FEDERAL RESERVE BANK of ST. LOUIS
CENTRAL TO AMERICA'S ECONOMY®

REGIONAL ECONOMIST | FOURTH QUARTER 2020

https://www.stlouisfed.org/publications/regional-economist/fourth-quarter-2020/should-social-distancing-be-mandatory-during-pandemic

Should Social Distancing Be Mandatory during a Pandemic?

KEY TAKEAWAYS

- The economic concept of an "externality" is important in understanding the policy debate surrounding COVID-19.
- Lack of social distancing by one person during the pandemic creates an externality: a higher risk of infection for all.
- Social distancing should be mandatory because people left to their own devices do not internalize all its benefits.


Luis Alvarez/DigitalVision/Getty Images Plus

Guillaume Vandenbroucke

The economic concept of an "externality"—a cost or benefit imposed by one or more parties' actions on another who has no say in the matter—is critical to understanding the policy debate surrounding the COVID-19 pandemic.

Just as drunk driving creates a negative externality (by increasing risks for other parties on the road) that can be avoided by regulation, normal socializing during a pandemic also creates a negative externality that can be avoided by regulation, such as an early mandate to socially distance.

The term "social distancing" is used here as a catch-all for measures that may reduce the person-to-person transmission of the virus, such as physical distancing, mask wearing, reduced travel and other preventive efforts. This article reviews the concept itself and then discusses its application to the pandemic.

Externalities in General

These are some classic examples of externalities:

- A person smoking a cigarette imposes a negative externality, or cost, on those around him. They are exposed to secondhand smoke but did not have a say in the "smoking decision," and they are not compensated for the cost they bear.
- A person drinking too much and then going for a drive imposes an increased safety risk on other drivers and passersby.[1]
- Noise and pollution are other examples of negative externalities.
- Externalities also can be positive. For example, a farmer plants trees that provide benefits to a nearby beekeeper. The beekeeper can benefit from the presence of the trees, even though he was not party to the farmer's decision and did not compensate the farmer for it.

- Another positive externality is when a person's yard is beautiful enough to enhance the neighborhood, even though that person is not compensated for the service the yard provides to passersby or adjacent property owners.

Externalities affect economic outcomes: A negative externality resulting from production (e.g., pollution) leads to "overproduction," because if the polluter had to compensate those bearing the cost of the externality, it would produce and pollute less. This overproduction leads to excess costs to society—in this case, excess pollution.

A negative externality resulting from consumption (e.g., noise from loud music in the middle of the night) leads to overconsumption for the same reason. Conversely, positive externalities result in underproduction and/or underconsumption.

Costs and Benefits

Externalities are traditional justifications for government intervention and regulations. Take alcohol and driving, for example. It is not optimal for society that people should drive under the influence of alcohol, because many who are not party to the drinking decisions are impacted: They face more risk on the road than they are willing to take. Therefore, the cost to society is more than the cost to the individual drinker. As a result, absent any regulations, there would be too much drunken driving or overconsumption of alcohol.

Take pollution as a second example. A firm may produce and pollute, but the pollution does not impact just the polluter. The cost to society is, again, more than the cost to the individual decision-maker. Absent any interventions or regulations, there would be too much pollution, or overproduction. One such intervention would be to allow the polluter to pay third-party individuals to obtain the right to pollute. Such payments sometimes take the form of a tax.[2]

When some of the costs or benefits of decisions are not considered by decision-makers, economists say that these costs or benefits are not "internalized."

Externalities in the COVID-19 Pandemic

Think of the early months of the COVID-19 pandemic. Suppose, for the sake of argument, that no policy decisions had been made; that it was already known that the virus can transmit from person to person through respiratory droplets; that there were few-to-no reliable tests; and, importantly, that it was known that there are asymptomatic carriers of the virus.

The decision-maker is an individual—neither a firm nor the government. Among many other things, individual decisions have to include how many social interactions to engage in each day. The benefits of social interactions are many, but for the sake of this discussion, let us assume that the dominating benefit is the ability to work and, thus, to earn an income. The cost of social interactions is, evidently, the risk of contracting the virus.

What are the externalities, if any, associated with a person's decision to engage in more social interactions? There are, in fact, two different externalities. The first is similar to that of a drunk person taking to the road or to a producer polluting: When an infectious person becomes more social, third parties are immediately more at risk of becoming infected with the virus.

If it were possible, the infectious person could pay third parties to be allowed to go out, just like a polluter would pay to be allowed to produce. Conversely, society could pay the infectious person to stay at home. This could take the form of compensations such as unemployment benefits for those who could not go to

work. These payments reveal the negative externality of social interactions: Absent any interventions or regulations, there would be too many.

The second externality is different and deserves more explanation. A person does not internalize the effect of his or her own behavior in the evolution of the virus over time. When an infectious person becomes more social, secondary infections follow. The number of such secondary infections is the often discussed "reproduction number."[3] Each secondary infection snowballs into further infections.

An individual does not internalize this effect, just like he does not consider that purchasing a cup of coffee affects the price of coffee, or that his vote turns an election around. It is precisely because a person does not internalize the effect of his behavior on the future evolution of the disease that there is another externality.

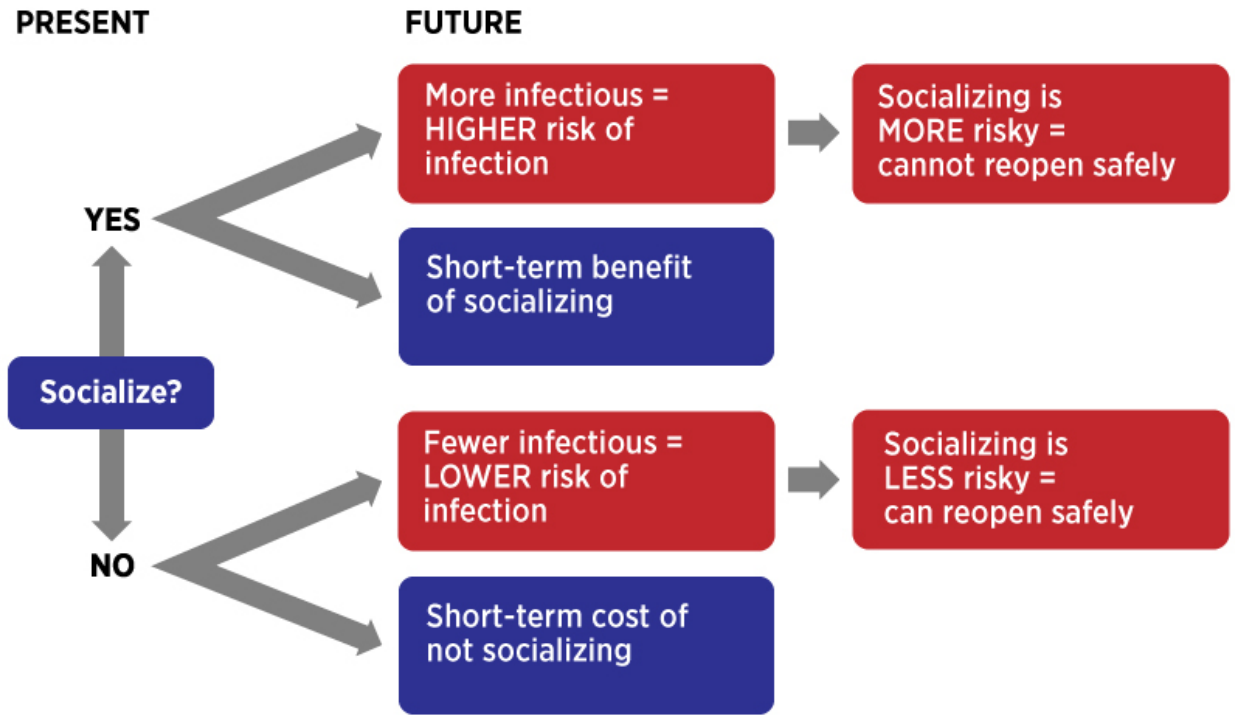
To understand this, consider an immediate mandate to socially distance when the virus breaks out. The mandate reduces the number of infections and, therefore, the number of secondary infections. Sometime later, fewer infectious people are in the population than there would have been without the mandate.

With fewer infectious people, the risk of new infections diminishes, and it becomes possible to relax the social-distancing mandate without risking a spike in infections—and it becomes possible to reopen the economy.

This latter point is somewhat obvious but worth emphasizing. New infections result from social interactions within a population with a large enough proportion of infectious people. Reduce the proportion of infectious people, and you can raise social interactions without getting a spike in new infections.

Why Socially Distance?

This discussion points to a benefit of an early social-distancing mandate: the ability to lower the future proportion of infections and, therefore, to reopen the economy (or to relax social-distancing measures without creating further infections). This benefit to society, however, is not internalized by individuals. So, the benefit of early social distancing is lower for an individual than it is for society. It follows that social distancing must be less than optimal for society in the absence of an early mandate.



Red: effects at the level of society
Blue: decisions, costs and benefits internalized by an individual

This discussion would be quite different if there were no asymptomatic carriers of the virus. In the extreme case in which infectious people would be immediately sick and quarantined, an asymptomatic person would not put anyone at risk by being social: The externality would not exist.

An important aspect of the argument here is the assumption that most people are not altruistic. If they were, in the sense that they cared not just about themselves but about society as a whole, then such considerations would be irrelevant. By definition, altruistic people caring about society as a whole would internalize all the costs and benefits of their actions. There would be no need for government interventions in such a world.

Conclusion

Social distancing should be mandatory in a pandemic such as COVID-19 because there are benefits of social distancing that cannot be internalized by individuals. In particular, the possibility of an early reopening of the economy is not viewed as a benefit of social distancing by a single individual, because individuals do not internalize the effects of their own decisions on the evolution of the disease over time.

Endnotes

1. Driving is risky in the first place, of course. The externality stems from the fact that when Person A decides to drink and drive, Person B has no say in the additional risk that Person A brings to the road.
2. The opposite solution is conceivable: A third party could pay the producer to reduce its pollution.
3. The reproduction number is the number of secondary infections generated by one infectious person in a population in which all are susceptible to the virus. When the reproduction number is above one, the virus

can spread rapidly into the population. When it is below one, the virus eventually disappears. Studies estimate the reproduction number for SARS-CoV-2 (which causes COVID-19) to be above two.

ABOUT THE AUTHOR

Guillaume Vandenbroucke

Guillaume Vandenbroucke is an economist and research officer at the Federal Reserve Bank of St. Louis. His research focuses on the relationship between economics and demographic change. He joined the St. Louis Fed in 2014. Read more about the author and his research.