



ECONOMICS IN ONE VIRUS: CHAPTER 2

Should I be free to risk infecting your grandma with a deadly virus?

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GRADE LEVEL: 9-12 (ADVANCED)

TIME ESTIMATE: 45-60 MINUTES

Lesson Overview

Students will describe externalities in their day-to-day lives and those associated with illness, especially COVID-19. Students will use the circular flow to demonstrate the effect of COVID-19 infections on the overall economy using hypothetical headlines. Students will generate solutions to internalizing externalities to achieve positive social goals. Students will evaluate different public policy options based on how well they internalized the economic externalities of COVID-19 infection.



Objectives

- Students will be able to describe positive and negative externalities.
- Students will be able to explain how public policy can help internalize externalities to achieve positive social outcomes.

Vocabulary

- Benefit
- Cost
- Externalities
- Fine
- Negative externalities
- Positive externalities
- Subsidy
- Tax

Materials

- Warm-up hypothetical
- Vocabulary Preview Activity
- COVID-19 Externality Excerpt 1
- Internalize the Externalities
- COVID-19 Externality Excerpt 2
- COVID-19 Policy Evaluation worksheet
- Positive Externality Exit Ticket

Warm-Up

- Post or hand out warm-up hypotheticals. Ask students to reflect on how they feel about each of the hypothetical situations.
 - Last year, you and your classmates all took a nationwide standardized college entrance exam. Your scores have been returned, and you have planned your class schedule and college search according to the results. The testing company has discovered that a student was posting exam questions and answers on the internet before your school was able to test. They are invalidating all test scores and forcing all students to retake a new version of the test with higher test security standards.
 - Identify how this event has imposed a cost on you.
 - Identify how this event might benefit you.
 - Come up with an example of a time in your life in which someone else's actions had a negative impact on you.
 - Be prepared to discuss your answers with a partner.
- Have students pair, discuss, and share some of their examples. The purpose is to capture the frustration of incurring a cost for someone else's behavior. Here are some example answers.
 - Costs:
 - Retaking the test takes time away from classes or other activities.

- A student may do worse on the retake.
- A student must worry about the test and the outcome again.
- A student might have to change class schedules or college plans.
- College applications might be delayed.
- Benefits:
 - A student might do better on the retake.
 - Students might get out of class or get a half day due to testing.
 - Students have more time to prepare for a retake.
- Examples of negative externalities:
 - Kids stopped in the hallway and made me late.
 - Kids were talking next to me and the whole class got in trouble.
 - Kids had a food fight, and now lunch is boring.
 - Someone was late for football practice, so we all had to run laps.
 - Any story will do if it gets kids talking about the social effects of the bad actions of individuals.

Lesson Activities

• Vocabulary preview activity

- Split the class into relatively equal groups.
- Hand all students the vocabulary preview sheet.
- Have each group come up with a one- to two-minute skit that incorporates all the vocabulary words in a meaningful way.
- Definitions are below.
 - Benefit: something that produces good or helpful results
 - Cost: loss or penalty incurred
 - Externalities: instances where the overall social costs or social benefits of the activity exceed the private costs and benefits but where it is infeasible to set compensation within markets to account for this
 - Negative externality: costs on third parties that cannot be compensated for within markets
 - Positive externality: benefits to third parties that cannot be compensated for within markets
 - Fine: a government-imposed fee meant to discourage a certain behavior
 - Subsidy: a government payment or benefit meant to encourage a specific behavior

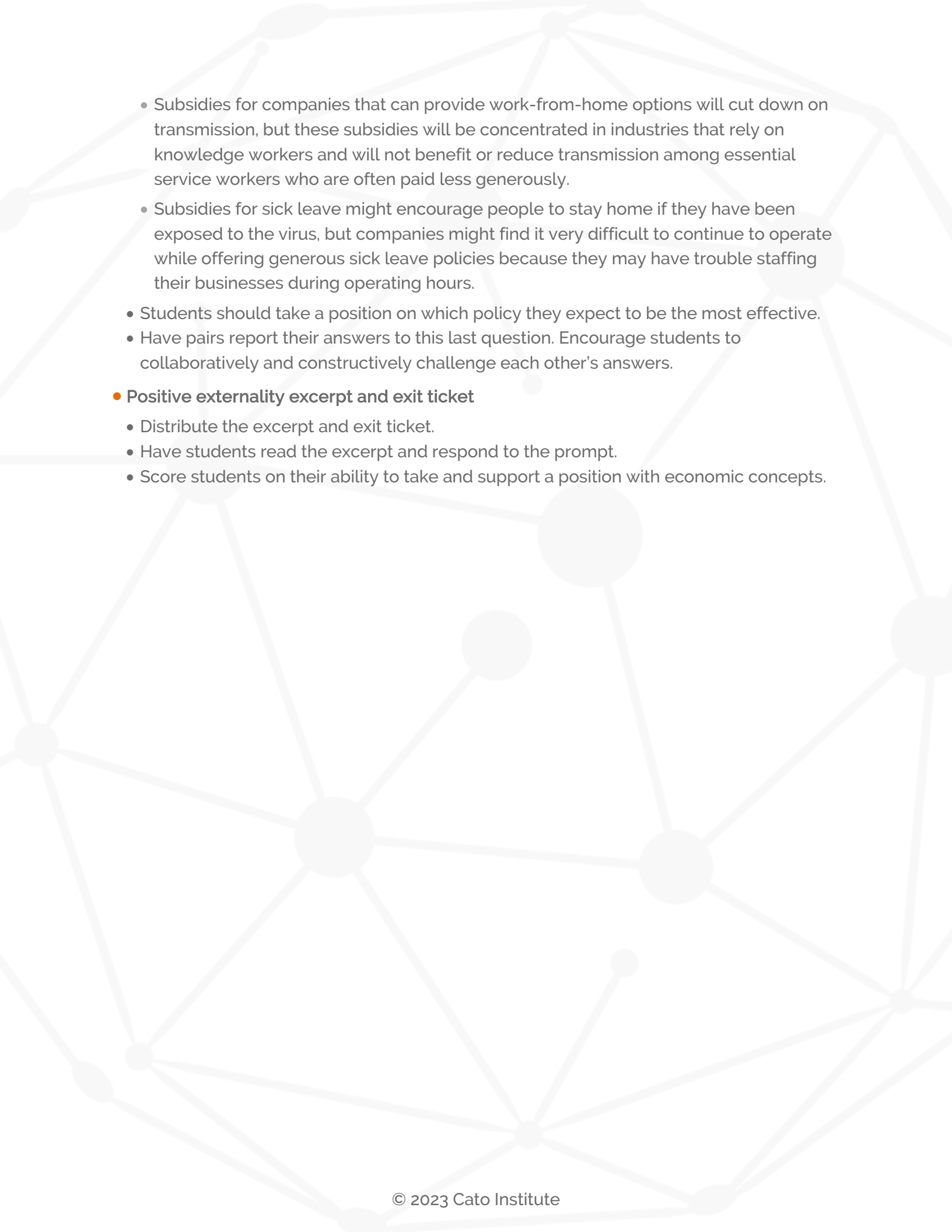
- Tax: a government-imposed cost added to a financial transaction; sometimes used to discourage certain economic behaviors (e.g., Philadelphia's tax on sugary drinks to discourage their consumption)
- **Externality reading and brainstorm example**
 - Have students read the excerpt describing the author's cost-benefit analysis of going out in public during the COVID-19 pandemic.
 - Have students answer the questions following questions:
 - According to the author, why is COVID-19 an externality problem?
 - i. *One person's actions might make a different person very sick.*
 - According to the author, why was it especially difficult for individuals to calculate risks in the early days of the COVID-19 pandemic? Provide evidence from the excerpt. (Answers may vary.)
 - i. *Some people didn't know they were infected and therefore behaved as if they weren't. This caused the virus to spread more rapidly.*
 - ii. *The author indicates that he would never even know whether or not he infected someone, and he could not possibly be held accountable for his actions.*
 - Have students work in pairs and use the chart to determine the personal and social costs and benefits of the author's actions. Answers may vary and may include the following:
 - Personal costs
 - i. *Risk of contracting the virus*
 - ii. *Time spent away from home*
 - iii. *Money spent on items and services*
 - Personal benefits
 - i. *Sunshine*
 - ii. *Fresh air*
 - iii. *Social time with friends*
 - Social costs
 - i. *Risk of spreading the virus*
 - ii. *Risk of overcrowding hospitals*
 - iii. *Risk of overcrowding spaces and not allowing others to socially distance*
 - iv. *Causing businesses to have service professionals work in person and risk their health*
 - Social benefits
 - i. *Allows businesses to stay open*
 - ii. *Creates jobs in production of goods and services*
 - iii. *Allows people to have social interaction*

- Have each pair determine whether or not the author should go out based on their own analysis of costs and benefits.
- **Check for understanding/civic dialogue/gradient**
 - Direct the pairs that have decided that the author SHOULD go out to stand at one side of the room.
 - Direct the pairs that have decided that the author SHOULD NOT go out stand at the other end of the room.
 - Ask one pair from each side to share their reasoning.
 - Allow students to move from one side to another. (Pairs do not have to remain together in this step.)
 - Any student who moves should be asked to explain why.
 - Repeat until all students are satisfied with their choices.

IF YOU HAVE SHORTER CLASS PERIODS, THIS IS A GOOD PLACE TO CONCLUDE.

- **Reviewing vocabulary and policy options**
 - Review the vocabulary regarding policy options. Ask students to brainstorm how each policy could be used to reduce risky behavior during a pandemic. Some examples are below:
 - Fine: a government-imposed fee meant to discourage a certain behavior
 - i. *People could be fined for entering stores without masks.*
 - ii. *People could be fined for standing too closely to others.*
 - iii. *Stores and restaurants could be fined if they do not have and enforce a mask policy.*
 - iv. *Stores and restaurants could be fined for exceeding reduced capacity limits.*
 - Subsidy: a government payment or benefit meant to encourage a specific behavior
 - i. *Governments could subsidize retail stores and restaurants that remain closed.*
 - ii. *Governments could subsidize employers who encourage symptomatic employees to stay home.*
 - iii. *Governments could subsidize businesses that effectively take additional safety and sanitation precautions.*
 - iv. *Governments could subsidize home delivery services.*
 - Tax: a government-imposed cost added to a financial transaction; sometimes used to discourage certain economic behaviors (e.g., Philadelphia's tax on sugary drinks to discourage their consumption)
 - i. *Governments could increase sales taxes on all nonessential items.*
 - ii. *Governments could tax in-person transactions.*
 - iii. *Governments could tax restaurant food that is not specifically prepared for takeout.*

- Encourage students to think of ways to punish anti-social behavior or reward social behavior.
- **Externality Excerpt 2**
 - Pass out the Externality Excerpt 2 handout.
 - Have students read the excerpt and respond to the following questions:
 - According to the author, how would fines and taxes affect the willingness with which people would undertake high-risk behaviors? Provide evidence from the excerpt. (Answers will vary.)
 - i. *Fines and taxes should discourage people from engaging in high-risk activities.*
 - According to the author, how have governments in East Asia used economic policies to prevent the spread of COVID-19? Provide evidence from the excerpt. (Answers will vary.)
 - i. *East Asian governments have paid workers to quarantine and have fined them for not doing so.*
- **Policy analysis activity**
 - Distribute the policy analysis sheet.
 - Have students work in pairs to analyze the various public policies suggested at the height of the COVID-19 pandemic. Students should generate a pro and a con for each policy.
 - Students may decide for themselves whether the policies seem effective. Some suggestions are listed below.
 - Taxes on public transportation may encourage people to socially distance on the way to work but may also punish essential workers who must expose themselves to the virus as a condition of employment.
 - Fines for failing to wear face masks may reduce transmission of the virus but may punish people who are medically sensitive or not be clear enough about which masks reduce transmission or may not provide flexibility to account for social distancing. Additionally, this may be difficult to enforce.
 - Fines for restaurants that put tables too close together may reduce spread between households, but it might not protect employees or people waiting in the lobby. Restaurants may not have an incentive to open if they can only seat a limited number of people.
 - Taxes for travel to high-risk areas might be a disincentive for people traveling to those areas and returning with infections, but these taxes might have an oversized impact on the health of the travel and tourism industry. They do not take into account the personal safety precautions people may or may not take in traveling to these areas.
 - Fines for people who fail to quarantine might cut down on transmission of the virus, but these are very difficult to enforce.

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- Subsidies for companies that can provide work-from-home options will cut down on transmission, but these subsidies will be concentrated in industries that rely on knowledge workers and will not benefit or reduce transmission among essential service workers who are often paid less generously.
 - Subsidies for sick leave might encourage people to stay home if they have been exposed to the virus, but companies might find it very difficult to continue to operate while offering generous sick leave policies because they may have trouble staffing their businesses during operating hours.
 - Students should take a position on which policy they expect to be the most effective.
 - Have pairs report their answers to this last question. Encourage students to collaboratively and constructively challenge each other's answers.
 - **Positive externality excerpt and exit ticket**
 - Distribute the excerpt and exit ticket.
 - Have students read the excerpt and respond to the prompt.
 - Score students on their ability to take and support a position with economic concepts.

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Warm-Up

Hypothetical:

Last year you and your classmates all took a nationwide standardized college entrance exam. Your scores have been returned, and you have planned your class schedule and college search according to the results. The testing company has discovered that a student was posting exam questions and answers on the internet before your school was able to test. They are invalidating all test scores and forcing all students to retake a new version of the test with higher test security standards.

- Identify how this event has imposed a cost on you.

- Identify how this event might benefit you.

- Come up with an example of a time in your life in which someone else's actions had a negative impact on you.

- Be prepared to discuss your answers with a partner.

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Vocabulary Activity

Word and Definition	What It Means to Us/How We Will Use It in Our Skit
Benefit: something that produces good or helpful results	
Cost: loss or penalty incurred	
Externalities: instances where the overall social costs or social benefits of the activity exceed the private costs and benefits but where it is infeasible to set compensation within markets to account for this	
Negative externality: costs on third parties that cannot be compensated for within markets	
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Fine: a government-imposed fee meant to discourage a certain behavior

Subsidy: a government payment or benefit meant to encourage a specific behavior

Tax: a government-imposed cost added to a financial transaction; sometimes used to discourage certain economic behaviors (e.g., Philadelphia's tax on sugary drinks to discourage their consumption)

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COVID-19 Excerpt #1

Suppose it was a nice, hot, sunny day here in Washington, DC. The virus was still circulating and there were absolutely no government restrictions on activity. When deciding whether to head for a walk on the National Mall, visiting a few retail stores or a bar en route, I might implicitly think about the costs and benefits to me of my social activity.

Yes, there is a risk I could get infected with the virus by being around and interacting with other people. But compared to other demographic and health groups, my risk of dreadful outcomes from this disease, given that I have no known preexisting conditions, is very low. On the other hand, I would really enjoy getting out for some sunshine, buying some new clothes in a store, and seeing some friends for a drink. I value the benefits of going out highly.

I will try to be respectful of the risks I pose to others, obviously. Yet, I don't have any major symptoms, except a slightly sore throat that I put down to last night's whiskey. So, I might feel confident I am not carrying the virus. But the truth is that I do not know whether I'm a carrier, absent an instant test. Perhaps I already picked up the virus from a container from the takeout food I ordered midweek. Or maybe the lady who served me at the grocery store three days ago, or a recent taxi driver, transmitted the virus to me, and I'm in the presymptomatic stage. I cannot know for sure whether I might sneeze or cough or breathe and unwittingly spread the virus while I am in a store or a bar.

If I overwhelmingly worry about the costs and risks to me, perhaps I take insufficient account of the risks of my behavior to others. Again, if I get too close to your grandma in a store while I am not wearing a mask, or else get too close to someone else who might work in her care home or live with her, that means I risk potentially infecting her indirectly without even realizing it. Yet I would not feel the cost of that eventuality, nor is there any feasible way for me to compensate her for my behavior. It probably wouldn't even cross my mind to consider how I might contribute to hospital congestion or increase risks for workers in crucial industries.

—*Economics in One Virus*, pp. 21–22

- According to the author, why is COVID-19 an externality problem?
 - a. One person's action might make a different person very sick.
 - b. If one person is behaving badly, only that person will incur the cost.
 - c. The person who started the pandemic will eventually have to pay the total cost.

- According to the author, what would be most likely to happen if individuals were allowed to freely choose their own behaviors during a global pandemic?
 - a. Individuals would overestimate their personal risk and stop interacting with others to protect themselves.
 - b. Individuals might account for their own personal risk but not adequately include the risk they are causing to others.
 - c. Individuals will underestimate their own personal risk and overestimate their risk to others.

- According to the author, why was it especially difficult for individuals to calculate risks in the early days of the COVID-19 pandemic. Provide evidence from the excerpt.

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Cost-Benefit Analysis

Directions: Based on COVID-19 Excerpt 1, determine the personal and social costs and benefits of the author going for a walk on the mall, visiting some retail shops, and having some drinks with friends. Try to identify three costs and three benefits for the author and for society.

Personal Costs	Personal Benefits
1.	1.
2.	2.
3.	3.
Social Costs	Social Benefits
1.	1.
2.	2.
3.	3.

- Should the author go for a walk, shop at a few stores, and have drinks with his friends at a bar?

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COVID-19 Excerpt #2

Imposing a tax on all social activities to deter the risk of spreading the virus is nearly impossible, although some targeted taxes could help reduce seemingly high-risk practices. Raising the price of public transportation, for example, through lowering government subsidies or taxing ticket prices, may deter the use of mass transit, particularly if operators adopted surge pricing to prevent packed trains.

One early study suggested the subway might have been a key vector for the virus in the initial spread of SARS-CoV-2 in New York City. Other studies have found strong evidence that the early higher prevalence of COVID-19 in black populations can be accounted for, in part, by their higher use of public transit than the general population, while U.S. counties with greater use of public transport relative to telecommuting saw higher death rates early on. So, for a high-risk activity like this—being in close proximity to others in congested buses or railroad cars for extended periods—a tax or a charge could help reduce people's willingness to take public transit.

Introducing fines or taxes for not wearing facemasks in indoor public places, failing to separate tables in restaurants, and for traveling to areas of high rates of infection or failing to quarantine upon return could all likewise help proxy for dealing with the externalities of socializing or travel. One could imagine, too, that new technologies might be used to facilitate congestion-based pricing on other public transport or in large public spaces.

On the flip side, governments could offer tax breaks to companies that encourage remote work or temporarily subsidize sick pay so that fewer infected people would intermingle with others at work. Some governments in East Asia encourage quarantine for those who have come into contact with infected people by paying them to isolate or by imposing large penalties on them for breaching the rules.

—*Economics in One Virus*, pp. 27-28

- According to the author, how would fines and taxes affect the willingness with which people would undertake high-risk behaviors? Provide evidence from the excerpt.

- According to the author, how have governments in East Asia used economic policies to prevent the spread of COVID-19? Provide evidence from the excerpt.

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COVID-19 Policy Evaluation

Directions: For each of the following policies, identify the targeted behavior and determine the costs and benefits of the policy. Decide whether or not you think the policy would be effective and explain why or why not. The first answers from the first boxes are already done for you. All examples can be found on page 28.

Policy	Targeted behavior	Benefits of the policy	Costs of the policy	Do you think this policy is effective? Why or why not?
Taxing public transportation	Overcrowding on public transportation	May reduce risk of transmission on trains and buses	Adds extra cost for essential workers at risk of transmission	
Fines for not wearing face masks				
Fines for restaurants that put tables too close together				
Taxes for travel to high-risk areas				

Fines for failing to quarantine				
Subsidies for companies with work-from-home policies				
Subsidies for offering sick pay				

- Which of the above policies would be most effective in preventing the spread of the virus? Why?

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Positive Externalities Excerpt and Exit Ticket

Directions: Read the excerpt below and answer the questions.

There is also a *positive externality* that arises from someone having contracted and recovered from the disease. That's because, once someone has recovered, they have immunity to being reinfected (at least for a time) and so are unable to spread the disease to those who are susceptible to infection. This, of course, reduces risks to others, as well as providing a source of labor and support to those yet to be infected. . . .

Obviously, a vaccine offers one route. But before that was available, some economists suggested that because the health risks to younger and less-vulnerable people were lower compared with older people and those with comorbidities, we should have isolated high-risk individuals for longer and imposed less-stringent restrictions on the activities of low-risk individuals. That way the net effects on society might have been preferable to a crude lockdown—benefits would have been achieved at much lower cost. Indeed, economic modeling from economists such as Daron Acemoglu suggested a more-targeted approach could have improved economic welfare. Some economists have even advocated subsidizing the social activities of low-risk groups.

—*Economics in One Virus*, pp. 31-32

- What are the costs and benefits of policies encouraging low-risk individuals to become infected? Would you support such policies? Why or why not?

Rubric:

Criteria	Exceeds Expectations (3)	Meets Expectations (2)	Needs Improvement (1)
Clear and valid response	Response takes a clear position and supports the answer with valid economic reasoning using terms and referencing the text	Response takes a clear position and supports the answer with some economic reasoning while attempting to use economic terminology	Response fails to take a clear position or inappropriately applies economic reasoning and vocabulary