An Evaluation of Backwards Imputation for the Annual Survey of Public Employment & Payroll

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Abstract

The Annual Survey of Public Employment & Payroll (ASPEP) provides state and local government data on full-time and part-time employment, part-time hours worked, full-time equivalent employment, and payroll statistics by governmental function. For nonresponding general purpose governments, dependent and independent school districts, and special district governments with no historical data available (i.e., births), missing data are imputed using the hot-deck imputation method. Since the hot-deck imputation method entails the use of a random donor for imputation, it is possible that the imputed data do not accurately reflect the data of the unit that was imputed. In an effort to increase data quality, research was conducted to determine if a more accurate imputed value could later be obtained through backwards imputation. This paper describes the results of this research. It discusses the backwards imputation methodology as implemented for the survey and compares the current hot-deck methodology with the backwards imputation methodology.

Key Words: Missing data, nonresponse

1. Introduction

The Annual Survey of Public Employment & Payroll (ASPEP) provides state and local government data on full-time and part-time employment, part-time hours worked, full-time equivalent employment, and payroll statistics by governmental function. In years that end in '2' or '7', the survey becomes a part of the Census of Governments, where all government units are surveyed. A new sample is selected from the Census data every five years (in years ending in '4' or '9') (U.S. Census Bureau 2016). Although the survey provides data on both state and local governments, only data from local governments were used in this research. Employment and payroll data are imputed for the following types of local governments: county governments, municipal governments, township governments, special districts and school districts. The five variables imputed are full-time employment (FTE), full-time payroll (FTP), part-time employment (PTE), part-time payroll (PTP) and part-time hours (PTHR). Respondents are asked to provide the payroll and employment data for the pay period that includes March 12.

Counties, municipalities and townships are referred to as "general purpose" local governments in Census Bureau statistics on governments. General purpose governments provide general services, or functions, in the specified geographic areas. Special district governments provide only one or a limited number of designated functions. School districts provide public elementary, secondary and/or higher education functions. Refer to the Attachment for a list of all of the functions. School districts are further classified as

independent schools or dependent schools. Dependent schools are those that depend on a county, municipal, township, or state government (U.S. Census Bureau 2006).
Two imputation procedures are used to impute missing values of full-time employment, full-time payroll, part-time employment and part-time payroll for nonrespondent local government units in the ASPEP. The method that is used to impute these four variables depends on the availability of prior data. Nonresponding units with prior data are imputed using growth rate imputation. Units with no prior data (i.e., births) are imputed using hot-deck imputation. The fifth variable, part-time hours, is imputed as the product of the imputed current year part-time payroll and the ratio of the prior year part-time hours to the prior year part-time payroll.

To perform growth rate imputation, the current year and prior year respondents are first identified. Then the ratio of the current year value to the prior year value of the variable (i.e., the growth rate) is computed for each of the respondent units. Averages of these growth rates are calculated by imputation group for general purpose governments, dependent schools and independent schools. Median growth rates are calculated by imputation group for special districts. Imputation groups are formed differently depending on the type of government. Imputation groups for general purpose governments are formed by state, type of government (i.e., county, municipality or township) and sometimes by population. The imputation groups for independent and dependent schools are formed by state, school level and sometimes also by enrollment (depending on the state). Lastly, the imputation groups for special districts are formed by state and government function. An imputed value for a nonrespondent unit is then obtained by multiplying the unit's prior data by the corresponding mean growth rate (or the median growth rate in the case of special districts) from the nonrespondent unit's imputation group.

Since growth rate imputation entails the use of prior data, units with no prior data cannot be imputed using this method. Consequently, these units are imputed using hot-deck imputation. To impute ASPEP units using hot-deck imputation, a responding unit, or donor, is randomly selected from the nonrespondent unit's imputation group. To obtain an imputed value for the nonrespondent unit, the selected donor's data are adjusted by the ratio of the nonrespondent's population (or enrollment in case of school districts) to the donor's population or enrollment. There is no population or enrollment data available for special districts. As a result, the imputed variable values are set to the donor's values, without making any adjustments to the donor's data.

According to Andridge and Little (2010), "…a weakness [of hot-deck imputation] is that it requires good matches of donors to recipients…" Due to the randomness factor associated with hot-deck imputation, it is possible that the selected donor's data do not represent the nonrespondent unit very well. This is particularly an issue for the ASPEP, as the data collected are used in future imputations. In addition, data from Census years are also used for sample selection. As a result, in an effort to increase data quality, units imputed with hot-deck imputation were researched to determine if a more accurate imputed value could later be obtained through backwards imputation. If so, the original hot-decked value would be replaced with the backwards-imputed value.

2. Backwards Imputation

2.1 Backwards Imputation Methodology Applied to the ASPEP

The goal of backwards imputation for the ASPEP is to replace an imputed value that was originally obtained through hot-deck imputation. To perform backwards imputation for this research, all the units that were hot-decked in 2007 were monitored to determine if they responded to the survey a subsequent year. If the unit responded in a later year, the reported variable values of the unit were used to backwards impute a value for 2007. The backwards-imputed value would replace the value that was hot-decked in 2007.

The backwards imputation procedure as applied to the ASPEP resembles the growth rate imputation methodology discussed in the Introduction. If a nonrespondent unit that was hot-decked in 2007 responded to the survey a subsequent year (i.e., current year), all current year respondents that also responded in 2007 are identified. Shrink rates are then calculated for the variables of these respondents. Shrink rates are essentially growth rate inverses. They are computed as the ratio of the variable value in 2007 to the variable value in the current year. Then shrink rate averages are computed by imputation group for general purpose governments and for school districts. Shrink rate medians are calculated by imputation group for special districts. These imputation groups are constructed in the same way that they are formed for growth rate imputation. To obtain a backwards-imputed value, the current year variable value of the unit that was hot-decked in 2007 is multiplied by the mean or the median shrink rate from the imputation group of the hot-decked unit.

To illustrate the backwards imputation process, suppose that the following four units are survey respondents in current survey year (CY) 2008 and in prior survey year (PY) 2007. Suppose also that these units are general purpose governments and were assigned to imputation group 1. Table 1 shows reported employment and payroll information (using dummy data for illustration purposes).

Table 1: Sample Respondent Data in Imputation Group 1

Unit	*CY FTE*	*PY FTE*	*CY FTP*	*PY FTP*	*CY PTE*	*PY PTE*	*CY PTP*	*PY PTP*
A	35	33	69,661	63,958	5	6	6,536	10,238
B	43	32	96,096	82,290	1	0	425	0
C	4	3	7,147	5,539	4	16	2,801	10,362
D	106	103	384,636	361,466	22	20	20,533	18,533

The next step in the process is to calculate a shrink rate (SR) for each variable and unit in the imputation group. Recall that shrink rates are calculated as the ratio of the prior year value of the variable to the current year value of such variable. Table 2 provides the resulting shrink rates.

Table 2: Shrink Rates in Imputation Group 1

Unit	*FTE SR*	*FTP SR*	*PTE SR*	*PTP SR*
A	0.9429	0.9181	1.2000	1.5664
B	0.7442	0.8563	0.0000	0.0000
C	0.7500	0.7750	4.0000	3.6994
D	0.9717	0.9398	0.9091	0.9026

After the individual shrink rates are calculated for all the respondent units in the imputation group, the mean of the individual rates is computed. For our sample data, the mean shrink rates (from 2008 to 2007) are as follows:

Table 3: Mean Shrink Rates of Each Variable

FTE SR Mean	*FTP SR Mean*	*PTE SR Mean*	*PTP SR Mean*
0.8522	0.8723	1.5273	1.5421

Now suppose that unit J was imputed with hot-deck imputation in 2007 and responded to the survey in 2008. Suppose also that this unit is in the same imputation group as the four respondents in Table 1. Table 4 shows the employment, payroll and part-time hours data that were hot-decked for the unit in 2007 and the data that the unit reported in survey year 2008.

Table 4: Hot-decked Data in 2007 and Reported Data in 2008

Unit J	*FTE*	*FTP*	*PTE*	*PTP*	*PTHR*
Hot-decked value in 2007 (PY)	615	2,569,653	3	6,542	321
Reported value in 2008 (CY)	199	500,814	22	30,315	3,235

Since the hot-decked unit reported data in 2008, its reported data and the mean shrink rates calculated above are used to backwards impute. A backwards-imputed value of FTE, FTP, PTE and PTP for 2007 (i.e., PY) is obtained by multiplying the reported variable value from 2008 (i.e., CY) by the calculated mean shrink rate of such variable:

Table 5: Backwards-imputed Data for Survey Year 2007

Unit J	*FTE*	*FTP*	*PTE*	*PTP*
Backwards-imputed value for 2007	170	436,860	34	46,749

A backwards-imputed value of part-time hours is obtained in one of three ways, depending on unit J's reported value of part-time hours in 2008 (CY PTHR) shown in Table 4 and the backwards-imputed value of PTP shown in Table 5.

- CY PTHR > 0 and Backwards-imputed PTP > 0

  Backwards-imputed PTHR = Backwards-imputed PTP × (CY PTHR ÷ CY PTP).

- CY PTHR = 0 and Backwards-imputed PTP > 0

  Backwards-imputed PTHR = Backwards-imputed PTP × (Cell Median of CY PTHR ÷ CY PTP).

- Backwards-imputed PTP = 0

  Backwards-imputed PTHR = 0.

Since CY PTHR and the backwards-imputed value of PTP are both positive for the unit in our example, a backwards-imputed value of part-time hours is calculated as:

Backwards-imputed PTHR = Backwards-imputed PTP × (CY PTHR ÷ CY PTP)
= 46,749 × (3,235 ÷ 30,315)
= 4,989.

2.2 Results

2.2.1 Number of units and functions hot-decked and backwards-imputed

Table 6 provides data on the number of units and functions that were hot-decked in 2007 by type of government. The table also shows the number of units and functions that were backwards-imputed using respondent data from 2008, 2009, 2010 and 2011.

Table 6: Number of Units and Functions Hot-decked in 2007 and Backwards-imputed a Subsequent Year

	General Purpose	*Special Districts*	*Independent Schools*	*Dependent Schools*	*Backwards-imputed Total*
Units/functions hot-decked in 2007*	63,625	28,094	2,890	412	--
Units/functions backwards-imputed with 2008 data	1,583	15	80	46	1,724
Units/functions backwards-imputed with 2009 data	1,270	37	82	21	1,410
Units/functions backwards-imputed with 2010 data	871	15	50	20	956
Units/functions backwards-imputed with 2011 data	261	3	10	9	283
Backwards-imputed Total	3,985	70	222	96	4,373

Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

As Table 6 shows, most of the units and functions that were hot-decked in 2007 were general purpose governments. This is also the type of government with the most units among the four types of governments.

2.2.2 Reported versus hot-decked means and backwards-imputed means

The units that responded a subsequent year were analyzed to compare their reported data with the hot-decked imputed values and with the backwards-imputed values. Tables 7A through 7D show the reported mean of such units, the hot-decked mean and the backwards-imputed mean by government for each of the five variables. Ratios of the reported mean to each of the imputed means are also included in the tables.

* The output file produced at the time was a square file. A square file is one where all the possible functions of a government type are populated for each unit, regardless of whether a given function was applicable to an imputed unit. This resulted in a larger total number of units and functions hot-decked in 2007.

Table 7A: Reported (R), Hot-decked (HD) and Backwards-imputed (BI) Means
General Purpose Governments (n = 3,985)

	Reported		*Hot-decked*		*Backwards-imputed*		*Reported to Imputed Mean Ratios*	
Var	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*	*R to HD*	*R to BI*
FTE	20.6	1.1	21.7	1.3	20.6	1.1	0.95	1.00
FTP	84,246.7	5,186.1	79,675.1	4,980.0	78,981.3	4,797.3	1.06	1.07
PTE	4.0	0.3	5.8*	0.5	4.0	0.3	0.69	1.00
PTP	4,731.8	608.1	6,080.8	819.8	4,649.4	613.4	0.78	1.02
PT HR	309.5	33.4	412.0*	40.0	303.1	33.4	0.75	1.02

*represents the difference from the reported mean was significant at alpha = 0.10.
Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

Table 7B: Reported (R), Hot-decked (HD) and Backwards-imputed (BI) Means
Special Districts (n = 70)

	Reported		*Hot-decked*		*Backwards-imputed*		*Reported to Imputed Mean Ratios*	
Var	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*	*R to HD*	*R to BI*
FTE	11.7	8.0	15.1	6.8	11.4	7.8	0.77	1.03
FTP	34,893.4	22,625.8	52,862.2	22,858.2	29,696.2	19,107.6	0.66	1.18
PTE	1.1	0.3	6.2*	2.5	1.0	0.3	0.18	1.10
PTP	819.9	244.8	6,883.5*	3,002.1	674.1	202.5	0.12	1.22
PT HR	68.7	21.6	432.7*	171.2	56.4	17.8	0.16	1.22

*represents the difference from the reported mean was significant at alpha = 0.10.
Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

Table 7C: Reported (R), Hot-decked (HD) and Backwards-imputed (BI) Means
Independent Schools (n = 222)

	Reported		*Hot-decked*		*Backwards-imputed*		*Reported to Imputed Mean Ratios*	
Var	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*	*R to HD*	*R to BI*
FTE	476.1	43.6	471.4	42.0	474.9	43.2	1.01	1.00
FTP†	1,871.254	170.538	1,805.152	162.353	1,774.590	161.056	1.04	1.05
PTE	154.0	14.3	175.6	18.0	155.3	14.2	0.88	0.99
PTP	166,771.0	16,148.4	198,395.0	26,137.3	164,655.0	16,156.9	0.84	1.01

† FTP means and standard errors are expressed in thousands.

Table 7C: Reported (R), Hot-decked (HD) and Backwards-imputed (BI) Means
Independent Schools (n = 222)

	Reported		*Hot-decked*		*Backwards-imputed*		*Reported to Imputed Mean Ratios*	
Var	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*	*R to HD*	*R to BI*
PT HR	10,398.3	1,004.6	12,921.6	1,708.7	10,208.9	978.7	0.80	1.02

[*] represents the difference from the reported mean was significant at alpha = 0.10.
Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

Table 7D: Reported (R), Hot-decked (HD) and Backwards-imputed (BI) Means
Dependent Schools (n = 96)

	Reported		*Hot-decked*		*Backwards-imputed*		*Reported to Imputed Mean Ratios*	
Var	*Mean*	*SE*	*Mean*	*SE*	*Mean*	*SE*	*R to HD*	*R to BI*
FTE	221.5	34.0	252.8	40.3	211.2	29.2	0.88	1.05
FTP[‡]	1,004.96	175.467	921.257	148.004	894.812	140.204	1.09	1.12
PTE	97.1	18.7	115.8	24.0	114.6	25.2	0.84	0.85
PTP	140,715.0	32,127.9	167,445.0	53,808.6	178,548.0	38,863.7	0.84	0.79
PT HR	6,785.4	1,478.4	7,430.4	1,879.0	8,636.6	1,734.4	0.91	0.79

[*] represents the difference from the reported mean was significant at alpha = 0.10.
Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

As the tables show, the backwards-imputed means were generally much closer to the reported means than were the hot-decked means, although not all of the differences were significant. Special Districts in particular show a great discrepancy between the reported and the hot-decked means, especially when we consider the PTE, PTP and PTHR means. The hot-decked means overestimate the reported means, with reported to hot-deck mean ratios as low as 0.12 and these differences were significant.

Next, we consider the reported means, the hot-decked means and the backwards-imputed means by state for general purpose governments. Ratios of reported means to hot-deck imputed means and reported means to backwards-imputed means for each of the five variables are shown in Figure 1 through Figure 5.

Within general purpose governments, Figure 1 through Figure 5 show that the hot-decked imputed means underestimated the reported means of all five variables in the state of Utah, with the biggest discrepancy found in the reported versus hot-decked mean of part-time payroll (Figure 4). The reported part-time payroll mean in the state was approximately 5.18 times greater than the hot-decked mean, and the difference between the reported and the hot-decked means was significant. However, it should be noted that the number of units in Utah was small – only 23 units were analyzed in the state of Utah.

[‡] FTP means and standard errors are expressed in thousands.

Similarly, the figures show that the hot-decked means overestimated the reported means of all variables in the state of Wyoming. The main discrepancies in this state are found in the hot-deck means of part-time employment, part-time payroll and part-time hours (Figure 3 through Figure 5). These items had ratios of reported to hot-decked means of 0.06, 0.06 and 0.05, respectively, but the differences between the reported and the hot-decked means were not significant. However, the number of units in the state of Wyoming was small, as only 16 units were included in the analysis. The backwards-imputed means of all items were much closer to 1.0 in these states, indicating that the backwards-imputed means were much closer to the reported means.

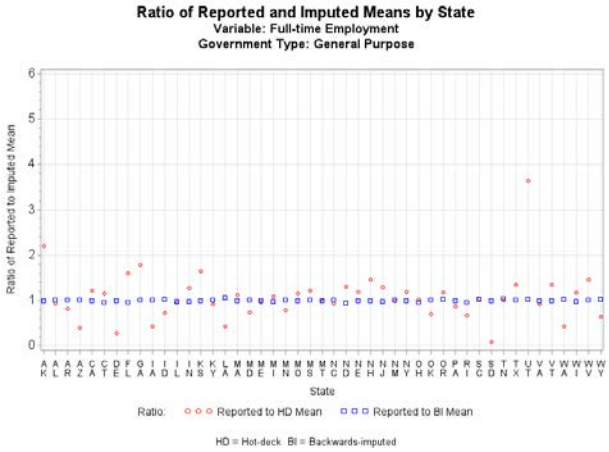

Figure 1: Ratio of Reported to Imputed FTE Means by State – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

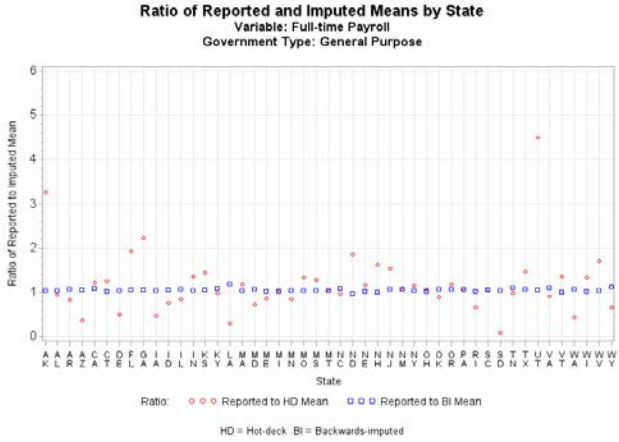

Figure 2: Ratio of Reported to Imputed FTP Means by State – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

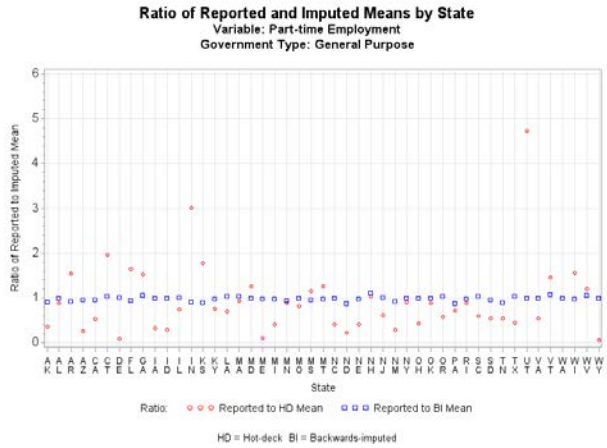

Figure 3: Ratio of Reported to Imputed PTE Means by State – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

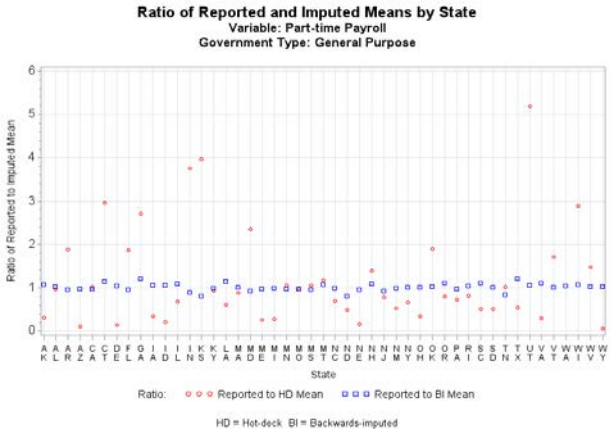

Figure 4: Ratio of Reported to Imputed PTP Means by State – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

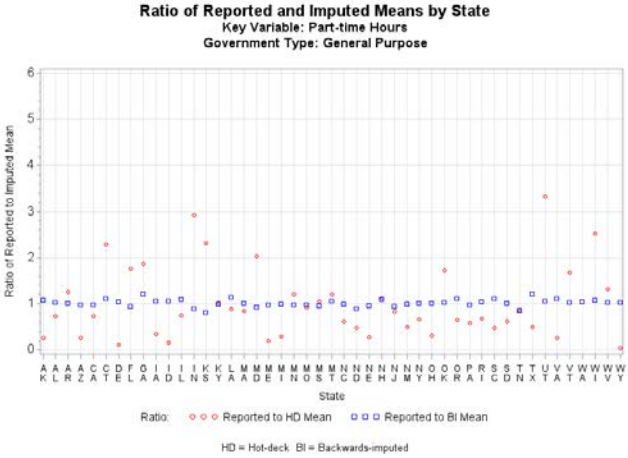

Figure 5: Ratio of Reported to Imputed PT Hours Means by State – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

The same type of analysis was performed for the remaining types of governments. For each of these governments, the comparison of reported means to imputed means at the state level yielded the same result - the backwards-imputed means of all items were much closer to 1.0 than the hot-deck imputed means. Thus implying that the backwards-imputed means were more in line with the reported values than the hot-deck means.

2.2.3 Reported versus hot-decked values and backwards-imputed values

To illustrate how different a hot-deck imputed value can be from a reported value and a backwards-imputed value, Figure 6 through Figure 10 show the hot-deck imputed values (along the X-axis), the corresponding values that these units reported in a later year (along the bottom half of the Y-axis), and the backwards-imputed values obtained from the reported data (along the top half of the Y-axis). Although the values were compared for all five variables and four government types, the figures show employment and payroll data for select variables and government types. However, a similar conclusion can be made for the data that are not shown in the graphs.

Figures 6 through 10 show what was determined following the analysis of the reported means, the hot-decked means and the backwards-imputed means. These figures show that the hot-decked imputed values can be drastically different from the values that the units report in a subsequent year.

Among the extreme cases, Figure 6 shows a general purpose unit that had its full-time employment hot-decked to over 2,000 employees. However, this unit later reported zero full-time employment (as well as zero full-time payroll and zero part-time employment and part-time payroll) because the unit did not provide the service, or function, that the employment and payroll data were assigned to through hot-deck imputation. The unit had full-time employment (and all other variables) backwards-imputed to zero for that particular function.

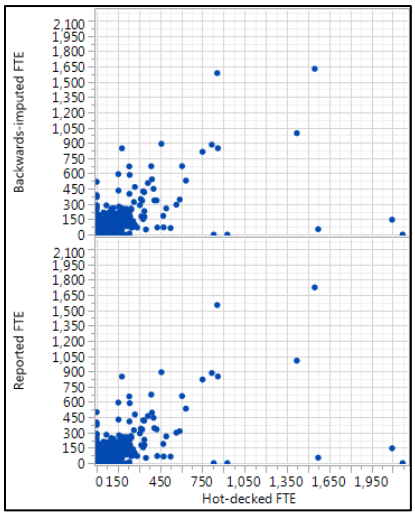

Figure 6: Hot-decked, Reported and Backwards-imputed Values of FTE – General Purpose Governments. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

Conversely, Figure 7 shows a special district unit that had full-time payroll hot-decked to 0, but the unit later reported over 1.5 million in full-time payroll. The unit had full-time

payroll backwards-imputed to a value much closer to the reported value (full-time payroll was backwards-imputed to approximately 1.3 million).

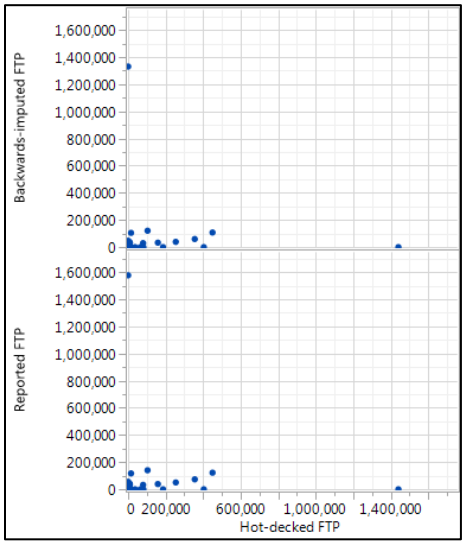

Figure 7: Hot-decked, Reported and Backwards-imputed Values of FTP – Special Districts. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

Within independent schools, Figure 8 shows a unit whose part-time employment was hot-decked to approximately 2,100 employees, and the unit subsequently reported having only 31 part-time employees. A more reasonable imputed value of 28 was assigned to this unit through backwards imputation.

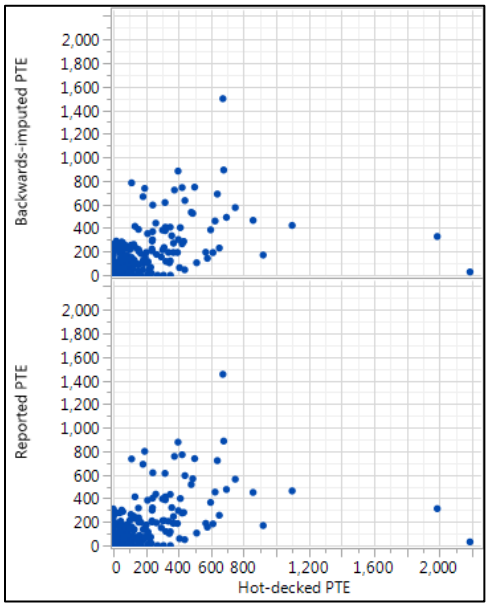

Figure 8: Hot-decked, Reported and Backwards-imputed Values of PTE – Independent Schools. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

In Figure 9, we see an independent school unit with its part-time payroll hot-decked to over 3,500,000, but it later reported a part-time payroll value of approximately 28,700. The backwards-imputed part-time payroll value for the unit turned out to be approximately 25,000.

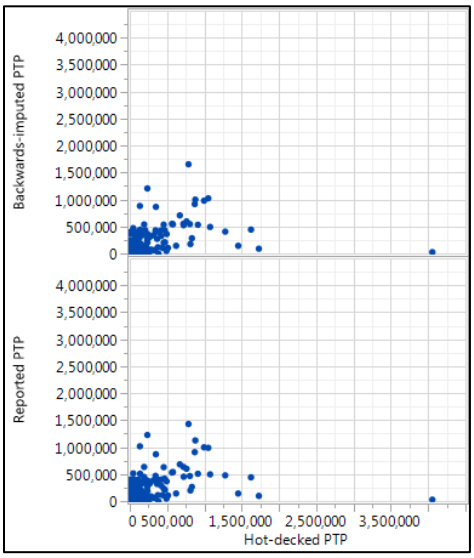

Figure 9: Hot-decked, Reported and Backwards-imputed Values of PTP – Independent Schools. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

In another instance, a dependent school unit had its part-time hours hot-decked to approximately 60,000 but the unit later reported a part-time hours value of approximately 30,000, as shown in Figure 10. This unit's value of part-time hours was backwards-imputed to approximately 21,000.

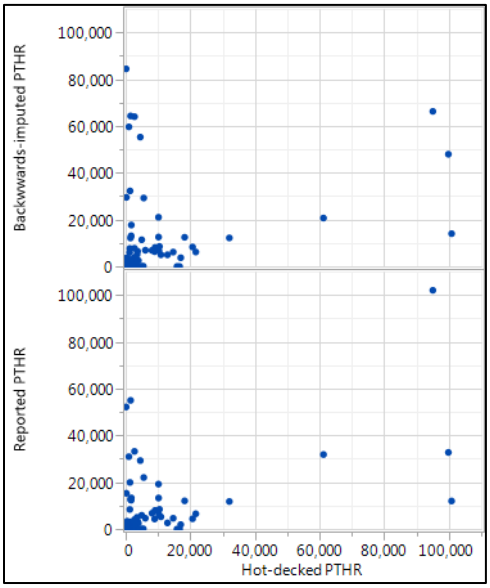

Figure 10: Hot-decked, Reported and Backwards-imputed Values of PTHR – Dependent Schools. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2008 – 2011), U.S. Census Bureau.

2.2.3 Published local government data versus updated data

The next part of the analysis pertained to determining how much the published local government data for 2007 would change if the hot-decked imputed data were replaced with the backwards-imputed data, when available. To this end, the files of respondent and imputed data from 2007 were used to calculate totals of full-time employment (FTE), full-time payroll (FTP), part-time employment (PTE), part-time payroll (PTP) and part-time hours (PTHR) by function code and by state/function code, thus reproducing the published totals.

Since the totals reproduced for this research did not match the published totals for all states and function codes, the reproduced totals were used as a base of comparison to determine how the backwards-imputed values would affect the calculated totals. Figure 11 shows ratios of the reproduced totals to the totals obtained when the backwards-imputed values available replaced the originally hot-decked values (i.e., the updated totals) by function code for each of the five variables. The only function codes shown in the figure are those for units backwards-imputed. Refer to the Attachment for a list of all the function codes and their descriptions.

As Figure 11 shows, the updated totals do not change the reproduced totals much at the function-level. Most of the reproduced to updated total ratios are slightly greater than 1.0, implying that most of the totals decreased when the backwards-imputed values replaced the hot-decked values.

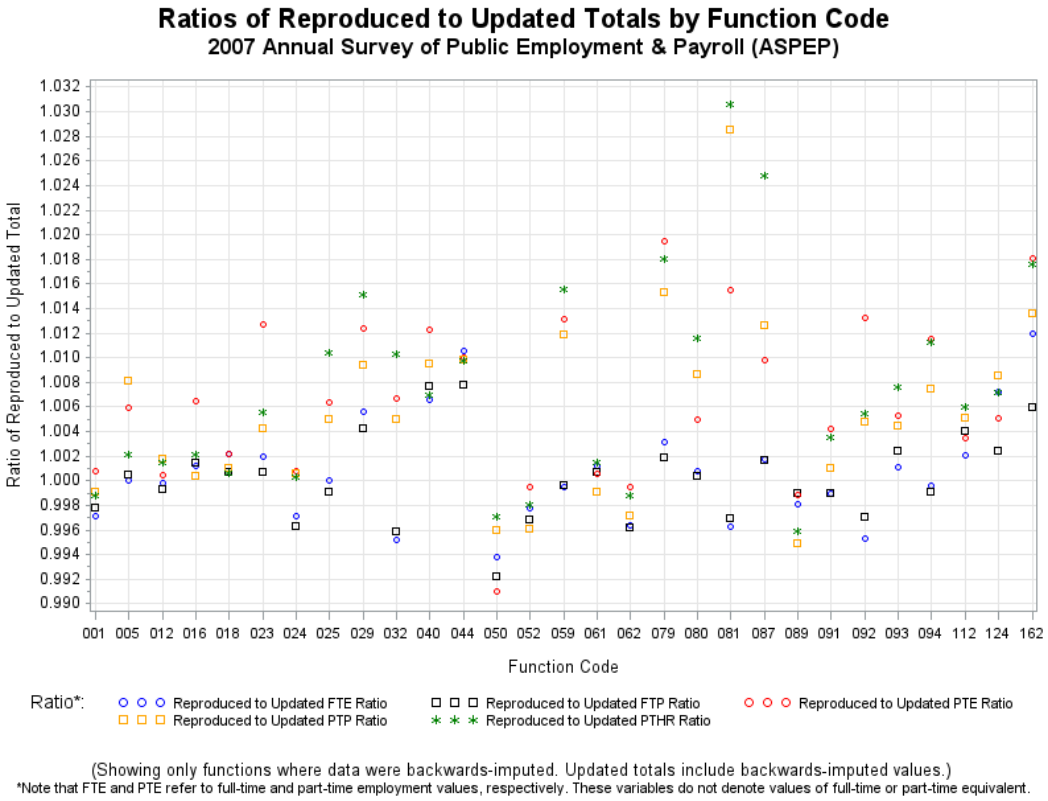

Figure 11: Ratios of Reproduced to Updated Totals by Function Code. Source: Census of Governments: Employment (2007) and Annual Survey of Public Employment & Payroll (2007 – 2011), U.S. Census Bureau.

3. Conclusion

The randomness factor in hot-deck imputation can yield imputed data that does not necessarily represent the unit being imputed. This is particularly an issue for ASPEP because the data collected are used in future imputations. Moreover, Census data are also used in sample selection. The comparison of reported means, hot-decked means and backwards-imputed means of each variable showed that the means obtained through hot-deck imputation can be quite different from the means that these imputed units eventually report. This was also evident when the individual hot-decked values were compared to the reported and to the backwards-imputed values. The backwards-imputed data, however, seem to be more in line with the reported data of the unit, providing a better representation of such unit. Since prior data are used in various ASPEP processes, such as imputation and sample selection, using backwards imputation to replace hot-deck imputed values is a feasible approach to increase the quality of the data obtained from the ASPEP.

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Attachment: Function Code Descriptions

Function	Description
001	Air Transportation
002	Space Research & Technology (Federal)
005	Corrections
006	National Defense & International Relations (Federal)
012	Elementary and Secondary - Instruction
014	Postal Service (Federal)
016	Higher Education - Other
018	Higher Education - Instructional
021	Other Education (State)
022	Social Insurance Administration (State)
023	Financial Administration
024	Firefighters
025	Judicial & Legal
029	Other Government Administration
032	Health
040	Hospitals
044	Highways
050	Housing & Community Development
052	Libraries
059	Natural Resources
061	Parks & Recreation
062	Police Protection - Officers
079	Public Welfare
080	Sewerage
081	Solid Waste Management
087	Water Transport & Terminals
089	All Other & Unallocable
090	Liquor Stores (State)
091	Water Supply
092	Electric Power
093	Gas Supply
094	Transit
112	Elementary & Secondary - Other
124	Fire - Other
162	Police - Other