5. Empirical methods in health economics

Hello, I'm Sandy Tubeuf, associate professor at the University of Leeds. I'm going to introduce the methods used in health care economics. Two major types of methods are used in this field: medico-economic evaluation and survey data analysis. These are empirical methods. What is medico-economic evaluation? Medico-economic evaluation is very useful for policy makers, who can base their decisions on health care economists' analyses to decide, for example, which treatments to offer patients from the basket of goods and services available to them. Health care economists compare different treatments, focusing on two things: 1) benefits to the patient's health, gains in their health, changes thanks to treatment, and 2) the difference between costs: the cost of patient management, the cost of drug production and delivery, but also of further treatments throughout the patient's life. Medico-economic analysis uses three main methods. Method 1: cost-benefit analysis. Nowadays, cost-benefit analysis is much less frequently used to make health-related decisions. Why? Because it does not measure the health benefits themselves; it values the benefits of new treatments in monetary terms. This method can be difficult to apply, since determining the number of years gained due to treatment or the time lost in a hospital bed is a complicated task. Policy makers therefore rely on what we call cost-effectiveness analysis. Method 2: cost-effectiveness analysis. This analysis covers two aspects: costs and health. Here, costs are also, financially speaking, the time individuals spend at the hospital, the treatment they receive, the fact that for certain cancer treatments, they need to have scans or X-rays done. All of these costs are accounted for. But if we're more interested in health status, how do we measure it? Cost-effectiveness analysis can measure the years of life expectancy gained by an individual thanks to treatment. We can also look at pain, on a scale of pain felt, to see if a treatment diminishes pain. We can very well imagine this in the case of vaccination. Yet when you want to compare different treatments, using different measures for health outcomes makes comparing very difficult. The policy maker wants to be able to compare the treatments from the basket of goods and services patients receive to know whether or not they are a good investment for the available budget. Cost-effectiveness analysis has its limits. Whereas some diseases can be compared by the number of years of life gained with treatment others are more easily interpreted in terms of gain on a scale of mobility. When it's time to make a decision, we compare things that can't necessarily be compared. So we use a more sophisticated method: cost-utility analysis. Method3: cost-utility analysis. Utility is a very popular concept with economists. It allows for a multidimensional analysis of an individual's health status. It allows us to measure both quantity of life, how much longer a person survives thanks to a specific treatment, as well as quality of life, making it a combined measure. This concept is called quality-adjusted life years, the years of life adjusted to the quality of life during those years. Cost-utility analysis makes it possible to compare treatments used for very different diseases: for example, comparing applications of cancer treatments and neurological disease treatments on the respective diseases. We compare the way a treatment improves people's lives, how much more time they live because of treatment, and their quality of life during that time. Cost-utility analysis is preferred because it allows us to compare different treatments. It is a widespread medico-economic analysis that guides in decision-making and gives an idea of the gains and costs that the decisions entail. I also mentioned other kinds of methods used in health care economics: survey data analysis methods.

In this case, the tool of choice is applied microeconometric analysis. Applied microeconometric analysis: the main tool for survey data. Essentially, economists look for the causal mechanisms that explain the different health outcomes between individuals, the differences in terms of health care consumption or the differences in their risky behaviors. It's difficult to present all the methods used in applied econometrics since there are many and they are constantly evolving. I simply want to underline three important aspects of health economics that make health microeconometrics quite different from microeconometrics applied to other fields. First, measuring health: by observing survey data, the way we assess the health of individuals is subject to an objective or subjective frame of analysis. Many people think they are in more or less good health, coming to their own conclusions. The decision-maker may wonder what data to trust if they want to measure the number of diseases an individual has or their self-reported health, chronic diseases or limitations. There are a number of health indicators that can be used. Economists must ask themselves what is the best way to analyze and estimate models from these findings which are mostly categorical, or qualitative, as a statistician would say. The second very important aspect of this survey data is that some of it is cross-sectional, i.e., true at a given time for a certain population that is not tracked. Each new piece of cross-sectional data represents a new sample of population. Here as well, econometric methods must take into account the fact that this population has probably changed. The third main aspect, which is beginning to be debated in France and which has already been implemented in England, is the arrangement of groups of individuals. When information is collected on a group of individuals from birth with a lifelong follow-up, it becomes more worthwhile to carry out causal analyses that explain the differences in behavior between individuals with similar health outcomes. Now you have an overview of the methods used in health economics. It is not exhaustive, but it gives an idea of the scope of empirical analysis in our field.

5. Empirical methods in health economics