

# CEMAF as a Census Method: A Proposal for a Re-designed Census and an Independent U.S. Census Bureau

**Abstract** We propose a census based neither on door-to-door canvassing nor self-enumeration, but rather, on a combination of four elements: (1) administrative records; (2) the continuously updated Master Address File; (3) survey data; and (4) modeling techniques. We use the “Census-Enhanced Master Address File” (CEMAF) as a descriptive term for our re-designed census. Our proposal is intended to be provocative. It pushes the envelope of technical, administrative, and legal capabilities and introduces ideas that may seem farfetched to some. Our proposal is largely based on “EMAF,” a proposal for a re-designed population estimation system in the US and the body of work done on a census based on administrative records. However, advances in record linkage, imputation, and microsimulation also inform it. We also provide recommendations about the administrative structure, legal and regulatory foundation, and working culture of the Census Bureau that are designed to support CEMAF. Thus, CEMAF is a proposal that includes not only a re-designed census, but also a new administrative structure for the Census Bureau, one that provides greater autonomy. The proposal is designed to maintain accuracy, functionality, and usability while curtailing both increased non-response rates and costs, major problems facing the U.S. Census. It is guided by four principles: (1) Applied Demography; (2) Check and Balance; (3) Separation; and (4) the four essential features of a census. We use the earlier work on an administrative records census, record linkage, and modeling and the four principles to describe CEMAF and how it could be developed. The discussion focuses on technical, budgetary, administrative, and legal issues, but also touches

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upon others, such as privacy, confidentiality, and public perception. We consider the major obstacles facing our proposal and provide ideas on how they may be overcome.

**Keywords** Cost • Administrative records • Commons • Modeling • Survey

## 1 Introduction

There has been a fair amount of discussion about re-designing the U.S. Census and much of the driving force has to do with increasing non-response rates and increasing costs (see, e.g., Edmonston 2001; Edmonston and Schultze 1995; Cork et al. 2004; Brown 2010; Brown et al. 2010; Weinberg 2010). We enter this discussion with a proposal that is intended to be provocative. It pushes the envelope of technical, administrative, and legal capabilities and some of our ideas will seem farfetched to some. We believe that this type of proposal is needed because the current state of future census “envisionings” is closely linked to traditional methods of conducting the census (Brown 2010; Brown et al. 2010) and even Robert Groves, the current Director of the Census Bureau believes that that these methods may have run their course (El Nasser 2010).

As suggested by the title, we propose a census based neither on the current system, self-enumeration, nor its predecessor, door-to-door canvassing. Instead, we propose that it be built on a combination of four elements: (1) administrative records; (2) the continuously updated Master Address File; (3) survey data; and (4) modeling and imputation techniques. We use the “Census-Enhanced Master Address File” (CEMAF) as a descriptive term for our re-designed census. The term CEMAF is derived from “EMAF” (Enhanced Master Address File), a proposal by Swanson and McKibben (2010) for a re-designed population estimation system. CEMAF is aimed at curtailing both increasing non-response rates and increasing costs while maintaining reasonable levels of accuracy, functionality, and usability.

Three of the four elements on which our CEMAF proposal are based stem from work done in regard to an Administrative Records Census (Alvey and Scheuren 1982; Judson 2000, 2003; Judson and Bauder 2002; Kliss and Alvey 1984; Prevost 1996; Prevost and Leggieri 1999; Scheuren 1999) and the use of survey data, record linkage, and both modeling and imputation methods to augment census data (Allison 2001; Blum 1999; Fay 2005; Fellegi and Sunter 1969; Judson 2007; Kalton 1983; Liu 2007, 2008; Myrskylä 1991; Peterson 1999; Rubin 2004; Scheuren 1999; Statistics Canada 2009; Statistics Finland 2004; Swanson and Knight 1998; Thomsen and Holmøy 1998; Weinberg 2009). However, we have the advantage of being able to add an important accomplishment to this earlier work, the advent of MAF, a continuously updated Master Address File (Brown et al. 2008; Devine and Coleman 2003; Hakanson 2007; Swanson and McKibben 2010; U.S. Census Bureau 2004a, b).

Along with others, we believe that ideas about a census should be guided by principles (United Nations (UN) 1992, 2007; United Nations Economic Commission for Europe (UNECE) 2006; Wilmoth 2004). As such, CEMAF is guided by four basic principles: (1) “*Applied Demography*,” aiming at the precision and accuracy needed to make good decisions while minimizing cost and time (Swanson et al. 1996); (2) “*Check and Balance*,” viewing the census as an “Enclosure,” not a “Commons” (Walashek and Swanson 2006); (3) “*Separation*,” having a political firewall between the Census Bureau and other elements of the federal government (El-Badry and Swanson 2007; Maloney 2009; Teitelbaum and Winter 1998); and (4) *the four essential features of a census*, to include (a) individual enumeration, (b) universality within a defined territory, (c) simultaneity, and (d) periodicity (Anderson et al. 2000; Swanson 2010a, b; UN 1992, 2007; UNECE 2006; Wilmoth 2004). We believe that each of these four principles deserves to be considered in any discussion of the future of the census and we challenge those who disagree with them to provide alternative principles.

However hypothetical and farfetched our ideas for re-designing a census for 2020 may be, there clearly are reasons for considering such a task, including rising census costs and declining response rates (Brown et al. 2010; Edmonston and Schultze 1995; Prevost and Leggieri 1999; Weinberg 2009, 2010). While incomplete, we believe that our proposal offers a means of combating rising costs and declining response rates, as well as other problems. This is important because as noted by El-Badry and Swanson (2007), among others (e.g., Starr 1987), democratic societies like the United States are predicated on the use of numbers with valid social content and the deterioration of the decennial census subverts one of the fundamental, constitutional elements of this validity. In fact, as the Enumeration Clause of the U.S. Constitution (Art. I. §2. cl. 3) makes clear, the primary purpose of the decennial census is to provide the basis for the apportionment of seats in the federal House of Representatives among the States. For example, as less people in Florida respond to the decennial census, Florida’s population count for apportionment purposes declines and Florida may as a result lose one of its representatives.

In Sect. 2, we describe our four principles and then provide a summary of them. In Sect. 3, we describe the technical aspects of CEMAF. As you may suspect, our proposal looks very different from what the United States now employs as a census method, which is “self-enumeration.” However, as we point out, the transition from self-enumeration to CEMAF may not be any greater than the transition from door-to-door canvassing was to self-enumeration from legal, administrative, and methodological perspectives. Importantly, CEMAF uses existing data and methods. In Sect. 4, we discuss the constitutional and legal issues affecting CEMAF, which is based on neither traditional (face-to-face) enumeration nor self-enumeration (e.g., mail-out/mail-back). This discussion includes issues associated with the administrative, legal and regulatory, and working culture changes we recommend for the Census Bureau. After describing our re-designed census and Census Bureau, and how these changes can be accomplished, we conclude with a summary (Sect. 5).

## 2 The Four Principles

### 2.1 *Applied Demography*

In describing the Applied Demography Principle (ADP), we start with its counterpart, the basic demography perspective (Swanson and Pol 2008; Swanson et al. 1996). Basic demography is primarily concerned with offering convincing explanations of demographic phenomena, such as changes in fertility and mortality. It tends to view time and resources as barriers to surmount in order to maximize precision and explanatory power. Moreover, the substantive problems of basic demography are largely endogenously defined.

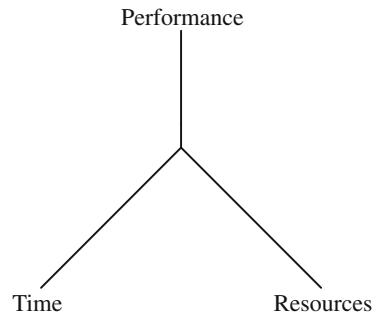
Interestingly, there is evidence that the Census Bureau views the decennial census from the perspective of basic demography. The most telling is that it makes heroic efforts to “count” each member of the population (Anderson and Fienberg 1999; Choldin 1994; Edmonston and Schultze 1995; National Research Council 1972, 1978, 1993, 1994, 2004a, b). While the Census Bureau recognizes that counting everybody is an impossible task, it generally views it as an obstacle to be overcome instead of viewing this as a constraint that needs to be accommodated (Anderson 2010; Carter 2001; Hogan 1993, 2000; Shepherd 2007; U.S. Census Bureau 1980, 1987, 1993, 2001a, 2010a, b). This approach is a hallmark of basic demography: No matter what the cost and time, one must strive to render a precise measurement (Swanson et al. 1996).

Not surprisingly, many who write about the Census Bureau’s data generation procedures and methods do so from a basic demography perspective (Anderson and Fienberg 1999; Choldin 1994; Edmonston and Schultze 1995; National Research Council 1972, 1978, 1993, 1994, 2004a, b; U.S. Census Bureau 1980, 1987, 1993, 2001a). That is, they, among others, tend to look at the Census Bureau as a scientific enterprise, which is useful in a limited context, but not when it spills over into discussions of the Bureau’s legal, political and societal challenges.

We argue that in a broad sense, it is appropriate to consider the Census Bureau’s data generation procedures and methods in accordance with the ADP. The guiding principle in applied demography is “only as much as necessary for the immediate problem at hand” (Swanson et al. 1996). A rule-of-thumb variation on this principle would be the so-called 80/20 rule: That 80% of the benefit derives from the first 20% of effort. An implication is that the last 80% of effort may be wasted if the marginal gains in benefit are not necessary. Properly applied, the rule can lead to efficiency; poorly applied, to mediocrity.

Both the basic demography perspective and the ADP can be succinctly represented in terms of the triple constraint (Rosenau 1981; Swanson 1986; Swanson et al. 1996):

1. Performance specification—the explanatory/predictive precision sufficient to support a given decision-making situation;

**Fig. 1** The triple constraint

2. Time—the schedule requirements under which the performance specification must be accomplished; and
3. Resources—the budget requirements under which the performance specification must be accomplished.

As a heuristic device, it is useful to view the triple constraint as if each of its three elements represents an axis in three-dimensional space (Rosenau 1981; Swanson et al. 1996). Using this perspective, for example, we can see that a high performance specification for the development of a number of the total population in a given area at a given point in time generally requires a great deal of time and resources (a complete census); a lower performance specification requires much less time and resources (a population estimate rather than a complete census) (Fig. 1).

While it would be inaccurate to draw a black and white contrast between applied and basic demography, it is true in terms of emphasis, that basic demography pursues an open-ended quest for ever better knowledge, more precise and reliable measurement, firmer empirical generalizations, better theoretical systems, and more refined techniques. For basic demography, the triple constraint perspective is embedded within a context that is distinctly different from that of the ADP. Under the basic demography perspective, the context involves the goal of maximizing the performance dimension, explanatory power, and precision. Thus, it tends to view time and resources as barriers to surmount in order to maximize explanatory power and precision. Under the ADP, the context is to set the performance dimension at a level that is just sufficient to support a given decision-making process in order to minimize the use of time and resources.

Among other benefits, using the ADP reveals that a perfectly accurate census as not only unachievable, but also not necessarily a desirable goal. This serves to reduce the costs associated with striving towards what we view is an inappropriate goal—perfect measurement. Instead, the ADP reorients the Bureau and its stakeholders to the more appropriate goal of trying to minimize costs while delivering numbers that are sufficiently accurate for their general use. This perspective seems to fit the views of others Cantwell et al. (2005); Groves (2010). Moreover, as observed in Edmonston and Schultze (1995, pp. 55–56), rising costs

have not produced a “better” census in terms of accuracy, which leads to the question, “is it appropriate to continue to attempt to improve measurement (especially in terms of reducing differential coverage and net undercounts) in future censuses given that these efforts have led to rising costs and not produced the desired results?”

Similar to stating that it would be inaccurate to draw a black and white contrast between basic and applied demography overall, it also is important to note here that the Census Bureau does not exclusively view the decennial census from the basic demography perspective. Some at the Census Bureau have applied the ADP to discussions of the decennial census, at least implicitly (Cantwell et al. 2005; Kincannon 2003; Murdock et al. 2006). Pursuing the use of the Applied Demography Principle would require the Census Bureau to develop guidelines developed in consultation with key stakeholders.

## 2.2 *Check and Balance*

Walashek and Swanson (2006) have described the decennial census as a “commons,” where private benefits are gained at the expense of public costs. Their portrayal of the census follows Hardin’s (1968) classic “Tragedy of the Commons” in which he describes herdsmen who increased their livestock to gain individual benefits at the expense of the common pasture; pushing the carrying capacity of the common grazing area too far until it collapsed. While the “commons” as a metaphor can be pushed too far, it is nonetheless useful (National Research Council 2002). Using this metaphor, Walashek and Swanson (2006) argue that like herdsmen, interest groups attempt to increase their share of the population to gain individual (interest group) benefits at the expense of the “census commons” and that this leads to conflict over census counts, increased census costs, and declines in response rates, threatening a collapse of the census.

However, the census was not designed to be a commons; rather, it was designed to be an “enclosure” in the sense described by Hardin (1968). That is, the census was designed to have costs as well as benefits. The first step in the design of the census as an “enclosure” was that delegates to the Constitutional Convention of 1787 agreed to give Congress the power to tax and levy tariffs. Article I. §8 of the U.S. Constitution provides: “The Congress shall have Power to lay and collect Taxes, Duties, Imposts and Excises.” The second step was to decide how to levy taxes, which is found language in art. I, §2:

Representatives and direct Taxes shall be apportioned among the several States which may be included within this Union according to their respective Numbers.

If population was to be the determining factor for the number of representatives a state was allocated in the House of Representatives as well as the state’s share of the cost in running the federal government, how was a state’s population to be determined? The delegates debated how to resolve this problem, settled on the idea

of a census, which was the third step. Thus, art. I, §2 of the Constitution provides for a decennial census:

The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten years, in such Manner as they shall by Law direct.

Article I, §2 was, therefore, carefully crafted to resolve several problems: how to keep federal power in balance with the power of the states as a whole; how to balance the power among the large and small states; and finally, how to balance the power between the nation's different regions. Article I also balanced the benefits and costs of larger populations with regards to each state's citizens; a larger congressional delegation also meant having to provide more federal tax dollars. In effect, this balance prevented the census from being a commons. Instead, the census "enclosed" public benefits by protecting them from abuse by one interest over another. This was a conscious decision by the framers of the Constitution. As Madison (Rossiter 2003) wrote in *The Federalist*:

...it is of great importance that the States should feel as little bias as possible, to swell or reduce the amount of their numbers. Were their share of representation alone to be governed by this rule, they would have an interest in exaggerating their inhabitants. Were the rule to decide their share of taxation alone, a contrary temptation would prevail...By extending the rule to both objects, the States will have opposite interests, which will control and balance each other, and produce the requisite impartiality...

The "enclosed" census remained in effect until the adoption of the 16th Amendment in 1913. Short in wording but long in effect, the 16th Amendment simply states: "The Congress shall have the power to lay and collect taxes on income, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration." With the adoption of the 16th Amendment, the stage was set for census benefits to be private and census costs to be public. With the institution of an unapportioned federal income tax, there was no longer a private cost to the residents of a state having a larger share of the U.S. population: The census became a commons.

The impact of the 16th Amendment was not immediate on the census. It served as a necessary, but not sufficient, condition for the Census Commons to be fully realized. The remaining conditions were put largely into place beginning with the 1960s when the reapportionment revolution occurred (McMillan 2000) and the distribution of substantial amounts of federal funds became linked to census data (Citro 2000; Murray 1992; U.S. GAO 1999; Walashek and Swanson 2006). This meant that "populations" were linked to increased private benefits without the balance of accompanying private costs. Not surprisingly, interest groups began to form around these populations and the process of linking federal funds to census data accelerated (Anderson and Fienberg 1999, 2002; Choldin 1994; Skerry 2000; Walashek and Swanson 2006).

The Progressives did not anticipate this development in 1913. They had championed passage of the 16th Amendment and tended to see only the wealthy and the poor as special interest groups of note. An illustration of the huge private

benefits at stake in the twenty-first century is the appropriated federal block grants for Native American housing which in 2003 totaled \$649 million with an additional \$4,937 million for community development (Walashek and Swanson 2006). It is easy to see why more than 100 Indian tribes, complaining of undercount, challenged the 2000 census results and conducted their own head counts. The tribes pointed out that the 2000 census counted 3,334 people at Warm Springs, Oregon, of which 3,018 were Indians.

According to tribal registries, however, 3,522 tribal members live on the reservation, suggesting that the 2000 census missed 504 Warm Springs tribal members, for an error undercount rate of 14% (Walashek and Swanson 2006): “We’re being shorted on funding...the numbers [the Census Bureau] have are totally inaccurate. We’re doing our census to get the money we’re owed.” This sentiment was not confined to residents of the Warm Springs Reservation.

As the preceding example illustrates, as recognition of these benefits has spread, the Census Commons has become more and more exploited. Evidence of this increasing exploitation can be found in a wide range of publications (Skerry 2000; Anderson 1988; Choldin 1994; Citro et al. 2004; Edmonston and Schultze 1995; Anderson and Fienberg 1999; Prewitt 1987; Price Waterhouse Coopers 2001; Rousch 1996; U.S. Conference of Mayors 1999; U.S. GAO 1999). Thus, just as in Hardin’s rendition of the “*Tragedy*,” each herdsman attempted to increase his share of the pasture commons, so has each interest group attempted to increase its share of the Census Commons.

Fueled by the proliferation of federal programs distributing benefits using decennial census data and the knowledge that federal courts were now willing to consider apportionment cases, several lawsuits were filed against the Census Bureau following the 1970 census. Importantly, these suits relied upon knowledge of differential undercounts from 1940 to 1960 and although they were dismissed, the Census as a commons was now becoming evident. The decision of *Baker v. Carr*, 369 U.S. 186 (1962) by the Supreme Court ended the federal courts refusal to hear reapportionment lawsuits; some 16 years after the same court in *Colgrove v. Green*, 330 U.S. 549 (1946) held that the federal judiciary had no power to interfere with issues regarding apportionment of state legislatures. The plaintiff, Baker, complained that the population had shifted such that his district in Shelby County had about ten times as many residents as some of the rural districts. The result of this shift in population without reapportioning the congressional districts for the state legislature was that the votes of rural citizens were worth more than the votes of urban citizens. It was in *Baker* that the famous “one-person, one-vote” standard for legislative redistricting was established; that is individuals had to be weighted equally in legislative apportionment. The Supreme Court ruled that the Tennessee legislature had to be re-apportioned and the floodgates for reapportionment lawsuits opened (Walashek and Swanson 2006).

It was no surprise that with the arrival of 1980 census data, another flood of lawsuits followed (Anderson and Fienberg 2002; Anderson 1988; Mitroff et al. 1983). The flood of lawsuits was commented on in *Carey v. Klutznick*, 653 F. 2d 732 (2d Cir. 1981) *cert. denied*, 455 U.S. 999 (1982) noting that more than



50 challenges to the 1980 census were brought by various states and localities in 1980 and 1981. In these actions, the plaintiffs claimed that their particular locality was or was going to be disproportionately undercounted denying the locality the number of representatives it was due in the federal congress and its fair share of federal funding. They sued for statistical adjustment for the undercount (*Cuomo v. Baldrige* 1987). One of these 50-odd cases was filed in August of 1980 in the U.S. District Court, in the Southern District of New York. The plaintiffs, in *Cuomo v. Baldrige*, 674 F. Supp. 1089 (1987) sued the Secretary of Commerce and the Bureau of the Census seeking a judgment declaring that New York City and New York State were disproportionately undercounted in the 1980 census. They moved for a court order requiring the Bureau of the Census to statistically adjust the 1980 decennial census. District Judge Sprizzo dismissed the case holding that the state and city failed to establish the statistical adjustment of decennial census was technically feasible.

The 1990 census also was followed by lawsuits (Anderson and Fienberg 2002; Pack 1996) and yet more again following the 2000 census (Anderson and Fienberg 2002; Citro et al. 2004; Wenjert 2003). These lawsuits overwhelmingly were based on grounds that the census had undercounted some population (Anderson and Fienberg 2002; Anderson 1988; Freedman and Wachter 2001).

An important illustration of these actions is provided by a suit filed in the 1990s, which made it to the Supreme Court. Justice O'Connor delivered the opinion in *Franklin v. Massachusetts*, 505 U.S. 788 (1992) on the issue of whether the decision by the Secretary of Commerce to allocate federal overseas employees to particular states for reapportionment purposes violated the Constitution. The Court found that since many, if not most of the federal overseas employees, particularly the military, have retained their ties to the states and, therefore, could and should be counted toward their states' representation in Congress. "Many," said the Court, "if not most of those temporarily stationed overseas considered themselves to be usual residents of the United States" (*Franklin v. Massachusetts*, 1992). Justice O'Connor stated that the Secretary of Commerce's judgment to include them in the population count for their state of residence does not hamper the underlying constitutional goal of equal representation and, in fact, actually promotes equality. She noted that if some persons had not been counted because they temporarily reside outside the U.S., the votes of all those who reside in Washington State would not have been weighted equally to votes of those who reside in other States.

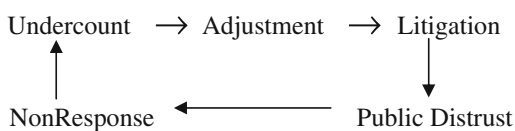
A successful action to have more people counted is not just an action that affects the census. It has a ripple effect throughout the decade leading to the next census because the census is the starting point for a set of annual estimates done by the Bureau that in themselves also distribute resources. For the 1980 census, Prevost and McKibben (1988) found that annual population estimates done by the Census Bureau affected the distribution of \$40 billion in federal grants each year subsequent to the 1980 census. Murray (1992) found that formulas involving census population numbers were used in the distribution of \$58.7 billion in federal funds distributed to state and local governments in 1989.

Perhaps it is not a surprise that the focus by academics, stakeholders, the Census Bureau, and the Congress is largely on methodological developments as the solution to census conflicts—increasing census accuracy through advertising to increase participation, for example, or by using statistical adjustments to reduce differential net undercounts (Anderson and Fienberg 2002; Anderson et al. 2000; Belin and Rolph 1994; Brown et al. 1999; Brunell 2001; Census Monitoring Board 2001; Darga 1999; Rolph 1993; U.S. Census Bureau 2001a; U.S. GAO 2003; Wright 1998; Wright and Hogan 2000). In spite of methodological developments such as the de-coupling of the long form from the decennial census (Federal Register 2010; Hough and Swanson 1998, 2004, 2006; Salvo et al. 2002; U.S. Census Bureau 2004c, 2010a, b), nothing has occurred that would suggest to us that methodological developments will reduce litigation and other forms of conflict over census results (see, e.g., Cruickshank 2010; Khavkine 2010; Rowland 2009). Even in Canada, where Statistics Canada had arguably done a good job on containing census costs, conflicts have erupted over its current government's decision to not include a mandatory long form in the 2011 Canadian census, a decision justified by the government on both privacy and cost grounds (see, e.g., Proudfoot 2010; The Canadian Press 2010).

As conflicts continue, it is likely that public confidence in the census will be further eroded and with erosion of public confidence comes higher levels of non-response (Dillman 2000), which, in turn, bring about higher levels of non-response and increase the need for the wider use of existing statistical procedures and adjustments to compensate for those not responding, as well as calls for even more procedures and adjustments (Anderson et al. 2000; Brown et al. 1999; Edmonston and Schultze 1995; Kalton 1983; Freedman and Wachter 2001). These additional procedures will require more funding, forcing the Census Bureau to make choices about methods that cannot provide optimal results for all populations. This will lead to more litigation and other forms of conflict as the special interest groups struggle to get their populations into the Census Commons. Once glimpsed, the outcome of this downward spiral is not reassuring for the future of the census. Figure 2 provides a heuristic illustration of the feedback cycle that characterizes the Census Commons.

As an example of the possible result of the Census Commons feedback cycle for the United States, consider the case of the Netherlands, where public cooperation has been deemed so low that a legally mandated census scheduled to have taken place in 1981 was indefinitely postponed. With the last conventional census having been taken in 1971, the government and other users of census data (e.g., planners, market researchers, bureaucrats, and academics) were desperate for

**Fig. 2** The census commons feedback cycle



current data. Therefore, as a substitute, the government authorized Statistics Netherlands to use a combination of survey results and administrative data to come up with a “census” for 2001 (Van der Laan 2000). Although this is a complicated task, Statistics Netherlands has managed to produce data that appear to be sufficient for the purposes to which they are put. Similarly, justifications for cancelling the decennial census of England (Hope 2010) are based in part on the country’s ability to make up for lost census data with a combination of administrative records and survey data.

What can be done to avoid the “Tragedy of the Census Commons?” We return to this question later.

### 2.3 Separation

Along with others, we believe that having a political firewall between the Census Bureau and other elements of the federal government is important (El-Badry and Swanson 2007; Maloney 2009; Teitelbaum and Winter 1998). As a branch of the executive and beholden to Congress for its funding, the Census Bureau is subject to the tides and currents of political processes (Anderson 1988). This is neither nefarious nor illegal. It is simply the nature of our government. As an example, the parent agency of the Census Bureau, the Department of Commerce, took the decision concerning statistical adjustment out of the hands of the Census Bureau, and in 1987 announced that there would be no statistical adjustment of the 1990 census (Choldin 1994, pp. 236–237). The winds changed with the democratic Clinton Administration. The Democrats were more than happy to sanction statistical adjustments for undercounts since the undercounted are primarily minorities, children, and renters (Walashek and Swanson 2006). In other words, if the census were statistically adjusted to account for minorities, children and renters, the population of the Democrats would increase along with their representation and power in Congress.

Ultimately, the Democrats lost their fight to have the census statistically adjusted for purposes of apportionment. The Republican-controlled House of Representatives sued the Secretary of Commerce seeking a declaration that the use of statistical sampling violated the Census Act and Article I of the Constitution (Walashek and Swanson 2006). In 1999, the Supreme Court in *Department of Commerce v. United States House of Representatives*, 525 U.S. 316, 343, 119 S.Ct. 765 (1999a) found that the Census Act prohibits the use of statistical sampling to determine the population for congressional apportionment (Anderson and Fienberg 2002; Anderson et al. 2000; U.S. Census Bureau 2009a).

Choldin (1994, pp. 237–238) discusses the two major deleterious effects of the Census Bureau’s loss of autonomy, which began in 1979 due to the political controversy over census undercount adjustment: (1) injecting caution into the Bureau’s scientific work and constraining the contacts that Bureau staff with outside colleagues; and (2) damage to the Census Bureau’s reputation. The major

entities encroaching on the Bureau's autonomy are the Office of Management and Budget, the Department of Commerce, and Congress.

To combat these and other problems, Teitelbaum and Winter (1998) proposed that a permanent and non-political oversight panel similar in structure and function to either the Federal Reserve Board or the Congressional Budget Office be established for the Census Bureau. These two agencies are called "independent agencies" because they function outside executive supervision. Independent agencies are established by statute. The Federal Trade Commission, an independent agency, for example was created by Congress in the Federal Trade Commission Act of 1914, 38 Stat. 717 (codified as amended at 15 U.S.C. §§41–58 (2010)).

Independent agencies are organized differently than executive agencies in order to create a buffer between their purpose and politics. In 1935, the Supreme Court, in *Humphrey's Executor v. United States*, 295 U.S. 602 (1935) looked at some of the differences between executive agencies and independent agencies. In *Humphrey's*, the plaintiff sued to recover salary allegedly due Mr. Humphrey, a Federal Trade Commissioner, removed from office by the President of the United States. Humphrey was nominated by President Hoover and confirmed by the Senate as a member of the Federal Trade Commission. Unlike executive agencies such as the Census Bureau, which have a single director nominated by the President and confirmed by the Senate, Humphrey was to be one of five commissioners. Of these five commissioners, §1 of the Federal Trade Commission Act provided that "[n]ot more than three of the commissioners shall be members of the same political party." and pursuant to the statute, the commissioners were to serve staggered terms of 3–7 years and successors were to be appointed for terms of 7 years, the Court stated. This initial staggered term structure meant that some of the commissioners were in office longer than the usual 4-year presidential term making it nearly impossible for a sitting president to appoint all the commissioners from members of his own political party. In addition, since the Federal Trade Commission by statute must be bipartisan, the President is unable to fill vacancies with only members of his own political party. Most importantly, Congress restricted the President's power to remove a commissioner to those reasons listed in the statute: inefficiency, neglect of duty, or malfeasance in office. In other words, the President cannot fire at will and fill the vacancies with commissioners of his own party. This limitation on the President's power to remove a commissioner from office was the issue before the *Humphrey's* court. Was it an unconstitutional interference with the President's executive power? Here is what the Supreme Court said:

The Federal Trade Commission is an administrative body created by Congress to carry into effect legislative policies embodied in the statute and to perform other specified duties as a legislative or as a judicial aid. Such a body cannot in any proper sense be characterized as an arm or an eye of the executive. Its duties are performed without executive leave, and, in the contemplation of the statute, must be free from executive control (*Humphrey's Ex'r v. United States* 1935).

The court noted that the President's power alone to remove is confined purely to executive officers. Officers of the kind under consideration in *Humphreys*, Federal Trade Commissioners, cannot be removed during the term for which the officer is appointed except for one or more of the causes named in the statute.

The independent agency status has certainly worked in terms of the Federal Reserve Board and Congressional Budget Office, both of which appear to carry out their missions in an effective and de-politicized manner. As was the case for both the Federal Reserve system and the Congressional Budget Office, such a move for the Census Bureau explicitly acknowledges that its constitutionally mandated activity, the decennial census, represents a political process that in spite of all of its flaws, serves important data needs, and that, as such, should be buffered from the excesses of political and bureaucratic demands.

Teitelbaum's and Winter's solution is not likely to be something that would occur quickly as can be seen by the progress of H.R. 1254, a bill introduced by Reps. Carolyn Maloney and several colleagues in the 1st session of the 111th Congress on March 3rd, 2009 (Maloney 2009). A related bill, H.R. 4945 was introduced on March 25th, 2010 (Maloney 2010). This is as it should be—much debate and in-depth consideration by many parties over a course of years is needed before such an action would be taken.

The 2009 bill, "Restoring the Integrity of American Statistics Act of 2009," H.R. 1254, 111th Cong. (2009), seeks to establish the Census Bureau as an independent establishment in the executive branch effective January 1, 2012. It requires the Bureau Director to be appointed by the President without regard to political affiliation for a 5-year term and provides for the appointment of an Inspector General for the Bureau. However, the last action on the bill was May 4, 2009 when it was referred to the House of Representatives' Subcommittee on Information Policy, Census, and National Archives (H.R. 1254, 2009). The bill will be reviewed by the subcommittee, which may ultimately report the bill favorably or unfavorably to the House as a whole allowing it to receive consideration by the full body and move forward. Alternatively, like the majority of bills, the subcommittee may fail to consider the bill at all. If the bill does move forward, it must be passed by both the House and the Senate and then be signed by the President before it becomes law. H.R.1254 has until January 3, 2011, the end of the 111st Congressional session, to be passed on by the subcommittee or it will suffer the same fate as H.R. 7069. H.R. 7069, Restoring the Integrity of American Statistics Act of 2008, H.R. 7069, 110th Cong. (2008) was introduced by Carolyn Maloney in the 110th Congress proposing to establish the Census Bureau as an independent agency. The 100th Congress ended in January 2009 and H.R. 7069 along with it.

## 2.4 The Four Essential Elements of a Census

Whether conducted using a *de jure* basis or a *de facto* basis, there are four essential features of a population and housing census according to the UN (1992, 2007):

- (1) individual enumeration;
- (2) universality within a defined region;
- (3) simultaneity; and
- (4) defined periodicity.

In terms of essential feature number 1, “Individual enumeration,” the UN (1992, 2007) states that separate information is collected regarding the characteristics of each individual, although information may be provided to an administrative register for other purposes. Moreover, access to administrative data for statistical purposes should be given by law and/or by agreement, so that:

- (a) the data may be passed as individual records to the population register; or
- (b) the registers may be temporarily linked to form a proxy population register.

“Simultaneity,” the 3rd essential feature, refers to establishing a set census moment, or reference time, that is used to collect and record census data. The simultaneity feature is, of course, an ideal in that a census is subject to many factors that cause it to be conducted over a period of time (UNECE 2006; UN 1992, 2007; Wilmoth 2004). This period should be short, however, so that the reference point remains reasonable. Here is an example of this recommendation.

Information obtained on individuals and housing in a census should refer to a well defined and unique reference period. Ideally, data on all individuals and living quarters should be collected simultaneously. However, if data are not collected simultaneously, adjustment should be made so that the final data have the same reference period (UNECE 2006).

For essential feature number 4, “Universality within a defined territory,” the UN (1992, 2007) states that all persons within the defined territory who meet the coverage rules are enumerated. In concept, the enumeration can be taken from a population register in which the fields for attributes are populated from subsidiary registers relating to specific topics.

Essentially, all U.S. censuses through 2000 have these four essential features. However, 2010 breaks with this tradition, especially in terms of simultaneity, because the long form was “replaced” by the American Community Survey (ACS). The ACS data released in the Fall of 2010 have no link whatsoever with the 2010 census (U.S. Census Bureau 2007, 2009d, 2010b; Federal Register 2010). This means that the 2010 “long form” data represented by the ACS are not connected with the 2010 short form data. This, indeed, is a major break with previous censuses in which the long form data were “simultaneous” with the short form data. As such, the U.S. Census decennial census data no longer meets the UN objective of simultaneity in terms of its short and long form data.

## ***2.5 Summary: The Four Principles and Why they are Important***

The *Applied Demography Principle* suggests that the census should achieve the precision and accuracy needed to make good decisions while minimizing cost

rather than trying to achieve the impossible task of perfect measurement at great time consumption and cost. The *Check and Balance Principle* suggests that the census should be an “Enclosure,” not a “Commons,” where there are both benefits and costs to having more people. The *Separation Principle* suggests that there should be a political firewall between the Census Bureau and other elements of the federal government. Finally, the *Four Essential Features of a Census Principle* suggests that the census adhere to its historical features, especially “simultaneity”, which means that it should be a “snapshot” of the U.S. at a specific point in time.

The *Applied Demography Principle* is linked to the *Check and Balance Principle* largely through the idea of keeping costs under control. If the census provides both benefits and costs to having more people, then there is less pressure to achieve a perfect measurement, which means methodological “adjustment” fixes and the associated litigation will be kept to a minimum. It also is linked to the *Separation Principle* via costs. If there is less political pressure to pursue actions that lead to litigation, then costs will tend to be lower. The *Applied Demography Principle* also is linked to the *Four Essential Features of Census Principle*, especially the Simultaneity Feature via cost containment. If the census is comprised only of “simultaneous” data rather than a mixture of data collected at a fixed point in time and data collected over intervals that in some cases will be as long as 5 years, then costs also are contained.

### 3 CEMAF

#### 3.1 Privacy and Confidentiality Concerns

Virtually all users desire accurate, timely, and accessible data, with cost-effectiveness often, but not always, being an issue (Swanson et al. 1996). Many tend to use aggregated data (Clark 1986; Coale and Demeny 1966; Dharmalingam 2004; Li and Tuljapurkar 2005; Pollard 1973; Rogers 1995; Rogers et al. 2000; Stockwell et al. 2005; Suchindran 2004; Treyz et al. 1993). However, some users, particularly academic researchers, would prefer to use microdata. This is because many of these basic researchers are interested in hypotheses concerning individuals (Brandon and Hogan 2004; Livingston 2006; Mutchler and Baker 2004; Ryan et al. 2006) and in using aggregated data to addresses their hypotheses about individuals, they have to deal with problems such as aggregation bias and the ecological fallacy (Freedman 2004; King et al. 2004). Because microlevel data can be aggregated and aggregated data are not generally amenable to being disaggregated, what we believe is needed by all users is a data system that provides current and historical sets of sub-county estimates of populations and their characteristics that can be rolled up to all higher administrative and statistical geographies for a given vintage to produce a “one number” hierarchy. It should be consistent with data from both decennial census counts and sample surveys done by the Census Bureau. Further, the ideal foundation of these estimates would, we



believe, be comprised of individual data on persons that are linked to households and other living arrangements in specific locations. What we have just described, of course, is something that does not exist for the United States—a national population register, a system that contains microlevel data that can be rolled up and linked both across time and with other data, such as the case found in Finland (Statistics Finland 2004).

We do not believe that there are many who would argue against the utility of a national population file. We believe that this observation applies not only to researchers, but also to users in general. The issue here, of course, is that “utility” is not the over-riding factor. American traditions and values are not in favor of such a system, given concerns about government intrusion into privacy (El-Badry and Swanson 2007; Habermann 2006; Seltzer and Anderson 2000; Siefert and Reylea 2004).

In fact, Americans voiced their concerns about the government’s intrusion into their privacy in the very first census in 1790 (Bohme and Pemberton 1991). By 1850, census returns were no longer posted publically. The Secretary of the Interior, who had responsibility for the census, explained:

Information has been received at this office that in some cases unnecessary exposure has been made by the assistant marshals with reference to the business and pursuits, and other facts relating to individuals, merely to gratify curiosity, ... No individual employed under sanction of the Government to obtain these facts has the right to promulgate or expose them without authority (Bohme and Pemberton 1991).

Twenty years later, public outcry over the census questions which asked whether they were paupers or convicts caused the Census Bureau to drop the questions in 1870 (Bohme and Pemberton 1991). Privacy, that is, the freedom to give or withhold information, and confidentiality, the government’s obligations once it possesses the data, have been the most frequently raised concerns in the Twentieth Century with regard to the census. One example occurred in 1940 when the public objected to census questions about personal wages and income (Bohme and Pemberton 1991).

Privacy concerns and the public and private need for census information met head on in 1954 when Title 13, the Census Act, was passed which made responses to all census questionnaires mandatory. Title 13 U.S.C. §221, ch. 7 states:

Whoever, being over eighteen years of age, refuses or willfully neglects, when requested by the Secretary ... to answer, to the best of his knowledge, any of the questions ... in connection with any census, shall be fined.

Title 18 U.S.C. §3571 and §3559 provides that anyone over 18 years old who refuses or willfully neglects to answer questions posed by census takers of a fine of not more than \$5,000.

In the 1960s various congress members proposed legislation to address the privacy issues by limiting the mandatory questions to name and address, age, relationship to the head of household, sex, marital status and visitors in the home at the time of the census (Bohme and Pemberton 1991). The 1970s saw a shift in focus from the public’s concern with answering intrusive questions on the census to what



the government should be allowed to disseminate of the private information it was collecting—confidentiality issues (Bohme and Pemberton 1991). Finally, Congress passed the Privacy Act, 5 U.S.C. §552a which limited what personal information could be collected by federal agencies and under what circumstances personal information could be disseminated to other agencies and third parties.

The purpose of the Privacy Act was “to assure that personal information about individuals collected by Federal agencies is limited to that which is legally authorized and necessary and is maintained in a manner which precludes unwarranted intrusion upon individual privacy” (Office of Management and Budget 1975). 5 U.S.C. §552a (b) prohibited federal agencies from disclosing without the consent of the individual:

No agency shall disclose any record which is contained in a system of records by any means of communication to any person, or to another agency, except pursuant to a written request by, or with the prior written consent of, the individual to whom the record applies.

However, the Privacy Act at §552a(b)(1) through (12) did provide for 12 exemptions from the “no disclosure without consent rule”; 11 of them permissive exemptions and one mandatory exemption for the requirements under the Freedom of Information Act (U.S. Department of Justice 2010). Two exemptions at §552a (b) (4) and (5) important for the Bureau of Census and CEMAF are:

- “to the Bureau of the Census for purposes of planning or carrying out a census or survey or related activity pursuant to the provisions of Title 13.”
- “to the recipient who has provided the agency with advance adequate written assurance that the record will be used solely as a statistical research or reporting record, and the record is to be transferred in a form that is not individually identifiable.”

Privacy and confidentiality continued to be a concern for the 1990 and 2000 census. In fact, the decline in the 1990 decennial census response rate compared to 1980 was attributed partly to privacy issues (Gatewood 2001, p. 46). Responding to the decline in response rates, the Census Bureau conducted four public opinion surveys to get a handle on the public’s concern regarding privacy (Gatewood 2001, p. 46). The surveys addressed three topics: trends in privacy attitudes; the effect of the census information environment on beliefs, attitudes, and privacy concerns; and the relationship between privacy attitudes and response behavior (Gatewood 2001, p. 46).

Results related to trends in privacy concerns showed small, yet statistically significant, increases between 1995 and 2000 in the percentage who were very worried about their personal privacy and the loss of control over personnel information (Gatewood 2001, p. 47).

We see that public concerns over privacy and confidentiality issues over the decennial census started with the first census and have continued to modern times. If we factor in the definition of privacy given by U.S. Supreme Court Justice Louis Brandeis as “the right to be left alone” the Census Bureau steps over the line with regard to personal privacy every time a household receives a census form

(Prevost and Leggieri 1999, p. 8). As we pointed out previously, Americans value their privacy and government intrusion into their privacy is not easily accepted, even when the intrusion is once a decade, as is the case with the decennial census. It would be difficult to overcome these hurdles to launch a national population register.

From a legal standpoint, however, a hybrid approach, like the national housing register we propose here with the Census Enhanced Master Address File (CEMAF) may be possible.

The U.S. Constitution, art. I. §2. cl. 3, gives Congress the authority to conduct the decennial census in “such manner as they shall by Law direct.” Congress in turn delegated this authority to the Secretary of Commerce in The Census Act, Title 13, §5:

The Secretary shall prepare questionnaires, and shall determine the inquiries, and the number, form...of the census

While Title 13, does not dictate what questions can or must be included in the decennial census, it does require the Secretary in 13 U.S.C. §141(2)(f)(1) and (2) to notify Congress of general census subjects to be addressed 3 years before the decennial census and the actual questions to be asked 2 years before the decennial census. In other words, there is congressional monitoring from the public’s elected representatives as to what questions are asked in the census and how much the government can intrude into the privacy of its citizens.

Nonetheless, the questions on the census and what the Census Bureau does with the information have been litigated. In 1901, *United States v. Morarity*, 106 F. 886, 891 (S.D.N.Y.1901) the court found that the census is not limited to a headcount of the population and “does not prohibit the gathering of other statistics, if necessary and proper” (*United States v. Morarity*1991). In 2000, the issue as to whether or not the questions on the census short or long form violate a citizen’s rights to privacy was addressed in *Morales v. Daley*, 116 F. Supp.2d 801, (S.D. Tex 2000), *aff’d*, 275 F.3d 45 (5th Cir. 2001), *cert. denied*, 534 U.S. 1135 (2002).

The plaintiffs in “*Morales*” claimed that the questions on the 2000 Census violated their rights under the First, Fourth and Fourteenth Amendments. Four plaintiffs had received the “short form” with eight questions and one received the long form with some 53 questions. The court addressed each question on each form separately and the constitutional violations claimed by the plaintiffs. The court dismissed each claim finding that no question on either form violated their constitutional rights whether the question concerned the number of people living in their housing, their relationship to each other, whether they rented or owned, their mortgage, race, sex, age, place and date of birth, citizenship, modes of transportation, job or layoff information and income. The court in *Morales* stated

...[I]t is clear that the degree to which these questions intrude upon an individual’s privacy is limited, given the methods used to collect the census data and the statutory assurance that the answers...will remain confidential. The degree to which the information is needed for the promotion of legitimate governmental interest has been found to be significant. (*Morales v. Daley* 2002).

While a national population register may indeed be a hard sell to the American public, the Constitution gives Congress the authority to establish by law the form and the method the census can take. Given the significant legitimate governmental interest in the census information, it is not a stretch to imagine Congress establishing by statute a national *housing* register, the CEMAF for example, to collect the same data, provided, of course, that the method does not violate the American citizens' constitutional rights to privacy. The reason is that the Master Address File (MAF) is a file that could, with some enhancements, yield such information when coupled with the Bureau's record matching, extant data collection, and other capabilities. It is to this subject—the CEMAF—we now turn.

### 3.2 CEMAF: *The Process*

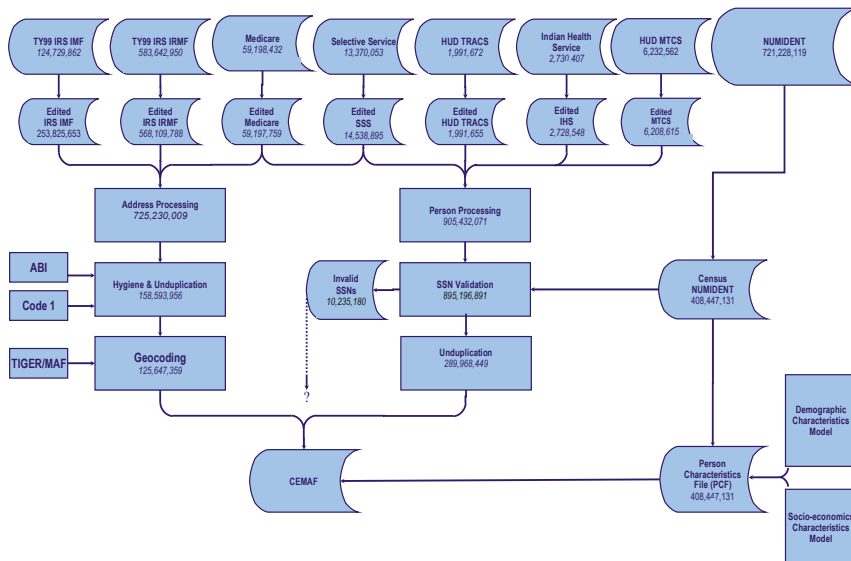
We believe that the Census Enhanced Master Address File—CEMAF—would contribute toward having not only population estimates that are timely, comprehensive, and internally consistent, but also estimates of housing, as well as demographic and socio-economic characteristics for the U.S. as a whole and its sub-areas. However, before we offer our suggestion regarding the enhancement of the MAF and its potential for meeting the needs of researchers and other users, it is important to acknowledge that others have thought along similar lines. Here, we are thinking primarily of research into the development of an “administrative records census,” which has been going on (and off) for at least 20 years (Alvey and Scheuren 1982; Kliss and Alvey 1984; Scheuren 1999). Initially, much of this work was done within the U.S. Internal Revenue Service, but this broadened to include other agencies, including the Census Bureau (Prevost 1996, Prevost and Leggieri 1999; Judson 2000, 2003; Judson and Bauder 2002). Research and other activities in the U.S. related to administrative records censuses have also been commented on by researchers outside of the country (Redfern 1986). Moreover, the U.S. Census Bureau uses administrative records extensively in its Economic Census (U.S. Census Bureau 2009b). However, it is still the case that the U.S. Census Bureau had not attempted to conduct a full-blown administrative records census (Bryan 2004a, b; Bryan and Heuser 2004).

We also again acknowledge that our suggestion, although stemming directly from Swanson and McKibben (2010), goes back to a proposal by Wang (1999) for greater recognition of the utility of the MAF in regard to population estimates. Wang provided specific suggestions on how to overcome the problems associated with maintaining and updating the MAF such that the data were of high quality, including the development of an active federal-state-local program (similar to the one used for vital statistics) to update the MAF. Wang's (1999) suggestions, along with the ideas underlying an administrative records census provided by Judson (2003), led directly to the idea of viewing the MAF as the basis for developing EMAF, which is a housing unit register with population information (Swanson and McKibben 2010). In turn, EMAF leads to CEMAF.

Exhibit 1 provides an overview of how CEMAF might be developed and maintained. It is designed to serve as a conceptual roadmap rather than a work plan.

As can be seen at the lower far left of Exhibit 1, the MAF/TIGER file is an input into CEMAF that goes through a geocoding process. Inputs into the MAP/TIGER geocoding process include processed (“Address Processing” in Exhibit 1), as well

### Exhibit 1. Schematic View of Technical aspects of CEMAF\*



#### Terms used in Exhibit 1

**CEMAF:** Census Enhanced Master Address File

**MAF/TIGER:** Master Address File/Topologically Integrated Geographic Encoding and Reference System

**IRS IMF:** Individual Master 1040 File from the US Internal Revenue Service

**IRS IRMF:** IRS Information Returns Master File

**HUD TRACS:** Tenant Rental Assistance file from the Department of Housing and Urban Development (HUD)

**HUD MTCS:** HUD's Tenant Rental Assistance Certification System

**NUMIDENT:** the Social Security Administration's "Numerical Identification System" file, which contains the name of the applicant, place and date of birth, & other information since the first social security cards were issued in 1936

**SSN:** Social Security Number

**Indian Health Service:** Indian Health Service patient file

**Medicare:** Medicare enrollment database.

**Selective Service:** Selective Service (Military) Registration File

\*Adapted from Judson (2003).

**Exhibit 1** Schematic view of technical aspects of CEMAF. *CEMAF* census enhanced master address file, *MAF/TIGER* master address file/topologically integrated geographic encoding and reference system, *IRS IMF* individual master 1040 file from the US internal revenue service, *IRS IRMF* IRS information returns master file, *HUD TRACS* tenant rental assistance file from the Department of Housing and Urban Development (HUD), *HUD MTCS* HUD's tenant rental assistance certification system, *NUMIDENT* the social security administration's "Numerical Identification System" file, which contains the name of the applicant, place and date of birth, and other information since the first social security cards were issued in 1936, *SSN* social security number, *Indian Health Service:* Indian Health Service patient file, *Medicare* medicare enrollment database. *Selective Service* selective service (military) registration file. Adapted from Judson (2003)

as edited and unduplicated addresses (“Editing and Unduplication” in Exhibit 1) that originate from the following sources:

- IRS individual Master 1040 File (“IRS IMF” in Exhibit 1);
- IRS Information Returns Master File (“IRS IRMF” in Exhibit 1);
- Medicare enrollment database (“Medicare” in Exhibit 1);
- Selective Service File (“Selective Service” in Exhibit 1);
- Tenant Rental Assistance file from the Department of Housing and Urban Development (“HUD TRACS” in Exhibit 1);
- Indian Health Service patient file (“Indian Health Service” in Exhibit 1); and
- HUD’s Tenant Rental Assistance Certification System (“HUD MTCS” in Exhibit 1).

These same files also feed “Person Processing,” where after being processed they are fed into “SSN Validation” as shown in Exhibit 1 and matched with the Census Bureau’s extract (“Census NUMIDENT” in Exhibit 1) from the Social Security Administration’s “Numerical Identification System” file (“Social Security NUMIDENT” in Exhibit 1), which contains the name of the applicant, place and date of birth, and other information since the first social security cards were issued in 1936. The valid “Matched Person-Numident” records are then unduplicated (Unduplication) and, as indicated at the lower center of Exhibit 1, merged with the address records and enter CEMAF. The records that fail the validation processing of the “Person-Numident” merger, enter into a file that requires further processing (“Invalid SSNs” in Exhibit 1) with the idea that additional work would yield additional valid data to be merged with the address records so that they could enter CEMAF. The Census Bureau’s NUMIDENT file also feeds into a Persons Characteristics File (“PCF” in Exhibit 1) that itself is informed by Census Bureau data sources, including the decennial census, the ACS, and modeling, which taken altogether represent the “Demographic Characteristics Model” and the “Socio-economic Characteristics Model” data files, as shown in Exhibit 1. While the merged “Person-Address-Numident” file would be powerful, it needs information from the PCF so that the potential of CEMAF is fully realized. There are significant technical challenges facing not only the development of a functional PCF, but also its merger with the Person-Address-Numident file.

Initial data from the “Demographic Characteristics Model” could be provided directly by Census 2000 short form data while the “Socio-economic Characteristics Model” data could be provided by a combination of Census 2000 long form data and imputation/modeling/methods so that they are characteristics assigned to the short form records. In turn, they would be informed by the Census Numident Records, which would result in the PCF. From the PCF they would, in turn, inform the “Person-Address-Numident” so that the characteristics of individual and household/group quarters could be assigned to individual addresses in the MAF.

It is worthwhile to note here that imputation modeling used by the Census Bureau today has been found to neither violate the Census Act as it reads today nor the U.S. Constitution’s requirement of an “actual Enumeration” of the population.

The issue was considered by the Supreme Court in *Utah v. Evans*, 536 U.S. 452 (2002). The Bureau, the court noted in *Utah*, derives most census information from what is, in effect, a nationwide list of addresses. If no one replies to a particular census form or the information is confusing, contradictory, or incomplete, the Census Bureau follows up with visits by its field personnel. If, despite the visits, the Bureau still cannot resolve the problems, it may then use “imputation” (Kalton 1983) by which it infers that the address or unit about which it is uncertain has the same population characteristics as those of its geographically closest neighbor living in the same type of dwelling; i.e., an apartment or single family residence (*Utah v. Evans* 2002). This is called “hot-deck imputation” noted the court, and refers to the way in which the Census Bureau fills in gaps in its information and resolves conflicts in the data. This type of imputation, said the court was not the extrapolation of the features of a large population from a small one, but the filling in of missing data as part of an effort to count individuals one by one. The *Utah* Supreme Court held that the use of “hot-deck imputation” violates neither the Census Act nor the constitutional requirement of an “actual Enumeration” of the population (*Utah v. Evans* 2002).

Returning to the discussion of how CEMAF would work, once this initial CEMAF is constructed, it can be brought forward in time on a regular basis (e. g, once each year) using the processes identified in Exhibit 1. Here, it is useful to think about the possibility of using microsimulation methods (see, e.g., Statistics Canada 2009) as the means to accomplish bringing the CEMAF forward in time.

The microsimulation system would yield aggregated data that could be calibrated against survey and other empirical data that are regularly collected by the Census Bureau. This means that the parameters being used in the microsimulation would be adjusted until data from the CEMAF matched (with given tolerance levels) the empirical data. The re-calibration could include direct substitution in CEMAF addresses appearing in the survey sample for a given vintage (i.e., a given year), and imputation, simulation, and related estimation methods for those CEMAF addresses in the same vintage and area that are not in the survey. Data for addresses in the “old” CEMAF version could be so identified and remain attached to each record so that measures of change could be computed for individual address and person records. Thus, CEMAF would be an address register containing a combination of collected and estimated data centered on demographic characteristics (i.e., age, sex, race, household relationships) distinguished, as appropriate, by year.

To summarize, we picture CEMAF as an integrated file that contains not only existing MAF variables (e.g., geocode, address, and structure type), but also information on the occupancy status of housing units and the people within these units and non-household living arrangements (group quarters). Demographic and socio-economic characteristics would be generated using a combination of administrative records and survey data largely in conjunction with a combination of record matching, imputation and microsimulation methods.

### 3.3 Cost

The cost of the census has increased dramatically in the twentieth century (Brown 2010). In 1960, the census cost \$523 million in nominal dollars (Gathier 2002; U.S. GAO 1998, p. 37). By 1990, the census cost was \$2.6 billion nominal dollars and in 2000, \$6.5 billion in nominal dollars (Gathier 2002). Yet, in spite of the significant increase in cost, the response rate continued to decline through the 1990s until 2000 when there was a slight reversal (Gatewood 2001, pp. 46, 52). The numbers are not in yet, but the projected cost for the 2010 census was estimated by the Census Bureau to be \$11.3 billion as of 2006 (U.S. GAO 2006) and \$14.7 billion by the Office of the Inspector General, U.S. Department of Commerce as of February, 2010 (U.S. Department of Commerce 2010).

The Census Bureau states that 2/3rds of the census cost will be spent enumerating the people who did not respond by mail, costing approximately \$75 million to enumerate each additional percentage point of households that require follow up by a census enumerator (U.S. Census Bureau 2010a, b). CEMAF will be able to handle the increasing housing units for the future decennial censuses without a large increase in staff. In addition, the CEMAF will eliminate most of the cost of the door-to-door visits of census takers for nonresponse follow up.

Do these increasing costs and declining response rates justify the cost to develop the CEMAF? An idea of the potential cost to develop CEMAF is found in Redfern's (1986) discussion of the cost of converting from a traditional census to an administrative records census. Similar hints are found in Hope (2010). However, once developed (or converted, as the case may be), it appears that the costs for a national housing register could be less than the system currently being used in the U.S. for developing post-censal estimates and decennial census counts. We use here the information from Statistics Finland (2004, p. 26) discussed earlier in regard to the comparative costs of registries and censuses. It also is worth noting here that local officials in Finland update the country's population and housing registries (Statistics Finland 2004, p. 21). Thus, we see no major cost obstacle in following Wang's (1999) suggestion that state and local governments be funded to assist in maintaining CEMAF under the general supervision of the Census Bureau. Before such a major step is taken, however, it would be wise to research the various forms this could take. El-Badry and Swanson (2007) call for research on such a recommendation in terms of public involvement in administrative oversight of the Census Bureau.

In concluding this section, we again note that we are providing a conceptual roadmap rather than a work plan in terms of constructing CEMAF. The files and processes identified in Exhibit 1, for example, are likely to look different from those identified by the Census Bureau if it embarks on the construction of CEMAF and develops a full-scale work plan for this task.

The history of the Census Bureau is one of under-funding (Lowenthal 2009). For example, The U.S. Census Bureau was confronted with a shortfall of more than \$50 million in the budget proposed by the Executive Branch for its FY 2007



operations (Lowenthal 2006). This is not a new phenomenon and much of the impetus for reduced and otherwise tight budgets comes from the high costs of collecting data. In this regard, we believe that a decennial census such as we describe would reduce costs. For example, Statistics Finland (2004, p. 26) reports that it was pressured by the Ministry of Finance to move to a register-based system because of the recurring high costs associated with taking a census. After it made the change following its 1980 census, Statistics Finland (2004, p. 26) reports that in terms of 2003 euro, the cost of its 2000 register-based census was less than one million euro while the traditional 1980 census costs were approximately 35 million euro. This evidence strongly suggests that CEMAF would assist the U.S. Census Bureau in containing costs.

We also note that another benefit of CEMAF is that it could largely negate and eliminate the need for many of the traditional demographic methods of population estimation and possibly reduce the number of sample surveys. The demographic methods largely use aggregate data and include the Housing Unit Method, regression methods, and component methods. Depending on how it is configured, CEMAF might also reduce the need for at least some of the sample surveys being done. As can be implied from the discussion of how CEMAF might be developed, there would likely be a need for accurate, efficient, and cost-effective record matching methods, as well as imputation and microsimulation methods. Of course, in addition to the benefit of reducing the number of methods needed to produce population estimates, there is the cost of migrating to new methods. These costs include acquiring new equipment, building new data files, creating new administrative, regulatory, and legal arrangements, and developing and extending new forms of technical expertise.

We believe that CEMAF would not only reduce costs, but also contribute toward having more timely, comprehensive, and internally consistent demographic, housing, and socio-economic data for the U.S. as a whole and its sub-areas. In regard to geography, we note that register-based-data are extremely flexible in that they can be geocoded to a specific location (as opposed to being assigned to an area defined by administrative or statistical boundaries). This also means that CEMAF can be overlaid with other features using GIS capabilities. The TIGER street address file comes immediately to mind in this regard. This would lead to an entirely new way of looking at the concept of a small area, in that boundaries could be drawn that are much finer than those allowed by the census defined block and more precise than those allowed by the zip code tabulation area. This would allow much higher precision in defining areas for purposes of marketing and site location. Once up and running, this would also allow for greater ease in producing a consistent time series for areas in which administrative boundaries changed over time (e.g., school attendance zones).

When considering the ideas of Swanson and McKibben (2010) in the context of the decennial census, keep in mind the volume of records collected that could be used for purposes of “counting” the population, such as social security, Medicare, IRS tax returns, and so forth and the constitutional issues that are raised if the US



moves away from “traditional enumeration” to the use of administrative records in combination with estimation methods as The Netherlands has been forced to do.

## 4 Constitutional and Legal Issues Facing CEMAF

### 4.1 What is an “Actual Enumeration”?

The Census Enhanced Master Address File method for conducting the census would use administrative records like federal income tax returns as one of its sources for information. It would be an extremely useful source if income tax returns were mandatory regardless of income level. Using federal income tax returns to count the population for the census raises two questions: (1) can the government require federal income tax returns be filed regardless of income level? and (2) would the use of federal income tax returns to conduct the census be an “actual Enumeration” of the population as required by the U.S. Constitution? We address question 2 first.

Article 1 §2 of the Constitution states:

Representatives and direct taxes shall be apportioned among the several States which may be included within this union, according to their respective Numbers. The actual Enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct.

The question as to what “actual Enumeration” means has been litigated in federal courts all the way to the Supreme Court. “Does ‘actual Enumeration’ mean that a physical head count of every person must be taken every 10 years? If a physical head count isn’t required, is the Census Bureau present method of mail-out–mailback” forms, which allow the population to self enumerate, constitutional?

In 1999, the U.S. Supreme Court in *Department of Commerce v. U.S. House of Representatives*, 525 U.S. 316 (1999a, b) looked at the question as what an “actual Enumeration” means. The Census Bureau wanted to use statistical sampling as one of its “Manners” of “actual Enumeration”. The Supreme Court in *Department of Commerce* never reached the constitutional question as to whether statistical sampling is an “actual Enumeration” permitted by the Constitution because the court found that statistical sampling violated the Census Act. Why the Supreme Court came to this decision makes a case for the use of administrative records like federal income tax returns as well as imputation and microsimulation methods to conduct the census.

Justice O’Connor delivered the opinion of the court. She noted that Congress used the authority given it in art. I. §1–2 to direct an “actual Enumeration” to enact the Census Act in 1954, 13 U.S.C. §1–402 (*Department of Commerce v. U.S. House of Representatives* 1999a, b). Congress, in the Census Act, delegated its

authority to the Secretary of Commerce. In 1998, the Secretary through the Census Bureau, a part of the Department of Commerce, announced a plan to use statistical sampling in the 2000 decennial census to address a chronic and apparently growing problem of “undercounting” of minorities, children, and renters (*Department of Commerce v. U.S. House of Representatives* 1999a, b). The plaintiffs sued the Secretary arguing that statistical sampling was not an “actual Enumeration” of the population as directed by art. I. §2 and also challenging the legality of statistical sampling under Title 13 of the Census Act.

The Supreme Court held that amendments to the Census Act did not permit statistical sampling for purposes of apportionment. The Court also held that the amendments to the Census Act *required* the Secretary to use statistical sampling in assembling the myriad demographic data that are collected in connection with the decennial census (*Department of Commerce v. U.S. House of Representatives* 1999a, b). Justice Stevens, dissenting, stated, on the contrary that the 1976 amendments to Title 13 commanded the Secretary to use statistical sampling with two limitations: he need not do so for determining the population for apportionment purposes and he need not do so unless he considers it feasible. In other words, Justice Stevens disagreed with the Court that the Census Act prohibited the use of statistical sampling for apportionment purposes.

While Justice Steven’s opinion was not the Supreme Court’s ruling with regard to the Census Act, it is also interesting to note his discussion of the plaintiffs’ complaint that the use of statistical sampling violates the Constitution because it is not an “actual Enumeration” as required by art. I §2. Justice Stevens referred to the Supreme Court’s 1992 decision in *Franklin v. Massachusetts*, 505 U.S. 788,804 (1992). In *Franklin*, he states, the Court held that the census is intended to serve “the constitutional goal of equal representation.” That goal, he said, is best served by the use of a “Manner” to conduct an “actual Enumeration” that is most likely to be complete and accurate.

As we repeatedly emphasized in our recent decision in *Wisconsin v. City of New York*, 517 U.S. 1,3 (1996), our construction of that authorization must respect “the wide discretion bestowed by the Constitution upon Congress.” Methodological improvements have been employed to ease the administrative burden of the census and increase the accuracy of the data collected. The “mailout–mailback” procedure now considered a traditional method of enumeration was itself an innovation of the 1970 census” (*U.S. Department of Commerce v. U.S. House of Representatives*, (1999a, b)).

Congress has permitted the Census Bureau to make these improvements to the methodology it uses to conduct the census; in its “Manner” of “actual Enumeration” because of changes it has made to Title 13 since it was first enacted in 1954. For example, in 1964, Congress chose to amend The Census Act to stop the impossible, expensive, and time consuming method of requiring census enumerators to visit each household personally. Prior to 1964, the Census Acts of 1810 through 1954 required enumerators to “visit personally each dwelling house in his subdivisions” in order to obtain “every item of information and all particulars required for any census or survey conducted in connection with the census” (*Utah v. Evans* 2002). In 1964, Congress repealed §25(c) of Title 13 removing the

requirement that enumerators visit each dwelling personally which allowed the Bureau to mail out a form and have it completed and mailed back by each household. This new “mailout–mailback” system was used for the first time in 1970 (Gathier 2002; Taeuber and Hansen 1966; *Department of Commerce v. U.S. House of Representatives* 1999a, b; U.S. Census Bureau 1976). “Requiring a face-to-face headcount would yield absurd results,” said Justice Stevens, in *Department of Commerce* giving the example that enumerators unable to gain entry to a large and clearly occupied apartment complex would be required to note zero occupants. It was for this reason, he stated, that the 1970 census introduced the Postal Vacancy Check, a form of sampling not challenged in *Department of Commerce*, which uses sample households to impute population figures that have been designated vacant but appear to be occupied (*Department of Commerce v. U.S. House of Representatives* 1999a, b).

Three years later, in *Utah v. Evans*, 526 U.S. 425 (2002) the Supreme Court was asked again to look at whether an alleged statistical sampling method called “hot deck imputation” used by the Bureau in 2000 for apportionment violated 13 U.S. C. §195. And once again, the question was before the Court as to whether this method was inconsistent with the Constitution’s statement that an “actual Enumeration” be made. As discussed, the court found that the imputation method was not statistical sampling and did not violate either the Census Act or the Constitution.

To underline our position that the use of administrative records and specifically the use of federal income tax returns may well pass not only the Census Act test by the Supreme Court, but also the Constitution test, the *Utah* decision presents some compelling support. The State of Utah had sued because the imputation method had resulted in North Carolina’s population being increased by .4% while increasing Utah’s by only .2% (*Utah v. Evans* 2002). As a result, North Carolina received one more Representative and Utah received one less. In *Utah*, the State’s position was that “actual Enumeration” required the Bureau to seek out each individual, which prohibits the use of imputation. The Supreme Court did not agree. “The Constitution’s text does not make the distinction that Utah seeks to draw. Rather, it uses a general word, ‘enumeration’ that refers to a counting process without describing the count’s methodological details” (*Utah v. Evans* 2002). In fact, the Supreme Court noted that the word “actual” refers to the enumeration method the Founding Fathers wanted used for apportioning the Third Congress of the new United States. This “actual Enumeration” of the Third Congress was in contrast to the conjecture used to apportion for the First and Second Congresses of the new United States. The Founding Fathers figured that by the Third Congress, the nation would have had been able to organize an actual physical headcount of the population and not have to rely on estimation. The court held that the rest of the Enumeration Clause, “shall take place in such Manner as Congress itself shall be Law direct”, suggests the breadth of Congress’s authority to decide the method used, rather than its limitation, referencing their decision in *Wisconsin* (*Utah v. Evans* 2002). The Court also noted that Congress enacted legislation to support the Census Bureau’s interpretation that imputation was

permissible in the Census Address Improvement Act of 1994 underlining our position that Congress, as necessary, can amend Title 13 to accommodate the use of CEMAF as a census method.

*Utah v. Evans* opened the door for constitutional arguments to support census methods like CEMAF. The Supreme Court stated that the decisions by the Founding Fathers in Article I, to use population rather than wealth for apportionment, to tie taxes and representation together, to insist on periodic recounts, and to take from the States the power to determine the methods to be used for the Enumeration “all suggest a strong constitutional interest in accuracy... (I)n fact, the court stated the interest in accuracy here favors the Bureau, which uses imputation as a last resort after other methods have failed” (*Utah v. Evans* 2002). The Supreme Court in *Utah* stated it was not going to try to foresee the methodological limits in the Census Clause but did narrow its decision to say that in the case before it, “[w]here all efforts have been made to reach every household, where the methods used consist not of statistical sampling but of inference, where that inference involves a tiny percent of the population, where the alternative is to make a far less accurate assessment of the population, and where consequently manipulation of the method is highly unlikely, those limits are not exceeded”.

In fact, the decennial census has never been a face-to-face count of inhabitants (Cantwell et al. 2005). It has used a variety of sources. The very first census relied on information provided by members of the household rather than an enumerator’s direct observation. All of the decennial censuses have used the head of household as the primary respondent to census forms. If the head of household could not be found, enumerators used information from proxies—neighbors, landlords or postal workers. The CEMAF as a census method is a proxy count.

## ***4.2 Can Congress Require Federal Tax Returns Regardless of Income?***

We know from the discussion above that the Supreme Court has ruled that Congress has broad authority to conduct an “actual Enumeration” in a “Manner” that it chooses. Could it choose to conduct the decennial census by using federal income tax returns to not only report income but also as the decennial census questionnaire? In this case, filing a return would have to be mandatory regardless of income level. What are the obstacles to requiring citizens, permanent residents, and temporary workers to file a mandatory income tax return so it could be used for the decennial census?

There have been so many attempts by the public to challenge the right of the federal government to require federal income tax returns and tax the people that the IRS responded to the most common arguments in January 2010 in an 83-page document posted on its website called “The Truth about Frivolous Tax Arguments” (Internal Revenue Service 2010).

The legal challenges have been on both constitutional and statutory grounds and been heard by federal courts all the way to the top. The arguments concern not only whether it is unconstitutional for the federal government to collect tax but also whether the federal government can make the filing of an income tax return mandatory. If an income tax return is made mandatory because it is to be used not only to tax individuals but also to count them for census purposes, problems arise. What about individuals who do not want to declare income gained illegally? If they have to file an income tax return and put down a false amount, is their Fifth Amendment right against self-incrimination been violated? What about illegal immigrants? Can they be prosecuted if they file a federal income tax return and are using a bogus social security number?

#### 4.2.1 Fifth Amendment Challenges

Individuals who refuse to file an income tax return argue that to file an income tax return calling for information that could lead to a conviction for criminal acts from which the income was derived, or for the crime of not paying the tax itself violates the Fifth Amendment right against self incrimination. In 1989, John Cheek, an American Airlines pilot appealed his conviction of three counts of tax evasion, one count of false claims against the government for income tax withheld, and six counts of willful failure to file individual tax returns. The 7th Circuit in *U.S. v. Cheek*, 882 F.2d 1263, 1968 n.2 (7th Cir. 1989) confirmed his convictions on the willful failure to file individual income tax returns stating, “[F]or the record, we note that the following beliefs, which are stock arguments of the tax protestor movement, have not been, nor ever will be considered objectively reasonable in this circuit.” The court listed several constitutional arguments put forth by the defendant, which it rejected including the belief that the 16th Amendment was improperly ratified and unconstitutional and that the tax laws violate the privilege against self-incrimination in the 5th Amendment. The case was later vacated and remanded back to the Circuit Court by the Supreme Court for erroneous jury instructions. His convictions were confirmed in *U.S. v. Cheek*, 3 F.3d 1057 (7th Cir. 1993).

Sixty some years earlier, in 1927, Justice Oliver Wendell Holmes on the Supreme Court responded to a similar 5th Amendment argument. In *United States v. Sullivan* 274, U.S. 259 (1927), the defendant claimed he was exonerated from filing a return because he did not meet the gross income requirements since part of his income had come from business in violation of the National Prohibition Act. The lower Circuit Court of Appeals held that gains from illicit traffic in liquor were subject to the income tax but that the Fifth Amendment prohibition against self-incrimination protected the defendant from the requirement of filing a tax return. Justice Holmes disagreed, holding that the defendant’s gains were subject to tax under The Revenue Act of 1921, §213(a) which states that gross income includes gains, profits and income derived from any source whatever—including illegal ones.

As the defendant's income was taxed, the statute, of course, required a return. In the decision that this was contrary to the Constitution we are of opinion that the protection of the Fifth Amendment was pressed too far. If the form of return provided called for answers that defendant was privileged from making, he could have raised the objection in the return, but could not on that account refuse to make any return at all... It would be an extreme if not an extravagant application of the Fifth Amendment to say that it authorized a man to refuse to state the amount of his income because it had been made in crime.

Would the Fifth Amendment argument against filing a federal income tax return hold if Congress made an income tax return mandatory regardless of income for census purposes? The Supreme Court looked at the question of compelled disclosure which may have an incriminating potential in *California v. Byers*, 402 U.S. 424 (1971) when Mr. Byers appealed his indictment for failing to stop and furnish his name and address after involvement in an automobile accident on the grounds that compliance would have violated his privilege against self incrimination. "Just as there is no constitutional right to refuse to file an income return, there is no constitutional right to flee the scene of an accident to avoid any possible legal involvement," said the Supreme Court:

Whenever the Court is confronted with the question of a compelled disclosure that has an incriminating potential, the judicial scrutiny is invariably a close one. Tension between the State's demand for disclosures and the protection of the right against self-incrimination is likely to give rise to serious questions. Inevitably, these must be resolved in terms of balancing the public need, on the one hand, and the individual claim to constitutional protections, on the other; neither can be treated lightly. An organized society imposes many burdens on its constituents. It commands the filing of tax returns for income; it requires producers and distributors of consumer goods to file informational reports on the manufacturing process and the content of products, on the wage, hours and working conditions of employees. Those who borrow money on the public market or issue securities for sale to the public must file various information reports; industries must report periodically the volume and content of pollutants discharged into our waters and atmosphere. Comparable examples are legion. In each of these situations, there is some possibility of prosecution—often a very real one—for criminal offenses disclosed by or deriving from the information that the law compels a person to supply. Information revealed by these reports could well be "a link in the chain" of evidence leading to prosecution and conviction. But, under our holdings, the mere possibility of incrimination is insufficient to defeat the strong policies in favor of a disclosure called for by statutes like the one challenged here (*California v. Byers* 1971: 402).

The resolution for the possibility of prosecution for disclosures on mandatory federal income tax returns used for census purposes is discussed in *Byers*. The Court took the position that the state objective in the reporting requirement and the constitutional values protected by the Fifth Amendment could be accommodated by imposing a restriction on prosecutorial use of the disclosed information and its fruits (*California v. Byers* 1971). In fact, this is exactly what §9 and §214 of Title 13 in the Census Act does. These sections mandate that the census information can only be used for statistical purposes. It states that information is immune from legal process and shall not without the consent of the individual be admitted as evidence, or used for any purpose in any action suit, or other judicial or

administrative proceeding. For example, people cannot be deported based on information gathered in the census.

#### 4.2.2 Statutory Challenges

What are some of the current laws that may hinder the initiation of mandatory filing of a federal income tax form for census purposes? The Internal Revenue Code, 26 U.S.C. §6012 (2010) requires every individual to file returns with respect to income taxes under subtitle A. Defendant Kenneth M. Tedder argued to the 10th Circuit in 1986 in *United States v. Tedder*, 787 F.2d 540, 542 (1986) that the Privacy Act, which the IRS prints on its tax forms are part of an IRS scheme to defraud taxpayers into paying taxes they are not otherwise obligated to pay (*United States v. Tedder* 1986) The 10th Circuit disagreed stating “[t]his argument is without merit as its premise—that the tax system is somehow “voluntary” is incorrect. Persons who meet the requisite statutory definition are required to pay income taxes” (*United States v. Tedder* 1986).

The Supreme Court has made it clear that individuals who meet a certain income level are required by law (The Internal revenue Code) to file tax returns. The Internal Revenue Code can be amended by Congress to require all individuals, regardless of income level, to file income tax returns for census purposes. For those individuals with no tax liabilities, a special informational return for census purposes could be required.

As far as the 5th Amendment protection against self incrimination is concerned, The Census Act provides that individuals disclosing self-incriminating information for *census* purposes are immune from prosecution and legal processes. The Confidential Information Protection and Statistical Efficiency Act of 2002, 44 U.S.C. §3501, in §512 prohibits any information acquired for exclusively statistical purposes to be disclosed by an agency in identifiable form, for any use other than exclusively statistical purposes without the consent of the individual. As discussed previously, The Privacy Act of 1974, 5 U.S.C. §552a (1974) prohibits the disclosure of information absent the written consent of the individual unless the disclosure falls under one of 12 statutory exceptions. One of those exceptions is that records can be disclosed for statistical purposes to the Census Bureau. In other words, the IRS can and does disclose its information to the Census Bureau. In fact, each year the Census Bureau obtains income tax return data from the Internal Revenue Service. “Access to the data is vital to the health insurance coverage estimates and these data are obtained and kept in the strictest confidentiality. No personal identifiers are included on the records used by the SAHIE program” (U.S. Census Bureau 2009c). The SAHIE program measures the Federal Poverty Level and family income with the IRS tax data (U.S. Census Bureau 2009c). The Privacy Act only covers U.S. citizens and permanent residents, which would be an issue for temporary workers and illegal aliens if mandatory tax returns were required.



The Confidential Information Protection and Statistical Efficiency Act of 2002 authorized the sharing of *business* data among the Census Bureau, Bureau of Labor Statistics, and Bureau of Economic Analysis. It represents the beginning of more efficient procedures for statistical data sharing among these agencies (Schildkraut 2003). This Act also ensures that information supplied by individuals or organizations to any agency for statistical purposes under a pledge of confidentiality is used exclusively for statistical purposes. It is intended to address the public's concerns that providing data to the Census Bureau will not be used for unauthorized purposes or for legal actions against them.

The Computer Matching and Privacy Protection Act of 1988, Pub.L.No. 100-503, 102 stat 2507, codified as amended at 5 U.S.C. 552a(o)*et seq* (2010) amended the Privacy Act by adding certain protections for the subjects of Privacy Act records whose records are used in automated matching programs.

### ***4.3 Social Security Numbers as National Identification Numbers***

If federal income tax returns are made mandatory to use for census purposes, one of the issues will be the requirement under The Social Security Act (2010), 42 U.S.C. §405(c)(2)(B)(i)(II) that every individual who is claimed as a dependent on the income tax return must have a social security number, including newborns. Deputy Commissioner J. B. Lockhart (2002) testified before the House Ways and Means Subcommittee on Social Security on September 19, 2002 that the original purpose of the Social Security Number (SSN) was to track and accurately record a worker's earnings (Lockhart 2002, p. 11). However, it has since come to be used as a de facto identification number simply because almost every American citizen, permanent resident and temporary (working) resident already has one (Kouri 2005; Lockhart 2002; Puckett 2009).

How did our social security number become a de facto national identification number? In 1943, Executive Order 9396 required federal agencies to use the SSN in any new system for identifying individuals (Puckett 2009, p. 13). By 1962, the Internal Revenue Service starting using the SSN as a taxpayer identification number and in 1967 the U.S. Armed Forces began using it as an identifier (Lockhart 2002, p. 13). In fact, the use of this unique number as an individual's identifier exploded in the 1960s and 1970s, when government agencies and the private companies began using automated data processing systems for record keeping (Puckett 2009, p. 13). In 1972, the law required SSNs to be issued to all noncitizens authorized to work in the United States, Today, a number is required for anyone applying or receiving federal benefits and required of anyone claimed as a dependent on a tax return (U.S. Social Security Administration 2010).

While the Social Security Act does not require every person to be issued a social security number, SSNs are used as identifiers by the government,



nongovernmental entities, and private organizations. Employee, patient, student and credit records are tracked using the SSN and the Internal Revenue Service requires any person who, after 1962 works as an employee for wages subject to Social Security taxes, Medicare taxes or U.S. federal income tax withholdings to have a social security number pursuant to The Internal Revenue Code, 26 U.S.C. §6109 (2010). The use of Social Security Numbers is not only widespread; it is encouraged. Companies may legally refuse to provide service to an individual who does not provide a SSN (Lockhart 2002, p. 14). States and political subdivisions of the state may, in the administration of any tax general public assistance, driver's license or motor vehicle registration law utilize the social security number for the purpose of establishing the identification of individuals pursuant to The Social Security Act, 42 U.S.C. §405(c)(2)(C)(i). Even ministers and members of religious orders who are exempt from paying Social Security taxes must have a SSN to apply for the exemption (IRS.gov 2010).

In short, taking the step from using the social security number as a de facto national identification number to a de jure federal identification number is a short one. There are obstacles. The public is concerned over the lack of regulation to control the dissemination of the confidential information available with the Social Security Number. Identity theft has become another problem since the SSN is so interconnected with other identification like banking and credit cards (Lockhart 2002). The social security card does not contain any biometric identifiers, which makes it impossible to verify the person using the card.

From a legal standpoint, none of these problems is insurmountable. Congress took the first step toward establishing a policy limiting compulsory divulgence of the Social Security Number in the Privacy Act of 1974. 28 C.F.R. §16.53(a) was promulgated pursuant to the Privacy Act to provide a rule to protect confidentiality (Use and Collection of Social Security Numbers 2009). The regulation provides that no individual can be denied any right, benefit or privilege as a result of refusing to provide their social security number. Furthermore, individuals requested to provide their SSN must be informed as to whether providing their SSN is mandatory or voluntary; advised of any statutory authority that authorizes the collection of the SSNs and be informed of the uses that will be made of the number. However, this will not have an adverse impact on our proposal to use federal income tax returns, which require a social security number by law. The Privacy Act restrictions are limited by the exemptions in 5 U.S.C. §552a note, Section 7(a) (2). The restrictions on compulsory disclosure of the SSN do not apply to (1) *any disclosure which is required by federal statute*, or (2) the disclosure of a SSN to any federal, state, local agency maintaining a system of records in existence and operating January 1, 1975, if such disclosure was required under statute or regulation adopted prior to such date to verify the identity of an individual.

Nonetheless, the public is, will and should be concerned with the use of SSNs as an identifier and the masses of personal information which the number accesses. The Social Security Act, 42 U.S.C. 405(c) (2)(C)(viii)(I) addresses this concern mandating that SSNs obtained by federal or state governmental bodies pursuant to

federal laws enacted on or after October 1, 1990 are confidential, and no authorized person can disclose any such SSN. However, as is shown with the “Numident file,” arrangements have been and can be made among federal agencies to share this information.

On the opposite side of the fence, a bill introduced by Rep. Mike Coffman, Republican on May 19, 2009, H.R. 2472, Social Security Number Fraud and Identity Theft Prevention Act proposes to amend the Immigration and Nationality Act to authorize the Department of Homeland Security (DHS) the Secretary of Labor and the Attorney General to require an individual to provide a SSNs for any record maintained by these agencies on any application, document or form provided or required under the immigration laws (Homeland security 2009). The bill proposes allowing additional liberties to various governmental agencies using the numbers for fraud prevention and immigration enforcement purposes (H.R. 2472, 2009). The bill also makes individuals reportable to the DHS who are thought to be in violation of the immigration laws; those suspected of using SSNs of deceased or under-age individuals, those sharing a SSN among multiple individuals and individuals suspected of using fake names or SSNs. This bill was referred to subcommittee on June 12, 2009. There was no further action (H.R. 2472, 2009).

There have also been constitutional challenges to the collection and dissemination of SSNs. Courts have not found a constitutionally protected privacy interest in the SSNs because of its broad dissemination in public and private records. In *Michigan Department of State v. United States*, 166 F. Supp. 2d 1228, (W.D. Mich. 2001), the court found that requiring a SSN on a driver’s license application is not unconstitutional. The court stated that the government interest in pursuing child support payments by accessing driver license data through social security numbers arguable outweighs an individual’s interest in privacy. “The government’s purpose is to improve the effectiveness of interstate CSE [child support enforcement programs]. On the other hand, the individual’s interest is minimal in this case. While the individual legitimately wants to protect herself from problems of identity theft, there is nothing to suggest that federal agencies or other states’ CSE agencies perpetrate or facilitate identity theft” (*Department of State v. United States* 2001). In 1986, the Supreme Court in *Bowen v. Roy*, 476 U.S. 693, 703 (1986) held that requiring applicants to provide their SSN as a condition of eligibility for federal benefits, such as food stamps, does not violate the First Amendment of the Constitution since such a requirement is neutral in religious terms.

What is revealed in these cases is that so far, the courts have not found that requiring social security numbers violates a citizen’s constitutional protections. The legal road is paved for Congress to enact a federal statute establishing the social security number as the official national identification number and requiring all American citizens, permanent residents and temporary workers to have one. At the same time, Congress can legislate that all social security cards be issued with biometric identifiers. Overcoming the political challenges is another issue altogether. If everyone is required to have a social security number, everyone can file the mandatory federal tax return we proposed which opens the door a bit wider for the CEMAF as a census method.

#### ***4.4 The Check and Balance Fund***

Article I, §9, cl. 7 of the Constitution states that “No money shall be drawn from the Treasury but in Consequence of Appropriations by Law; and a regular Statement and Account of the Receipts and Expenditures of all public Money shall be published from time to time.”

Since the 1980s, the federal Congress has used this Constitutional authority to pass appropriation bills which allocate nearly \$400 billion in federal block grants each year to State, local and Indian governments (Office of Management and Budget [n.d.](#)). These federal block grants are awarded in a lump sum with only general provisions on how it the money should be spent.

Block grants are allocated by population. For example, in 2009, under the State Homeland Security Grant Programs, Wyoming, the state with the least population in the United States received a little over \$6 million and California, the most populated state in the Union, received about \$105 million (Homeland Security [n.d.2009](#)). Therefore, Wyoming with a population count of 554,270 received about \$11 per person while California with 36,961,664 people received about \$3 per person (U.S. Census Bureau [2010b](#)). Using this same congressional appropriations process for block grants, we propose an idea aimed at restoring the check and balance principle intended by the constitutional framers when they allocated representatives to the states based on their census populations and charged the states for their share of the support of the federal government based on the same population. Hand-in-hand with CEMAF, we propose what we call a “check and balance fund” be established. It would work like this:

*Step 1*, rank order states by number of congressional representatives (in case of ties, the highest population) and then invert the number by giving the highest number to the state with the lowest number of representatives and so on.

*Step 2*, take the inverse as a share of the total number of representatives (435) and use that share as the basis for distributing a fund designed to restore the balance between the cost and benefits of population for states.

Thus, the state with the highest number of representatives (California with 53 congressional representatives) would get 0.00230 of \$50 billion (\$114,942,528.74) while the state with the lowest [Wyoming with one (several ties here)] would get 0.12184 of \$50 billion (\$6,091,954,022.99). The spreadsheet we have developed to illustrate the “Check and Balance Fund” does not yet contain the fine points for distinguishing among states with the same number of representatives by using their census populations as a secondary step to allocate funds. But it would not be hard to implement. For example, first allocate using the two steps above and then for those states that have the same number of representatives set up a sub-allocation by sharing the sum of dollars allocated to them using their share of the sum of their populations.

To give a more detailed example of how the “Check and Balance Fund” would work in practice recall that Article I, §2 of the Constitution provided that “Representatives and direct Taxes would be apportioned among the several States ...

according to their respective Numbers.” However, all that changed in 1913 with the passage of the 16th Amendment, which gave Congress the power to collect taxes on income without apportionment among the several States and without regard to any census or enumeration. As a result, California’s share of the nation’s population provides for an apportionment of 53 representatives. These 53 federal representatives provide California with the substantial benefit of representing California’s interests in the House of Representatives in Washington D.C. If Article I still applied, California would also be responsible for an apportionment of the nation’s costs based on its population. It would pay taxes into the federal coffers accordingly. However, in spite of the fact that California is apportioned 53 representatives based on its population, the state of California does not pay the corresponding apportionment of federal taxes based on its population. As a result, California has every incentive to overstate its population to receive not only those federal benefits derived from the number of its federal representatives, but also those benefits from receiving a larger share of federal money. Why not inflate population if there are no direct federal costs that correlate to its population count? If California were to receive more money from the Check and Balance Fund if its population count was less, California would be weighing up the pros of having a higher population count and thus more representatives in Congress with the cons of receiving less federal money from the fund. The Check and Balance Fund would resurrect the original checks and balances of Article I. We understand that to make this work, the fund would likely have to be more than \$50 billion, but we use this for illustrative purposes. Mandatory grants to state and local governments for 2009, for example, totaled \$236 billion. Of this \$236 billion, \$114 billion represented discretionary grants to state and local governments so maybe \$200 billion would be a more appropriate figure to start with.

## 5 Summary

In this paper we propose a census based neither on door-to-door canvassing nor self-enumeration, but rather on a combination of four elements: (1) administrative records; (2) the continuously updated Master Address File; (3) survey data; and (4) modeling techniques. Our proposal is intended to be provocative. It pushes the envelope of technical, administrative, and legal capabilities and introduces ideas that may seem farfetched to some. Moreover, because our proposal is based on four fundamental principles, we believe that our ideas comprise a comprehensive system consistent with its underlying principles. This type of foundation is not found in other discussions about future census counts in the U.S. (see, e.g., Brown 2010; Brown et al. 2010; Weinberg 2009, 2010).

We use the “Census-Enhanced Master Address File” (CEMAF) as a descriptive term for our re-designed census as well as a re-designed Census Bureau. Our proposal for a re-designed census is largely based on “EMAF,” a proposal for a re-designed population estimation system in the US and the body of work done on a

census based on administrative records (Swanson and McKibben 2010). However, advances in record linkage, imputation, and microsimulation also inform it. We also provided recommendations for a re-designed Census Bureau that include the administrative structure, legal and regulatory foundation, and working culture of the Census Bureau that are designed to support CEMAF. Thus, CEMAF is a proposal that includes not only a re-designed census, but also a re-designed Census Bureau.

The proposal is designed to maintain accuracy, functionality, and usability while curtailing both increased non-response rates and costs, which are major problems facing the U.S. Census. It is guided by four principles: (1) Applied Demography; (2) Check and Balance; (3) Separation; and (4) the Four Essential Features of a Census, to include (a) individual enumeration, (b) universality within a defined territory, (c) simultaneity, and (d) periodicity. We used the earlier work on an administrative records census, record linkage, and modeling and the four principles to describe CEMAF in conceptual terms and how it could be developed. The discussion was focused on technical, budgetary, administrative, and legal issues, but we also touched upon others, such as the work culture of the census, privacy, confidentiality, and public perception. We considered the major obstacles facing our proposal and provided ideas on how they may be overcome.

Importantly, the technical aspects of CEMAF use existing data and methods. They will have to come together not only in familiar, but also unfamiliar, ways. However, we believe that the technical expertise and creativity that exists not only in the Census Bureau, but also in the general demographic, information technology, and statistical communities, are both deep and diverse, as is political savvy. Thus, as has been the case with other major changes in data and administrative and legal developments (e.g., the development of electronic tabulation machines by Herman Hollerith; the development of Title 13, the move from face-to-face enumeration to self-enumeration; and the development of TIGER and MAF), we believe that CEMAF, while challenging, is technically, administratively, and politically feasible. Thus, in our sketched outline for answering these questions, we have left to others the thoughts required to answer them.

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