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Abstract

Quantitative public financial management research is limited by the absence of a common database for empirical analysis (Gill and Meier 2000). While the U.S. Census Bureau distributes government finance data that some scholars have utilized, the arduous process of collecting, interpreting, and organizing the data has led its adoption to be prohibitive and inconsistent. In this article we offer a single, coherent resource that contains all of the census data from 1967-2011, uses easy to understand natural-language variable names, and will be extended when new data is available.
INTRODUCTION

Data drive the cumulative acquisition of scientific knowledge (Gill and Meier 2000). Widely shared, coherent databases facilitate quantitative research and render the replication of findings practical and convenient. Indeed, much of what we know about public finance has been tested against large microdata sets – in the United States, primarily merged information files based on household-level data from the IRS Individual Public-Use Tax Files, the Current Population Survey, the Consumer Expenditure Survey, and the triennial Survey of Consumer Finances.

Unfortunately, students of public financial management must often rely on one-off, custom-built datasets to pursue their inquiries, which is costly, inimical to replication, and leaves practitioners uncertain about the utility of academic insights, or, worse, we eschew quantitative analysis altogether. Indeed, less than half of all research in the field employs quantitative methods (Groeneveld et al. 2014).

For someone from outside the field of public financial management, the lack of coherent, widely used data might seem an unlikely obstacle to the discovery of general truths. After all, students of public financial management have access to a database that is in many respects ideally suited to their needs and wide-ranging in its coverage. The field’s subjects are governmental entities, how they source and use cash, and the consequences of alternative ways of getting and deploying public monies. The U.S. Census Bureau has surveyed state and local governments annually since 1967. And, as the Director of the U.S. Census Bureau stated in a letter accompanying the 2013 request for financial information: “This survey is the only comprehensive source of information on the finances of local governments in the United States.”

The problem with the U.S. Census Bureau’s annual surveys of state and local government finances is that the data retrieved from the census require substantial effort to interpret, translate, consolidate, and use. Arguably, the situation is similar to the situation in corporate finance prior to the availability of the CRSP-COMPUSTAT database of stock prices and accounting data. Accounting data were available from the Securities and Exchange Commission and data on share prices could be obtained from various vendors, but merging and matching observations from these files was prohibitively costly.
Consequently, the data were rarely used and, when they were, it was nearly impossible to explain, let alone resolve, the numerous discrepancies in the findings that resulted, which held back sustained intellectual progress in the field. Corporate financial research no longer suffers from this problem. Comprehensive, useable data about financial markets is now universally available. The CRSP-COMPUSTAT database supports much of the research in the field and has secured its sustained progress.

This article describes the steps we have taken to make the Census Bureau’s annual surveys of state and local government finances equally easy to interpret, translate, consolidate, and use. It offers a single, comprehensive database of government-finance statistics,¹ which includes detailed financial data from states, municipalities, townships, special districts, and school districts for the years 1967 through 2011, processed to make it user friendly – uncomplicated to use and convenient for replication.

We will demonstrate some applications of the database, but its potential for scholarly inquiry is staggering. The data include extensive information on government revenue from both tax and non-tax sources, facilitating a more general understanding of strategies to increase revenue streams (Mikesell and Ross 2012), the interdependencies of local government and school district revenue (Kurban et al. 2012), or the budgetary impacts of revenue diversity (Chapman and Gorina 2012), just to name a few possibilities.

The data include detailed breakdowns of expenditures by both type and function, which can propel answers to questions about spending on education and transportation (Witko and Newmark 2010), the importance of the business cycle for budgets (Hou 2006), geographic impacts on categories of municipal spending (Vallés-Giménez and Zárate-Marco 2011), or the applicability of aggregate budget functions (Breunig et al. 2010). The database also contains information about the cash positions of governments, the issuance and retirement of debt, and the investments of social insurance trusts.

The applicability of the data is perhaps best exemplified by the fact that the Census Bureau’s annual surveys of state and local government finances have been used by researchers across disciplines. Recent

¹ http://www.willamette.edu/mba/research_impact/2014/public_datasets.html
examples include Gore (2004), Baber and Gore (2008), Kido et al. (2012), Murray et al. (1998), Carroll (2009), Mullins (2004), and Fisher and Papke (2000), among others. However, no research has presented the data as comprehensively, continuously, or coherently as we do here.

The diversity of treatments and time horizons in work using Census of Governments data isn’t surprising given the investment of time and resources necessary to work with the data in its raw state, but it is potentially damaging to the interpretation and application of research in our field. By consolidating the Census Bureau’s data into a single, coherent database we hope to alleviate these concerns and move quantitative research in public finance progressively forward.

Some caveats are appropriate however. The government finance database is an imperfect resource. In particular the data do not include measures of accomplishment or effort, except where money spent is a reasonable proxy for the latter, and so the database must be supplemented if such measures are important to the question being studied, e.g. by merging it with performance data, such as the Texas school-district performance data (Meier et al. 2010). However, given the push towards both methodological (Krause and Meier 2003) and theoretical (Kelman 2005) innovation in public administration research, and given the existing diversity the field displays in those areas (see for instance Bartle 2001 or Raadschelders 2013) this breadth of financial information provided from a single, standardized source has the potential to streamline and facilitate a diverse body of inquiry.

After explaining the overall structure of the data, what variables are included, and how the data is transformed from its raw state, we will transition to discussing several insights that arose from our initial analysis. These include examples of using the data to better understand patterns in government finance, and important advice for other researchers working with the database.

**THE GOVERNMENT FINANCE DATABASE**

The basic unit of reporting in government accounting is the fund, essentially a separate bucket of financial resources tasked with accomplishing some objective (GASB 1). While more recent accounting guidance mandates that some government-wide information be reported in addition to fund level reports (GASB
The census extends this reference frame by consolidating information across funds and presenting all of its data on a government-wide basis. This approach is broadly beneficial for studies that seek to understand something about governments as separate financial entities, and better conforms to the way that citizens and financial intermediaries (as opposed to governmental managers charged with oversight) use government accounting data (Voorhees and Kravchuk 2001).

The data are reported in thousands of nominal dollars, unadjusted for changes in prices or wages over time, allowing researchers to choose whether and how best to convert the information into real dollars. The time period represented in the data is 1967-2011, however the number of governments included varies significantly from year to year. The primary source of this variation is the fact that the Census Bureau collects financial data from governments in two separate, but related efforts. During years ending in a 2 or 7 the government collects a census (essentially a population) of government financial statistics in the “Census of Government Finance and Employment Data”. Every year when a census is not being conducted a sample of governments report data through the “Annual Survey of State & Local Government Finances”.

The data include federal (type 6), state (type 0), county (type 1), municipal (type 2), township (type 3), special district (type 4), and school district data (type 5), each of which can be isolated by censoring the data on the “Type_Code” variable. While every state is included in the sample every year the coverage for other government types is less complete. Figure 1 shows the number of governments of each type that are included in the data each year.

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2 While many government funds report information on a modified-accrual basis, some are required to report using a cash basis, a modified cash basis, or (rarely) a full accrual basis (Ingram 1984). This diversity of reporting practices within and across governments presents some difficulty to anyone attempting to present, or utilize government financial data in a consistent manner. Given that a transformation of data between the different accounting treatments is not possible the census adopts the accounting basis declared by each government fund “so long as that basis (1) conforms to generally accepted accounting procedures and (2) is applied consistently from year-to-year.” In practice this means that the data are best conceptualized as roughly equivalent to cash flows, even though they will not always represent actual cash flows during the periods reported.

3 The federal data were not produced by the census after 1995.
FIGURE 1
Report Counts by Government Type and Year

Records

- County
- Municipality
- Township
- Special District
Figure 1 highlights several important insights into the coverage of the data over time. Reporting rates are uniformly high during years when a full census was conducted. In addition, school districts report at much higher rates than other governments, but show a large reduction in reporting during the years between 1993 and 1996. Closer examination of the data for other government types shows a similar (but less visually pronounced) reduction in coverage during those years. In 1993 the census began sampling a smaller, but still significant, portion of all government types. Because of their work with the National Center for Education Statistics, the census was able to resume nearly complete coverage of school districts following the 1997 census, but the other government types were never again sampled at the levels seen in the late 1980’s.

*Census Data Codes*

One of the largest hurdles in the process of organizing the census’ government financial information as a single, coherent database is learning to interpret the codes used by the census to identify what each data point represents. The database we present replaces these codes with natural language variable names borrowed from the census’ classification manual, however understanding the codes that the census uses internally will help readers to validate, interpret, and apply our work.

Each census code combines an “object code” with a “function code”. Object codes are one character long and represent large categories or types of data. For instance, the object code T is used for all tax revenues. Function codes are double digit numbers that indicate what the funds in question were used for. Combining an object code, such as A, for current charges, with a function code, such as 12, for
elementary and secondary education, results in a pointer to a particular variable, in this case A12: current charges from elementary and secondary education\(^4\).

**Revenue**

At a high level the data for each government are grouped into four large categories: revenue flows, expenditure flows, cash and investment positions, and debt positions.

The revenue data are organized by sector into general revenue, utility revenue, liquor store revenue, and social insurance trust revenue. Each of these sectors is comprised of a number of smaller subcategories, as shown in table 1.

<table>
<thead>
<tr>
<th>Revenue Categories</th>
<th>Census Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Revenue</td>
<td>T B C D A U</td>
<td>All revenue not arising from utilities, liquor stores, or social insurance</td>
</tr>
<tr>
<td>Taxes</td>
<td>T</td>
<td>All taxes other than those assessed for social insurance</td>
</tr>
<tr>
<td>Intergovernmental Revenue</td>
<td>B C D</td>
<td>Transfers to the government from others, including grants and shared taxes</td>
</tr>
<tr>
<td>From Federal</td>
<td>B</td>
<td>Intergovernmental revenue from federal sources</td>
</tr>
<tr>
<td>From State</td>
<td>C</td>
<td>Intergovernmental revenue from state sources</td>
</tr>
<tr>
<td>From Local</td>
<td>D</td>
<td>Intergovernmental revenue from local sources</td>
</tr>
<tr>
<td>Current Charges</td>
<td>A</td>
<td>Fees collected for providing services, other than utility service charges or liquor store charges</td>
</tr>
<tr>
<td>Miscellaneous General Rev</td>
<td>U</td>
<td>Other general revenue from a government’s own sources</td>
</tr>
<tr>
<td>Utility Revenue</td>
<td>A</td>
<td>Revenue from providing water, electric, gas, or transportation services</td>
</tr>
<tr>
<td>Liquor Store Revenue</td>
<td>A</td>
<td>Sales revenue from government run liquor stores</td>
</tr>
<tr>
<td>Social Insurance Trust Rev</td>
<td>X Y</td>
<td>Contributions and investment earnings (or losses) for all social insurance programs.</td>
</tr>
<tr>
<td>Retirement Plans</td>
<td>X</td>
<td>Contributions and investment earnings (or losses) for public employee retirement programs</td>
</tr>
<tr>
<td>Unemployment Revenue</td>
<td>Y</td>
<td>Contributions and investment earnings (or losses) for the unemployment compensation insurance system</td>
</tr>
</tbody>
</table>

*Note: This table shows the high-level organization of the different revenue variables in the database. It references the census object categories used to create these categories, and provides a short description of each. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each category can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).*

\(^4\) Function codes are not applied consistently across the entire data set, but are still useful to understanding data within large sections of it. For instance, the function code 01 represents property taxes whenever it is used with object code T, but represents air transportation with every expenditure object code.
<table>
<thead>
<tr>
<th>Tax Revenue Categories</th>
<th>Census Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Taxes</td>
<td></td>
<td>The sum of all of the tax categories</td>
</tr>
<tr>
<td>Property Tax</td>
<td>T01</td>
<td>All taxes on property that use its value as a basis</td>
</tr>
<tr>
<td>Total Sales Taxes</td>
<td></td>
<td>The sum of general and selective sales taxes</td>
</tr>
<tr>
<td>General Sales Tax</td>
<td>T09</td>
<td>Taxes on the sale of all types of goods and services</td>
</tr>
<tr>
<td>Total Selective Sales Taxes</td>
<td></td>
<td>The sum of the eight selective sales tax categories</td>
</tr>
<tr>
<td>Alcoholic Beverage</td>
<td>T10</td>
<td>Sales taxes on government and private sales of alcohol</td>
</tr>
<tr>
<td>Amusement</td>
<td>T11</td>
<td>Sales taxes on all types of amusement businesses</td>
</tr>
<tr>
<td>Insurance Premium</td>
<td>T12</td>
<td>Sales taxes on insurance</td>
</tr>
<tr>
<td>Motor Fuel</td>
<td>T13</td>
<td>Sales taxes on fuels for vehicles and aircraft</td>
</tr>
<tr>
<td>Pari-mutuels</td>
<td>T14</td>
<td>Sales taxes on wagers and betting</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>T15</td>
<td>Sales taxes on government owned utilities</td>
</tr>
<tr>
<td>Tobacco</td>
<td>T16</td>
<td>Sales taxes on tobacco products</td>
</tr>
<tr>
<td>Other Selective Sales Tax</td>
<td>T19</td>
<td>All other selective sales taxes</td>
</tr>
<tr>
<td>Total License Taxes</td>
<td></td>
<td>The sum of the nine licensing tax subcategories</td>
</tr>
<tr>
<td>Alcoholic Beverage</td>
<td>T20</td>
<td>Licenses pertaining to alcohol</td>
</tr>
<tr>
<td>Amusement</td>
<td>T21</td>
<td>Licenses pertaining to amusement businesses</td>
</tr>
<tr>
<td>Corporate</td>
<td>T22</td>
<td>Licenses pertaining to all corporations</td>
</tr>
<tr>
<td>Hunting and Fishing</td>
<td>T23</td>
<td>Licenses pertaining to hunting and fishing</td>
</tr>
<tr>
<td>Total Motor Vehicle</td>
<td>T24</td>
<td>The sum of motor vehicle and operator licenses</td>
</tr>
<tr>
<td>Motor Vehicle</td>
<td></td>
<td>(Registration, plates, inspection ect.)</td>
</tr>
<tr>
<td>Operator Licenses</td>
<td>T25</td>
<td>Licenses pertaining to the right to operate a vehicle</td>
</tr>
<tr>
<td>Public Utility</td>
<td>T27</td>
<td>Licenses imposed on public utilities</td>
</tr>
<tr>
<td>Occupation and business</td>
<td>T28</td>
<td>Licenses for certain professions and businesses</td>
</tr>
<tr>
<td>Other Licenses</td>
<td>T29</td>
<td>All other licenses</td>
</tr>
<tr>
<td>Total income Taxes</td>
<td></td>
<td>The sum of individual and corporate income taxes.</td>
</tr>
<tr>
<td>Individual</td>
<td>T40</td>
<td>Taxes on the income of individuals</td>
</tr>
<tr>
<td>Corporate</td>
<td>T41</td>
<td>Taxes on the income of corporations</td>
</tr>
<tr>
<td>Death and Gift Tax</td>
<td>T50</td>
<td>Taxes on the transfer of property after death</td>
</tr>
<tr>
<td>Documentary Tax</td>
<td>T51</td>
<td>Taxes on the transfer of documents</td>
</tr>
<tr>
<td>Severance Tax</td>
<td>T53</td>
<td>Taxes on the removal of natural resources</td>
</tr>
<tr>
<td>Taxes NEC</td>
<td>T99</td>
<td>All other taxes not listed above</td>
</tr>
</tbody>
</table>

Note: This table gives a detailed breakdown of the different tax revenue data reported. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each category can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).
The revenue data within each subcategory are further broken down in order to identify more specific sources of funds. Tax revenues have the largest number of subcategories in the data. Table 2 summarizes the organization of tax revenue subcategories.

Intergovernmental revenue data is first separated based on its source (from the federal, state, or local government) as shown in table 1. Within each of these sources intergovernmental revenue is categorized by its intended use. Table 3 displays this structure.

<table>
<thead>
<tr>
<th>Intergovernmental Revenue Categories</th>
<th>Revenue Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Transportation</td>
<td>Aid in support of public airports</td>
</tr>
<tr>
<td>Interschool revenue</td>
<td>Aid from one school district to another (schools only)</td>
</tr>
<tr>
<td>Education</td>
<td>Aid for public schools</td>
</tr>
<tr>
<td>Employment Security</td>
<td>Transfers to the states from the federal government for unemployment insurance</td>
</tr>
<tr>
<td>General Support</td>
<td>Aid that can be applied for any purpose</td>
</tr>
<tr>
<td>Health and Hospitals</td>
<td>Aid intended for public health or hospitals</td>
</tr>
<tr>
<td>Highways</td>
<td>Aid to be used for roads, streets, and highways</td>
</tr>
<tr>
<td>Transit Subsidies</td>
<td>Aid for mass transit systems</td>
</tr>
<tr>
<td>Housing and Community Dev</td>
<td>Aid for public housing and other community development</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Federal aid for conservation resource protection</td>
</tr>
<tr>
<td>Public Welfare</td>
<td>Aid for social welfare programs</td>
</tr>
<tr>
<td>Sewerage</td>
<td>Aid for sewage systems, disposal and treatment</td>
</tr>
<tr>
<td>Other Uses</td>
<td>All other aid not classified above</td>
</tr>
</tbody>
</table>

Note: This table describes a detailed breakdown of the different intergovernmental revenue function codes reported by governments in the data. More detailed descriptions of each function code can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

The precise application of each of these categories changes somewhat based on the source of the intergovernmental revenue. For instance federally sourced intergovernmental revenue for public welfare includes programs such as TANF (Temporary Assistance for Needy Families) and Medicaid, whereas state sourced intergovernmental revenue for public welfare includes pass-through of these programs, as well as revenue arising from state specific programs. An exhaustive documentation of what each variable contains and excludes is available in the census classification manual.

Current charges are amounts that the government collects from individuals and corporations in exchange for providing services. They are reported in gross amounts, ignoring any cost of service. Liquor
stores and utilities are excluded from current charges and given their own category of revenue in order to
distinguish them from general revenue. Charges are separated based on the type of service provided as
shown in table 4.

<table>
<thead>
<tr>
<th>Charge Functions</th>
<th>Census Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total General Charges</td>
<td></td>
<td>The sum of all charges</td>
</tr>
<tr>
<td>Airport Charges</td>
<td>01</td>
<td>Charges relating to air transportation</td>
</tr>
<tr>
<td>Misc. Commercial Charges</td>
<td>03</td>
<td>Charges from all publicly owned enterprises NEC</td>
</tr>
<tr>
<td>Total Education Charges</td>
<td></td>
<td>The sum of the three education subcategories</td>
</tr>
<tr>
<td>Total Elem-Secondary</td>
<td></td>
<td>The sum of the next three variables</td>
</tr>
<tr>
<td>School Lunch</td>
<td>09</td>
<td>Revenue from the sale of milk and school lunches</td>
</tr>
<tr>
<td>Tuition</td>
<td>10</td>
<td>Charges for tuition and transportation</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>Other charges (athletics, textbooks etc.)</td>
</tr>
<tr>
<td>Higher Education</td>
<td>16 18</td>
<td>All charges from public higher education</td>
</tr>
<tr>
<td>All Other Education</td>
<td>21</td>
<td>Charges from all other state or federally run schools</td>
</tr>
<tr>
<td>Hospital Charges</td>
<td>36</td>
<td>Charges for care in publicly run hospitals</td>
</tr>
<tr>
<td>Total Highway Charges</td>
<td></td>
<td>The sum of the two following variables</td>
</tr>
<tr>
<td>Regular Highways</td>
<td>44</td>
<td>Assessments and fees for the maintenance of non-toll roads</td>
</tr>
<tr>
<td>Toll Highways</td>
<td>45</td>
<td>Fees from toll roads</td>
</tr>
<tr>
<td>Housing and Com Dev</td>
<td>50</td>
<td>Revenue from the rental of public housing</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>56 59</td>
<td>Charges from forestry and other natural resources</td>
</tr>
<tr>
<td>Parking Charges</td>
<td>60</td>
<td>Charges from on and off-street parking, and lots</td>
</tr>
<tr>
<td>Parks and Recreation</td>
<td>61</td>
<td>Revenue from facilities, parks, stadiums etc.</td>
</tr>
<tr>
<td>Sewerage</td>
<td>80</td>
<td>Charges for sewage connection, collection and disposal</td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>81</td>
<td>Fees from garbage collection and the operation of landfills</td>
</tr>
<tr>
<td>Water Transport</td>
<td>87</td>
<td>Charges relating to port terminals and canal operation</td>
</tr>
<tr>
<td>All Other General Charges</td>
<td>89</td>
<td>All charges NEC</td>
</tr>
</tbody>
</table>

Note: This table describes a detailed breakdown of the different current charge function codes reported in the data. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each function code can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

Liquor store and utility revenue are not disaggregated to the extent that other revenue data is. Total liquor store revenue is reported, and utility revenue is broken into revenue from each of the four types of utilities: water, electricity, gas, and mass transit.

Several categories of general revenue are listed under miscellaneous general revenue. Their organization is shown in table 5.
TABLE 5
Miscellaneous General Revenue Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Census Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Charges and Misc. Revenue</td>
<td></td>
<td>The sum of total charges and total misc. revenue</td>
</tr>
<tr>
<td>Total Misc. General Revenue</td>
<td></td>
<td>The sum of the seven variables below</td>
</tr>
<tr>
<td>Special Assessments</td>
<td>U01</td>
<td>Charges to individuals benefiting from improvements</td>
</tr>
<tr>
<td>Property Sale Other</td>
<td>U11</td>
<td>Gross receipts from all property sales</td>
</tr>
<tr>
<td>Interest Revenue</td>
<td>U20</td>
<td>Interest earnings from all sources</td>
</tr>
<tr>
<td>Fines and Forfeits</td>
<td>U30</td>
<td>Revenue from legal penalties</td>
</tr>
<tr>
<td>Rents and Royalties</td>
<td>U40 U41</td>
<td>The sum of rent and royalty income</td>
</tr>
<tr>
<td>Net Lottery Revenue</td>
<td>U95</td>
<td>Lottery proceeds net of the cost of prizes</td>
</tr>
<tr>
<td>Misc. General Revenue NEC</td>
<td>U99</td>
<td>All general revenue NEC</td>
</tr>
</tbody>
</table>

Note: This table describes the coding of the miscellaneous revenue variables and provides a short description of each. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each variable can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

TABLE 6
Insurance Trust Revenue Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Census Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Insurance Trust Revenue</td>
<td></td>
<td>The sum of all insurance trust revenue</td>
</tr>
<tr>
<td>Total Insurance Trust Contributions</td>
<td></td>
<td>The sum of the contribution variables below</td>
</tr>
<tr>
<td>Total Trust Investment Revenue</td>
<td></td>
<td>The sum of the investment variables below</td>
</tr>
<tr>
<td>Total Retirement Plan Revenue</td>
<td></td>
<td>The sum of all retirement plan revenue</td>
</tr>
<tr>
<td>Total Retirement Contributions</td>
<td></td>
<td>The sum of the following four contribution variables</td>
</tr>
<tr>
<td>Local Government Employees</td>
<td>X01</td>
<td>Contributions from employees of local governments</td>
</tr>
<tr>
<td>State Government Employees</td>
<td>X04</td>
<td>Contributions from employees of state governments</td>
</tr>
<tr>
<td>From Other Governments</td>
<td>X05</td>
<td>Contributions coming from other governments</td>
</tr>
<tr>
<td>Contribution to Own System</td>
<td>X06</td>
<td>Contributions to the government’s own system</td>
</tr>
<tr>
<td>Investment Earnings</td>
<td>X08</td>
<td>All earnings on the investments of the retirement plan</td>
</tr>
<tr>
<td>Total Unemployment Revenue</td>
<td></td>
<td>The sum of the following three variables</td>
</tr>
<tr>
<td>Unemployment Payroll Tax</td>
<td>Y01</td>
<td>Included in total insurance trust contributions</td>
</tr>
<tr>
<td>Unemployment Interest Revenue</td>
<td>Y02</td>
<td>Included in total investment revenue</td>
</tr>
<tr>
<td>Unemployment Federal Advances</td>
<td>Y04</td>
<td>Funds received when taxes and investments cannot cover the benefits due to unemployed workers</td>
</tr>
</tbody>
</table>

Note: This table describes the coding of the social insurance trust revenue variables and provides a short description of each. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each variable can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

The last category of revenue is revenue from social insurance trusts. Insurance trust revenue is separated into retirement plan revenue and unemployment revenue, and several smaller partitions of both are reported as shown in table 6.
Expenditures are organized according to their category and function. The category of each expenditure refers to how the cash was used, while the function of the expenditure refers to the type of service it was used to accomplish. In general every expenditure variable is a combination of one category and one function, following the logic of the census codes. For instance, “Air Transportation Capital Outlay” is in the capital outlay category and was used for the air transportation function.

Table 5 shows the different categories of expenditures that are recorded in the data. Total expenditures are the sum of direct expenditures and intergovernmental expenditures. Direct expenditures can further be broken down into current expenditures used to pay employees, purchase supplies and hire contractors; construction expenditures used to build long term assets; and expenditures used to purchase (rather than build) long term assets. Capital outlay expenditures are the sum of construction and purchase expenditures.

Intergovernmental expenditures are defined by the census as “as amounts paid to other governments for performance of specific functions or for general financial support.” They are included in total expenditure, and are separated based on whether the funds went to state governments or local ones.

In a very small number of instances\(^5\) assistance, subsidies, and interest on debt are added to direct expenditures and total expenditures. When this occurs the data always include a separate line item reporting the amount of assistance, subsidies, or interest, allowing researchers to correct for this if necessary.

**TABLE 5**

<table>
<thead>
<tr>
<th>Expenditure Categories</th>
<th>Census Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>E F G L M</td>
<td>The sum of all expenditures</td>
</tr>
</tbody>
</table>

\(^5\) Assistance and subsidies are coded by the census as object J, and occur four times in the data: state government scholarships (J19), federal categorical assistance programs (J67), other cash assistance programs (J68), and federal and state veterans’ services (J85). Interest on debt is coded by the census as object I and occurs five times: interest on general debt (I89), and interest on debt for the four classes of utilities (I91, I92, I93, and I94).
Direct | E F G | Current expenditures (such as salaries and supplies), plus any expenditures for capital improvements
Capital Outlay | F G | Purchase or construction of capital improvements
Construction | F | Construction expenditures only
Intergovernmental to State | L | Paid to state governments for performance of functions or aid related to those functions
Intergovernmental to Local | M | Paid to local governments for performance of functions or aid related to those functions

Note: Every set of expenditure data follows a similar organization. This table shows users of the data how to interpret the names given to the variables in the database, references the census object codes used to create them, and provides a short description of each. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each category can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

Expenditures are also separated by function within the database. Table 6 shows the various expenditure functions considered in the data and the census function codes that correspond to them. Some of the expenditure functions recorded by the census only exist at the federal level and have been excluded from the database otherwise. Other codes exist in the newest census data but do not exist for years prior to 2007 and have been removed or consolidated into their earlier versions to create a more coherent database.

Cash and Investment Positions
Several of the cash and investment positions of each government are recorded in the data. Other current and long term assets, such as those recorded on a typical statement of net position are not included by the census. A summary of these variables is shown in table 7.

Debt Positions
Debt statistics were significantly simplified following the 2005 redesign of the Census’ government finance statistics program. Prior to this simplification data on debt were separated based on whether the debt was issued with the backing of the full faith and credit of the government in question, whether it was not guaranteed, or whether the guarantee was unspecified. Within each of those categories the debt was broken out by function: debt to be used for each of the four utilities (water, electric, gas, and transit), general use debt, elementary and secondary education debt, or higher education debt. Measures of debt outstanding, debt issued, and debt retired were recorded for each of these guarantees and functions. Debt outstanding, issued, and retired are still reported variables, but the distinctions between the guarantee
levels and functions of debt have been removed. Instead, debt variables are disaggregated into public debt for private purposes, and debt for all other general purposes.

**TABLE 6**

<table>
<thead>
<tr>
<th>Expenditure Functions</th>
<th>Census Number</th>
<th>Expenditure Functions Continued</th>
<th>Census Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Transport</td>
<td>01</td>
<td>Parking Facilities</td>
<td>60</td>
</tr>
<tr>
<td>Miscellaneous Commercial Activities, NEC</td>
<td>03</td>
<td>Parks and Recreation</td>
<td>61</td>
</tr>
<tr>
<td>Correctional Institutions</td>
<td>04</td>
<td>Police Protection</td>
<td>62</td>
</tr>
<tr>
<td>Elementary and Secondary Education</td>
<td>12</td>
<td>Protective Inspection &amp; Reg., NEC</td>
<td>66</td>
</tr>
<tr>
<td>Higher Education</td>
<td>16 18</td>
<td>Public Welfare – sum of several smaller functions</td>
<td>67 68 74 75 77 79</td>
</tr>
<tr>
<td>State Government Scholarships</td>
<td>19</td>
<td>Federal Categorical Assistance</td>
<td>67</td>
</tr>
<tr>
<td>Education NEC</td>
<td>21</td>
<td>Other Cash Assistance Programs</td>
<td>68</td>
</tr>
<tr>
<td>Employment Security Administration</td>
<td>22</td>
<td>Vendor Payments Medical Care</td>
<td>74</td>
</tr>
<tr>
<td>Financial Administration</td>
<td>23</td>
<td>Vendor Payments Other Purposes</td>
<td>75</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>24</td>
<td>Institutions</td>
<td>77</td>
</tr>
<tr>
<td>Judicial and Legal</td>
<td>25</td>
<td>Public Welfare - Other</td>
<td>79</td>
</tr>
<tr>
<td>Central Staff Services</td>
<td>29</td>
<td>Sewerage</td>
<td>80</td>
</tr>
<tr>
<td>General Public Buildings</td>
<td>31</td>
<td>Solid Waste Management</td>
<td>81</td>
</tr>
<tr>
<td>Health</td>
<td>32</td>
<td>Sea and Inland Port Facilities</td>
<td>87</td>
</tr>
<tr>
<td>Hospitals</td>
<td>36</td>
<td>General Expenditure NEC</td>
<td>89</td>
</tr>
<tr>
<td>Federal Owned Hospitals - Veterans</td>
<td>37</td>
<td>Liquor Stores</td>
<td>90</td>
</tr>
<tr>
<td>Federal Other Hospitals - Veterans</td>
<td>39</td>
<td>Utilities Total – sum of several smaller functions</td>
<td>91 92 93 94</td>
</tr>
<tr>
<td>Regular (non-toll) Highways</td>
<td>44</td>
<td>Water Supply</td>
<td>91</td>
</tr>
<tr>
<td>Toll Highways</td>
<td>45</td>
<td>Electric Power</td>
<td>92</td>
</tr>
<tr>
<td>Housing and Community Development</td>
<td>50</td>
<td>Gas Supply</td>
<td>93</td>
</tr>
<tr>
<td>Libraries</td>
<td>52</td>
<td>Public Mass Transit Systems</td>
<td>94</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>55 56 59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: The data include a number of different functional separations for expenditures and the table above shows the name of each along with the corresponding census function number or numbers included in that expenditure function. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each expenditure function can be found in the Census’ 2006 classification manual ([http://www.census.gov/govs/classification/](http://www.census.gov/govs/classification/)).

Because the data prior to 2005 have substantial additional detail the government finance database keeps all of the potential categories of debt, even though many of these values are missing for the most recent years. Any research using the finer-grained debt data should exclude years prior to 2005, but the larger debt totals are comparable over the entire timespan of the data.
### TABLE 7

**Cash and Investment Security Variables**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Census Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cash and Securities</td>
<td></td>
<td>The sum of all cash and securities held</td>
</tr>
<tr>
<td>Insurance Trust Cash and Securities</td>
<td></td>
<td>The sum of retirement and unemployment investments</td>
</tr>
<tr>
<td>Employee Retirement Cash and Securities</td>
<td></td>
<td>The sum of all employee retirement cash and sec.</td>
</tr>
<tr>
<td>Employee Retirement Cash</td>
<td>X21</td>
<td>Cash held by the employee retirement system</td>
</tr>
<tr>
<td>Employee Retirement Securities</td>
<td>X30</td>
<td>The sum of the following two subcategories</td>
</tr>
<tr>
<td>Federal Securities</td>
<td></td>
<td>Amount invested in federal government securities</td>
</tr>
<tr>
<td>Non-Governmental Securities</td>
<td></td>
<td>The sum of the following five variables</td>
</tr>
<tr>
<td>Corporate Bonds</td>
<td>Z77</td>
<td>All forms of corporate debt</td>
</tr>
<tr>
<td>Corporate Stock</td>
<td>Z78</td>
<td>All forms of corporate equity investments</td>
</tr>
<tr>
<td>Mortgages</td>
<td>X42</td>
<td>Mortgages owed to the retirement system</td>
</tr>
<tr>
<td>Other Investments</td>
<td>X44</td>
<td>Mutual funds, international investments, loans to members and several other investments</td>
</tr>
<tr>
<td>Miscellaneous Investments</td>
<td>X47</td>
<td>All investments of the retirement system NEC</td>
</tr>
<tr>
<td>State and Local Government Sec.</td>
<td>X35</td>
<td>Included in X44 but also reported separately&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Unemployment Cash and Securities</td>
<td></td>
<td>The sum of the following two variables</td>
</tr>
<tr>
<td>Unemployment in US Treasuries</td>
<td>Y07</td>
<td>The balance held in federal securities</td>
</tr>
<tr>
<td>Other Unemployment Balances</td>
<td>Y08</td>
<td>Negative when states borrow from the federal gov.</td>
</tr>
<tr>
<td>Non-Insurance Trust Cash and Sec.</td>
<td></td>
<td>The sum of the following three variables</td>
</tr>
<tr>
<td>Sinking Fund Cash and Securities</td>
<td>W01</td>
<td>Funds held in order to service debt, all purposes</td>
</tr>
<tr>
<td>Bond Fund Cash and Securities</td>
<td>W31</td>
<td>Proceeds of bond issues awaiting disbursement</td>
</tr>
<tr>
<td>Other Non-Insurance Trust C&amp;S</td>
<td>W61</td>
<td>All other non-insurance trust cash and investments</td>
</tr>
</tbody>
</table>

Note: This table describes the coding of the cash and investment security variables and provides a short description of each. NEC stands for not elsewhere classified. The indentation of the variables in the first column indicates how subcategories of data collapse into larger categories. More detailed descriptions of each variable can be found in the Census’ 2006 classification manual (http://www.census.gov/govs/classification/).

### CREATING A COHERENT DATABASE

The Census’ government financial data comes in two forms. Data from 1967 through 2007 is more or less organized in the manner that researchers expect from panel data. The files are divided by year. Each row of each file corresponds to one government. There are several columns for identifying information and a column for each financial variable. These columns are all labeled with natural language names that make

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<sup>6</sup> This may seem like an odd choice given the explicit division between governmental and non-governmental securities in the data, but given that defaults by state and local governments are more likely than federal defaults (Chalmers 1998, and many others) conceptually including state and local government bonds with non-federal securities is reasonable. For situations where this combination is unwanted state and local government securities can be subtracted out.
it easy to understand what they represent. One wrinkle arises from the fact that data for this period is always provided in three separate text files each year. Each file contains a row for every government and some identifying information, but the three files contain different subsets of the financial information available.

Overcoming this challenge is straightforward. Given the consistent naming scheme used by the census for these years we simply merge the three data files each year so that all of the columns are available in one large matrix. We then loop through the years available and continue aggregating the data into what we call the “early database”.

The newer data presents a much more substantial challenge, and the process of consolidating it with the early database to create one source of data is a substantial contribution. Data after 2007 is organized into two files per year. The first file is a fixed width text file called the “Individual Unit File”. On each row of this file there is one government ID number, one census data code, one number representing data, the year of the data, and a character that encodes something about how the data was gathered.

This organization presents the first major hurdle to merging the recent data with the early database, since each row of the individual unit file holds data that must comprise one cell in the final matrix. For this reason the individual unit file is transposed so that there is one row per government and one column for each census data code.

The second file the census provides contains identifying information for every government in that year’s data, and is organized by government ID code. This “Government ID” file has the name of each government, population figures, and several other pieces of identifying information. Once the individual unit files are transposed they are merged with this identifying information to create the “recent database”.

The second major hurdle presented by the more recent census data is the fact that the data are not encoded with natural language variable names the way that the early census data is. This needs to be fixed, so the final step in the data consolidation is a mapping of each of the census codes onto the variable names used in the early database. The Census provides some resources to facilitate the process, including a user’s guide to the early data and classification manuals describing the recent data, but the process is still time consuming.
consuming and meticulous in a way that likely deters other researchers from incorporating the recent data into their studies.

In the end we take the recoded recent data and merge it with the early data to present a single coherent database of government financial statistics between 1967 and 2011. Specific instructions for replicating our consolidation, the final SAS code we employed, and a mapping of data codes to variable names is available in the supplementary files included with the database download\(^7\). A high-level view of the process of organizing and consolidating all of the census data is shown in figure 2.

**DATA INSIGHTS**

*Unbalanced Panel Data*

The government finance database is an unbalanced panel dataset because the annual samples vary in size, and so any analysis of the data should be informed by traditional approaches to working with unbalanced panels, such as fixed effects models (Baltagi 2008). However, a deeper understanding of how the sample varies over time can provide us with advantages over the simple application of statistical tools, by guiding future research designs and by helping to interpret results.

One particularly striking finding from a high level analysis of the data is that smaller (larger) sample sizes indicate that the sample is skewed towards larger (smaller) governments. The graphs in figures 3 and 4 show a clear, inverse relationship for counties \((r = -0.93)\) and municipalities \((r = -0.78)\) between the number of governments sampled each year and the median population of the governments in the sample, providing strong evidence that larger municipalities are more likely to be sampled during non-census years. The two government types that are exceptions to this pattern are states and school districts, because of the uniformly high reporting rates for both.

This relationship indicates several actionable steps, beyond the straightforward advice to apply year fixed effects, for quantitative research using this data. First, considering government size in your

\(^7\) http://www.willamette.edu/mba/research_impact/2014/public_datasets.html
research design will be essential. Directly controlling for size, or being able to make a plausible argument for why size is not important for the question being pursued is an important bar for studies using this database to clear. If such controls or arguments are missing, academics and policy makers should be very wary of generalizing the results.

FIGURE 3
The Relationship between Sample Size and Population for Counties

Second, the particular research focus may inform the data cleaning and selection process in novel ways. For instance, studies that aim to identify long term financial trends across all governments may want to only use the data from years ending in a 2 or a 7, because that will ensure that every measure they calculate is representative of a census of governments. Some of the time series we graph later in this paper will clearly show the impact that ignoring this advice can have. On the other hand, studies that include or truncate data based on the population of each observation may claim to be including all of the
data, but are actually removing much of what is available and are prejudicing their sample towards including more observations during the most recent years. While this type of data cleaning is often correctly implemented without much thought in other fields, reviewers of work using the government finance database should pressure authors to justify (or test to ensure) that the choice to include only governments with a certain population does not bias the results of the study.

While the number of governments sampled in any given year varies considerably, impacting the median population of the sample, it has long been understood that city populations follow a power law, or Pareto distribution (Beckmann 1958, or Blank and Solomon 2000), and thus it is reasonable to ask whether years with a small number of governments might nonetheless cover a large fraction of the population. Figures 5 and 6 take advantage of the fact that all states report data for every year to calculate the percentage of the total population covered by various government types each year.

What these figures show is that even though the samples are skewed towards governments with the largest populations, and so are not representative of all cities or all counties, they do capture a sizeable portion of the overall population in both cases.

FIGURE 5
Population Coverage for Sampled Local Governments

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8 There are likely several reasons why none of the years reach 100% coverage for population. One is that Connecticut and Rhode Island do not report county data, even though they both have counties. In addition, the District of Columbia is coded as a state by the census and not as a local government. In practice however these reasons do not account for much of the gap. Other sources potentially include systematic non-reporting from less obvious sources, or the possibility that state population estimates are updated more often than other governments and so display growth sooner.
An important implication of this is that studies which use the government finance database to measure the overall economic force of a particular category of government cash flow are likely to come very close to an accurate estimate, even during small sample years. Per capita numbers, which are easy to compute in the database, will often be a reasonable tool to use given that the data cover so much of the population. These measures will still be weighted towards representing people living in the largest governments during years when the sample is the smallest, but most people live in places with large populations and so per capita measures will be broadly representative.

Another important consideration in working with unbalanced panel data is that requiring a long, uninterrupted time series of observations will limit the generality of your results. More specifically in this case, depending on the type of government being researched, requiring consecutive observations is likely to bias your sample towards including larger governments and data measured during the years in the late 1980’s when samples were larger. The size of this effect is controlled by the number of concurrent observations your research design requires however, so even small differences in such requirements have the potential to sizably impact your findings. Table 8 shows the number of observations that have consecutive data of a given length, and table 9 shows how average population changes in those samples. Figure 7 graphs the sample sizes as proportions of all of the available data.
Representative Results

In the process of organizing and cleaning the data we were struck by its wide applicability to many different areas of public administration. In this section we present a number of simple analyses that illustrate both the flexibility and usability of the government finance database.

Figure 8 is a good example. It shows a time series of the average number of tax revenue sources computed for both municipalities and school districts. These data were constructed by adding an indicator variable to the database for each type of tax revenue. The indicator was coded as a 0 whenever the total

TABLE 8  
The Impact of Requiring Consecutive Data on Sample Size  

<table>
<thead>
<tr>
<th>Consecutive Years Required</th>
<th>All Reports</th>
<th>2-Year</th>
<th>3-Year</th>
<th>4-Year</th>
<th>5-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>State</td>
<td>1,800</td>
<td>1,700</td>
<td>1,650</td>
<td>1,600</td>
<td>1,550</td>
</tr>
<tr>
<td>County</td>
<td>93,365</td>
<td>76,582</td>
<td>70,505</td>
<td>65,096</td>
<td>60,109</td>
</tr>
<tr>
<td>Municipality</td>
<td>361,300</td>
<td>208,715</td>
<td>170,286</td>
<td>144,915</td>
<td>121,995</td>
</tr>
<tr>
<td>Township</td>
<td>273,063</td>
<td>133,936</td>
<td>100,474</td>
<td>80,014</td>
<td>60,311</td>
</tr>
<tr>
<td>Special Districts</td>
<td>393,918</td>
<td>159,349</td>
<td>137,548</td>
<td>116,732</td>
<td>98,437</td>
</tr>
<tr>
<td>School Districts</td>
<td>488,319</td>
<td>425,588</td>
<td>395,090</td>
<td>367,150</td>
<td>339,564</td>
</tr>
<tr>
<td>All Types</td>
<td>1,611,790</td>
<td>1,005,894</td>
<td>875,576</td>
<td>775,529</td>
<td>681,987</td>
</tr>
</tbody>
</table>

Note: This table displays how the sample size will change when researchers require consecutive years of data. The calculations are shown by government type, and each column increases the number of required years by one.

TABLE 9  
The Impact of Requiring Consecutive Data on Average Population  

<table>
<thead>
<tr>
<th>Consecutive Years Required</th>
<th>All Reports</th>
<th>2-Year</th>
<th>3-Year</th>
<th>4-Year</th>
<th>5-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>229,703,936</td>
<td>229,703,936</td>
<td>229,703,936</td>
<td>229,703,936</td>
<td>229,703,936</td>
</tr>
<tr>
<td>State</td>
<td>5,148,833</td>
<td>5,148,833</td>
<td>5,148,833</td>
<td>5,148,833</td>
<td>5,148,833</td>
</tr>
<tr>
<td>County</td>
<td>95,796</td>
<td>108,182</td>
<td>113,368</td>
<td>118,457</td>
<td>123,753</td>
</tr>
<tr>
<td>Municipality</td>
<td>15,568</td>
<td>23,986</td>
<td>28,017</td>
<td>31,423</td>
<td>35,677</td>
</tr>
<tr>
<td>Township</td>
<td>4,963</td>
<td>7,521</td>
<td>8,923</td>
<td>10,087</td>
<td>11,967</td>
</tr>
<tr>
<td>All Types</td>
<td>1,611,790</td>
<td>1,005,894</td>
<td>875,576</td>
<td>775,529</td>
<td>681,987</td>
</tr>
</tbody>
</table>

Note: This table displays how the average population of included governments will change when researchers require consecutive years of data. The calculations are shown by government type, and each column increases the number of required years by one.

FIGURE 7  
Proportion of Governments with Consecutive Years of Data
amount of that tax was either missing or equal to zero, and was coded as a 1 otherwise. The indicators for
property taxes, sales taxes, income taxes, license taxes, and other taxes were then summed and the
average was calculated, by year, for each government type.

**FIGURE 8**
**Number of Tax Revenue Sources by Government Type**

![Graph showing number of tax revenue sources by government type]

The results show two interesting features. The first is a quantitative confirmation of the often-noted trend
towards increasing revenue diversification by municipal governments (Hendricks, 2002). This trend is
mirrored by school districts, a fact which is far less well known. The second notable feature is that the
number of municipal tax revenue sources *looks* much more variable than the number of school district tax
revenue sources. In fact, much of that variability is induced by the different sample sizes (and therefore
the different average populations) each year.

Figure 9 shows a similar analysis that also highlights several additional considerations for using
the data. It graphs average, real, per capita government debt at both the state and municipal levels.

Scaling by population is easy, since population figures are included in the data, but because the
database is recorded in nominal thousands of dollars any analysis that wants to control for inflation needs
to merge an appropriate scaling factor. In this case we used the annual average CPI levels from the
Bureau of Labor Statistics (with $1983 \cong 1$), scaled total debt outstanding by both CPI and population, and
multiplied each resulting figure by 1,000. The government level figures were then averaged, by year, for
each government type.
On the surface the graph in figure 9 shows many of the features described by Hildreth and Zorn (2005), including a substantial increase in debt levels following the Tax Reform Act of 1986, decreasing new issues in the early 1990’s, and a general upward trend in debt outstanding since. Beyond those well-known trends however the real, per capita levels tell an interesting story about how large and small municipalities have used debt markets differently.

Prior to 1986 five-year censuses show relatively little difference from annual samples in terms of the average level of real debt per person. Following the 1987 census however those differences dominate the figure, indicating that large municipalities have taken advantage of the Tax Reform Act of 1986 far more than small municipalities, even in inflation adjusted per capita terms. While city size has been studied in relation to its impact on interest rates (Rivers and Yates 1997, Simonsen et al. 2001), this previously unnoticed pattern between city size and the level of outstanding municipal debt is a potential area for future research.

There is no reason why the data need to be analyzed from the aggregate perspective our previous two figures used. Breaking the data out and studying one particular government is also an interesting exercise. For instance, figure 10 shows the state of Oregon’s total revenue and total expenditure, in billions of nominal dollars through time.
The most striking feature of this graph is the sizeable impact of the great recession on total revenue in 2009. Contrary to what you might think, this change is not the result of a large decrease in taxes collected or any other traditional revenue source, instead virtually all of the difference between the 2008 and 2009 numbers comes from the approximately $12 billion dollar loss from public employee retirement system investment revenue. The visual impact of this loss on the graph is small compared to the actual impact losses like this had on public retirement systems across the nation and the world (Pino and Yermo 2010), but it drives home an important point about the flexibility of the government finance database. Isolating more stable government revenues through the use of general revenue, rather than total revenue, is likely to be advisable in many situations, and further isolating your data from the impact of intergovernmental revenue by using the “own source” versions of either revenue number is also possible.

Another option for segmenting the data is to look more closely at patterns within a particular government type. Table 10 shows one such analysis for special districts. While the general pattern of growth in special districts is well known (see Carr 2006 or McCabe 2000), and there are a few isolated studies that attempt to understand what is driving that growth (cf. Nunn and Schoedel’s 1997 study using one year of data to our table), there are no studies describing which types of special districts have contributed most to that growth.
<table>
<thead>
<tr>
<th>Special District Category</th>
<th>Code</th>
<th>1977 Ct.</th>
<th>2007 Ct.</th>
<th>Δ%</th>
<th>1977 %</th>
<th>2007 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-</td>
<td>25,987</td>
<td>35,574</td>
<td>37%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Local Fire Protection</td>
<td>24</td>
<td>4,186</td>
<td>5,814</td>
<td>39%</td>
<td>16.11%</td>
<td>16.34%</td>
</tr>
<tr>
<td>Water Supply Utility</td>
<td>91</td>
<td>2,481</td>
<td>3,424</td>
<td>38%</td>
<td>9.55%</td>
<td>9.63%</td>
</tr>
<tr>
<td>Housing and Community Development</td>
<td>50</td>
<td>2,412</td>
<td>3,391</td>
<td>41%</td>
<td>9.28%</td>
<td>9.53%</td>
</tr>
<tr>
<td>Other Multi-function Districts</td>
<td>99</td>
<td>517</td>
<td>2,545</td>
<td>392%</td>
<td>1.99%</td>
<td>7.15%</td>
</tr>
<tr>
<td>Soil and Water Conservation</td>
<td>88</td>
<td>2,431</td>
<td>2,531</td>
<td>4%</td>
<td>9.35%</td>
<td>7.11%</td>
</tr>
<tr>
<td>Drainage</td>
<td>51</td>
<td>2,254</td>
<td>2,021</td>
<td>-10%</td>
<td>8.67%</td>
<td>5.68%</td>
</tr>
<tr>
<td>Sewerage</td>
<td>80</td>
<td>1,608</td>
<td>1,867</td>
<td>16%</td>
<td>6.19%</td>
<td>5.25%</td>
</tr>
<tr>
<td>Libraries</td>
<td>52</td>
<td>588</td>
<td>1,663</td>
<td>183%</td>
<td>2.26%</td>
<td>4.67%</td>
</tr>
<tr>
<td>Cemeteries</td>
<td>2</td>
<td>1,615</td>
<td>1,588</td>
<td>-2%</td>
<td>6.21%</td>
<td>4.46%</td>
</tr>
<tr>
<td>Sewerage and Water Supply</td>
<td>98</td>
<td>1,064</td>
<td>1,359</td>
<td>28%</td>
<td>4.09%</td>
<td>3.82%</td>
</tr>
<tr>
<td>Parks and Recreation</td>
<td>61</td>
<td>830</td>
<td>1,320</td>
<td>59%</td>
<td>3.19%</td>
<td>3.71%</td>
</tr>
<tr>
<td>Other Single Function Districts</td>
<td>89</td>
<td>312</td>
<td>926</td>
<td>197%</td>
<td>1.20%</td>
<td>2.60%</td>
</tr>
<tr>
<td>Irrigation</td>
<td>64</td>
<td>933</td>
<td>827</td>
<td>-11%</td>
<td>3.59%</td>
<td>2.32%</td>
</tr>
<tr>
<td>Regular Highways</td>
<td>44</td>
<td>652</td>
<td>813</td>
<td>25%</td>
<td>2.51%</td>
<td>2.29%</td>
</tr>
<tr>
<td>Health</td>
<td>32</td>
<td>356</td>
<td>768</td>
<td>116%</td>
<td>1.37%</td>
<td>2.16%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>40</td>
<td>717</td>
<td>671</td>
<td>-6%</td>
<td>2.76%</td>
<td>1.89%</td>
</tr>
<tr>
<td>Flood Control</td>
<td>63</td>
<td>681</td>
<td>588</td>
<td>-14%</td>
<td>2.62%</td>
<td>1.65%</td>
</tr>
<tr>
<td>School Building Authorities</td>
<td>9</td>
<td>1,019</td>
<td>522</td>
<td>-49%</td>
<td>3.92%</td>
<td>1.47%</td>
</tr>
<tr>
<td>Air Transportation</td>
<td>1</td>
<td>299</td>
<td>490</td>
<td>64%</td>
<td>1.15%</td>
<td>1.38%</td>
</tr>
<tr>
<td>Solid Waste Management</td>
<td>81</td>
<td>71</td>
<td>425</td>
<td>499%</td>
<td>0.27%</td>
<td>1.19%</td>
</tr>
<tr>
<td>Public Mass Transit Utility</td>
<td>94</td>
<td>96</td>
<td>356</td>
<td>271%</td>
<td>0.37%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Other Natural Resources</td>
<td>59</td>
<td>179</td>
<td>336</td>
<td>88%</td>
<td>0.69%</td>
<td>0.94%</td>
</tr>
<tr>
<td>Miscellaneous Commercial Activities</td>
<td>3</td>
<td>0</td>
<td>297</td>
<td>-</td>
<td>0.00%</td>
<td>0.83%</td>
</tr>
<tr>
<td>Industrial Development</td>
<td>41</td>
<td>0</td>
<td>168</td>
<td>-</td>
<td>0.00%</td>
<td>0.47%</td>
</tr>
<tr>
<td>Sea and Inland Port Facilities</td>
<td>87</td>
<td>166</td>
<td>162</td>
<td>-2%</td>
<td>0.64%</td>
<td>0.46%</td>
</tr>
<tr>
<td>Electric Power Utility</td>
<td>92</td>
<td>82</td>
<td>154</td>
<td>88%</td>
<td>0.32%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Reclamation</td>
<td>86</td>
<td>114</td>
<td>149</td>
<td>31%</td>
<td>0.44%</td>
<td>0.42%</td>
</tr>
<tr>
<td>Natural Resources and Water Supply</td>
<td>97</td>
<td>71</td>
<td>87</td>
<td>23%</td>
<td>0.27%</td>
<td>0.24%</td>
</tr>
<tr>
<td>Fire Protection and Water Supply</td>
<td>96</td>
<td>66</td>
<td>59</td>
<td>-11%</td>
<td>0.25%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Gas Supply Utility</td>
<td>93</td>
<td>46</td>
<td>57</td>
<td>24%</td>
<td>0.18%</td>
<td>0.16%</td>
</tr>
<tr>
<td>Public Welfare Institutions</td>
<td>77</td>
<td>0</td>
<td>51</td>
<td>-</td>
<td>0.00%</td>
<td>0.14%</td>
</tr>
<tr>
<td>Mortgage Credit</td>
<td>42</td>
<td>0</td>
<td>39</td>
<td>-</td>
<td>0.00%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Parking Facilities</td>
<td>60</td>
<td>122</td>
<td>32</td>
<td>-74%</td>
<td>0.47%</td>
<td>0.09%</td>
</tr>
<tr>
<td>Correctional Institutions</td>
<td>4</td>
<td>0</td>
<td>23</td>
<td>-</td>
<td>0.00%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Police Protection</td>
<td>62</td>
<td>0</td>
<td>23</td>
<td>-</td>
<td>0.00%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Toll Highways</td>
<td>45</td>
<td>0</td>
<td>15</td>
<td>-</td>
<td>0.00%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Public Welfare</td>
<td>79</td>
<td>0</td>
<td>12</td>
<td>-</td>
<td>0.00%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Other Corrections</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>19</td>
<td>0</td>
<td>-100%</td>
<td>0.07%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Note: This table displays the growth of special districts by comparing the 1977 data with the 2007 data, and is ordered by the number of districts existing in the 2007 data. The absolute number of special districts of each type is displayed, along with the percentage change between the two years, and the proportion of all special districts that each type comprises. The code column is the special district function code used by the census.
Our findings demonstrate a number of interesting patterns. First, much of the growth seems to be an organic expansion of the most common special districts without much change in their proportion. For instance, even though local fire protection districts added 1,628 to their total and grew almost 40% over the 30 years, they represented a very stable 16% of all special districts at both points. Second, some of the most dramatic growth came from the other multi-function district category, which grew from around 2% to over 7% of all districts, indicating that citizens who form special districts are increasingly deciding that the efficiency of combining multiple functions (perhaps from economies of scale, or reductions in administrative costs), outweighs the burden arising from additional complexity.

There are many other interesting storylines that we might draw from this table, including the reduction in school building authorities and cemeteries potentially representing shifts in population demographics, or the strong growth of library, health, and solid waste management districts potentially representing increased demand for those services in areas without the population to support them previously. The diversity of potential insights from this relatively simple analysis highlights the fact that we can only begin to characterize the full extent of the flexibility and utility of the government finance database here.

**FUTURE STEPS**

A trade-off between ease of use and purity exists with any data cleaning effort. On the one hand we would like to present researchers with a database that is free from abnormalities and can be easily used in the widest range of circumstances. On the other hand we also want a database that is as close to the raw data collected by the census as possible in order to limit statistician induced measurement error.

In this paper we have made several decisions that ensure the purity of the data even when there is some reduction in its usability. We plan to implement fixes for these issues, but have reserved these changes for a later work, since this will give us an opportunity to describe our approach to the data cleaning in a complete way, and because our approaches are potentially controversial. Academics who appreciate the changes we plan to make are free to apply them or use our revised database, and those who
disagree with us or would prefer to use an alternate method can still have access to the census data in this form. A brief description of the issues we would like to fix is warranted however, since our choosing to not amend the database now means that the data may have less utility for some studies.

The two primary issues surround the population figures and the fiscal year end dates. The issue with the population numbers is that they do not update annually. Given the fact that per capita levels are a common, useful transformation to apply to government finance statistics, the use of old population figures means that per capita variables are likely to be measured with error in some cases. Short of conducting a retrospective count of populations for every government in the dataset the best solution is to model what the population must have been in every year when the population estimate is not current. This model could take many different forms, so we will reserve a discussion of how we propose to create it for the future.

The issue with the fiscal year end dates is threefold: inconsistent coding of dates, a large number of error codes which we can interpret, and a surprising collection of other strange entries that are harder to interpret. The bluntest illustration of this problem is that fact that there are 520 unique values of fiscal year end dates, and only 365 days in a year. There are several avenues for correcting this problem, none of which is perfect. In the meantime however research that relies on fiscal year end dates should be careful of dropping observations that don’t conform to the expected format of this data field.

**CONCLUSION**

While the data we provide is far from perfect it still represents a substantial step forward for quantitative research in public financial analysis, and helps to solve a long-standing problem created by the lack of standardized cross-sectional databases in our field.

All of the data was collected by the U.S. Census Bureau’s annual surveys and five-year censuses of state and local government finance, but prior to our work the use of census data in public accounting and finance research always involved a substantial investment into data
cleaning. As a result there was very little standardization in the time periods and government types covered, and the interpretability, accessibility, and replicability of research suffered.

We offer this database in the hopes that it can bring more consistency and transparency to quantitative research in financial management. In the process it should also make conducting this type of research less costly, and may provide a template for others with access to unique data sources who want to provide them to our field.
REFERENCES


GASB, Statement No. 34 (Norwalk, CT: GASB, 1999).


Appendix A: Replication of Data Consolidation

Instructions for replicating the process of data organization we followed.

  - (Contact information is available from: http://www.census.gov/govs/local/)
- Extract these files to a directory on your computer
- Make sure that you have at least 20GB of space available on the drive where your SAS work directory is located, since the data files stored in memory get very large during this process.
- Paste the code from appendix C into a SAS program file.
- Change the directories referenced in the code so that they will work on your machine. There are several locations for these:
  - Line 4
    - Make sure to include the final “/IndFin0” after the file path pointing to the 1967-2007 folder.
  - Line 46
    - Make sure to include the final “/IndFin” (different from above) after the file path pointing to the 1967-2007 folder.
  - Line 114
    - This should point to the data file containing the 2011 data, the text “2011FinEstDAT_ALL5mod_pu.txt” fits the current census data, but these naming conventions change regularly.
  - Line 142
    - This should point to the file containing the 2011 government ID information
  - Line 168
    - Points to the 2010 financial data text file.
  - Line 196
    - Points to the 2010 government ID file.
  - Line 222
    - Points to the 2009 financial data text file.
  - Line 250
    - Points to the 2009 government ID file.
  - Line 276
    - Points to the 2008 financial data text file.
  - Line 304
    - Points to the 2008 government ID file.
  - Line 1189
    - This points to the location and file name where the final comma separated data file should be exported and saved.
- Run the SAS program, it should output a csv file with the consolidated data to the location you indicated on line 1189.
Appendix B: Mapping Natural Language Variables to Census Data Codes

In Table A1 we display the census codes used to create each of the database variables, or present a formula in cases where the variable is computed from other database variables. Variables listed as “.” Do not have a data code in the newest census data and will not have complete coverage in the database as a result. IGR stands for “intergovernmental revenue”, NEC stands for “not elsewhere classified”, LTD stands for “long term debt”, FFC stands for “full faith and credit”, and NG stands for “not guaranteed”.

<table>
<thead>
<tr>
<th>Table A1</th>
<th>Corresponding Census Codes or Formulas for Each Database Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Variable Name</td>
<td>Census Data Codes or Formula</td>
</tr>
<tr>
<td>Total_Revenue</td>
<td>B01, B21, B22, B30, B42, B46, B50, B59, B79, B80, B89, B91, B92, B93, B94, C21, C30, C42, C46, C50, C79, C80, C89, C91, C92, C93, C94, D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94, T01, T09, T10, T11, T12, T13, T14, T15, T16, T19, T20, T21, T22, T23, T24, T25, T27, T28, T29, T40, T41, T50, T51, T53, T99, A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89, U01, U11, U20, U21, U30, U40, U41, U50, U59, U99, A90, A91, A92, A93, A94, X01, X02, X05, X08, Y01, Y02, Y04, Y11, Y12, Y51, Y52</td>
</tr>
<tr>
<td>Total_Rev_Own_Sources</td>
<td>T01, T09, T10, T11, T12, T13, T14, T15, T16, T19, T20, T21, T22, T23, T24, T25, T27, T28, T29, T40, T41, T50, T51, T53, T99, A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89, U01, U11, U20, U21, U30, U40, U41, U50, U59, U99, A90, A91, A92, A93, A94, X01, X02, X05, X08, Y01, Y02, Y04, Y11, Y12, Y51, Y52</td>
</tr>
<tr>
<td>Property_Tax</td>
<td>T01</td>
</tr>
<tr>
<td>Tot_Sales___Gr_Rec_Tax</td>
<td>T09, T10, T11, T12, T13, T14, T15, T16, T19</td>
</tr>
<tr>
<td>Total_Gen_Sales_Tax</td>
<td>T09</td>
</tr>
<tr>
<td>Total_Select_Sales_Tax</td>
<td>T10, T11, T12, T13, T14, T15, T16, T19</td>
</tr>
<tr>
<td>Alcoholic_Beverage_Tax</td>
<td>T10</td>
</tr>
<tr>
<td>Tax Description</td>
<td>Code</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Amusement Tax</td>
<td>T11</td>
</tr>
<tr>
<td>Insurance Premium Tax</td>
<td>T12</td>
</tr>
<tr>
<td>Motor Fuels Tax</td>
<td>T13</td>
</tr>
<tr>
<td>Pari_mutuels Tax</td>
<td>T14</td>
</tr>
<tr>
<td>Public Utility Tax</td>
<td>T15</td>
</tr>
<tr>
<td>Tobacco Tax</td>
<td>T16</td>
</tr>
<tr>
<td>Other Select Sales Tax</td>
<td>T19</td>
</tr>
<tr>
<td>Total License Taxes</td>
<td>T20, T21, T22, T23, T24, T25, T27, T28, T29</td>
</tr>
<tr>
<td>Alcoholic Beverage Lic</td>
<td>T20</td>
</tr>
<tr>
<td>Amusement License</td>
<td>T21</td>
</tr>
<tr>
<td>Corporation License</td>
<td>T22</td>
</tr>
<tr>
<td>Hunting___Fishing License</td>
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</tr>
<tr>
<td>Motor_Vehicle License</td>
<td>T24</td>
</tr>
<tr>
<td>Motor_Veh_Oper License</td>
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<td>Motor_Vehicle License_Total</td>
<td>T24, T25</td>
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<td>Public Utility License</td>
<td>T27</td>
</tr>
<tr>
<td>Occup_and_Bus_Lic_NEC</td>
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</tr>
<tr>
<td>Other License Taxes</td>
<td>T29</td>
</tr>
<tr>
<td>Total Income Taxes</td>
<td>T40, T41, T50, T51, T53, T99</td>
</tr>
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<td>Individual_Income_Tax</td>
<td>T40</td>
</tr>
<tr>
<td>Corp_Net_Income_Tax</td>
<td>T41</td>
</tr>
<tr>
<td>Death_and_Gift_Tax</td>
<td>T50</td>
</tr>
<tr>
<td>Docum_and_Stock_Tr_Tax</td>
<td>T51</td>
</tr>
<tr>
<td>Severance Tax</td>
<td>T53</td>
</tr>
<tr>
<td>Taxes_NEC</td>
<td>T99</td>
</tr>
<tr>
<td>Total IG Revenue</td>
<td>B01, B21, B22, B30, B42, B46, B50, B59, B79, B80, B89, B91, B92, B93, B94, C21, C30, C42, C46, C50, C79, C80, C89, C91, C92, C93, C94, D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94</td>
</tr>
<tr>
<td>Total Fed IG Revenue</td>
<td>B01, B21, B22, B30, B42, B46, B50, B59, B79, B80, B89, B91, B92, B93, B94</td>
</tr>
<tr>
<td>Fed IGR_Air_Transport</td>
<td>B01</td>
</tr>
<tr>
<td>Fed IGR_Education</td>
<td>B21</td>
</tr>
<tr>
<td>Fed IGR_Emp_SEC_Adm</td>
<td>B22</td>
</tr>
<tr>
<td>Fed IGR_Gen_Rev_Share</td>
<td>B30</td>
</tr>
<tr>
<td>Fed IGR_Gen_Support</td>
<td>B30</td>
</tr>
<tr>
<td>Fed IGR_Health___Hos</td>
<td>B42</td>
</tr>
<tr>
<td>Fed IGR_Highways</td>
<td>B46</td>
</tr>
<tr>
<td>Fed IGR_Transit_Sub</td>
<td>B94</td>
</tr>
<tr>
<td>Fed IGR_Hous_Com_Dev</td>
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</tr>
<tr>
<td>Fed IGR_Natural_Res</td>
<td>B59</td>
</tr>
<tr>
<td>Fed IGR_Public_Welf</td>
<td>B79</td>
</tr>
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<td>B80</td>
</tr>
<tr>
<td>Fed IGR_Other</td>
<td>B89</td>
</tr>
<tr>
<td>Total_State IG Revenue</td>
<td>C21, C30, C42, C46, C50, C79, C80, C89, C91, C92, C93, C94</td>
</tr>
<tr>
<td>State IGR_Education</td>
<td>C21</td>
</tr>
<tr>
<td>State IGR_Tax_Relief</td>
<td>.</td>
</tr>
<tr>
<td>State IGR_Oth_Gen_Sup</td>
<td>C30</td>
</tr>
<tr>
<td>State IGR_Gen_Sup</td>
<td>State IGR_Oth_Gen_Sup, State IGR_Tax_Relief</td>
</tr>
<tr>
<td>State IGR_Health___Hos</td>
<td>C42</td>
</tr>
<tr>
<td>State IGR_Highways</td>
<td>C46</td>
</tr>
</tbody>
</table>
State IGR Transit Sub C94
State IGR Hous Com Dev C50
State IGR Public Welf C79
State IGR Sewerage C80
State IGR Other C89
Tot Local IG Rev D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94
Local IGR InterSchool Aid D11
Local IGR Other Education D21
Local IGR Oth Gen Sup D30
Local IGR Health Hos D42
Local IGR Highways D46
Local IGR Transit Sub D94
Local IGR Hous Com Dev D50
Local IGR Public Welf D79
Local IGR Sewerage D80
Local IGR Other D89
Tot Chgs and Misc Rev A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89, U01, U11, U20, U21, U30, U40, U41, U50, U95, U99
Total General Charges A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89
Chg Air Transportation A01
Chg Misc Com Activ A03
Chg Total Education A09, A10, A12, A16, A18, A21
Chg Total Elem Education Chg Elem Ed Sch Lunch, Chg Elem Ed Tuition, Chg Elem Ed NEC
Chg Elem Ed Sch Lunch A09
Chg Elem Ed Tuition A10
Chg Elem Ed NEC A12
Chg Total High Ed A16, A18
Chg Hospitals A36
Chg Highways Chg Regular Highways, Chg Toll Highways
Chg Regular Highways A44
Chg Toll Highways A45
Chg Housing Comm Dev A50
Chg Total Nat Res A56, A59
Chg Parking A60
Chg Parks Recreation A61
Chg Sewerage A80
Chg Solid Waste Mgmt A81
Chg Water Transport A87
Chg All Other NEC A89
Misc General Revenue U01, U11, U20, U21, U30, U40, U41, U50, U95, U99
Special Assessments U01
Prop Sale Total Prop Sale Hous Com Dev, Prop Sale Other
Prop Sale Hous Com Dev .
Prop Sale Other U11
Interest Revenue U20
Fines and Forfeits U30
Rents and Royalties U40, U41
Net_Lottery_Revenue          U95
Misc_General_Rev_NEC         U99
Liquor_Stores_Revenue        A90
Total_Utility_Revenue        A91, A92, A93, A94
Water_Utility_Revenue        A91
Electric_Utility_Rev         A92
Gas_Utility_Rev              A93
Transit_Utility_Rev          A94
Total_Insur_Trust_Rev        X01, X02, X05, X08, Y01, Y02, Y04, Y11, Y12, Y51, Y52
Total_Insur_Trust_Ctrb       X01, X02, X05, Y01
Tot_Ins_Trust_Rev            X08, Y02
Total_Emp_Ret_Rev            X01, X02, X05, X08
Emp_Ret_Total_Ctrb           X01, X02, X05
Emp_Ret_Loc_Emp_Ctrb         X01
Emp_Ret_Loc_To_Loc_Sys       X04
Emp_Ret_From_Other_Gov       X05
Emp_Ret_Sta_To_Sta_Ctr       X06
Emp_Ret_Int_Rev              X08
Emp_Ret_Other_Earnings       .
Total_Unemp_Rev              Y01, Y02, Y04
Unemp_Payroll_Tax            Y01
Unemp_Int_Revenue            Y02
Unemp_Federal_Advances       Y04

Total_Current_Expend Total_Expenditure, - Total_Capital_Outlays
Total_Other_Capital_Outlays Total_Capital_Outlays, - Total_Construction
Tot_Assist___Subsidies J19, J67, J68, J85
Total_Interest_on_Debt I89, I91, I92, I93, I94
Total_Insur_Trust_Ben X11, X12, Y05, Y06, Y14, Y53
Total_Salaries___Wages Z00
IG_Exp_To_Local_Govts M01, M04, M05, M12, M18, M21, M23, M24, M25, M29, M30, M32, M36, M44, M50, M52, M55, M56, M59, M60, M61, M62, M66, M67, M68, M79, M80, M81, M87, M89, M91, M92, M93, M94
IG_Exp_To_Federal_Govt S67, S74, S89
Total_Educ_Assist__Sub                      J19
Total_Educ_Cap_Outlay                      F12, F16, F18, F21, G12, G16, G18, G21
Total_Educ_Current_Exp                    Total_Educ_Direct_Exp, -Total_Educ_Cap_Outlay
Total_Educ_Construct                       F12, F16, F18, F21
Elem_Educ_Total_Exp                       E12, F12, G12, L12, M12, Q12
Elem_Educ_Direct_Exp                      E12, F12, G12
Elem_Educ_Cap_Outlay                      F12, G12
Elem_Educ_Current_Exp                     Elem_Educ_Direct_Exp, -Elem_Educ_Cap_Outlay
Elem_Educ_Construction                    F12
Elem_Educ_IG_To_State                     L12
Elem_Educ_IG_Local_Govts                  M12
Elem_Educ_IG_Sch_to_Sch                   Q12
Higher_Ed_Total_Exp                       E16, E18, F16, F18, G16, G18, L18, M18
Higher_Ed_Direct_Exp                      E16, E18, F16, F18, G16, G18
Higher_Ed_Cap_Outlay                      F16, F18, G16, G18
Higher_Ed_Current_Exp                     Higher_Ed_Direct_Exp, -Higher_Ed_Cap_Outlay
Higher_Ed_Construct                        F16, F18
Higher_Ed_IG_To_St                        L18
Higher_Ed_IG_Loc_Govts                    M18
Educ_NEC_Total_Expend                     E21, F21, G21, L21, M21
Educ_NEC_Direct_Exp                       E21, F21, G21
Educ_NEC_Assistance                       F21
Educ_NEC_Cap_Outlay                       F21, G21
Educ_NEC_Current_Exp                      Educ_NEC_Direct_Exp, -Educ_NEC_Cap_Outlay
Educ_NEC_Construction                     F21
Educ_NEC_IG_To_State                      L21
Educ_NEC_IG_Loc_Govts                     M21
Emp_Sec_Adm_Direct_Exp                    E22, F22, G22
Emp_Sec_Adm_Cap_Outlay                    F22, G22
Emp_Sec_Adm_Current_Exp                   Emp_Sec_Adm_Direct_Exp, -Emp_Sec_Adm_Cap_Outlay
Emp_Sec_Adm_Construct                      F22
Fin_Admin_Total_Exp                       E23, F23, G23, L23, M23
Fin_Admin_Direct_Exp                      E23, F23, G23
Fin_Admin_Cap_Outlay                      F23, G23
Fin_Admin_Current_Exp                     Fin_Admin_Direct_Exp, -Fin_Admin_Cap_Outlay
Fin_Admin_Construction                    F23
Fin_Admin_IG_To_State                      L23
Fin_Admin_IG_Loc_Govts                     M23
Fire_Prot_Total_Expend                    E24, F24, G24, L24, M24
Fire_Prot_Direct_Exp                      E24, F24, G24
Fire_Prot_Cap_Outlay                      F24, G24
Fire_Prot_Current_Exp                     Fire_Prot_Direct_Exp, -Fire_Prot_Cap_Outlay
Fire_Prot_Construction                    F24
Fire_Prot_IG_To_State                     L24
Fire_Prot_IG_Loc_Govts                    M24
Judicial_Total_Expend                     E25, F25, G25, L25, M25
Judicial_Direct_Expend                    E25, F25, G25
Judicial_Cap_Outlay                       F25, G25
Judicial_Current_Exp                      Judicial_Direct_Expend, -Judicial_Cap_Outlay
Judicial_Construction                     F25
Judicial_IG_To_State                      L25
<table>
<thead>
<tr>
<th>Category</th>
<th>Formulas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judicial IG Local Govts</td>
<td>M25</td>
</tr>
<tr>
<td>Cen Staff Total Exp</td>
<td>E29, F29, G29, L29, M29</td>
</tr>
<tr>
<td>Cen Staff Direct Exp</td>
<td>E29, F29, G29</td>
</tr>
<tr>
<td>Cen Staff Cap Outlay</td>
<td>F29, G29</td>
</tr>
<tr>
<td>Cen Staff Current Exp</td>
<td>Cen Staff Direct Exp, -Cen Staff Cap Outlay</td>
</tr>
<tr>
<td>Cen Staff Construction</td>
<td>F29</td>
</tr>
<tr>
<td>Cen Staff IG To State</td>
<td>L29</td>
</tr>
<tr>
<td>Cen Staff IG Local Govts</td>
<td>M29</td>
</tr>
<tr>
<td>Gen Pub Bldg Total Exp</td>
<td>E31, F31, G31</td>
</tr>
<tr>
<td>Gen Pub Bldg Cap Out</td>
<td>F31, G31</td>
</tr>
<tr>
<td>Gen Pub Bldg Current Exp</td>
<td>Gen Pub Bldg Total Exp, -Gen Pub Bldg Cap Out</td>
</tr>
<tr>
<td>Gen Pub Bldg Construct</td>
<td>F31</td>
</tr>
<tr>
<td>Health Total Exp</td>
<td>E32, F32, G32, L32, M32</td>
</tr>
<tr>
<td>Health Direct Exp</td>
<td>E32, F32, G32</td>
</tr>
<tr>
<td>Health Capital Outlay</td>
<td>F32, G32</td>
</tr>
<tr>
<td>Health Current Exp</td>
<td>Health Direct Exp, -Health Capital Outlay</td>
</tr>
<tr>
<td>Health Construction</td>
<td>F32</td>
</tr>
<tr>
<td>Health IG To State</td>
<td>L32</td>
</tr>
<tr>
<td>Health IG Local Govts</td>
<td>M32</td>
</tr>
<tr>
<td>Total Hospital Total Exp</td>
<td>E36, F36, G36, L36, M36</td>
</tr>
<tr>
<td>Total Hospital Dir Exp</td>
<td>E36, F36, G36</td>
</tr>
<tr>
<td>Total Hospital Cap Out</td>
<td>F36, G36</td>
</tr>
<tr>
<td>Total Hospital Current Exp</td>
<td>Total Hospital Dir Exp, -Total Hospital Cap Out</td>
</tr>
<tr>
<td>Total Hospital Construct</td>
<td>F36</td>
</tr>
<tr>
<td>Total Hospital IG To State</td>
<td>L36</td>
</tr>
<tr>
<td>Total Hospital IG Loc Govts</td>
<td>M36</td>
</tr>
<tr>
<td>Own Hospital Total Exp</td>
<td>E37, F37, G37</td>
</tr>
<tr>
<td>Own Hospital Cap Out</td>
<td>F37, G37</td>
</tr>
<tr>
<td>Own Hospital Current Exp</td>
<td>Own Hospital Total Exp, -Own Hospital Cap Out</td>
</tr>
<tr>
<td>Own Hospital Construct</td>
<td>F37</td>
</tr>
<tr>
<td>Hosp Other Total Exp</td>
<td>E39, F39, G39, L39, M39</td>
</tr>
<tr>
<td>Hosp Other Direct Exp</td>
<td>E39, F39, G39</td>
</tr>
<tr>
<td>Hosp Other Cap Outlay</td>
<td>F39, G39</td>
</tr>
<tr>
<td>Hosp Other Current Exp</td>
<td>Hosp Other Direct Exp, -Hosp Other Cap Outlay</td>
</tr>
<tr>
<td>Hosp Other Construct</td>
<td>F39</td>
</tr>
<tr>
<td>Hosp Other IG To State</td>
<td>L39</td>
</tr>
<tr>
<td>Hosp Other IG Loc Govts</td>
<td>M39</td>
</tr>
<tr>
<td>Total Highways Total Exp</td>
<td>E44, F44, G44, E45, F45, G45, L44, M44</td>
</tr>
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<td>Total Highways Dir Exp</td>
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</tr>
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<td>Total Highways Cap Out</td>
<td>F44, G44, F45, G45</td>
</tr>
<tr>
<td>Total Highways Current Exp</td>
<td>Total Highways Dir Exp, -Total Highways Cap Out</td>
</tr>
<tr>
<td>Total Highways Construct</td>
<td>F44, F45</td>
</tr>
<tr>
<td>Regular Hwy Total Exp</td>
<td>E44, F44, G44, E45, F45, G45, L44, M44</td>
</tr>
<tr>
<td>Regular Hwy Direct Exp</td>
<td>E44, F44, G44</td>
</tr>
<tr>
<td>Regular Hwy Cap Outlay</td>
<td>F44, G44</td>
</tr>
<tr>
<td>Regular Hwy Current Exp</td>
<td>Regular Hwy Direct Exp, -Regular Hwy Cap Outlay</td>
</tr>
<tr>
<td>Regular Hwy Construct</td>
<td>F44</td>
</tr>
<tr>
<td>Regular Hwy IG To Sta</td>
<td>L44</td>
</tr>
<tr>
<td>Regular Hwy IG Loc Govts</td>
<td>M44</td>
</tr>
<tr>
<td>Toll Hwy Total Exp</td>
<td>E45, F45, G45</td>
</tr>
<tr>
<td>Toll Hwy Cap Outlay</td>
<td>F45, G45</td>
</tr>
<tr>
<td>Category</td>
<td>Expenditure</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Toll_Hwy_Current_Exp</td>
<td>Toll_Hwy_Total_Expend, -Toll_Hwy_Cap_Outlay</td>
</tr>
<tr>
<td>Toll_Hwy_Construction</td>
<td>F45</td>
</tr>
<tr>
<td>Transit_Sub_Total_Exp</td>
<td></td>
</tr>
<tr>
<td>Transit_Sub_Direct_Sub</td>
<td></td>
</tr>
<tr>
<td>Transit_Sub_IG_To_Sta</td>
<td></td>
</tr>
<tr>
<td>Transit_Sub_IG_Loc_Govts</td>
<td></td>
</tr>
<tr>
<td>Transit_Sub_To_Own_Sys</td>
<td></td>
</tr>
<tr>
<td>Hous__Com_Total_Exp</td>
<td>E50, F50, G50, L50, M50</td>
</tr>
<tr>
<td>Hous__Com_Direct_Exp</td>
<td>E50, F50, G50</td>
</tr>
<tr>
<td>Hous__Com_Cap_Outlay</td>
<td>F50, G50</td>
</tr>
<tr>
<td>Hous__Com_Current_Exp</td>
<td>Hous__Com_Direct_Exp, -Hous__Com_Cap_Outlay</td>
</tr>
<tr>
<td>Hous__Com_Construct</td>
<td>F50</td>
</tr>
<tr>
<td>Hous__Com_IG_To_State</td>
<td>L50</td>
</tr>
<tr>
<td>Hous__Com_IG_Loc_Govts</td>
<td>M50</td>
</tr>
<tr>
<td>Libraries_Total_Expend</td>
<td>E52, F52, G52, L52, M52</td>
</tr>
<tr>
<td>Libraries_Direct_Exp</td>
<td>E52, F52, G52</td>
</tr>
<tr>
<td>Libraries_Cap_Outlay</td>
<td>F52, G52</td>
</tr>
<tr>
<td>Libraries_Construction</td>
<td>F52</td>
</tr>
<tr>
<td>Libraries_IG_To_State</td>
<td>L52</td>
</tr>
<tr>
<td>Libraries_IG_Local_Govts</td>
<td>M52</td>
</tr>
<tr>
<td>Natural_Res_Direct_Exp</td>
<td>E55, F55, G55, E56, F56, G56, E59, F59, G59</td>
</tr>
<tr>
<td>Natural_Res_Cap_Outlay</td>
<td>F55, G55, F56, G56, F59, G59</td>
</tr>
<tr>
<td>Natural_Res_Current_Exp</td>
<td>Natural_Res_Direct_Exp, -Natural_Res_Cap_Outlay</td>
</tr>
<tr>
<td>Natural_Res_Construct</td>
<td>F55, F56, F59</td>
</tr>
<tr>
<td>Natural_Res_IG_To_Sta</td>
<td>L59</td>
</tr>
<tr>
<td>Natural_Res_IG_Loc_Govts</td>
<td>M55, M56, M59</td>
</tr>
<tr>
<td>Parking_Total_Expend</td>
<td>E60, F60, G60, L60, M60</td>
</tr>
<tr>
<td>Parking_Direct_Expend</td>
<td>E60, F60, G60</td>
</tr>
<tr>
<td>Parking_Capital_Outlay</td>
<td>F60, G60</td>
</tr>
<tr>
<td>Parking_Current_Exp</td>
<td>Parking_Direct_Expend, -Parking_Capital_Outlay</td>
</tr>
<tr>
<td>Parking_Construction</td>
<td>F60</td>
</tr>
<tr>
<td>Parking_IG_To_State</td>
<td>L60</td>
</tr>
<tr>
<td>Parking_IG_Local_Govts</td>
<td>M60</td>
</tr>
<tr>
<td>Parks__Rec_Total_Exp</td>
<td>E61, F61, G61, L61, M61</td>
</tr>
<tr>
<td>Parks__Rec_Direct_Exp</td>
<td>E61, F61, G61</td>
</tr>
<tr>
<td>Parks__Rec_Cap_Outlay</td>
<td>F61, G61</td>
</tr>
<tr>
<td>Parks__Rec_Current_Exp</td>
<td>Parks__Rec_Direct_Exp, -Parks__Rec_Cap_Outlay</td>
</tr>
<tr>
<td>Parks__Rec_Construct</td>
<td>F61</td>
</tr>
<tr>
<td>Parks__Rec_IG_To_Sta</td>
<td>L61</td>
</tr>
<tr>
<td>Parks__Rec_IG_Loc_Govts</td>
<td>M61</td>
</tr>
<tr>
<td>Police_Prot_Total_Exp</td>
<td>E62, F62, G62, L62, M62</td>
</tr>
<tr>
<td>Police_Prot_Direct_Exp</td>
<td>E62, F62, G62</td>
</tr>
<tr>
<td>Police_Prot_Cap_Outlay</td>
<td>F62, G62</td>
</tr>
<tr>
<td>Police_Prot_Current_Exp</td>
<td>Police_Prot_Direct_Exp, -Police_Prot_Cap_Outlay</td>
</tr>
<tr>
<td>Police_Prot_Construct</td>
<td>F62</td>
</tr>
<tr>
<td>Police_Prot_IG_To_Sta</td>
<td>L62</td>
</tr>
<tr>
<td>Police_Prot_IG_Loc_Govts</td>
<td>M62</td>
</tr>
<tr>
<td>Prot_Inspect_Total_Exp</td>
<td>E66, F66, G66, L66, M66</td>
</tr>
<tr>
<td>Category</td>
<td>Expenditure Components</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Prot_Insp_Direct_Exp</td>
<td>E66, F66, G66</td>
</tr>
<tr>
<td>Prot_Insp_Cap_Outlay</td>
<td>F66, G66</td>
</tr>
<tr>
<td>Prot_Insp_Current_Exp</td>
<td>Prot_Insp_Direct_Exp, -Prot_Insp_Cap_Outlay</td>
</tr>
<tr>
<td>Prot_Insp_Construction</td>
<td>F66</td>
</tr>
<tr>
<td>Prot_Insp_IG_To_State</td>
<td>L66</td>
</tr>
<tr>
<td>Prot_Insp_IG_Local_Govts</td>
<td>M66</td>
</tr>
<tr>
<td>Public_Welf_Direct_Exp</td>
<td>J67, J68, E74, E75, E77, F77, G77, E79, F79, G79</td>
</tr>
<tr>
<td>Public_Welf_Cash_Asst</td>
<td>J67, J68, M67, M68</td>
</tr>
<tr>
<td>Public_Welf_Cap_Outlay</td>
<td>F77, G77, F79, G79</td>
</tr>
<tr>
<td>Public_Welf_Current_Exp</td>
<td>Public_Welf_Direct_Exp, -Public_Welf_Cap_Outlay, -Public_Welf_Cash_Asst</td>
</tr>
<tr>
<td>Public_Welf_Construct</td>
<td>F77, F79</td>
</tr>
<tr>
<td>Welf_Categ_Total_Exp</td>
<td>J67, L67, M67</td>
</tr>
<tr>
<td>Welf_Categ_Cash_Assist</td>
<td>J67</td>
</tr>
<tr>
<td>Welf_Categ_IG_To_State</td>
<td>L67</td>
</tr>
<tr>
<td>Welf_Categ_IG_Local_Govts</td>
<td>M67</td>
</tr>
<tr>
<td>Welf_Cash_Total_Exp</td>
<td>J68, M68</td>
</tr>
<tr>
<td>Welf_Cash_Cash_Assist</td>
<td>J68</td>
</tr>
<tr>
<td>Welf_Cash_IG_Local_Govts</td>
<td>M68</td>
</tr>
<tr>
<td>Welf_Vend_Pmts_Medical</td>
<td>E74</td>
</tr>
<tr>
<td>Welf_Vend_Pmts_NECE</td>
<td>E75</td>
</tr>
<tr>
<td>Welf_State_Share_Part_D</td>
<td>S74</td>
</tr>
<tr>
<td>Welf_Ins_Total_Exp</td>
<td>E77, F77, G77</td>
</tr>
<tr>
<td>Welf_Ins_Cap_Outlay</td>
<td>F77, G77</td>
</tr>
<tr>
<td>Welf_Ins_Current_Exp</td>
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</tr>
<tr>
<td>Welf_Ins_Construction</td>
<td>F77</td>
</tr>
<tr>
<td>Welf_NECE_Total_Exp</td>
<td>E79, F79, G79, L79, M79</td>
</tr>
<tr>
<td>Welf_NECE_Direct_Exp</td>
<td>E79, F79, G79</td>
</tr>
<tr>
<td>Welf_NECE_Cap_Outlay</td>
<td>F79, G79</td>
</tr>
<tr>
<td>Welf_NECE_Current_Exp</td>
<td>Welf_NECE_Direct_Exp, -Welf_NECE_Cap_Outlay</td>
</tr>
<tr>
<td>Welf_NECE_Construction</td>
<td>F79</td>
</tr>
<tr>
<td>Welf_NECE_IG_To_State</td>
<td>L79</td>
</tr>
<tr>
<td>Welf_NECE_IG_Local_Govts</td>
<td>M79</td>
</tr>
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Trans_Util_Inter_Exp
Trans_Util_Cap_Outlay
Trans_Util_Current_Exp
Trans_Util_Construct

F87, G87

Water_Trans_Direct_Exp, -Water_Trans_Cap_Outlay
F87
L87
M87
I89
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E89, F89, G89, J89
J89
F89, G89
General_NEC_Direct_Exp, -General_NEC_Cap_Outlay, -VetBonus
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S89
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Liquor_Stores_Tot_Exp, -Liquor_Stores_Cap_Out
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I91, I92, I93, I94
F91, F92, F93, F94, G91, G92, G93, G94
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Elec_Util_Total_Exp, -Elec_Util_Inter_Exp, -Elec_Util_Cap_Outlay
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E93, I93, F93, G93, L93, M93
I93
F93, G93
Gas_Util_Total_Exp, -Gas_Util_Inter_Exp, -Gas_Util_Cap_Outlay
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I94
F94, G94
Trans_Util_Total_Exp, -Trans_Util_Inter_Exp, -Trans_Util_Cap_Outlay
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Total_Cash___Securities W01, W31, W61, X21, X30, Z77, Z78, X42, X44, X47, Y07, Y08, Y21, Y61
Insur_Trust_Cash___Sec X21, X30, Z77, Z78, X42, X44, X47, Y07, Y08, Y21, Y61
Emp_Retire_Cash___Sec X21, X30, X35, Z77, Z78, X42, X47, X44
Emp_Retire_Cash___Dep X21
Emp_Retire_Total_Sec X30, X35, Z77, Z78, X42, X47, X44
Emp_Retire_Sec_Tot_Fed X30
Emp_Retire_Sec_S_L_Secur X35
Emp_Retire_Sec_Tot_Nong Z77, Z78, X42, X47, X44
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Appendix C: Sas Code for Data Consolidation

The following is the complete SAS code we used to consolidate all of the files we received from the census. Please refer to appendix A for step by step instructions for using this SAS code.

* This sas macro merges the historical data files that the census provides;
%macro census;
* Defines the text that is repeated in each census file. Base text should be changed to your correct file path (it is declared twice in the code, so change both);
%LET BaseText = E:/CensusData/IndFin/IndFin0;
%LET EndTextA = a.Txt;
%LET EndTextB = b.Txt;
%LET EndTextC = c.Txt;
%do i = 7 %to 0 %by -1;
  * Import the data from each of the three physical files in the current year;
  %let FileName = &BaseText&i&EndTextA; *Creates concatenated file names following the census naming conventions;
  proc import datafile="&FileName" out=DataA dbm=dlm replace;
    delimiter="","
    names=yes;
    GUESSINGROWS=700; *This takes longer to run than is optimal, but will help to ensure that the data types created by proc import are correct.;
  run;
  %let FileName = &BaseText&i&EndTextB;
  proc import datafile="&FileName" out=DataB dbm=dlm replace;
    delimiter="","
    names=yes;
  run;
  %let FileName = &BaseText&i&EndTextC;
  proc import datafile="&FileName" out=DataC dbm=dlm replace;
    delimiter="","
    names=yes;
  run;
  * Merge the three data items into one;
  Data LatestData;
  Merge DataA DataB DataC;
  by ID;
  run;
  * The if then else structure allows the larger data set to be created for the first set of files;
  %if &i = 7 %then
    %do;
    * Add trailing zeros to the ID number to match the format in more recent data;
    Data LargeData;
    set LatestData;
    run;
    %end;
  %else
    %do;
    * Append the most recently merged data to the larger data file;
    PROC APPEND BASE= LargeData DATA= LatestData force;
    RUN;
    %end;
%end;
%LET BaseText = E:/CensusData/IndFin/IndFin; * Make sure to change this
destination to match your file system;
%do i = 70 %to 99;
* Import the data from each of the three physical files in the current year;
 %Let FileName = &BaseText&i&EndTextA; *Creates concatenated file names
 following the census naming conventions;
 proc import datafile="&FileName" out=DataA dbms=dlm replace;
   delimiter="","
   getnames=yes;
   GUESSINGROWS=700;
 run;
 %Let FileName = &BaseText&i&EndTextB;
 proc import datafile="&FileName" out=DataB dbms=dlm replace;
   delimiter="","
   getnames=yes;
 run;
 %Let FileName = &BaseText&i&EndTextC;
 proc import datafile="&FileName" out=DataC dbms=dlm replace;
   delimiter="","
   getnames=yes;
 run;
* Merge the three data items into one;
 Data LatestData;
   Merge DataA DataB DataC;
 by ID;
 run;
* Append the most recently merged data to the larger data file;
PROC APPEND BASE= LargeData DATA= LatestData force;
RUN;
%end;
%do i = 67 %to 67;
* Import the data from each of the three physical files in the current year;
 %Let FileName = &BaseText&i&EndTextA; *Creates concatenated file names
 following the census naming conventions;
 proc import datafile="&FileName" out=DataA dbms=dlm replace;
   delimiter="","
   getnames=yes;
   GUESSINGROWS=700;
 run;
 %Let FileName = &BaseText&i&EndTextB;
 proc import datafile="&FileName" out=DataB dbms=dlm replace;
   delimiter="","
   getnames=yes;
 run;
 %Let FileName = &BaseText&i&EndTextC;
 proc import datafile="&FileName" out=DataC dbms=dlm replace;
   delimiter="","
   getnames=yes;
 run;
* Merge the three data items into one;
 Data LatestData;
   Merge DataA DataB DataC;
 by ID;
 run;
* Append the most recently merged data to the larger data file;
PROC APPEND BASE= LargeData DATA= LatestData force;
RUN;
%end;
%MEND Census;

* This line runs the macro shown above;
*Census;

*Create variables not existing in earlier data that can be calculated from it;
Data LargeData;
  Set LargeData;
  *Manipulate certain identification variables that can be improved in the overall database;
    FunctionCode = .;
    Enrollment = .;
    if Type_Code = '4' then
      do;
        FunctionCode = Population;
        Population = .;
        Enrollment = .;
      end;
    if Type_Code = '5' then
      do;
        FunctionCode = .;
        Enrollment = Population;
        Population = .;
      end;
    run;

* We now need to format the newer census data to roughly match the format of the earlier data. This process is;
* accomplished without a macro because there are only a few years of newer data, and the file names tend to be non-standard;
* Make sure that you change the "Infile" line on each of the data steps to the path for the files on your system.

* Read the financial data file in fixed width format, dollar signs indicate values which are stored as characters;
Data FinancialData;
  INFILE 'E:/CensusData/2011/2011FinEstDAT_ALL5modp_pu.txt'
  MISSOVER;
  INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 itemcode $ 15-17 data 18-29 year 30-33 code $ 34;
  id = cats(of id_state id_type id_county id_unit);
RUN;

* Transpose the financial information file so that every government ID number corresponds to one row and every data item has its own column;
Proc Transpose data=work.FinancialData
  out=work.TransposedData
  name=Year;
  var data;
  by id;
  id itemcode;
run;
* Change the "year" variable in the financial data matrix to be the year we are currently working with;

```sas
Data TransposedDates;
   Set work.TransposedData;
   Year = 2011;
run;
```

* Sort each of the matrices by ID code in preparation for merging them.;

```sas
proc sort data=TransposedDates;
   by id;
run;
```

* Read the government information file as a fixed width text file. Dollar signs indicate fields that are coded as text.;

```sas
DATA Identification;
   INFILE 'E:/CensusData/2011/fin_gid_2011.txt' MISSOVER;
   INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 Name $ 15-78 CountyName $ 79-113 FIPSstate $ 114-115 FIPScounty $ 116-118 FIPSplace $ 119-123 Population $ 124-132 PopYear $ 133-134 Enrollment $ 135-141 EnrollYear $ 142-143 FunctionCode $ 144-145 SchoolLevel $ 146-147 FYEnd $ 148-151 SurveyYear $ 152-153;
   id = cats(of id_state id_type id_county id_unit);
RUN;
```

* Merge the government identification file with the transposed, dated, financial information file;

```sas
Data LatestData;
   Merge Identification TransposedDates;
   By id;
run;
```

*Concatenate the Latest data to the larger data file preserving every data element for later reorganization;

```sas
Data NewData;
   Set LatestData;
Run;
```

*Begin the same process for the 2010 data;

```sas
DATA FinancialData;
   INFILE 'E:/CensusData/2010/2010FinEstDAT_ALL12modp_pu.txt' MISSOVER;
   INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 itemcode $ 15-17 data $ 18-29 year $ 30-33 code $ 34;
   id = cats(of id_state id_type id_county id_unit);
RUN;
```

* Transpose the financial information file so that every government ID number corresponds to one row and every data item has its own column;
PROC TRANSPOSE data=work.FinancialData
    out=work.TransposedData
    name=Year;
    var data;
    by id;
    id itemcode;
run;

* Change the "year" variable in the financial data matrix to be the year we are currently working with;
Data TransposedDates;
    Set work.TransposedData;
    Year = 2010;
run;

* Sort each of the matrices by ID code in preparation for merging them.
proc sort data=TransposedDates;
    by id;
run;

* Read the government information file as a fixed width text file. Dollar signs indicate fields that are coded as text.
DATA Identification;
    INFILE 'E:/CensusData/2010/fin_gid_2010.txt'
    MISSOVER;
    INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 Name $ 15-78 CountyName $ 79-113 FIPSstate $ 114-115 FIPScounty $ 116-118 FIPSplace $ 119-123 Population $ 124-132 PopYear $ 133-134 Enrollment $ 135-141 EnrollYear $ 142-143 FunctionCode $ 144-145 SchoolLevel $ 146-147 FYEnd $ 148-151 SurveyYear $ 152-153;
    id = cats(of id_state id_type id_county id_unit);
RUN;

* Merge the government identification file with the transposed, dated, financial information file;
Data LatestData;
    Merge Identification TransposedDates;
    By id;
run;

* Concatenate the Latest data to the larger data file preserving every data element for later reorganization;
Data NewData;
    Set NewData LatestData;
Run;

* Begin the same process for the 2009 data;
* *
* *
* *

* Read the financial data file in fixed width format, dollar signs indicate values which are stored as characters;
DATA FinancialData;
    INFILE 'E:/CensusData/2009/2009FinEstDAT_ALL16modp_pu.txt'
MISSOVER;

INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 itemcode $ 15-17 data 18-29 year 30-33 code $ 34;

id = cats(of id_state id_type id_county id_unit);
RUN;

* Transpose the financial information file so that every government ID number corresponds to one row and every data item has its own column;
PROC TRANSPOSE data=work.FinancialData 
   out=work.TransposedData 
   name=Year;
   var data;
   by id;
   id itemcode;
run;

* Change the "year" variable in the financial data matrix to be the year we are currently working with;
Data TransposedDates;
   Set work.TransposedData;
   Year = 2009;
run;

* Sort each of the matrices by ID code in preparation for merging them.;
proc sort data=TransposedDates;
   by id;
run;

* Read the government information file as a fixed width text file. Dollar signs indicate fields that are coded as text.;
DATA Identification;
   INFILE 'E:/CensusData/2009/fin_gid_2009.txt'
   MISSOVER;
   INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 Name $ 15-78 CountyName $ 79-113 FIPSstate $ 114-115 FIPScounty $ 116-118 FIPSplace $ 119-123 Population $ 124-132 PopYear $ 133-134 Enrollment $ 135-141 EnrollYear $ 142-143 FunctionCode $ 144-145 SchoolLevel $ 146-147 FYEnd $ 148-151 SurveyYear $ 152-153;
   id = cats(of id_state id_type id_county id_unit);
RUN;

* Merge the government identification file with the transposed, dated, financial information file;
Data LatestData;
   Merge Identification TransposedDates;
   By id;
run;

* Concatenate the Latest data to the larger data file preserving every data element for later reorganization;
Data NewData;
   Set NewData LatestData;
Run;

*Begin the same process for the 2008 data;
*
* Read the financial data file in fixed width format, dollar signs indicate values which are stored as characters;

```sas
DATA FinancialData;
  INFILE 'E:/CensusData/2008/2008FinIndiv15_modp3.txt'
  MISSOVER;
  INPUT id_state $ 1-2 id_type $ 3 id_count $ 4-6 id_unit $ 7-9 id_add $ 10-14 itemcode $ 15-17 data 18-29 year 30-33 code $ 34;
  id = cats(of id_state id_type id_county id_unit);
RUN;
```

* Transpose the financial information file so that every government ID number corresponds to one row and every data item has its own column;

```sas
PROC TRANSPOSE data=work.FinancialData LET
  out=work.TransposedData
  name=Year;
  var data;
  by id;
  id itemcode;
RUN;
```

* Change the "year" variable in the financial data matrix to be the year we are currently working with;

```sas
DATA TransposedDates;
  Set work.TransposedData;
  Year = 2008;
RUN;
```

* Sort each of the matrices by ID code in preparation for merging them.;

```sas
proc sort data=TransposedDates;
  by id;
RUN;
```

* Read the government information file as a fixed width text file. Dollar signs indicate fields that are coded as text.;

```sas
DATA Identification;
  INFILE 'E:/CensusData/2008/fin_gid_2008.txt'
  MISSOVER;
  INPUT id_state $ 1-2 id_type $ 3 id_county $ 4-6 id_unit $ 7-9 id_add $ 10-14 Name $ 15-78 CountyName $ 79-113 FIPSstate $ 114-115 FIPScounty $ 116-118 FIPSpplace $ 119-123 Population 124-132 PopYear $ 133-134 Enrollment 135-141 EnrollYear $ 142-143 FunctionCode 144-145 SchoolLevel $ 146-147 FYEnd $ 148-151 SurveyYear $ 152-153;
  id = cats(of id_state id_type id_county id_unit);
RUN;
```

* Merge the government identification file with the transposed, dated, financial information file;

```sas
DATA LatestData;
  Merge Identification TransposedDates;
  By id;
RUN;
```
*Concatenate the latest data to the larger data file preserving every data element for later reorganization;*

```plaintext
Data NewData;
  Set NewData LatestData;
Run;
```

*Manually convert the newer data to the format of the older data and keep only variables that exist in the final data set;*

```plaintext
```
LTD_Ret_Util_Electric LTD_Ret_Util_Gas_Supply LTD_Ret_Util_Transit
LTD_Ret_Gen_Elem_Educ LTD_Ret_Gen_Other_Educ
LTD_Ret_Gen_Other_NEC Total_LTD_Ret_NG
LTD_Ret_Gene ral LTD_Ret_Gen_Other_NEC
LTD_Ret_FFC_Water_Util LTD_Ret_FFC_Elec_Util LTD_Ret_FFC_Gas_Util
LTD_Ret_FFC_Trans_Util LTD_Ret_FFC_General LTD_Ret_FFC_ELEM_Educ
LTD_Ret_FFC_Other_Educ LTD_Ret_FFC_Other_NEC Total_LTD_Ret_NG
LTD_Ret_NG Utility LTD_Ret_NG_Water_Util LTD_Ret_NG_Elec_Util
LTD_Ret_NG_Elem_Educ LTD_Ret_NG_Other_Educ LTD_Ret_NG_Private_Purp
LTD_Ret_NG_Other_NEC Total_LTD_Ret_NG
LTD_Ret_Unsp_Water_Util LTD_Ret_Unsp_Elec_Util LTD_Ret_Unsp_Gas_Util
LTD_Ret_Unsp_Trans_Util LTD_Ret_Unsp_General LTD_Ret_Unsp_ELEM_Educ
LTD_Ret_Unsp_Other_Educ LTD_Ret_Unsp_Other_NEC Total_LTD_Out
LTD_Out_Private_Purp LTD_Out_All_Other Total_LTD_Out Utility
LTD_Out_Water_L LTD_Out_Electric LTD_Out_Gas_Supply
LTD_Out_Trans Util LTD_Out_Gen_Elem_Educ
LTD_Out_Gen_Other_Educ LTD_Out_Gen_Other_NEC Total_LTD_Out_FFC
LTD_Out_FFC_Water_Util LTD_Out_FFC_Elec_Util LTD_Out_FFC_Gas_Util
LTD_Out_FFC_Trans_Util LTD_Out_FFC_General LTD_Out_FFC_ELEM_Educ
LTD_Out_FFC_Other_Educ LTD_Out_FFC_Other_NEC Total_LTD_Out_FFC
LTD_Out_NG.Utility LTD_Out_NG_Water_Util
LTD_Out_NG_Water_Util LTD_Out_NG_Gas_Util LTD_Out_NG_Trans_Util
LTD_Out_NG_Elec_Util LTD_Out_NG_Gas_Util LTD_Out_NG_Trans_Util
LTD_Out_NG_General LTD_Out_NG_Elm_Educ LTD_Out_NG_Other_Educ
LTD_Out_Private_Purp LTD_Out_NG_Other_NEC Total_LTD_Out_NG
Insur_Trust_Cash__Sec Emp_Retire_Cash__Sec Emp_Retire_Cash__Dep
Emp_Retire_Total_Sec Emp_Retire_Sec_Tot_Fed
Emp_Retire_Sec_S_L_Sec Emp_Retire_Sec_Tot_Nong
Emp_Retire_Sec_Corp_Bds Emp_Retire_Sec_Corp_Stk
Emp_Retire_Sec_Mortgages
Emp_Retire_Sec_Misc_Inv Emp_Retire_Sec_Oth_Nong Unemp_Comp_Cash__Sec
Unemp_Comp_Bal_In_US_Trs Unemp_Comp_Other_Balance
Nonin_Trust_Cash__Sec Sinking_Fd_Cash__Sec Bond_Fd_Cash__Sec
Other_Nonin_Fd_Cash__Sec
set NewData;

* Convert variables to ones that exist in the earlier dataset.
Multiplying by 1 converts character variables to numeric formats;
SurveyYr = SurveyYear*1;
Year4 = Year*1;
State_Code = id_state;
Type_Code = id_type;
County = id_County;
FIPS_Code_State = FIPSstate;
FYEndDate = FYEnd;
YearPop = PopYear;
SchLevCode = SchoolLevel;

*Consolidate and name variables;
*Revenue;
Total_Revenue = sum(B01, B21, B22, B30, B42, B46, B50, B59, B79,
B80, B89, B91, B92, B93, B94, C21, C30, C42, C46, C50, C79, C80, C89, C91,
C92, C93, C94, D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94,
T01, T09, T10, T11, T12, T13, T14, T15, T16, T19, T20, T21, T22, T23, T24,
T25, T27, T28, T29, T40, T41, T50, T51, T53, T99, A01, A03, A09, A10, A12,
A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89,
U01, U11, U20, U21, U30, U40, U41, U50, U59, U99, A90, A91, A92, A93, A94,
X01, X02, X05, X08, Y01, Y02, Y04, Y11, Y12, Y51, Y52);


*Taxes;

Total_Taxes = sum(T01, T09, T10, T11, T12, T13, T14, T15, T16, T19, T20, T21, T22, T23, T24, T25, T27, T28, T29, T40, T41, T50, T51, T53, T99);

Property_Tax = T01;
Tot_Sales___Gr_Rec_Tax = sum(T09, T10, T11, T12, T13, T14, T15, T16, T19);

Total_Gen_Sales_Tax = T09;
Total_Select_Sales_Tax = sum(T10, T11, T12, T13, T14, T15, T16, T19);

Alcoholic_Beverage_Tax = T10;
Amusement_Tax = T11;
Insurance_Premium_Tax = T12;
Motor_Fuels_Tax = T13;
Pari_mutuels_Tax = T14;
Public_Utility_Tax = T15;
Tobacco_Tax = T16;
Other_Select_Sales_Tax = T19;

*Licenses;

Total_License_Taxes = sum(T20 , T21 , T22 , T23 , T24 , T25 , T27 , T28 , T29);

Alcoholic_Beverage_Lic = T20;
Amusement_License = T21;
Corporation_License = T22;
Hunting___Fishing_License = T23;
Motor_Vehicle_License = T24;
Motor_Veh_Oper_License = T25;
Public_Utility_License = T27;
Occuap_and_Bus_Lic_NEC = T28;
Other_License_Taxes = T29;

*Income Taxes;

Total_Income_Taxes = sum(T40 , T41 , T50 , T51 , T53 , T99);
Individual_Income_Tax = T40;
Corp_Net_Income_Tax = T41;
Death_and_Gift_Tax = T50;
Docum_and_Stock_Tr_Tax = T51;
Severance_Tax = T53;
Taxes_NEC = T99;

* Intergovernmental Revenue;
Total_IG_Revenue = sum(B01, B21, B22, B30, B42, B46, B50, B59, B79, B80, B89, B91, B92, B93, B94, C21, C30, C42, C46, C50, C79, C80, C89, C91, C92, C93, C94, D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94);

* Federal;
Total_Fed_IG_Revenue = sum(B01, B21, B22, B30, B42, B46, B50, B59, B79, B80, B89, B91, B92, B93, B94);
  Fed_IGR_Air_Transport = B01;
  Fed_IGR_Education = B21;
  Fed_IGR_Emp_Sec_Adm = B22;
  Fed_IGR_Gen_Rev_Shar = .; *Obsolete after 1987;
  Fed_IGR_Gen_Support = B30;
  Fed_IGR_Health___Hos = B42;
  Fed_IGR_Highways = B46;
  Fed_IGR_Transit_Sub = B94;
  Fed_IGR_Hous_Com_DEV = B50;
  Fed_IGR_Natural_Res = B59;
  Fed_IGR_Public_Welf = B79;
  Fed_IGR_Sewerage = B80;
  Fed_IGR_Other = B89;

* State;
  Total_State_IG_Revenue = sum(C21, C30, C42, C46, C50, C79, C80, C89, C91, C92, C93, C94);
    State_IGR_Education = C21;
    State_IGR_Tax_Relief = .; *Obsolete after 1987;
    State_IGR_Oth_Gen_Sup = C30;
    State_IGR_Health___Hos = C42;
    State_IGR_Highways = C46;
    State_IGR_Transit_Sub = C94;
    State_IGR_Hous_Com_DEV = C50;
    State_IGR_Public_Welf = C79;
    State_IGR_Sewerage = C80;
    State_IGR_Other = C89;

* Local;
  Tot_Local_IG_Rev = sum(D21, D30, D42, D46, D50, D79, D80, D89, D91, D92, D93, D94);
    Local_IGR_InterSchool_Aid = D11;
    Local_IGR_Other_Education = D21;
    Local_IGR_Oth_Gen_Sup = D30;
    Local_IGR_Health___Hos = D42;
    Local_IGR_Highways = D46;
    Local_IGR_Transit_Sub = D94;
    Local_IGR_Hous_Com_DEV = D50;
    Local_IGR_Public_Welf = D79;
    Local_IGR_Sewerage = D80;
    Local_IGR_Other = D89;

* Charges and Misc Revenue;
Tot_Chgs_and_Misc_Rev = sum(A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89, U01, U11, U20, U21, U30, U40, U41, U50, U95, U99);

* Charges;
Total_General_Charges = sum(A01, A03, A09, A10, A12, A16, A18, A21, A36, A44, A45, A50, A56, A59, A60, A61, A80, A81, A87, A89);
Chg_Air_Transportation = A01;
Chg_Misc_Com_Activ = A03;
Chg_Total_Education = sum(A09, A10, A12, A16, A18, A21);
ChgElem_Ed_Sch_Lunch = A09;
ChgElem_Ed_Tuition = A10;
ChgElem_Ed_NEC = A12;
Chg_Total_High_Ed = sum(A16, A18);
Chg_Hospitals = A36;
Chg_Reg_Highways = A44;
Chg_Toll_Highways = A45;
Chg_Housing___Comm_Dev = A50;
Chg_Total_Nat_Res = sum(A56 , A59);
Chg_Parking = A60;
Chg_Parks___Recreation = A61;
Chg_Sewerage = A80;
Chg_Solid_Waste_Mgmt = A81;
Chg_Water_Transport = A87;
Chg_All_Other_NEC = A89;

* Misc Revenue;
Misc_General_Revenue = sum(U01, U11, U20, U21, U30, U40, U41, U50, U95, U99);
Special_Assessments = U01;
Prop_Sale_Hous_Com_Dev = .; *Deleted as of 2005 and reported in U11 Prop_Sale_Other;
Prop_Sale_Other = U11;
Interest_Revenue = U20;
Fines_and_Forfeits = U30;
Rents_and_Royalties = sum(U40 , U41);
Net_Lottery_Revenue = U95;
Misc_General_Rev_NEC = U99;

* Liquor and Utilities;
Liquor_Stores_Revenue = A90;
Total_Utility_Revenue = sum(A91, A92, A93, A94);
Water_Utility_Revenue = A91;
Electric_Utility_Rev = A92;
Gas_Utility_Rev = A93;
Transit_Utility_Rev = A94;

* Insurance Trusts;
Total_Insur_Trust_Rev = sum(X01, X02, X05, X08, Y01, Y02, Y04, Y11, Y12, Y51, Y52);
Total_Insur_Trust_Ctrb = sum(X01, X02, X05, Y01);
Tot_Ins_Trust_Inv_Rev = sum(X08 , Y02);

* Retirement Plan Data;
Total_Emp_Ret_Rev = sum(X01, X02, X05, X08);
Emp_Ret_Total_Ctrib = sum(X01, X02, X05);
Emp_Ret_Loc_Emp_Ctrib = X01;
Emp_Ret_Loc_To_Loc_Sys = X04;
Emp_Ret_From_Other_Gov = X05;
Emp_Ret_Sta_To_Sta_Ctr = X06;
Emp_Ret_Int_Rev = X08;
Emp_Ret_Other_Earnings = ; *Consolidated with X08

Emp_Ret_Int_Rev in 1990;

* Old data does not have Worker's Comp information;

* Unemployment Revenue;
Total_Unemp_Rev = sum(Y01, Y02, Y04);
Unemp_Payroll_Tax = Y01;
Unemp_Int_Revenue = Y02;
Unemp_Federal_Advances = Y04;

*Expenses;
Total_Expenditure = sum(E01, E03, E04, E05, E12, E16, E18, E21,
E22, E23, E24, E25, E26, E29, E31, E32, E36, E44, E45, E50, E52, E55,
E56, E59, E60, E61, E62, E66, E74, E75, E77, E79, E80, E81, E85, E87, E89,
E90, E91, E92, E93, E94, I89, I91, I92, I93, I94, J19, J67, J68, J85, X11,
X12, Y05, Y06, Y14, Y53, F01, F03, F04, F05, F12, F16, F18, F21, F22, F23,
F24, F25, F26, F29, F31, F32, F36, F44, F45, F50, F52, F55, F56, F59, F60,
F61, F62, F66, F77, F79, F80, F81, F85, F87, F89, F90, F91, F92, F93, F94,
G01, G03, G04, G05, G12, G16, G18, G21, G22, G23, G24, G25, G26, G29, G31,
G32, G36, G44, G45, G50, G52, G55, G56, G59, G60, G61, G62, G66, G77, G79,
G80, G81, G85, G89, G90, G91, G92, G93, G94, L01, L04, L05, L12, L18,
L79, L90, L81, L87, L89, L91, L92, L93, L94, M01, M04, M05, M12, M18, M21,
M23, M24, M25, M29, M30, M32, M36, M44, M50, M52, M55, M56, M59, M60,
M61, M62, M66, M67, M68, M79, M80, M81, M87, M89, M91, M92, M93, M94,
Q12, Q18, S67, S74, S89);

*Totals;
Total_IG_Expenditure = sum(L01, L04, L05, L12, L18, L23, L25,
L87, L89, L91, L92, L93, L94, M01, M04, M05, M12, M18, M21, M23, M24, M25,
M29, M30, M32, M36, M44, M50, M52, M55, M56, M59, M60, M61, M62, M66,
M67, M68, M79, M80, M81, M87, M89, M91, M92, M93, M94, Q12, Q18, S67, S89);
Direct_Expenditure = sum(E01, E03, E04, E05, E12, E16, E18, E21,
E22, E23, E24, E25, E26, E29, E31, E32, E36, E44, E45, E50, E52, E55, E56,
E59, E60, E61, E62, E66, E74, E75, E77, E79, E80, E81, E85, E87, E89,
E90, E91, E92, E93, E94, F01, F03, F04, F05, F12, F16, F18, F21, F22, F23, F24,
F25, F26, F29, F31, F32, F36, F44, F45, F50, F52, F55, F56, F59, F60, F61,
F62, F66, F77, F79, F80, F81, F85, F87, F89, F90, F91, F92, F93, F94, G01,
G03, G04, G05, G12, G16, G18, G21, G22, G23, G24, G25, G26, G29, G31,
G32, G44, G45, G50, G52, G55, G56, G59, G60, G61, G62, G66, G77, G79,
G80, G81, G85, G89, G90, G91, G92, G93, Q12, Q18, S67, S89);

Total_Current_Oper = sum(E01, E03, E04, E05, E12, E16, E18, E21,
E22, E23, E24, E25, E26, E29, E31, E32, E36, E44, E45, E50, E52, E55, E56,
E59, E60, E61, E62, E66, E74, E75, E77, E79, E80, E81, E85, E87, E89,
E90, E91, E92, E93, E94);
Total_Capital_Outlays = sum(F01, F03, F04, F05, F12, F16, F18,
F21, F22, F23, F24, F25, F26, F29, F31, F32, F36, F44, F45, F50, F52, F55,
F56, F59, F60, F61, F62, F66, F77, F79, F80, F81, F85, F87, F89, F90, F91,
F92, F93, F94, G01, G03, G04, G05, G12, G16, G18, G21, G22, G23, G24, G25,
G26, G29, G31, G32, G36, G44, G45, G50, G52, G55, G56, G59, G60, G61, G62, G66, G77, G79, G80, G81, G85, G87, G89, G90, G91, G92, G93, G94;  

\[
\text{Total Construction} = \sum(F01, F03, F04, F05, F12, F16, F18, F21, F22, F23, F24, F25, F26, F29, F31, F32, F36, F44, F45, F50, F52, F55, F56, F59, F60, F61, F62, F66, F77, F79, F80, F81, F85, F87, F89, F90, F91, F92, F93, F94); 
\]

\[
\text{Tot Assist } \_\text{Subsidies} = \sum(J19, J67, J68, J85); 
\]

\[
\text{Total Interest on Debt} = \sum(I89, I91, I92, I93, I94); 
\]

\[
\text{Total Insur } \_\text{Trust Ben} = \sum(X11, X12, Y05, Y06, Y14, Y53); 
\]

\[
\text{Total Salaries } \_\text{Wages} = Z00; 
\]

\[
\text{Total Current Expend} = \sum(\text{Total Expenditure}, - \text{Total Capital Outlays}); 
\]

* General Expenses; 

\[
\]

\[
\text{IG Exp } \_\text{To State Govt} = \sum(L01, L04, L05, L12, L18, L23, L25, L29, L32, L36, L44, L50, L52, L59, L60, L61, L62, L66, L67, L79, L80, L81, L87, L89, L91, L92, L93, L94); 
\]

\[
\text{IG Exp } \_\text{To Local Govts} = \sum(M01, M04, M05, M12, M18, M21, M23, M24, M25, M29, M30, M32, M36, M44, M50, M52, M55, M56, M59, M60, M61, M62, M66, M67, M79, M80, M81, M87, M89, M91, M92, M93, M94); 
\]

\[
\text{IG Exp } \_\text{To Federal Govt} = \sum(S67, S74, S89); 
\]

\[
\]

\[
\text{General Current Oper} = \sum(E01, E03, E04, E05, E12, E16, E18, E21, E22, E23, E24, E25, E26, E29, E31, E32, E36, E44, E45, E50, E52, E55, E56, E59, E60, E61, E62, E66, E74, E75, E77, E79, E80, E81, E85, E87, E89, E90, E91, E92, E93, E94); 
\]

\[
\text{General Capital Outlay} = \sum(F01, F03, F04, F05, F12, F16, F18, F21, F22, F23, F24, F25, F26, F29, F31, F32, F36, F44, F45, F50, F52, F55, F56, F59, F60, F61, F62, F66, F77, F79, F80, F81, F85, F87, F89, F90, F91, F92, F93, F94); 
\]

\[
\text{General Assist } \_\text{Sub} = \text{Tot Assist } \_\text{Subsidies}; 
\]

\[
\text{General Debt Interest} = I89; 
\]
General Current Expend = sum(General Expenditure, -
General Capital Outlay);

* Air Transport;
Air Trans Total Expend = sum(E01, F01, G01, L01, M01);
Air Trans Direct Expend = sum(E01, F01, G01);
Air Trans Cap Outlay = sum(F01, G01);
Air Transport Construction = F01;
Air Trans IG To State = L01;
Air Trans IG Local Govts = M01;

* Misc Commercial Activities;
Misc Com Activ Tot Exp = sum(E03, F03, G03);
Misc Com Activ Cap Out = sum(F03, G03);
Misc Com Activ Constr = F03;

* Correctional Institutions;
Correct Total Exp = sum(E04, F04, G04, E05, F05, G05, L04,
L05, M04, M05);
Correct Direct Exp = sum(E04, E05, F04, G04, F05, G05);
Correct Cap Outlay = sum(F04, G04, F05, G05);
Correct Construct = sum(F04, F05);
Correct IG To St = sum(L04, L05);
Correct IG Loc Govts = sum(M04, M05);

* Missing national defense code 06;

* Education;
Total Educ Total Exp = sum(E12, F12, G12, E16, F16, G16, E18,
F18, G18, J19, E21, F21, G21, L12, M12, Q12, L18, M18, L21, M21);
Total Educ Direct Exp = sum(E12, F12, G12, E16, F16, G16, E18,
F18, G18, J19, E21, F21, G21);
Total Educ Assist Sub = J19;
Total Educ Cap Outlay = sum(F12, F16, F18, F21, G12, G16, G18,
G21);
Total Educ Construct = sum(F12, F16, F18, F21);

* Elementary and Secondary Education;
Elem Educ Total Exp = sum(E12, F12, G12, L12, M12, Q12);
Elem Educ Direct Exp = sum(E12, F12, G12);
Elem Educ Cap Outlay = sum(F12, G12);
Elem Educ Construction = F12;
Elem Educ IG To State = L12;
Elem Educ IG Local Govts = M12;
Elem Educ IG Sch to Sch = Q12;

* Higher Education;
Higher Ed Total Exp = sum(E16, E18, F16, F18, G16, G18, L18,
M18);
Higher Ed Direct Exp = sum(E16, E18, F16, F18, G16, G18);
Higher Ed Cap Outlay = sum(F16, F18, G16, G18);
Higher Ed Construct = sum(F16, F18);
Higher Ed IG To St = L18;
Higher Ed IG Loc Govts = M18;

* Education not otherwise classified;
Educ NEC Total Expend = sum(E21, F21, G21, L21, M21);
Educ NEC Direct Exp = sum(E21, F21, G21);
Educ NEC Assistance = .; *The prior code, E19 no longer exists
in the data;
Educ_NEC_Cap_Outlay = sum(F21, G21);
Educ_NEC_Construction = F21;
Educ_NEC_IG_To_State = L21;
Educ_NEC_IG_Local_Govts = M21;

* Missing post offices code 14;

*Employment Security Administration;
Emp_Sec_Adm_Direct_Exp = sum(E22 , F22 , G22);
Emp_Sec_Adm_Cap_Outlay = sum(F22 , G22);
Emp_Sec_Adm_Construct = F22;

*Financial Administration;
Fin_Admin_Total_Exp = sum(E23, F23, G23, L23, M23);
Fin_Admin_Direct_Exp = sum(E23, F23, G23);
Fin_Admin_Cap_Outlay = sum(F23, G23);
Fin_Admin_Construct = F23;
Fin_Admin_IG_To_State = L23;
Fin_Admin_IG_Local_Govts = M23;

*Fire protection;
Fire_Prot_Total_Expend = sum(E24, F24, G24, L24, M24);
Fire_Prot_Direct_Exp = sum(E24, F24, G24);
Fire_Prot_Cap_Outlay = sum(F24, G24);
Fire_Prot_Construct = F24;
Fire_Prot_IG_To_State = L24;
Fire_Prot_IG_Local_Govts = M24;

*Judicial Expenditures;
Judicial_Total_Expend = sum(E25, F25, G25, L25, M25);
Judicial_Direct_Expend = sum(E25, F25, G25);
Judicial_Cap_Outlay = sum(F25, G25);
Judicial_Construct = F25;
Judicial_IG_To_State = L25;
Judicial_IG_Local_Govts = M25;

*Central Staff Services;
Cen_Staff_Total_Expend = sum(E29, F29, G29, L29, M29);
Cen_Staff_Direct_Expend = sum(E29, F29, G29);
Cen_Staff_Cap_Outlay = sum(F29, G29);
Cen_Staff_Construct = F29;
Cen_Staff_IG_To_State = L29;
Cen_Staff_IG_Local_Govts = M29;

* General Public Buildings;
Gen_Pub_Bldg_Total_Exp = sum(E31, F31, G31);
Gen_Pub_Bldg_Cap_Out = sum(F31, G31);
Gen_Pub_Bldg_Construct = F31;

* Health;
Health_Total_Expend = sum(E32, F32, G32, L32, M32);
Health_Direct_Expend = sum(E32, F32, G32);
Health_Capital_Outlay = sum(F32, G32);
Health_Construct = F32;
Health_IG_To_State = L32;
Health_IG_Local_Govts = M32;
*Hospitals;
Total_Hospital_Total_Exp = sum(E36, F36, G36, L36, M36);
Total_Hospital_Dir_Exp = sum(E36, F36, G36);
Total_Hospital_Cap_Out = sum(F36, G36);
Total_Hospital_Construct = F36;
Total_Hospital_IG_To_State = L36;
Total_Hospital_IG_Loc_Govts = M36;

*Federal Owned Hospitals - Veterans;
Own_Hospital_Total_Exp = sum(E37, F37, G37);
Own_Hospital_Cap_Out = sum(F37, G37);
Own_Hospital_Construct = F37;

* Other Hospital Expenses - Federal but not veterans;
Hosp_Other_Total_Exp = sum(E39, F39, G39, L39, M39);
Hosp_Other_Direct_Exp = sum(E39, F39, G39);
Hosp_Other_Cap_Outlay = sum(F39, G39);
Hosp_Other_Construct = F39;
Hosp_Other_IG_To_State = L39;
Hosp_Other_IG_Loc_Govts = M39;

* Highways;
Total_Highways_Tot_Exp = sum(E44, F44, G44, L44, M44);
Total_Highways_Dir_Exp = sum(E44, F44, G44, L44, M44);
Total_Highways_Cap_Out = sum(F44, G44, L44, M44);
Total_Highways_Construct = sum(F44, L44);

* Non-Toll Highways;
Regular_Hwy_Total_Exp = sum(E44, F44, G44, L44, M44);
Regular_Hwy_Direct_Exp = sum(E44, F44, G44);
Regular_Hwy_Cap_Outlay = sum(F44, G44);
Regular_Hwy_Construct = F44;
Regular_Hwy_IG_To_Sta = L44;
Regular_Hwy_IG_Loc_Govts = M44;

* Toll Highways;
Toll_Hwy_Total_Exp = sum(E45, F45, G45);
Toll_Hwy_Cap_Outlay = sum(F45, G45);
Toll_Hwy_Construction = F45;

* Transit Subsidies - These data were eliminated in the 2005 data;
Transit_Sub_Total_Exp = .;
Transit_Sub_Direct_Sub = .;
Transit_Sub_IG_To_Sta = .;
Transit_Sub_IG_Loc_Govts = .;
Transit_Sub_To_Own_Sys = .;

* Housing and Community Development;
Hous___Com_Total_Exp = sum(E50, F50, G50, L50, M50);
Hous___Com_Direct_Exp = sum(E50, F50, G50);
Hous___Com_Cap_Outlay = sum(F50, G50);
Hous___Com_Construct = F50;
Hous___Com_IG_To_State = L50;
Hous___Com_IG_Loc_Govts = M50;
* Libraries;
Libraries_Total_Expend = sum(E52, F52, G52, L52, M52);
Libraries_Direct_Exp = sum(E52, F52, G52);
Libraries_Cap_Outlay = sum(F52, G52);
Libraries_Construction = F52;
Libraries_IG_To_State = L52;
Libraries_IG_Local_Govts = M52;

* Natural Resources;
Natural_Res_Total_Exp = sum(E55, F55, G55, M55, E56, F56, G56, M56, E59, F59, G59, L59, M59);
Natural_Res_Direct_Exp = sum(E55, F55, G55, E56, F56, G56, E59, F59, G59);
Natural_Res_Cap_Outlay = sum(F55, G55, F56, G56, F59, G59);
Natural_Res_Construct = sum(F55, F56, F59);
Natural_Res_IG_To_Sta = L59;
Natural_Res_IG_Loc_Govts = sum(M55, M56, M59);

* Parking Facilities;
Parking_Total_Expend = sum(E60, F60, G60, L60, M60);
Parking_Direct_Expend = sum(E60, F60, G60);
Parking_Capital_Outlay = sum(F60, G60);
Parking_Construction = F60;
Parking_IG_To_State = L60;
Parking_IG_Local_Govts = M60;

* Parks and Recreation;
Parks_Rec_Total_Exp = sum(E61, F61, G61, L61, M61);
Parks_Rec_Direct_Exp = sum(E61, F61, G61);
Parks_Rec_Cap_Outlay = sum(F61, G61);
Parks_Rec_Construct = F61;
Parks_Rec_IG_To_Sta = L61;
Parks_Rec_IG_Local_Govts = M61;

* Police Protection;
Police_Prot_Total_Exp = sum(E62, F62, G62, L62, M62);
Police_Prot_Direct_Exp = sum(E62, F62, G62);
Police_Prot_Cap_Outlay = sum(F62, G62);
Police_Prot_Construct = F62;
Police_Prot_IG_To_Sta = L62;
Police_Prot_IG_Local_Govts = M62;

* Protective Inspection and Regulation;
Prot_Insp_Total_Exp = sum(E66, F66, G66, L66, M66);
Prot_Insp_Direct_Exp = sum(E66, F66, G66);
Prot_Insp_Cap_Outlay = sum(F66, G66);
Prot_Insp_Construct = F66;
Prot_Insp_IG_TO_State = L66;
Prot_Insp_IG_Local_Govts = M66;

* Public Welfare;
Public_Welf_Total_Exp = sum(J67, L67, M67, J68, M68, E74, E75, S74, E77, F77, G77, E79, F79, G79, L79, M79);
Public_Welf_Direct_Exp = sum(J67, J68, E74, E75, E77, F77, G77, E79, F79, G79);
Public_Welf_Cash_Asst = sum(J67, J68, M67, M68);
Public_Welf_Cap_Outlay = sum(F77, G77, F79, G79);
Public_Welf_Construct = sum(F77, F79);

* Public Welfare-Categorical Assistance Programs;
Welf_Categ_Total_Exp = sum(J67, L67, M67);
Welf_Categ_Cash_Assist = J67;
Welf_Categ_IG_To_State = L67;
Welf_Categ_IG_Loc_Govts = M67;

* Public Welfare-Cash assistance payments;
Welf_Cash_Total_Exp = sum(J68, M68);
Welf_Cash_Cash_Assist = J68;
Welf_Cash_IG_Local_Govts = M68;

* Public Welfare-Vendor Payments;
Welf_Vend_Pmts_Medical = E74;
Welf_Vend_Pmts_NEC = E75;

* State Share of Medicare Part D;
Welf_State_Share_Part_D = S74;

* Public Welfare-Institutions;
Welf_Ins_Total_Exp = sum(E77, F77, G77);
Welf_Ins_Cap_Outlay = sum(F77, G77);
Welf_Ins_Construction = F77;

*Public Welfare not elsewhere classified;
Welf_NEC_Total_Expend = sum(E79, F79, G79, L79, M79);
Welf_NEC_Direct_Expend = sum(E79, F79, G79);
Welf_NEC_Cap_Outlay = sum(F79, G79);
Welf_NEC_Construction = F79;
Welf_NEC_IG_To_State = L79;
Welf_NEC_IG_Local_Govts = M79;

*Sewerage;
Sewerage_Total_Expend = sum(E80, F80, G80, L80, M80);
Sewerage_Direct_Expend = sum(E80, F80, G80);
Sewerage_Cap_Outlay = sum(F80, G80);
Sewerage_Construction = F80;
Sewerage_IG_To_State = L80;
Sewerage_IG_Local_Govts = M80;

*Solid Waste Management;
SW_Mgmt_Total_Expend = sum(E81, F81, G81, L81, M81);
SW_Mgmt_Direct_Expend = sum(E81, F81, G81);
SW_Mgmt_Capital_Outlay = sum(F81, G81);
SW_Mgmt_Construction = F81;
SW_Mgmt_IG_To_State = L81;
SW_Mgmt_IG_Local_Govts = M81;

*Sea and Inland Port Facilities;
Water_Trans_Total_Exp = sum(E87, F87, G87, L87, M87);
Water_Trans_Direct_Exp = sum(E87, F87, G87);
Water_Trans_Cap_Outlay = sum(F87, G87);
Water_Trans_Construct = F87;
Water_Trans_IG_To_State = L87;
Water_Trans_IG_Local_Govts = M87;
*Interest on General Debt;
Interest_on_Gen_Debt = I89;

* General Expenditure not elsewhere classified;
General_NEC_Total_Exp = sum(E89, F89, G89, L89, M89, S89, J89);
General_NEC_Direct_Exp = sum(E89, F89, G89, J89);
VetBonus = J89;
General_NEC_Cap_Outlay = sum(F89, G89);
General_NEC_Construct = F89;
General_NEC_IG_To_St = L89;
General_NEC_IG_Loc_Govts = M89;
General_NEC_IG_To_Fed = S89;

* Liquor Stores;
Liquor_Stores_Tot_Exp = sum(E90, F90, G90);
Liquor_Stores_Cap_Out = sum(F90, G90);
Liquor_Stores_Construct = F90;

* Total Utilities;
Total_Util_Total_Exp = sum(E91, I91, F91, G91, L91, M91, E92, I92, F92, G92, L92, M92, E93, I93, F93, G93, L93, M93, E94, I94, F94, G94, L94, M94);
Total_Util_Inter_Exp = sum(I91, I92, I93, I94);
Total_Util_Cap_Outlay = sum(F91, F92, F93, F94, G91, G92, G93, G94);
Total_Util_Construct = sum(F91, F92, F93, F94);

* Water Supply Utilities;
Water_Util_Total_Exp = sum(E91, I91, F91, G91, L91, M91);
Water_Util_Inter_Exp = I91;
Water_Util_Cap_Outlay = sum(F91, G91);
Water_Util_Construct = F91;

* Electric Power Utilities;
Elec_Util_Total_Exp = sum(E92, I92, F92, G92, L92, M92);
Elec_Util_Inter_Exp = I92;
Elec_Util_Cap_Outlay = sum(F92, G92);
Elec_Util_Construct = F92;

* Gas Supply Utilities;
Gas_Util_Total_Exp = sum(E93, I93, F93, G93, L93, M93);
Gas_Util_Inter_Exp = I93;
Gas_Util_Cap_Outlay = sum(F93, G93);
Gas_Util_Construct = F93;

* Transit System Utilities;
Trans_Util_Total_Exp = sum(E94, I94, F94, G94, L94, M94);
Trans_Util_Inter_Exp = I94;
Trans_Util_Cap_Outlay = sum(F94, G94);
Trans_Util_Construct = F94;

* Employee Retirement;
Emp_Ret_Total_Expend = sum(X11, X12);
Emp_Ret_Benefit_Paymts = X11;
Emp_Ret_Withdrawals = X12;
Emp_Ret_Other_Paymts = .; *This code used to be X14 is now obsolete since 2002 represented realized losses and is coded elsewhere;
* Unemployment Compensation;
Unemp_Comp_Total_Exp = sum(Y05, Y06);
Unemp_Comp_Ben_Paymts = Y05;
Unemp_Ext_Spec_Pmts = Y06;

* Debt totals;
Total_Debt_Outstanding = sum(_44T, _49U, _64V);
Total_Long_Term_Debt_Out = sum(_44T, _49U);
ST_Debt_End_of_Year = _64V;

* Beginning Long Term Debt Outstanding;
Total_Beg_LTD_Out = sum(_19T, _19U);
Beg_LTD_Out_Private_Purp = _19T;
Beg_LTD_Out_All_Other = _19U;
Beg_LTD_Out_Utility = .; *All detailed debt codes were discontinued in 2005;
Beg_LTD_Out_Water_Util = .;
Beg_LTD_Out_Elec_Util = .;
Beg_LTD_Out_Gas_Util = .;
Beg_LTD_Out_Trans_Util = .;
Beg_LTD_Out_General = .;
Beg_LTD_Out_Education = .;
Beg_LTD_Out_Priv_Purp = .;
Beg_LTD_Out_Other_NEC = .;

* Long Term Debt Issued;
Total_LTD_Issued = sum(_24T, _29U);
LTD_Iss_Private_Purp = _24T;
LTD_Iss_All_Other = _29U;
LTD_Iss_Utility = .;
LTD_Iss_Water_Util = .;
LTD_Iss_Elec_Util = .;
LTD_Iss_Gas_Supply = .;
LTD_Iss_Trans_Util = .;
LTD_Iss_General = .;
LTD_Iss_Elem_Educ = .;
LTD_Iss_Other_Educ = .;
LTD_Iss_Other_NEC = .;

* Long-Term Debt Issued, Full-Faith and Credit; *Codes discontinued in 2005;
Total_LTD_Iss_FFC = .
LTD_Iss_FFC_Utility = .
LTD_Iss_FFC_Water_Util = .
LTD_Iss_FFC_Elec_Util = .
LTD_Iss_FFC_Gas_Util = .
LTD_Iss_FFC_Trans_Util = .
LTD_Iss_FFC_General = .
LTD_Iss_FFC_Elem_Educ = .
LTD_Iss_FFC_Other_Educ = .
LTD_Iss_FFC_Other_NEC = .

* Long-Term Debt Issued, Nonguaranteed;
Total_LTD_Iss_NG = .
LTD_Iss_NG_Utility = .
LTD_Iss_NG_Water_Util = .
LTD_Iss_NG_Elec_Util = .;
LTD_Iss_NG_Gas_Util = .;
LTD_Iss_NG_Trans_Util = .;
LTD_Iss_NG_General = .;
LTD_Iss_NG_ELEM_Educ = .;
LTD_Iss_NG_Other_Educ = .;
LTD_Iss_NG_Private_Purp = .;
LTD_Iss_NG_Other_NEC = .;

* Long-Term Debt Issued, Unspecified Issue;
Total_LTD_Iss_Unsp = .;
LTD_Iss_Unsp_Utility = .;
LTD_Iss_Unsp_Water_Util = .;
LTD_Iss_Unsp_Elec_Util = .;
LTD_Iss_Unsp_Gas_Util = .;
LTD_Iss_Unsp_Trans_Util = .;
LTD_Iss_Unsp_General = .;
LTD_Iss_Unsp_ELEM_Educ = .;
LTD_Iss_Unsp_Other_Educ = .;
LTD_Iss_Unsp_Other_NEC = .;

* Long-Term Debt Retired During Fiscal Year;
Total_LTD_Retired = sum(_34T, _39U);
LTD_Ret_Private_Purp = _34T;
LTD_Ret_All_Other = _39U;
LTD_Ret_Utility = .;
LTD_Ret_Water_Util = .;
LTD_Ret_Electric = .;
LTD_Ret_Gas_Supply = .;
LTD_Ret_Trans_Util = .;
LTD_Ret_General = .;
LTD_Ret_ELEM_Educ = .;
LTD_Ret_Gen_Other_Educ = .;
LTD_Ret_Gen_Other_NEC = .;

* Long-Term Debt Retired, Full-Faith and Credit;
Total_LTD_Ret_FFC = .;
LTD_Ret_FFC_Utility = .;
LTD_Ret_FFC_Water_Util = .;
LTD_Ret_FFC_Electric = .;
LTD_Ret_FFC_Gas_Util = .;
LTD_Ret_FFC_Trans_Util = .;
LTD_Ret_FFC_General = .;
LTD_Ret_FFC_ELEM_Educ = .;
LTD_Ret_FFC_Other_Educ = .;
LTD_Ret_FFC_Other_NEC = .;

* Long-Term Debt Retired, Nonguaranteed;
Total_LTD_Ret_NG = .;
LTD_Ret_NG_Utility = .;
LTD_Ret_NG_Water_Util = .;
LTD_Ret_NG_Electric = .;
LTD_Ret_NG_Gas_Util = .;
LTD_Ret_NG_Trans_Util = .;
LTD_Ret_NG_General = .;
LTD_Ret_NG_ELEM_Educ = .;
LTD_Ret_NG_Other_Educ = .;
LTD_Ret_NG_Private_Purp = .;
LTD_Ret_NG_Other_NEC = .;

* Long-Term Debt Retired, Unspecified;
Total_LTD_Ret_Unsp = .;
LTD_Ret_Unsp_Utility = .;
LTD_Ret_Unsp_Water_Util = .;
LTD_Ret_Unsp_Elec_Utili = .;
LTD_Ret_Unsp_Gas_Util = .;
LTD_Ret_Unsp_Trans_Util = .;
LTD_Ret_Unsp_General = .;
LTD_Ret_Unsp_Elem_Educ = .;
LTD_Ret_Unsp_Other_Educ = .;
LTD_Ret_Unsp_Other_NEC = .;

* Long-Term Debt Outstanding;
Total_LTD_Out = sum(_44T, _49U);
LTD_Out_Private_Purp = _44T;
LTD_Out_All_Other = _49U;
Total_LTD_Out_Utility = .
LTD_Out_Util_Water = .;
LTD_Out_Util_Electric = .
LTD_Out_Util_Gas_Supply = .
LTD_Out_Util_Transit = .
LTD_Out_General = .;
LTD_Out_Gen_Elem_Educ = .
LTD_Out_Gen_Other_Educ = .;
LTD_Out_Gen_Other_NEC = .;

* Long-Term Debt Outstanding, Full-Faith and Credit;
Total_LTD_Out_FFC = .;
LTD_Out_FFC_Utility = .;
LTD_Out_FFC_Water_Util = .;
LTD_Out_FFC_Elec_Util = .
LTD_Out_FFC_Gas_Util = .
LTD_Out_FFC_Trans_Util = .
LTD_Out_FFC_General = .;
LTD_Out_FFC_Elem_Educ = .
LTD_Out_FFC_Other_Educ = .;
LTD_Out_FFC_Other_NEC = .;

* Long-Term Debt Outstanding, Nonguaranteed;
Tot_LTD_Out_NG = .;
LTD_Out_NG_Utility = .;
LTD_Out_NG_Water_Util = .;
LTD_Out_NG_Elec_Util = .
LTD_Out_NG_Gas_Util = .
LTD_Out_NG_Trans_Util = .
LTD_Out_NG_General = .;
LTD_Out_NG_Elem_Educ = .
LTD_Out_NG_Other_Educ = .;
LTD_Out_NG_Private_Purp = .;
LTD_Out_NG_Other_NEC = .;

* Cash and Securities;
Total_Cash___Securities = sum(W01, W31, W61, X21, X30, Z77, Z78, X42, X44, X47, Y07, Y08, Y21, Y61);
* Insurance Trust Funds Only Cash and Securities;
  Insur_Trust_Cash___Sec = sum(X21, X30, Z77, Z78, X42, X44, X47, 
  Y07, Y08, Y21, Y61);

* Employee Retirement Systems Cash and Securities;
  Emp_Retire_Cash___Sec = sum(X21, X30, X35, Z77, Z78, X42, X47, 
  X44);
  Emp_Retire_Cash___Dep = X21;
  Emp_Retire_Total_Sec = sum(X30, X35, Z77, Z78, X42, X47, X44);
  Emp_Retire_Sec_Tot_Fed = X30;
  Emp_Retire_Sec_Tot_Nong = sum(Z77, Z78, X42, X47, X44);
  Emp_Retire_Sec_Corp_Bds = Z77;
  Emp_Retire_Sec_Corp_Stk = Z78;
  Emp_Retire_Sec_Mortgages = X42;
  Emp_Retire_Sec_Misc_Inv = X47;
  Emp_Retire_Sec_Oth_Nong = X44;

* Unemployment Compensation Funds Cash and Securities;
  Unemp_Comp_Cash___Sec = sum(Y07, Y08);
  Unemp_Comp_Bal_In_US_Trs = Y07;
  Unemp_Comp_Other_Balance = Y08;

* Other Insurance Trusts Holdings Cash and Securities;
  Nonin_Trust_Cash___Sec = sum(W01, W31, W61);

* Sinking Funds (debt service funds) Cash and Securities;
  Sinking_Fd_Cash___Sec = W01;

* Bond Funds Cash and Securities;
  Bond_Fd_Cash___Sec = W31;

* All Other Noninsurance Funds Cash and Securities;
  Oth_Nonin_Fd_Cash___Sec = W61;

run;

*Merge the older data with the newer data that has had its format converted;

Proc append base=LargeData data=ConvertedNewData force;
run;

Data LargestData;
  Set LargeData;

  *Calculate several totals from revenue data and to correct for differences between old and new data;
  Motor_Vehicle_License_Total = sum(Motor_Vehicle_License,
  Motor_Veh_Oper_License);
  Fed_IGR_Gen_Support = sum(Fed_IGR_Gen_Support, Fed_IGR_Gen_Rev_Share);
  State_IGR_Gen_Sup = sum(State_IGR_Oth_Gen_Sup, State_IGR_Tax_Relief);
  Chg_Total_Elem_Education = sum(Chg_Elem_Ed_Sch_Lunch,
  Chg_Elem_Ed_Tuition, Chg_Elem_Ed_NEC);
  Chg_Highways = sum(Chg_Regular_Highways, Chg_Toll_Highways);
  Prop_Sale_Total = sum(Prop_Sale_Hous_Com_Dev, Prop_Sale_Other);
  Total_Other_Capital_Outlays = sum(Total_Capital_Outlays, -
  Total_Construction);
General_Capital_Outlay_Other = sum(General_Capital_Outlay, - General_Construction);

*Calculate current expenditure data for every function where it is missing;*

Air_Trans_Current_Exp = sum(Air_Trans_Direct_Expend, - Air_Trans_Cap_Outlay);

Misc_Com_Activ_Current_Exp = sum(Misc_Com_Activ_Tot_Exp, - Misc_Com_Activ_Cap_Out);

Correct_Current_Exp = sum(Correct_Direct_Exp, -Correct_Cap_Outlay);

Total_Educ_Current_Exp = sum(Total_Educ_Direct_Exp, - Total_Educ_Cap_Outlay);

Elem_Educ_Current_Exp = sum(Elem_Educ_Direct_Exp, - Elem_Educ_Cap_Outlay);

Higher_Ed_Current_Exp = sum(Higer_Ed_Direct_Exp, - Higher_Ed_Cap_Outlay);

Educ_NEC_Current_Exp = sum(Educ_NEC_Direct_Exp, - Educ_NEC_Cap_Outlay);

Emp_Sec_Adm_Current_Exp = sum(Emp_Sec_Adm_Direct_Exp, - Emp_Sec_Adm_Cap_Outlay);

Fin_Admin_Current_Exp = sum(Fin_Admin_Direct_Exp, - Fin_Admin_Cap_Outlay);

Fire_Prot_Current_Exp = sum(Fire_Prot_Direct_Exp, - Fire_Prot_Cap_Outlay);

Judicial_Current_Exp = sum(Judicial_Direct_Exp, - Judicial_Cap_Outlay);

Cen_Staff_Current_Exp = sum(Cen_Staff_Direct_Exp, - Cen_Staff_Cap_Outlay);

Gen_Pub_Bldg_Current_Exp = sum(Gen_Pub_Bldg_Total_Exp, - Gen_Pub_Bldg_Cap_Out);

Health_Current_Exp = sum(Health_Direct_Expend, -Health_Capital_Outlay);

Total_Hospital_Current_Exp = sum(Total_Hospital_Dir_Exp, - Total_Hospital_Cap_Out);

Own_Hospital_Current_Exp = sum(Own_Hospital_Total_Exp, - Own_Hospital_Cap_Out);

Hosp_Other_Current_Exp = sum(Hosp_Other_Direct_Exp, - Hosp_Other_Cap_Out);

Total_Highways_Current_Exp = sum(Total_Highways_Dir_Exp, - Total_Highways_Cap_Out);

Regular_Hwy_Current_Exp = sum(Regular_Hwy_Direct_Exp, - Regular_Hwy_Cap_Out);

Toll_Hwy_Current_Exp = sum(Toll_Hwy_Total_Expend, - Toll_Hwy_Cap_Out);

Hous___Com_Current_Exp = sum(Hous___Com_Direct_Exp, - Hous___Com_Cap_Outlay);

Libraries_Current_Exp = sum(Libraries_Direct_Exp, - Libraries_Cap_Outlay);

Natural_Res_Current_Exp = sum(Natural_Res_Direct_Exp, - Natural_Res_Cap_Outlay);

Parking_Current_Exp = sum(Parking_Direct_Expend, - Parking_Capital_Outlay);

Parks___Rec_Current_Exp = sum(Parks___Rec_Direct_Exp, - Parks___Rec_Cap_Outlay);

Police_Prot_Current_Exp = sum(Police_Prot_Direct_Exp, - Police_Prot_Cap_Outlay);

Prot_Ins__p_Current_Exp = sum(Prot_Ins__p_Direct_Exp, - Prot_Ins__p_Cap_Outlay);
Public_Welf_Current_Exp = sum(Public_Welf_Direct_Exp, -
Public_Welf_Cap_Outlay, -Public_Welf_Cash_Asst);
Welf_Ins_Current_Exp = sum(Welf_Ins_Total_Exp, -Welf_Ins_Cap_Outlay);
Welf_NEC_Current_Exp = sum(Welf_NEC_Direct_Expend, -
Welf_NEC_Cap_Outlay);
Sewerage_Current_Exp = sum(Sewerage_Direct_Expend, -
Sewerage_Cap_Outlay);
SW_Mgmt_Current_Exp = sum(SW_Mgmt_Direct_Expend, -
SW_Mgmt_Capital_Outlay);
Water_Trans_Current_Exp = sum(Water_Trans_Direct_Exp, -
Water_Trans_Cap_Outlay);
General_NEC_Current_Exp = sum(General_NEC_Direct_Expend, -
General_NEC_Cap_Outlay, -VetBonus);
Liquor_Stores_Current_Exp = sum(Liquor_Stores_Tot_Exp, -
Liquor_Stores_Cap_Out);
Total_Util_Current_Exp = sum(Total_Util_Total_Exp, -
Total_Util_Inter_Exp, -Total_Util_Cap_Outlay);
Water_Util_Current_Exp = sum(Water_Util_Total_Exp, -
Water_Util_Inter_Exp, -Water_Util_Cap_Outlay);
Elec_Util_Current_Exp = sum(Elec_Util_Total_Exp, -Elec_Util_Inter_Exp,
-Gas_Util_Cap_Outlay);
Gas_Util_Current_Exp = sum(Gas_Util_Total_Exp, -Gas_Util_Inter_Exp, -
Gas_Util_Cap_Outlay);
Trans_Util_Current_Exp = sum(Trans_Util_Total_Exp, -
Trans_Util_Inter_Exp, -Trans_Util_Cap_Outlay);

run;

*Set the order of the variables in the largest data set. Only the variables
to be placed at the front of the data set need to be listed in the retain
statement.;
*Also drop any variables that are unreliable according to the census, or that
are both unneeded and unavailable in the newest data.;

Data LargestData (Drop= SortCode Census_Region Weight YearDepSch YearRetire
Version ReviseDate Data_Flag JacketUnit ZeroData Imputed_Record);
Retain SurveyYr Year4 YearofData ID IDChanged State_Code Type_Code
County Name FIPS_Code_State FYEndDate YearPop SchLevCode Population
FunctionCode Enrollment SurveyYr Year4 ID State_Code Type_Code County Name
FIPS_Code_State FYEndDate YearPop SchLevCode Population Total_Revenue
Total_Rev_Own_Sources General_Revenue Gen_Rev_Own_Sources Total_Taxes
Property_Tax Tot_Sales__Gr_Rec_Tax Total_Gen_Sales_Tax
Total_Select_Sales_Tax Alcoholic_Beverage_Tax Amusement_Tax
Insurance_Premium_Tax Motor_Fuels_Tax Par_i_mutuels_Tax Public_Utility_Tax
Tobacco_Tax Other_Select_Sales_Tax Total-License_Taxes Alcoholic_Beverage_Lic
Amusement-License Corporation-License Hunting--Fishing-License
Motor_Vehicle-License Motor_Veh_Oper-License Motor_Vehicle-License_Total
Public_Utility-License Occup_and_Bus_Lic_NEC Other-License_Taxes
Total_Income_Taxes Individual_Income_Tax Corp Net_Income_Tax
Death_and_Gift_Tax Docum_and_Stock_Tr_Tax Severance_Tax Taxes_NEC
Total_IG_Revenue Total_Fed_IG_Revenue Fed_IGR_Air_Transport Fed_IGR_Education
Fed_IGR_Health__Hos Fed_IGR_Highways
Fed_IGR_Transit_Sub Fed_IGR_Hous_Com_Dev Fed_IGR_Natural_Res
Fed_IGR_Public_Welf Fed_IGR_Sewerage_Fed_IGR_Other_Total_State_IG_Revenue
State_IGR_Education State_IGR_Tax_Relief State_IGR_Oth_Gen_Sup
State_IGR_Gen_Sup State_IGR_Health__Hos State_IGR_Highways
State_IGR_Transit_Sub State_IGR_Hous_Com_Dev State_IGR_Public_Welf
* Write the final file to a delimited text file, change this path to define a valid location for the file on your system:

```sql
Proc Export Data=work.LargestData
    outfile='E:/CensusData/AllCensusData.csv'
    dbms=CSV
    replace;
run;
```