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Is Capacity Destiny?

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Green Mountain Care Board

January 2022

Health Care Capacity

Labor: Clinicians

Capital: Medical & surgical beds, ICU beds, NICU beds, imaging, and procedure suites

- How is capacity distributed? Is it distributed rationally?
- How does variation in capacity relate to health care use?
- Does the variation in capacity lead to unwarranted variation? That is health care variation unrelated to patient needs and preferences.
- How is capacity associated with outcomes?

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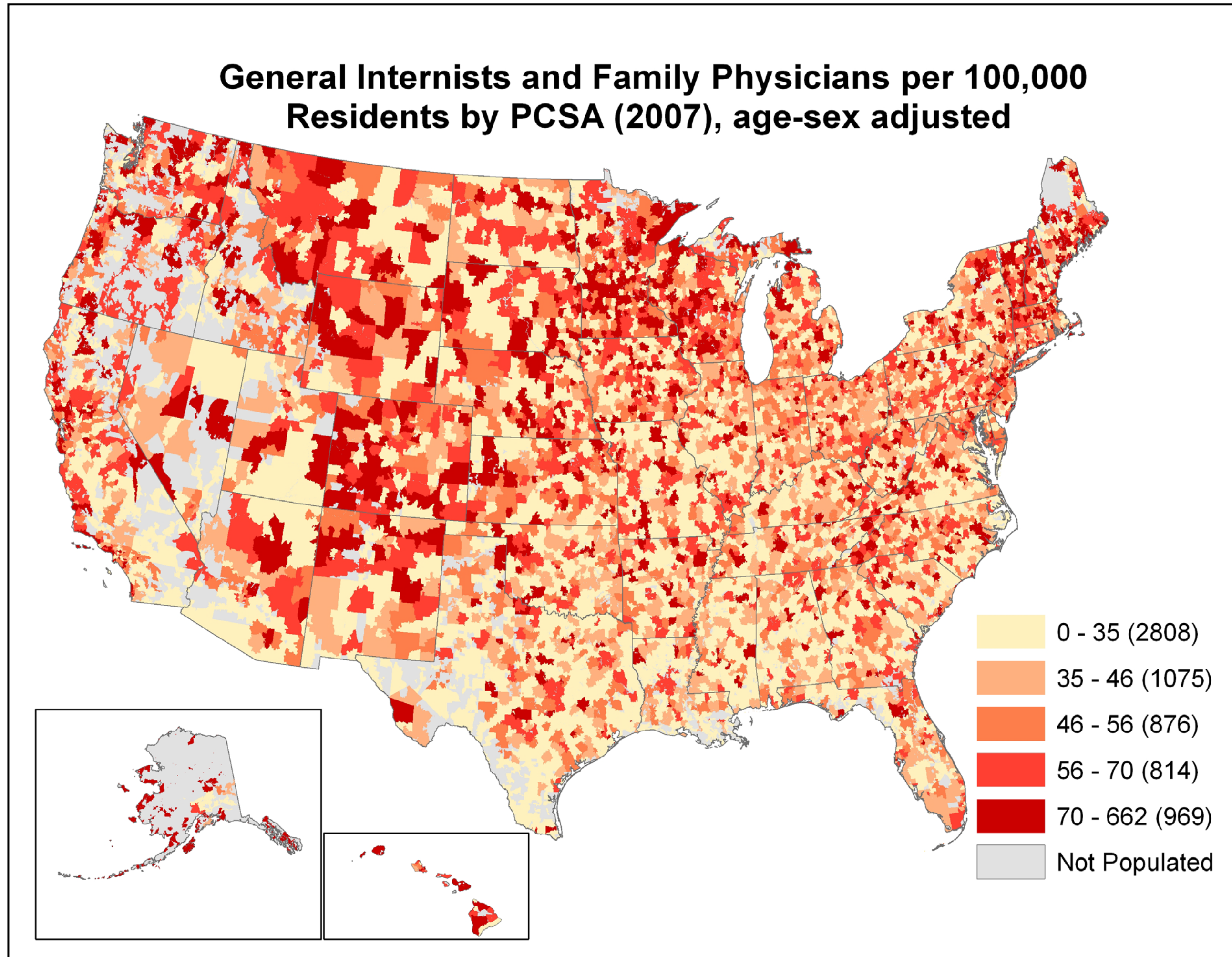
Health care capacity varies across regions and health systems. Most of this variation is above the level of underservice



Source: *Dartmouth Atlas of Health Care*

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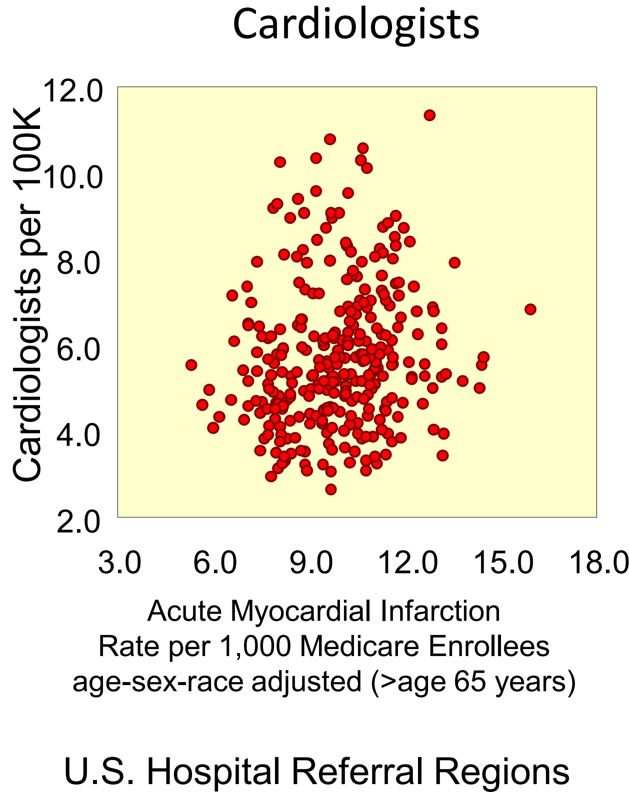
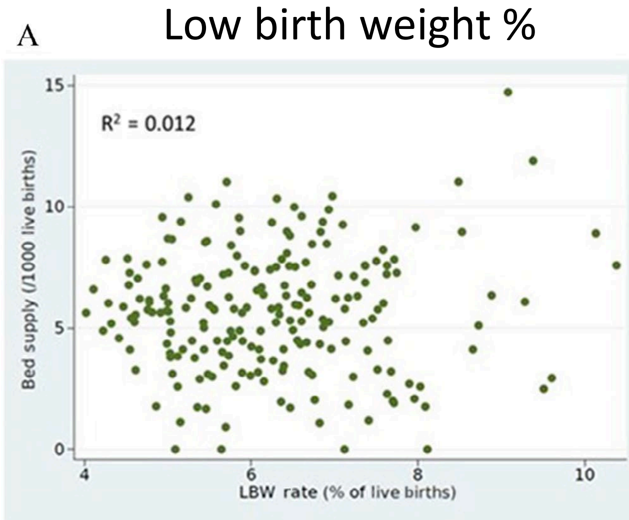
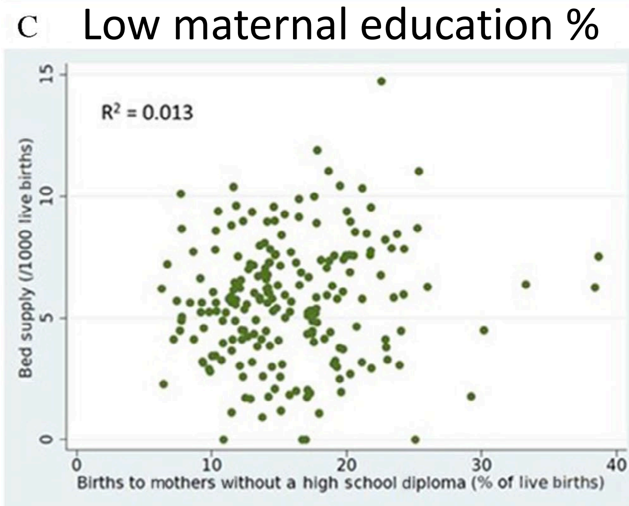
Higher U.S. physician capacity is not located where patients needs are greater



NICU beds per births



NICU beds per births



Wennberg, et al. *Dartmouth Cardiovascular Atlas*

Harrison, Wasserman, Goodman. *J of Pediatr, 2017.*

U.S. Neonatal Intensive Care Regions

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In the U.S. there is little or no relationship between regional per capita capacity measures and need:

Medical specialists

Primary care physicians (except a weak association of family medicine and SES)

Advanced Practice Nurses

Hospital capital investments - beds of all types and expensive technologies

(multiple published studies)

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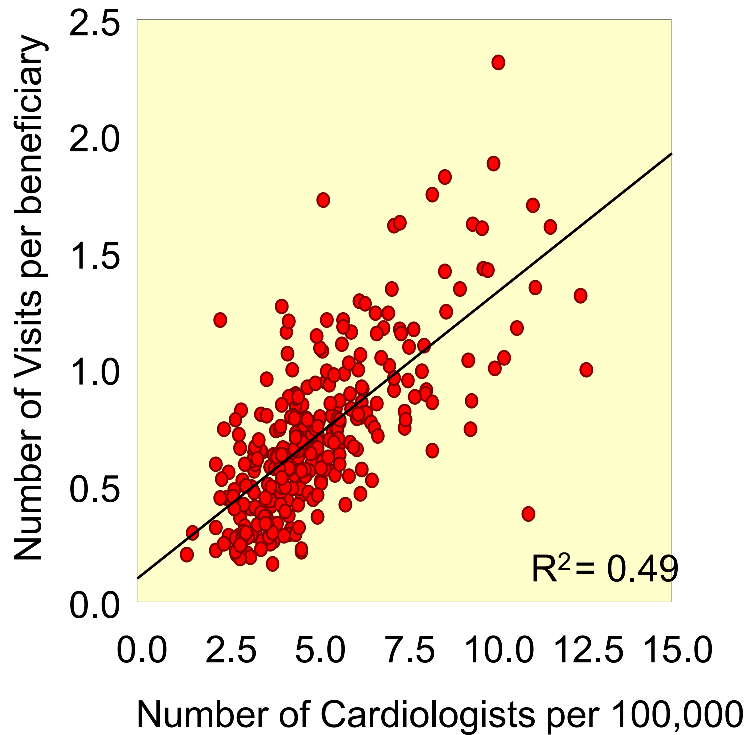
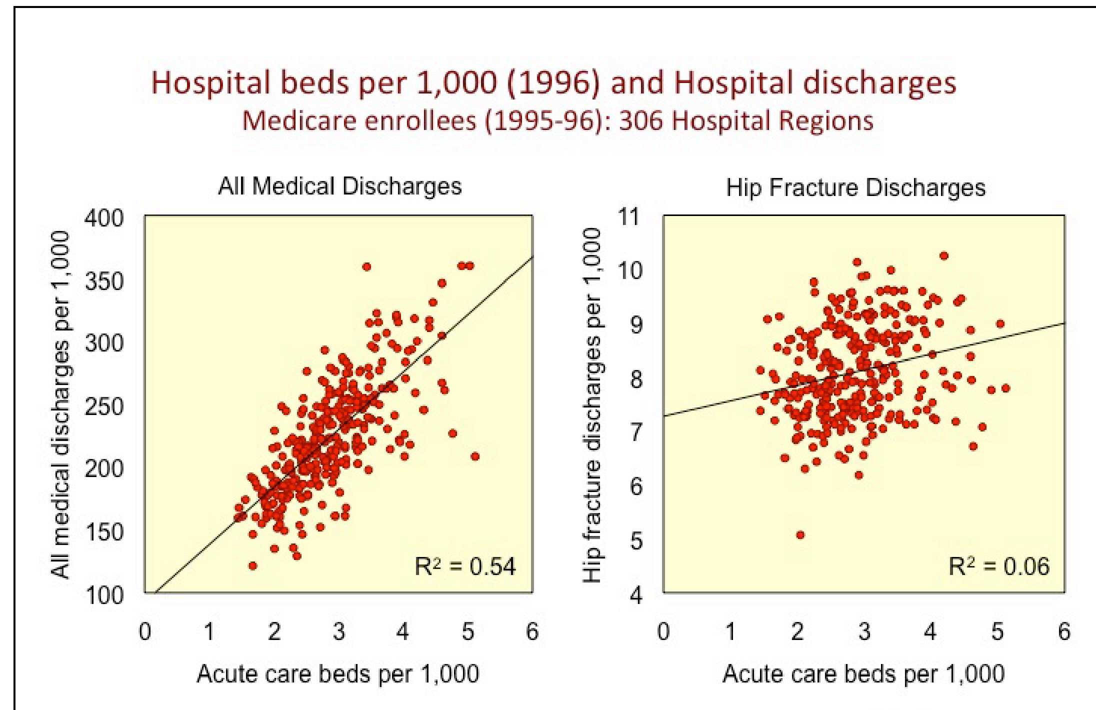
Health Care Capacity – Does more lead to more health care services (i.e., utilization?)

- Generally, yes





Source: *Dartmouth Atlas of Health Care*

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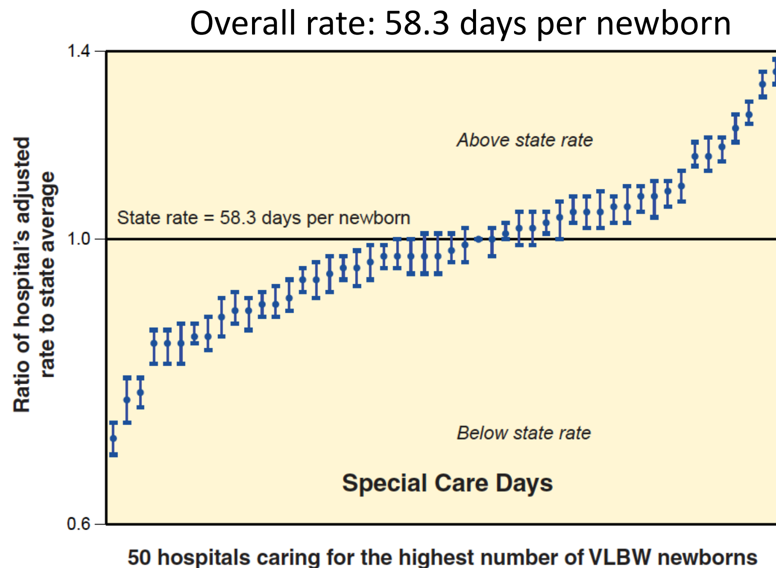
Higher capacity often leads to care this is not needed or wanted

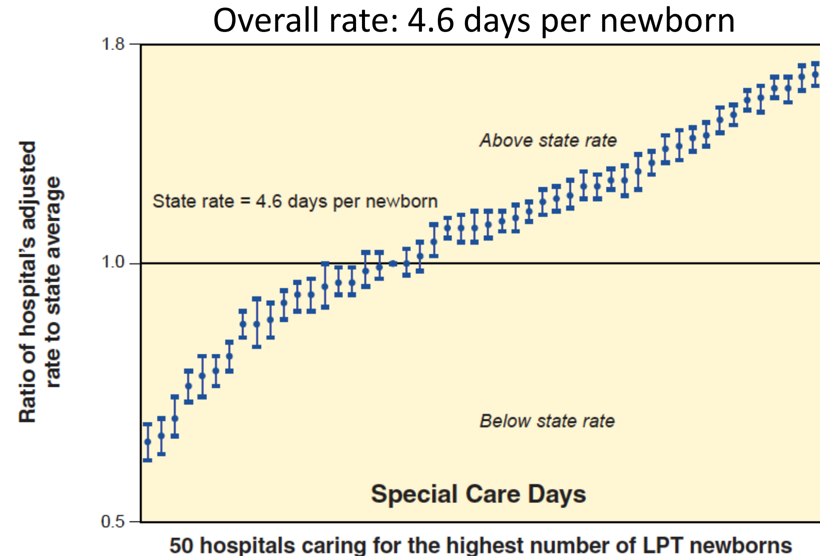
Unwarranted Hospital Variation in the length of neonatal intensive care unit stay, Texas Medicaid, 2010-14

Overall rate: 58.3 days per newborn



Very low birth weight newborns (<1500 grams)

Overall rate: 4.6 days per newborn



Late pre-term newborns (34-36 weeks gestation)

Adapted from: Goodman DC, Ganduglia Cazaban C, Franzini L, et al. Neonatal intensive care variation in Medicaid-insured newborns: A population-based study. J Pediatr 2019;209:44-51.

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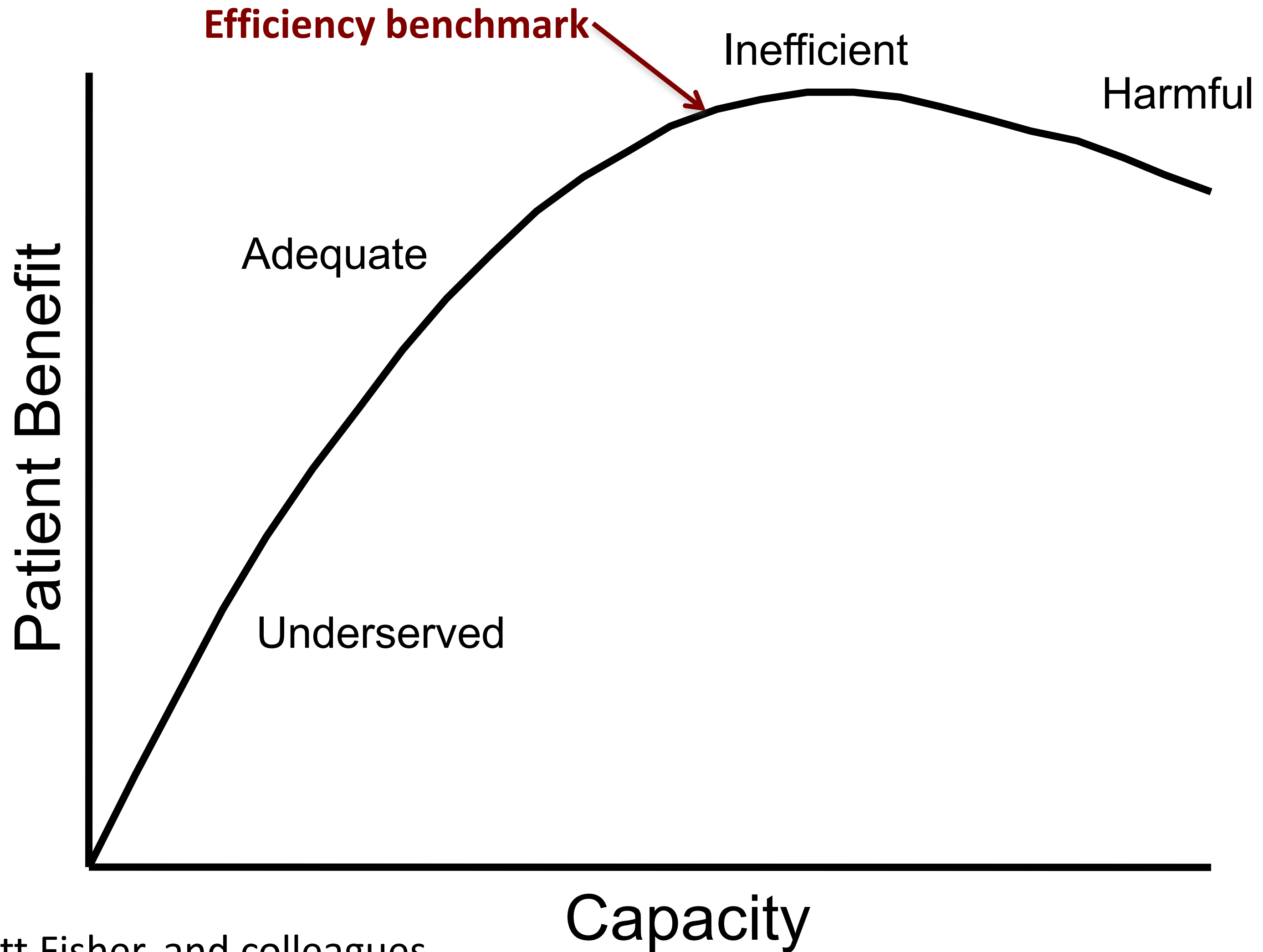
Is more better? It depends...



Thanks to Elliott Fisher, and colleagues

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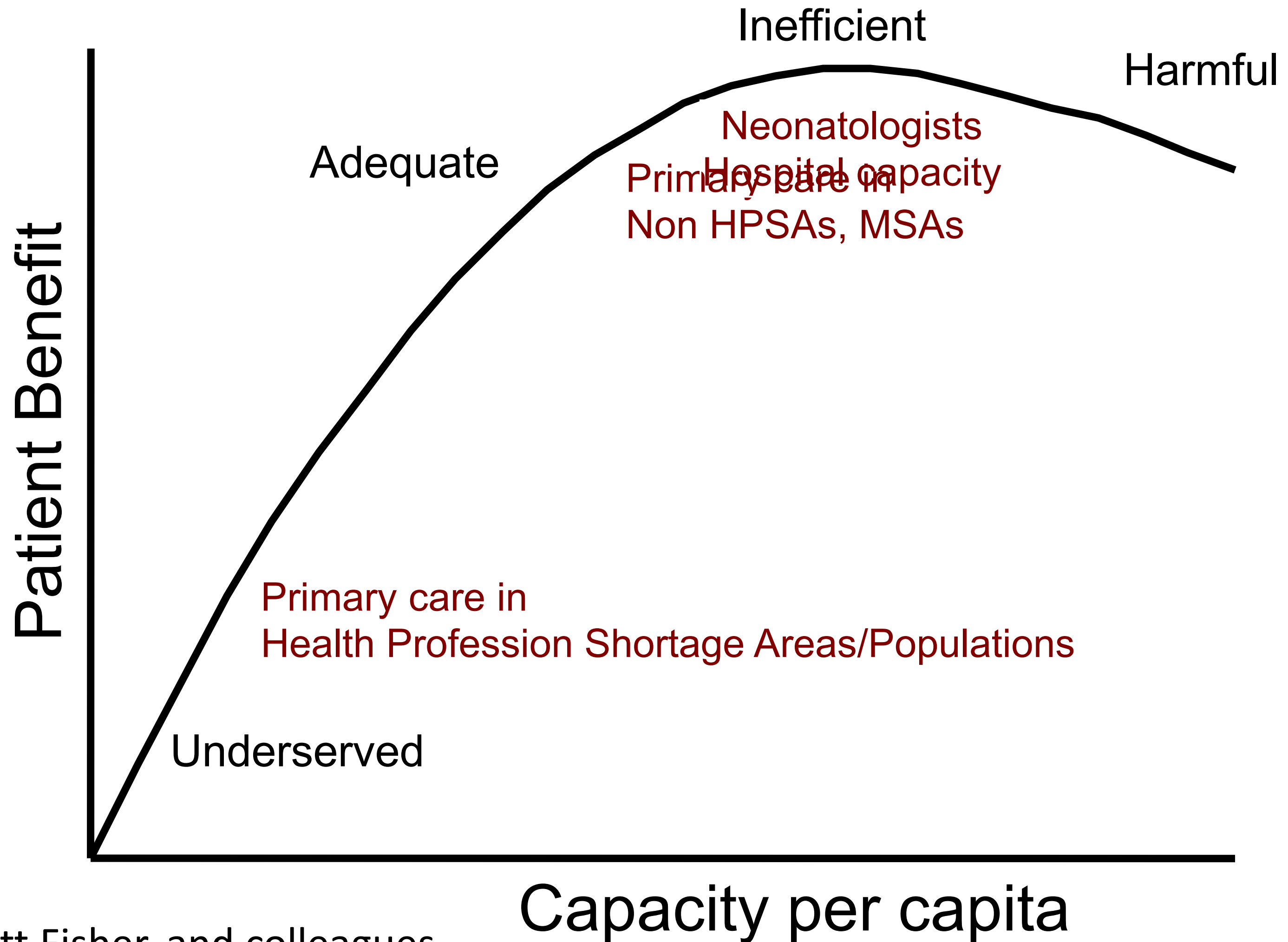
Is more better? Depends...



Thanks to Elliott Fisher, and colleagues

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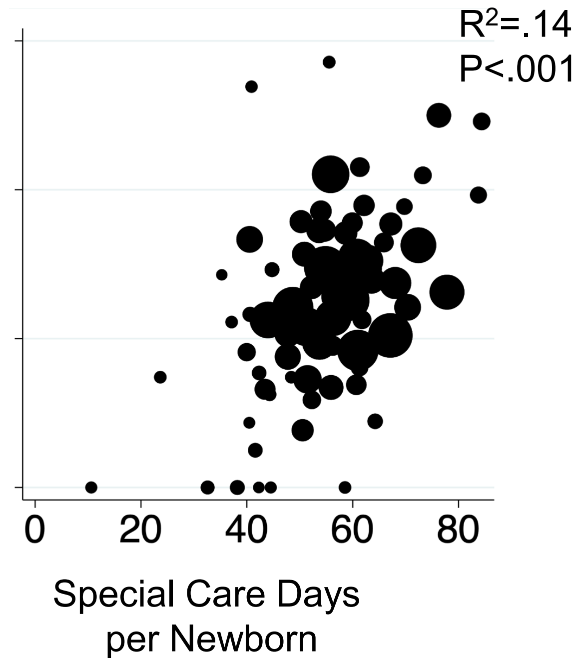
More care does not always benefit patients

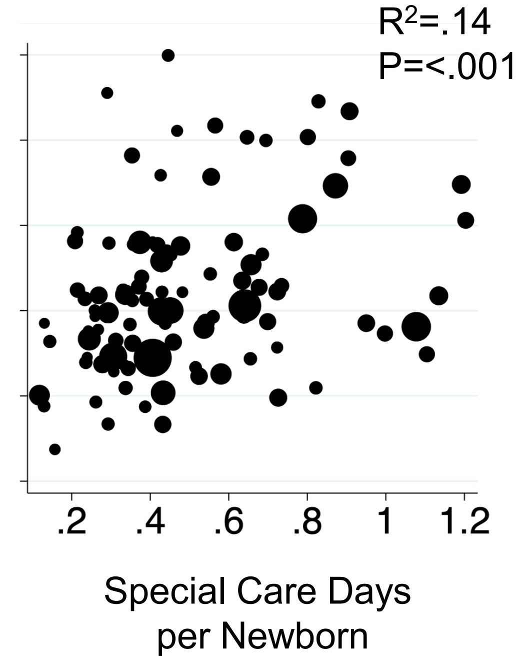
100 Largest Hospitals Texas Medicaid, 2010-14

% with a 30-day adverse event

Very Low Birth Weight



Late Preterm (34-36 weeks)



Goodman DC, Wasserman JR, Mowitz ME, et al. Neonatal Intensive Care Utilization and Postdischarge Newborn Outcomes: A Population-based Study of Texas Medicaid Insured Infants. J Pediatr. 2021.

With Similar Outcomes, Many Health Care Systems Deliver Care with Far Fewer Physicians

Standardized Physician Labor Input During Last 6 Months of Life
Among Medicare Cohorts
(Full Time Equivalents per 1,000 beneficiaries)

	Mean Age	Total FTEs	Primary Care	Medical Specialists
NYU Medical Center	**82**	**28.3**	**8.8**	**15.0**
RWJ University Hospital (NJ)	80	19.8	4.3	12.2
Montefiore Med Center (NY)	83	16.5	6.5	7.1
MA General Hospital	80	15.3	6.3	5.5
Johns Hopkins Hospital	77	12.2	5.0	3.9
Yale-New Haven	82	10.6	3.4	4.4
UC, San Francisco	81	9.4	4.7	3.2
Mayo, Rochester MN	**81**	**8.9**	**3.0**	**3.9**
Univ. of Minnesota	79	10.7	3.8	3.5

Source: Goodman, Wennberg, Chang, Health Affairs,March/April 2006.

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Technical Quality and Satisfaction of Medicare Beneficiaries is Not Necessarily Better with More Physicians

	Physicians Per Capita		
	Lowest Quintile	Highest Quintile	Ratio highest to lowest
Total physicians per capita by Hospital Referral Regions (2005)	169.4	271.8	1.60
CMS Compare Composite Scores (2005)			
Acute myocardial infarction	91.0	93.1	1.02
Congestive heart failure	84.1	88.6	1.05
Pneumonia	79.5	79.2	1.00

Goodman DC, Fisher ES. New England J Med, 2008.

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Pneumonia	79.5	79.2	1.00
Medicare access and satisfaction (2005)			
Ever had a problem and didn't see a doctor? (% No)	91.7	93.2	1.02
Do you have a particular place for medical care? (% Yes)	95.0	95.5	1.01
Satisfied with ease of getting to the doctor? (% Yes)	94.9	94.7	1.00
Satisfied with doctor's concern for overall health? (% Yes)	95.5	95.7	1.00
Satisfied with quality of medical care? (% Yes)	96.7	97.0	1.00

Goodman DC, Fisher ES. New England J Med, 2008.

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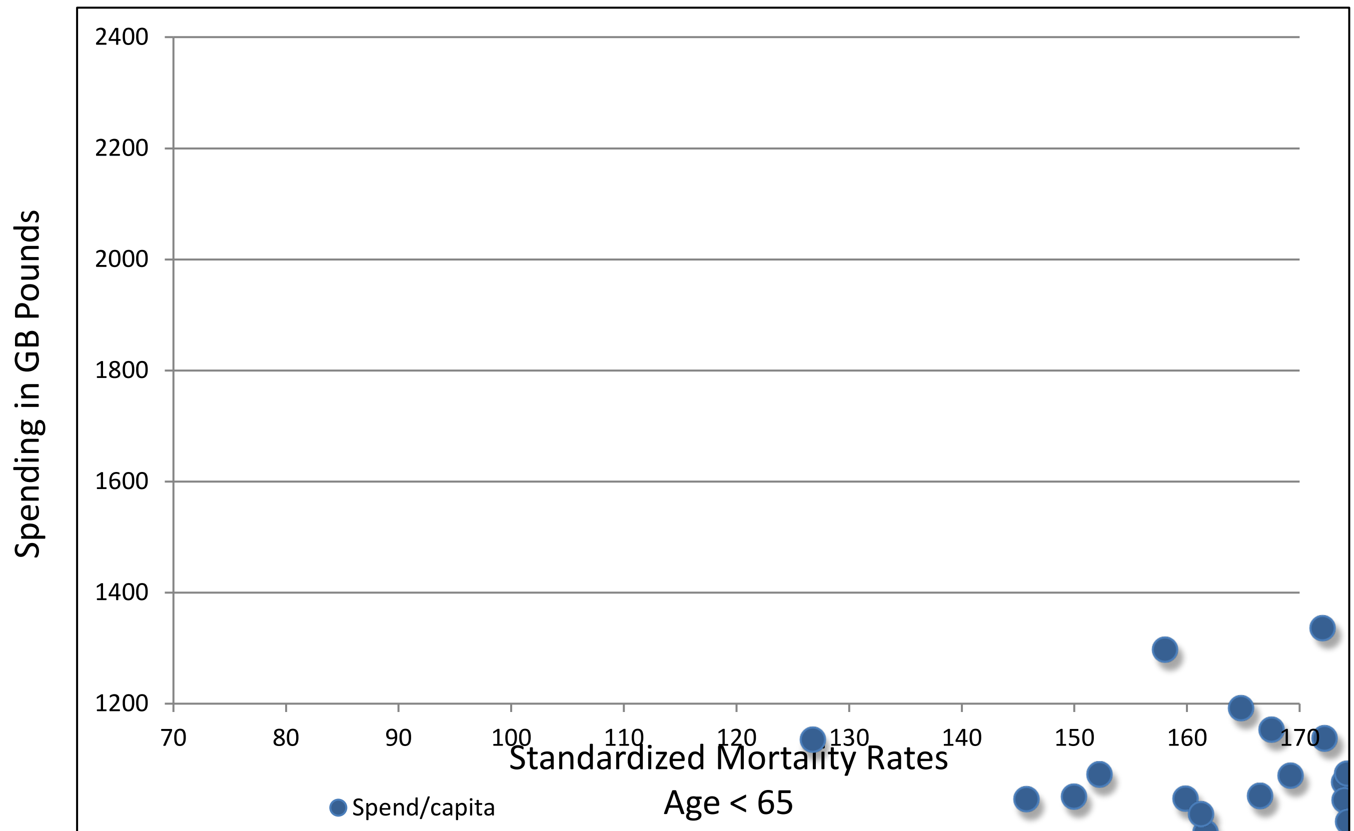
Efforts to fund health care equitable....

A case study from the English NHS.

(Thanks to Gwyn Bevan – London School of Economics)

Spending levels (blue dots) are budgeted based on need.



Unpublished data.

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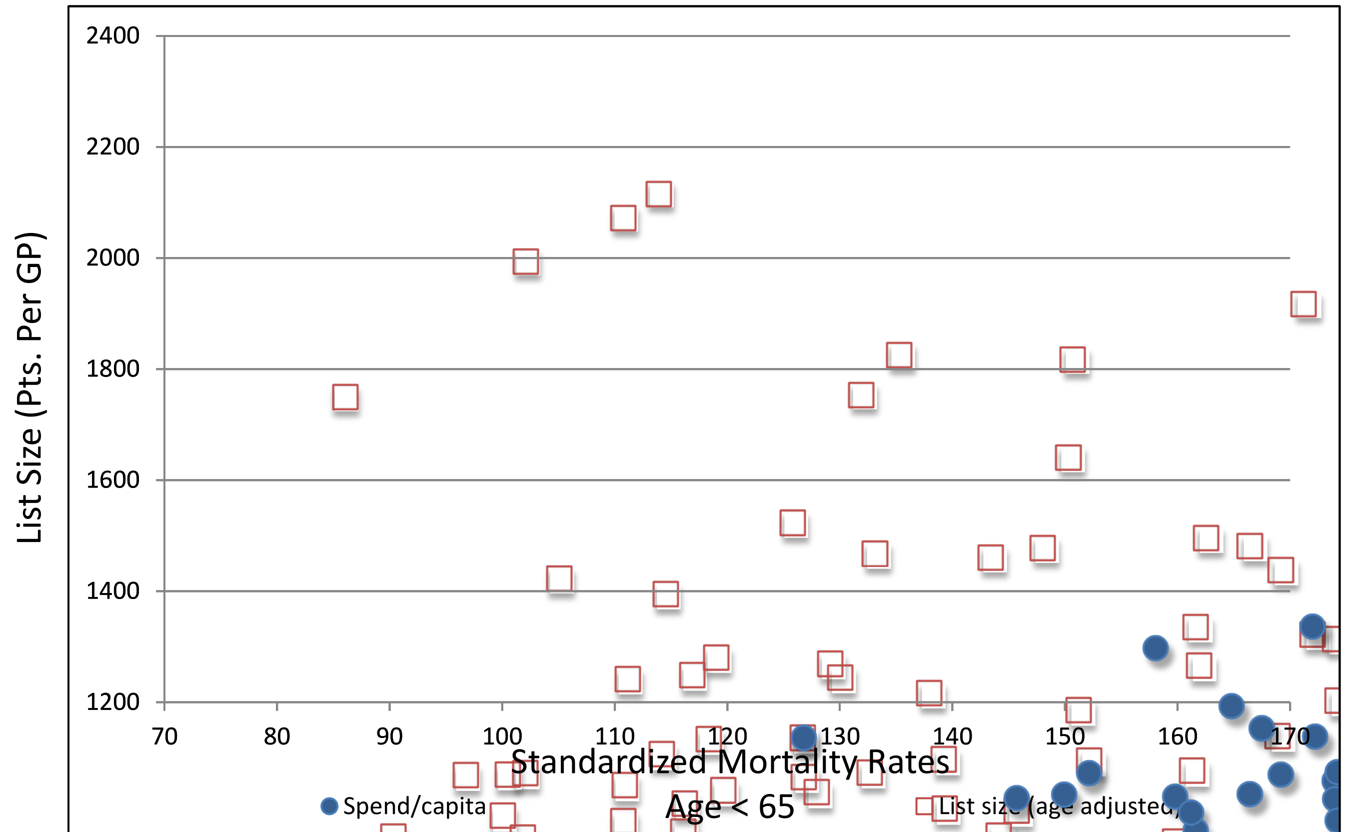
The weak link between capacity and population need despite strong central planning.

Despite longstanding efforts to discourage practice in high capacity Primary Care Trusts, there is still unwarranted GP capacity in England.

Spending levels (blue dots) are budgeted based on need.

Relationship Between Need and General Practitioner Location in England



English Primary Care Trusts 2007, 2009

Unpublished data.

What are some of the responses to under and over capacity?

- NY State: Commission on Health Care Facilities in the 21st Century (2006)
- Numerous states: Incentives and subsidies for sustained primary care, and other marginalized services, directed towards identified communities and populations
- Japan and Germany: uniform fee schedules for basic package of medical services; prioritizes primary care and preventative services
- Numerous countries: “Capacity Commission” that monitors and promotes policies (training, practice incentives) to assure reasonable capacity in relation to population needs.
- Numerous countries: Near universal capitated payment at regional or provider (i.e., health system level) with measurement-based accountability.

Steps to Rationalize Capacity?

(Expect little help from market forces)

- Measure capacity as routinely and systematically as we measure health.
  (Easy part)
- Direct clinician training funding to specialties and pay clinicians to practice in places with greater need.
  (Hard - physicians assert they should have high degree of choice)
- Pay better for care that is effective and efficiently delivered.
  (Hard - technically difficult & providers think they all deliver great care)
- Capitated payment: requires a high proportion of the population.
- Regulate hospital capital spending to services and places with greater need.
  (Really hard. Hospitals are powerful.
  Voters trust physicians and hospitals more than politicians and “bureaucrats.”)
- Reduce capacity by regulation and payment incentives.
  (The howls of protest will be heard across the mountains.)

Is Capacity Destiny?

No, but levels of capacity are strong, invisible currents, that health systems unknowingly row with, or against.

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photo by Joseph Mehling '69

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In understanding health care, the first question is: Are we asking the right questions?

Credit: Joel Sternfeld