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THE ECONOMIC VALUE OF HUMAN LIFE: A BIAS OF LIBERAL ECONOMIC POLICY

O VALOR ECONÔMICO DA VIDA HUMANA: UM VIÉS DA POLÍTICA ECONÔMICA LIBERAL

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Abstract: Life, having infinite value, must be saved at any cost. For this, "social isolation" was created so that lives are preserved. The problem question is to know what are the assumptions that support political choices and decisions? The study here is based on a descriptive theoretical study, rescuing the concept of value to be used as a management and decision-making tool in the elaboration of actions, strategies and public policies in health, and, more specifically, in the “economic valuation” of health. The analysis made use of quantitative data

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using the standard cost-effectiveness formula, the study sought to show that the equation could be improved by changing its ratio (benefits in the numerator and cost or effort in the denominator). It is concluded that the issue of the value of life and the economic value of life cannot be autocratically imposed either by the State or by those who consider themselves experts in the subject. However, the potential for adding value to life is the issue that needs to be considered. Finally, the study emphasizes the need to seek empirical validation with the different decision makers involved in the health sectors that would be used to quantify, in an absolute or relative way, the variables benefit and effort to value life.

Keywords: Life. Economic appreciation. Health. Politics.

Resumo: A vida, tendo valor infinito, precisa ser salva a qualquer preço. Para isso, se criou o “isolamento social” para que as vidas sejam preservadas. A questão problema é: quais são os pressupostos que sustentam as escolhas e as decisões políticas? Este estudo está baseado em um estudo teórico descritivo, resgatando o conceito de valor para ser usado como ferramenta de gestão e tomada de decisão na elaboração de ações, estratégias e políticas públicas em saúde, e, mais especificamente, na “valoração econômica” da vida. A análise fez o uso de dados quantitativos com o uso da fórmula padrão de custo-efetividade, o estudo buscou mostrar que a equação poderia ser aperfeiçoada, alterando a sua razão (benefícios no numerador e custo ou esforço no denominador). Conclui-se que a questão valor da vida e o valor econômico da vida não pode ser imposto de forma autocrática nem pelo Estado nem por aqueles que se consideram experts no tema. Mas, a potencialidade de agregação do valor da vida é a questão necessária ser considerada. Por fim, o estudo enfatiza a necessidade de buscar a validação empírica junto aos diferentes tomadores de decisão envolvidos nos setores da saúde que seriam utilizadas para quantificar, de forma absoluta ou relativa as variáveis benefício e esforço par a valorização da vida.

Palavras-chave: Vida. Valorização econômica. Saúde. Política.

Introduction

The different crises at the beginning of the 21st century have somehow raised some very old questions. One of them is the value of life, or rather the value of a life. Discourses considered politically correct, that life is priceless and the value of a life cannot be calculated because it is infinite, in no way contributes to adapting old concepts to new times. In fact, what this view achieves is to launch a big cloud of smoke that confuses more than it clarifies and does not point out acceptable ways for managing and overcoming the current crises.

A paradox, which was wide open in the pandemic crisis at the end of 2019 and beginning of 2020, is that life, having infinite value, needs to be saved at any cost. For this, "social isolation" was created so that lives are preserved. It turns out that with the extension of these isolations in time, the pandemic seriously damaged the economy and many individuals

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had their lives compromised, reaching the point of approaching situations of “hunger”, which the world knows so well, as was the case of hunger that shook the early days of the formation of the Soviet state, in the 20s and 30s of the last century. There, to free a people from the tsarist model, a more authoritarian state was created than the previous state itself [1-8].

Currently, horizontal social isolation may have minimized or saved individuals, but by breaking the economy, it condemned a larger universe of individuals. In short, in order to save lives, the political remedy could have been worse, creating hunger and misery. It is in the wake of this discussion that the debate on the value of life is reborn. After all, what are the assumptions that support political choices and decisions?

This question is very old and can be traced back to the first Western and Eastern philosophers. In the East, for example, 600 years before Christ, it was shown that life has a meaning, an objective, that it was to approach what is known as Unity and that there was a Path. The “most valuable” men were those who most managed to approach this Unit. In the West, the Greek philosophers showed and spoke of the need to form a State of greater value (monarchy, aristocracy and democracy). They also said that these could become states of lesser value associated with them (tyranny, oligarchy and anarchy). The latter would be a kind of deteriorated state architecture in relation to the former. At the same time, men associated with the first states had more value than those associated with the second. Example: the basis of aristocracy was honor, of great value, and the basis of oligarchy was power and wealth, which was of lesser value. So, the aristocrat has more value than an oligarch. The same reasoning can be made for the other State architectures (monarchy, tyranny, democracy and anarchy).

Aristotle, in his book “The Politics”, discusses the forms and architectures of the State and advances in the discussion showing that the passages from the States of greater value to those of lesser value can be the result of the search for material enjoyment to appease their passions in pleasure, for “... it is to obtain the superfluous and not the necessary that great crimes are committed. No one becomes a tyrant to get rid of the cold” (book second chapter IV). With this, it is evident that the States of lesser value were created and led by men of lesser value.

With the advent of the so-called Western religions (Jewish, Judeo-Christian and Islamic), whoever came closer to the messiah's guidelines, closer to God and, therefore, had more value. An example of this categorization of value are the Holy Men, who, being Holy,

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approached God, similar to the idea of Unity in the eastern context, and, therefore, have more value, so much so that they are revered. Another association that one can look for in life is in the management of warlike conflicts, where the most valuable kings and generals are those who manage to win, because the objective of war is victory. Men like Alexander of Macedon[1], Julius Caesar of Rome, and Napoleon were men of freat value on the military scene, as They won more than They were defeated.

The value of man, whether in the context of State architecture or in philosophy and religion, is always associated with expected results in terms of a consensual objective. Therefore, this value has a cultural basis, which means that it also needs to be contextualized at a certain time and in a certain place.

French writer Antoine de Saint-Exupéry wrote that “Although human life is priceless, we always act as if certain things outweigh the value of human life.” However, a little reflection is enough for us to understand that nothing has more value in life than life itself. We need to put life first – we cannot waste lives, or put other matters ahead of human life. The best way is to go back to our roots and become part of the ecosystem again, because by living a more sustainable life, with more respect for the environment, we will ensure that less lives are wasted due to environmental problems such as the greenhouse effect, pollution in the oceans, soil and air.

Taking a historical leap, one can remember the contributions of those considered fathers of modern economics (David Ricardo and Adam Smith, as well as Marx, a little later). Especially Ricardo, in a non-explicit way, showed that value, for any organization, is a function of the relationship between its results and its efforts to achieve these results. Simplifying, and considering a business organization, a company, value can be considered as a result of the ratio between revenue and cost.

Later on, Marx, in order to quantify this value, defined working time as a measurement parameter. To do so, it had to consider the different qualifications as a job for a specialized worker and a non-specialized one, as the former had a greater capacity to generate value for the organization. However, he continued to use labor time as a currency for quantifying value.

1 Alexander, because he was never defeated in battle, is almost a god in the military field. Its “value”, however, is not debatable, as it is a reference in the area of military strategy, which is its reference work. Therefore, the question of value needs to be referred to a certain area.

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At the end of the 20th century, beginning of the 21st century, the “Ricardian Equation”, which was widely used in the three Industrial Revolutions, underwent a small adaptation. Value came to be considered as the ratio between desire, instead of result, and effort, instead of cost, since it was accepted that value needs to be taken into account that those who determine it are the users or consumers of the products, whether these products are tangible or no. With this new orientation, the Marxist focus that was turned to production was shifted to the user or consumer. This, however, did not reduce the importance of previous theoretical constructions, as they were necessary to reach the current point. In the same way as philosophy, economics and its concepts are the product of a dialectical evolution strongly dependent on history and its theoretical trajectories.

When one wants to arrive at the value of life, after understanding the concept of value and its historical trajectory, it is important to determine what has been called objective. Man, as a social being, has as one of his objectives to live to contribute and collaborate with what can be called the common good. Accepting this, we have that the social and life value can be considered a relationship between social result and social cost[2].

$$Social\ Value = \frac{social\ result}{social\ cost} \qquad \text{(equation 1)}$$

That said, it can be considered that the most valuable individuals are, socially speaking: a) those who manage to leverage the social result, for a constant social cost; b) those who manage to reduce the social cost, for a constant social result or; c) those who manage to leverage the result proportionally greater than the increase in the cost associated with it. The result of this operation shows why soldiers, who leverage the social result through a perception of security, have more value than a murderer and thief, as the latter generates social insecurity. Therefore, less social result for the Community.

In all these situations, the life of an individual has generated what can be called “adding social value” (+ΔVS). This ability to add value, however, is a function of what can be called social objectives. These social goals are the modern equivalent of Eastern Unity and God for Western religions. In order to understand this relationship between value and social objectives, one can compare the two sociopolitical orientations that have been, roughly speaking, the

2 The initial criticism that can be made is the difficulty of quantifying the elements of the equation. Economists throughout history have partially overcome this difficulty by comparatively analyzing different situations. By doing this, one can, for example, assess that a product x has more utility than a product y, without needing a measure to determine the absolute utilities of x and y. With this, the utilitarian school can be developed without needing such a measure.

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hegemonic ones since the 19th century: the liberal ideology and the socialist ideology. For liberals, the result is for themselves and their family, as they consider freedom to be the greatest result to be achieved. For socialists, the result to be sought is equality. For them, the greater the equality, the better the social result.

Whatever the ideological orientation, more liberal or more social, the generation of the “common good”, which is the objective that will determine the value of an individual's life, needs to be associated with something quantifiable, just as Marx did with the time of work , “abstract work”. For this, some variables can be used, such as: a) amount of happiness, or amount of achievement; b) income level; c) number of “emancipated” people; d) level of satisfaction, and so on.

Some of these variables are easier to quantify, such as income, but the most difficult ones, such as happiness, can be classified based on the construction of scales, in this case happiness scales (very happy, happy, indifferent, unhappy and very unhappy, for example). An economic concept that permeates all the variables that can be considered in the measurement of value is the concept of utility. This concept, discussed at length by utilitarians, has already extended its boundaries and can be used perfectly to evaluate the different variables used to determine value. It is a sufficiently adequate way to approach the value of life in the modern or postmodern era. In the economic view, utility can be defined as the benefit felt or satisfaction obtained by the individual as a result of the consumption of goods or services.

The theory is based on the principle that the rational consumer acts to maximize his own utility. However, it should be noted that this objective can be achieved through consumption by another, as in the case of the use of health care by the most needy. The consumer feels satisfaction in knowing that these people have access to such a fundamental good for human life. The term utility also has another specific meaning in the health economics literature, particularly in the context of economic evaluation: it is used to name a quantification of the quality of life associated with the state of health. In this case, they are numerical representations (on a 0-1 scale) of individual preferences for certain outcomes, in an environment of uncertainty.

The Value of a Health Good or Service

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For many economists, the value of a good or service can be calculated from two ways: a) the scarcity of the good or service; and b) the amount of labor required to produce or supply. The exceptions would be special or rare goods or services (e.g. artwork by Monet, Velasquez, Van Gogh...), as for this there is no work capable of expanding their numbers, establishing that the value cannot be determined by the supply increase.

In the health area, it is practically consensual that the seminal work of Kenneth Arrow (Uncertainty and the welfare economics of medical care), published by the American Economic Review in 1963, was a watershed that marked the birth of health economics. In Arrow's view, the market for goods and services constitutes a unique market, and therefore, distinct from the norms that govern the welfare economy (welfare economics). Since entry into the healthcare environment is strictly restricted to those who have a medical license, competitiveness within the sector ends up becoming something more difficult to achieve. And that, for Arrow [9], can be considered as the “most striking departure from competitive behavior”. This phenomenon leads to and justifies the high salaries of physicians in this closed sector. Finally, Arrow [9] finishes his comparison with market prices. The economist declares that the price practice completely leaves the competitive scenario. In his view, because doctors are scarce, they know how much their customers will be willing to pay.

According to Arrow [9], all the special characteristics of the health sector deviate from the competitive market model. The expectation is that doctors, even though they sell services, always put the interests of patients above their own. At the same time, there is professional licensing and many other forms of regulation that run counter to the assumptions of how a perfectly competitive market should work. Given this circumstance, the specificities of the health sector require a customized theoretical construction that needs to start with the very concept of health [10,11].

Michael Grossman [12,13] elaborated a model that describes that the demand for health is a result of individual choice (individual conduct); time; and effort to obtain it. For the author, medical care is an intermediary product, a productive factor acquired by the person to produce health. Health is a stock (level depends on nature) subject to depreciation (rate will differ from person to person). In this sense, the author approaches the already consolidated concept of financial management, which is the Minimum Attractiveness Rate (MAR), which is individual and unique, both for the organization and for people. MAR is unique due to the ability of an organization or individual to be able to generate results from a set of theoretically stocked

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resources. With this, Grossman [12,13] makes his theoretical construction more robust, as it is supported by already sufficiently consolidated conceptual bases.

Grossman [12,13] treats health as: (a) a consumer good (this good gives satisfaction to the individual the greater the direct utility); and (b) investment good (the greater the stock of health, the fewer days of disability, the greater the productivity. For Grossman [12,13], people demand health and not health care. The demander of health goods and services is not looking for the service itself, but its effect on health. In this sense, the author sought to answer why individuals invest in health and concluded that the higher the individual's education and the wage rate, the greater the investment in health. With this logic, one can think of health in a similar way to the “cause-effect” relationship of the organizations' production architectures.

The Value of Collective Life

If a group or community of individuals were asked about the value of life, the answer of the vast majority would surely be "Life is priceless". This response would be involved by what is conventionally called “politically correct”. From the point of view of the individual this response seems natural. Economic theory refutes this view, stating that the price of human life can be calculated. A person's worth can be defined in relation to his future productivity, his expected remaining lifetime income or his expected contribution to accumulated production. This approach makes calculating a person's economic "worth" relatively easy and objective, since socioeconomic data are well documented and accessible, such as average life expectancy, employment rate or average earnings from work.

However, decisions that affect lives are not decisions taken only by individuals, but necessarily also by parliaments and public authorities on a regular basis. This implies weighing the preservation and extension of human life against the input of scarce resources. Examples of such decisions in the public sector can be found not only in healthcare. Other sectors, especially those related to transport and the environment, are just as complex.

Sennett [14], in his work, which has already become a classic in public management, addresses the same problem, but from a different perspective and states that “civility exists when a person does not become a burden for others”. When this happens, the value of an individual life becomes negative, because life itself becomes no longer pleasant, that is, it

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starts to have a negative result from the social point of view. In short: the value of individual life at a given moment becomes deficient as the cost (social burden) is greater than any benefits that life can generate (potential return to society).

Countries with a national health service or national health insurance generally allow political authorities to decide on new pharmaceuticals, new therapies and new devices to be covered by the plan. As a rule, cost-increasing product innovations that bring therapeutic advantages, often reducing the risk of early death in a given at-risk population, prevail. New drugs and other health technologies, as a rule, involve additional expenses. For example, providing a mobile coronary care unit at multi-million dollar total costs can help treat heart attack patients on the spot, serving to reduce the number of people dying before reaching the hospital.

In the long term, drug therapy of hypertensive patients using antihypertensives can prevent a heart attack as well, at considerable cost to the economy in pharmaceutical research and development. Another well-known example is the installation of dialysis equipment for patients with chronic renal failure. High-cost equipment, but guaranteeing survival for people who need treatment.

Outside of healthcare, there are numerous other examples where "life" and "costs" have to be pitted against each other. Communities and countries need to decide whether notorious crash sites, for example, tight blind bends, should be eliminated by road widening and correction. In residential areas, the opposite may be appropriate. Planting trees and installing bumps can improve environmental conditions and reduce the risk of accidents with children.

The environmental policy provides additional cases. Safety systems in nuclear power plants not only reduce the probability of catastrophes with thousands of deaths, but also the emission of radiation, exposing the population to a greater risk of diseases, such as leukemia (see the case of Chernobyl in 1986). Expensive filters that trap sulfur dioxide and other harmful substances from burning coal serve to improve air quality and reduce the incidence of respiratory illnesses.

In all of the above areas, rational decisions cannot be made by authorities unless there is a comprehensive and accurate assessment of the future benefits (and possibly disadvantages) resulting from a specific measure taken, allowing comparison with the present value of the associated cost stream to the project. To help decision makers, costs and benefits

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should ideally be proportionate. For this to be possible, it is necessary to have a common unit of measurement. Since project cost is usually measured in monetary units, it makes sense to measure all benefits the same way. Obviously, this implies that the extension of human life or the improvement of the state of health due to the realization of a project must be evaluated in monetary units as well.

An assessment of health and, a priori, of human life in terms of money, however, encounters considerable objections. For this reason, economists have developed alternative valuation methods that are not based on simple monetization.

Approaches to Economic Valuation of Life

The various approaches to health economic evaluation compare the benefits of a health intervention to its cost. With regard to the benefits of the intervention, three alternative units of measurement can be divided into: a) natural units on a unidimensional scale; b) units of a cardinal utility function that maps the multidimensional concept of health onto a scalar index; and c) units of money.

As for the measurement of benefits in natural units, the "natural" scale can be a clinical parameter such as the reduction in blood pressure in mmHg or the duration of life in years. Measures of this type are meaningful only in cases where the alternatives (for example, carrying out an intervention or not) differ in only one specific effect and have no side effects. In the first example, the comparison might be between different types of antihypertonic drugs without side effects and, in the second example, traffic interventions that can prevent fatal traffic accidents.

When the corresponding evaluation method is called Cost-Effectiveness Analysis (CEA), the first independent interventions are interventions whose costs and benefits are not affected by other interventions. Examples are heart transplants. The benchmark is the "average cost-effectiveness ratio" (ACER). Efficacy is measured by lifetime:

$$ACER = \frac{costs\ in\ monetary\ units}{benefits\ in\ life\ years\ gained} \qquad \text{(equation 2)}$$

If interventions are mutually exclusive, when, for example, two drugs are incompatible for the same condition, then consideration needs to be given to the rate at which increased expenditures may achieve additional benefits. For this reason, "incremental cost-effectiveness

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ratios" (ICERs) can be used [15]. The ICER of an intervention is defined as the ratio of incremental costs to benefits compared to the next effective intervention.

$$ICER = \frac{additional\ costs}{additional\ benefits\ on\ natural\ units} \qquad \text{(equation 3)}$$

Average cost-effectiveness ratios for stand-alone interventions can also be considered incremental because they are compared with the 'do nothing' alternative. All interventions can therefore be classified according to their cost-effectiveness. Interdependencies between the benefits and costs of interventions can be taken into account by defining combinations of interventions as the unit of comparison [15].

The cost and the cost-benefit ratio generated by the intervention are not enough to determine the value of human life, but they represent a gigantic advance in the sense of monetizing the benefits related to the continuity of life or the improvement of the quality of life. These two elements, “quantity” and “quality” of life, are fundamental elements when trying to design a concept or a criterion for economic evaluation of life[3].

Human Life Valuation Methods

The vast majority of society does not accept the valuation of the value of life. However, all individuals unconsciously define the value of life. By taking risks on a daily basis, such as not buying an airbag, for example, one is defining the value of lives. According to traffic medicine statistics, the probability of a life saved by the airbag can be estimated. Well, if the device has a cost and you refuse, for whatever reason, to pay for this item, you are running an additional risk of death. By making a simple rule of three involving the cost of the airbag and

3 Health programs produce common benefits such as reductions in mortality and increases in life expectancy. Economic evaluation of these programs sometimes requires quantifying the value of human life, a task for which there are three main approaches. The human capital method is based on measuring the expected income for people affected by the program. It has been deeply criticized for considering only the productive potential of individuals and for undervaluing the lives of the elderly, disabled or women. The method of implicit values in social decisions seeks to infer the value of life from decisions previously taken by the State. For example, if a mandatory market introduction program for pill packs with safety caps were rejected by the Government, and the cost per avoided death had been calculated at 4000, then it could be said that the average value of life of individuals at risk (children, for example) would be less than 4000. The main problem with this method is the variability and inconsistency of the decisions taken. The last method, called the value of risk prevented or willingness to pay, is based on asking individuals to identify the maximum amount they would be willing to pay to achieve a reduction in their probability of dying. Of the three methods, it is the one that best fits economic theory. However, some authors argue that it would be dangerous to base health planning on judgments that are known to be conditioned by consumer ignorance in the health market.

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the probability of death with and without the airbag, the value of life is quantified in monetary terms.

From these citizen decisions and other similar examples, the value of human life in developed countries has been estimated at between $5 million and $8 million. It is about the value of a human life from a statistical point of view. A few examples from developing countries estimate the value of human life at about 1/2 to 1/3 of that value. These monetary values, presented in absolute form, are a function of a series of considerations that are, to say the least, debatable.

If individuals value their lives at any number of dollars, is it right for the state to consider them worth more than that? Theoretically, public policies should, at most, value life as much as the average citizen values it.

One of the most accepted theories for calculating the value of human life is the human capital theory. It calculates the capacity, aptitude and specialization possessed by the individual, which allow him to generate desirable results, such as increases in income or health. Similar to physical capital formation, eg. construction of buildings, periods dedicated to formal and informal education are considered as human capital formation. In Grossman's health demand model [12,13], good health is interpreted as a lasting good that produces a desired flow, which is called healthy time free of disease. Each individual is endowed with an initial stock of health which, like other forms of capital, tends to depreciate over time. Such depreciation can be mitigated by investing in the health stock, which implies healthier nutrition, good education, appropriate health care, etc. In this context, the demand for health care has no reason to exist, but derives from a more fundamental demand, that of health itself. Although in its original version Grossman's model was not very accessible to non-economists, given its mathematical abstraction, it is today a keystone in the analysis of individuals' behavior in relation to health.

Arguments Against a Finite Value of Life

There are, in principle, only two possible approaches to determining the value people place on their lives. It is necessary to know: a) the amount that someone would be willing to pay to avoid certain (and immediate) deaths; or b) the compensation that would have to be paid to someone to accept (immediate) death.

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The amount determined according to formulation (a) is not very useful, as most people would be willing to give up all of their wealth, including most of their future income stream, except a small reserve for subsistence, at the same time. face immediate death. Therefore, the alternative that remains is about an individual's wealth and ability to obtain credit, as a function of his preferences.

Question (b) will fail to ask for a limited amount for the simple reason that the money is not good for the dead. This seems to result in an indeterminate value of life. This indeterminacy, however, can be resolved by noting that formulation (a) implicitly assigns the “property rights” to life to someone else. Only alternative (b) says that the individual has the right to live and give up voluntarily. Given the right to live, the correct "value of an identified life" must be infinite. This line of thought goes back to John Broeme [16], who opposes a distinction between identified and statistical lives, since, in his opinion, the latter concept involves incomplete information about who will lose their lives. If statistics allow it to be said that, in the course of a construction project, a worker, who is not yet identified, is going to be killed, that statistical life is indeed infinitely precious. When the veil of ignorance is lifted and the name of the victim known, approach (b) would demand infinite compensation for the loss of this identified life [16-19].

Otherwise, the most relevant decisions regarding life and death seem to involve small risks that can be avoided (or should be accepted). In these situations, limited amounts of money might be expected to be sufficient to compensate an individual for taking a risk[4].

There are countless examples showing that people are willing to risk their lives for pleasure, comfort or excitement. Activities such as smoking, driving without a seat belt, traveling by car or plane rather than by train, and riding a roller coaster show that avoiding small risks is not infinitely valuable to people.

Because individuals clearly act as if their lives have only finite value, the government must not (implicitly or explicitly) assign an infinite value to life when making decisions in the

4 The flaw in the author's argument is revealed when one looks more closely at how he builds his case. It is very difficult to imagine a risk where the number of victims is known with certainty in advance. In most cases, it cannot even be said with certainty that there will be victims. For example, a bend in the road may cost an average of one human life per year in the past. This, however, does not mean that exactly one person will die during the next year. On the contrary, observing exactly one death during a given year is a rather unlikely event. Considering 100,000 road users per year, each of whom face a 1 in 100,000 risk of being killed in an accident, the individual statement that I will die, but not individuals j, k, is very strong indeed, implying perfect negative correlation between individual risks. Assuming stochastic independence or even positive correlation, which is much more plausible when talking about accidents, there is a strictly positive probability that no one dies while there is a positive, albeit very small, probability that all 100,000 people die. The total number of victims is therefore unknown, making 'statistical life' the relevant concept for an economic evaluation of security measures.

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public domain. Otherwise, inefficiencies due to the discrepancy between the costs of lives saved in the public and private domains would result. This discrepancy could only be justified if external effects were present.

The Reserve of the Possible

When examining the problem of the value of life from the perspective of public management, all measures that involve raising the quantity and quality of life generate additional expenses from the public budget. For these questions, a theory called the Reserve of the Possible emerged.

The theory of the Reserve of the Possible originated in Germany in the year 1970, through a case presented before the German Court. It was decided by the German Supreme Court that the State can only be required to provide for the benefit of the interested party, provided that the limits of reasonableness are observed.

Originating from German law, in the year 1970, a judgment led to the Court, assessed a theme on access to public university education, which delivered its decision based on the principle of the Reservation of the Possible, claiming that the law was coherent, however, the State did not have enough resources due to a major crisis that the country was experiencing. Therefore, he had no resources to provide such a right. You can't talk openly about rationing, but it is practiced all over the world, all the time by governments, by health plans and even by families who decide how much they can or are willing to spend on their patients. The simplest form of rationing is to exclude part of the population from accessing healthcare, or create barriers that make it difficult (long queues to get an appointment, waiting months for an exam, irregular distribution of medication). This type of rationing, as a rule, causes the aggravation of diseases that are no longer detected and treated in the initial phase. With this, more money is spent and the chances of cure decrease.

If rationing is inevitable, it better be explicit and planned. At the same time, the rules need to be clear and valid for everyone. Decisions are especially difficult in the case of very expensive treatments that, instead of curing, only prolong life. The constant tension between individual right and collective interest suggests the creation of an agency along the lines of the National Institute for Health and Clinical Excellence (NICE) in the United Kingdom. The agency

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evaluates the costs and benefits of health products[5]. The body allows decisions to be adopted based on science, common sense and consensus.

The mission of establishing a balance between what is desirable and what is possible is entrusted to mathematical tools created to compare the benefits offered by different forms of medical care. Or, in technical jargon, point out the cost-effectiveness of a given product or service. The choice of mathematical model is not just a scientific or economic issue. It also raises an ethical issue. Imagining a life expectancy of 80 years and thinking about teenagers and generic seniors, saving the life of a 10-year-old teenager represents a gain of 70 years. Saving the life of a 75-year-old counts as a five-year gain. This suggests that saving one teenager is equivalent to saving 14 75-year-olds. The evaluation of cost-effectiveness in the process of choices. The World Health Organization recommends that interventions be called cost-effective when one year of healthy living costs one to three times the per capita GDP of the country. In the view of many, cost-effectiveness assessment methods are not perfect, but they allow for equitable distribution of resources (20).

This balance between the desirable and the possible needs to be negotiated with society, as proposed by NICE. Villanueva (21) shows, quite clearly, that “the government's belief as the central actor sufficient to make its industrialized societies function from the 1970s onwards”. Further on, he works with the question of the necessary articulation between State, market and society, which the author calls social organization. The concept that supports this relationship and that will need to support the concept of the economic value of life is “negotiation”, as well as transparency and social participation. Only in this way can one hope to arrive at a concept of value that can be considered legitimate (22).

The idea is not to put a price on life, but to distribute finite resources so that they are available to all people in the best possible way. The central issue is that unfortunately there are no resources (even in the richest countries) to offer all the knowledge already available in health to all citizens. The authors (23-26) are affirmatively positioned with the idea.

5 NICE also holds meetings with representatives of society (patients, doctors, pharmaceutical industry) to discuss what should or should not be offered by the National Health Service (NHS), which pays for 95% of all health care in the country. What Nice decides to offer goes for everyone. If the decision on what to offer the patient is up to the physician, he, in theory, tends to want to use more medication. If the decision is left in the hands of the government and health plans, there will always be a temptation to cut costs.

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Analysis of the "Value" Approach

When using the cost-effectiveness criterion to decide economic aspects related to health there are two issues that need to be raised. They are: a) robustness as a function of the decision universe that uses method e; b) the conceptual fragility of the criterion, since the mathematical formulation of cost-effectiveness is exactly contrary to the concept of value that has always been used by economics [27].

It is on this second aspect that this work is based to build an indicator, even if it does not generate absolute values, to quantify the economic value, or more specifically, the "economic value added to life" that is aligned with the entire history of the concept of value developed since David Ricardo.

For this to be accomplished, a dilemma must be overcome, which will be called the "moral dilemma", and a paradox must be overcome, which is the paradox of political correctness, which can also be called the "infinity trap".

As for the moral dilemma, it is clear that monetization, whether absolute or relative, cannot be compared with the monetization of the slavery period, when it was possible to "buy" slaves at a certain price. In parallel with this initial consideration, it is essential to consider that the resources to extend life, whether in terms of number of years or quality of life itself, are finite and limited. Faced with this situation, in order to make a decision, whatever it may be, it is necessary to have a set of objective criteria that are possible to use. The criterion that can be used today is that of 'cost-effectiveness'. This criterion represented a great advance towards overcoming this moral dilemma of the unfeasibility of monetizing the value of a life.

The "cost-effectiveness" criterion, despite its wide acceptance, reverses the order of the elements of the value equation, in addition to using the concept of effectiveness in a slightly different way from that used in public management[6].

Effectiveness, theoretically, is the relationship between the result of an action, project or policy, with the problem that generated and provoked this action, the same project or policy. Faced with this reality, the "cost-effectiveness" criterion would gain strength if it were thought of in terms of "cost-result". These elements, here called results or benefits, are conceptually

6 The NICE (National Institute Center of Excellence) is a reference body in the elaboration of evidence-based guidelines. Through NICE, the UK public health system is able to more reliably establish which drugs, treatments and devices represent the best quality care at the lowest cost. When a device or treatment is recommended, NICE promotes a guideline that establishes a "standard of care".

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the same as those described by Aristotle in the first book, chapter V of Ethics and Nicomachus, which later on Rawls [28] will call the Aristotelian principle. For the Greek “there are three main ways of living life: pleasure and dedication to its enjoyment; … political action; … and the one dedicated to contemplative activity [29].

Rawls [28], using the three ways of “living life” as a basis, discusses the choice of a good in a rational way, states that three elements need to be considered in this equation. They are: a) the broad characteristics of wants and needs; b) human capacities and abilities; c) general facts of social interdependence. For the author, “taking these contingencies into account, restricts the number of alternative plans, and the decision problem forms, at least in some cases, reasonably defined”.

Another important consideration when discussing the moral dilemma, and more specifically what Aristotle called “living life”, is what Deaton [30] shows and what can be called the unequal evolution of communities, since longevity, especially after of the 2nd World War, began to change very strongly. In terms of longevity (number of years of life), which is one of the subvariables of the “outcome” or “benefits”, along with quality of life”; “Japan, in 1950, was in the last position, and now the first” [30].

In terms of “quality”, Arendt [31] shows that what she calls “active life” is linked to three fundamental activities: work, constructions and action. For the author, “work is the activity that corresponds to the biological process… construction is the activity corresponding to the unnaturalness of human existence … and action corresponds to the human condition of plurality”. That said, both the quantity and quality of life can be evaluated based on criteria, which can be monetized in some way or evaluated only in a comparative way.

Parallel to this issue of quantity and quality of life, there is yet another pertinent issue when discussing the moral issue, which is the one that relates the individual and his social environment. Dworkin [32] is quite clear when he discusses what he calls the principle of dignity, using the Kantian theory as a basis. “Adequate respect for oneself entails an equal respect for the lives of all human beings… to respect yourself, you must assume that their lives, too, matter objectively” [32].

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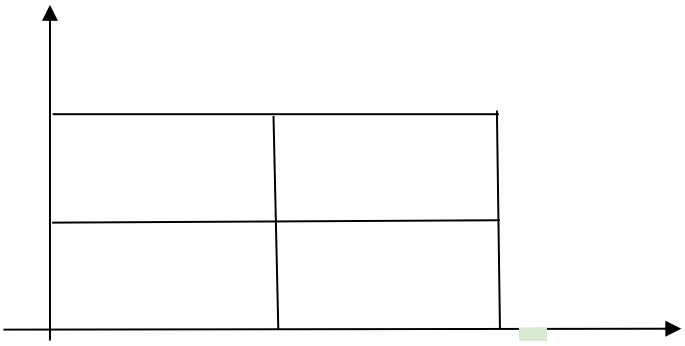
“Value” results

That said, the evaluation of “results” or “benefits” can be the result of an economic equation formed by four elements that can be taken from a 2 x 2 matrix, focus-criterion, and each element of this matrix may originate from the criteria described above:



$$Result = R_{11} + R_{12} + R_{21} + R_{22} \quad \text{(equation 4)}$$

Source: Authors (2022).

The other element of the equation is cost, cost can be assessed using any established costing method. One possibility to extend this element is to consider this element as “effort”, where the cost would be a sub-component. The advantage of using “effort” is that many times, especially in public health management, it is difficult to monetarily quantify some actions, initiatives and projects that involve time, knowledge and dedication. As a final result of rebuilding the “cost-effectiveness” criterion, the “benefit-effort” criterion can be adopted.

As for the inversion of the elements of the equation, when working with the concept of value, the result or benefits are in the numerator and the costs are in the denominator. This simple inversion, which could be represented as “result-cost” or “benefit-effort”, can establish a better way of measuring effort in order to quantify the economic value of life [33-35]. Another consideration is that, with this inversion or with the direct use of the value equation, which is result/cost, it means that a life that has greater potential for results (or benefits), whether social

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or individual, in theory has more value than another with lesser potential. This is easy to identify, as the result is in the numerator. The same can be seen with cost: a lower social cost (which is in the denominator) generates potentially greater value. In this way, the value equation, which has been used for a long time, is more adequate to show, in an absolute or relative way, the economic value of life:

$$value = result\ (or\ benefit\ \ / \ cost\ (or\ effort)$$ (equation 5)

The second problem that needs to be overcome is the "infinity trap". This problem (paradox) is more easily solved. When we say that "life is priceless", we are considering that this assertion is for "all" lives. It would be better, then, to say that all lives are priceless, sustaining a view of life egalitarianism. Therefore, if all lives are equal and their "prices" are equal and more, they are equal to infinity. In this way, if all lives are equal to infinity, it follows that they have a price and this price is infinite. So, the statement that life has no price does not hold, because it keeps a non-explicit consideration that value is infinite[7].

Having overcome the moral dilemma and the paradox of the infinite trap, one can arrive at the value of life. Taking into account that this value will always be used to make a decision, often in the field of public policies, it would be enough to have the "added value" (ΔV), since the highest added value would be preferable to the lowest value aggregate. So, you can use the value of life relatively, without having to monetize it absolutely, as has sometimes been done:

$$\Delta\ value$$ =Δ benefits (or result) / Δ cost (equation 6)

When you can rely on relative values (potential to add value), you have a sufficient tool to make a decision maximizing social well-being.

$$\Delta\ value\ \boldsymbol{j}\ > \Delta\ value\boldsymbol{i}$$ (equation 7)

When the choice is between "i" and "j", "j" will be preferred to "i" if it adds more value. This way of working the economic concept of the value of life, in a relative way and not quantifying life in an absolute way, while not being monetized in a unitary way, circumvents the moral dilemma and overcomes the paradox of infinity. With this, you can have a tool to be able to make decisions, supported by objective criteria.

7 Given this, the best one can do is implicitly disregard this "politically correct" statement in an unsustainable way.

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Final considerations

Almost all individuals believe that the value of human life is inestimable. However, economists, despite not being able to say how much a person's existence is worth, are looking for ways to calculate how much the average person is willing to pay to reduce the risk of death, which allows them to put a price related to the collective value to save a life.

In this sense, the article sought to carry out a theoretical essay, rescuing the concept of value to be used as a management and decision-making tool in the elaboration of actions, strategies and public policies in health, and, more specifically, in the “economic valuation of life”.

Based on the discussion of the standard cost-effectiveness formula, the study sought to show that the equation could be improved by changing its ratio (benefits in the numerator and cost or effort in the denominator). With this, the already established concept of value, long used by economists and managers, could be rescued. For this transformation to be operated, it would be necessary, in theory, to legitimize it, which would necessarily involve negotiation between all stakeholders.

A new concept, which involves an issue as delicate as the value of life and the economic value of life, cannot be imposed in an autocratic way, either by the State or by those who consider themselves experts in the subject. Transparency, negotiation and broad participation are needed even to establish the criteria and parameters of the very concept presented in this study, which is the potential for adding value to life.

The limitations of the study are in the theoretical discussion, without having an empirical proof and, in parallel, in the non-operational specification of the subvariables. These sub variables need to be attested in more depth, both theoretically and empirically, so that an equation can be arrived at that is operationalized.

Finally, additional studies should seek this empirical validation with the different decision makers involved in the health sectors that would be used to quantify, in an absolute or relative way, the benefit and effort variables.

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