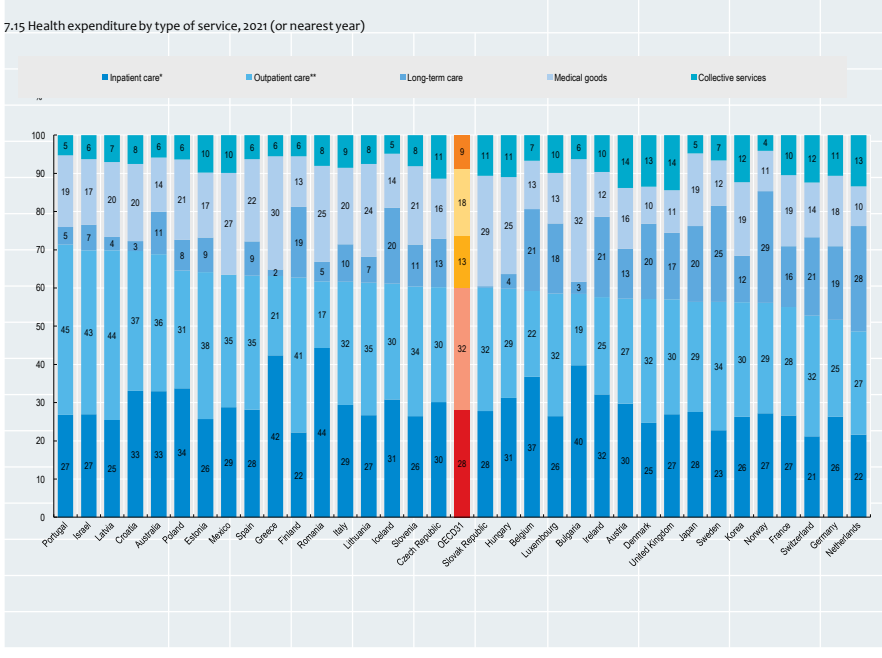
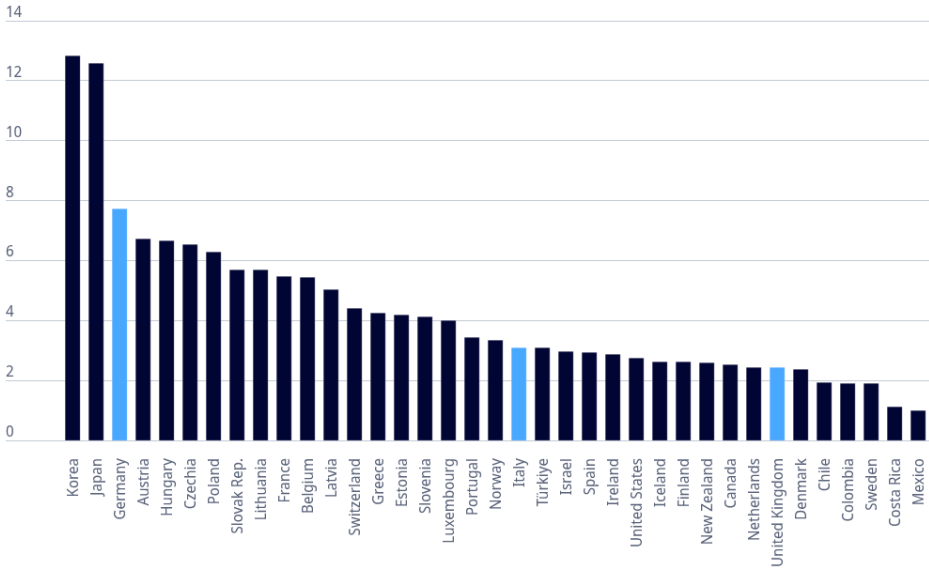
CHAPTER 6
THE HOSPITAL INDUSTRY



Hospital beds

Per 1 000 inhabitants, 2022

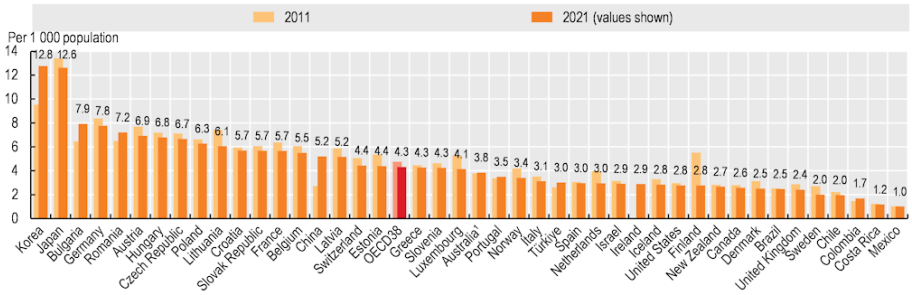


Source: Hospital beds by function of healthcare

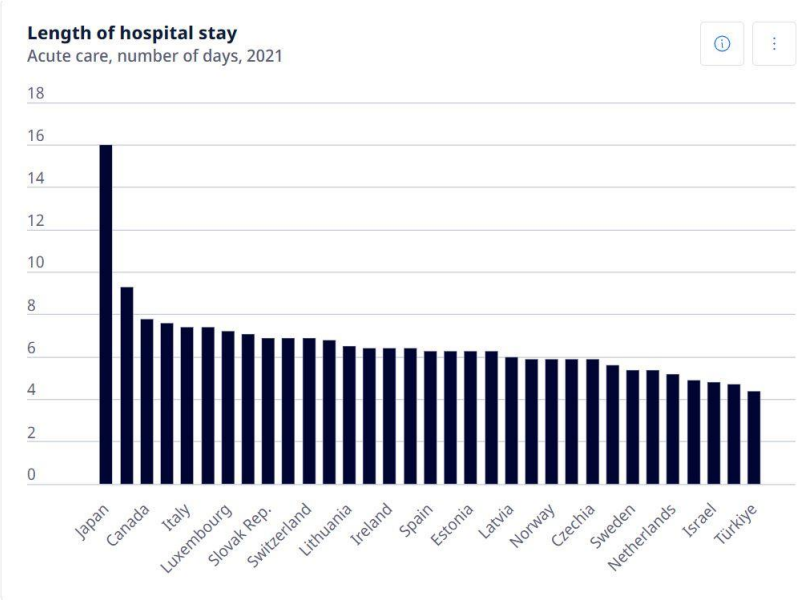
© OECD

Hospital beds

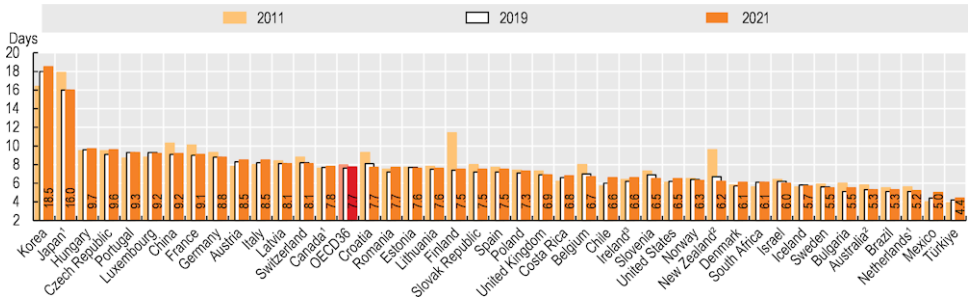
Figure 5.17. **Hospital beds, 2011 and 2021 (or nearest year)**



Bhattacharya, Hyde and Tu – *Health Economics*



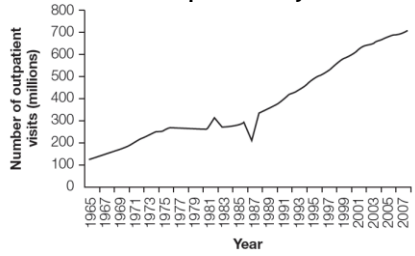
Length of stay

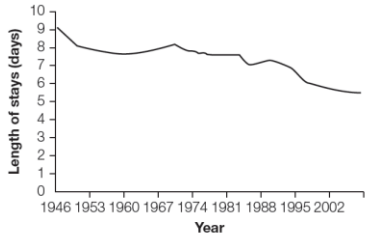


Source: OECD Health Statistics 2023.

Trend in length of stay

- Technology advances have reduced recovery times
- Insurer increasingly design hospital payment to incentive shorter hospital stays





- Trend toward
  - Increased outpatient visits
  - Decreased length of stay

Bhattacharya, Hyde and Tu – *Health Economics*

The hospital industry

- Hospitals, like firms, organise «production» using inputs (machines, physicians, nurses…)
- Their objective depends on ownership
  - Profit for private hospitals
  - Other objectives (health, equity ..) for non-profit and Government owned

Bhattacharya, Hyde and Tu – *Health Economics*

Dataset: Health Care Resources

Year	2016							
Variable	Hospitals		Hospitals					
			Publicly owned		Not-for-profit		For-profit privately	
Measure	Number	Per million population	Number	Per million population	Number	Per million population	Number	Per million population
Country								
Australia	1352	55,89	695	28,73	114	4,71	543	22,45
Austria	273	31,25	148	16,94	41	4,69	84	9,61
Belgium	177	15,62	40	3,53	137	12,09	..	..
Canada	722	19,91	715	19,72	..	..	7	0,19
Chile	356	19,57	208	11,43	..	..	148	8,14
Czech Republic	260	24,61	161	15,24	3	0,28	96	9,09
Estonia	30	22,8	20	15,2	3	2,28	7	5,32
Finland	262	47,68	192	34,94	..	..	70	12,74
France	3065	45,94	1376	20,62	686	10,28	1003	15,03
Germany	3100	37,64	793	9,63	989	12,01	1318	16,01
Greece	280	25,98	124	11,51	5	0,46	151	14,01
Hungary	168	17,12	..	..	..	..	..	..
Iceland	8	23,85	8	23,85	0	0	0	0
Ireland	86	18,08	..	..	..	..	19	4
Israel	84	9,83	37	4,33	24	2,81	23	2,69
Italy	1090	17,98	449	7,41	33	0,54	608	10,03
Japan	8442	66,51	1540	12,13	..	..	..	..
Korea	3788	73,92	220	4,29	3568	69,63	0	0
Latvia	65	33,17	45	22,96	0	0	20	10,21
Lithuania	93	32,42	85	29,63	0	0	8	2,79
Luxembourg	12	20,57	5	8,57	6	10,28	1	1,71
Mexico	4474	36,83	1372	11,29	19	0,16	3083	25,38
Netherlands	534	31,36	0	0	140	8,22	394	23,14
New Zealand	159	33,88	83	17,69	26	5,54	50	10,65
Poland	1064	28,02	..	..	..	..	..	..
Portugal	225	21,79	111	10,75	55	5,33	59	5,71
Slovak Republic	133	24,49	..	..	..	..	..	..
Slovenia	29	14,04	26	12,59	0	0	3	1,45
Spain	764	16,44	343	7,38	120	2,58	301	6,48
Switzerland	283	33,8	..	..	..	..	..	..
Turkey	1510	19,05	923	11,64	0	0	587	7,4
United Kingdom	1922	29,29	..	..	..	..	..	..
United States	5534	17,11	1373	4,25	2958	9,15	1203	3,72

Data extracted on 22 Oct 2019 10:53 UTC (GMT) from OECD.Stat

https://data-explorer.oecd.org/vis?lc=en&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_HEALTH_REAC_HOSP%40DF_HOSP&df[ag]=OECD.ELS.HD&df[vs]=1.0&dq=AUS%2BAUT%2BBEL%2BCAN%2BCHL%2BCOL%2BCRI%2BCZE%2BDNK%2BEST%2BFIN%2BFRA%2BDEU%2BGRC%2BHUN%2BISL%2BIRL%2BISR%2BITA%2BJPN%2BKOR%2BLVA%2BLTU%2BLUX%2BMEX%2BNLD%2BNZL%2BNOR%2BPOL%2BPRT%2BSVK%2BSVN%2BESP%2BSWE%2BCHE%2BTUR%2BGBR%2BUSA%2BBGR%2BHRV%2BPER%2BROU%2BARG%2BWXOECD..10P6HB..._T%2BP%2BNPP%2BFPP....&pd=2022,2022&to[TIME_PERIOD]=false&vw=tb

The hospital industry

- Hospitals and physicians
- Relationship among hospitals (**the hospital market**)
- Hospitals and patients

Hospitals as firms

- **Public Hospitals**
  - Government owned and government financed
  - Objectives: equity, health as merit good
- **Private Hospitals**
  - For profits
  - Not for profits
- All «compete» in the market
  - For patients, physicians, funding
- Competition involves
  - Price, quality, location, technology and innovation
- Output
  - Quality of care, clinical outcomes, access

Hospitals as firms

- Cost characteristics: high fixed costs → a natural oligopoly (*economies of scale*)

- Ownership: hospital like public «firms»
  - Performance cannot be judged looking at profits, although budget concern
- But … healthcare is particular good

Economies of Scale

- In the hospital market, economies of scale refer to the phenomenon whereby, as a hospital increases in size or in the volume of services provided, the average cost per patient or per treatment decreases.
- This occurs because fixed costs, such as medical equipment and infrastructure, are spread across a larger number of patients, making each individual treatment less expensive
- Furthermore, larger hospitals or hospitals belonging to hospital networks can obtain discounts on medical supplies and pharmaceuticals.

Is There an Optimal Hospital Size?

- Recent literature suggests that the number of beds that minimizes production costs is between 200 and 300.
  - Below 200 and above 600 beds, diseconomies of scale arise.
- Note: Activity volumes affect not only unit production costs but also health outcomes.

Positive volume-outcome correlation

- Surgical mortality rates decrease with increased hospital volume

Table 6.1. *Surgical mortality rates for various Medicare procedures, by hospital volume.*

	Hospital volume		
Procedure	Lowest 20%	Middle 20%	Highest 20%
Coronary-artery bypass grafting[a]	6.1	5.3*	4.8*
Aortic-valve replacement[b]	9.9	9.1*	7.6*
Carotid endarterectomy[c]	2.0	1.8*	1.7*
Pancreatic resection[d]	17.6	11.6*	3.8*
Nepherectomy[e]	3.6	2.7*	2.6*

- Learning-by-doing hypothesis
  - High volume leads to good outcomes
- Selective-referral hypothesis
  - Good outcomes leads to high volume

A «quasi» market

- Market structure in which some, but not all, elements of a competitive market are present
- Regulation
- Information asymmetry
- Economies of scale
- Heterogeneity of services (and quality competition)
- Cost of services (do not reflect cost of production)

Differentiated product oligopoly

- Hospital industry is a **differentiated product oligopoly**
- Strict barriers to entry
  - Buildings, technology, staff, administration, etc.
- Few firms
  - Each can affect market outcome (no price-takers)
- Strategic interaction
  - Game theory

Differentiated product oligopoly

- **Herfindahl-Hirschman Index**
  - $HHI = \sum s_i^2$
- Concentration ratio (CR4)
- Strategies
  - Price, quantity, quality, technology
  - Services provided by each firm are not perfect substitutes (*differentiated products*) → ***P>MC***
    - Horizontal differentiation (price)
    - Vertical differentiation (quality)

Limited competition

Not just due to barriers to entry. Also:

- Because of insurance,
  - Prices not transparent
  - Moral hazard for insured patients
- Government often sets prices
- Emergency nature of health care means that patients are unable to search for the "best" and "cheapest" hospital

Is hospital competition good for patients?

Typically, competition improves quality and lowers prices.

BUT

- Presence of insurance hinders price competition
- Patients are typically referred to hospitals by physicians, so hospitals compete for physicians
  - Medical arms race **hypothesis:** greater competition among hospitals for physicians can result in redundancy in and overconsumption of medical technologies. This can actually increase costs without improving quality
- Lots of empirical research about the *effect of hospital competition on patient outcomes*: mixed findings and different policy implications.

Medical Arms Race a prisoners' dilemma game

		Hospital B	
		Buy	Do not buy
Hospital A	Buy	−200, −200	800, −300
	Do not buy	−300, 800	0, 0

For-profit and nonprofit hospitals

US hospital industry has both for-profit and nonprofit hospitals

- Majority of hospitals are nonprofit
  - 2009: 75% of private hospitals organized as nonprofits
- Benefits of nonprofit status:
  - Exempt from taxes
  - Donors receive a tax deduction
- Costs of nonprofit status:
  - Cannot sell stock
  - Cannot distribute profits to owners
  - Restricted to certain charitable activities

Why do nonprofits exist?

Theories for nonprofit existence

1. Altruistic-motive theory
   - Some entrepreneurs prefer altruism over profits
2. Government-failure theory
   - Politics ineffectively help those in need
3. Asymmetric information
   - Donors trust nonprofits more

Who pays? How are prices set?

- The Government
- Insurance
- Patients (out of pocket)
- Hospitals and insurers -- both private and public -- periodically negotiate rates

Reimbursement schemes

Diagnosis-Related Group (DRG)

- Payment based on patient diagnosis and hospital services.
- **Key Features:**
  - Fixed payment per case.
  - Encourages efficiency.
  - Risk: May reduce care quality for complex cases.

Reimbursement schemes

Fee-for-Service (FFS)

- Payment per individual service provided.
- **Key Features:**
  - Incentivizes service volume.
  - Promotes access to care.
  - Risk: Can lead to overtreatment and higher costs.
  - Risk: May reduce care quality for complex cases.

Reimbursement schemes

Capitation

- Fixed payment per patient, regardless of services provided.
- **Key Features:**
  - Incentivizes cost control.
  - Encourages preventative care.
  - Risk: Potential for under-treatment.