The frequency of use of physician services, hospital and intensive care unit beds, and other *supply-sensitive* care varies dramatically across the U.S., with two factors — the local supply of hospital beds and medical specialists — explaining almost half the variation in Medicare spending. Moreover, the greater use of the hospital, physician services, and testing observed in high-spending Medicare regions are not associated with better health, better technical quality, or better patient or physician perceptions of quality, pointing to substantial opportunities for savings. The rapid emergence of telemedicine during the pandemic has made abundantly clear just how much care can be delivered in innovative and less costly ways.
https://catalyst.nejm.org/doi/abs/10.1056/CAT.20.0456

Recommendations for Baseline Data for Inter- and Intra-Regional Variations in Expenditures and Use of Services

Chronic Diseases
Unique members with Chronic Diseases by Regions
Visits to specialists for Chronic Disease
Admissions to Hospitals
    Days
    ICU Days
    Reimbursement

Overall use of services
Members with any use of service
Members with Primary Care visits
Outpatient visits
    Primary Care including Preventive Services
    Specialists

Emergency Room Visits
Hospital Admissions

- Days
- DRG
    - DRG weighting by Hospital
- ICU days
- Reimbursement

Ambulatory Care Sensitive Admissions as indicator of inadequate care, with some data for consideration of Social Determinants of Health

- Particular attention for Admissions where no apparent prior health care
- Similar for the Chronic Disease Admissions

Use APAC data 2015 – 2019
Group by year
Group by Patient Zip Code
Group by Provider or Faciliity Zip Code

- Prior two zip code groupings can be aggregate to any selected regions

Type of Payer would be useful and illuminating

Notes

If every Medicare provider in the country spent at the same rate as the lowest 10% of providers in the program, overall costs would be slashed by 30%. That alone is enough to pay for the elusive Medicare drug benefit. Additional savings might well accrue by implementing shared decision-making and reducing underuse of preventive services and medical errors
'Clamping down on variation' February 1, 2003 Managed Health Care Executive

Dartmouth Atlas Project General FAQ's

https://www.dartmouthatlas.org/faq/

This research suggests savings that can be realized within the Medicare system. Don't we need to look at the whole picture to truly realize savings?

The first is that, even if we redirected only Medicare into high-quality, high-efficiency patterns of resource allocation and utilization, we would realize tremendous gains in quality and reductions in spending. The second is that, in several state-based studies of all health insurance claims (both Medicare and commercial) we have determined that the variations in resources and quality in the non-Medicare populations closely resemble those in the Medicare population.

What explains the differences in efficiency among different regions? Is it supply driven?

The supply of resources such as hospital beds and specialist physicians does drive utilization – where there are more hospital beds per capita, more people will be admitted (and readmitted more frequently) than in areas where there are fewer beds per capita. Economically, it is important for hospitals to make sure that all available beds generate as much revenue as they can, since an unoccupied bed costs nearly as much to maintain as an occupied bed. Similarly, where there are more specialist physicians per capita, there are more visits and revisits. Other reasons for the variations in efficiency are related to practice style – the way physicians in the region practice medicine (using more or fewer prescriptions or tests, for example).

Rather, the additional services provided to Medicare beneficiaries in higher-spending regions all fall into the category of "supply-sensitive care": discretionary care that is provided more frequently when a population has a greater per capita supply of medical resources. In

regions where there are more hospital beds per capita, patients will be more likely to be admitted to the hospital – and Medicare will spend more on hospital care. Where there are more intensive care unit beds, more patients will be cared for in the ICU – and Medicare will spend more on ICU care. The more CT scanners are available, the more CT scans patients will receive – and so on.

Ironically, research has found that in patients with chronic illnesses, more aggressive interventions result in shorter life expectancy, probably because of the risks associated with hospitalization. This indicates that the best strategy for extending the life of people with chronic illness is to focus on those activities that provide a survival benefit – better control of blood pressure for people with diabetes, for example – rather than on "heroic" end-of-life care.

What are the medical conditions that define a patient as having a chronic illness?

To be assigned to our chronically ill cohort, a patient must have one of the following nine conditions: congestive heart failure, chronic lung disease, cancer, coronary artery disease, renal failure, peripheral vascular disease, diabetes, chronic liver disease or dementia. ICD-9-CM codes defining each condition can be found here.

Hospital service areas (HSAs) are local health care markets for hospital care. An HSA is a collection of ZIP codes whose residents receive most of their hospitalizations from the hospitals in that area. HSAs were defined by assigning ZIP codes to the hospital area where the greatest proportion of their Medicare residents were hospitalized. Minor adjustments were made to ensure geographic contiguity. Most hospital service areas contain only one hospital. The process resulted in 3,436 HSAs.

Hospital referral regions (HRRs) represent regional health care markets for tertiary medical care. Each HRR contains at least one hospital that performs major cardiovascular procedures and neurosurgery. HRRs were defined by assigning HSAs to the region where the greatest proportion of major cardiovascular procedures were performed, with minor modifications to achieve geographic contiguity, a minimum population size of 120,000, and a high localization index. The process resulted in 306 hospital referral regions. More information on how HSAs and HRRs were defined is available in our Appendix on the Geography of Health Care in the United States.

Regional differences in Medicare spending are largely explained by the more inpatient-based and specialist-oriented pattern of practice observed in high-spending regions. Neither quality of care nor access to care appear to be better for Medicare enrollees in higher-spending regions.
https://pubmed.ncbi.nlm.nih.gov/12585825/

From almost 30 years ago

The small-area variation research tra¬ dition provides the basis for a definition of excess. Excess supply exists when increased resource availability results in increased utilization for which there is no empirical evidence that more is better.16 Hospital beds provide a good example of a resource that often meets this criterion. When more beds are avail¬ able, the threshold for admission is low¬ ered for a broad family of discretionary medical conditions.1718 Higher rates of

hospitalizations for these conditions are not associated with better population based mortality rates.

Table 4. Estimates of the Magnitude of Waste in U.S. Health Care and How a Single System of Measurement, Payment, and Insurance Would Help Reduce These Sources of Waste

Category	Berwick and Hackbarth[71]	Shrank, Rogstad & Parekh[72]	How a Single System Approach Could Help
Failures of Care Delivery: Waste due to poor execution or failure to adopt known best practices	3.8% – 4.8%	2.7% – 4.3%	Comprehensive and accurate information on treatment outcomes and provider performance would support improvement and choice, both leading to better outcomes.
Failures of Care Coordination: Waste from fragmented care	0.9% –1.3%	0.7% – 2.0%	Everyone is enrolled in a population health organization with strong primary care, effective information systems, and powerful incentives to improve and coordinate care.
Overtreatment: Waste from care that, according to known science, cannot help patients	5.9% – 7.1%	2.0% – 2.6%	Better information would reduce overuse of biomedical interventions. Global payment would provide incentives to reduce overuse of both biomedical treatments and supply-sensitive care.
Administrative Complexity: Waste from inefficient rules, such as failure to standardize forms.	4.0% – 9.2%	7.0%	A single, simplified billing, payment, and insurance system that all are required to use would reduce costs, while also reducing avoidable confusion.
Pricing Failures: Waste from prices that migrate far from those expected in efficient markets	3.1% – 4.9%	6.0% – 6.3%	A single, constantly updated fee system will accurately reflect costs, set a ceiling on price variation, and promote competition.
Fraud and Abuse: Waste that comes as fraudsters issue fake bills and run scams	3.0% – 6.6%	1.3% – 2.2%	Eliminating fragmented data will make it harder to hide fraudulent activity. Global payment creates incentives for providers to reduce fraud and discretionary overuse.
Overall Percent of Spending	*20.7%–33.8%*	*19.9%–24.5%*	*A key barrier to achieving even a fraction of the potential savings shown remains the fragmentation that enables producers, providers, and insurers to shift or raise costs to others: a single system would help.*
Total Spending on Waste	*$558B–$910B*	*$760B–$935B*	

Efforts to estimate the magnitude of waste in U.S. health care, with recent studies shown above, have identified multiple specific sources