

Per-Capita Medicare Expenditures, Primary Care Access, Mortality Rates, and the Least Healthy Cities in America

William B. Weeks, MD, PhD, MBA,^{a,b} James N. Weinstein, DO, MS^{a,b,c}

^aThe Dartmouth Institute for Health Policy and Clinical Practice, Lebanon, NH; ^bThe Geisel School of Medicine, Hanover, NH; ^cDartmouth-Hitchcock Health, Lebanon, NH.

ABSTRACT

PURPOSE: To determine whether several measures of health care expenditures, access, and outcomes for the 25 recently identified “least healthy cities in America” differed from those in the rest of America.

METHODS: For 2004 and 2013, we obtained publicly available price-, age-, sex-, and race-adjusted hospital service area per-capita Medicare expenditures; age-, sex-, and race-adjusted Medicare mortality rates; and 2 indicators of primary care access: the proportion of enrollees having at least one ambulatory visit to a primary care clinician and the per-capita discharge rate for ambulatory care sensitive conditions. Using population weighting, we used Student *t* test for expenditure data and the chi-squared test for access and outcomes data to compare results of the 25 least healthy cities in aggregate to the rest of America.

RESULTS: In both years examined, the 25 least healthy cities had substantially (about \$500 per capita per year) and statistically significantly higher total per-capita Medicare Part A and Part B expenditures than the rest of America: about 4/5 of this difference was due to higher hospital and skilled nursing facility expenditures; physician expenditures were modestly lower in the 25 least healthy cities. While a greater proportion of Medicare beneficiaries in the least healthy cities had a primary care clinician both years, mortality and ambulatory care sensitive condition admission rates were substantially higher in the least healthy cities.

CONCLUSIONS: Policymakers and health system executives should work together to determine the best asset allocation across determinants of health that maximizes value creation from a community health perspective.

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KEYWORDS: Health services research; Medicare; Outcomes

A recent report identified the “25 least healthy cities in America.” They were diagnosed using a model that incorporated health outcomes, a length-of-life composite, quality-of-life measures, and “health factors” that included healthy behaviors, clinical care, social and economic factors, and measures of the physical environment.¹

We wanted to determine whether several measures of health care expenditures, access, and outcomes for the 25 least healthy cities differed from those in the rest of America.

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Requests for reprints should be addressed to William B. Weeks, MD, PhD, MBA, Dartmouth Institute for Health Policy and Clinical Practice, 307 River Road, Lyme, NH 03768.

E-mail address: wbw@dartmouth.edu

METHODS

We obtained publicly available data on fee-for-service Medicare enrollees aged 65-99 years who were concurrently enrolled in Medicare Parts A and B from the Dartmouth Atlas Project.² Because expenditure data were relatively stable across geographic settings during this period,³ we obtained data from 2004 (or 2003-2005) and 2013. Our data included: price-, age-, sex-, and race-adjusted hospital service area (HSA) per-capita Medicare expenditures, age-, sex-, and race-adjusted Medicare mortality rates, and 2 indicators of primary care access: the proportion of enrollees having at least one ambulatory visit to a primary care clinician and the per-capita discharge rate for ambulatory care sensitive conditions (ACSCs). Using the number of Medicare fee-for-service beneficiaries in each HSA to create population-weighted averages, we used Student *t* test for expenditure data and the chi-squared test for

access and outcomes data to compare results of the 25 least healthy cities in aggregate with the rest of America. We used SPSS v23 (released 2013; IBM Corporation, Armonk, NY) for all analyses.

RESULTS

Table 1 lists the 25 least healthy cities in America, includes several data elements used to select them, and shows the Dartmouth Atlas-defined HSAs correlating to each city. **Table 2** shows HSA-level and population-weighted aggregate data for the 25 least healthy cities and for the rest of America.

In both years examined, the 25 least healthy cities had substantially (about \$500 per capita per year) and statistically significantly higher per-capita Total Medicare Part A and Part B expenditures than the rest of America. About 4/5 of this difference was due to higher Hospital and Skilled Nursing Facility expenditures. Physician expenditures were

modestly lower in the 25 least healthy cities. While a greater proportion of Medicare beneficiaries in the least healthy cities had a primary care visit in both time periods, mortality and ACSC admission rates were substantially higher in the least healthy cities.

CLINICAL SIGNIFICANCE

- Twenty-five cities have been designated the “least healthy cities in America.”
- In 2004 and 2013, these cities had higher per-capita Medicare expenditures on hospital care but lower per-capita expenditures on physician care.
- They also had higher ambulatory care sensitive condition hospitalization rates, suggesting overuse of hospital care.
- Policymakers and health system executives should work together to determine the best asset allocation that maximizes value creation from a community health perspective.

COMMENT

We found that the least healthy cities spent more overall and on hospital care, but less on physician services. Although these cities used primary care physicians more frequently, they experienced much higher ACSC admission rates. These findings suggest that hospital care might be overused in these cities, due in part to the high ACSC admission rates.

We could not determine whether underlying demand for health services might justify higher total and hospital spending. However, because more health care spending is not associated with better outcomes,⁴ and there are multiple non-health-care-related determinants of health,⁵

Table 1 The 25 Least Healthy Cities in America, in Order from Least Healthy, Some of the Measures Used to Define Them, and the Dartmouth Atlas-Defined Hospital Service Area Correlating to Each City

Least Healthy Rank	Least Healthy City	Premature Death Rate	Adult Obesity Rate	Adults Without Insurance	Poverty Rate	Hospital Service Area
1	Beckley, WVa	553.4	34.5%	9.6%	18.6%	Beckley, WVa
2	Pine Bluff, Ark	500.9	38.3%	10.0%	24.2%	Pine Bluff, Ark
3	Hammond, La	496.1	40.3%	16.4%	21.7%	Hammond, La
4	Mobile, Ala	490.3	36.1%	12.9%	19.9%	Mobile, Ala
5	Albany, Ga	480.3	25.9%	17.8%	26.8%	Albany, Ga
6	Monroe, La	465.7	35.3%	16.0%	24.8%	Monroe, La
7	Florence, SC	513.5	36.3%	12.8%	22.0%	Florence, SC
8	Gadsden, Ala	546.4	34.7%	12.4%	19.6%	Gadsden, Ala
9	Shreveport-Bossier City, La	466.8	34.5%	13.9%	19.4%	Shreveport, La
10	Macon, Ga	507.5	30.9%	14.7%	23.3%	Macon, Ga
11	Anniston-Oxford-Jacksonville, Ala	520.7	32.0%	10.7%	21.7%	Anniston, Ala
12	Alexandria, La	499.9	36.1%	14.6%	20.2%	Alexandria, La
13	Charleston, WVa	496.8	32.3%	8.3%	16.1%	Charlston, WVa
14	Morristown, Tenn	477.9	29.8%	13.2%	19.6%	Morristown, Tenn
15	Montgomery, Ala	438.6	32.9%	10.9%	18.9%	Montgomery, Ala
16	Memphis, Tenn-Miss-Ark	451.0	34.4%	13.4%	19.4%	Memphis, Tenn
17	Hot Springs, Ark	494.5	31.0%	13.0%	22.1%	Hot Springs, Ark
18	Fort Smith, Ark-Okla	476.6	36.5%	15.2%	22.0%	Fort Smith, Ark
19	Jackson, Miss	453.2	33.8%	12.1%	19.9%	Jackson, Miss
20	Weirton-Stubenville, WVa-Ohio	487.9	34.9%	8.8%	16.5%	Weirton, WVa
21	Tuscaloosa, Ala	453.5	33.3%	8.5%	19.7%	Tuscaloosa, Ala
22	Huntington-Ashland WVa-Ky-Ohio	464.7	36.1%	8.0%	18.8%	Huntington, WVa
23	Jonesboro, Ark	480.1	37.2%	12.1%	22.1%	Jonesboro, Ark
24	Farmington, NM	383.7	30.3%	17.9%	21.5%	Farmington, NM
25	Rocky Mount, NC	444.3	34.1%	13.4%	20.5%	Rocky Mount, NC

Table 2 HSA-Level and Population-Weighted Aggregate Data for the 25 Least Healthy Cities and for the Rest of America

Hospital Service Area for Least Healthy Cities	Per-Capita Total Medicare Part A and Part B Expenditures		Per-Capita Hospital and Skilled Nursing Facility Expenditures		Per-Capita Physician Expenditures		Proportion of Medicare Enrollees Having at Least One Ambulatory Visit to a Primary Care Clinician		Discharges for Ambulatory Care Sensitive Conditions Per 1000 Medicare Enrollees		Age-, Sex-, and Race-Adjusted Mortality Rate Among Medicare Enrollees	
	2004	2013	2004	2013	2004	2013	2003-2005	2013	2003-2005	2013	2004	2013
	Albany, Ga	\$6366	\$8720	\$3081	\$3689	\$1621	\$2202	86.3	87.0	75.8	61.7	5.77
Alexandria, La	\$9456	\$11,650	\$5106	\$5300	\$1990	\$2374	76.0	78.4	109.0	76.7	6.00	5.56
Anniston, Ala	\$9151	\$10,877	\$5032	\$4978	\$2287	\$2870	79.7	84.0	110.5	75.3	6.08	5.60
Beckley, WVa	\$7727	\$10,247	\$4401	\$5138	\$1963	\$2650	76.9	81.8	130.4	101.3	5.80	5.31
Charleston, WVa	\$6798	\$10,041	\$3613	\$5051	\$1794	\$2252	79.9	81.3	95.0	75.8	5.95	5.56
Farmington, NM	\$6323	\$7974	\$3017	\$3787	\$1485	\$1834	77.3	77.1	72.0	55.2	4.81	4.34
Florence, SC	\$7627	\$9765	\$4304	\$4541	\$1928	\$2367	86.7	88.3	108.4	71.1	5.70	5.39
Fort Smith, Ark	\$7537	\$10,299	\$4230	\$5240	\$1737	\$2192	78.6	79.8	91.5	67.8	5.92	5.49
Gadsden, Ala	\$8974	\$11,797	\$5022	\$5515	\$2273	\$2883	79.2	79.9	111.9	82.4	5.76	5.97
Hammond, La	\$9671	\$13,908	\$4840	\$6389	\$2152	\$2954	79.7	81.3	141.8	85.8	6.13	5.87
Hot Springs, Ark	\$7056	\$9034	\$3672	\$4142	\$2101	\$2518	82.9	85.5	67.1	58.9	5.06	4.82
Huntington, WVa	\$6860	\$10,079	\$3636	\$4820	\$1740	\$2500	74.7	79.7	94.4	81.6	6.30	5.35
Jackson, Miss	\$7234	\$10,037	\$3620	\$4573	\$1824	\$2353	79.4	82.1	90.8	67.3	5.27	4.78
Jonesboro, Ark	\$8025	\$10,083	\$4498	\$5290	\$1937	\$2165	81.4	84.6	112.3	70.5	6.19	5.64
Macon, Ga	\$7945	\$10,092	\$4122	\$4525	\$2131	\$3047	81.8	84.9	81.0	62.7	5.48	4.90
Memphis, Tenn	\$7316	\$9615	\$3702	\$4500	\$2257	\$2620	78.1	79.0	81.4	53.0	5.47	4.90
Mobile, Ala	\$8229	\$9890	\$4067	\$4192	\$2184	\$2846	76.2	81.0	84.6	63.4	5.59	5.14
Monroe, La	\$10,059	\$12,358	\$5472	\$5796	\$2070	\$2459	81.4	83.8	128.5	104.1	5.43	5.18
Montgomery, Ala	\$7663	\$9362	\$3803	\$3952	\$2405	\$2464	82.8	83.2	69.6	51.7	5.58	4.97
Morristown, Tenn	\$8428	\$10,642	\$4405	\$4518	\$2173	\$2729	78.8	81.9	132.5	84.1	6.13	6.10
Pine Bluff, Ark	\$6926	\$8785	\$3657	\$4074	\$2181	\$2406	78.3	75.1	72.2	58.4	5.75	5.57
Rocky Mount, NC	\$6969	\$9121	\$3770	\$4428	\$2006	\$2543	85.4	90.6	81.6	65.0	5.49	4.87
Shreveport, La	\$8788	\$11,093	\$5009	\$5401	\$1942	\$2430	78.6	81.7	93.5	72.0	5.34	5.03
Tuscaloosa, Ala	\$8060	\$9750	\$4237	\$4435	\$2022	\$2611	83.1	86.3	89.7	77.3	5.79	5.23
Weirton, WVa	\$9763	\$11,806	\$6006	\$6596	\$2191	\$2343	70.8	77.8	157.9	101.9	5.79	4.37
Population weighted mean of the 25 least healthy cities	\$7805	\$10,107	\$4114	\$4702	\$2043	\$2530	79.4	81.9	92.3	67.6	5.63	5.14
Population weighted average of all other hospital service areas	\$7293	\$9550	\$3698	\$4289	\$2115	\$2679	76.5	78.3	77.4	52.8	5.02	4.39
P-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

On the left, per-capita Total Part A and Part B, Hospital and Skilled Nursing Facility, and Physician expenditures in 2004 and 2013, with the 2013 to 2004 ratio for 25 hospital service areas in the 25 least healthy cities in America and for the other hospital service areas (with results weighted by the population of Medicare enrollees in each hospital service area). On the right, hospital service area-specific average proportion of Medicare enrollees having at least one visit to a primary care clinician during the year, discharges for ambulatory care sensitive conditions per 1000 Medicare enrollees, and age-, sex-, and race-adjusted mortality rate among Medicare enrollees.

HSA = hospital service area.

our findings imply that disinvestment from hospital care in the least healthy cities may be a way to fund community-based investments in other determinants of health that might have a greater impact on population health.⁶

Further work is needed to advance the concept of community-based investments in population health; evaluating specific tradeoffs across and within different determinants of health, and their respective returns, would be a fertile area of investigation. Although we report high-level, initial findings, our study suggests that considering alternate asset allocation across determinants of health might improve community health while reducing health care costs. Policymakers and health system executives should work together to determine the best asset allocation across determinants of health that maximizes value creation from a community health perspective.

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