

CHAPTER SIX

The Intensity of Care in the Last Six Months of Life

The Intensity of Care in the Last Six Months of Life

The quality of medical intervention is often more a matter of the quality of caring than the quality of curing, and never more so than when life nears its end. Yet medicine's focus is disproportionately on curing, or at least on the ability to keep patients alive with life-support systems and other medical interventions. This ability to intervene at the end of life has raised a host of medical and ethical issues for patients, physicians, and policy makers.

The Dartmouth Atlas demonstrates that, to the extent that end of life issues are addressed in practice, they are resolved in ways that depend on where the patient happens to live, not on the patient's preferences or the power of care to extend life. The Michigan experience of death varied remarkably from one community to another in 1995-96:

- The chance that the decedent was an inpatient in an acute care hospital at the time of death varied by a factor of two, from less than 20% to more than 40%.

- The chance of being admitted to an intensive care unit at least once during the last six months of life varied by a factor of about three, from less than 15% to more than 45%.

The intensity of care in the last six months of life also varied remarkably in 1995-96:

- The average number of visits to physicians varied by a factor of more than two, from 16 to 34.

- The number of physicians involved in patients' care varied substantially. In some hospital referral regions almost one-third of patients saw ten or more physicians during the last six months of their lives; in other regions fewer than 9% were treated by that many different physicians.

Like other medical decisions, end of life decisions about the use of resources are influenced by the available supply of acute care hospital resources and by individual physicians' practice styles. But is more better? The intensity of care in the last six months of life is an indicator of the propensity to use life saving technology. The question of whether more medical intervention is better must be framed in terms of the potential gain in life expectancy for populations living in regions with greater intensity of intervention. Research conducted in conjunction with the Atlas project provides evidence that populations living in regions with lower intensity of care in the last six months of life did not have higher mortality rates.

More than 80% of Americans say that they wish to avoid hospitalization and intensive care during the terminal phase of illness, but those wishes are often overridden by other factors. If more intense intervention does not improve life expectancy, and if most patients prefer less care when more intensive care is likely to be futile, the fundamental question is whether the quality of care in regions with fewer resources and more conservative practice styles is better than in regions where more aggressive treatment is the norm.

The Likelihood That Death Will Occur in a Hospital, Rather Than Elsewhere

In 1995-96, the likelihood of a hospitalized death for a Medicare enrollee living in Michigan was closely linked to where the enrollee lived. In some hospital service areas, fewer than 20% of Medicare deaths occurred in hospitals; in one hospital service area, the proportion was more than 40%.

Nationally, 33% of Medicare deaths occurred in hospitals. In a number of Michigan hospital service areas the proportion was more than 35%, including Madison Heights (41.1%); Garden City (39.1%); Flint (37.6%); Wayne (37.4%); Saginaw (36.6%) and Detroit (36.1%).

In other hospital service areas, the proportion of Medicare deaths that occurred in hospitals was substantially lower than the Michigan average of 31.9%, including Petoskey (26.3%); Grand Rapids (23.4%); Grayling (21.9%) and Big Rapids (18.3%).

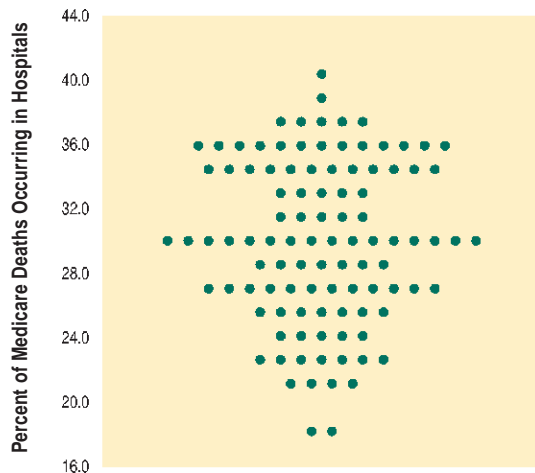
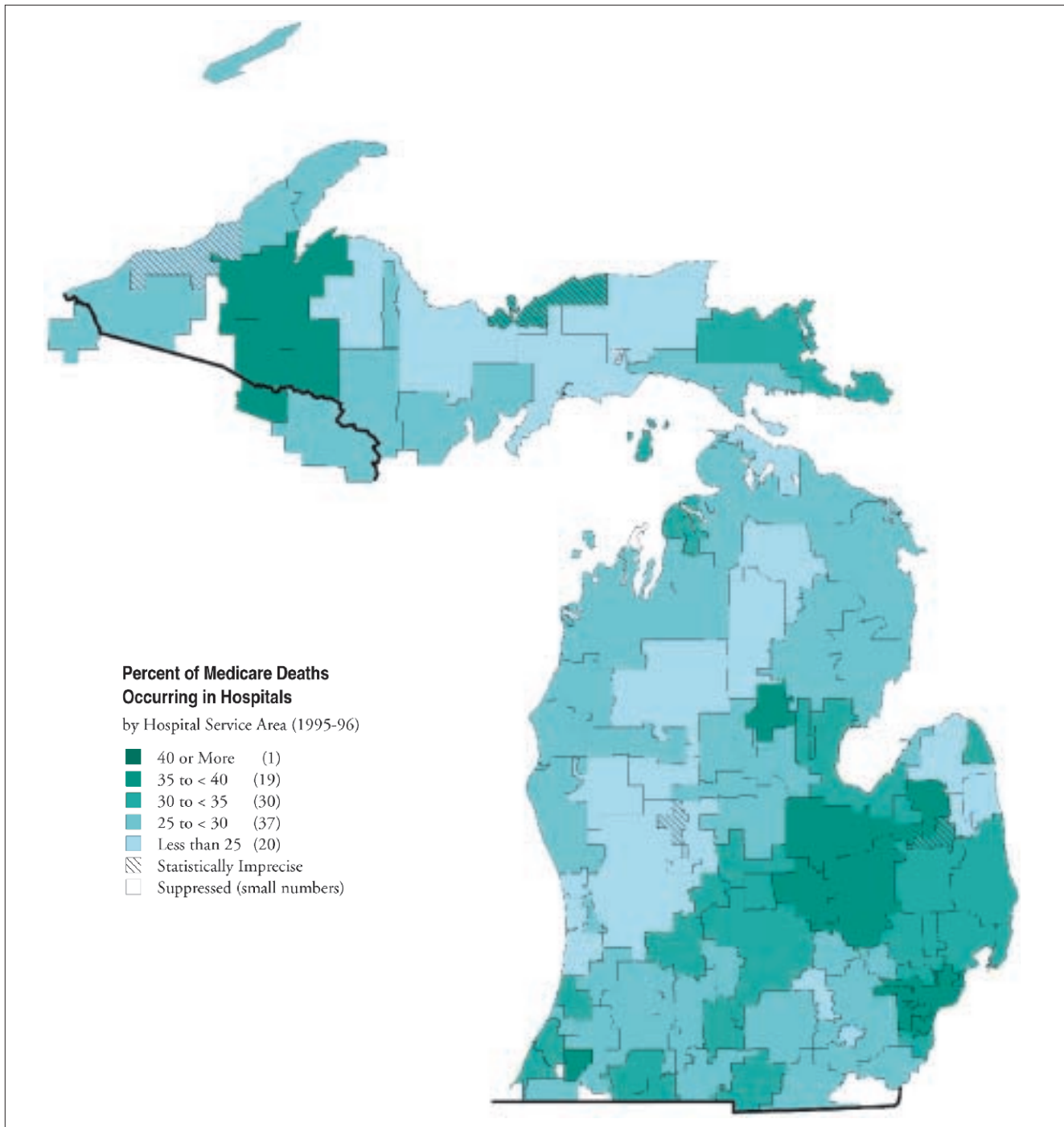


Figure 6.1. Percent of Medicare Deaths Occurring in Hospitals (1995-96)

The percent of Medicare deaths that occurred while the decedents were inpatients in hospitals ranged from less than 18% to more than 40%, after adjustment for differences in population age, sex and race. Each point represents one hospital service area in Michigan.



Map 6.1. Percent of Medicare Deaths Occurring in Hospitals (1995-96)

In one hospital service area, more than 40% of Medicare deaths occurred while the decedents were inpatients. In 20 hospital service areas, less than 25% of Medicare deaths occurred in hospitals.

The Likelihood of Being Admitted to an Intensive Care Unit During the Last Six Months of Life

The chances that the last six months of a Medicare enrollee's life included at least one stay in an intensive care unit varied by a factor of more than three in 1995-96. In some hospital service areas, less than 20% of Medicare enrollees who died were admitted one or more times to intensive care units (including coronary intensive care) during their last six months of life; in other regions almost one-half of decedents had at least one such admission. In Michigan, the likelihood of an admission to intensive care ranged from 13.2% to 46.6%.

The likelihood of being admitted to an intensive care unit during the last six months of life was highest in the hospital service areas in Taylor (46.6%); Wyandotte (44.6%); Wayne (43.2%); Dearborn (42.5%); Saginaw (40.4%) and Detroit (37.1%).

In other hospital service areas, the proportion of enrollees admitted to intensive care during the last six months of their lives was less than 24%, including Muskegon (23.8%); Marquette (20.8%); Iron Mountain (17.5%) and Newberry (13.2%).

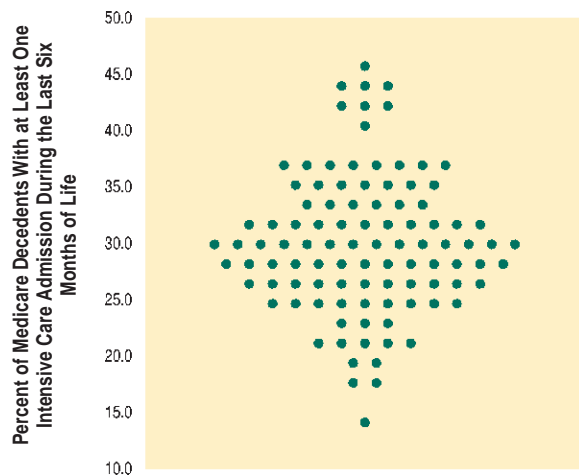
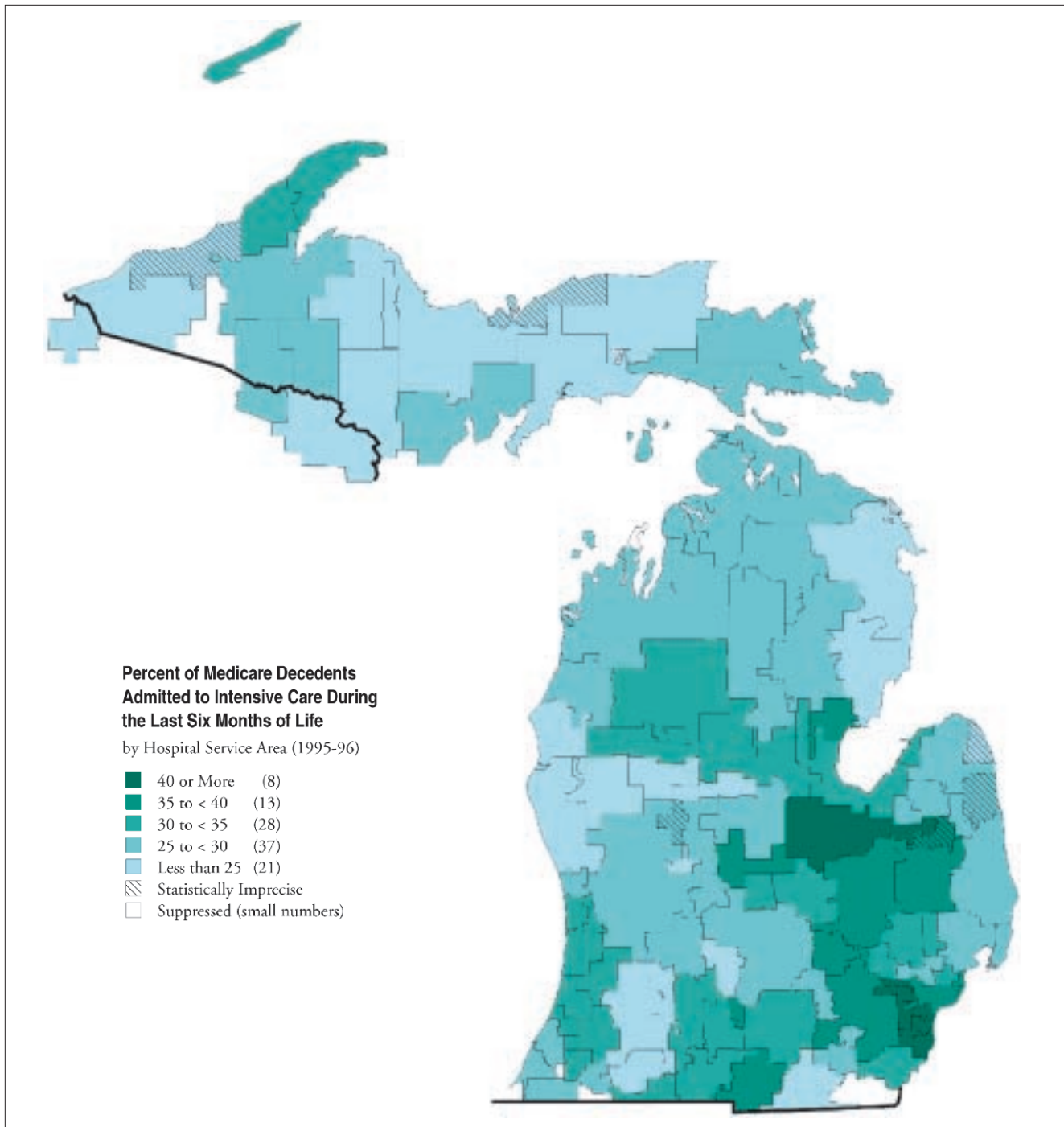


Figure 6.2. Percent of Medicare Enrollees Admitted to Intensive Care During the Last Six Months of Life (1995-96)

The percent of all Medicare decedents who were admitted to intensive care at least once during their final six months varied from less than 15% to more than 45%, after adjustment for differences in population age, sex and race. Each point represents one hospital service area in Michigan.



Map 6.2. Percent of Medicare Enrollees Admitted to Intensive Care During the Last Six Months of Life (1995-96)

In eight hospital service areas, more than 40% of Medicare decedents were admitted to intensive care at least once during the last six months of life. In 21 hospital service areas, fewer than 25% of decedents were admitted to intensive care.

Physician Visits During the Last Six Months of Life

Although people in the last six months of their lives are generally quite sick, the intensity of physician care that Medicare enrollees in their last six months of life were likely to receive, as measured by the average number of visits to physicians, varied from fewer than nine visits per decedent to almost 50. About 90% of physician visits in the last six months of life were with either primary care physicians or medical specialists; surgeons were visited much less frequently.

In Michigan, the average number of physician visits during the last six months of life was 25.3; hospital referral regions with higher rates of physician visits included Royal Oak (33.9); Dearborn (33.2); Detroit (30.8) and Pontiac (30.4).

Residents of other hospital referral regions had fewer physician visits during the last six months of their lives, including those in Muskegon (16.4); Marquette (17.6); Grand Rapids (17.8) and Kalamazoo (18.5).

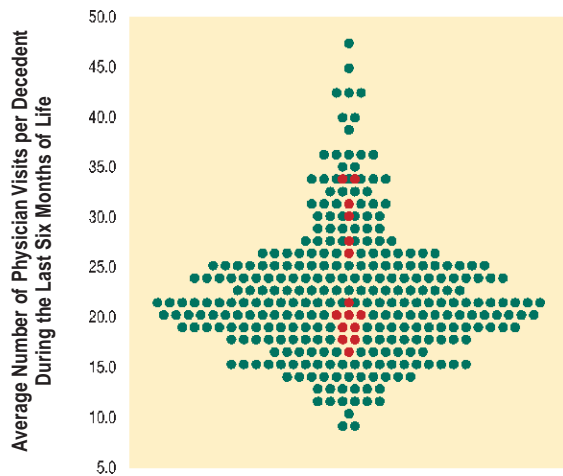
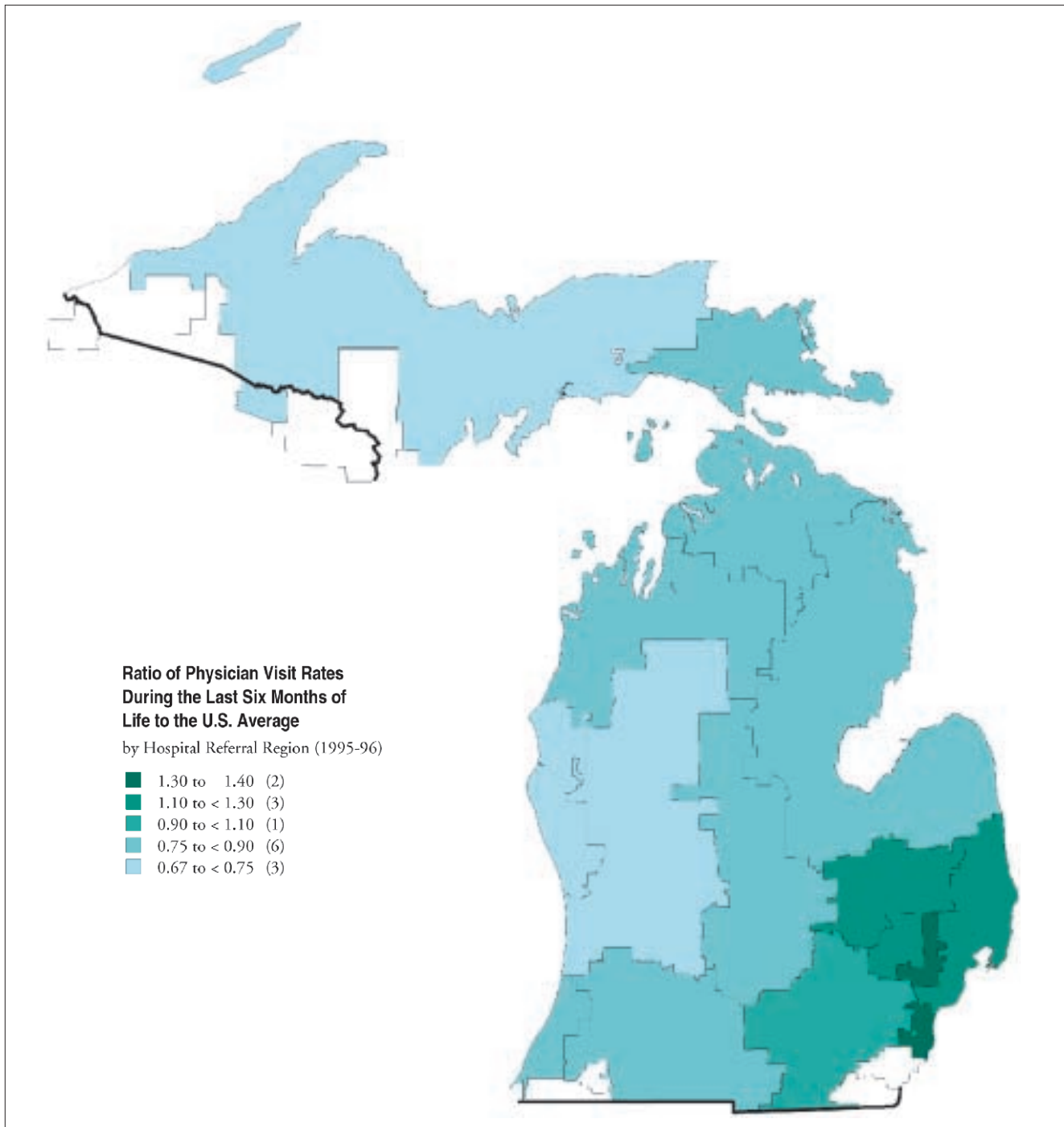


Figure 6.3. Average Number of Physician Visits per Decedent During the Last Six Months of Life (1995-96)

The number of physician visits during the last six months of life varied by a factor of about five, from fewer than 10 to almost 50, after adjustment for differences in population age, sex and race. Each point represents one of the 306 hospital referral regions in the United States. The red dots are rates for Michigan hospital referral regions.



Map 6.3. Average Number of Physician Visits per Decedent During the Last Six Months of Life (1995-96)

Rates of physician visits during the last six months of life were higher than the national average in several Michigan hospital referral regions, including Royal Oak, Dearborn and Detroit. Several regions, including Muskegon and Marquette, were below the U. S. average.

Primary Care Physician Visits During the Last Six Months of Life

Almost half of all physician visits among Medicare enrollees in their last six months of life were with primary care physicians. As with total physician visits, treatment by primary care physicians was extremely variable, according to where the Medicare enrollee lived. In Michigan hospital referral regions, the average number of such visits varied from 10.0 to 18.1.

In Michigan, the average number of primary care physician visits during the last six months of life was at least 30% above the national average in five hospital referral regions, including Dearborn (18.1); Pontiac (16.9); and Detroit (16.5).

Residents of other hospital referral regions had rates below the average, including Kalamazoo (10.0) and Lansing (11.2).

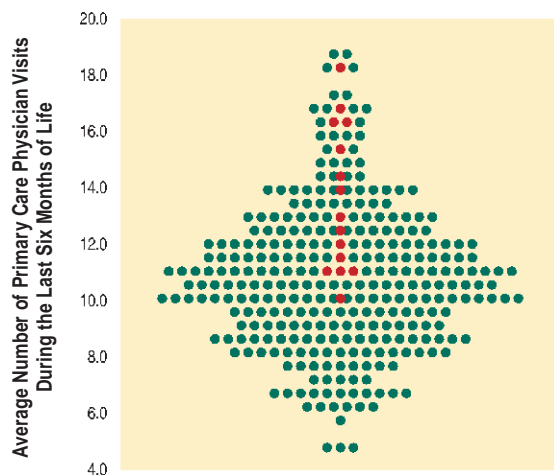
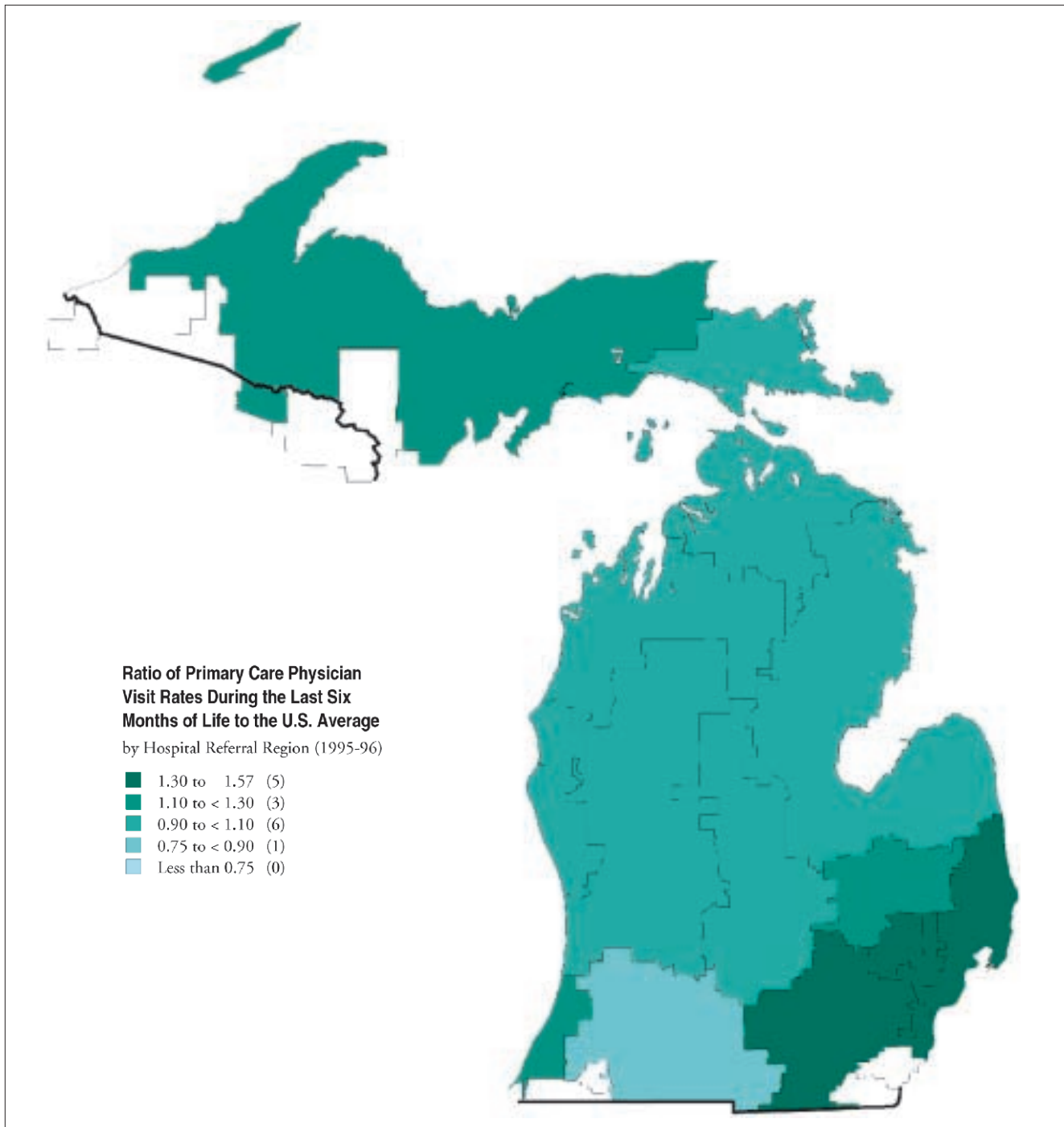


Figure 6.4. Average Number of Primary Care Physician Visits During the Last Six Months of Life (1995-96)

Visits to primary care physicians by Medicare enrollees in their last six months of life varied by a factor of more than four, from fewer than five to almost 20, after adjustment for differences in population age, sex and race. Each point represents one of the 306 hospital referral regions in the United States. The red dots are rates for Michigan hospital referral regions.



Map 6.4. Average Number of Primary Care Physician Visits During the Last Six Months of Life (1995-96)

In five hospital referral regions, the average number of primary care physician visits was at least 30% higher than the national average. There were no regions in which the number of visits was more than 25% below the average.

Visits to Medical Specialists During the Last Six Months of Life

More than 40% of Medicare enrollees' visits with physicians during the last six months of the enrollees' lives were with medical (non-surgical) specialists. The number of such visits varied by a factor of more than ten, from 2.0 to 25.1. There was no evidence that Medicare enrollees in their last six months of life were seen by primary care doctors instead of visiting medical specialists (a substitution effect); indeed, regions with higher visit rates for primary care tended also to have higher visit rates for specialist care ($R^2 = .22$).

In Michigan, only five hospital referral regions had specialist visit rates higher than the national average, including Royal Oak (13.9); Flint (12.0) and Dearborn (12.0). Specialist visits were far less common for residents of the hospital referral regions in several areas, including St. Joseph (3.0); Muskegon (3.1) and Marquette (3.4).

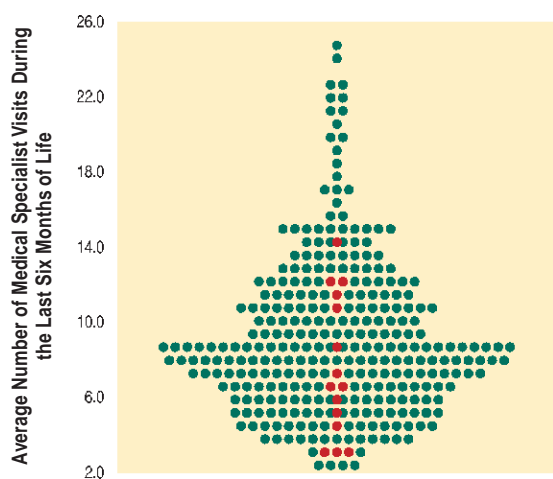


Figure 6.5. Average Number of Visits to Medical Specialists During the Last Six Months of Life (1995-96)

The average number of visits to medical specialists during the last six months of life varied by a factor of more than ten, from 2 to 25, after adjustment for differences in population age, sex and race. Each point represents one of the 306 hospital referral regions in the United States. The red dots are rates for Michigan hospital referral regions.

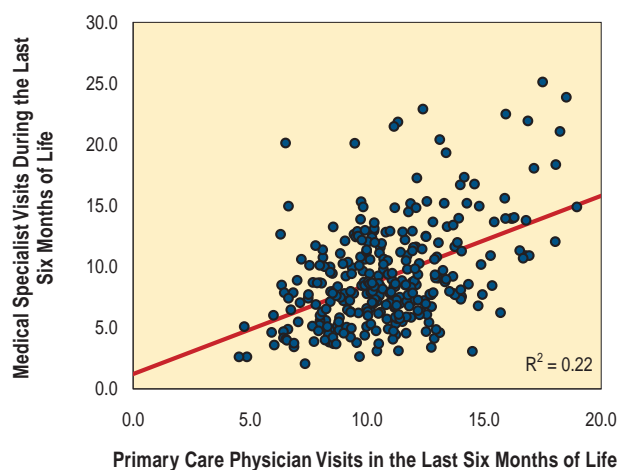
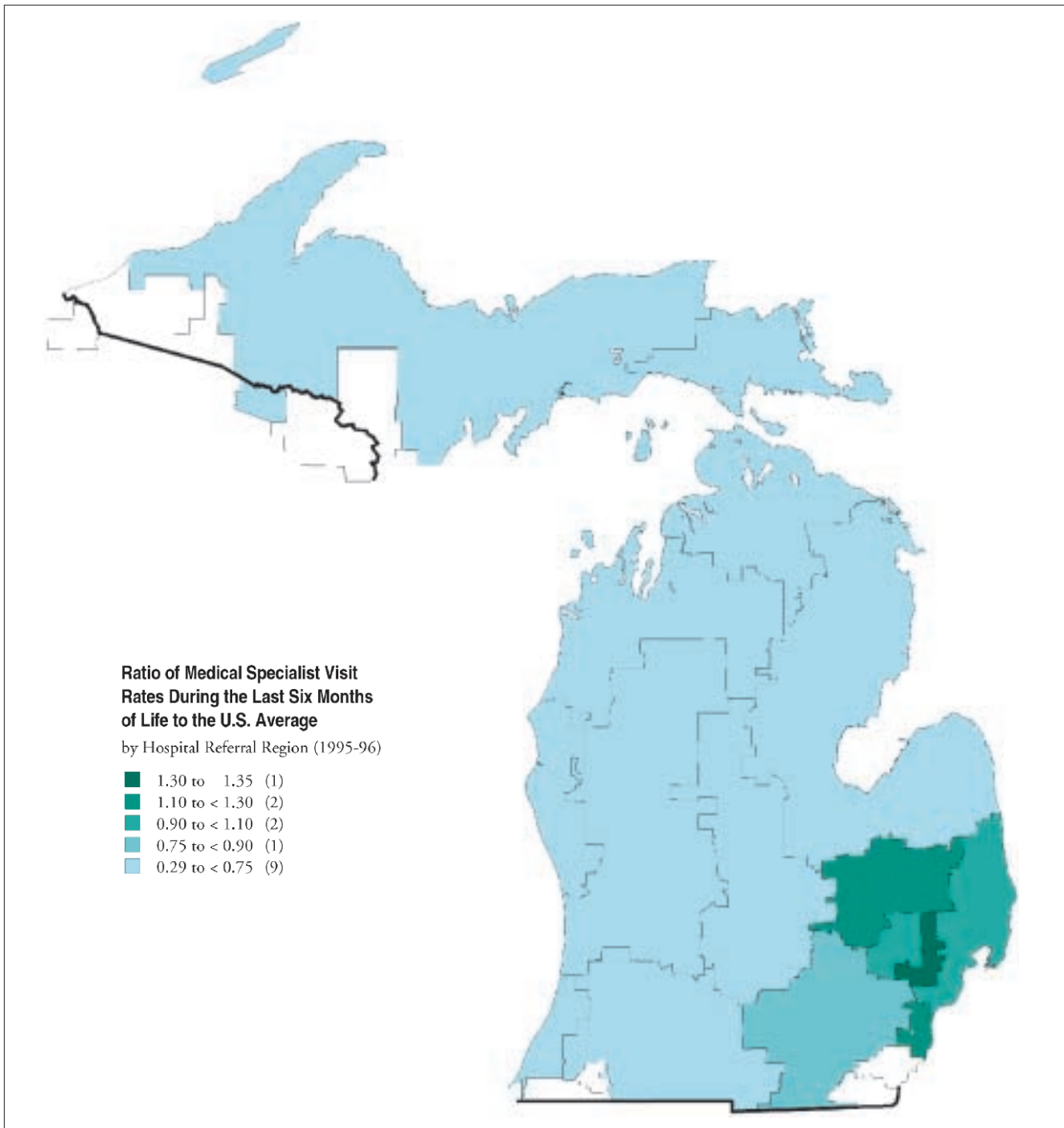


Figure 6.6. The Relationship Between Rates of Visits to Primary Care Doctors and Rates of Visits to Medical Specialists During the Last Six Months of Life (1995-96)

Nationally, there was no evidence that Medicare enrollees who had higher rates of visits to primary care physicians during their last six months of life saw fewer medical specialists during the same period; there was, in fact, a positive correlation ($R^2 = .22$).



Map 6.5. Average Number of Visits to Medical Specialists During the Last Six Months of Life (1995-96)

Specialist visits in last six months of life were more than 25% below the national average in nine regions. Only one region, Dearborn, exceeded the national average by more than 30%.

The Likelihood of Seeing Ten or More Physicians in the Last Six Months of Life

Another way of measuring the intensity of the use of physician care in the last six months of life is to measure the number of different physicians involved in the treatment of individual enrollees in the last six months of their lives. To measure this “propensity to refer,” an index was developed by counting the number of physicians who provided one or more patient visits within the last six months of life to each patient in the 5% sample of Medicare Part B claims. (The index is explained in more detail in the Appendix on Methods.)

According to this index, the propensity to refer varied by a factor of almost four among the hospital referral regions in Michigan. Only 8.7% of enrollees in the St. Joseph hospital referral region saw ten or more physicians during the last six months of their lives; almost one-third of dying enrollees in Dearborn saw at least ten different physicians. Nationally, the propensity to refer was strongly correlated with visit rates in the last six months of life.

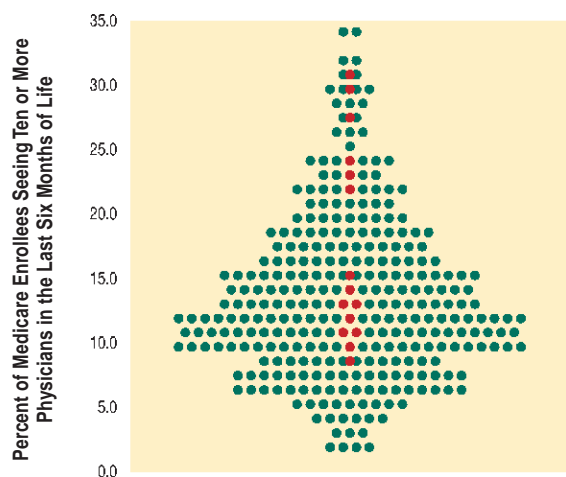


Figure 6.7. Percent of Medicare Enrollees Seeing Ten or More Physicians During the Last Six Months of Life (1995-96)

The proportion of Medicare enrollees who saw ten or more physicians during their last six months of life ranged from less than 10% to more than 30%, after adjustment for differences in population age, sex and race. Each point represents one of the 306 hospital referral regions in the United States. The red dots are rates for Michigan hospital referral regions.

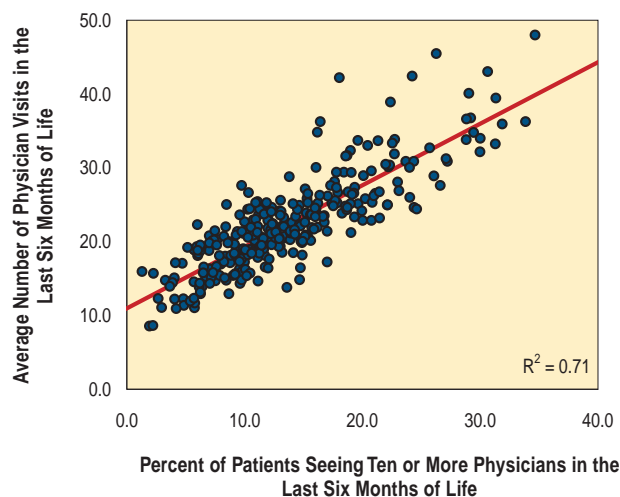
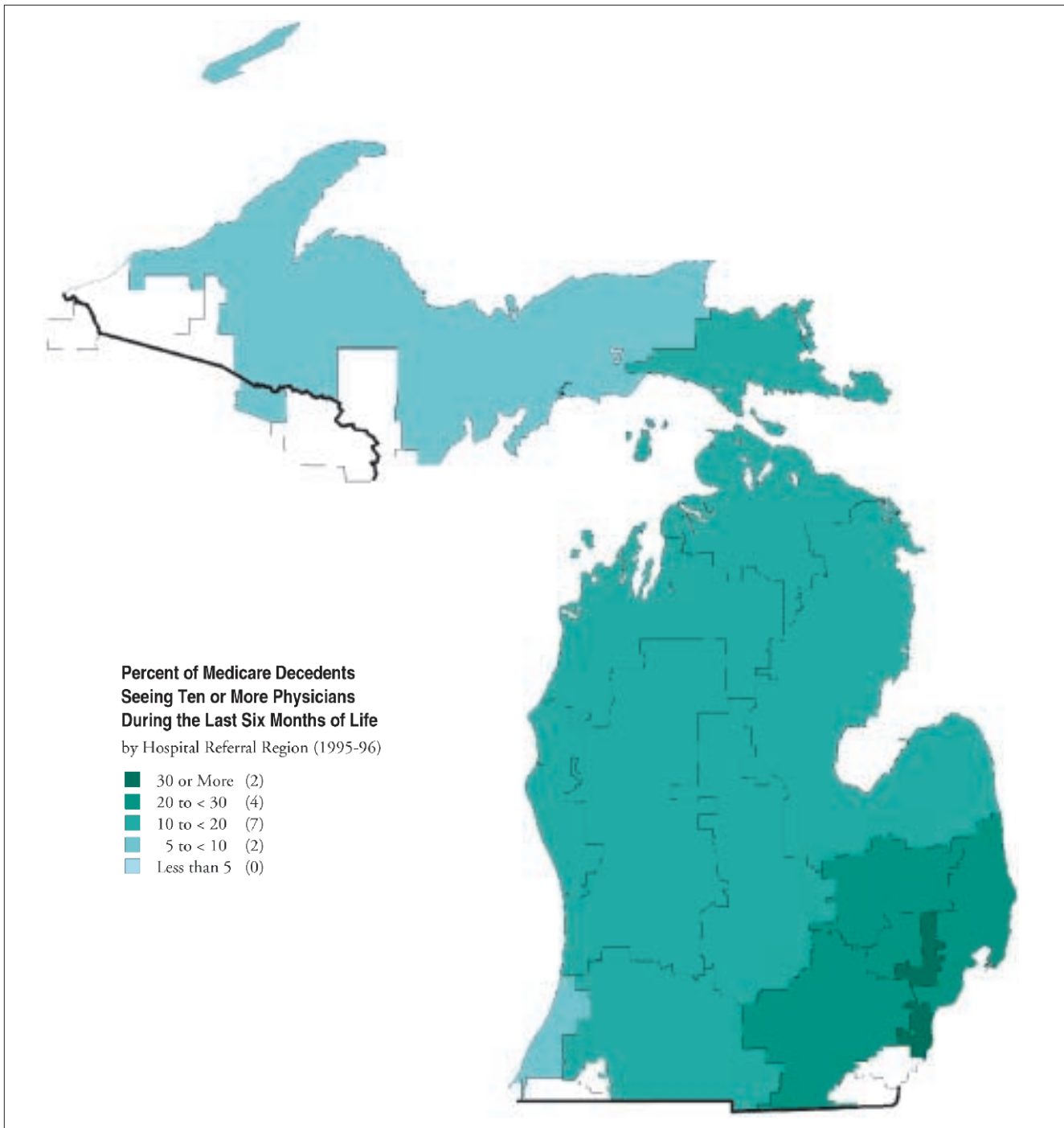


Figure 6.8. The Relationship Between the Propensity to Refer to Multiple Physicians and the Average Number of Physician Visits Among Enrollees in the Last Six Months of Life (1995-96)

The number of different physicians Medicare enrollees saw during the last six months of their lives was strongly correlated with the average number of total physician visits ($R^2 = .71$).



Map 6.6. Percent of Medicare Enrollees Seeing Ten or More Physicians During the Last Six Months of Life (1995-96)

In two hospital referral regions, 30% of Medicare enrollees saw ten or more physicians during the last six months of their lives. In two regions, less than 10% of enrollees saw as many physicians.

Chapter Six
Table Notes

Table 6A provides measures of the intensity of hospital and intensive care use by Medicare enrollees during the last six months of life in Michigan hospital service areas. The measures in this table are adjusted for differences in the age, sex and race of local populations, and are expressed as proportions (rates per 100 decedents).

Table 6B provides measures of the use of physician services by Medicare decedents during the last six months of life. Due to small sample size, these measures are expressed by hospital referral region. Rates are per decedent, and are adjusted for age, sex and race, with the exception of the percent seeing ten or more physicians during the last six months of life, which is a simple proportion.

For a more detailed description of how adjustments were made, please refer to the Appendix on Methods.

CHAPTER SIX TABLE A

The Intensity of Care in the Last Six Months of Life (1995-96)

Hospital Referral Region	Medicare Deaths (1995-96)	Percent of Medicare Deaths Occurring in Hospitals (1995-96)	Percent of Medicare Dependents Admitted to Intensive Care During the Last Six Months of Life (1995-96)	Hospital Referral Region	Medicare Deaths (1995-96)	Percent of Medicare Deaths Occurring in Hospitals (1995-96)	Percent of Medicare Dependents Admitted to Intensive Care During the Last Six Months of Life (1995-96)
Adrian	680	25.5	24.5	Harbor Beach	79	32.9	(24.8)
Albion	134	34.5	37.2	Hastings	369	34.5	28.1
Allegan	221	29.4	30.1	Hillsdale	367	30.4	36.0
Alma	532	25.0	28.4	Holland	802	24.0	30.4
Alpena	633	25.3	24.2	Howell	398	28.9	36.1
Ann Arbor	2,944	30.0	35.9	Ionia	190	30.5	27.3
Bad Axe	234	24.4	25.6	Iron Mountain	569	29.2	17.5
Battle Creek	1,242	29.9	30.7	Iron River	146	35.9	26.6
Bay City	1,218	31.4	34.9	Ironwood	391	26.8	21.8
Berrien Center	38			Ishpeming	171	26.7	20.7
Big Rapids	281	18.3	18.7	Jackson	1,642	29.6	33.3
Cadillac	497	21.0	32.2	Kalamazoo	2,465	29.5	21.8
Caro	129	31.3	25.6	L'Anse	159	36.2	27.9
Carson City	129	32.7	37.0	Lakeview	54	(22.6)	(26.5)
Cass City	116	36.3	28.9	Lansing	2,878	32.9	27.1
Charlevoix	201	33.8	28.0	Lapeer	555	34.3	36.5
Charlotte	235	27.5	20.8	Laurium	278	26.3	34.1
Cheboygan	195	21.3	25.1	Livonia	1,878	35.9	41.4
Chelsea	207	21.1	26.4	Ludington	407	25.5	22.2
Clare	402	28.1	30.8	Madison Heights	501	41.1	31.2
Coldwater	449	29.6	32.2	Manistee	303	27.3	25.9
Crystal Falls	87	35.2	29.5	Manistique	176	23.4	17.4
Dearborn	1,897	35.5	42.5	Marlette	80	(30.6)	(38.0)
Deckerville	81	22.5	(27.4)	Marquette	508	22.9	20.8
Detroit	11,334	36.1	37.1	Marshall	223	34.4	34.2
Dowagiac	166	36.6	35.0	Midland	700	29.8	30.9
Escanaba	478	29.4	27.8	Milford	669	28.5	30.5
Farmington Hills	992	35.8	43.1	Monroe	848	29.7	31.2
Flint	4,216	37.6	35.9	Mount Clemens	2,650	33.6	27.3
Frankfort	69	(27.0)	(27.3)	Mount Pleasant	335	27.4	23.6
Fremont	249	22.0	25.0	Munising	76	(32.7)	(14.2)
Garden City	821	39.1	37.1	Muskegon	1,820	28.3	23.8
Gaylord	288	23.5	27.0	Newberry	122	17.4	13.2
Gladwin	217	37.1	27.4	Niles	603	27.0	27.5
Grand Haven	438	22.6	26.6	Northport	31		
Grand Rapids	5,714	23.4	28.5	Ontonagon	74	(20.5)	(17.8)
Grayling	459	21.9	27.8	Owosso	589	35.2	30.1
Greenville	156	22.0	18.6	Paw Paw	293	27.7	33.9
Grosse Pointe	641	33.8	35.3	Petoskey	755	26.3	29.2
Hancock	300	26.9	30.1	Pigeon	136	27.5	31.1

Hospital Referral Region	Medicare Deaths (1995-96)	Percent of Medicare Deaths Occurring in Hospitals (1995-96)	Percent of Medicare Decedents Admitted to Intensive Care during the Last Six Months of Life (1995-96)
Pontiac	2,366	33.1	30.2
Port Huron	1,362	34.1	29.3
Reed City	290	25.9	34.4
Rochester	763	31.7	34.3
Royal Oak	3,289	34.8	28.7
Saginaw	2,230	36.6	40.4
Saline	95	20.6	25.2
Sandusky	96	22.1	25.9
Sault Ste Marie	326	34.5	29.6
South Haven	268	30.1	32.0
Southfield	696	35.8	36.9
St. Clair	322	30.5	25.2
St. Johns	141	30.9	32.7
St. Joseph	1,082	30.9	26.3
Standish	150	30.0	35.6
Sturgis	291	34.1	30.8
Tawas City	533	26.6	25.0
Taylor	472	36.8	46.6
Tecumseh	209	28.2	29.2
Three Rivers	325	30.0	22.9
Traverse City	1,437	27.1	26.9
Trenton	663	34.8	41.9
Troy	805	34.8	25.5
Warren	2,707	35.6	30.8
Watervliet	141	25.9	31.3
Wayne	1,481	37.4	43.2
West Branch	434	29.0	29.7
Wyandotte	1,655	37.1	44.6
Zeeland	119	29.3	30.3
Michigan	89,358	31.9	32.1
United States	2,278,277	33.0	31.4

CHAPTER SIX TABLE B

Physician Visits During the Last Six Months of Life (1995-96)

Hospital Referral Region	Medicare Deaths (1995-96)	Total Physician Visits per Decedent During the Last Six Months of Life (1995-96)	Primary Care Physician Visits per Decedent During the Last Six Months of Life (1995-96)	Medical Specialist Visits per Decedent During the Last Six Months of Life (1995-96)	Percent of Medicare Decedents Seeing 10 or More Physicians During the Last Six Months of Life (1995-96)
Ann Arbor	10,526	25.9	15.4	8.4	24.1
Dearborn	5,508	33.2	18.1	12.0	31.3
Detroit	19,016	30.8	16.5	11.3	27.2
Flint	4,771	28.0	13.9	12.0	23.0
Grand Rapids	8,721	17.8	11.2	4.4	11.1
Kalamazoo	6,176	18.5	10.0	6.3	13.2
Lansing	5,241	20.6	11.2	6.8	13.4
Marquette	2,575	17.6	12.8	3.4	9.8
Muskegon	2,665	16.4	11.3	3.1	14.8
Petoskey	1,765	20.0	12.7	5.4	12.2
Pontiac	3,035	30.4	16.9	10.9	22.0
Royal Oak	6,054	33.9	16.2	13.9	30.0
Saginaw	7,066	21.5	12.2	7.2	14.2
St. Joseph	1,529	19.9	14.5	3.0	8.7
Traverse City	2,299	18.9	11.2	5.8	10.4
Michigan	89,358	25.3	14.2	8.6	20.4
United States	2,278,277	24.4	11.5	10.3	16.1

