th Cir. 2016) (citation
 9 omitted).¹¹ Put simply, the Court “cannot substitute its judgment for that of the agency.” *Ctr. for Bio.*
 10 *Diversity v. Zinke*, 868 F.3d 1054, 1057 (9th Cir. 2017); *see also FERC v. Elec. Power Supply Ass’n*, 136 S.
 11 Ct. 760, 782 (2016) (“A court is not to ask whether a regulatory decision is the best one possible or
 12 even whether it is better than the alternatives.”). “The only question before [the Court] is whether
 13 the [agency], in reaching its ultimate finding, ‘considered the relevant factors and articulated a rational
 14 connection between the facts found and the choices made.’” *Nw. Ecosys. All. v. U.S. Fish & Wildlife*
 15 *Serv.*, 475 F.3d 1136, 1145 (9th Cir. 2007) (quoting *Nat’l Ass’n of Home Builders v. Norton*, 340 F.3d 835,
 16 841 (9th Cir. 2003)). And “[t]hat requirement is satisfied when the agency’s explanation is clear
 17 enough that its ‘path may reasonably be discerned.’” *Encino Motorcars, LLC v. Navarro*, 136 S. Ct.
 18 2117, 2125 (2016) (quoting *Bowman Transp., Inc. v. Ark-Best Freight Sys, Inc.*, 419 U.S. 281, 286 (1974)).

19 The Court’s review of Plaintiffs’ APA claim should be confined to the record before the
 20 Secretary. “[W]hen a party seeks review of agency action under the APA, the district judge sits as an
 21 appellate tribunal.” *Herguan Univ. v. ICE*, 258 F. Supp. 3d 1050, 1063 (N.D. Cal. 2017) (quoting
 22 *Rempfer v. Sharfstein*, 583 F.3d 860, 865 (D.C. Cir. 2009)). Thus, the Court’s review “is based on the
 23

24
 25 ¹¹ Moreover, the Court’s review must be particularly deferential here because Plaintiffs
 26 challenge the Secretary’s broad discretion over the census. “The text of the Constitution vests
 27 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 New York*, 517 at 19 (quoting U.S. Const. art. 1, § 2, cl. 3)
 (emphasis added). 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)).

1 agency record and limited to determining whether the agency acted arbitrarily or capriciously.” *Id.*
2 (quoting *Marshall Cty. Health Care Auth. v. Shalala*, 988 F.2d 1221, 1226 (D.C. Cir. 1993)); *see also, e.g.*
3 *Camp v. Pitts*, 411 U.S. 138, 142 (1973) (*per curiam*). To the extent Plaintiffs seek to introduce expert
4 testimony going to the merits, that testimony is not a proper subject of APA review because it was
5 not before the Secretary and irrelevant to his decision. *See, e.g., San Luis & Delta-Mendota Water Auth.*
6 *v. Locke*, 776 F.3d 971, 993 (9th Cir. 2014); *Love v. Thomas*, 858 F.2d 1347, 1356 (9th Cir. 1988).
7 Materials produced in discovery (which Defendants contend was improper here) likewise are not a
8 proper subject of APA review unless those materials were part of the record before the agency, 5
9 U.S.C. § 706, because the bad-faith exception to record review simply “operate[s] to identify and plug
10 holes in the administrative record.” *Lands Council v. Powell*, 395 F.3d 1019, 1030 (9th Cir. 2005).

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

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

26 Against this backdrop, the Secretary solicited DOJ’s views on the subject and, in December
27 2017, received DOJ’s formal request “that the Census Bureau reinstate on the 2020 Census

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

10 The Secretary “set out to take a hard look at the request” and ensure that he “considered all
11 facts and data relevant to the question.” AR 1313. The Commerce Department and the Census
12 Bureau “began a thorough assessment that included legal, program, and policy considerations.” *Id.*
13 This review included, for example, the preparation by the Census Bureau of a technical review of the
14 request, *id.* at 1277-85; a detailed exchange between the Commerce Department and the Census
15 Bureau about the technical review, *id.* at 1286-97; multiple meetings between the Secretary and
16 Census Bureau leadership to discuss the Census Bureau’s “process for reviewing the DOJ request,
17 their data analysis, [the Secretary’s] questions about accuracy and response rates, and their
18 recommendations,” *id.* at 1313; and extensive engagement with stakeholders, *id.* at 763-1276. At the
19 conclusion of this process, the Secretary determined that the “census-block-level citizenship data
20 requested by DOJ [was] not available” from existing surveys conducted by the Census Bureau. *Id.* at
21 1314. The Secretary also reasonably accepted DOJ’s determination that, because “DOJ and the
22 courts use CVAP data for determining violations of Section 2” of the VRA, “having these data at the
23 census block level will permit more effective enforcement.” *Id.* at 1313.

24 The Secretary thus proceeded to evaluate the available options. AR 1317. Through extensive
25 consultation with the Census Bureau, the Secretary identified four alternatives: making no change in
26 data collection but assisting DOJ with statistical modeling (“Option A”); reinstating a citizenship
27 question on the decennial census (“Option B”); obtaining citizenship data from administrative

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

8 Thus, the Secretary traced the steps from the facts found during the agency’s extensive review
9 of DOJ’s request to his ultimate decision. AR 1313-20. This reasonable explanation of the
10 decisionmaking process is all that is required to survive arbitrary-and-capricious review. Even if the
11 Court doubts that the Secretary’s conclusions necessarily follow from the facts found, the Court
12 “should ‘uphold a decision of less than ideal clarity if the [Secretary’s] path may reasonably be
13 discerned.’” *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 513-14 (2009) (citation omitted). And
14 here, the Secretary’s path is readily understood from his memorandum, including a “rational
15 connection between the facts found and the choices made.” *State Farm*, 463 U.S. at 43.

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

18 To the extent Plaintiffs suggest that the Secretary’s decision was arbitrary and capricious
19 because he “relied on factors which Congress has not intended [him] to consider,” “failed to consider
20 an important aspect of the problem” or “offered an explanation for its decision that runs counter to
21 the evidence before the agency,” *id.*, those claims are clearly belied by the record. The Secretary
22 engaged in a process that identified various issues, considered alternative proposals, and explained
23 his rationale for rejecting or accepting the different options presented based on the evidence before
24 him. What matters for APA review is that the Secretary engaged in this process and deliberately
25 considered the options—not whether his decision was “the best one possible or even whether it [was]
26 better than the alternatives.” *Elec. Power Supply Ass’n*, 136 S. Ct. at 782.

27 Plaintiffs cannot show, for example, that the Secretary failed to consider effects on the

1 response rates. State of California, FAC ¶¶ 37, 41, 55. The Secretary reviewed the available materials
2 and concluded that “no one provided evidence that reinstating a citizenship question on the decennial
3 census would materially decrease response rates.” AR 1315, 1317. The Secretary further explained
4 that the Bureau could address any nonresponse through NRFU and, in any event, “the value of more
5 complete and accurate data derived from surveying the entire population outweighs such concerns.”
6 *Id.* at 1319. That judgment was informed by the fact that there is a legal duty to respond to the
7 census, 13 U.S.C. § 221, and the Secretary concluded that the value of providing accurate data to
8 DOJ was “of greater importance than any adverse effect that may result from people violating their
9 legal duty to respond.” AR 1319. Plaintiffs also cannot show that the Secretary failed to consider
10 the issue of testing for the reinstatement of a citizenship question. State of California, FAC ¶ 38.
11 When the Census Bureau receives a request from other agencies for a new question on the ACS, the
12 Bureau typically “work[s] with the other agencies to test the question (cognitive testing and field
13 testing).” AR 1296. In reviewing DOJ’s request to reinstate a citizenship question, the Bureau
14 concluded that, “[s]ince the question is already asked on the American Community Survey, [it] would
15 accept the cognitive research and questionnaire testing from the ACS instead of independently
16 retesting the citizenship question.” *Id.* at 1279. In his memorandum, the Secretary thus reasonably
17 concluded that “the citizenship question has already undergone the cognitive research and
18 questionnaire testing required for new questions.” *Id.* at 1319.

19 Lastly, to the extent Plaintiffs suggest the Secretary’s decision was pretextual, they cannot
20 demonstrate that he did not believe the rationale set forth in his decision memorandum or that his
21 initial policy preferences, whatever they may have been, render his ultimate decision arbitrary and
22 capricious. Even if the Secretary had *additional* reasons for reinstating a citizenship question or
23 expressed interest in adding a question before hearing from DOJ, the APA analysis would remain
24 unchanged. *Jagers v. Fed. Crop Ins. Corp.*, 758 F.3d 1179, 1186 (10th Cir. 2014) (rejecting argument that
25 “the agency’s subjective desire to reach a particular result must necessarily invalidate the result,
26 regardless of the objective evidence supporting the agency’s conclusion”). It is utterly unremarkable
27 for an agency head to enter office with predispositions toward certain policy choices. That the

1 Secretary thought reinstatement of a citizenship question “could be warranted,” AR 1321, asked his
 2 staff to explore such an action, and decline to accept some of his staff’s recommendations is neither
 3 unexpected nor evidence of improper decisionmaking. *Wisconsin*, 517 U.S. at 23 (“[T]he mere fact
 4 that the Secretary’s decision overruled the views of some of his subordinates is by itself of no moment
 5 in any judicial review of his decision.”). As Justice Gorsuch explained, “there’s nothing unusual about
 6 a new cabinet secretary coming to office inclined to favor a different policy direction, soliciting
 7 support from other agencies to bolster his views, disagreeing with staff, or cutting through red tape.”
 8 *In re Dep’t of Commerce*, ___ S. Ct. ___, 2018 WL 5259090, at *1 (U.S. Oct. 22, 2018) (Gorsuch, J.,
 9 concurring in part and dissenting in part).

10 **B. The Secretary’s decision was not otherwise unlawful.**

11 Plaintiffs also argue that the Secretary’s decision was unlawful because it did not conform to
 12 the requirements of the Constitution or federal statute. To the extent Plaintiffs again argue that the
 13 Secretary will fail to conduct an “actual Enumeration” or otherwise violate constitutional mandates,
 14 State of California, FAC ¶ 55, those claims are unavailing for the reasons set forth above. Likewise,
 15 Plaintiffs’ claim that the Secretary’s decision violates his duty to “take a decennial census of
 16 population” under 13 U.S.C. § 141(a), State of California, FAC ¶ 54, is unconvincing for the same
 17 reasons. Plaintiffs cannot claim that the congressional delegation in the Census Act narrowed the
 18 Secretary’s discretion beyond that afforded by the Constitution itself. *See Wisconsin*, 517 U.S. at 19.

19 Plaintiffs also contend that the Secretary violated the Information Quality Act (IQA), Pub. L.
 20 No. 106-554, § 1(a)(3) (Dec. 21, 2001) (published at 44 U.S.C. § 3516 note), and a provision of the
 21 Census Act governing the contents of certain reports to Congress, 13 U.S.C. § 141(f)(3). State of
 22 California, FAC ¶ 54. The IQA neither informs the Secretary’s exercise of discretion over the
 23 questions on the census nor provides a private right of action or a basis for APA review. *See, e.g., Salt*
 24 *Inst. v. Leavitt*, 440 F.3d 156, 159 (4th Cir. 2006); *Family Farm All. v. Salazar*, 749 F. Supp. 2d 1083, 1092
 25 (E.D. Cal. 2010); *Ams. for Safe Access v. U.S. Dep’t of Health & Human Servs.*, No. 07-cv-1049 (WHA),
 26 2007 WL 4168511, at *4 (N.D. Cal. Nov. 20, 2007) (“[T]he IQA and OMB guidelines do not create a
 27 duty to perform legally required actions that are judicially reviewable.”). Plaintiffs’ allegations of

1 purported violation of 13 U.S.C. § 141(f)(3), meanwhile, are both factually incorrect and beyond the
2 scope of this Court’s jurisdiction. Defendants submitted the required reports to Congress, and the
3 Secretary explained the basis for including a citizenship question. In any event, it is Congress itself,
4 not third-party litigants, that oversees agency reports to Congress; such reports are neither “agency
5 action” subject to judicial review, 5 U.S.C. § 551, nor can any purported defects create the sort of
6 redressable Article III injury necessary to sustain the Court’s jurisdiction. *Guerrero v. Clinton*, 157 F.3d
7 1190, 1195 (9th Cir. 1998); *Nat. Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 316-19 (D.C. Cir. 1988).

8 **CONCLUSION**

9 For the foregoing reasons, summary judgment should be granted in Defendants’ favor on
10 both of Plaintiffs’ claims, and this case should be dismissed with prejudice.

11 Date: November 2, 2018

Respectfully submitted,

12
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28 ***California v. Ross*, No. 3:18-cv-01865-RS
Defs.’ Mot. Summ. J.**

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CERTIFICATE OF SERVICE

I hereby certify that on the 2nd day of November, 2018, I electronically transmitted the foregoing document to the Clerk of Court using the ECF System for filing.

/s/ Kate Bailey

KATE BAILEY

EXHIBIT A

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

STATE OF CALIFORNIA, *et al.*,

Plaintiffs,

v.

WILBUR L. ROSS, JR., *et al.*,

Defendants.

Civil Action No. 3:18-cv-01865-RS

CITY OF SAN JOSE, *et al.*,

Plaintiffs,

v.

WILBUR L. ROSS, JR., *et al.*,

Defendants.

Civil Action No. 5:18-cv-02279-RS

Declaration of John M. Abowd, Ph.D.

November 1, 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 in-person 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 for the 2020 Census compares to projected national self-response rates of 70 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 in-person 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

⁶⁰ Brown et al. (2018) page 42.

⁶¹ Brown et al. (2018) page 42.

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.

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

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

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

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 Millions⁷⁸	Percent of NRFU Workload⁷⁹
Initial NRFU Workload⁸⁰	61.3	100.0%
Late Self-Response: Pre-Attempt 1⁸¹	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

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).

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.

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 undue 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 write-in 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 1, 2018



John M. Abowd, Ph.D.

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- Internal Document, 2020 Census Lifecycle Cost Estimate Internal Document, Assumption Tables 2, 3, 6, and 12, September 29, 2017.
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- Internal Document, 2020 Type of Enumeration Areas (TEAs) Final TEA Delineations for Approval, August 14, 2018.
- Internal Document, 2018 End-to-End Census Test Plan, November 1, 2017.
- Internal Document, NRFU Workload Estimates by ACO.

EXHIBIT B

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

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STATE OF CALIFORNIA, by and through	:	
Attorney General Xavier Becerra,	:	
	:	
Plaintiff,	:	
vs.	:	
	:	
WILBUR L. ROSS, JR., in his official capacity	:	
as Secretary of the U.S. Department of	:	Case No. 3:18-cv-01865
Commerce; U.S. DEPARTMENT OF	:	
COMMERCE; RON JARMIN, in his official	:	
capacity as Acting Director of the U.S. Census	:	
Bureau; U.S. Census Bureau; DOES 1-100	:	
	:	
Defendants.	:	
<hr/>		
CITY of SAN JOSE, a municipal corporation;	:	
and BLACK ALLIANCE FOR JUST	:	
IMMIGRATION, a California Non-Profit	:	
Corporation,	:	
	:	
Plaintiff,	:	
vs.	:	
	:	Case No. 5:18-cv-02279
WILBUR L. ROSS, JR., in his official capacity	:	
as Secretary of the U.S. Department of	:	
Commerce; U.S. DEPARTMENT OF	:	
COMMERCE; RON JARMIN, in his official	:	
capacity as Acting Director of the U.S. Census	:	
Bureau; U.S. Census Bureau; DOES 1-100	:	
	:	
Defendants.	:	
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RULE 26(A)(2)(B) EXPERT REPORT AND DECLARATION

OF

STUART D. GURREA, PH.D.

October 31, 2018

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EXHIBITS

Exhibit 1 Curriculum Vitae of Stuart D. Gurrea

Exhibit 2 Documents and Data Reviewed and Considered

I. ASSIGNMENT

1. My name is Stuart D. Gurrea. I have been asked by counsel for Defendants to perform a critical assessment of certain quantitative analyses in support of the legal actions brought forward by the State of California, the City of San Jose, and the Black Alliance for Just Immigration (collectively “Plaintiffs”) against Wilbur L. Ross, Jr., U.S. Department of Commerce, Ron Jarmin, and U.S. Census Bureau (collectively, “Defendants”).¹ Plaintiffs’ complaints arise from the reinstatement of a question about citizenship in the 2020 Census questionnaire.
2. Dr. Matthew A. Barreto, Dr. Bernard L. Fraga and Dr. Andrew Reamer among others submitted expert reports in support of Plaintiffs’ action.² Dr. Fraga’s assignment was to assess “the impact of the addition of a citizenship question on the 2020 Census population for California, and California’s congressional apportionment [...]”.³ Dr. Fraga’s analyses rely in part on the results of Dr. Barreto’s survey regarding census participation. Dr. Reamer analyzes “the impact of the inclusion of a question on citizenship status on the 2020 Census questionnaire on the distribution of particular federal domestic assistance funds to certain states, counties and communities.”⁴ Dr. Reamer’s analyses rely on population estimates developed by Dr. Fraga.
3. In this report, I assess the reliability of the impact evaluations Dr. Fraga and Dr. Reamer conduct to isolate the effect of the reinstatement of a citizenship question on 2020 Census population estimates, congressional seat apportionment, and distribution of federal funds. Part of my analyses involve assessing Dr. Fraga’s use

¹ First Amended Complaint for Declaratory and Injunctive Relief, *State of California, County of Los Angeles, City of Los Angeles, City of Fremont, City of Long Beach, City of Oakland, and City of Stockton v. Wilbur L. Ross, Jr., U.S. Department of Commerce, Ron Jarmin and U.S. Census Bureau*, May 4, 2018; and, Complaint for Declaratory and Injunctive Relief, *City of San Jose and Black Alliance for Just Immigration v. Wilbur L. Ross, Jr., U.S. Department of Commerce, Ron Jarmin and U.S. Census Bureau*, April 17, 2018.

² Rule 26(A)(2)(B) Expert Report and Declaration of Matthew Barreto, PhD, September 7, 2018 (hereafter Barreto Report”); Rule 26(A)(2)(B) Expert Report and Declaration of Bernard L. Fraga, PhD, September 19, 2018 (hereafter “Fraga Report”); and, Rule 26(A)(2)(B) Expert Report and Declaration of Andrew Reamer, PhD, September 18, 2018 (hereafter “Reamer Report”).

³ Fraga Report, pp. 2 and 3.

⁴ Reamer Report, p. 1.

of the survey data Dr. Barreto developed to measure the impact of the inclusion of a citizenship question.

4. Defendants also asked me to reassess Dr. Fraga's and Dr. Reamer's predictions under an alternative assumption regarding the success rate of the Census Bureau in Non-Response Follow-Up operations ("NRFU").
5. 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.
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. Dr. Fraga's estimates of the percentage of population not counted due to reinstatement of a citizenship question in the 2020 Census are overstated because of his unreliable interpretation of survey data. Two of Dr. Fraga's projection scenarios rely on survey responses to determine the reduction in Census self-response rates attributable to the reinstatement of a citizenship question. Dr. Fraga overstates these rates by assuming that unwillingness to reply to certain survey questions implies a reduction in population counts. Also, Dr. Fraga overstates these estimated declines by categorizing survey respondents without any basis.
9. Dr. Fraga defines a total of four scenarios as a basis to estimate the percentage of the projected U.S. population not counted due to reinstatement of a citizenship question in the 2020 Census. These four scenarios understate the effectiveness of the Census in mitigating a decline in self-response rates and result in overstated reductions in

- population counts attributable to the inclusion of a citizenship question. Two scenarios assume that NRFU is entirely ineffective in mitigating undercounts from a citizenship question. A third scenario assumes much of the NRFU effort would be entirely nonexistent or ineffective, and a fourth scenario assumes a NRFU success rate that has no basis. All four scenarios assume the U.S. Census Bureau will not impute information to mitigate net undercount.
10. Dr. Fraga's and Dr. Reamer's evaluations of the impact of the reinstatement of a citizenship question on congressional apportionment and federal funds distribution, respectively, are overstated. Their evaluations are driven by overstated population undercount estimates as quantified in Dr. Fraga's four scenarios.
 11. With a NRFU success rate in 2020 equal to the 2010 Census NRFU success rate (and assuming no additional undercount mitigation through imputation), congressional apportionment in any state (including California) does not change due to reinstatement of a citizenship question. At this same NRFU success rate (and no additional undercount mitigation through imputation), the distribution of federal funds to the State of California is estimated to decline by 0.01 percent before mitigation due to the reinstatement of a citizenship question for each of the three federal programs Dr. Reamer evaluated.
 12. 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 Dr. Fraga's and Dr. Reamer's 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. DR. REAMER'S AND DR. FRAGA'S IMPACT EVALUATIONS

13. Dr. Fraga's and Dr. Reamer's assignments are to quantify the impact of the reinstatement of a citizenship question to the 2020 Census questionnaire on population counts, the apportionment of congressional seats, and on the distribution of domestic assistance funds associated with certain federal programs.⁵

14. Dr. Fraga's and Dr. Reamer's evaluations of the impact of reinstatement of a citizenship question on congressional seat apportionment and on the distribution of federal funds rely on two key inputs: Dr. Fraga's estimates of the population by state at the time of the 2020 Census enumeration,⁶ and estimates of the undercount in the 2020 Census due to the reinstatement of a citizenship question. Dr. Fraga estimates four undercount scenarios. Scenario A is based on estimates of the estimated percent of Census non-response attributable to the reinstatement of a citizenship question in a national survey conducted by Dr. Barreto.⁷ Scenario B is the same as Scenario A, but removes from the undercount the share of individuals "who changed their mind and decided to reply to the Census" after a follow-up question.⁸ The follow-up question is considered a "proxy for individuals who would be responsive to reasonable follow-up efforts conducted by the Census and thus would be enumerated."⁹ Scenario C is based on an estimated 5.8 percent point difference in modeled rates of initial non-response for non-citizen households versus citizen

⁵ Fraga Report, p. 3. Reamer Report, p. 2.

⁶ Fraga Report, § 6 and Reamer Report, § 4.

⁷ Fraga Report, § 5.1.1.

⁸ Fraga Report, § 5.1.2.

⁹ Fraga Report, § 5.1.2.

households reported in a Census analysis.¹⁰ Scenario D is the same as Scenario C but reduces the 5.8 percent self-response decline estimate by 86.63 percent. According to Dr. Fraga, he was provided with this percentage, which is purported to be an estimate of the NRFU enumeration success rate based on Census data and analyses.¹¹ Dr. Reamer relies on Dr. Fraga's scenarios C and D.¹² Table 1 below summarizes these scenarios.

Table 1
Plaintiffs' Experts' Scenarios

	Decline in Self-response Rates	NRFU Success Rate
Scenario A	Barreto "drop-off" estimates by ethnicity and nativity	0%
Scenario B	Barreto "drop-off" estimates by ethnicity and nativity	Barreto estimates by ethnicity and nativity
Scenario C	5.8 % for non-citizen households	0%
Scenario D	5.8 % for non-citizen households	86.63%

15. For each of these scenarios, Dr. Fraga calculates the proportion of each demographic group that is subject to his predicted decline in population counts.¹³ He uses the results to estimate the population of each state that is not counted due to the reinstatement of a citizenship question.¹⁴
16. Dr. Fraga also estimates the change in apportionment due to the reinstatement of a citizenship question by comparing apportionment under his baseline 2020 projections to his four alternatives, Scenarios A-D.¹⁵ Dr. Fraga purports to implement the "Method of Equal Proportions" methodology to compute apportionment.¹⁶ He further calculates the probability of losing one or more congressional seats by allowing for variation in the estimated inputs to his apportionment calculations.¹⁷ From his analyses, Dr. Fraga concludes that "the

¹⁰ Fraga Report, § 5.2.1.

¹¹ Fraga Report, § 5.2.2.

¹² Reamer Report, § 4.A.

¹³ Fraga Report, § 5.3.

¹⁴ Fraga Report, § 5.4.

¹⁵ Fraga Report, § 6.2.

¹⁶ Fraga Report, § 6.1.

¹⁷ Fraga Report, § 6.3.

addition of a citizenship question to the 2020 Census would lead to a disproportionate reduction in California's population relative to other states.”¹⁸

17. Dr. Reamer's assignment is to analyze the “impact of a question on citizenship status on the 2020 Census questionnaire on the distribution of particular federal domestic assistance funds to certain states, counties, and communities.”¹⁹ According to Dr. Reamer, as of November 2017, there were 2,249 domestic assistance programs offered by U.S. federal departments and agencies.²⁰ Out of these, Dr. Reamer identifies 320 federal domestic assistance programs as “census-guided programs”—programs that employ census-derived data to distribute funds.²¹ Within these 320 programs, Dr. Reamer notes that “programs with geographic allocation formulas” exhibit the greatest sensitivity of funds distribution to census mismeasurement.²²
18. Dr. Reamer does not estimate the impact of the reinstatement of a citizenship question on the geographic distribution of federal domestic assistance across all census-guided domestic assistance programs. Rather, he illustrates the “nature of the fiscal impacts” by assessing the impact on three specific programs among those that are more sensitive to census mismeasurement (programs that use census-derived data in their geographic allocation formulas): Title I Grants to Local Educational Agencies (“LEAs”); Supplemental Nutrition for Women, Infants, and Children (“WIC”); and, Social Services Block Grants (“SSBG”).²³
19. To evaluate the impact of the reinstatement of a citizenship question, Dr. Reamer takes Dr. Fraga's undercount estimates purportedly associated with the reinstatement of a citizenship question and estimates the impact of those undercounts on the distribution of funds for certain federal assistance programs. In particular, he relies on Dr. Fraga's Scenarios C and D estimates of the percentage of residents in each

¹⁸ Fraga Report, § 7.

¹⁹ Reamer Report, p. 2.

²⁰ Reamer Report, p. 6.

²¹ Reamer Report, p.9.

²² Reamer Report, p. 14. Emphasis in original removed.

²³ Reamer Report, p. 23.

state that would not be counted due to the reinstatement of a citizenship question on the 2020 Census questionnaire as a basis for quantifying the distributional impact of funds from the three federal programs listed above.²⁴ Dr. Reamer estimates that the impact of an undercount on the distribution of funds to the state of California would range between 0.1 and 0.9 percent of its actual Title I Grants to LEAs, between 0.1 and 0.8 percent of its actual WIC grant, and between 0.1 and 0.9 percent of its actual SSBG grant.²⁵

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

20. Plaintiffs' experts' analyses involve three impact evaluations associated with the reinstatement of a citizenship question in the 2020 Census. First, Dr. Fraga evaluates the impact on state population counts, including California.²⁶ Second, Dr. Fraga evaluates the impact on congressional seat apportionment based on population projections reflecting a citizenship question.²⁷ And third, Dr. Reamer evaluates the impact on the distribution of federal assistance funds, also based on population projections reflecting a citizenship question.²⁸

21. 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.²⁹

²⁴ Reamer Report, p. 23.

²⁵ Reamer Report, pp. 26-28. Dr. Reamer's analyses assume all other factors driving the allocation of funds to states such as the size of the federal program or the distribution criteria remain constant. Also, his analyses do not evaluate how changes in state allocations affect individual beneficiaries, whose eligibility is dependent on state level decisions. For example, Dr. Reamer notes that "[s]tate agencies have the option to limit WIC eligibility to U.S. citizens." (Reamer Report, p. 19.)

²⁶ Fraga Report, Table 3, p. 18.

²⁷ Fraga Report, Table 4, p. 23.

²⁸ Reamer Report, pp. 26-29.

²⁹ "Outline of Principles of Impact Evaluation," OECD, <http://www.oecd.org/dac/evaluation/dcdndep/37671602.pdf>.

22. For example, Dr. Fraga reports in Table 3 of the Fraga Report his estimates of the impact of the reinstatement of a citizenship question on population counts.³⁰ In this analysis, the intervention is the reinstatement of a citizenship question. The counterfactual is represented by a 2020 baseline scenario defined as projected 2020 Census counts *without* a citizenship question.
23. 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.
24. Table 3 of the Fraga Report provides estimates of the impact of the reinstatement of a citizenship question under four alternative scenarios. If the differences between the baseline estimates *without* a citizenship question and the estimated counts *with* a citizenship question cannot be attributed solely to the reinstatement of a citizenship question, then these differences do not quantify the impact of the reinstatement of a citizenship question.

VI. DR. FRAGA'S INTERPRETATION OF SURVEY DATA OVERSTATES THE EXPECTED DECLINE IN CENSUS SELF-RESPONSE RATES DUE TO A CITIZENSHIP QUESTION

25. Dr. Fraga's Scenarios A and B rely on survey response data to determine the reduction in Census self-response rates attributable to the reinstatement of a citizenship question.³¹ Dr. Fraga overstates these declines in self-response rates by interpreting survey data as if item-nonresponse necessarily reduces population

³⁰ Fraga Report, Table 3, p. 18.

³¹ Survey respondents could indicate that they either will or will not respond to the Census, or they could refuse to answer the survey question ("nonresponse"). Dr. Fraga defines the self-response rate as the number of survey respondents who indicate that they will respond to the Census as a proportion of all surveyed individuals, including those who did not respond to the question.

counts. Also, Dr. Fraga overstates these declines in self-response rates by categorizing survey respondents without any basis.

26. As a preliminary matter, Dr. Fraga uses these survey data without assessing the level and sources of nonresponses and the extent to which they may have affected the survey results. 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.”³² This is important because survey results may reflect nonresponse bias, whereby responses only come from a portion of the selected sample with certain characteristics. This bias would render the sample unrepresentative of the population as a whole, rendering the sample unreliable for drawing inferences about the population. 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.

27. Dr. Fraga compares projected self-response rates with and without the reinstatement of a citizenship question. To this end, Dr. Fraga’s Scenarios A and B rely on two of Dr. Barreto’s survey questions that purportedly provide self-response 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?³³

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

³² “Reference Manual on Scientific Evidence,” Federal Judicial Center and National Research Council, Third Edition, p. 383.

³³ Barreto Report, p. 75.

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?³⁴

The response options to these questions in the survey are “Yes, will participate” or “No, will NOT participate.”³⁵

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

28. Dr. Fraga uses Dr. Barreto’s survey results to estimate the Census self-response rates and associated population counts due to the reinstatement of a citizenship question. However, Dr. Barreto’s survey questions do not generate the information necessary to address this question and Dr. Fraga’s interpretation of the data overstates the reduction in self-responses.
29. There are two types of self-response that generate valid counts. One is a self-response that answers all questions and the other is a self-response with “item nonresponse,” in which some but not all questions were answered.³⁶ For example, with the reinstatement of a citizenship question in the 2020 Census, a self-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.”³⁷
30. Dr. Fraga, however, treats the response “No” to Q2 and the lack of a response (“Missing”) to the same question as equivalent. Generally, without statistical support item non-response cannot be associated uniquely with one of the allowable responses. Excluding everyone who did not respond to Q2 from the count increases Fraga’s undercount estimates. This assumption results in an overstated estimated

³⁴ Barreto Report, p. 75.

³⁵ Barreto Report, p. 75.

³⁶ Expert Disclosure of John M. Abowd, September 21, 2018 (“Abowd Disclosure”), p. 9.

³⁷ Abowd Disclosure, p. 9.

reduction in population counts with the reinstatement of a citizenship question because of an overstated decline in self-response rates in Dr. Barreto's survey.

31. Dr. Barreto defines "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.³⁸

Consistent with this definition, Dr. Fraga measures the effect of the reinstatement of a citizenship question on self-response rates by this drop-off rate and generates population estimates in Scenarios A and B.³⁹

32. Respondents to Dr. Barreto's survey who say "yes" to Q1 but not to Q2, however, may still provide enough information to generate a valid population count. "No, will NOT participate" responses to Q2 may include respondents that will continue to participate but only fail to submit the citizenship information. As described above, these are item non-responses 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.) Household information in Q2 includes a *required* listing of the citizenship status for every person in the household. A respondent that decides to continue to participate but not submit required citizenship information may respond "No, will NOT participate," as that response meets the first condition (will participate) but not the second (submit household information, including the required citizenship question). Such responses do not result in a reduction in self-response rates. As noted above, item non-response (in this case, non-response to a citizenship question) does not imply a reduction in population count. By assuming responses with item non-response always reduce the population count, Dr. Fraga fails to isolate the impact of the reinstatement of a citizenship question on population counts and overestimates the reduction therein.

³⁸ Barreto Report, p. 34.

³⁹ Fraga Report, p. 12. As explained above, Scenario B includes a further adjustment.

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

33. The response options to Q2 of Dr. Barreto’s survey are “Yes, will participate” or “No, will NOT participate.”⁴⁰ Dr. Fraga purports to measure the “specific nonresponse attributable to the addition of a citizenship question” as the “estimates for the percent of respondents (and accompanying uncertainty) who replied ‘No, will NOT participate’ *or refused to respond* to the second question after initially stating ‘Yes, will participate’ to the first question.”⁴¹ (Emphasis added.)
34. Dr. Fraga’s definition of drop-off fails to isolate the effect of the reinstatement of a citizenship question. A number of survey participants that answered “Yes, will participate” to Q1 did not respond to Q2. Dr. Barreto’s survey does not provide any information about these respondents’ willingness to participate in a Census with a citizenship question. Dr. Fraga, nevertheless, assumes that these respondents will not participate in a Census with a citizenship question. There is no basis for this assumption. The “Yes on Q1, no response on Q2” respondents account for 39 percent of the responses counted as drop-off observations. By assuming that none of these respondents – those who refused to answer Q2 – would respond to the Census at all, Dr. Fraga overstates the decline in self-response rates that are his basis for his Scenarios A and B.

VII. DR. FRAGA’S SCENARIOS OVERSTATE UNDERCOUNTS

35. The reliability of Plaintiffs’ experts’ analyses is largely determined by the reliability of Dr. Fraga’s Scenario A-D estimates of the undercount in the 2020 Census due to the reinstatement of a citizenship question. Plaintiffs’ undercount scenarios, however, assume limited mitigation of the expected decline in self-response rates from the reinstatement of a citizenship question. To the extent that mitigation of the decline in self-response rates is expected to be greater than that estimated by Dr. Fraga, the resulting projected undercounts in these scenarios will be smaller.

⁴⁰ Barreto Report, p. 75.

⁴¹ Fraga Report, pp. 11 and 12.

A. The Measurement of Changes in Net Undercounts from the Reinstatement of a Citizenship Question

36. 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.⁴²

$$\text{Net undercount} = \text{Census count} - \text{Population estimate} \quad (\text{Equation 1}).$$

37. 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 as a result of the reinstatement of a citizenship question is:

$$\text{Net undercount}^* - \text{Net undercount} = \text{Census count}^* - \text{Census count} \quad (\text{Equation 2}).$$

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

$$\text{Projected 2020 Census count}^* - \text{Projected 2020 Census count} \quad (\text{Equation 3}).⁴³$$

38. 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.
39. Population counts are the combined result of self-responses *and* additional counts via NRFU and whole-person imputation.⁴⁴ As Dr. Abowd explains, “in the small percent of housing units for which we are unable to obtain an enumeration, we [the

⁴² <https://www.census.gov/dmd/www/techdoc1.html>.

⁴³ Consistent with this definition, Dr. Fraga describes undercounts as the “*net* population effect of households not responding to the Census as a result of the citizenship question.” Fraga Report, p. 10.

⁴⁴ 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.

U.S. Census Bureau] *impute* the information for these housing units.”⁴⁵ (Emphasis added, citations omitted.) In equation form:

$$\text{Census count} = \text{Self-response counts} + \text{NRFU counts} + \text{Imputed counts}$$

(Equation 4).

40. 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.”⁴⁶
41. 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 housing units in the 50 states, the District of Columbia, and Puerto Rico will not initially self-respond to the 2020 Census.”⁴⁷

B. Dr. Fraga’s Estimates of Changes in Net Undercounts Assume No or Limited Mitigation

42. Dr. Fraga purports to estimate (using four alternative scenarios) the percentage of population not counted due to a citizenship question in the 2020 Census—the projected 2020 net undercount change defined in Equation 3 above. These estimates assume the Census will be ineffective or not very effective at mitigating an expected decline in self-response rates.
43. For simplicity I assume in this section that all terms refer to 2020 projections, and express Dr. Fraga’s calculation as:

$$2020 \text{ net undercount change} = 2020 \text{ Census count}^* - 2020 \text{ Census count}$$

⁴⁵ See Abowd Disclosure, p. 6.

⁴⁶ “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.

⁴⁷ “2020 Census Detailed Operation Plan for: 18. Nonresponse Followup Operation (NRFU),” United States Census Bureau, April 18, 2018, p. 2.

44. Dr. Fraga quantifies projected Census counts *without* a citizenship question (*2020 Census count*) as “state-level 2020 population projections of how many individuals would be enumerated by the 2020 Census if it contains the same content as the 2010 Census.”⁴⁸ These estimates are based on data from updates to the decennial census counts.⁴⁹
45. Dr. Fraga quantifies projected Census counts *with* a citizenship question in four alternative scenarios described in Table 1 above with varying degrees of mitigation. If the mitigation of the decline in self-response rates is expected to be greater than the levels assumed in Dr. Fraga’s scenarios, then undercounts in Scenarios A-D are attributable, at least in part, to Dr. Fraga’s assumptions and not the reinstatement of a citizenship question.
46. Scenarios A and C assume that the difference between Census 2020 population counts with and without a citizenship question is equal to the decline in self-response rates. In these scenarios, Dr. Fraga assumes that the Census will not mitigate the self-response decline.⁵⁰ That is, NRFU and imputation are assumed to have no effect on reducing the self-response decline. Therefore:

$$\begin{aligned} 2020 \text{ net undercount change} &= 2020 \text{ Census count}^* - 2020 \text{ Census count} \\ &= \text{Self-response counts}^* - \text{Self-response counts} \end{aligned}$$

47. 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 project Census 2020 population counts. The survey evidence Dr. Fraga relies on, which is the basis for his Scenario B, indicates that NRFU is expected to be successful in reducing the self-response decline even with a citizenship question.⁵¹

⁴⁸ Fraga Report, p. 8.

⁴⁹ Fraga Report, pp. 4 and 5.

⁵⁰ These scenarios assume that mitigation does not reduce unit non-response associated with the citizenship question.

⁵¹ 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 after follow-up.

This expectation is consistent with the effectiveness of the NRFU operation in the 2010 Census.⁵² This evidence indicates that estimates under Scenarios A and C are undercounted for reasons other than the reinstatement of a citizenship question. In particular, these undercounts can be explained by unrealistically low mitigation rates and not the reinstatement of a citizenship question.

48. Dr. Fraga’s Scenario B attempts to approximate the mitigating effect of non-response follow-up efforts by the Census by accounting for the results of a follow-up survey question. The follow-up question includes assurances about confidentiality and is asked allowing “some time to pass” since the initial question.⁵³ Dr. Fraga does not opine on the reliability or extent to which Dr. Barreto’s follow-up questions capture the full extent of the Census NRFU operation.⁵⁴ Dr. Barreto notes that the inclusion of follow-up questions “mimics an attempt at re-contact in the real world in a condensed telephone interview setting.”⁵⁵ Dr. Abowd’s description of the actual NRFU operation, however, indicates that Dr. Barreto’s survey question falls well short of measuring its expected effectiveness. Dr. Abowd explains that “there are numerous housing unit addresses that require the Census Bureau to send an enumerator to conduct an interview in person [...]”⁵⁶ Dr. Abowd further explains that if no response can be obtained from a household member after multiple attempts, an enumerator will attempt to gather the necessary information from another person such as a neighbor or property manager.⁵⁷ This indicates that Dr. Fraga’s survey-based estimate of the NRFU success rate is likely understated and that

⁵² Memorandum from John Abowd and David Brown, September 28, 2018.

⁵³ Barreto Report, ¶ 92.

⁵⁴ See Abowd Disclosure, pp. 9-16. Dr. Barreto’s survey yields inconsistent responses. For example, 15.7 percent of respondents that were willing to participate without a citizenship question but not with a citizenship question, do not confirm their interest in participating without a citizenship question after follow-up with additional confidentiality assurances. See Barreto Report, ¶ 90. Also, among those that would participate without a citizenship question, a larger proportion would not participate with a citizenship question if confidentiality assurances are offered in a follow-up question relative to the proportion that would not participate with a citizenship question that did not offer confidentiality assurances. See Barreto Report, ¶¶ 80 and 82.

⁵⁵ Barreto Report, ¶ 92.

⁵⁶ Abowd Disclosure, p. 9.

⁵⁷ See Abowd Disclosure, pp. 9-13.

his Scenario B undercount is likely overstated for this reason rather than the reinstatement of a citizenship question.

49. In Scenario D, Dr. Fraga assumes a NRFU success rate of 86.63 percent.⁵⁸ Dr. Fraga does not offer any basis at all for this assumption or how it relates to the expected success rate of the 2020 Census NRFU operation.
50. Moreover, all of Dr. Fraga's four 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 all four scenarios are undercounted for reasons other than the reinstatement of a citizenship question.

VIII. DR. FRAGA'S AND DR. REAMER'S EVALUATED IMPACTS ARE OVERSTATED

51. Dr. Fraga uses his Scenarios A-D undercount estimates to estimate the impact of reinstatement of a citizenship question on congressional apportionment. Dr. Reamer uses Dr. Fraga's Scenarios C and D undercount estimates to estimate the impact of reinstatement of a citizenship question on the distribution of funds from three federal domestic assistance programs. Dr. Fraga's population undercounts in Scenarios A and B are overstated to the extent he overstates the decline in self-response rates derived from survey data. Similarly, Dr. Fraga's Scenarios A-D understate mitigation and therefore overstate net undercounts. As a result, Dr. Fraga's and Dr. Reamer's reliance on overstated estimates of undercounts attributable to a citizenship question result in overstated impacts.
52. "The Census Bureau is prepared to conduct the 2020 Census NRFU operation and believes that those efforts will result in a complete enumeration."⁵⁹ This implies that Census expects that it will fully mitigate any decline in self-response rates attributable to a citizenship question through NRFU and imputation. Plaintiffs' experts' scenarios, however, do not fully account for these expectations.

⁵⁸ Fraga Report, § 5.2.

⁵⁹ Abowd Disclosure, p. 5.

53. By definition, a full enumeration with the reinstatement of a citizenship question will result in no undercount relative to the 2020 baseline population projections assuming no citizenship question. Therefore, if full enumeration is achieved, the reinstatement of a citizenship question will have no impact on congressional seat apportionment or distribution of federal assistance programs.
54. To demonstrate how Dr. Fraga's assumed low NRFU follow-up success rate contributes to Plaintiffs' experts' results, Defendants asked me to recalculate Plaintiffs' predictions assuming NRFU would have the same success rate as it had in the 2010 Census: 98.58 percent ("Historical NRFU-Rate Scenario").⁶⁰ As described above, this hypothetical scenario does not fully account for mitigation because it does not include imputation.
55. The results described below show that with a NRFU success rate equal to that of the 2010 Census, even before accounting for imputation, the reinstatement of a citizenship question will have no impact on congressional seat apportionment and a 0.01 percent effect on the distribution of federal funds through the programs Dr. Reamer evaluated.

A. Impact Evaluation of Congressional Apportionment

56. Dr. Fraga purports to quantify the impact of the reinstatement of a citizenship question on the 2020 Census on congressional apportionment. The formula for computing congressional apportionment is based on a priority ranking using each state's population counts.⁶¹ As Dr. Fraga explains, the apportionment population includes "resident population as enumerated by the decennial census."⁶² To the extent that Dr. Fraga's population estimates understate resident population, his congressional seat apportionment analysis is likely to be incorrect. As in Dr. Fraga's Scenario D, in the "Historical NRFU-Rate Scenario," the reinstatement of a citizenship question has no impact on congressional apportionment.

⁶⁰ Memorandum from John Abowd and David Brown, September 28, 2018.

⁶¹ <https://www.census.gov/population/apportionment/about/computing.html>.

⁶² Fraga Report, ¶ 20.

1. The apportionment of congressional seats

57. Apportionment to the U.S. House of Representatives is mandated by the Constitution, which provides that each state receive 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.⁶³ 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.
58. Dr. Fraga purports to have developed an apportionment formula that calculates multipliers, state priority values, state apportionment and the order of seats apportioned to states. Dr. Fraga asserts that his calculator successfully and exactly replicated apportionment from the 1980, 1990, 2000 and 2010 Censuses, and will thus accurately predict 2020 apportionment.⁶⁴ He reports his estimates of 2020 Baseline population by state and the four different Scenarios A-D of undercounting due to a citizenship question on the 2020 Census, as described above.⁶⁵ He further reports five apportionment scenarios: one baseline scenario and four undercount scenarios.⁶⁶

⁶³ <https://www.census.gov/topics/public-sector/congressional-apportionment/about.html>; <https://www.census.gov/topics/public-sector/congressional-apportionment/about/computing.html>. 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.

⁶⁴ Fraga Report, pp. 20-21.

⁶⁵ Fraga Report Table 3, p. 18.

⁶⁶ Fraga Report Table 4, p. 23.

59. I created a spreadsheet calculator that replicates the 1990, 2000 and 2010 priority values and apportionment published by the Bureau of the Census.⁶⁷ The calculator can be used to estimate 2020 apportionment given inputs of each state's estimated apportionment population in 2020. The calculator can further be used to assess the effects of different population estimates on 2020 apportionment. My calculator replicates the apportionment formula described by Dr. Fraga, with one exception. I correct for the illogical methodology employed by Dr. Fraga for calculating the decline in overseas population between 2010 and 2020, and I thus obtain a different Baseline apportionment population. However, the use of a marginally different (higher) Baseline apportionment population is immaterial as it does not change apportionment relative to Dr. Fraga's Baseline.
60. Dr. Fraga relies on Census data indicating that military personnel in FY2010 (293,600) accounted for 28 percent of the total overseas population counted for apportionment (1,042,523). Dr. Fraga also uses Department of Defense estimates indicating that overseas military personnel in FY2018 (198,700) were 67.7 percent of the overseas military personnel in FY2010 (293,600)—32.3 percent lower. To project total overseas population counted for apportionment in 2020, Dr. Fraga assumes the total declines by 18.96 percent ($67.7\% * 28\% = 18.96\%$) from the FY2010 level.⁶⁸ This percentage reduction is mathematically equivalent to subtracting FY2018 military personnel stationed overseas from the FY2010 population ($1,042,523 - 198,700 = 843,823$) to estimate the total 2020 overseas population.⁶⁹ This calculation implies the following assumptions: the number of

⁶⁷ <https://www.census.gov/data/tables/1990/dec/1990-apportionment-data.html>, <https://www.census.gov/data/tables/2000/dec/2000-apportionment-data.html> and <https://www.census.gov/data/tables/2010/dec/2010-apportionment-data.html> respectively.

⁶⁸ Dr. Fraga's 18.96% calculation is imprecise as well as illogical. The more precise (but still illogical) calculation is $198,700 / 1,042,523 = 19.06\%$.

⁶⁹ If P_{2010} is FY2010 overseas population, M_{2010} is FY2010 overseas military and C_{2010} is overseas civilian employees, then $P_{2010} = M_{2010} + C_{2010}$. Similarly, P_{2020} is the 2020 overseas population to be estimated and M_{2020} is 2020 overseas military, proxied by FY2018 overseas military. Dr. Fraga estimates:

$$\begin{aligned}
 P_{2020} &= P_{2010} * \left(1 - \frac{M_{2010}}{P_{2010}} * \frac{M_{2020}}{M_{2010}}\right) \\
 &= P_{2010} * \left(1 - \frac{M_{2020}}{P_{2010}}\right)
 \end{aligned}$$

non-military federal personnel overseas is expected to remain constant between FY2010 and 2020; and, the military personnel overseas will not be counted. These assumptions do not provide a reasonable basis for estimation of the total overseas population in 2020.

61. If the number of federal civilian employees overseas between 2010 and 2020 declines at a rate equal to that of overseas military personnel between FY2010 and FY2018, the 2020 overseas population will be equal to FY2010 overseas population scaled by the ratio of FY2018 to FY2010 military personnel: $1,042,523 * (198,700 / 293,600) = 705,549$. If the number of federal civilian employees overseas remains constant between 2010 and 2020 and only the overseas military population declines, the 2020 overseas population is equal to FY2010 overseas population less the change in military personnel between FY2010 and FY2018: $1,042,523 - (293,600 - 198,700) = 947,623$. Dr. Fraga provides no evidence regarding changes in the number of overseas civilian federal employees. I rely on the latter estimate of 2020 federal overseas employees (947,623) for my apportionment calculations except for replication of Professor Fraga's 2020 Baseline, as discussed above.
62. I use my apportionment calculator to estimate 2020 apportionment using Dr. Fraga's 2020 Baseline population estimates. I replicate Dr. Fraga's results with the exception of Florida, to which Professor Fraga apportions 28 seats and I apportion 29 seats. Since the total number of seats generated by my calculator is 435 and the total generated by his formula is 434, there appears to be an error in Dr. Fraga's calculator or table.⁷⁰

2. Dr. Fraga's estimates of the change in apportionment of congressional seats are likely overstated

63. As described above, the apportionment calculation is based on the relative size of state populations. Therefore, states that are more likely to experience undercounts

$$= P_{2010} * \left(\frac{P_{2010} - M_{2020}}{P_{2010}} \right) = P_{2010} - M_{2020}.$$

⁷⁰ Two of the other scenarios reported in Table 4 of the Fraga Report (Scenario A and Scenario D) also result in a total of 434 not 435 apportioned seats, confirming that there appears to be an error in his calculations.

(and/or larger undercounts) if a citizenship question is reinstated, are more likely to experience a negative change in apportionment.

64. Dr. Fraga's changes in apportionment due to a citizenship question are likely to be overstated because his estimates of the impact of a citizenship question on 2020 Census counts are overstated. States that are impacted by the reinstatement of a citizenship question will experience a reduction in their calculated priority values in the apportionment formula. These states are more likely to have an overstated impact on their congressional apportionment.
65. For example, in Scenarios A and B, Dr. Fraga finds that the reinstatement of a citizenship question would have a disproportionate effect on the enumeration of California's population.⁷¹ In Scenario B, after approximating the estimated effect of NRFU counts from Dr. Barreto's survey, the population undercount due to a citizenship question is -8.48 percent. This undercount results in a three-seat loss in California relative to the 53 congressional seat allocation, which assumes projected 2020 Census counts without reinstatement of a citizenship question (an estimate based on historical census counts).⁷² If undercounts are fully mitigated, these losses will not be observed.

3. In the Historical NRFU-Rate Scenario there are no changes to congressional seat apportionment

66. I project population undercounts under the Historical NRFU-Rate Scenario. I report in Table 2, below, 2020 baseline population projections and Historical NRFU-Rate Scenario population projections by state. For the state of California, this implies that, before imputation, the population not counted is equal to 0.024 percent of the baseline projection.
67. Table 3 reports projected population and congressional seat apportionment by state for the 2020 baseline and the Historical NRFU-Rate Scenario. Under the Historical

⁷¹ Fraga Report, p. 22.

⁷² Fraga Report, pp. 22 and 23.

NRFU-Rate Scenario, there are no changes in congressional seat apportionment due to the inclusion of a citizenship question for any state, including California.

B. Impact Evaluation on the Distribution of Federal Domestic Assistance

68. Dr. Reamer purports to quantify the impact of the reinstatement of a citizenship question in the 2020 Census on the distribution of federal domestic assistance. The formulas for the three programs Dr. Reamer evaluates depend on population data. The impact evaluation Dr. Reamer conducts depends on comparing assistance distribution based on projected 2020 population counts and state-level undercount estimates from Dr. Fraga's Scenarios C and D, which purportedly result from the reinstatement of a citizenship question. Dr. Reamer's reliance on overstated estimates of undercounts attributable to reinstatement of a citizenship question results in overstated impact evaluations.
69. To illustrate how Dr. Fraga's underestimation of NRFU success contributes to Dr. Reamer's predictions, I replicate the methodology of Dr. Reamer's analysis but assume the levels of undercounts in the Historical NRFU-Rate Scenario.
70. Tables 4, 5 and 6 report fiscal-year 2016 changes in grant amounts in Dr. Reamer's analysis and in the Historical NRFU-Rate Scenario due to the estimated Census undercount by state for Title I LEA Grants, WIC Supplemental Food Grants, and Social Services Block Grants. In the Historical NRFU-Rate Scenario, following the reinstatement of a citizenship question in the 2020 Census and without accounting for imputation, the state of California is expected to lose 0.01 percent of the funds it would be expected to receive without the citizenship question.

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

Executed on October 31, 2018.

A handwritten signature in cursive script, appearing to read "Stuart Gurra", is written over a solid horizontal line.

Stuart D. Gurra, Ph.D.

Table 2
Historical NRFU - Rate 2020 Projections

State	Baseline	Historical NRFU - Rate Scenario	
	Population	Population	Undercount (%)
Alabama	4,909,797	4,909,629	-0.003%
Alaska	742,898	742,858	-0.005%
Arizona	7,302,219	7,301,223	-0.014%
Arkansas	3,041,609	3,041,449	-0.005%
California	40,393,990	40,384,382	-0.024%
Colorado	5,793,650	5,793,076	-0.010%
Connecticut	3,582,310	3,581,942	-0.010%
Delaware	984,226	984,150	-0.008%
Florida	21,668,695	21,665,660	-0.014%
Georgia	10,696,376	10,695,392	-0.009%
Hawaii	1,434,604	1,434,394	-0.015%
Idaho	1,817,286	1,817,173	-0.006%
Illinois	12,710,600	12,709,130	-0.012%
Indiana	6,735,594	6,735,256	-0.005%
Iowa	3,182,422	3,182,268	-0.005%
Kansas	2,932,387	2,932,172	-0.007%
Kentucky	4,491,934	4,491,795	-0.003%
Louisiana	4,722,625	4,722,463	-0.003%
Maine	1,331,859	1,331,823	-0.003%
Maryland	6,136,606	6,135,883	-0.012%
Massachusetts	6,973,938	6,973,132	-0.012%
Michigan	10,041,036	10,040,528	-0.005%
Minnesota	5,672,759	5,672,407	-0.006%
Mississippi	2,981,765	2,981,707	-0.002%
Missouri	6,153,347	6,153,134	-0.003%
Montana	1,067,836	1,067,815	-0.002%
Nebraska	1,951,944	1,951,799	-0.007%
Nevada	3,158,362	3,157,776	-0.019%
New Hampshire	1,358,014	1,357,960	-0.004%
New Jersey	9,073,181	9,071,745	-0.016%
New Mexico	2,093,728	2,093,522	-0.010%
New York	19,917,386	19,914,095	-0.017%
North Carolina	10,515,309	10,514,530	-0.007%
North Dakota	783,517	783,494	-0.003%
Ohio	11,756,941	11,756,582	-0.003%
Oklahoma	4,000,423	4,000,180	-0.006%
Oregon	4,310,660	4,310,260	-0.009%
Pennsylvania	12,804,528	12,803,910	-0.005%
Rhode Island	1,064,874	1,064,759	-0.011%
South Carolina	5,201,635	5,201,402	-0.004%
South Dakota	889,060	889,026	-0.004%
Tennessee	6,826,163	6,825,834	-0.005%
Texas	29,403,076	29,397,798	-0.018%
Utah	3,211,388	3,211,109	-0.009%
Vermont	621,076	621,061	-0.002%
Virginia	8,629,657	8,628,858	-0.009%
Washington	7,617,840	7,616,927	-0.012%
West Virginia	1,781,002	1,780,977	-0.001%
Wisconsin	5,837,508	5,837,238	-0.005%
Wyoming	598,982	598,963	-0.003%

Sources: REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx; NRFU Success Rate.docx

Notes: Non-citizen population calculated from Fraga 2020 Baseline Population and Scenario C ("Response Population") as follows:

$$\begin{aligned} \text{Response Population} &= \text{Baseline Population} * (1 - (5.8\% * (\text{Non} - \text{citizen population}))) \\ \text{Non} - \text{citizen population} (\%) &= \frac{\text{Baseline Population} - \text{Response Population}}{\text{Baseline Population}} * \frac{1}{.058} \\ \text{Non} - \text{citizen population} (\#) &= (\text{Baseline Population} - \text{Response Population}) * \frac{1}{.058} \end{aligned}$$

Undercount percentages before imputation.

Table 3
Historical NRFU - Rate 2020 Apportionment

State	<i>Baseline</i>		<i>Historical NRFU - Rate Scenario</i>	
	Population	Apportionment	Population	Apportionment
Alabama	4,909,797	6	4,909,629	6
Alaska	742,898	1	742,858	1
Arizona	7,302,219	10	7,301,223	10
Arkansas	3,041,609	4	3,041,449	4
California	40,393,990	53	40,384,382	53
Colorado	5,793,650	8	5,793,076	8
Connecticut	3,582,310	5	3,581,942	5
Delaware	984,226	1	984,150	1
Florida	21,668,695	29	21,665,660	29
Georgia	10,696,376	14	10,695,392	14
Hawaii	1,434,604	2	1,434,394	2
Idaho	1,817,286	2	1,817,173	2
Illinois	12,710,600	17	12,709,130	17
Indiana	6,735,594	9	6,735,256	9
Iowa	3,182,422	4	3,182,268	4
Kansas	2,932,387	4	2,932,172	4
Kentucky	4,491,934	6	4,491,795	6
Louisiana	4,722,625	6	4,722,463	6
Maine	1,331,859	2	1,331,823	2
Maryland	6,136,606	8	6,135,883	8
Massachusetts	6,973,938	9	6,973,132	9
Michigan	10,041,036	13	10,040,528	13
Minnesota	5,672,759	7	5,672,407	7
Mississippi	2,981,765	4	2,981,707	4
Missouri	6,153,347	8	6,153,134	8
Montana	1,067,836	1	1,067,815	1
Nebraska	1,951,944	3	1,951,799	3
Nevada	3,158,362	4	3,157,776	4
New Hampshire	1,358,014	2	1,357,960	2
New Jersey	9,073,181	12	9,071,745	12
New Mexico	2,093,728	3	2,093,522	3
New York	19,917,386	26	19,914,095	26
North Carolina	10,515,309	14	10,514,530	14
North Dakota	783,517	1	783,494	1
Ohio	11,756,941	15	11,756,582	15
Oklahoma	4,000,423	5	4,000,180	5
Oregon	4,310,660	6	4,310,260	6
Pennsylvania	12,804,528	17	12,803,910	17
Rhode Island	1,064,874	1	1,064,759	1
South Carolina	5,201,635	7	5,201,402	7
South Dakota	889,060	1	889,026	1
Tennessee	6,826,163	9	6,825,834	9
Texas	29,403,076	39	29,397,798	39
Utah	3,211,388	4	3,211,109	4
Vermont	621,076	1	621,061	1
Virginia	8,629,657	11	8,628,858	11
Washington	7,617,840	10	7,616,927	10
West Virginia	1,781,002	2	1,780,977	2
Wisconsin	5,837,508	8	5,837,238	8
Wyoming	598,982	1	598,963	1
Total	330,908,620	435	330,870,646	435

Sources: REAMER_000051_Fraga_NonResponseScenarios 9-17-18 Reamer analysis.xlsx; Fraga Report Table 4 and p.21

NRFU Success Rate.docx

https://www.census.gov/2010census/pdf/2010_Census_Federally_Affiliated_Overseas_Count_Operation_Assessment.pdf

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

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

Table 4
Change in Allocation of Title I LEA Grants due to
Census Undercount, by State, FY2016 -- Ranked

State	Dr. Reamer's Scenario C (5.8% undercount non-citizens)	Dr. Reamer's Scenario D (5.8% undercount non-citizens + 86.63% NRFU)	Historical NRFU - Rate Scenario (5.8% undercount non-citizens + 98.58% NRFU)
California	-\$15,278,566	-\$2,028,420	-\$215,226
<i>California Grant Loss</i>	<i>-0.87%</i>	<i>-0.12%</i>	<i>-0.01%</i>
Texas	-\$6,281,372	-\$833,930	-\$88,484
New York	-\$4,081,573	-\$541,880	-\$57,496
Florida	-\$1,437,825	-\$190,889	-\$20,254
New Jersey	-\$1,058,374	-\$140,512	-\$14,909
Nevada	-\$601,183	-\$79,815	-\$8,469
Arizona	-\$530,756	-\$70,464	-\$7,477
Hawaii	-\$110,966	-\$14,732	-\$1,563
Washington	-\$87,233	-\$11,581	-\$1,229
Maryland	-\$41,825	-\$5,553	-\$589
Illinois	-\$36,997	-\$4,912	-\$521
Massachusetts	-\$13,244	-\$1,758	-\$187

Sources: 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>

Table 5
Change in Fair Allocation of WIC Supplemental Food Grants
due to Census Undercount, by State, FY2016 -- Ranked

State	Dr. Reamer's Scenario C (5.8% undercount non-citizens)	Dr. Reamer's Scenario D (5.8% undercount non-citizens + 86.63% NRFU)	Historical NRFU - Rate Scenario (5.8% undercount non-citizens + 98.58% NRFU)
California	-\$6,411,831	-\$850,759	-\$90,263
<i>California Grant Loss</i>	<i>-0.81%</i>	<i>-0.11%</i>	<i>-0.01%</i>
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

Sources: 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%20StateLevel-Estimates-of-Infants-and-Pre-School-Age-Children-at-or%20....pdf>

Table 6
Change in Allocation of Social Services Block Grants
due to Census Undercount, by State, FY2016 -- Ranked

State	Dr. Reamer's Scenario C (5.8% undercount non-citizens)	Dr. Reamer's Scenario D (5.8% undercount non-citizens + 86.63% NRFU)	Historical NRFU - Rate Scenario (5.8% undercount non-citizens + 98.58% NRFU)
California	-\$1,683,013	-\$223,450	-\$23,709
<i>California Grant Loss</i>	<i>-0.88%</i>	<i>-0.12%</i>	<i>-0.01%</i>
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

Sources: 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

Exhibit 1

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

CURRICULUM VITÆ

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 Proving Antitrust Damages, 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

- Publications (Continued)** Market Power Handbook: Competition Law & Economic Foundations (2d ed.) American Bar Association, Section of Antitrust Law, (contributor), March 2012
- “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 Issues in Competition Law and Policy, Volume 2, pp. 1589-1611, American Bar Association, Section of Antitrust Law, 2008

- Publications (Continued)** “Imperfect Information, Entry and The Merger Guidelines,” *Economists Ink* (with Barry C. Harris and Allison M. Ivory), Summer 2006
- “International Airline Code Sharing and Entry,” in Darin Lee, ed., *Advances in Airline Economics*, Chapter 5, Vol. 1, Elsevier, 2006
- “The Antitrust Economics of Intellectual Property,” (with Phil B. Nelson and Robert D. Stoner), in *Antitrust and Intellectual Property: A Guide for Practitioners*, 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
- The Economics of Innovation: A Survey*, 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

**Expert Witness
Deposition and
Trial Testimony
(continued)** *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** *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

Selected Consulting Matters (continued) *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 Petraeus scandal

Selected Consulting Matters (continued) *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

Selected Consulting Matters (continued) *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

Selected Consulting Matters (continued) *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

- Selected Consulting Matters (continued)** *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

Selected Consulting Matters (continued) *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

Selected Consulting Matters (continued) *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

Selected Consulting Matters (continued) *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

Selected Consulting Matters (continued) *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

- Selected Consulting Matters (continued)** *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, September 21, 2018.

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 Matthew Barreto, PhD, September 7, 2018 and workpapers.

Rule 26(A)(2)(B) Expert Report and Declaration of Andrew Reamer, PhD, Civil Action No. 1:18-cv-2921 and 1:18-cv-05025 (SDNY), September 7, 2018.

Rule 26(A)(2)(B) Expert Report and Declaration of Christopher Warshaw, PhD, Civil Action No. 1:18-cv-2921 and 1:18-cv-05025 (SDNY), September 7, 2018.

Expert Report Errata of Andrew Reamer, PhD, Civil Action No. 1:18-cv-2921 (SDNY), September 18, 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.

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