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A Comparison of Non-Operating Revenue between Rural and Urban Hospitals

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KEY FINDINGS

- Non-operating revenue (NOR) as a percentage of total revenue is highest among rural hospitals and lowest among urban hospitals.
- CAHs have a higher percentage of NOR from philanthropic and government appropriations (such as local and state government tax transfers and grants) and a lower percentage from investments and office space rentals compared to rural PPS and urban PPS hospitals.
- Among hospital years with negative operating margins, a larger proportion of CAHs were able to offset these losses with NOR, as compared to both rural and urban PPS hospitals.
- Hospitals that were able to offset operating losses using NOR have, on average, a higher proportion of NOR coming from government appropriations, as compared to hospitals not able to offset losses.

PURPOSE

The purpose of this study is to compare the relative percentage and composition of non-operating revenue (NOR) among Critical Access Hospitals (CAHs), Rural Prospective Payment System (R-PPS) hospitals, and Urban Prospective Payment System (U-PPS) hospitals. This information may be important to hospital executives seeking to improve financial performance, and to policymakers to understand how non-operating revenue affects hospital financial performance.

BACKGROUND

Non-operating revenue (NOR), defined as revenue from sources other than patient care and activities closely related to patient care, is comprised of investment income, medical office rental revenue, government appropriations (such as state and local tax transfers and grants), and philanthropic sources. It is an important source of hospital revenue; some hospitals are able to use NOR to offset operating losses, improve total margins, and remain profitable overall despite experiencing negative operating incomes.¹⁻³ For example, a study of non-profit hospitals found that net income would have dropped by 31% if hospitals did not have investment income.⁴ Other studies found government appropriations to be important among safety net hospitals,⁵ especially during times of economic recession.⁶ Studies of rural hospitals have found NOR used to offset financial penalties from value-based purchasing programs,⁷ and to benefit the overall financial status of rural hospitals.^{8,9} Among hospitals that have relied on NOR to offset patient care losses, the majority of NOR has been found to be from investments. In contrast, among hospitals that were not able to offset patient care losses, the majority of NOR was from rental revenue on medical office buildings.²



Evidence about differences in the relative importance and composition of NOR between rural and urban hospitals is localized to a few states.^{2,3,10} One study based on 2005-2007 data for 50 New York hospitals found that urban hospitals had a higher median NOR as a percentage of total revenue than rural hospitals.¹⁰ An earlier study using data for rural hospitals in the Northwest U.S. found that negative operating margins changed to positive total margins after including NOR.⁸

Recent information at the national level comparing different sources of NOR in CAH, U-PPS, and R-PPS hospitals is limited. This study aims to provide a description of the differences in size and composition of NOR across these three hospital types.

DATA AND METHODS

Study data came from the Centers for Medicare & Medicaid Services (CMS) Healthcare Cost Report Information System (HCRIS) from 2011-2019.¹¹ Our final sample included 38,833 hospital-year observations from 4,830 unique hospitals. We limited observations to short-term acute hospitals with non-negative values for total NOR. We excluded hospital-year observations if they had: fewer than 360 days in the reporting year (n = 1,780 hospital-year observations); more than 25 beds reported for CAHs (n=44); negative total NOR (e.g., losses greater than gains after summing investment income, contributions, government appropriations, and medical office rental revenue) (n=879); if total margins or operating margins were less than -100% or greater than 100% (n=542 and n=62, respectively); or if they were from Indian Health Service Hospitals (n = 368) or cancer hospitals (n = 98) due to data availability and comparability concerns. We stratified the sample into three categories: Critical Access Hospitals (CAHs), Rural Prospective Payment System (R-PPS) hospitals, and Urban Prospective Payment System (U-PPS) hospitals. Hospitals were defined as rural using the 2022 definition by Federal Office of Rural Health Policy (FORHP): All non-metro counties; all metro census tracts with RUCA codes 4-10, large area Metro census tracts of at least 400 sq. miles in area with population density of 35 or less per sq. mile with RUCA codes 2-3; and all outlying metro counties without an Urbanized Area.

We defined total revenue as the sum of net patient care revenue, other operating revenue, and NOR. From Worksheet-G3 of the Medicare Cost Report,¹² we defined NOR as the sum of Contributions, donations, and bequests (line 6), Income from investments (line 7), Rental of hospital space (line 22), and Government appropriations (line 23) - see Appendix A for the definitions of study measures. The Medicare Cost Report instructions for these lines are “all other revenue not reported on line 1 (total patient revenue). Obtain these amounts from your accounting books and/or records.”¹² The lack of specificity suggests variation in what is reported on each of these lines. For example, in our experience “Government appropriations” consists primarily of state and local tax transfers and grants, but cost reports may also include other types of government funds.

We display dollar values after adjusting for annual inflation using the Consumer Price Index for All Urban Consumers (CPI-U), the U.S. City Average, and we present all values in 2019 U.S. dollars. We averaged data across the nine years of the study period to account for year-to-year fluctuations in hospital financial metrics. Means and standard deviations are presented. We performed descriptive analyses using Stata (v17), and we used Kruskal Wallis analyses to test if the proportion of NOR was significantly different across hospital types.

RESULTS

NOR makes up a higher percentage of total revenue among rural hospitals.

Table 1 shows that, when measured in dollars, rural hospitals (CAHs and R-PPS) had the lowest mean operating revenue and NOR, and U-PPS hospitals had the highest. However, the relative importance of NOR (mean NOR as a percentage of total revenue) is highest for rural hospitals (CAHs and R-PPS) and lowest for U-PPS hospitals. There is a statistically significant difference in the proportion of NOR to total revenue among the three hospital types (p <0.001).



TABLE 1: Operating revenue and NOR of CAHs, R-PPS hospitals, and U-PPS hospitals (2011-2019)

	CAHs	R-PPS	U-PPS
Number of hospital-year observations	11,427	8,467	18,939
Sources of revenue (\$ thousands)* <i>mean (SD)</i>			
Net patient care revenue	\$25,416 (\$25,982)	\$82,404 (\$84,687)	\$341,486 (\$410,483)
Other operating revenue	\$1,645 (\$3,913)	\$4,811 (\$11,640)	\$20,713 (\$79,786)
NOR	\$681 (\$1,444)	\$1,874 (\$12,465)	\$7,791 (\$38,004)
Total revenue	\$27,742 (\$27,580)	\$89,088 (\$95,043)	\$369,990 (\$459,276)
Revenue source as a percentage of total revenue <i>mean (SD)</i>			
Net patient care revenue / total revenue	90.3% (10.3%)	92.1% (9.9%)	94.3% (8.9%)
Other operating revenue / total revenue	6.5% (9.0%)	5.9% (8.9%)	4.1% (7.6%)
NOR / total revenue	3.2% (5.8%)	1.9% (4.1%)	1.5% (3.9%)

Note(s): *Revenues in thousands of dollars are adjusted for annual inflation using the Consumer Price Index for All Urban Consumers (CPI-U), the U.S. City Average.

Table 2a presents the number and percentage of hospital-year observations with positive, zero, or negative total margin and operating margin. The observations of interest are on the bottom line of Table 2a: 46.9% of CAH hospital-years, 42.4% of R-PPS hospital years, and 26.8% of U-PPS hospital-years had a negative operating margin. In total, 36.1% of all hospital-years

had a negative operating margin. In these hospital years, hospitals lost money on patient care and activities closely related to patient care: that is, operating expenses were greater than operating revenue. Given that operating losses occurred in a substantial number of hospital years, to what extent were operating losses offset by NOR?

TABLE 2a: Number and percentage of positive, zero, and negative total margin and operating margin observations (2011-2019)

<i>Among all hospital-year observations (n = 38,833)</i>	CAHs	R-PPS	U-PPS	Total
	n = 11,427	n = 8,467	n = 18,939	n = 38,833
Total Margin				
Positive	7,299 (63.9%)	5,357 (63.3%)	14,600 (77.1%)	27,256 (70.2%)
Zero	1 (0.0%)	2 (0.0%)	6 (0.0%)	9 (0.0%)
Negative	4,127 (36.1%)	3,108 (36.7%)	4,333 (22.9%)	11,568 (29.8%)
Operating Margin				
Positive	6,067 (53.1%)	4,877 (57.6%)	13,856 (73.2%)	24,800 (63.9%)
Zero	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
 Negative	5,360 (46.9%)	3,590 (42.4%)	5,083 (26.8%)	14,033 (36.1%)



Hypothetical example of how NOR can help offset operating losses

Line	Indicators	Hospital A	Hospital B	Hospital C
(1)	Operating revenue	\$10,000,000	\$10,000,000	\$10,000,000
(1)	Operating expenses	\$12,000,000	\$12,000,000	\$12,000,000
(1)	Operating loss (line 1 - line 2)	- \$2,000,000	- \$2,000,000	- \$2,000,000
(1)	Nonoperating revenue	\$3,000,000	\$2,000,000	\$1,000,000
(1)	Net income (line 3 + line 4)	\$1,000,000	\$0	- \$1,000,000
(3) / (1)	Operating margin	-20%	-20%	-20%
(5) / (1)+(4)	Total margin	8%	0%	-9%

To see how NOR can help offset operating losses, consider the hypothetical data in the table above for three hospitals with identical operating revenue and expenses but different NOR. All three hospitals have an identical operating loss of \$2 million and operating margin of -20%. However, Hospital A has NOR of \$3 million, which is sufficient to totally offset the operating loss plus generate a net income of \$1 million. The relatively large amount of NOR for Hospital A results in a positive total margin even though the operating margin is negative. In contrast, Hospital C has NOR of only \$1 million, which only partially offsets the operating loss. The relatively small amount of NOR for Hospital C results in a negative total margin as well as

the negative operating margin. Hospital B has NOR equal to the operating loss, so the total margin is zero.

Table 2b is a subset of Table 2a; the number and percentage of hospital-year observations with a negative operating margin from Table 2a are reproduced on the first line of Table 2b. Among these hospital year observations, Table 2b shows that 27.2% of CAH, 18.9% of R-PPS, and 20.9% of U-PPS hospital-years had an operating loss that was more than offset by NOR. In contrast, 72.8% of CAH, 81.1% of R-PPS, and 79.1% of U-PPS hospital-years had an operating loss that was greater than NOR.

TABLE 2b: Percentage of hospital-year observations with negative operating margin that offset operating losses using NOR (2011-2019)

Among all hospital-year observations (n = 38,833)	CAHs	R-PPS	U-PPS	Total
	n = 11,427	n = 8,467	n = 18,939	n = 38,833
Observations with negative operating margin (n = 14,033)	n = 5,360	n = 3,590	n = 5,083	n = 14,033
Total Margin				
Positive (Able to offset operating losses with NOR)	1,458 (27.2%)	677 (18.9%)	1,062 (20.9%)	3,197 (22.8%)
Zero	1 (0.0%)	2 (0.1%)	2 (0.0%)	5 (0.0%)
Negative (Not able to offset operating losses with NOR)	3,901 (72.8%)	2,911 (81.1%)	4,019 (79.1%)	10,831 (77.2%)

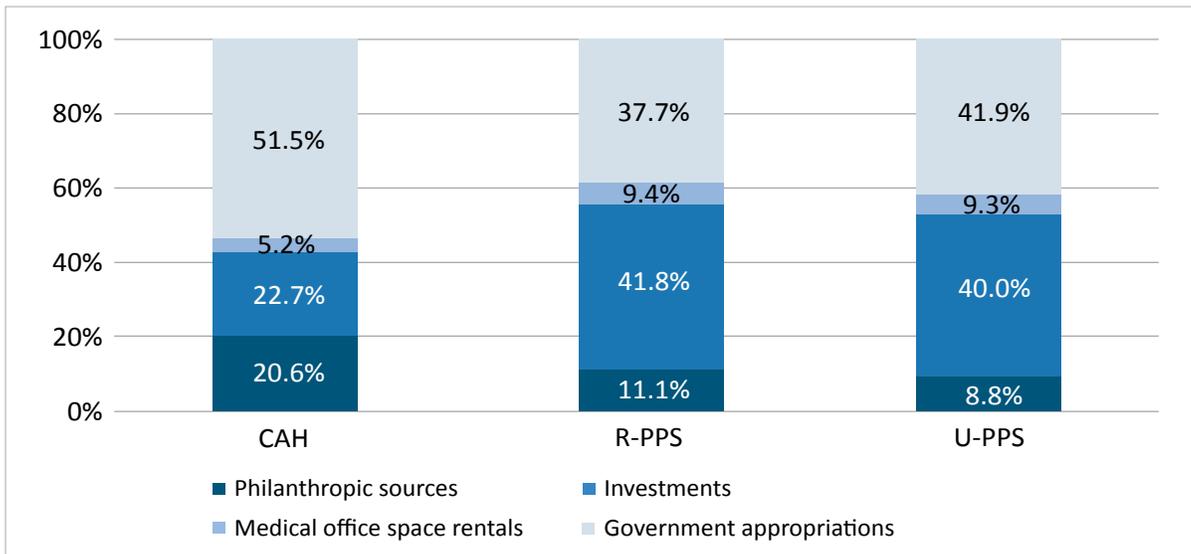


CAHs have a higher percentage of NOR from philanthropic and government sources.

Figure 1 shows that among hospital-year observations reporting NOR greater than \$0, philanthropic sources (contributions, donations, and bequests) and government appropriations (state and local tax transfers and grants) made up a higher percentage of NOR for CAHs compared to R-PPS and U-PPS hospitals. Investments and office space rentals made up a higher percentage of NOR for R-PPS and U-PPS hospitals compared to CAHs.

Table 3 presents the proportion of NOR by source for hospital-years where NOR offsets operating losses (green) and does not offset operating losses (yellow). Across all hospital types, hospital-year observations where NOR offsets operating losses (e.g., where operating margin is negative but total margin is positive) have on average, a higher proportion of NOR coming from government appropriations (76%) when compared to all hospital-year observations with negative operating margin (65%).

FIGURE 1: Sources of NOR among CAHs, R-PPS hospitals and U-PPS hospitals (2011-2019)



Note(s): The data presented in this figure are drawn from the 9,541 CAH, 6,191 R-PPS, and 13,711 U-PPS hospital-year observations that reported positive NOR. Not represented in the figure are the 1,886 CAH, 2,276 of R-PPS, and 5,228 U-PPS hospital year observations that reported zero total NOR, and 139 CAH, 194 R-PPS, and 540 U-PPS hospital year observations reported a negative total NOR (see Appendix C.)

TABLE 3: Composition of NOR among hospital-year observations with negative operating margins, by hospital type and ownership (n = 14,028)^a

Able to offset operating losses with NOR (Positive Total Margin) (n = 3,197 hospital-year observations)				
NOR Source	CAH	R-PPS	U-PPS	Total
	n=1,458	n=677	n=1,062	n=3,197
Philanthropic Sources	17%	7%	6%	7%
Investment Income	9%	17%	14%	14%
Medical Office Rental	2%	4%	3%	3%
Gov. Appropriations	71%	72%	77%	76%

Not able to offset operating losses with NOR (Negative Total Margin) (n = 10,831 hospital-year observations)				
NOR Source	CAH	R-PPS	U-PPS	Total
	n=3,901	n=2,911	n=4,019	n=10,831
Philanthropic Sources	22%	22%	9%	11%
Investment Income	12%	26%	13%	14%
Medical Office Rental	5%	16%	11%	11%
Gov. Appropriations	61%	37%	68%	65%

Note(s): a. Excluded from this table are the hospital-year observations with negative operating margins and total margins = 0 (n = 5); thus, the total hospital-year observations in this table (n = 14,028) are five fewer than all hospital-year observations with negative operating margins (n = 14, 033), presented in Table 2.



DISCUSSION

This study found that, on average, non-operating revenue (NOR) as a percent of total revenue was highest among rural hospitals [CAHs and Rural-Prospective Payment System hospitals (R-PPS)], compared to urban hospitals. Moreover, percentages of total revenue derived from non-operating sources were consistent with other studies, most of which ranged between 1-4%.^{2,3,10}

CAHs have a lower percentage of NOR from investments and office space rentals and a higher percentage from philanthropic and government sources compared to R-PPS and U-PPS hospitals. This likely reflects limitations on the amount of money that CAHs have available to invest in financial assets or medical office space. Additionally, CAHs are less likely to be affiliated with a system, which can provide greater access to capital for equipment and buildings.¹³

Consequently, many CAHs have no choice but to rely more on government appropriations. Congress created the CAH designation in 1997 to mitigate financial distress experienced by eligible rural hospitals. A higher percentage of NOR from government appropriations reflects funds from federal, state, and local government that recognize the need to support CAHs. Relatedly, this study found that among hospitals with negative operating margins, CAHs are more likely than R-PPS or U-PPS hospitals to be able to offset operating losses with NOR, and government appropriations represent a relatively larger share of the NOR.

Importantly, this study showed that many rural and urban hospitals have NOR, especially CAHs, but not many are able to make up for operating losses. Moreover,

NOR is not guaranteed: investments are subject to market risk, and philanthropic donations and state and local tax transfers and grants fluctuate with the overall health of the economy. Since the 1990s, there have been four recessions.¹⁴ Local governments facing competing budget priorities have made budget cuts during economic recessions and, more recently, the COVID-19 pandemic.^{5,15} Given the financial vulnerability of rural hospitals, it is important for policy-makers to monitor the composition of hospital revenue to identify financial risks that may threaten hospitals' long-term viability.

LIMITATIONS

The financial data for this study are derived from HCRIS cost reports, which have been shown to contain reporting errors, variations in reporting of revenues and expenses, and missing line items such as NOR.¹⁶ This may be due to cost report form instructions that are lacking in detail, which could potentially explain results seen in Appendix B where many hospital-year observations reported negative NOR in categories other than investments (investment values fluctuate and therefore periodic losses are expected). Additionally, we did not analyze cost report years after 2019 because of the likely impact of COVID-19 pandemic on revenue and reporting.¹⁷ Preliminary evidence has shown that NOR in a subset of U.S. hospitals has grown from 4.4% (pre-pandemic) to 10.3% (pandemic),¹⁸ which could be attributed to government funding provided during the Public Health Emergency.¹⁹ Moreover, consistent with previous studies, there was substantial variability in the proportion of NOR, which ranged from 0% to 64%.^{2,3} This speaks to the substantial heterogeneity among hospitals in regard to the distribution and magnitude of revenue sources.

For more information on this report, please contact Kristin Reiter, reiter@email.unc.edu.

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APPENDIX A: Composition of NOR among hospital-year observations with negative operating margins, by hospital type and ownership
(n = 14,028)^a

Able to offset operating losses with NOR (Positive Total Margin) (n = 3,197 hospital-year observations)

	CAHs				R-PPS				U-PPS				TOTAL			
	FP ^b	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL
NOR Source	n= 27	n= 924	n= 507	n= 1,458	n= 34	n= 294	n= 349	n= 677	n= 54	n= 314	n= 694	n= 1,062	n= 1,458	n= 677	n= 1,062	n= 3,197
Philanthropic Sources	28%	11%	37%	17%	5%	5%	14%	7%	5%	5%	7%	6%	6%	6%	9%	7%
Investment Income	4%	4%	26%	9%	19%	3%	52%	17%	12%	5%	26%	14%	12%	4%	28%	14%
Medical Office Rental	3%	1%	5%	2%	6%	1%	9%	4%	12%	1%	5%	3%	11%	1%	6%	3%
Gov. Appropriations	65%	84%	32%	71%	70%	91%	25%	72%	71%	89%	61%	77%	71%	89%	57%	76%
Total ^c	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Not able to offset operating losses with NOR (Negative Total Margin) (n = 10,831 hospital-year observations)

	CAHs				R-PPS				U-PPS				TOTAL			
	FP	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL	FP	Gov	NFP	TOTAL
NOR Source	n= 269	n= 1,808	n= 1,824	n= 3,901	n= 677	n= 880	n= 1,354	n= 2,911	n= 1,158	n= 542	n= 2,319	n= 4,019	n= 3,901	n= 2,911	n= 4,019	n= 10,831
Philanthropic Sources	37%	16%	35%	22%	9%	25%	20%	22%	17%	4%	15%	9%	17%	6%	16%	11%
Investment Income	4%	6%	25%	12%	8%	10%	38%	26%	13%	6%	22%	13%	12%	6%	24%	14%
Medical Office Rental	10%	3%	10%	5%	44%	8%	20%	16%	62%	4%	17%	11%	57%	4%	17%	11%
Gov. Appropriations	49%	75%	30%	61%	39%	56%	22%	37%	9%	87%	47%	68%	14%	84%	73%	65%
Total ^c	100%	100%	100%	100%	100%	99%	100%	101%	101%	101%	101%	101%	100%	100%	100%	101%

Note(s): a. Excluded from this table are the hospital-year observations with negative operating margins and total margins = 0 (n = 5); thus, the total hospital-year observations in this table (n = 14,028) are five fewer than all hospital-year observations with negative operating margins (n = 14, 033), presented in Table 2.

b. FP = For Profit, Gov = Government, and NFP = Not-for-profit.

c. Total percentages may be slightly above or below 100% due to rounding.

APPENDIX B: Definitions of Study Measures

Measure	Description	Calculation derived from Cost Report
Total margin	Net income / Total revenue	Worksheet G-3, line 29 / Worksheet G-3, lines 3 + 25
Operating margin	(Net patient revenue + Other revenue - Total operating expenses) / (Net patient revenue + Other revenue)	Worksheet G-3 (Line 3 + Lines 8 to 21 + Line 24 - Line 4) / Worksheet G-3 (Line 3 + (Lines 8 to 22) + Line 24)
Total revenue	Net patient care revenue + Total other income (sum of lines 6-24)	Worksheet G-3, lines 3 + 25
Net patient care revenue	Total patient revenues – contractual allowances and discounts on patients' accounts	Worksheet G-3, line 3
Total other operating revenue	Income from other operating activities excluding patient care	Worksheet G-3, lines 8 to 21 + line 24
NOR sources		
	Investment income	Worksheet G-3, line 7
	Medical office rental revenue	Worksheet G-3, line 22
	Government appropriations	Worksheet G-3, line 23
	Contributions, donations, and bequests	Worksheet G-3, line 6
Total NOR	Contributions + Investments + Rental of hospital space + Government appropriations	Worksheet G-3, lines 6 +7 + 22 + 23
NOR as a percent of total revenue	Total NOR / (NPCR + total other income)	(Worksheet G-3, lines 6 +7 + 22 + 23) / (Worksheet G-3, line 3 + line 25)
Types of NOR as a percent of total revenue	Proportion of total NOR derived from a particular source type (contributions, investments, government appropriations or medical office rental revenue)	[Worksheet G-3, line 6 OR line 7 OR line 22 OR line 23] / (Worksheet G-3, lines 6 +7 + 22 + 23)

APPENDIX C: Data reported on 2011-19 Medicare Cost Reports for Critical Access Hospitals, Prospective Payment System Hospitals in Rural Areas (R-PPS), and Prospective Payment System Hospitals in Urban Areas (U-PPS): Number of hospital-year observations with negative, zero, and positive values of Non-operating Revenue (NOR)

Cost report worksheet G-3 element:	Line	Formula	NOR			Total
			<0	=0	>0	
Critical Access Hospitals						
Net patient revenue	3		1	0	11,565	11,566
Other Operating Revenue		Sum of 8 to 21 + 24	139	75	11,352	11,566
NOR		Sum of 6 + 7 + 22 + 23	139	1,886	9,541	11,566
Contributions, donations, and bequests	6		93	4,368	7,105	11,566
Income from investments	7		269	2,828	8,469	11,566
Rental of hospital space	22		21	6,913	4,632	11,566
Government appropriations	23		20	7,840	3,706	11,566
R-PPS Hospitals						
Net patient revenue	3		2	0	8,659	8,661
Other Operating Revenue		Sum of 8 to 21 + 24	157	71	8,433	8,661
NOR		Sum of 6 + 7 + 22 + 23	194	2,276	6,191	8,661
Contributions, donations, and bequests	6		125	4,642	3,894	8,661
Income from investments	7		352	3,238	5,071	8,661
Rental of hospital space	22		30	4,616	4,015	8,661
Government appropriations	23		21	7,153	1,487	8,661
U-PPS Hospitals						
Net patient revenue	3		2	0	19,477	19,479
Other Operating Revenue		Sum of 8 to 21 + 24	404	236	18,839	19,479
NOR		Sum of 6 + 7 + 22 + 23	540	5,228	13,711	19,479
Contributions, donations, and bequests	6		283	12,428	6,768	19,479
Income from investments	7		943	8,082	10,454	19,479
Rental of hospital space	22		48	10,542	8,889	19,479
Government appropriations	23		70	16,718	2,691	19,479

Note(s): This appendix table includes a larger subset of data than those used in the analysis, thus the total columns do not match the counts of hospital-year observations presented in Table 1. This appendix table includes data with negative NOR (to illustrate the full distribution of values including negatives). All other exclusions from the main analysis were applied to this data.