

Improvements to Medicare Disproportionate Share Hospital (DSH) Payments

Benchmarking S-10 Data Using IRS Form 990 Data: An Update

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Introduction

This brief report represents the third update to a series of analyses comparing uncompensated care data from hospital cost report Worksheet S-10 and IRS Form 990. Our analysis is limited to non-profit hospitals expected to receive Medicare Disproportionate Share (DSH) payments in fiscal year 2019, because only non-profit organizations are required to complete IRS Form 990. In this report, we update our previous analyses by including S-10 and IRS 990 data from 2011 through 2014. We limited the analysis to this timeframe because Worksheet S-10 was introduced in its current form in Fiscal Year (FY) 2011, having been redesigned to capture hospital charity care and bad debt. The most recent IRS Form 990 data available are from 2014. In this report, we also consider the implications of our updated findings and the value of future comparisons between the two data sources. Methods and additional figures are provided in the appendix.

Our prior analyses comparing uncompensated care cost (UCC) data from Worksheet S-10 and IRS Form 990 have provided information on the reliability, validity, and consistency of the S-10 data in measuring hospitals' UCCs. We used data from IRS Form 990 as a standard for assessing the quality of S-10 data because it is an established and audited data source. IRS Form 990 was revised and updated in 2008 with new portions, including Schedule H for hospitals, which includes elements of uncompensated care costs. We compared the level and correlation of UCC and its components, charity care and bad debt, across the S-10 and IRS 990 data. Over the last few years, hospitals have gained experience with Worksheet S-10 and, presumably, have improved the quality of their reporting. Our analyses therefore focused on whether comparable data from the two sources have converged over time.

Summary of Results

- In examining data from 2011 through 2014, we found that the correlation of uncompensated care costs derived from the S-10 data and from IRS Form 990 data remains high, with correlation coefficients for Factor 3¹ of around 0.80 (Table 1). This finding suggests that the S-10 reasonably reflects the relative uncompensated care costs across hospitals as compared to IRS Form 990.
- We did not find improvement in the correlation of uncompensated care costs between 2013 and 2014, although the correlation remained relatively stable since 2012 (Table 1). A visual representation of the correlation between the two data sources by

¹ Factor 3 is defined as a hospital's share of uncompensated care costs relative to the aggregate uncompensated care costs of all DSH-eligible hospitals. For purposes of this analysis, we calculated Factor 3s as the uncompensated care costs for a hospital divided by the sum of uncompensated care costs for hospitals in our sample.

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hospital and by state for each year is presented in Figures 1 through 8, which can be found in the appendix.

- Similar to previous analyses, we found that Worksheet S-10 and IRS Form 990 show differences in the levels and distribution of uncompensated care costs and its component parts, charity care and bad debt (Table 2). The distribution of the S-10-to-IRS 990 ratio for each hospital's Factor 3 has a median of about 1 across the years examined, meaning that the distributions match at their centers. However, the ratio deviates noticeably from 1 at other points in the distributions. For example, the interquartile range (25th-75th percentile) for Factor 3 in 2014 was 0.661 to 1.453. Thus, 50 percent of hospitals in 2014 had a Factor 3 calculated from S-10 data that was at least 33.9 percent lower or 45.3 percent higher than their corresponding Factor 3 based on IRS Form 990 data (Table 2). Thus, the two data sources are not consistent in presenting absolute levels of UCC or its component parts.

Tables

Table 1: Correlation for Key Variables, 2011-2014

Year	Charity Care	Bad Debt	Uncompensated Care	Factor 3
2011	0.7774	0.5528	0.7350	0.7350
2012	0.8532	0.5436	0.7890	0.7890
2013	0.8572	0.6497	0.8145	0.8145
2014	0.7506	0.6942	0.8031	0.8031
Overall	0.8108	0.6050	0.7850	0.7853

Source: KNG Health and Dobson | DaVanzo Team Analysis of 2011-2014 Worksheet S-10 (September 2017 HCRIS) and IRS Form 990

Table 2: Ratios of Key Variables Reported in Worksheet S-10 and IRS Form 990

Key Variables	Percentile based on Ratio of Key Variables between Worksheet S-10 and IRS Form 990								Number of Hospitals
	1%	10%	25%	50%	75%	90%	99%	Mean	
2011									
Charity Care	0.000	0.216	0.513	0.795	0.962	1.264	3.503	0.861	1089
Bad Debt	0.000	0.163	0.269	0.453	0.874	0.981	2.127	0.809	1095
Uncompensated Care Costs	0.000	0.285	0.392	0.581	0.827	0.989	2.187	0.654	1098
Factor 3 (UCC/Total UCC)	0.000	0.509	0.702	1.040	1.479	1.770	3.913	1.170	1098
2012									
Charity Care	0.000	0.247	0.537	0.802	0.967	1.264	3.905	0.882	1089
Bad Debt	0.000	0.164	0.247	0.398	0.845	0.975	2.088	0.603	1097
Uncompensated Care Costs	0.000	0.264	0.381	0.550	0.803	0.963	1.823	0.635	1098
Factor 3 (UCC/Total UCC)	0.000	0.488	0.705	1.019	1.486	1.783	3.376	1.175	1098

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Key Variables	Percentile based on Ratio of Key Variables between Worksheet S-10 and IRS Form 990								Number of Hospitals
	1%	10%	25%	50%	75%	90%	99%	Mean	
2013									
Charity Care	0.000	0.282	0.536	0.794	0.969	1.256	4.164	0.881	1091
Bad Debt	0.000	0.157	0.233	0.371	0.814	0.973	1.594	2.529	1093
Uncompensated Care Costs	0.000	0.258	0.361	0.525	0.798	0.971	1.910	0.762	1098
Factor 3 (UCC/Total UCC)	0.000	0.491	0.688	1.001	1.521	1.851	3.640	1.452	1098
2014									
Charity Care	0.000	0.222	0.512	0.793	0.977	1.368	4.911	1.010	1085
Bad Debt	0.000	0.150	0.217	0.329	0.739	0.957	2.022	0.485	1089
Uncompensated Care Costs	0.000	0.244	0.333	0.485	0.733	0.955	2.098	0.574	1099
Factor 3 (UCC/Total UCC)	0.000	0.484	0.661	0.962	1.453	1.893	4.158	1.138	1099

Source: KNG Health and Dobson | DaVanzo Team Analysis of 2011-2014 Worksheet S-10 (September 2017 HCRI) and IRS Form 990

Discussion

In this update comparing S-10 and IRS 990 data, we find consistency in the correlation of Factor 3 over time, supporting the reliability of S-10 data. However, we continue to find large differences in the levels and distributions of S-10 and IRS 990 uncompensated care costs and related variables.

Differences in the levels of charity care, bad debt, and uncompensated care costs across the S-10 and IRS 990 data are somewhat expected. The S-10 and IRS 990 are different data sources, with different definitions of key variables and allowed reporting periods. For example, some hospitals report gross charges for bad debt expense on IRS Form 990. It is our view that these differences likely affect the levels and distributions of uncompensated care costs and its components in a manner such that they are unlikely to ever match exactly. Because of these differences, we have focused on correlations between Factor 3s, as this construct provides some standardization of differences in uncompensated care levels across data sources. The fact that Factor 3s correlate reasonably well and have stabilized from one year to the next suggests that the S-10 data may reliably measure relative uncompensated care costs.

Beginning in FY 2018, CMS began phasing in the use of S-10 data for determining Medicare DSH payments. While continued assessment of Worksheet S-10 to IRS Form 990 data may show fluctuations in the correlation of uncompensated care costs across the data sources, the focus of future efforts should be on improving the quality of the S-10 data through identification of aberrant or faulty data and implementation of mechanisms to correct such issues. While future efforts could focus on better understanding the differences

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between the levels of key variables in the S-10 and IRS Form 990, continued comparisons of these two data sources to assess the reliability and validity of the S-10 data is unlikely to yield additional insights.

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Appendix: Methodology in Brief and Updated Figures

For this update, as in past analyses, we analyzed correlation and ratios of key variables related to uncompensated care costs (UCC) to assess the consistency of UCC as reported across the data sources. These key variables included charity care and bad debt, examined individually and combined as UCC. We also constructed a fourth key variable, which CMS refers to as Factor 3, by calculating each hospital’s share of UCC relative to the aggregate UCC across hospitals in our sample. Our Factor 3 is designed to roughly emulate the actual Medicare DSH Factor 3. We conducted this analysis for data spanning the years 2011-2014 and include an attrition chart for our sample selection in Table 3. Please refer to our April 2017 report for a full description of our analytic methodology.

Table 3: Attrition Chart

Year	Full-year cost reports with S10	DSH Eligible (2018 impact)	Matching S10/990 Reporting Periods	Consistent Provider Number Cohort	Consistent EIN Cohort
2011	5928	2680	1404	1176	1101
2012	5880	2659	1389	1176	1101
2013	5858	2662	1386	1176	1101
2014	5892	2680	1376	1176	1101

Source: KNG Health and Dobson | DaVanzo Team Analysis of 2011-2014 Worksheet S-10 (Sept 2017 HCRIS) and IRS Form 990

In addition to the analyses described in the body of this report, we also conducted the same analyses after substantial trims of our dataset in an attempt to remove outliers that might affect the correlations and the distributions of key variable ratios. We found that the trims did not substantially improve the distributions and thus did not include these results in this update.

Our previous reports also included several charts displaying a visual representation of the correlation between the two datasets by hospital and by state for each year. We updated these charts with 2014 data and have included the 2011-2014 charts below as Figures 1 through 8. The updated data indicate that the charts do not drastically change compared with previous years, thus pointing to the stability in the correlations between the two data sources over recent time periods.

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Figure 1: IRS 990 Factor 3 and S-10 Factor 3 by EIN in 2011

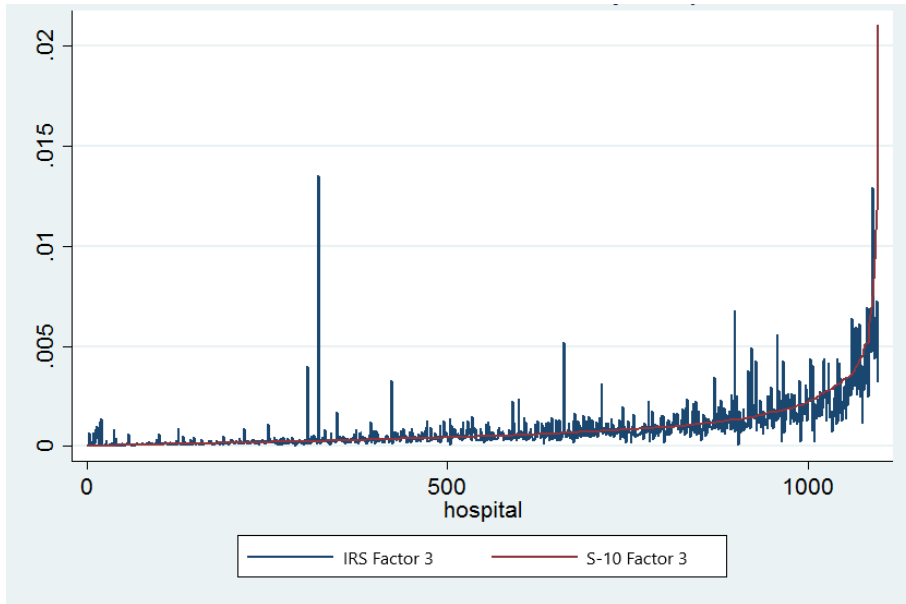
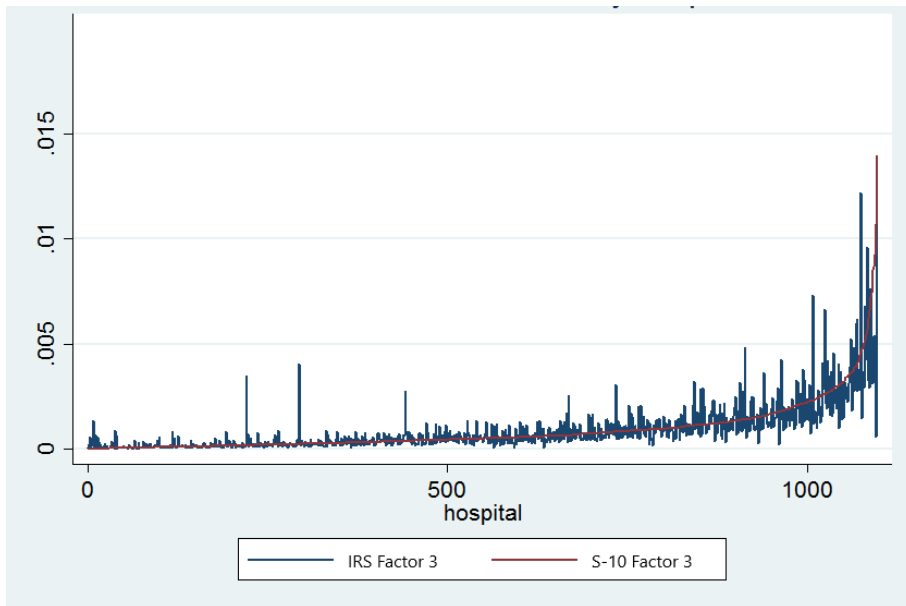


Figure 2: IRS 990 Factor 3 and S-10 Factor 3 by EIN in 2012



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Figure 3: IRS 990 Factor 3 and S-10 Factor 3 by EIN in 2013

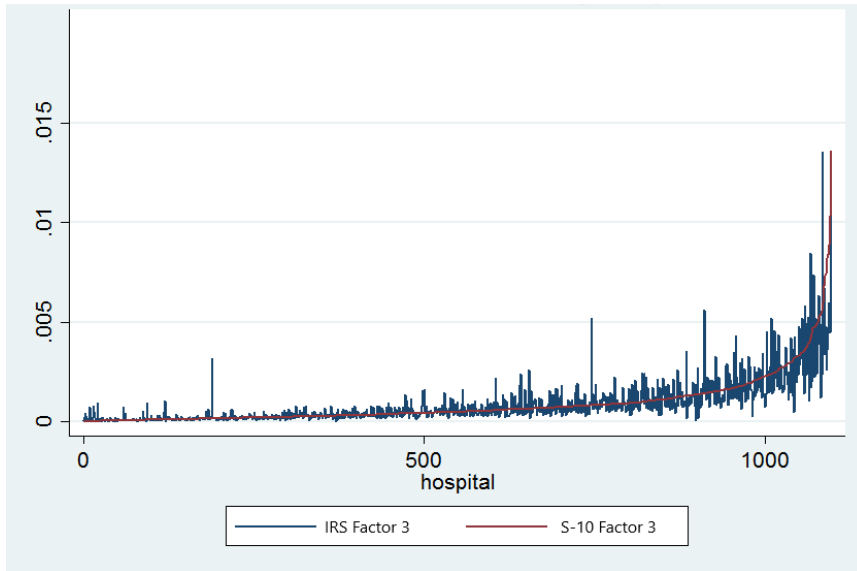
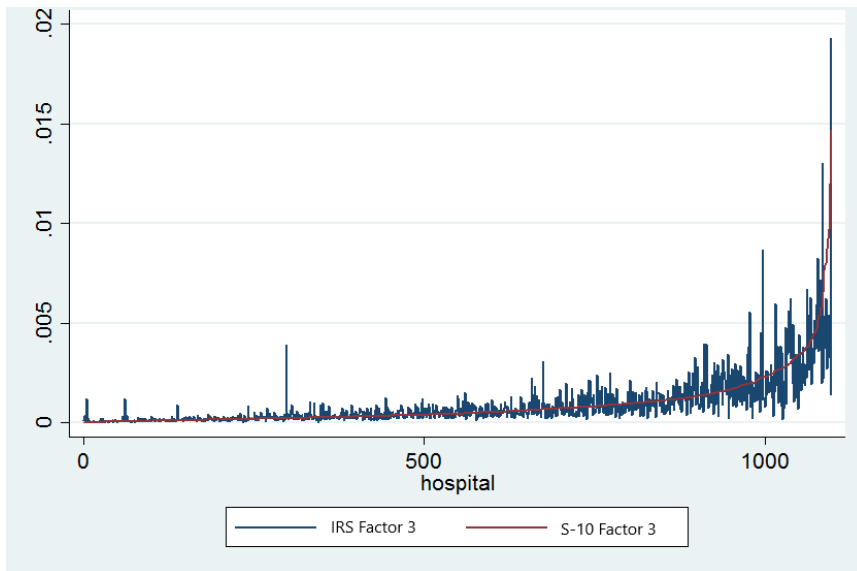


Figure 4: IRS 990 Factor 3 and S-10 Factor 3 by EIN in 2014



Source: KNG Health and Dobson | DaVanzo Team Analysis of 2011-2014 Worksheet S-10 (September 2017 HCRIS) and IRS Form 990

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Figure 5: IRS 990 Factor 3 and S-10 Factor 3 by State: 2011

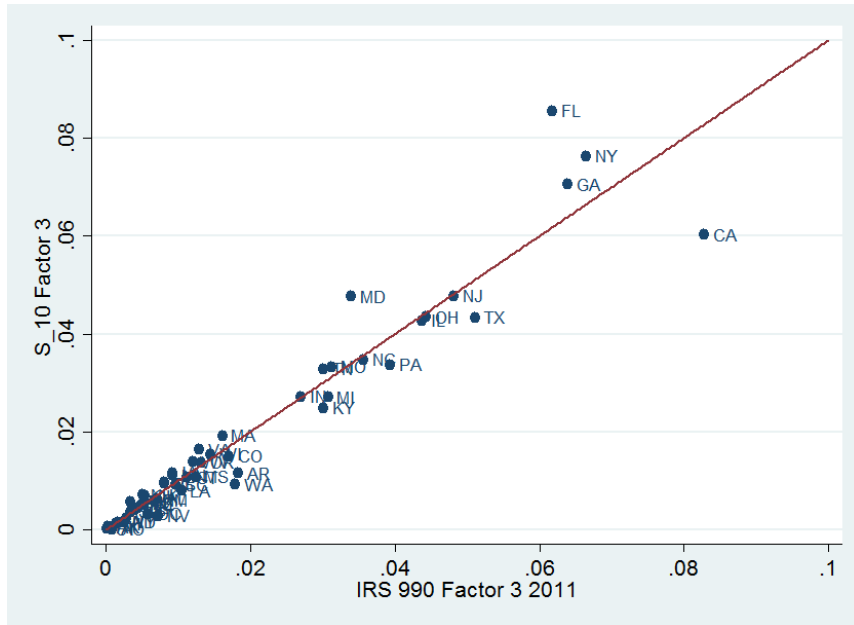
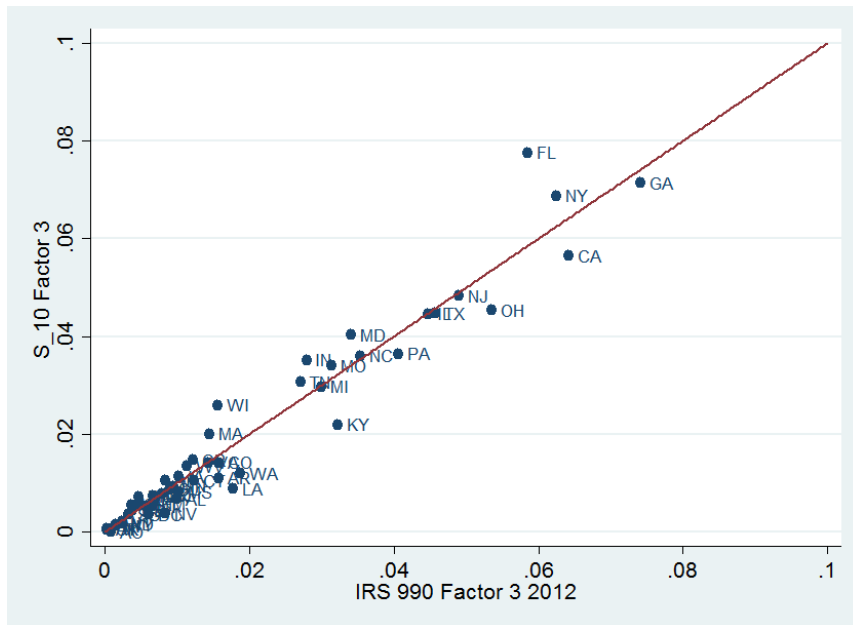


Figure 6: IRS 990 Factor 3 and S-10 Factor 3 by State: 2012



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Figure 7: IRS 990 Factor 3 and S-10 Factor 3 by State: 2013

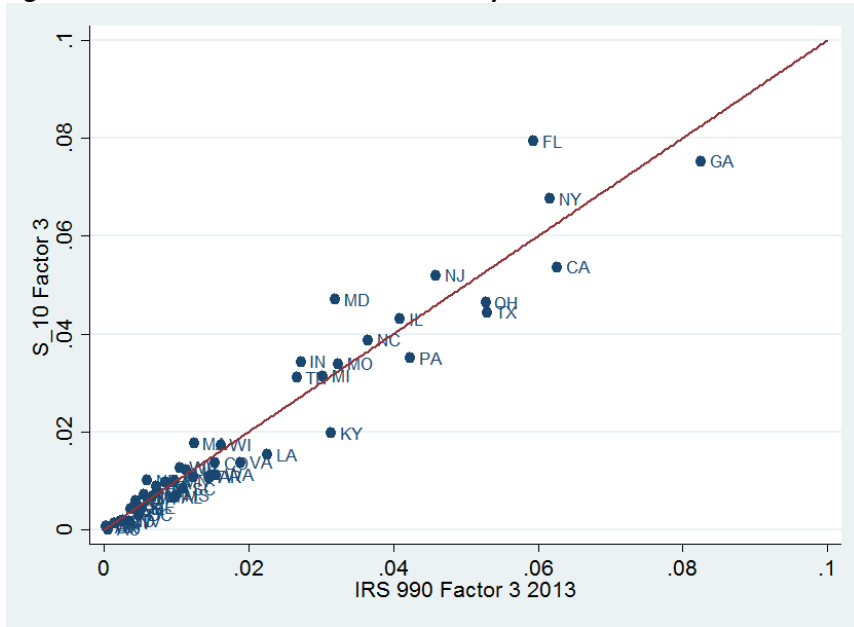
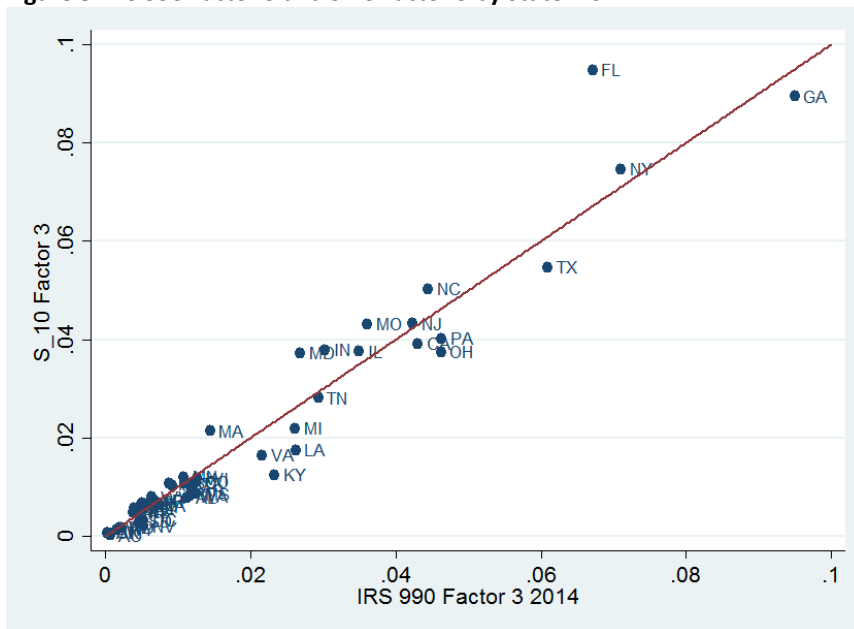


Figure 8: IRS 990 Factor 3 and S-10 Factor 3 by State: 2014



Source: KNG Health and Dobson | DaVanzo Team Analysis of 2011-2014 Worksheet S-10 (September 2017 HCRIS) and IRS Form 990