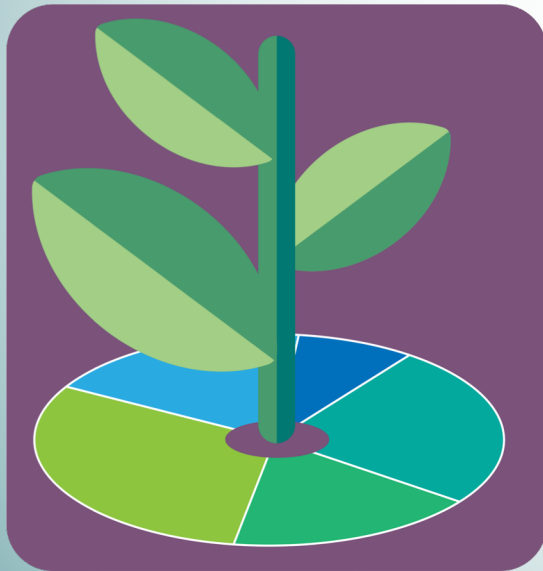


Economics of Social Expenditure

CHAPTER II. ANALYSIS OF MERIT GOODS

2.1 Public Spending on Health



David Cantarero Prieto
Paloma Lanza León
Javier Isaac Lera Torres

DPT. OF ECONOMICS

This material is published under the following license:

[Creative Commons BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/)



Index

Motivation

Fundamental Objectives

1. Introduction: economic analysis of health and health care

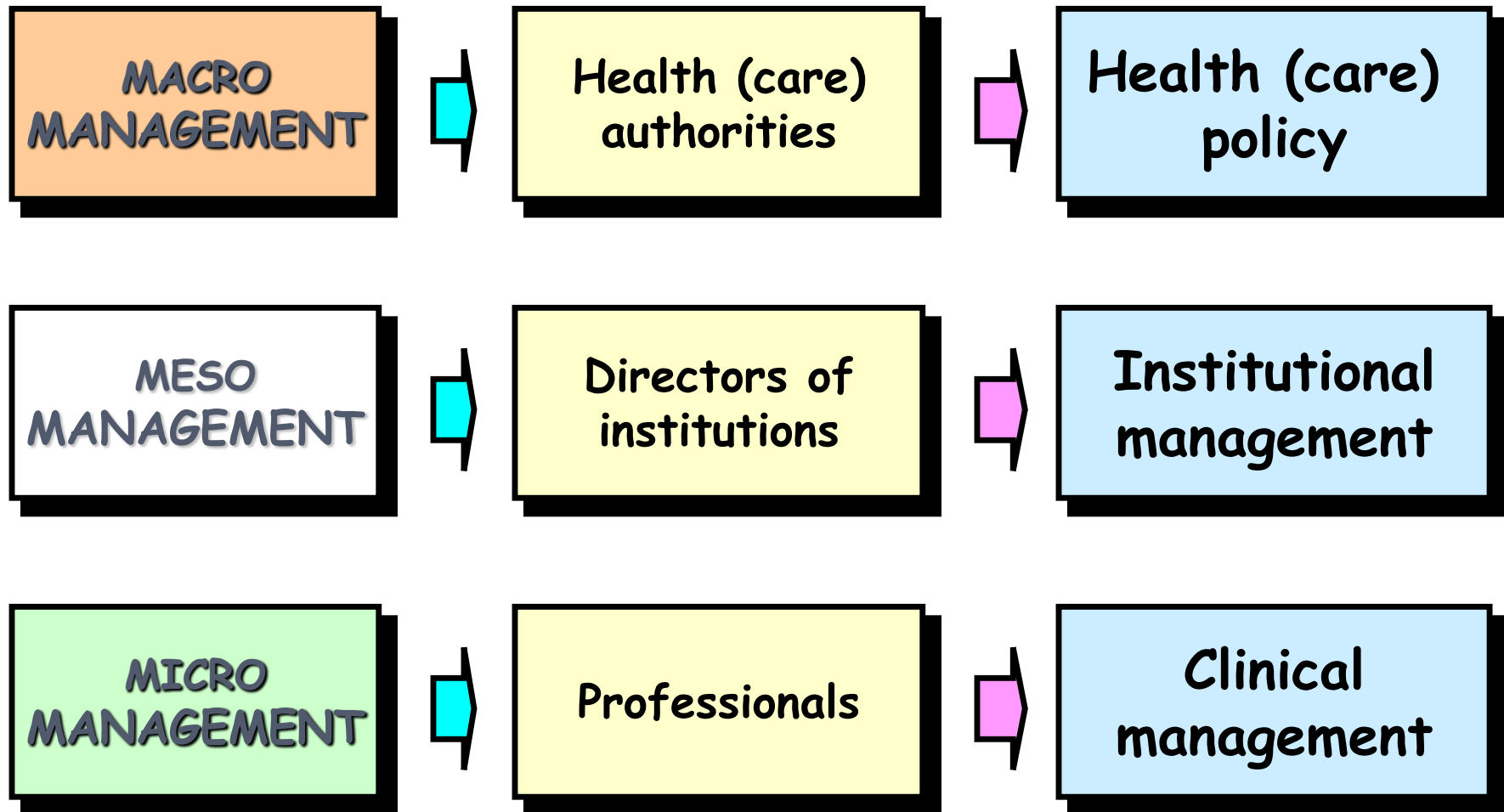
2. The healthcare market

3. Demand of health

4. Supply of health

5. A review of the methodology and empirical evidence in Health Economics: Challenges and reforms for the future

- **HEALTH ECONOMICS: Allocation of resources (within the health field and between the health sector and the rest of the economy) as a problem of balance between interest groups.**
- **PRIORITIZE (As resources are limited, giving to some implies denying others –opportunity cost-).**
- **Governments continually face demands such as:**
 - **Extend dental coverage to more people and groups?**
 - **Expand breast cancer early detection program from 40 years old instead of 45?**
 - **Financing more cancer drugs, for rare diseases or hepatitis C (with costs between €7,000-70,000)?**
 - **Start a shock plan to reduce surgical waiting lists?**
 - **Address patient association claims for certain rare diseases?(*Lorenzo's oil, Extraordinary measures...*) or epidemics like the Coronavirus in 2020?**



Motivation & goals



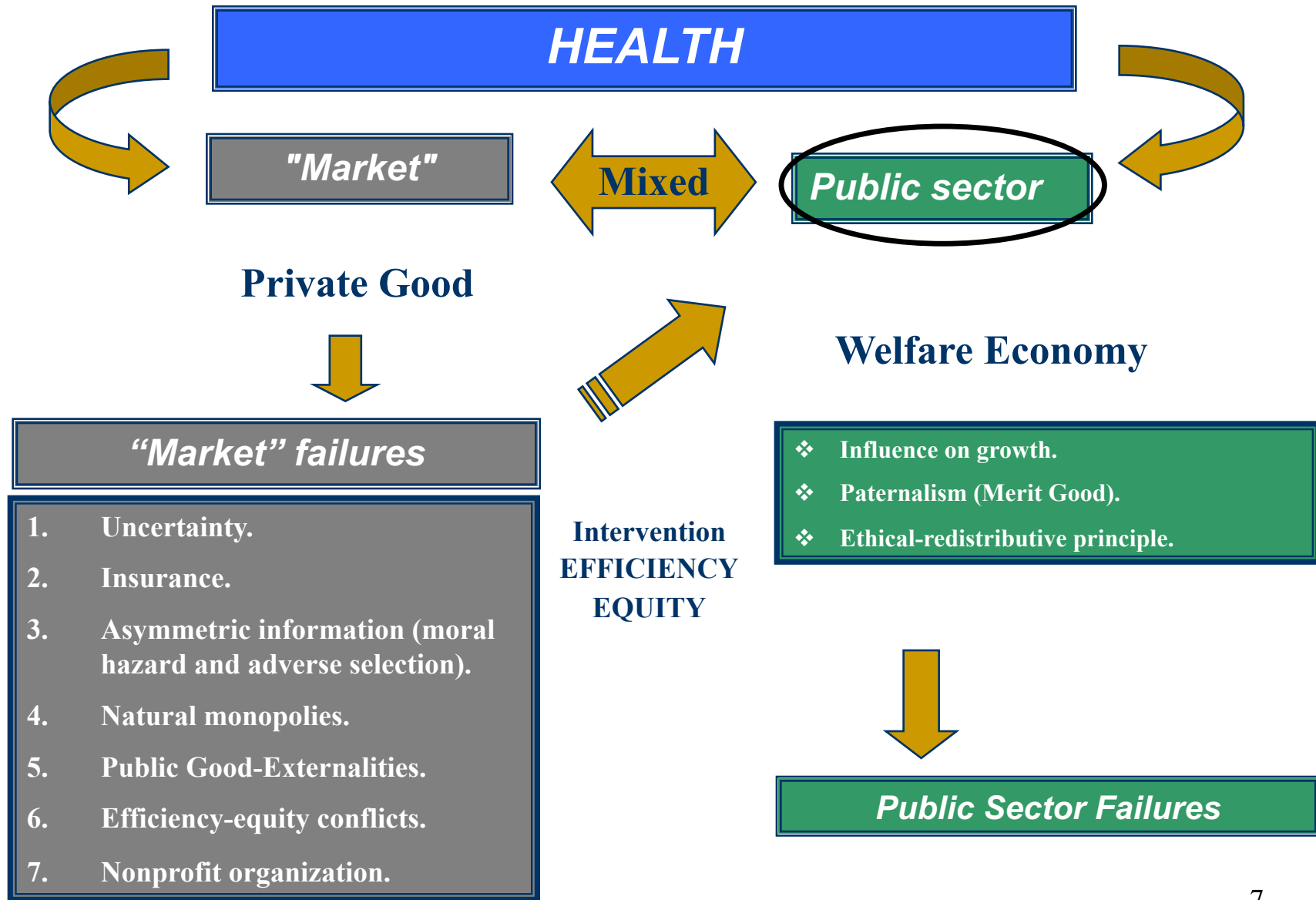
- Define *Health* is still a matter of controversy.
- In 1948, the World Health Organization defined health as “*state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*”.
- It continued with critical aspects and Terris (1980) proposed to understand it as “*state of physical, mental and social well-being, with the ability to function and not merely the absence of disease or illness*”.
- Although operational progress, it continued to present drawbacks, with possible joint presence of Health and certain diseases or conditions in the early phase would not produce symptoms or discomfort or limit the ability to function.
- As a result, its approach has been modified from the initial perspective of “*Balance*” (only the mere absence or recovery from illness and disability was concerned) towards the perspective of potential development of the “*wellness*” personal and even today of “*ability*”.

Motivation & goals

- Analyze “*health determinants*” (Lopez I Casanovas & Ortun, 1998).
- Since, at least, the Chadwick Report (1842) on the health of British workers, an important milestone 1975 in Canada (Lalonde Report), this problem has been analyzed by developing a model of “*health field*”.
- Proposed level of health of a community by interaction:
 1. *Human biology* (genetics and aging).
 2. *Environment* (physical, chemical, biological, psychosocial and sociocultural).
 3. *Lifestyles* (health behaviors).
 4. *Health care system (perhaps not as influential).*



One can hardly be modified (Human Biology) while others can, and they should be addressed as a priority, actions of PUBLIC HEALTH



1. Introduction: Economic analysis of health and health care

JUSTIFICATION PUBLIC PROVISION OF HEALTH

- 1) Universal coverage: provision guarantees externalities (+).
- 2) *There is no need for general public provision and it can be replaced by private insurance and aid for those who do not have it... No, since it is a market with information problems (asymmetric and imperfect).*
- 3) Paternalistic attitude of the Public Sector assures protection against diseases to “improvidents”.

Redistributive objective \Rightarrow ∇ poverty and counter models as private in the United States (*Medicare* for >65 and *Medicaid* for “poor”).

2 MODELS OF PUBLIC HEALTH PROVISION IN EUROPE

A) SOCIAL SECURITY (SS): SINGLE PAYER, MULTIPLE INSURERS WITH MANDATORY AFFILIATION, MULTIPLE INSURERS WITH CHOICE OF INSURER

- Financing for social contributions (covers workers and family members). Contributions for earned income, connect with health spending.
- Spain until 1986; France, Greece, Germany, Austria, Bulgaria, Croatia, Estonia, Lithuania, Luxembourg, Holland, Hungary, Poland, Belgium, Slovenia, Slovakia, Czech Republic, Turkey and Switzerland.

B) NATIONAL HEALTH SYSTEMS (NHS)

- Tax financing (greater redistribution) universal and “free”.
- Problem in controlling spending growth (Price perceived 0). But+equitable.
- Spain since 1986-GHL; Cyprus, Latvia, Malta, United Kingdom, Italy, Denmark, Finland, Ireland, Iceland, Norway, Sweden and Portugal.

PUBLIC PRODUCTION VERSUS PRIVATE PRODUCTION

- **NHS and SS public health provision, although with public or private production.**
- ***PRIVATE PRODUCTION***
 - **Receive financing of Public Sector with free professionals and private hospitals (like the United States).**
 - **Spain ⇒ health centers that may be “concerted” and the Public Sector pays them a part. France and Germany and in almost all SS with private production.**
- ***PUBLIC PRODUCTION***
 - **Public Sector buys means of production and hires free professionals.**
 - **Spain, Italy, Sweden, Finland, and other NHS countries have it.**
- **To see private/public production superiority: considering health “markets” are “peculiar”.**

2. The Healthcare “Market”

- **Some hospital treatments are “natural monopolies” (very high Fixed Costs). Better public production (due to private ⇒ create monopolistic services).**
- **In areas, such as rural areas, Weak demand. If unprofitable private production, check them out. In theory public production better. Election public production *versus* private ⇒ imperfect alternatives-**
- **PRIVATE PRODUCTION: +efficiency, but excessive spending, monopoly and insufficiently covers areas of low demand.**
- **PUBLIC PRODUCTION: +inefficient management and limits freedom of choice / eliminates private problems with ∇ cost, price is waiting lists and “worse” attendance (less competition than with private) ⇒ Health Reforms.**

2. The Healthcare “Market”

ECONOMIC AGENTS OF THE HEALTH SYSTEM

- 1) Consumers/patients: Demand**
- 2) Producers: Supply**
- 3) Doctors, Nursing, etc.: Supply**
- 4) Public Sector: efficiency (due to market failures for management, provision and regulation of prices and quantities) and equity (financing).**

CHARACTERISTICS OF THE “HEALTHCARE MARKET”

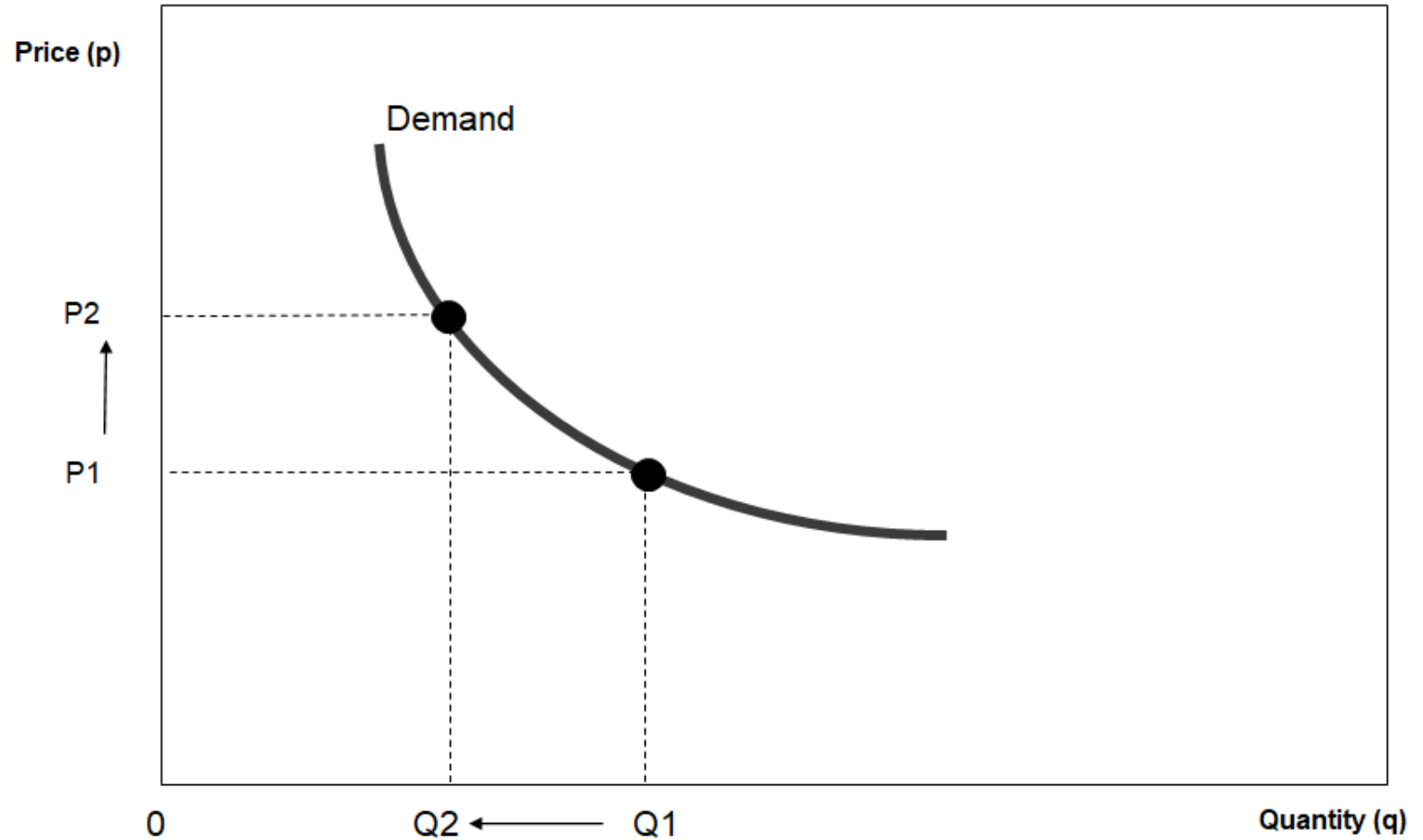
2. DEMAND AND HEALTH CARE

- **Limited information on quality of the good: indirect and imperfect, own previous experience or “next” or non-medical aspects.**
- **Information problems (Arrow, 1963). Agency relationship and “Supply-induced demand”.**
- **Equally “misinformed” patient in public and private production.**
- **Physician encouraged to change that situation and the regulation of entry into his profession.**

2. Demand and healthcare

- **Health Production Function: Relationship between level of health achieved and resources (factors of production) used to achieve it.**
- **Health is a “*multifactorial*” result: genetic load, lifestyles, use of health services, etc.**
- **Health services are only one of the factors of health production, being a mean to achieve health, not an end in themselves.**
- **Demand for health services is demand “derived” from the demand for health.**

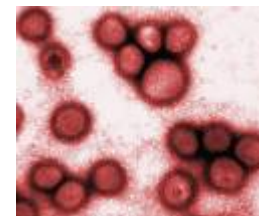
The individual demand function



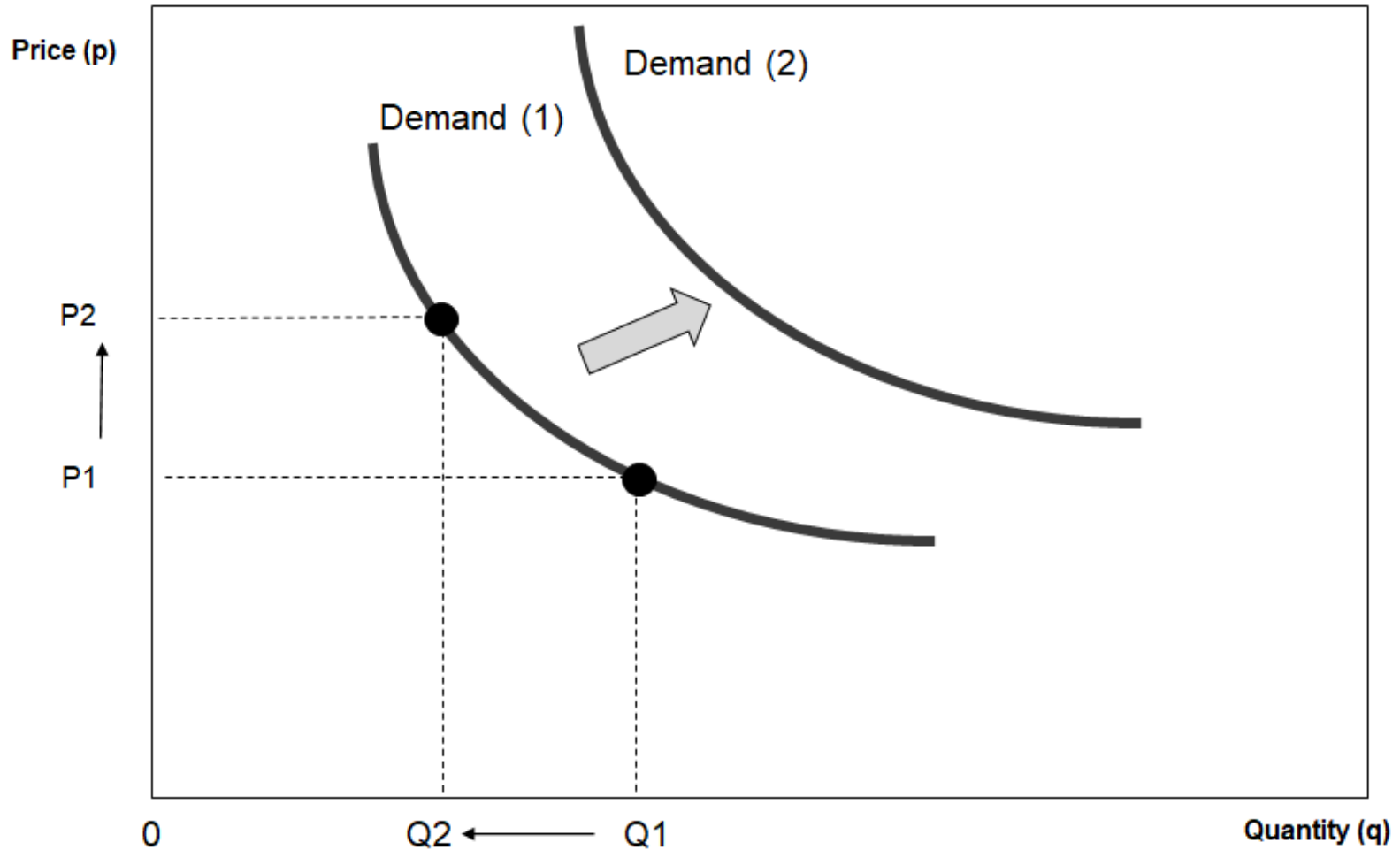
2. Demand and healthcare

- **Factors acting on demand:**

- **Changes in the health status of the individual.**
- **Changes in disposable income of the individual (direct taxes and transfers from the public sector to families).**
- **Changes in individual preferences.**
- **Influence of advertising campaigns. Example: health and prevention programs**
- **Physician acts as an intermediary (“defensive medicine”).**
- **Variations in the price of other goods (complementary and/or substitute).**



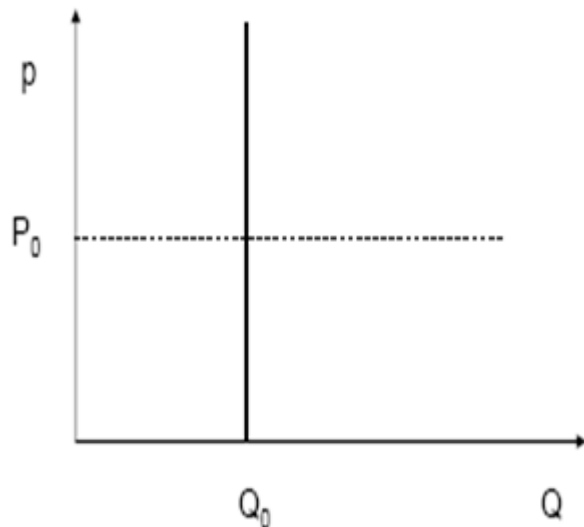
It is important to differentiate movements along the demand function (when the price falls or rises) from shifts in the function (for example, when a family increases its income).



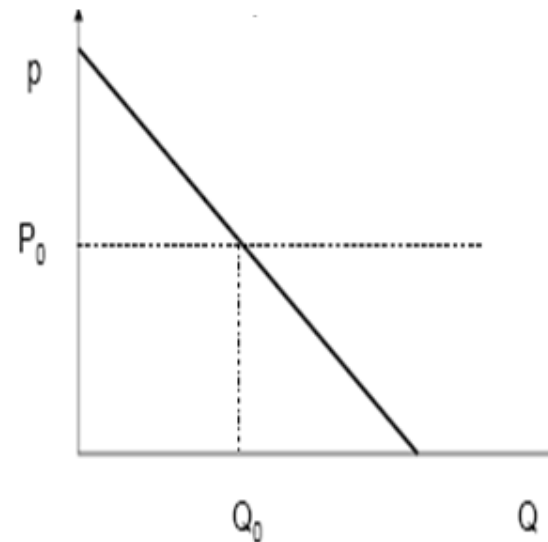
2. Demand and healthcare

- **Demand for health services: Inverse relationship between health care prices and amounts consumed (negative slope). “Demand” not always means “Need”.**

For many years it was thought that the demand for health services was totally insensitive to price, that is:



However, American researchers Manning et al. (1987) have been able to show that the demand curve is actually negatively inclined, the higher the price, the lower the demand.



SUPPLY-INDUCED DEMAND

- Medical services except consultations “*request*” of Primary and Emergencies, have Demand initiated in previous medical service (doctor “*prescribes*”).
- Agency relationship between doctor and patient: medical (offerer or provider of the service) is also “agent” of the patient and prescribes treatments appropriate to their case, without taking into account any criteria unrelated to the utility of the patient.
- But there is empirical evidence that the agency relationship is not complete: doctor is a *double agent* (of the patient and the health system that has hired him), and can make decisions based in part on his own utility or income. Example: Studies of clinical variability in small areas say that the rate of some types of surgical interventions is highly correlated with the availability of specialist doctors or hospital beds in its area.
- ***IN HEALTH UP TO A CERTAIN POINT SUPPLY CREATES ITS OWN DEMAND.***

HEALTH AT A GLANCE 2023 : OECD INDICATORS.

CHAPTER 7: HEALTH EXPENDITURE

<https://www.oecd-ilibrary.org/sites/7a7afb35-en/1/3/7/index.html?itemId=/content/publication/7a7afb35-en&csp=6cf33e24b6584414b81774026d82a571&itemIGO=oecd&itemContentType=book>

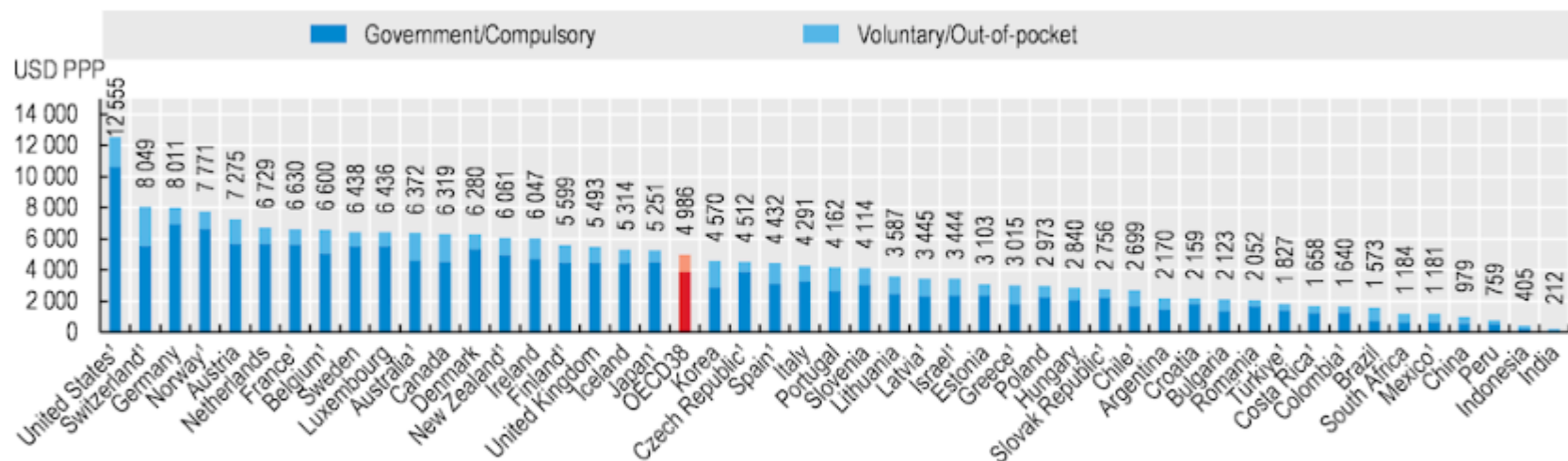
» Health at a Glance 2023: OECD Indicators

- Integrated care
- 7. Health expenditure**
- Health expenditure in relation to GDP
- Health expenditure per capita
- Prices in the health sector
- Health expenditure by financing scheme
- Public funding of health spending
- Health expenditure by type of service
- Health expenditure on primary healthcare
- Health expenditure by provider
- Capital expenditure in the health sector

7. Health expenditure

- [Health expenditure in relation to GDP](#)
- [Health expenditure per capita](#)
- [Prices in the health sector](#)
- [Health expenditure by financing scheme](#)
- [Public funding of health spending](#)
- [Health expenditure by type of service](#)
- [Health expenditure on primary healthcare](#)
- [Health expenditure by provider](#)
- [Capital expenditure in the health sector](#)

Figure 7.4. Health expenditure per capita, 2022 (or nearest year)



1. OECD estimates.

Source: OECD Health Statistics 2023; WHO Global Health Expenditure Database.



StatLink <https://stat.link/m6pzqb>

	Government/Compulsory	Voluntary/Out-of-pocket	Total
United States ¹	10644	1912	12555
Switzerland ¹	5547	2502	8049
Germany	6930	1081	8011
Norway ¹	6637	1134	7771
Austria	5664	1612	7275
Netherlands	5672	1057	6729
France ¹	5622	1007	6630
Belgium ¹	5058	1542	6600
Sweden	5525	913	6438
Luxembourg	5527	909	6436
Australia ¹	4603	1769	6372
Canada	4506	1813	6319
Denmark	5324	956	6280
New Zealand ¹	4969	1092	6061
Ireland	4678	1369	6047
Finland ¹	4476	1123	5599
United Kingdom	4479	1014	5493
Iceland	4425	889	5314
Japan ¹	4491	759	5251
OECD-38	3882	1104	4986

Note: 1. OECD estimates.

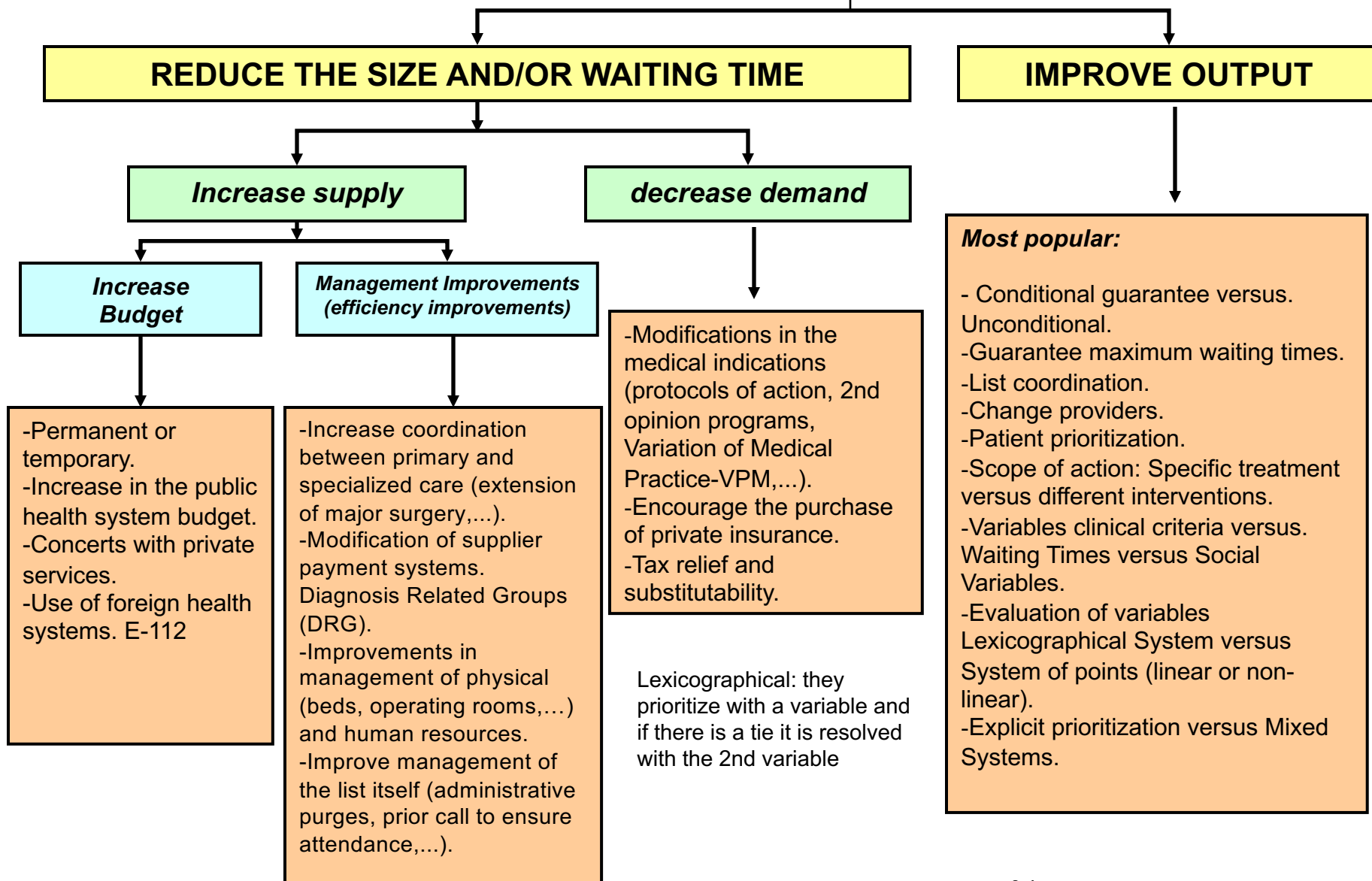
Source: OECD Health Statistics 2023; WHO Global Health Expenditure Database.

	Government/Compulsory	Voluntary/Out-of-pocket	Total
Korea	2865	1705	4570
Czech Republic ¹	3872	640	4512
Spain ¹	3113	1319	4432
Italy	3255	1036	4291
Portugal	2640	1522	4162
Slovenia	3056	1058	4114
Lithuania	2459	1128	3587
Latvia ¹	2304	1141	3445
Israel ¹	2360	1084	3444
Estonia	2356	746	3103
Greece ¹	1785	1230	3015
Poland	2227	746	2973
Hungary	2055	785	2840
Slovak Republic ¹	2210	546	2756
Chile ¹	1679	1020	2699
Argentina	1444	726	2170
Croatia	1818	341	2159
Bulgaria	1340	783	2123
Romania	1647	405	2052
Türkiye ¹	1395	432	1827
Costa Rica ¹	1234	425	1658
Colombia ¹	1248	392	1640
Brazil	705	868	1573
South Africa	603	581	1184
Mexico ¹	626	555	1181
China	536	442	979
Peru	523	237	759
Indonesia	223	182	405
India	78	133	212

2. Demand and health care: **waiting lists**

- Its existence is not itself a problem unless waiting times are “excessive” and dissatisfaction with the health system. Except for the “urgent” ones, it is ordered according to *WAIT TIME* (explicit prioritization) (although it is criticized for violating vertical equity (Peiro, 2000)).
- “Secretism” in data (since 2003 in aggregates) and implicit prioritization (medical practice).
- **Waiting list management: a single measure is not enough to achieve control in waiting lists and the incentives of each management strategy on health professionals must be analyzed.**
- **What matters is the number of patients on the waiting list or the average time they wait to undergo surgery?**

STRATEGIES AGAINST WAITING LISTS



STRATEGIES TO IMPROVE OUTPUT

- **Improve quality of the result or output (level of health and/or well-being)**

3.3.1. MAXIMUM WAITING TIMES GUARANTEED

- **It is one of the most popular measures. Politicians usually include it in their programs.**
- **If the patient exceeds the acceptable waiting time, they earn the right to receive priority treatment. This guarantee confuses the objectives of the system and management instruments. Maximum waiting times: management instrument if they are regulated as a patient's right (if they establish legal mechanisms to act against the system if there is non-compliance).**
- **Limiting waiting time ensures that the patient has access to the type of care needed and increases patient satisfaction with the health system.**

POINT SYSTEMS

- They assign a value to each variable previously selected as relevant when prioritizing patients, and priority for members of the waiting list comes by total score by adding partial scores in each relevant variable
- **LINEAR POINT SYSTEM:** Score received by patients on the waiting list is a linear combination of attributes selected as prioritization criteria.
Score = $F(x_1) + G(x_2) + \dots + W(X_n)$, where $F(\cdot)$, $G(\cdot)$ and $W(\cdot)$ measure the weight of each variable in the final score.

Example: General point system for assigning cadaveric kidneys in the United States is based on weighted sum of waiting time, donor and patient antigen-matching quality, patient presensitization status, and age.

- **NON-LINEAR POINTS SYSTEM:** Score obtained by non-linearly adding the prioritization attributes
Ex. Score = $F(x_1) \times G(x_2) \times G(X_n)$

Example: Point system for infertility treatment in New Zealand is the product of points times “objective attributes” and “social attributes”. Previously, “objective attributes” scores arose from the product of points assigned to different values of probability of pregnancy without treatment.



<https://www.sanidad.gob.es/en/estadEstudios/estadisticas/inforRecopilaciones/listaEspera.htm>

☰ Listen ▶ You are in: 🏠 > Health data > Health Information System > Health information system > Specialized Care Information System. Hospitals

➔

- Health at a glance
- Health Information System**
- Yearly Information of the National Health System
- National Health System Key Indicators [🔗](#)

Waiting Lists Information System

Latest available data

NHS Waiting Lists on december 31st 2011. 📄 🗣️ [Escuchar](#)(in Spanish)

Approved its broadcasting by the Council among the Autonomous Communities of Spain of the National Health System on june 27th 2012.

ECONOMIC IMPLICATIONS AND AGING?

OECD Statistics | stats.oecd.org/Index.aspx?ThemeTreeId=9

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT | **OECD.Stat**

Click here to Login | Contact us | User Guide | English | Fra

Search [Getting Started](#)

Health Care Utilisation : Waiting times

Customise | Export | My Queries

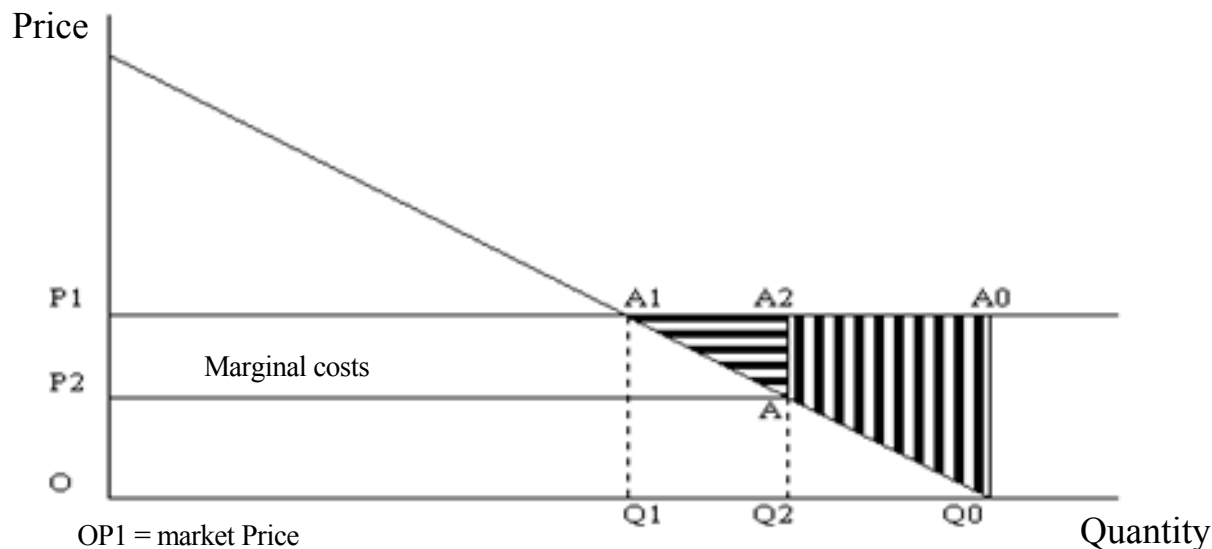
Variable: Cataract surgery

Measure: Waiting times from specialist assessment to treatment: % of all patients waiting more than 3 months

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Australia	..	..	..	..	(D) 48	(D) 50.7	(D) 48.6	(D) 48.7	(D) 47.6	(BD) 52.3	(D) 62.4	..
Chile	..	..	43	44	48	49	52	61	41	52	54.6	46
Costa Rica	..	..	..	..	..	..	..	..	..	74	68	60
Denmark	(D) 42.6	(D) 37.5	(D) 29.2	(D) 31.7	(D) 34.4	(D) 34	(D) 23	(D) 21.1	(D) 19.6	..	..	..
Estonia	68.1	66.4	62.3	52.7	47.4	53.1	72.9	80.3	68.2	62.8	49.1	..

REFORMS IN PUBLIC HEALTH. DIFFERENT MEASURES

- **Expenditure control (copayment-moderator ticket).**
- **Internal competition models (Enthoven, 1985).**
- **Make management more flexible (Law 15/1997, s/enabling New Forms of SNS Management and RD 29/2000). Foundations, Public Companies, Public Entities, etc.**
- **Other measures (Evaluation and Management Systems, Control of pharmaceutical expenditure (reference prices and others), ∇benefits or portfolio of health system services according to collective choice-voting).**



OP1 = market Price
 OQ1 = quantity demanded

Free provision = zero Price
 OQ0 = quantity demanded
 Triangle A1A2Q0 = distortion caused
 by excess consumption

OP2 = copayment-moderator ticket
 OQ2 = quantity demanded
 Triangle A1A2A = distortion caused
 by excess consumption

COPAYMENT AND PROBLEMS: 1) Amount; 2) Impact on equity (regressive?); 3) No training; 4) Maybe not Demand (or just the basic one). Valid in Spain in pharmacy

SHADOW BILL IN HEALTH (Analytical accounting, etc.)

Delivery to the patient of a document where the expense is recorded. Galicia, since 1998, and Valencia since 2003, are the only regions that gave it to patients. Model similar to the one that began in Andalusia in 2010, “it has already been used as a pilot experience, although without effect”.

And its utility? It is not “health copayment”, they would be better “*campaigns informing patients of what interventions cost to the system. It is better to create an annual summary sheet of the use that each citizen made of the system, which would detect if there was improper use*”.

And with time? The informative effect of the invoice is diluted and after a stage in which the citizen looks at the amount, little by little he forgets it. But, society assumes that everything has a cost, even in the public and “free” health system. Initiatives such as the shadow bill: short-term effects (which do not affect behavior) but no evidence of influence on long-term patronage.

Is Economy useful for our health?

WHO HAS TO PAY HEALTH AND HOW?

- Idea of financing health for the population with per capita adjusted for risk or need (age, gender, etc.) criteria applies at different levels. Example: United Kingdom or Spain.
- The great challenge of adjusting for risk is how to predict health expenditure that each person will need (patient stratification).
- There are econometric models that predict health spending based on clinical data and spending in the past, but their predictive capacity is still low.
- If we know everything (ARTIFICIAL INTELLIGENCE, PREDICTIVE ALGORITHMS, BIG DATA), perhaps our freedom is curtailed.

CHARACTERISTICS OF THE “HEALTH MARKET”

3. Health care supply

- **Quantity of good or service that an individual, family or company is willing to sell at a certain price in a certain period.**
- **Providers maximize profit, but it depends on the professional ethics of the doctor and expecting that incentives do not condition their performance.**
- **Positive relationship between health care prices and quantities offered.**
- **Factors affecting on supply:**
 - **Changes in factor prices (and raw materials).**
 - **Improvements in technology used for health care (influences costs).**
 - **Introduction of indirect taxes and subsidies.**
 - **Number of companies in the market (competition).**
 - **Level of capital available in the short term by companies.**

CHARACTERISTICS OF THE “HEALTH MARKET”

3. Health care supply

- **ELASTICITY** of supply depends on:
 - **TERM:** Short-term supply is less price elastic than long-term.
 - **FIXED COSTS:** if they are very high (a lot of infrastructure, for example), supply is less price elastic.
 - **RESTRICTIONS** (legal or otherwise) on the use of factors of production and substitution between factors make supply less price elastic.
- **As with Demand, supply can shift as with reductions in the prices of factors of production (wages, consumables, etc.) and lower production costs, or if cost-saving technological improvements.**
- **Health Policies: know the offer of health providers to anticipate changes in the market due to regulations. PATIENT MOBILITY (BILLING AND ECONOMIES OF SCALE?)**

CHARACTERISTICS OF THE “HEALTH MARKET”

3. Health care supply

- **TOTAL COST OF PRODUCTION OF A SERVICE PER PERIOD OF TIME (CT) = FIXED COSTS (CF) + VARIABLE COSTS (CV).**
- **FIXED COSTS INDEPENDENT OF THE LEVEL OF PRODUCTION.**
- **VARIABLE COSTS DEPEND DIRECTLY ON QUANTITY PRODUCED.**
- **AVERAGE PRODUCTION COSTS = CT / NUMBER OF UNITS PRODUCED.**
- **NOT ALL UNITS HAVE THE SAME PRODUCTION COST SINCE FIXED COSTS ARE DISTRIBUTED BETWEEN A HIGHER NUMBER OF UNITS WHEN PRODUCTION INCREASES.**

CHARACTERISTICS OF THE “HEALTH MARKET”

3. Health care supply

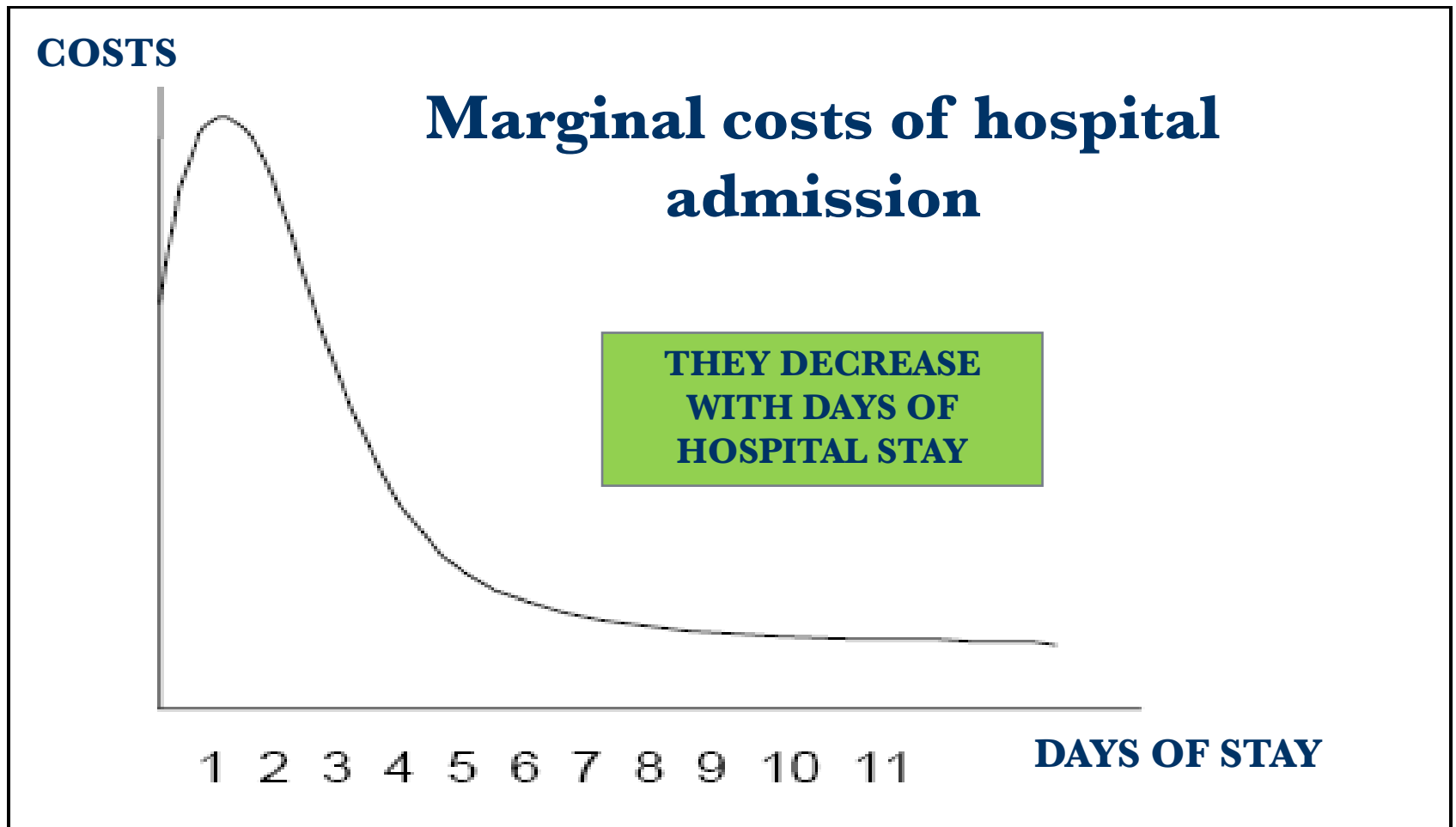
- **PRODUCTION: INCREASING RETURNS TO SCALE OR ECONOMIES OF SCALE IF BY INCREASING ACTIVITY LEVEL, AVERAGE PRODUCTION COSTS DECREASE.**
- **BUT ABOVE A CERTAIN LEVEL, AVERAGE COSTS ARE INCREASING, WHICH IS WHERE DISECONOMIES OF SCALE OR DECREASING RETURNS TO SCALE.**
- **COMPANIES TO SITUATE IN VOLUME OF PRODUCTION OR ACTIVITY AT THE MINIMUM AVERAGE COST IN THE LONG TERM (TRY TO OPERATE AT THE MINIMUM AVERAGE COST), LEADS TO THE OPTIMUM SIZE OF HEALTH CENTERS.**
- **ACCORDING TO EMPIRICAL STUDIES, THE OPTIMAL SIZE OF A HOSPITAL IS AROUND 300 BEDS. FOR SOME “L” SHAPE, OTHERS “U”, OTHERS INVERTED “U”, PROBLEMS SACRIFICE COST FOR QUALITY (EXAMPLE: + NOSOCOMIAL INFECTIONS).**

3. Health care supply

- Difficulty of measure health production example in hospitals and is measured by intermediate products (number of surgeries, stays, consultations, etc.).
- More progress has been made in measuring quantity than quality (it is usually measured negatively as % readmissions or infections).
- Try to accurately measure production as with risk adjustment systems.

3. Health care supply

- **MARGINAL COST (CMg):** Additional cost of producing more unit.
- **CMg of cataract operation is clinical with prepared facilities and available equipment is variable cost (payment of work, use of facilities, consumable material) but not an aliquot part of “*amortization*” of Fixed Costs.**
- **Many decisions are made “*in the margin*” (to decide whether or not to continue doing a certain activity).**
- **Objective of the vaccination program is the number or % of the target population immunized; ditto for program screening, or with many objectives of hospital management contracts (% medical records completed correctly, admissions well in the Minimum Basic Data Set (MBDS), number of patients on the waiting list > 6 months, etc.).**



3. Health care supply

- **CONTRIBUTION MARGIN:** Contribution made at each level of activity/sales to support fixed costs.
- **BREAK-EVEN POINT, DEAD POINT OR PROFITABILITY THRESHOLD:** Number of sales/activity in which the organization neither wins nor loses; point at which all fixed and variable costs are covered but no profit is made. It is the profitability threshold, from there the organization produces benefits.

Example: Hospital with

Variable cost per case = 1,000 monetary units (mu)

Fixed cost per period = 100,000 (mu)

Prices or fee per case = 2,400 (mu)

At neutral $It = Ct$; and $Ct = Cf + Cv \times Q$; if $It = p \times Q$

We have that $p \times Q = Cf + Cv \times Q$

And for Profit = 0 then $Cf = Q (p - Cv)$

So $Q = Cf / (p - Cv)$

Here $Q = 100,000 / (2,400 - 1,000) = 71.4$ cases

3. Health care supply

- On many occasions, it is proposed to know the number of patients who must be attended, keeping everything else, to obtain a certain % benefit or income.
- With previous data *How many patients must be treated in the period to obtain benefit = 6000 currency units (mu)?*
- $In = It - Ct = p \times Q - (Cf + Cv \times Q)$
- Where In = Net income
- $In + Cf = (p - Cv) \times Q$

$$Q = (Cf + In) / (p - Cv)$$

- Here $Q = (Cf + In) / (p - Cv) = (100000 + 6000) / (2400 - 1000) = 75.7$ cases (to have a benefit of 6000 mu it will be necessary to treat 76 cases).

Is Economy useful for our health?

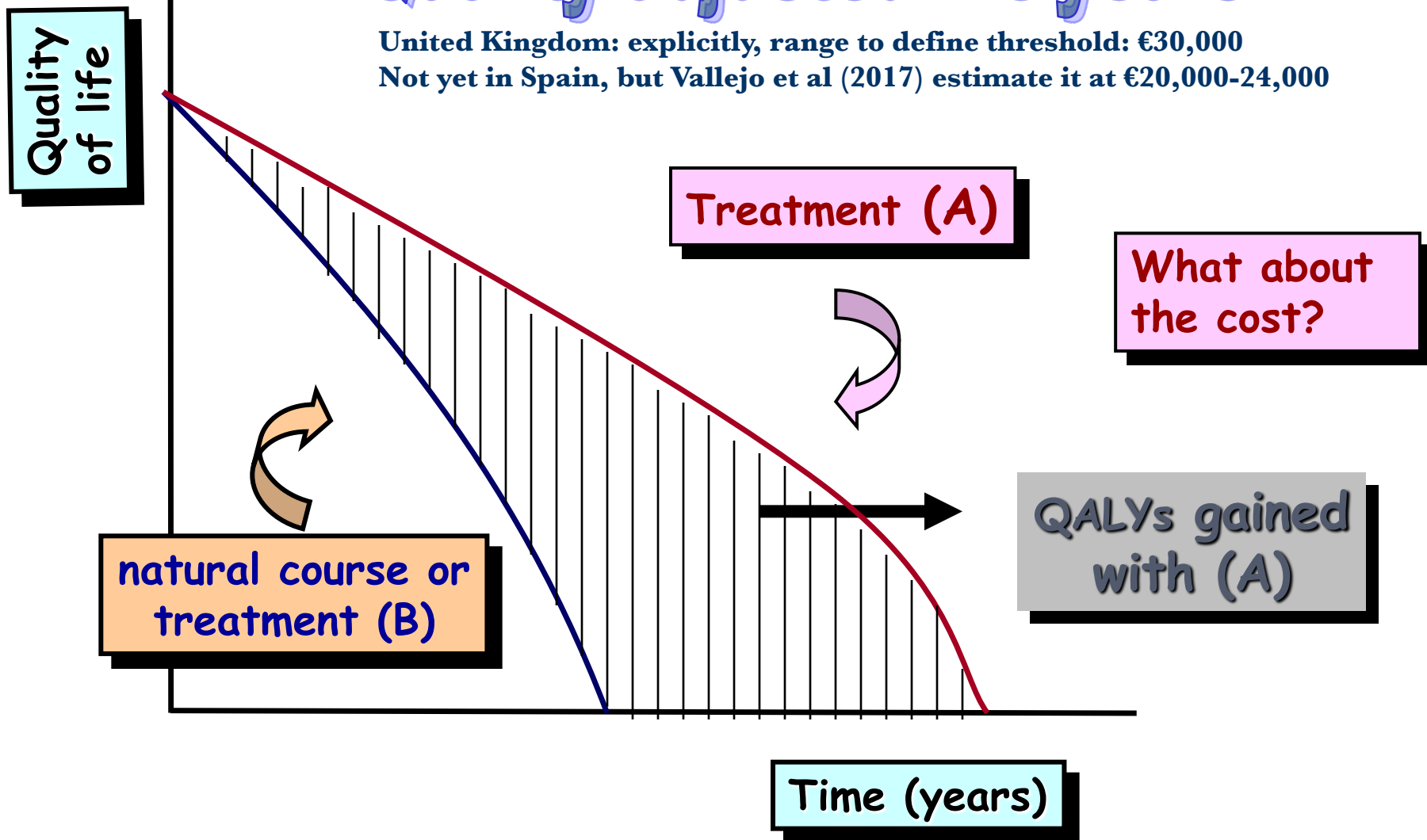
ECONOMIC EVALUATION. MEASURE AND ASSESS

- **Entrusted to Health Technology Assessment Agencies (prioritize health programs & treatments for specific populations). PHARMACOECONOMY: evaluates medicines to recommend or not their public financing.**
- **2 pillars:**
 - **Costs: Not only monetary, nor with market value (example: pain & suffering intangible cost), they are opportunity costs.**
 - **Results: Measure & assess effectiveness (health gain).**
 - **Costs in euros for effectiveness (quantity & quality of life – Quality Adjusted Life Years - QALYs).**
 - **SHARED RISK: Determine public financing of treatment to its economic evaluation after being on the market.+ Extensive modality is PAY FOR PERFORMANCE.**

Quality-adjusted life years

United Kingdom: explicitly, range to define threshold: €30,000

Not yet in Spain, but Vallejo et al (2017) estimate it at €20,000-24,000



Is Economy useful for our health?

ECONOMIC EVALUATION. MEASURE AND ASSESS

- **EFFICACY:** Measures the probability that an individual in a defined population benefits from a particular medical intervention or a particular drug to solve a specific health problem under ideal conditions of action. Habitually experimentally and with universal validity.
- **EFFECTIVENESS:** Measure the same thing as efficacy but under real conditions performance that differ from optimal or experimental. It does not have universal application.
- **EFFICIENCY:** It is reached when *Marginal benefit = marginal cost*. There is no need to go to extreme situations of “Eskimo economy” (valuing human life as it contributes to production).

Is Economy useful for our health?

ECONOMIC EVALUATION. MEASURE AND ASSESS

- Experiments where EFFICACY is fixed are usually based on random division of subjects between control group and treatment group (*matching* techniques, etc). Sometimes it may be unethical to leave someone out of the treatment group.
- To set the EFFICIENT level of treatment or medicine, it is necessary to know the EFFICACY (OR EFFECTIVENESS) that affects the part of the benefit.

Is Economy useful for our health?

Example where EFFICACY \neq EFFECTIVENESS:

- **Drug for hypertension. Laboratory efficiency= 75%. Effectiveness in practice = 30.6%. Ethical dilemma: Drugs to pay for according to price or effectiveness?**
- **How are these differences justified? In practice (100 people take drug):**
 - a) **Diagnostic accuracy by the doctor = 95% (so 5% of cases of hypertension are misdiagnosis).**
 - b) **Correct prescription of the drug = 66% (thus, 44% of diagnosed cases did not need or the drug was prescribed incorrectly (in quantities)).**
 - c) **Rate of correct treatment observation = 65% (so 35% of people have not taken the medication as they should).**

$$\text{Effectiveness} = [100 * 0.95 * 0.66 * 0.65] * 0.75 = 0.306 = 30.6\%$$

Is Economy useful for our health?

ECONOMIC EVALUATION. MEASURE AND ASSESS

- **Example: *Report SESPAS.ES, ETC.***
- **Different types of economic analysis-evaluation:**
 - **COST-BENEFIT (CBA).** Equivalent costs and effects in monetary units.
 - **COST-EFFECTIVENESS (CEA).** Costs in monetary units and effects in usual clinical units.
 - **COST-UTILITY (CUA).** Costs in monetary units and effects on quantity and quality of life.
 - **MINIMIZATION OF COSTS (MCA).** Costs in monetary units and equivalent effects.

Is Economy useful for our health?

ECONOMIC EVALUATION. MEASURE AND ASSESS

TYPE OF ANALYSIS	MEASUREMENT OF COSTS	MEASUREMENT OF THE RESULTS
MCA	MONETARY	THERE ARE NO DIFFERENCES IN THE RESULTS
CEA	MONETARY	USUAL CLINICAL UNITS (E.G.: COMPLICATIONS AVOIDED, BLOOD CHOLESTEROL, ANGLE OF ROTATION, ...)
CUA	MONETARY	QUANTITY AND QUALITY OF LIFE (QALY)
CBA	MONETARY	MONETARY UNITS

ECONOMIC EVALUATION. MEASURE AND ASSESS

- *The basic idea of the QALY is simple: it assumes that 1 year of life lived in perfect health is worth 1 QALY (1 year of life x 1 utility = 1 QALY), and 1 year of life lived in worse than perfect health is worth less than 1.*
- *To see the exact QALY value, it is enough to multiply the utility value associated with the health status determined by years of life lived in that status (for example, years of life gained with an intervention).*
- *QALYs are expressed in units of “years of life lived in perfect health”, that is, quality-adjusted life years: half a year of life lived in perfect health equals 0.5 QALYs (0.5 years x 1 utility), the same as 1 year of life lived in a state with utility 0.5 (1 year x 0.5 utility).*
- *QALYs are illustrated as rectangular areas resulting from the product of sides defined by utility and time.*

ECONOMIC EVALUATION. MEASURE AND ASSESS. DISTRIBUTIVE EFFECTS AND INEQUALITIES

- Estimates tell us nothing about how health gains are concentrated and who are beneficiaries compared to others.
- For its purposes, from individualism "it is the same to extend the life of a single person by 40 years as it is to extend the life of each of the 40 suffering from a disease by one year" but for society and the health system it is not the same → Society cares not only how much health is achieved.
- Criterion **EFFICIENCY NOT THE ONLY GUIDE** in decision making (quantity & quality of life –QALY). To capture the value of innovation (**ADHERENCE AND PERSISTENCE**) and aging: use methodologies.

ECONOMIC EVALUATION. MEASURE AND ASSESS. DISTRIBUTIVE EFFECTS AND INEQUALITIES

- **NICE (and Sweden, Canada, Australia and the Netherlands): NOT ONLY FOR COST-EFFECTIVENESS: social value judgments are needed to weigh efficiency-equity.**
- **MEASURE SOCIAL COSTS AND RETURN ALSO (direct and INDIRECT costs in the social sphere (productivity losses and informal care) but only direct costs are required from the Manager).**
- **SHARED RISK MODELS (conditions public financing of treatment to economic evaluation after being on the market. Modality + extensive: payment by results)...**
- **MEASURE HEALTH RESULTS... Will they displace management by processes (BENCHMARKING)?**
- **MULTICRITERIA DECISION ANALYSIS-ADMC (include SOCIAL PREFERENCES in evaluation. Transparency).**
- **Multidisciplinary work and collaboration.**

5. Review of methodology and empirical evidence in Health Economics: Challenges and reforms for the future

- **Covid-19 pandemic and variants.**
- **Addictions (Alcohol, Tobacco, Drugs, Non-responsible online gambling, etc.).**
- **Chronic diseases, loneliness and Obesity.**
- **Aging: Life expectancy-% population over 65 years.**
- **The pharmaceutical market.**
- **Utilization and immigration.**
- **Digital health.**