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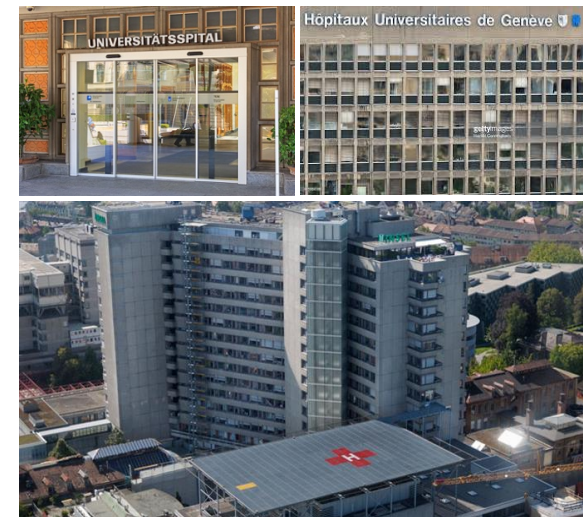
FOR HEALTH POLICY
& CLINICAL PRACTICE

Achievements of Health Services Research in the United States

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The Dartmouth Institute

Symposium zur Versorgungsforschung
im Gesundheitswesen

March 1, 2017



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MEDICINE
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1965: U.S. medical care was perfect...

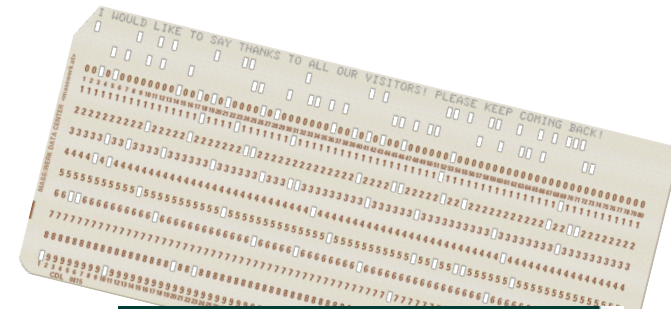
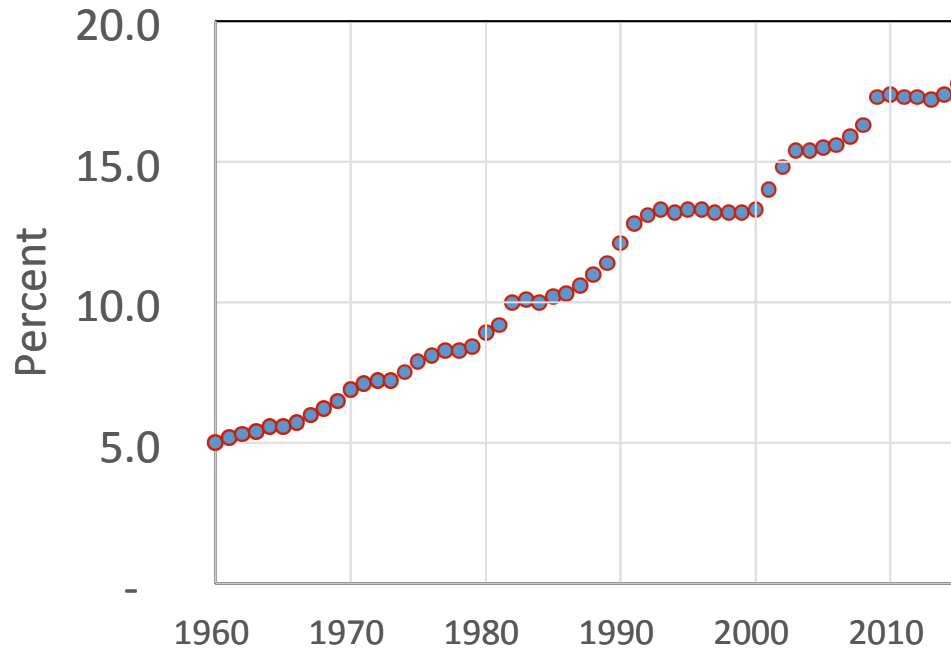
- Biomedical research was vibrant.
- Medicare and Medicaid were enacted.
- Medical costs were modest.
- Physicians and hospitals were highly respected.
- Everyone agreed that the quality of medical care was excellent.



1970: We have a problem...

And an opportunity...

US National Health Expenditures as % of GDP



1973 - "A Population-based health information system..."

John E. Wennberg, MD MPH and Alan Gittelsohn, PhD

Small Area Variations in Health Care Delivery

A population-based health information system can
guide planning and regulatory decision-making.

John Wennberg and Alan Gittelsohn

Recent legislation has extended planning and regulatory authority in the health field in a number of important areas. The 1972 amendments to the Social Security Act provide authority for regulating the construction of facilities and establish Professional Standard Review Organizations (PSRO's), which are accountable for setting standards and evaluating professional performance. Phase 3 of the Wage and Stabilization Act of 1970 and state insurance commissions provide authority for regulating dollar flow by controlling

impact of regulatory decisions on the equality of distribution of resources and dollars and the effectiveness of medical care services.

For technical and organizational reasons, documentation of the health care experience of populations has been restricted to large political jurisdictions such as counties, states, or nations. Studies at this level of aggregation have used indicators that support direct comparisons among areas. Relationships between the supply of manpower, facilities, and expenditures and

twice as high in California as in Arkansas. The number of physicians per thousand persons has been up to three times higher in some states than in others. International comparisons and studies of regions within states show that there are large differences in the rate of delivery of specific surgical procedures (2).

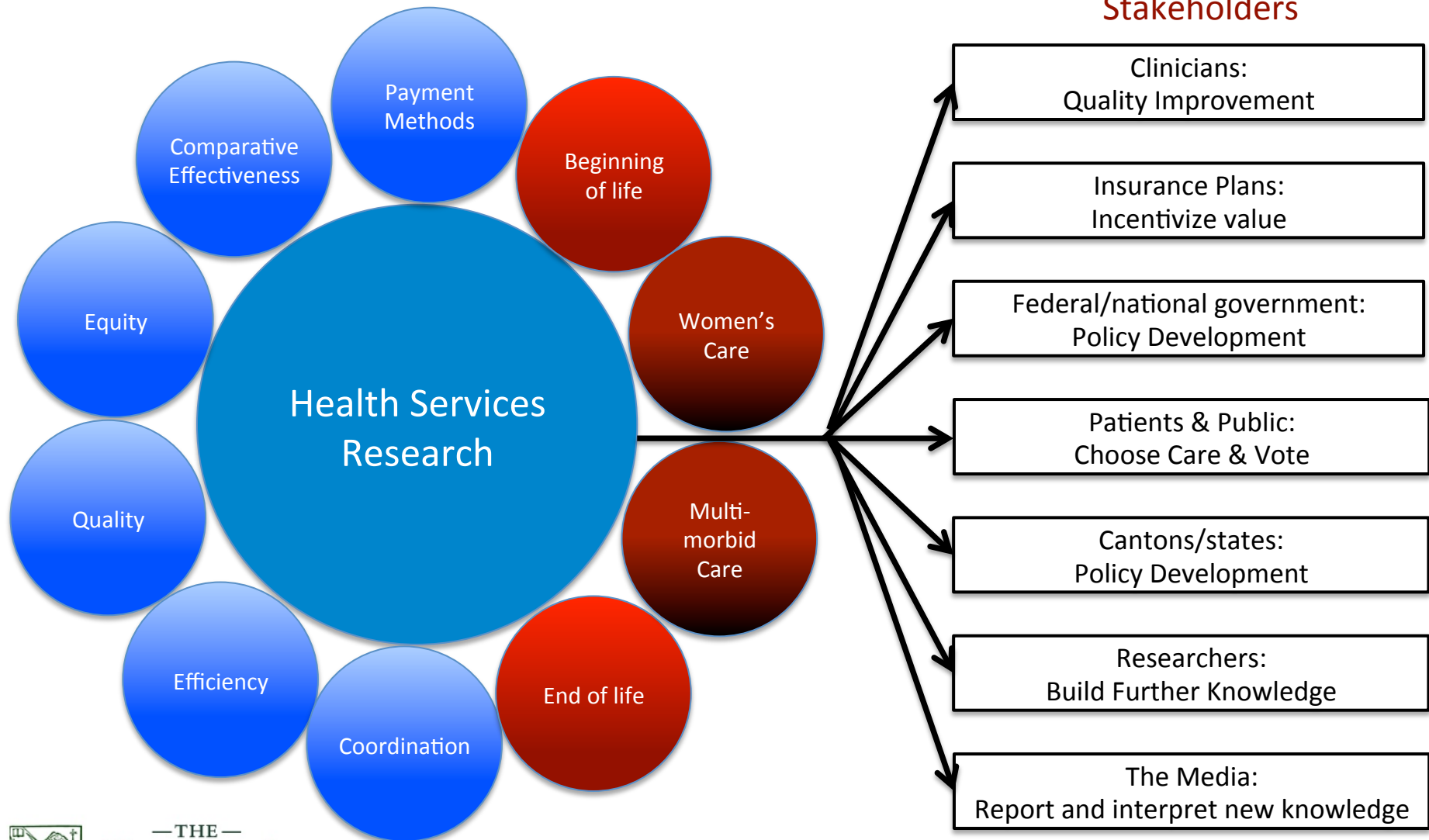
In 1969, there was implemented in the state of Vermont a data system that monitors aspects of health care delivery in each of the 251 towns of the state. When the population of the state is grouped into 13 geographically distinct hospital catchment, or service, areas, variations in health care are often more apparent than they are when the population is divided into fewer, larger areas. Population rates can be used to make direct statistical comparisons between each of the 13 hospital service areas. Since the medical care in each area is delivered predominantly by local physicians, variations tend to reflect differences in the way particular individuals and groups practice medicine. The specificity of the information in Vermont's data system makes it possible to appraise the impact that decisions controlling facility construction, price of insurance, and the unit price of service have on the



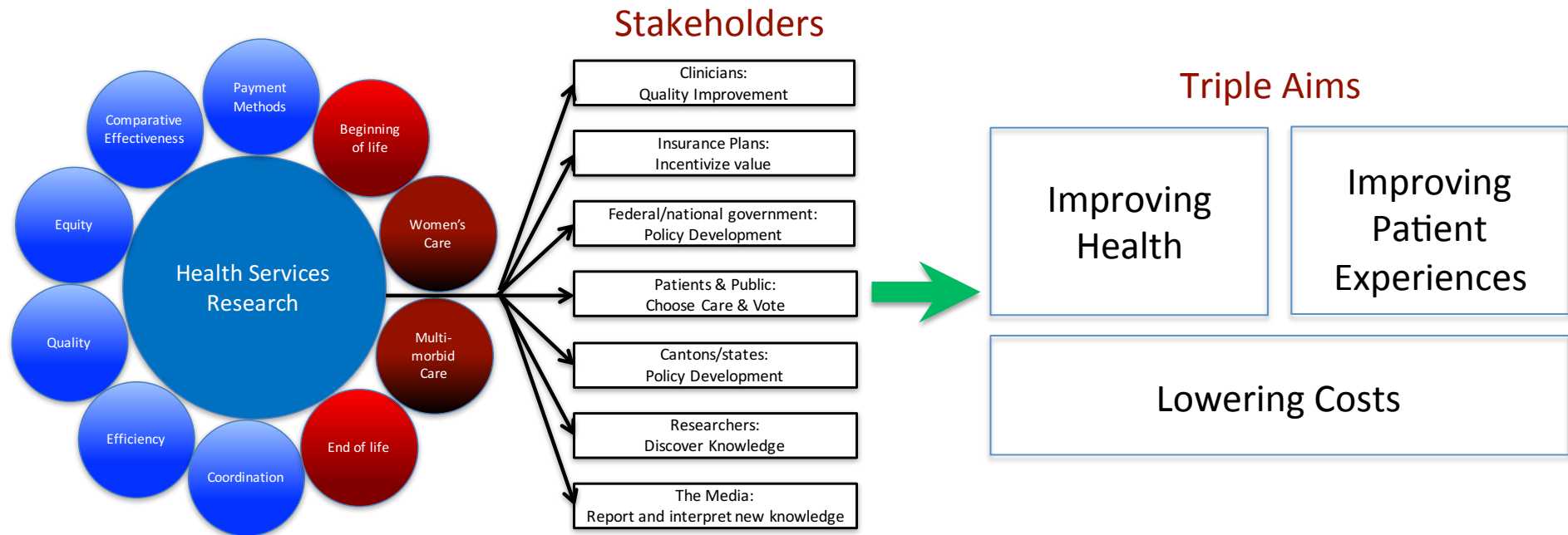
Fig. 1. Map of Vermont showing minor civil divisions, the Vermont town (lighter line). Darker line shows boundaries of hospital service areas. Circles represent hospitals. Areas without circles are served principally by hospitals in New Hampshire.

Observed variation could not be explained by population differences in demographics or health status.

Health Services Research - A diffuse field of inquiry about the quality, equity, efficiency, and outcomes of health care



Health Services Research - A diffuse field of inquiry about the quality, equity, efficiency, and outcomes of health care



2017- U.S. Health Services Research led to...

- Markedly greater transparency in health system performance.
- The development of outcomes research - using observational study designs to measure the effectiveness of health care interventions.
- New payment mechanisms:
 - Diagnostic Related Groups
 - Bundled payments
 - Accountable Care Organizations
- Better patient engagement: Shared decision making and decision aids
- Continuous quality improvement - and the birth of the Institute for Healthcare Improvement
- Choosing Wisely
- Establishment of systematic national funding of health services research



2017 - Diverse Sources of Health Services Research Funding

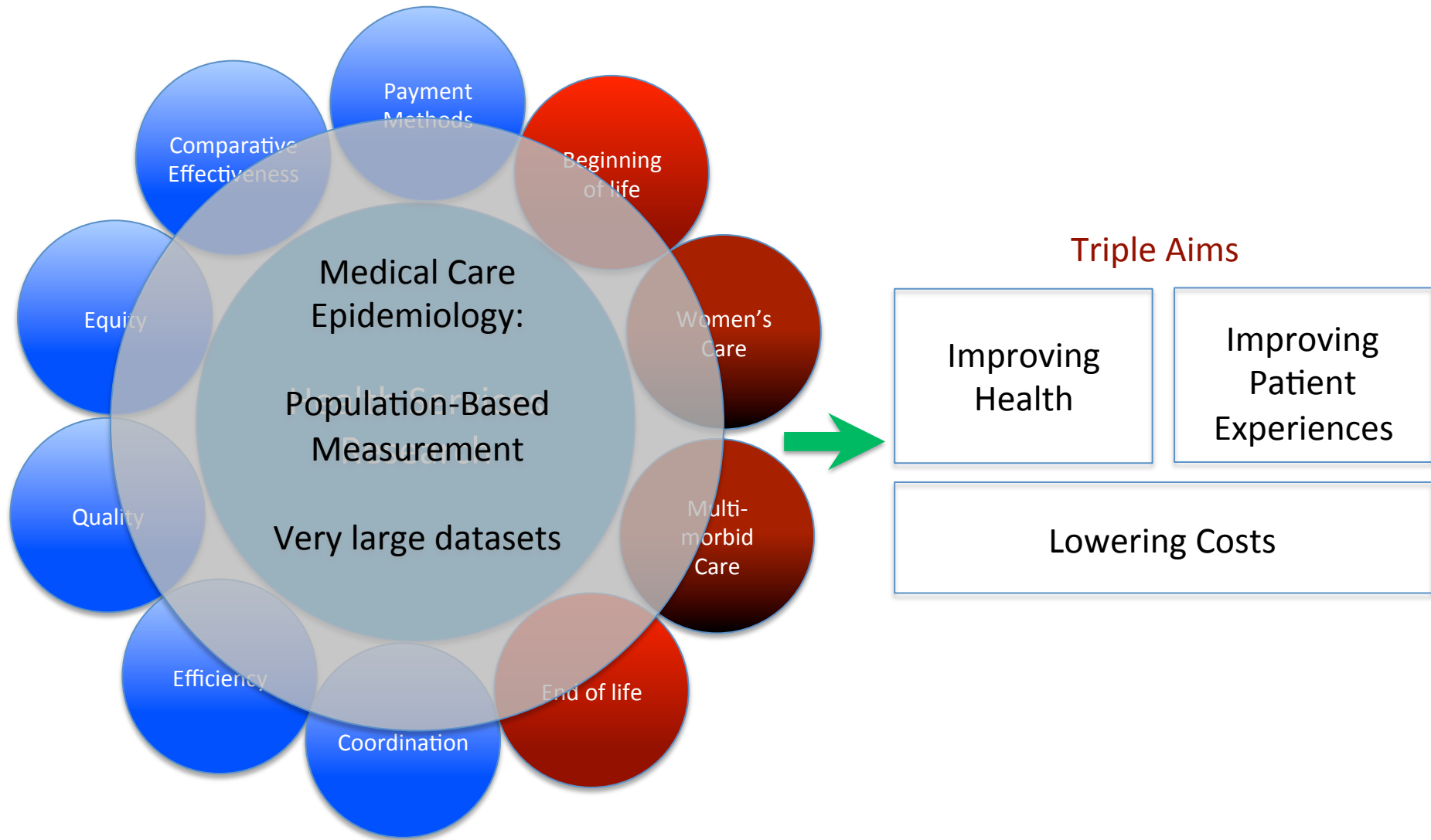


Affordable, quality health care. For everyone.



Medical Care Epidemiology

The foundation of health services research



Surveillance of health is essential to building a healthy society (i.e. descriptive epidemiology)

Surveillance of health care across populations is just as important.
(i.e. descriptive medical care epidemiology)

Followed by inferential studies to identify the causes of low quality and efficiency.

What can we learn from population-based studies?

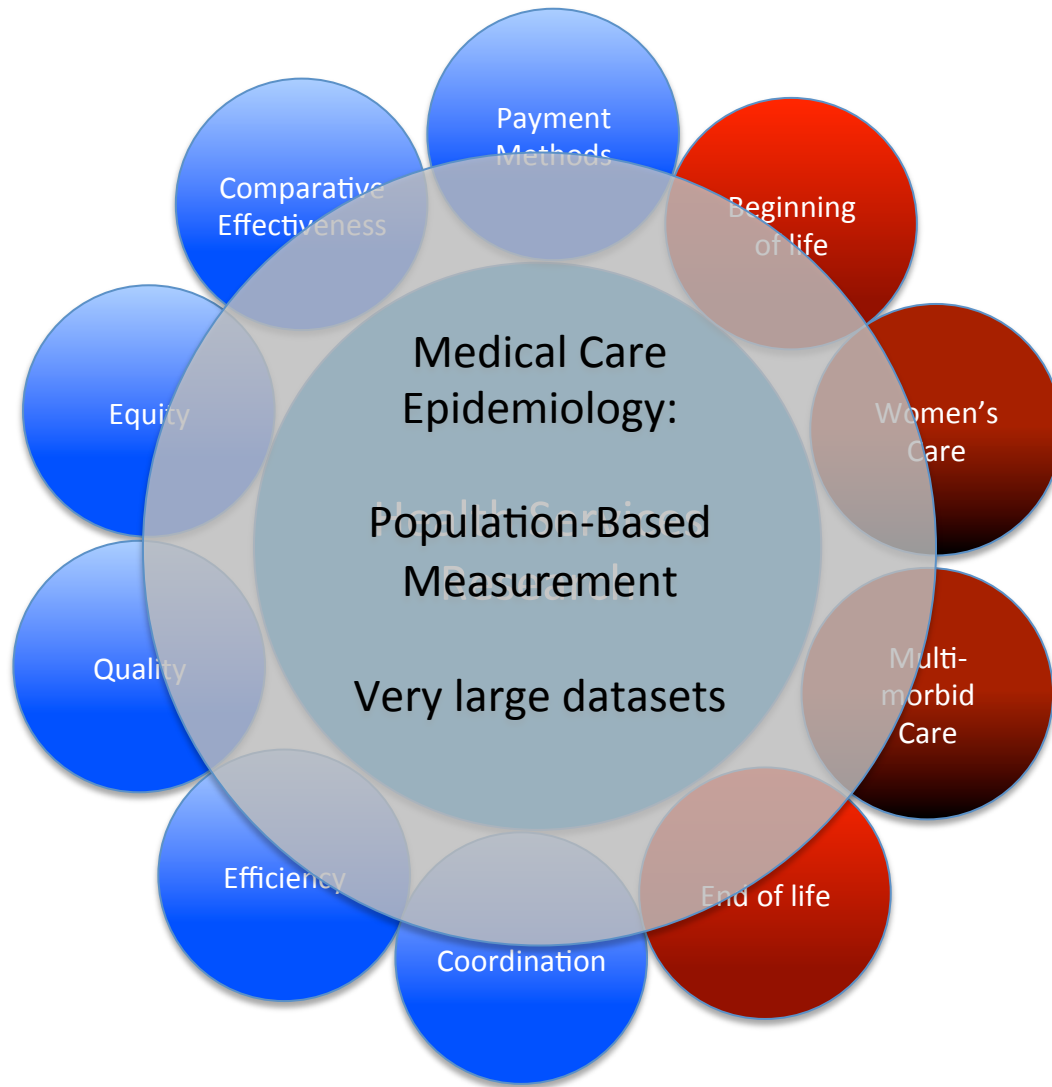
- Patterns of care before, during, and after hospitalization occurs.
- Outcomes, including mortality.
- Detailed measures of quality and efficiency of health care across large populations.

These studies...

- Can identify the causes and consequences of differences in health system performance across clinicians and hospitals.
- Provide transparency, and encourage public engagement.
- Assist in identifying quality and efficiency benchmarks.
- Stimulate and provide methods of improvement.

Medical Care Epidemiology

The foundation of health services research



Four Examples

Smarter Health Care

NRP 74

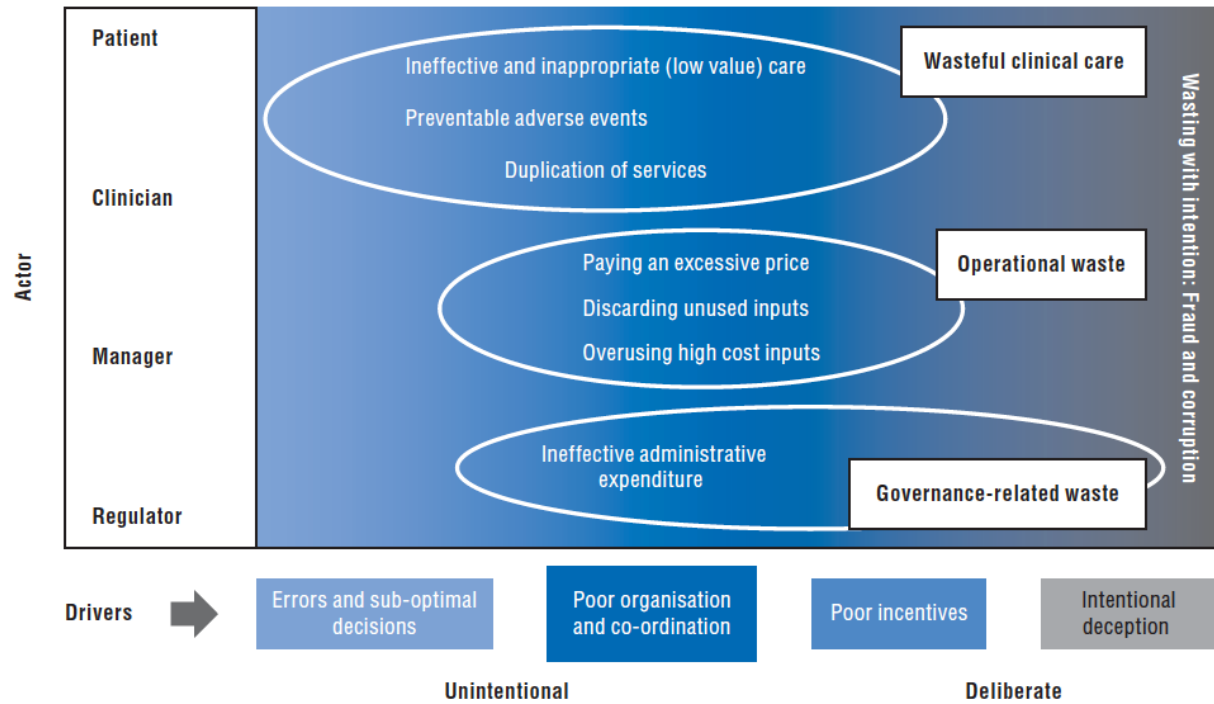
“The main goals of the programme will be to provide insight into health care structure and utilization in Switzerland, and into ways to improve health outcomes with a particular focus on prevention and treatment of (multiple) chronic conditions.”

- Countering under- and overuse to improve allocation of resources
- Coordination and collaboration among health care professionals
- Caring for patients with multiple chronic conditions



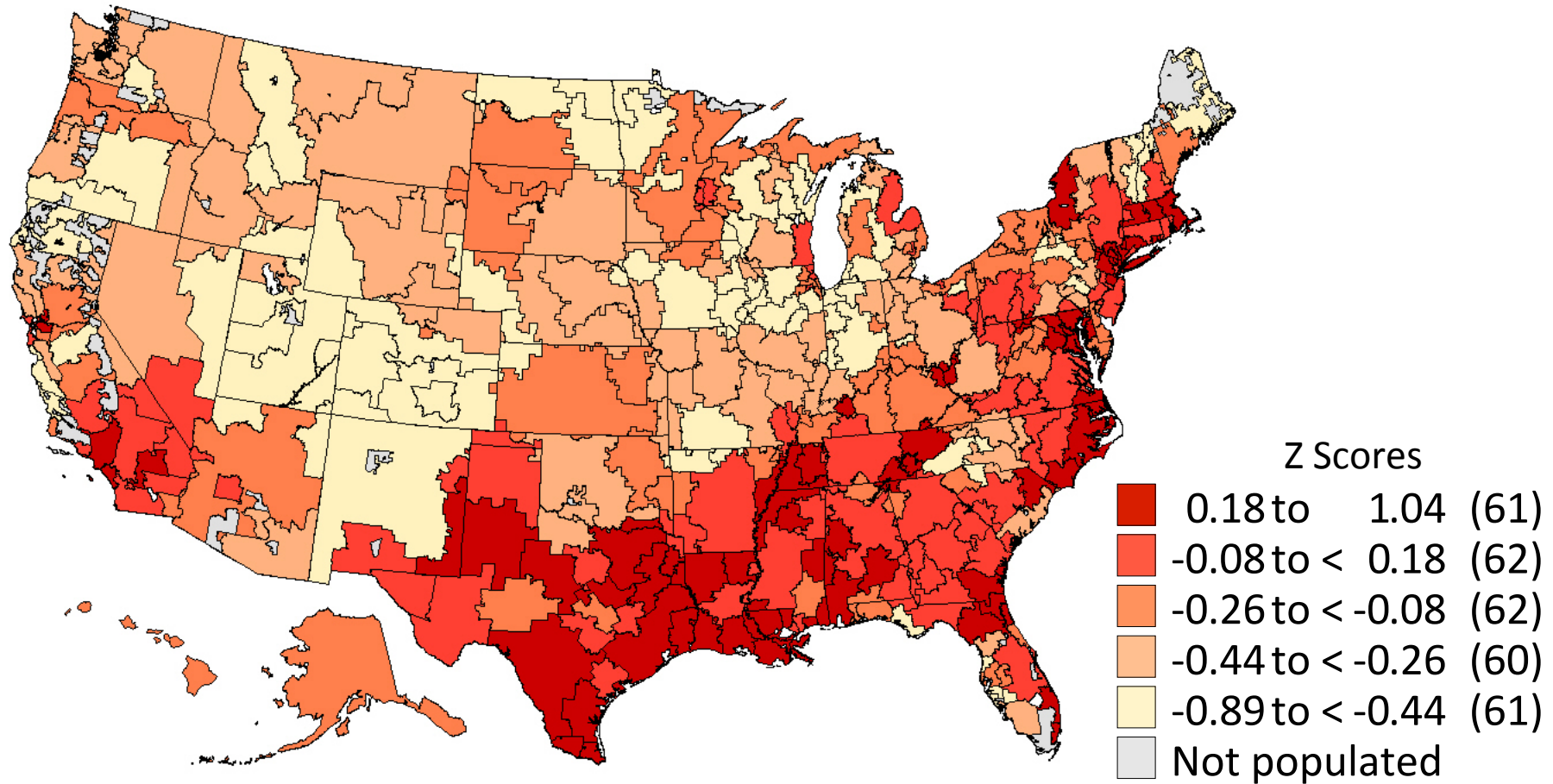


Figure 1.1. Three categories of waste mapped to actors involved and drivers



Example 1: Composite measure of Choosing Wisely test and treatment use (≥ 65 years Medicare beneficiaries)

Colla C, Morden N, et al. J Gen Intern Med. 2014



Variation in ineffective Care



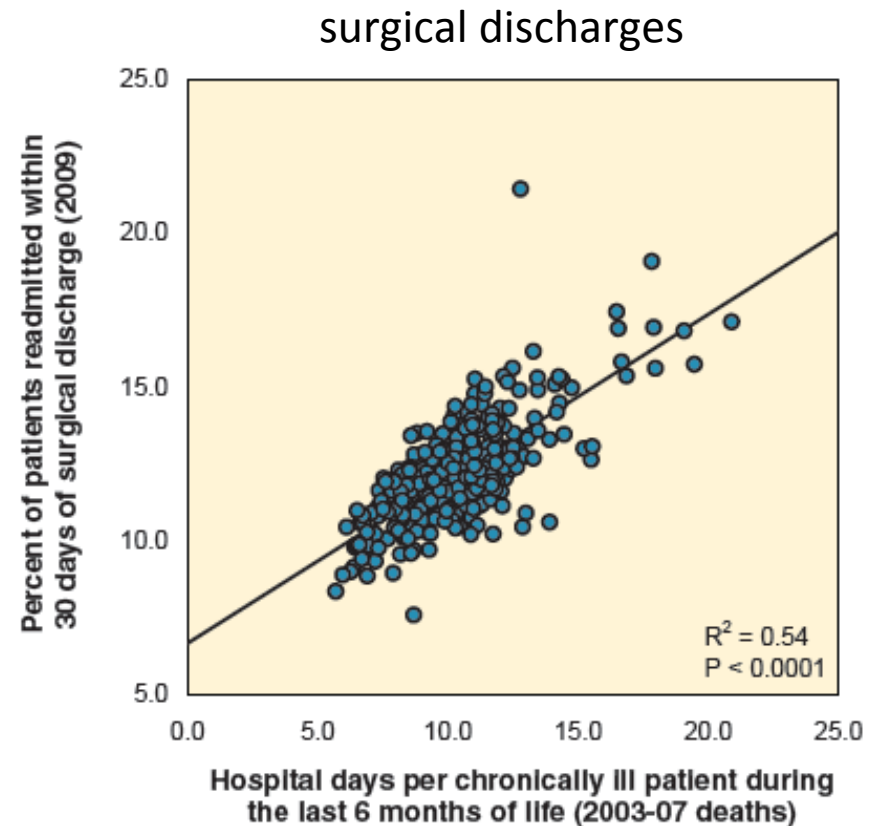
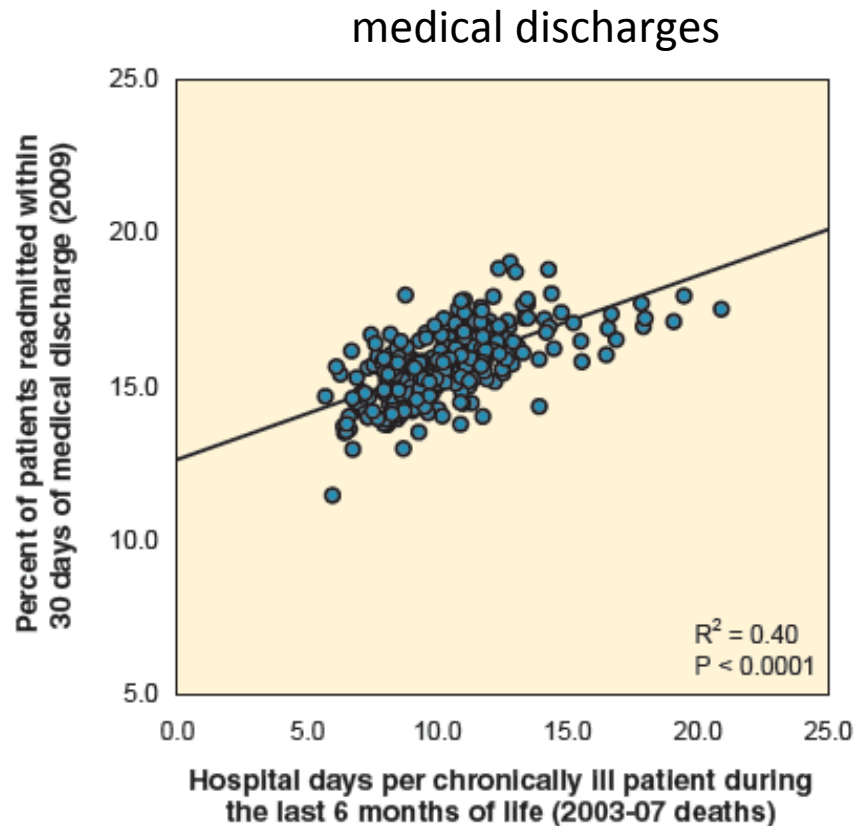
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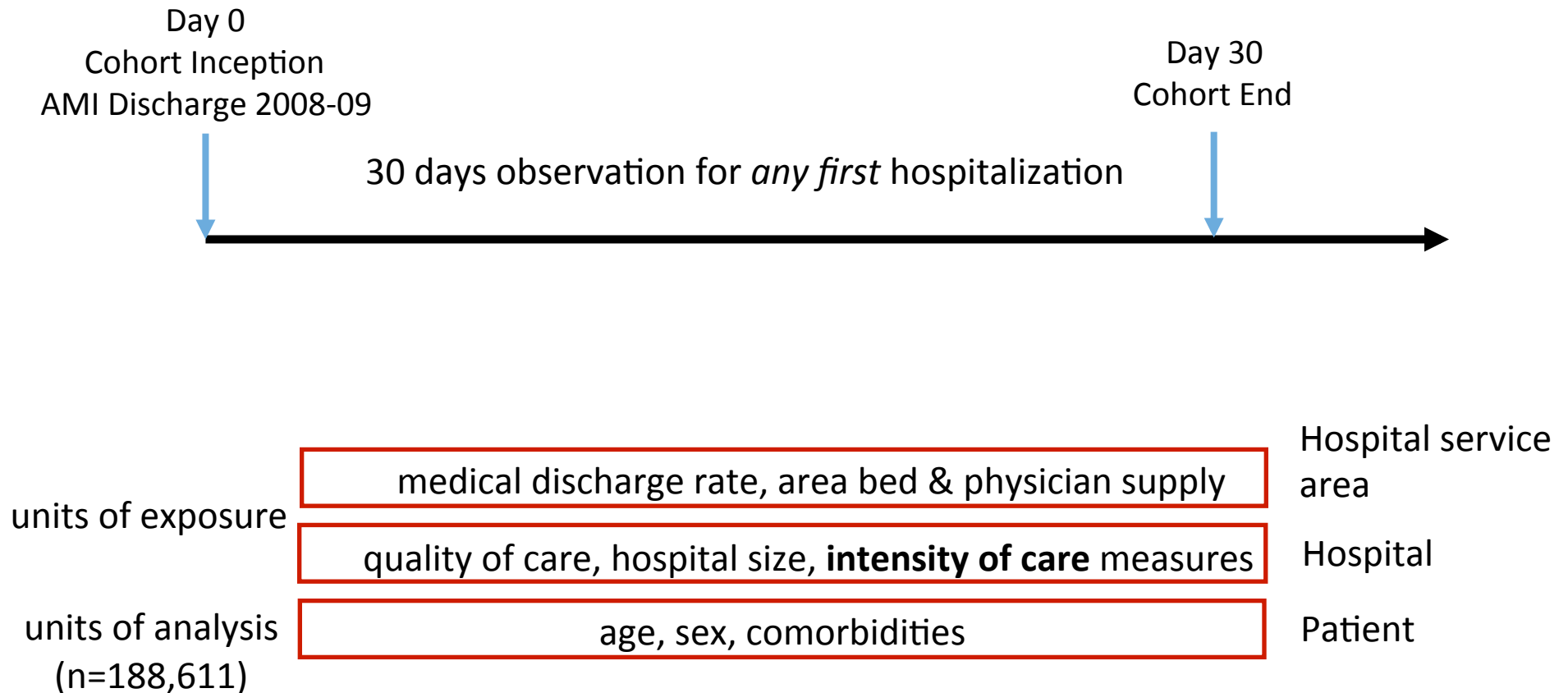
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Example 2: An unexpected finding: Regional patterns of end-of-life care predicts 30 day readmission rates



Health System Characteristics and Rates of Readmission after Acute MI in the U.S.

Brown JR, Chang CH, Zhou W, MacKenzie TA, Malenka DJ, Goodman DC.
Journal of the American Heart Association. 2014;3(3):e000714.



Predictors of Thirty Day Readmissions Forward Looking Cohort Study

Journal of the American Heart Association. 2014;3(3):e000714.

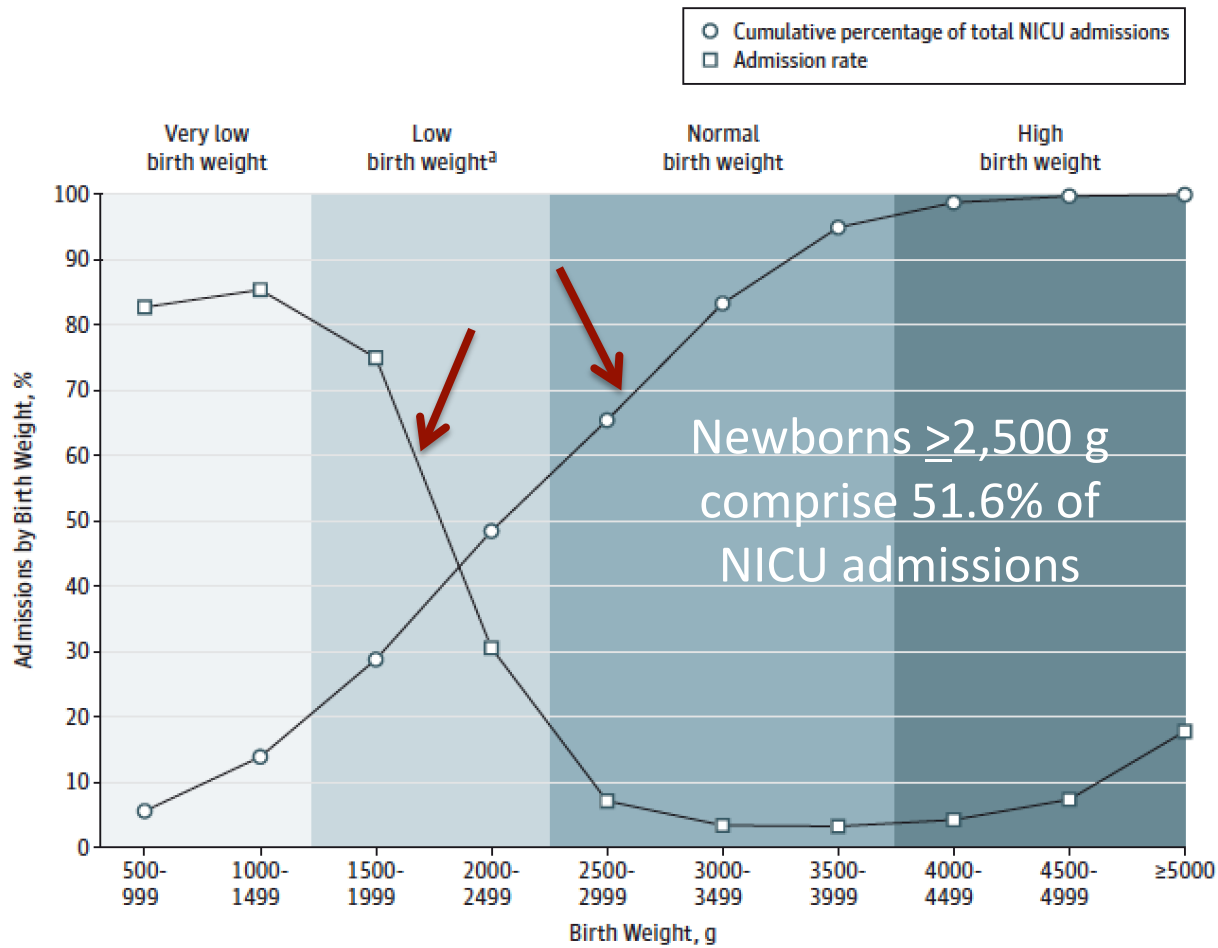
Predictor	Level of exposure	Relative Risk high to low quartile	95% CI
High quality discharge planning	hospital	0.95	0.91, 0.99
Primary care visit within 14 days	hospital	not significant	
Primary care physicians per capita	area	not significant	
Cardiologists per capita	area	not significant	
Size of hospital (no. beds)	hospital	0.79	0.75, 0.82
Medical admission rates	area	1.12	1.07, 1.16
last 6 mo. life inpatient days	hospital	1.23	1.16, 1.31
last 6 mo. life ICU days	hospital	not significant	
last 6 mo. life physicians visits	hospital	0.88	0.82, 0.95
last 6 mo. % seeing \geq 10 physicians	hospital	1.15	1.08, 1.23

Example 3: Population-based Studies of Neonatal Intensive Care



Level III/IV NICU Admissions by Birth Weight (2012 U.S. Birth Cohort)

Figure 1. Level III and IV NICU Admissions by Birth Weight for the 2012 US Birth Cohort

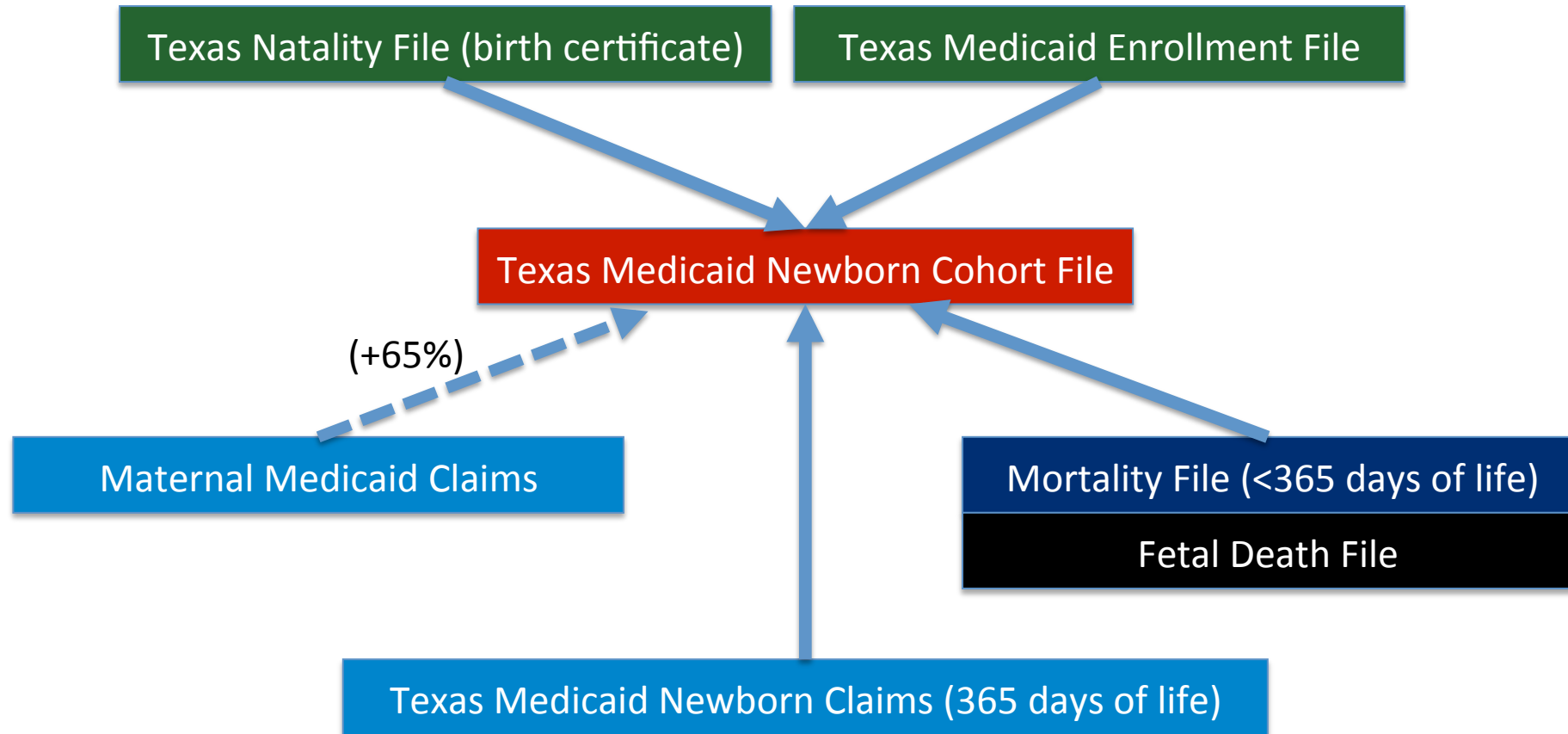


Harrison & Goodman, JAMA Pediatrics, 2015.

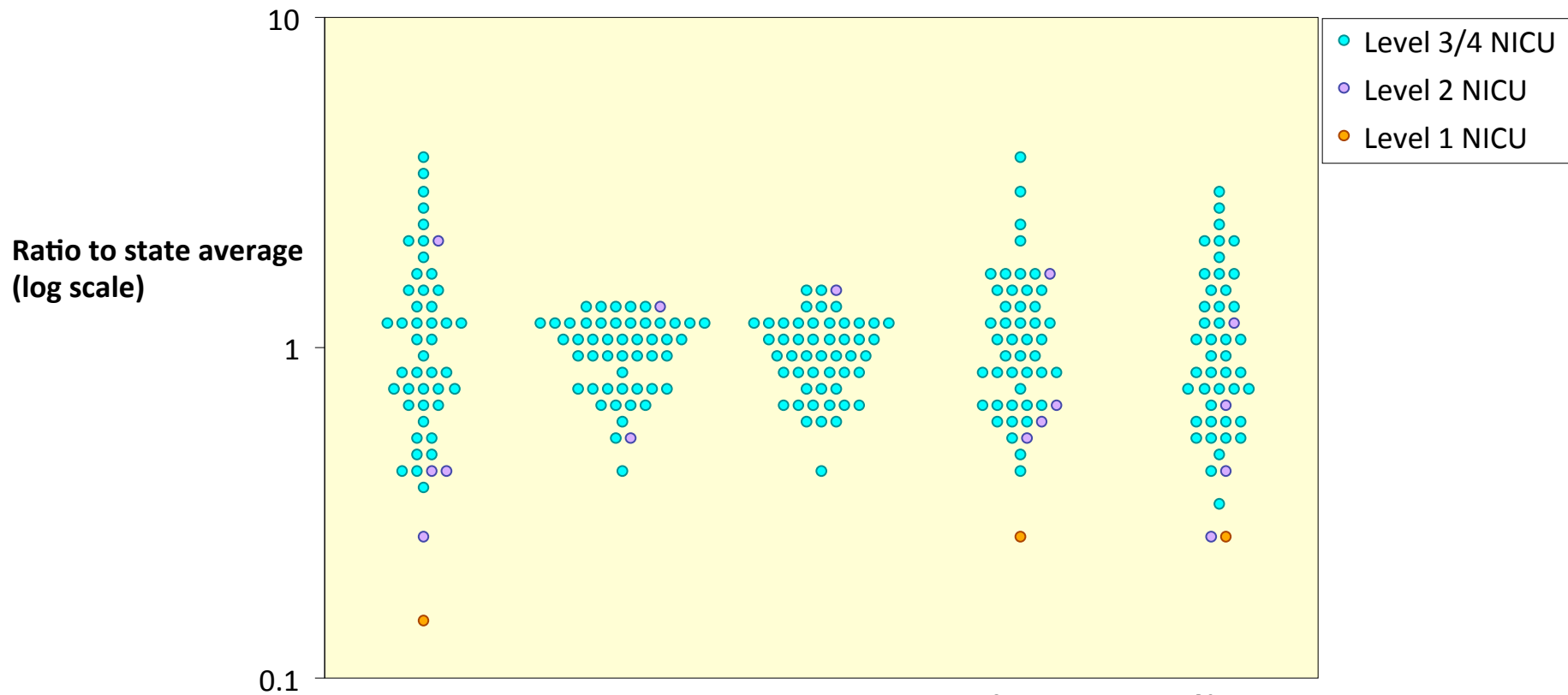
Texas Medicaid



TX Newborn Study Data 2010-2014 (n=1.13 million live births)



Special care days per live birth for hospitals with largest newborn cohorts (n=50), Texas Medicaid 2010-14



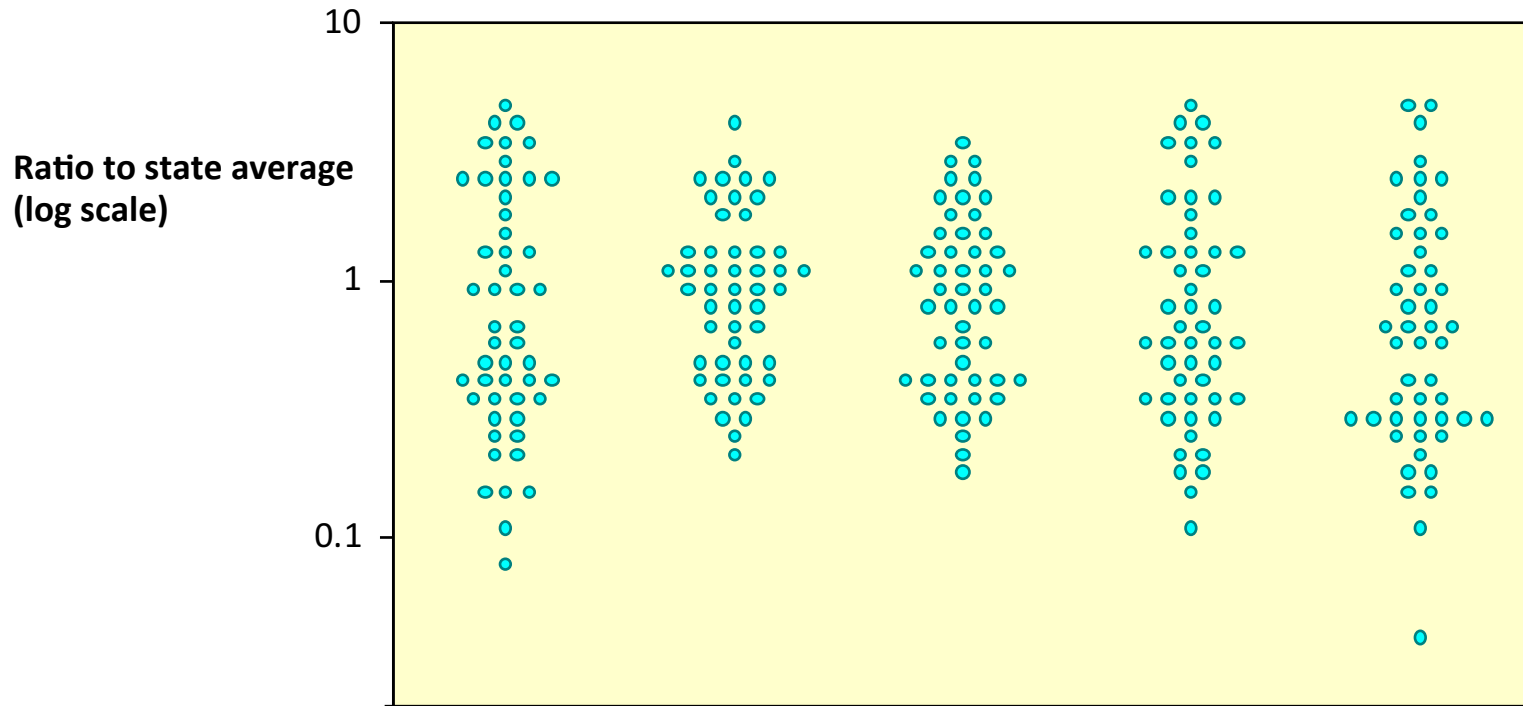
	Singletons	<1500g	<1000g	Late preterm	Not premature
State rate	2.98	98.74	118.91	7.63	0.93
Extremal ratio	24.0	3.17	3.46	14.5	11.6
Interquartile ratio	2.35	1.54	1.49	2.15	2.30
Coefficient of variation	0.68	0.25	0.26	0.58	0.59



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Chest x-rays per live birth for hospitals with largest newborn cohorts (n=50), Texas Medicaid 2010-14



	Singletons	<1500g	<1000g	Late preterm	Not premature
State average	0.20	6.84	10.50	0.50	0.08
Extremal ratio	53.5	18.1	17.3	44.5	139.2
Interquartile ratio	5.34	2.93	3.43	3.97	4.85
Coefficient of variation	1.00	0.73	0.74	1.03	1.13



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inborn only

But the rest of the world?



Systematic review of medical practice variation papers in OECD countries

Corallo A, Coxford R, Goodman D, Bryan E, Srivatava D, Stukel T. *Health Policy* 2013.

Published during the period 2000 – 2011.

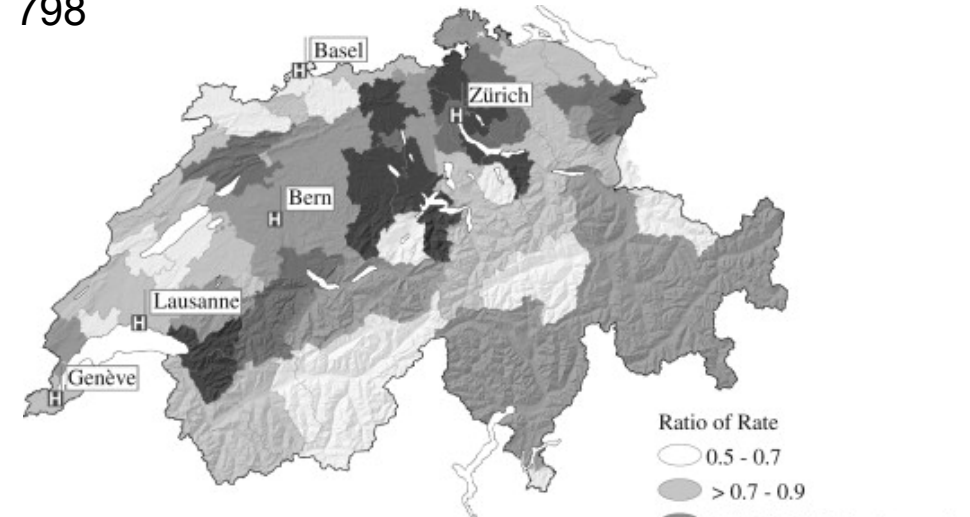
	Number of studies	Percent
United States	319	38
United Kingdom	123	15
Canada	111	13
Australia/N.Z.	53	6
Netherlands	22	3
Denmark	13	2
Germany	13	2
Sweden	12	1
Spain	11	1
Switzerland	11	1
Japan	10	1
France	10	1

	Number of studies	Percent
Norway	8	1
Ireland	8	1
Italy	7	>1
Finland	6	>1
Belgium	3	>1
Austria	2	>1
Estonia	1	>1
Greece	1	>1
Hungary	1	>1
Portugal	1	>1

Example 4: Regional variation of spine surgery

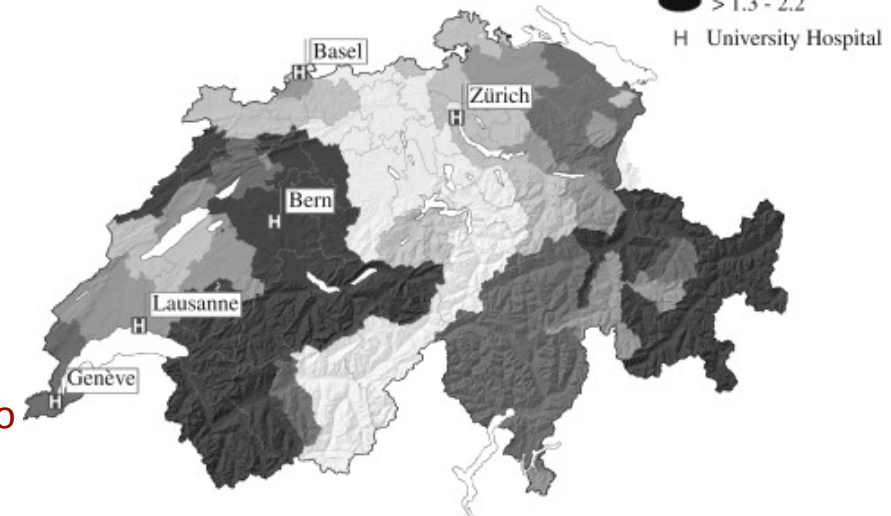
Marcel Widmer, Pius Matter, Lukas Staub, Franziska Schoeni-Affolter, André Busato.
Regional variation in orthopedic surgery in Switzerland. *Health & Place* 2009, 15(3):791–798

Overall use of fusion procedure



Decompression procedures for spinal stenosis.

“In addition to the cantonal barriers, scientific uncertainty and lack of coordinated efforts to evaluate current and new technologies are further causes of the widening regional disparities of care. Redundancy and inefficiency associated with high variation along with potential over- or underuse of specific procedures in certain areas are also likely to be named as characteristics of Swiss health care.”



This study was supported by funding from the Swiss National Science Foundation (SNSF Grant 405340-104607/2).

Why did (and do) most countries lag in measuring and understanding variation in population-based health system performance?

- Data is held by governments, insurers, and providers who often refuse legitimate data use requests by researchers.
- Measurement and public reporting makes providers, insurance plans, and politicians very nervous.
- Most studies are descriptive and do not investigate the causes of variation.
- Without theories of causation, the results have limited value in remediating problems.
- There are few forums to share ideas and methods.
- There is a lack of methods training at most universities.

Smarter Health Care

NRP 74

“The main goals of the programme will be to provide insight into health care structure and utilization in Switzerland, and into ways to improve health outcomes with a particular focus on prevention and treatment of (multiple) chronic conditions.”

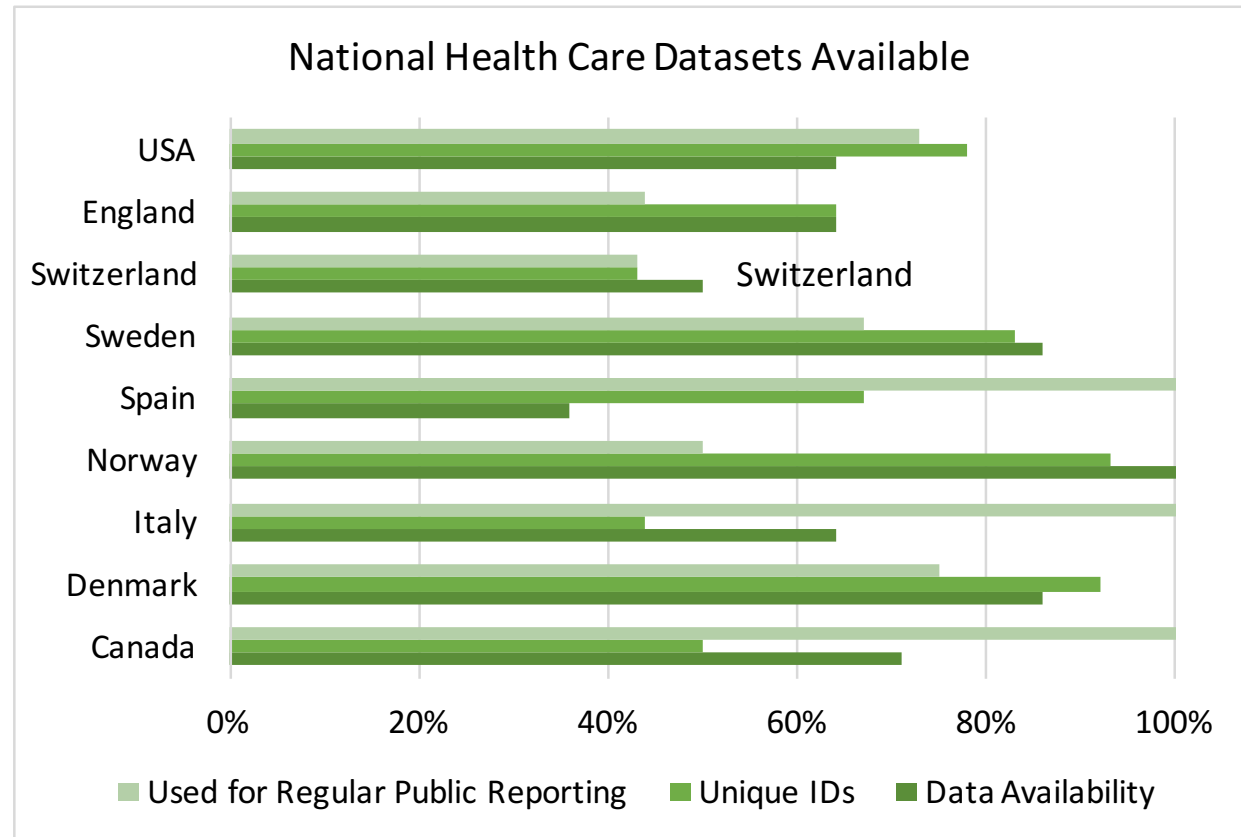
- Countering under- and overuse to improve allocation of resources
- Coordination and collaboration among health care professionals
- Caring for patients with multiple chronic conditions

“In addition, and with a more longterm perspective, the NRP aims to raise awareness of the current weaknesses of health care data in Switzerland and to contribute to improved availability, accessibility, linkage and comparability of health data.”

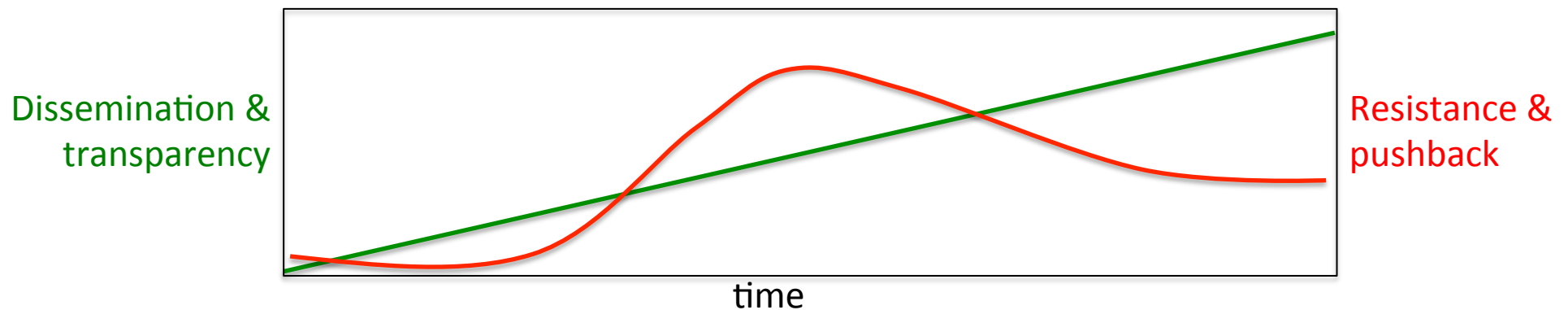
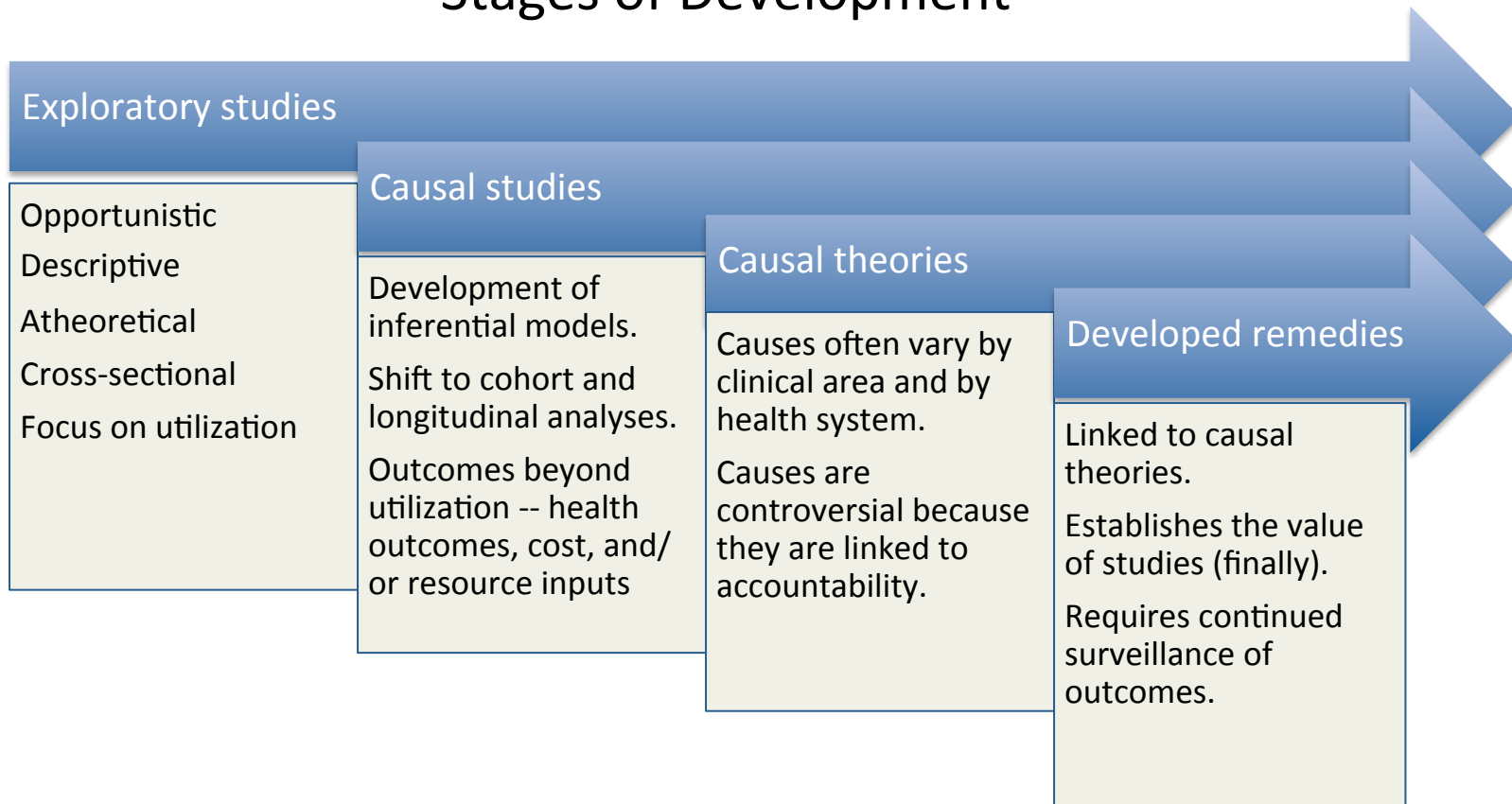




Health Care Data Availability 2015



Population-based Studies of Health Care: Stages of Development



Got that?



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Health Services Research -

A diffuse field of inquiry into the quality, equity, efficiency, and outcomes of health care

