NC RHRP

Findings Brief
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A Comparison of Rural and Urban Specialty Hospitals

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INTRODUCTION

Specialty hospitals are important providers in both urban and rural areas. However, they are not evenly distributed across these areas. This study addresses three types of specialty hospitals:

- *Long Term Acute Care Hospitals (LTCHs)* provide specialized treatment for patients with serious medical conditions that require ongoing, intensive care. The patients are acutely ill or medically complex. These hospitals also provide complex respiratory care and typically have a number of patients that have prolonged ventilator needs.[1]
- *Inpatient Psychiatric Facilities (IPFs)* provide inpatient care to patients in the acute phase of a mental illness that require 24-hour care. In addition to providing services for acute mental illness, IPFs can also provide drug and alcohol rehabilitation services.[2]
- *Inpatient Rehabilitation Facilities (IRFs)* provide intensive, inpatient rehabilitation services to patients that can tolerate the intensive therapy and require frequent supervision by a rehabilitation physician. IRFs treat patients that have completed the full course of treatment at the referring acute hospital since they cannot act as substitutes for treatment. IRFs are required to provide three hours of intensive therapy per day to each patient.[3]

This brief describes key differences between specialty hospitals located in rural versus urban areas.

KEY FINDINGS

Rural and urban specialty hospitals differ in the following characteristics.

- *Number of hospitals*. Rural specialty hospitals make up a small fraction of the total number of specialty hospitals: only 6.5% of Long-term Acute Care Hospitals (LTCHs), 14.5% of Inpatient Psychiatric Facilities (IPFs), and 5.0% of Inpatient Rehabilitation Facilities (IRFs) are located in rural areas.
- *Number of inpatient beds per facility*. Rural specialty hospitals have fewer inpatient beds per facility than urban specialty hospitals.
- *Percent of inpatient days for people who live in rural areas*. The percent of total days of care that are provided to rural residents is higher in rural LTCHs, IPFs, and IRFs.
- *Percent of inpatient days for Medicare beneficiaries*. The percent of total days of care that are provided to Medicare beneficiaries is higher in rural LTCHs and IRFs, but about the same for rural and urban IPFs.

METHOD

All data came from the Centers for Medicare & Medicaid Services (CMS) Healthcare Cost Report Information System (HCRIS 3-31-2020 file) except rural and total Medicare days that came from the Health Services Area file. We defined hospitals as rural using the Federal Office of Rural Health Policy (FORHP) definition. FORHP defines an area as rural if it is a) located outside a metropolitan Core Based Statistical Area; OR b) has a 2010 RUCA code of 4 or greater; OR c) is located in one of the census tracts with RUCA codes 2 or 3 that are at least 400 square miles in area with a population density of no more than 35 people per square mile.[4] Statistically significant differences in means between urban and rural specialty hospitals were identified with t-tests. Table 2 at the end of the brief (page 6) shows that there were missing data for some variables.

RESULTS

Table 1 shows the distribution of rural and urban specialty hospitals by ownership (for-profit, not-for-profit, and government). There are no statistically significant differences in the ownership of specialty hospitals across urban and rural classifications.

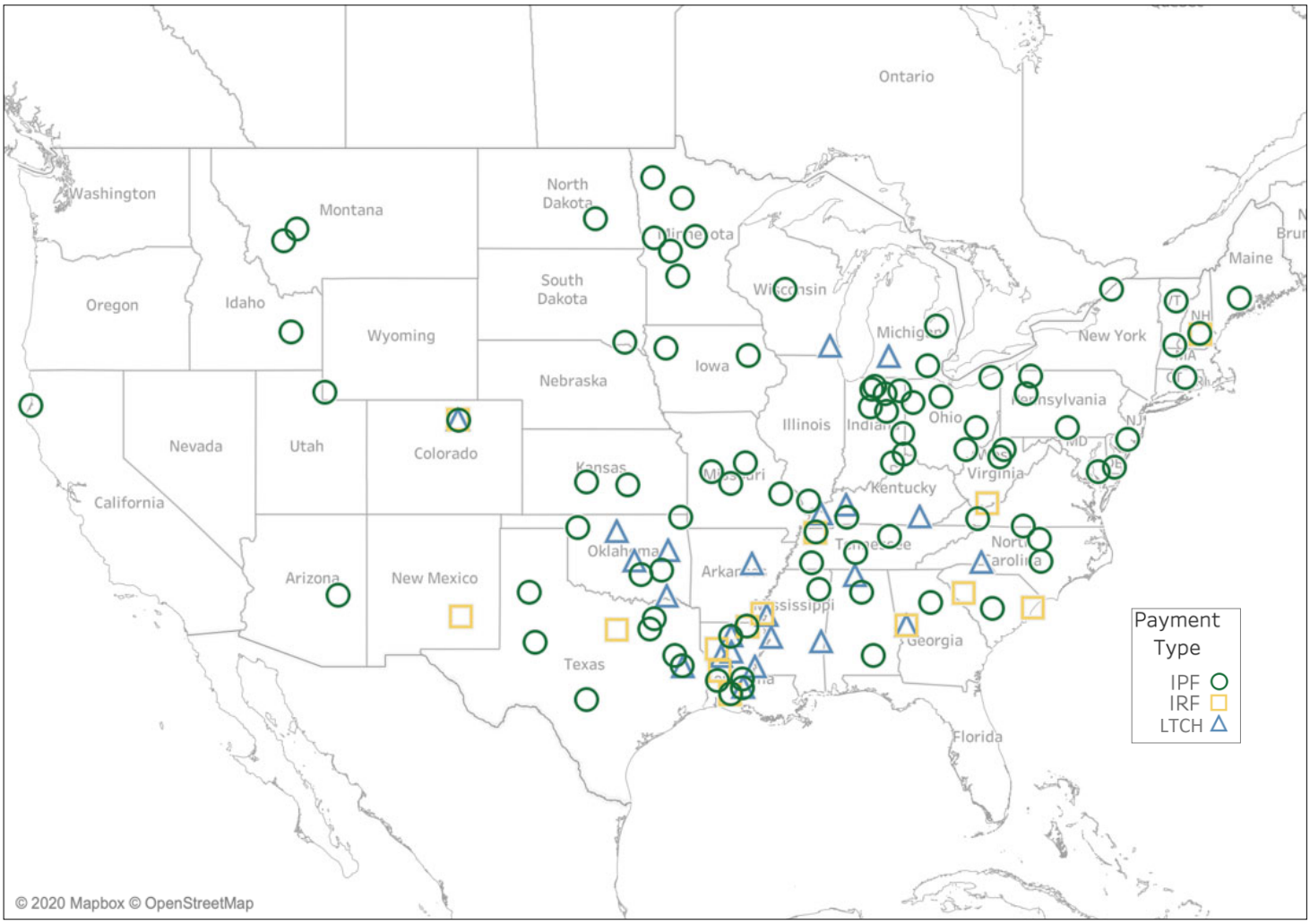
Table 1. Number of 2018 (or Most Recent) Cost Reports for Rural and Urban Specialty Hospitals

	LTCHs		IPFs		IRFs	
Ownership:	**Rural**	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
For profit	15	269	28	301	13	235
Not for profit	7	54	15	70	0	36
Government	2	19	44	127	2	4
Unknown	0	1	1	21	0	16
Total # of hospitals	24	343	88	519	15	291

Locations of Rural Specialty Hospitals

Figure 1 shows the location of each rural specialty hospital within the United States. The most common type of rural specialty hospital is the IPF (88) – there are relatively few rural LTCHs (24) and IRFs (15). Most rural specialty hospitals are in the South and Northeast. Louisiana (16), Indiana (9), and Texas (9) have the greatest number of rural specialty hospitals while Alaska, Hawaii, Nevada, Oregon, Washington, Wyoming, Florida, and Nebraska have none.

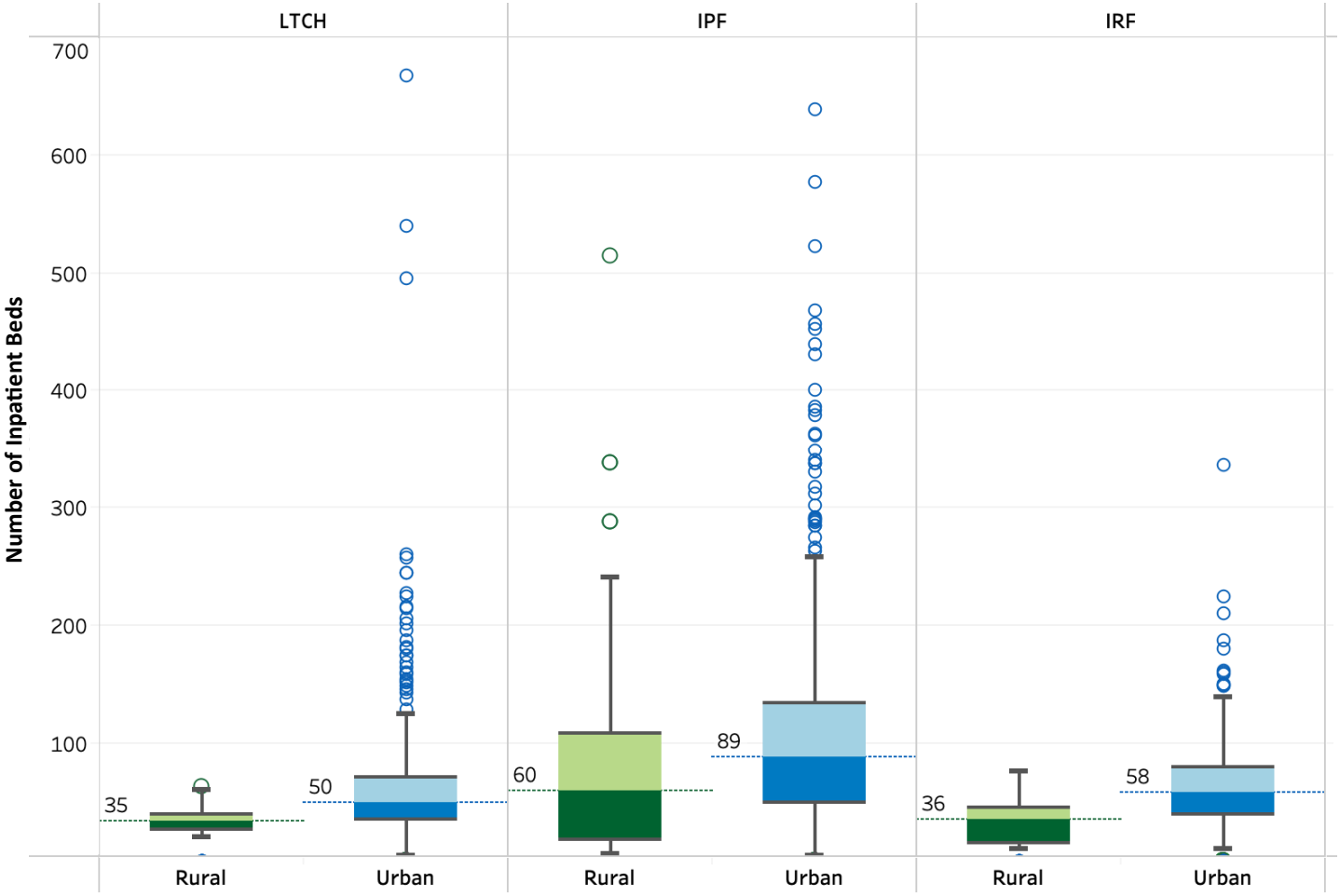
Figure 1. Locations of Rural Specialty Hospitals



Inpatient Beds in Rural and Urban Specialty Hospitals

Figure 2 is a box plot of inpatient beds in rural and urban specialty hospitals. In the shaded box, the horizontal line in the middle is the median, the top of the box is the 75th percentile, and the bottom of the box is the 25th percentile. The "whiskers" above and below the shaded box are the 99th and 1st percentile total margins, respectively. The circles located outside the whiskers are outliers. The figure shows that rural IPFs, LTCHs, and IRFs have fewer beds than their urban counterparts. The differences were statistically significant for all three types.

Figure 2. Number of Inpatient Beds in Rural and Urban Specialty Hospitals



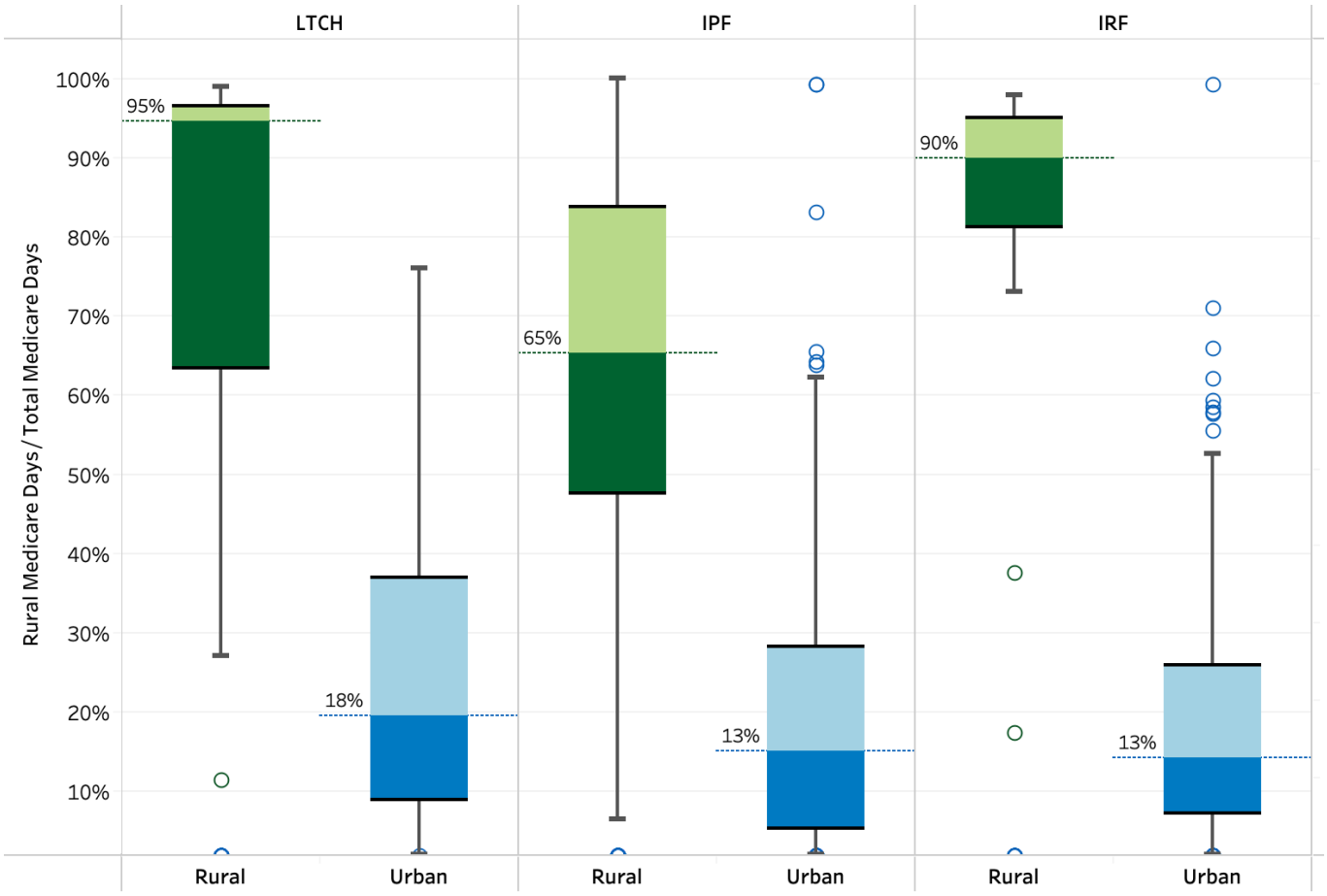
Per facility among hospitals with available data:	Median number of inpatient beds			
Hospitals	**Rural**	**Urban**	**p-value**	**Missing data**
LTCH	35	50	<0.001*	1
IPF	60	89	0.011*	50
IRF	36	58	<0.001*	17

*p-values < 0.05 are statistically significant based on the difference in means

Estimated Percent of Inpatient Days for Rural Residents

The number of days for rural residents in urban and rural specialty hospitals is estimated by (rural Medicare days / total Medicare days) * (total days for all payers). The percent of inpatient days for rural residents is estimated by (estimated rural days / total days) * 100%. This assumes that the percent of inpatient days for rural residents with Medicaid, commercial insurance, and other payers is identical to the percent for rural Medicare beneficiaries. Figure 3 shows that the estimated percent of inpatient days for rural residents is much higher in rural than urban LTCHs, IPFs, and IRFs. In this study, this is the single largest difference between rural and urban specialty hospitals. Rural-urban differences were significant for all measures except IPF Total days.

Figure 3. Rural Medicare Inpatient Days as a Percent of Total Medicare Inpatient Days



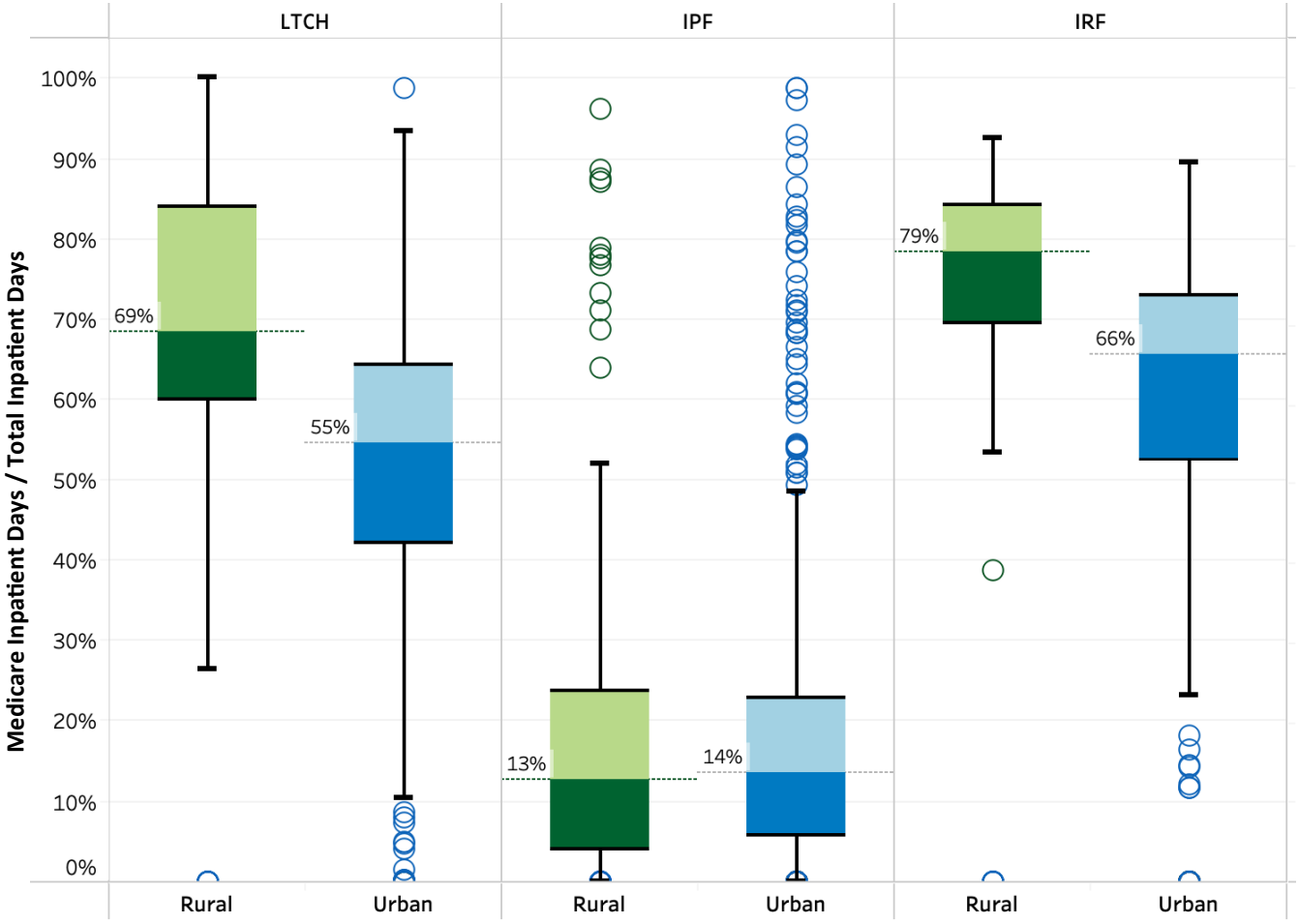
	Per facility among hospitals with available data:	Median days			
Hospitals	**Measures**	**Rural**	**Urban**	**p-value**	**Missing data**
LTCH	Estimated rural days	5,221	2,049	0.001*	1
	Total days	5,608	10,080	<0.001*	1
	(Rural days / total days) * 100%	95%	18%	<0.001*	1
IPF	Estimated rural days	5,433	2,320	<0.001*	56
	Total days	13,106	22,856	0.091	50
	(Rural days / total days) * 100%	65%	13%	<0.001*	57
IRF	Estimated rural days	3,524	1,579	0.019*	20
	Total days	5,691	14,492	<0.001*	17
	(Rural days / total days) * 100%	90%	13%	<0.001*	20

*p-values < 0.05 are statistically significant based on the difference in means

Percent of Inpatient Days for Medicare Beneficiaries

Medicare days / total days *100% is used to measure the percent of inpatient days for Medicare beneficiaries in rural and urban specialty hospitals. Figure 4 shows that the percent of inpatient days for Medicare beneficiaries is much higher in rural than urban LTCHs and IRFs, but about the same for rural and urban IPFs. Rural-urban differences were statistically significant for all measures except IPF Total days and IPF Percent of Medicare to total inpatient days.

Figure 4. Medicare Inpatient Days as a Percent of Total Inpatient Days



	Per facility among hospitals with available data:	Median days			
Hospitals	**Measures for Medicare inpatient days**	**Rural**	**Urban**	**p-value**	**Missing data**
LTCH	Medicare days	3,634	5,668	0.031*	1
	Total days	5,608	10,080	<0.001*	1
	(Medicare days / total days) * 100	69%	55%	<0.001*	1
IPF	Medicare days	1,238	2,500	0.020*	50
	Total days	13,106	22,856	0.091	50
	(Medicare days / total days) * 100	13%	14%	0.366	51
IRF	Medicare days	3,973	8,740	<0.001*	17
	Total days	5,691	14,492	<0.001*	17
	(Medicare days / total days) * 100	79%	66%	0.006*	17

*p-values < 0.05 are statistically significant based on the difference in means

OTHER MEASURES

- *Operating expenses* are expenses associated with the operation of the hospital, such as salaries, employee benefits, purchased services, supplies, professional fees, and insurance. Table 2 shows that rural LTCHs, IPFs, and IRFs have lower median operating expenses per facility, but the difference is statistically significant for IRFs only.
- *Percent of inpatient days for Medicaid recipients* (Medicaid as a percent of total days) is measured by Medicaid days / total days. Table 2 shows no statistically significant differences between rural and urban specialty hospitals in percent of inpatient days for Medicaid recipients.
- *Profitability* is measured by *operating margin* (operating income / operating revenue) and *total margin* (net income / total revenue). Although there are no statistically significant differences in operating margin and total margin between rural and urban specialty hospitals, most chief financial officers would consider the differences in medians for LTCHs and IPFs to be material. In particular, rural LTCHs have a median operating margin of -0.5% compared to 3.1% for urban LTCHs, a difference of 3.6 percentage points. For many hospitals, an operating margin difference of this magnitude could mean solvency versus insolvency.

Table 2. Operating Expenses, Percent of Inpatient Medicaid Days, and Profitability for Rural and Urban Specialty Hospitals

	Per facility among hospitals with available data:	Median			
Hospitals	**Other measures**	**Rural**	**Urban**	**t-stat**	**Missing data**
LTCH	Operating expenses	$8,438,116	$18,212,804	0.966	1
	Medicaid as a percent of total days	1%	0%	0.214	1
	Operating margin	-0.5%	3.1%	0.081	14
	Total margin	-0.6%	1.8%	0.143	13
IPF	Operating expenses	$17,509,264	$22,448,707	0.163	50
	Medicaid as a percent of total days	5%	2%	0.127	51
	Operating margin	2.6%	4.8%	0.483	182
	Total margin	0.0%	4.6%	0.416	154
IRF	Operating expenses	$9,093,819	$19,746,077	<0.001*	17
	Medicaid as a percent of total days	1%	1%	0.197	17
	Operating margin	11.3%	10.9%	0.951	18
	Total margin	11.3%	10.8%	0.951	18

*p-values < 0.05 are statistically significant based on the difference in means

This brief found significant differences between specialty hospitals in rural versus urban areas: 1) LTCHs, IPFs, and IRFs are not evenly spread across rural and urban areas, with most in urban areas; 2) rural specialty hospitals have fewer inpatient beds per facility than urban specialty hospitals; 3) the percent of total inpatient days for people who live in rural areas are higher for rural specialty hospitals; and 4) the percent of total inpatient days for Medicare beneficiaries are higher in rural LTCHs and IRFs. There were no statistically significant differences in the ownership of these hospitals.

ACKNOWLEDGEMENTS

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REFERENCES AND NOTES

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