



ECONOMICS IN ONE VIRUS: CHAPTER 6

# Why was I banned from going fishing?

GRADE LEVEL: 9-12 (ADVANCED)

TIME ESTIMATE: 90-120 MINUTES

## Lesson Overview

Students will use cost-benefit analysis to evaluate government policies that prevented the spread of COVID-19. Students will experience marginal cost and marginal benefit in order to better understand marginal thinking that economists employ to better craft policies. Students will apply marginal thinking to COVID-19 policies. Students will conclude by evaluating the marginal benefits of programs that sought to encourage economic activity as shutdowns concluded.



## Objectives

- Students will be able to apply cost–benefit analysis to public policy.
- Students will be able to explain marginal analysis.
- Students will be able to apply marginal thinking to public policy.

## Vocabulary

- Marginal benefit
- Marginal cost
- Peer effect
- Thinking on the margin

## Materials

- Warm-Up Cost–Benefit Hypothetical
- Vocabulary Graphic Organizer
- Policy Reading 1
- Peer Effect Reading/Check for Understanding
- Policy Analysis Worksheet
- Marginal cost/marginal benefit token rewards
- Marginal Thinking Reading
- Policy Reading 2 Exit Ticket

## Pework

Students should have an understanding of cost–benefit analysis prior to the lesson. If there is a token economy in place, you may want to use it for the marginal cost/marginal benefit simulation. Alternately, you could use candy, school supplies, or even extra credit points as the marginal benefit.

## Warm-Up

Distribute the hypothetical situation.

- Discuss the hypothetical:
  - Students have been ordering DoorDash to the school at all hours of the day. The secretary in the front office has complained that this is incredibly disruptive to her day. The school safety officer is uncomfortable with the number of strangers this process brings to the building. Teachers are annoyed that students are called out of class to retrieve their orders, but teachers also want to reserve the right to DoorDash food for themselves and to order pizzas for class parties. The problem is worse after school, when no one is around to receive the food in the office, students leave practices without permission, and students dangerously prop doors open for strangers. Students claim that the cafeteria food is unhealthy, unappetizing, and not filling, especially if they are staying after school. Parents complain that their kids always come home

hungry and say that refilling money on a phone app is easier than sending money into the cafeteria. Furthermore, the phone apps do not charge fees, but the district's electronic money transfer app charges fees. The school has decided to ban all food delivery to the school at all times for both teachers and students. What are the costs and benefits of this policy?

- Give students time to generate costs and benefits individually and then allow them to share in pairs before reporting out.
- Record what students report on a white board or a piece of chart paper.
  - Some costs might include the following: students quitting sports, students being hungry, parents being angry, teachers no longer hosting pizza parties, students leaving campus and cutting class to get food, students or teachers leaving campus for food and getting into car accidents, more absences for both students and teachers.
  - Some benefits might include the following: school safety (make the point that this argument is very compelling, especially to district personnel and politicians), more money for the cafeteria, fewer distractions during the day, better health since students won't be overeating or eating fast food.
- Ask students to generate a better policy and to explain why there should be exemptions to the binary policy. Some suggestions are below:
  - Teachers should be allowed to order in so that we keep pizza parties and so that teachers don't get in car accidents during their breaks.
  - Ordering food should be allowed during afterschool activities so that kids don't go hungry during their extra hours at school.
  - Ordering food should be allowed if a parent does it so that parents stay happy and are aware of the process.
  - Kids with straight As should be able to order food, because they deserve it, and this will be an incentive to get straight As.
- Ask students if it is unfair to have a policy that only applies to certain people or to certain times of day. Why or why not?

## Lesson Activities

### • Vocabulary preview

- Distribute the Vocabulary Graphic Organizer. Ask students to come up with a different example than the one provided for each word and then to write a few sentences about a time that they used marginal thinking to make a decision.
- Marginal benefit
  - i. The additional benefit from a unit change in activity

- ii. Ex: When I was working on my paper, I was able to write four pages in the first hour, but I only wrote three pages in the second hour.
- Marginal cost
  - i. The additional cost from a unit change in activity
  - ii. Ex: At cross country practice, the first mile was difficult, the second was easier, but the third was nearly impossible!
- Peer effects
  - i. An externality effect whereby the actions or characteristics of a surrounding group affect the actions or characteristics of an individual
  - ii. Ex: At the dance, I really wanted to sit down, but everyone else kept dancing, so I kept dancing.
- Thinking on the margin
  - i. Weighing the costs and benefits of each additional change or action rather than basing decisions on past events or broad rules of behavior
  - ii. Ex: After school, I went to the snack shack and got two bags of Takis. I wasn't hungry enough for two, but since one bag was \$2 and two bags were \$3, I figured I could just save the second bag for later.
- Have students share their sentences.
- **Reading (jigsaw) and analysis**
  - Tell students that you are going to discuss marginal thinking and government policies meant to stop the spread of COVID-19.
  - Have students read each section of text and answer the questions associated with it.
  - It might be helpful to jigsaw this reading activity by splitting the class into four groups and having each group read one of the sections to become experts and then switch groups and have students share their findings so that all students have answered all of the questions before moving onto the analysis.
  - All students should read and discuss the peer effects excerpts.
    - Excerpt A:
      - i. Yet in many states, stay-at-home or shelter-in-place orders explicitly or implicitly banned going fishing. Despite the activity being extremely low-risk in terms of spreading the virus (given you can safely socially distance and undertake it on your own or just with fellow household members), politicians often made no such exemptions from the broader orders to stay home.
      - ii. According to the text, why is fishing a low-risk activity?
        - a. You can stay socially distant.
        - b. You can undertake it on your own or with members of your household only.
      - iii. Why do you think politicians failed to exempt fishing from stay-at-home orders?

- a. Answers will vary but may include the following:
    - They didn't even think about it.
    - They worried that people would go with those from other households.
    - They worried about people doing other things on their way to fishing or while they were out.
  - b. Include some discussion of these varied answers at the end of this section of the lesson. This will help with the cost–benefit analysis in the next section.
- Excerpt B:
    - i. Fishing is not the only activity it made little sense to ban. In California, a man paddleboarding alone in the Pacific Ocean was tracked down by lifeguards and subsequently arrested for breaching the state's stay-at-home orders, even though he clearly posed an infinitesimally small risk to other while in the sea. In fact, his arrest itself was infinitely more risky than the activity he was arrested for in terms of transmitting the disease.
    - ii. Why was paddleboarding relatively low-risk in terms of transmitting COVID-19?
      - a. According to the text, he was alone in the ocean.
      - b. Paddleboarding is an individual activity.
    - iii. Why do you think California officials arrested the man for paddleboarding rather than just letting him go?
      - a. Answers will vary but may include the following:
        - They were afraid other people would be encouraged to do similar things.
        - They were afraid the person would transmit the disease to others if he stopped for gas or food or otherwise interacted with people on the way to or from the ocean.
        - He was breaking the law, pure and simple.
      - b. Include some discussion of these varied answers at the end of this section of the lesson. This will help with the cost–benefit analysis in the next section.
  - Excerpt C:
    - i. Yet we can find other absurd examples of regulations related to COVID-19 that suggest politicians' propensity to ban things is not just driven by fear of people being more willing to travel or socialize. In Michigan, for example, the state governor's executive order effectively banned the sale of goods not thought to be essential within large grocery and department stores. Famously, customers quickly posted pictures online of aisles containing seeds for gardening that had been roped off from purchase.
    - ii. Why do you think Michigan banned the sale of nonessential goods?
      - a. It wanted to discourage people from going to the store.
      - b. It wanted to discourage people from going shopping for fun.

iii. Do you think that this ban was effective in preventing the spread of COVID-19? Why or why not?

- a. Answers will vary.
- b. Make sure students support their answers with reasoning.

• Excerpt D:

i. But daft rules that didn't help the public health effort did not end with seeds. Lockdowns across the country, at least in principle, stopped people visiting their empty second homes, from using their boats or jet-skis in solitude, and from having people visit at a safe distance in their gardens or yards.

ii. Identify three low-risk activities according to the author. Why does he consider these to be low-risk?

- a. Buying seeds
- b. Visiting second homes
- c. Using boats
- d. Jet skiing
- e. Visiting people in the yard
- f. All of these activities involve few people and allow for social distancing.

iii. Why do you think government lockdowns prevented these things?

- a. Answers will vary but may include the following:
  - Officials were worried that if people went out that they would feel encouraged to do more than what was allowed.
  - They were worried that people would not really maintain appropriate distances.
  - They were worried that people would need other services while they were out that would bring them in contact with others.
  - They were worried that if they allowed some activities, people would take advantage.
- b. Give students the opportunity to discuss these with each other to ease the determination of costs and benefits in the next step.

• **Peer Effect Reading/Check for Understanding**

- THIS IS A GOOD FINAL ACTIVITY IF YOU ARE NOT OPERATING ON A BLOCK SCHEDULE.
- Have students read the excerpt: In their defense, politicians would argue that there is a behavioral reason why some seemingly safe activities can't be allowed. They would say that any exemptions from stay-at-home orders are likely to bring some additional interactions between people, not least in traveling to the beach or fishing site. But mostly they will be wary of *peer effects*—the idea that some people going out and engaging in activities will influence others' behavior. Perhaps I may not be willing to

take the risk of socializing as I once did, but if everyone else is out fishing or being active, it may influence my own risk preferences.

- According to the author, how might the peer effect change the behavior of people during lockdowns?
  - i. If you allow people to go do some things, they will also go do other things.
  - ii. If you allow some people to go do some things, other people will think it is less risky to be out, and they will make it more difficult to social distance.
- How does this reading influence the way you feel about the hypothetical situation in the warm-up? Would it be valid to say that allowing some people to order food delivery in some situations would encourage others to do it anyway? Why or why not?
  - i. Answers will vary.
  - ii. Encourage students to support answers with reasoning.

- **Policy Analysis Worksheet** (can be cut for time or reviewed quickly)

- Distribute the Policy Analysis Worksheet.
- Have students review policies from previous readings.
- Have students generate costs and benefits for each of the policies presented. Some answers should reflect that these policies cost people recreation and health benefits while having little actual benefit in protecting people from COVID-19.
- You can try to pay up the costs by indicating that the person going to do the forbidden activity may interact with someone who has an elderly grandparent at home who is at high risk of having serious complications from COVID-19.
- Ask students what might be wrong with these policies. Answers may include the following:
  - The costs are greater than the benefits.
  - The costs are spread out, but the benefits are limited to a few people. (Be really excited if you get this answer! This is stellar economic thinking.)
  - These are binary policies that don't consider nuances or accurate balance.

- **Marginal Cost/Marginal Benefit simulation**

- Ask for a student volunteer for an experiment. Tell the volunteer student that they will be experimenting with marginal cost and marginal benefit.
- Offer one token (extra credit point, Positive Behavior Support token, fun-sized candy bar, etc.) for each pushup the student can do. If you happen to have a particularly fit volunteer, you can adjust this to one token for every five pushups.
- When the student has seemingly tired, pay them the tokens.
- Ask the student to try to earn more.

- Repeat this until the student has tired or decided that they have enough tokens that it is no longer worthwhile to do pushups.
- Discuss with the student how they decided that it was time to stop.
- Review the concepts of costs and benefits from the vocabulary preview.
- **Marginal Thinking Readings**
  - Distribute the Marginal Thinking Readings.
  - Have students read Excerpt A:
    - Famous anti-communist Sen. Joseph McCarthy (R-WI) once suggested that having even one communist in the State Department was one community too many. Yet this was an obvious failure to think on the margin. The marginal cost of rooting out every last communist would have been massive. It seems incredibly unlikely that just one communist among all State Department employees could have such a damaging influence to justify the vast cost in time, resources, false allegations, and employee morale.

We could likewise eliminate lots of pollution by banning all industrial activity, most travel, and the burning of various fuels. But the cost of doing so would be huge. On the margin, it would soon become clear that reintroducing some activity, such as a power system to prevent many people dying of hypothermia, would be very, very good, on net, for society. Or, as another example, we might believe that providing government support for education has some positive impacts on society. But mandating another additional two years of formal schooling on top of existing mandates might have vastly higher marginal costs than societal marginal benefits.

- i. Define marginal thinking according to the text.
  - a. An attempt to balance societal cost with societal benefit
  - b. Not spending too much money chasing after too little benefit
  - c. Allowing some cost in order to get some benefit
- ii. According to the text, how does marginal thinking affect government policy? Provide an example from the reading.
  - a. Not rooting out every communist in the state department but stopping after there are too few to have a significant effect
  - b. Not eliminating all fossil fuels but instead allowing enough energy production to save people from hypothermia
  - c. Not forcing students to go through two additional years of school even if we believe that funding education has important social benefits
- iii. Using one of the policies previously discussed (prohibiting watersports, prohibiting the sale of nonessential items, prohibiting travel, etc.), explain how marginal thinking might lead to a policy that better balances costs and benefits.
  - a. Answers will vary but should take one of the policies and modify it
  - b. Allowing watersports for single riders or small craft with household members



- c. Allowing road travel to socially distanced locations like a vacation rental or second home
- d. Allowing sale of all items but controlling the number of people in stores at a time
- Have students read Excerpt B:
  - What happened after the initial, crude lockdowns was an implicit admission that the developers of these lockdowns did not think enough on the margin. Most reopenings occurred in stages. Lower-risk activities were allowed first, such as eating in outdoor restaurants with strict social distancing protocols. Mass gatherings, including concerts and sports events, were banned for much longer—these are, it is now believed, highly likely to have been the sources of superspreader events that possibly propelled infection rates. The marginal social costs of such gatherings are therefore highly likely to exceed the benefits.
  - According to the text, how did marginal thinking change the way many governments approached COVID-19 policies? Provide evidence from the text.
    - i. Answers will vary.
    - ii. Governments allowed a lot more activities but continued to restrict activities with high concentrations of people.
- Have students read Excerpt C:
  - Not that all marginal thinking points in favor of looser public health guidance or mandates, however. For many weeks during the initial lockdown, the most risky activity most people undertook each week was a visit to the grocery store. But at that time here in Washington, DC, there were no initial requirements from government or the retailers to wear facemasks or coverings within the stores, or indeed limits on how many people could enter. The requirements by stores that came later, however, almost certainly had marginal social benefits that exceeded the marginal social costs. Having to wait outside for a short time or cover your face while inside would usually be a relatively small cost imposition on each individual relative to the potential benefits of stopping the spread of the disease.
  - According to the text, identify a COVID-19 policy that balanced marginal costs and benefits appropriately. Provide evidence from the text.
    - i. Mask wearing
    - ii. Occupancy limits
- **Policy Reading 2 Exit Ticket**
  - Distribute the Policy Reading 2 Exit Ticket.
  - Have students read the marginal analysis of government COVID-19 spending:
    - Then there were the huge congressional spending packages. Lots of funding and relief spending was thrown around left, right, and center. But clearly some uses could have a much bigger payoff than others. Although there was great uncertainty over

whether we could fund a robust test-trace-isolate regime, or a successful vaccine or treatment for COVID-19, the reduction in economic pain that any of these ideas could have delivered was always huge. We knew, too, that vaccines in particular usually take years to roll out, in part because they entail incredibly risky investments in manufacturing capacity specific to the particular vaccine.

Given the potential social benefits of any of these public health innovations compared to the upfront costs, the case for a huge investment in testing, treatment research, and advanced orders for vaccines was extremely strong. Recent research by Tim Johnson, a business professor at the University of Illinois Urbana-Champaign, and others, has used stock market reactions to vaccine progress to estimate that a vaccine cure that ended this pandemic and its uncertainty would be worth around 5–15 percent of global wealth. The marginal benefits of any measures that encourage economic normalization by speeding up the end of this pandemic by just a few months then would be absolutely enormous, especially relative to the marginal costs of the investment, which were tiny in the grand scheme of things. And yet, as Nobel Prize-winning economist Paul Romer has observed, governments around the world, including in the United States, spent tiny, tiny fractions on medical innovation and testing through this pandemic relative to more direct relief to households and businesses.

And this was despite the fact that all the while the prevalence of the virus was high, the marginal benefit of additional “stimulus” was low in terms of its impact in reviving activity, especially relative to steps that got the virus under control.

- Discuss how marginal thinking would have changed government policy meant to stimulate the economy.
- Have students imagine that Congress has developed a congressional committee to investigate the response to the COVID-19 pandemic and to prepare for future pandemics. Create a short elevator pitch-type speech to present to your congressperson at the weekly coffee meetings he holds. Make sure you use the concept of marginal thinking and information from the text above in your presentation.
- Have students share out if time allows.

# Why was I banned from going fishing?

## Warm-Up Cost-Benefit Hypothetical

Directions: Read the excerpt and use the information to answer the question below:

Students have been ordering DoorDash to the school at all hours of the day. The secretary in the front office has complained that this is incredibly disruptive to her day. The school safety officer is uncomfortable with the number of strangers this process brings to the building. Teachers are annoyed that students are called out of class to retrieve their orders, but teachers also want to reserve the right to DoorDash food for themselves. The problem is worse after school, when no one is around to receive the food in the office, students leave practices without permission, and students dangerously prop doors open for strangers. Students claim that the cafeteria food is unhealthy, unappetizing, and not filling, especially if they are staying after school. Parents complain that their kids always come home hungry and say that refilling money on a phone app is easier than sending money into the cafeteria. Furthermore, the phone apps do not charge fees, but the district's electronic money transfer app charges fees. The school has decided to ban all food delivery to the school at all times for both teachers and students. What are the costs and benefits of this policy? (Come up with at least 3)

Costs	Benefits

- Can you think of a better policy? Why is your policy better?

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# Why was I banned from going fishing?

## Vocabulary Graphic Organizer

<p>Marginal benefit: the additional benefit from a unit change in activity</p> <p>Ex: When I was working on my paper, I was able to write 4 pages in the first hour, but I only wrote 3 pages in the second hour.</p> <p>My example:</p>	<p>Marginal cost: the additional cost from a unit change in activity</p> <p>Ex: At cross country practice, the first mile was difficult, the second was easier, but the third was nearly impossible!</p> <p>My example:</p>
<p>Peer effects: an externality effect whereby the actions or characteristics of a surrounding group affect the actions or characteristics of an individual</p> <p>Ex: At the dance, I really wanted to sit down, but everyone else kept dancing, so I kept dancing.</p> <p>My example:</p>	<p>Thinking on the margin: weighing the costs and benefits of each additional change or action rather than basing decisions on past events of broad rules of behavior</p> <p>Ex: After school, I went to the snack shack and got two bags of Takis. I wasn't hungry enough for two, but since one bag was \$2 and two bags were \$3, I figured I could just save the second bag for later.</p> <p>My example:</p>

Write a few sentences that use all four terms to tell the story about how you recently made a decision using marginal thinking:

# Why was I banned from going fishing?

## Policy Reading 1

### Excerpt A

Yet in many states, stay-at-home or shelter-in-place orders explicitly or implicitly banned going fishing. Despite the activity being extremely low-risk in terms of spreading the virus (given you can safely socially distance and undertake it on your own or just with fellow household members), politicians often made no such exemptions from the broader orders to stay home.

—*Economics in One Virus*, pp. 87

- According to the text, why is fishing a low-risk activity?

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- Why do you think politicians failed to exempt fishing from stay-at-home orders?

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Excerpt B

Fishing is not the only activity it made little sense to ban. In California, a man paddleboarding alone in the Pacific Ocean was tracked down by lifeguards and subsequently arrested for breaching the state's stay-at-home orders, even though he clearly posed an infinitesimally small risk to other while in the sea. In fact, his arrest itself was infinitely more risky than the activity he was arrested for in terms of transmitting the disease.

—*Economics in One Virus*, pp. 87-88

- Why was paddleboarding relatively low-risk in terms of transmitting COVID-19?

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- Why do you think California officials arrested the man for paddleboarding rather than just letting him go?

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Excerpt C

Yet we can find other absurd examples of regulations related to COVID-19 that suggest politicians' propensity to ban things is not just driven by fear of people being more willing to travel or socialize. In Michigan, for example, the state governor's executive order effectively banned the sale of goods not thought to be essential within large grocery and department stores. Famously, customers quickly posted pictures online of aisles containing seeds for gardening that had been roped off from purchase.

—*Economics in One Virus*, pp. 88

- Why do you think Michigan banned the sale of nonessential goods?

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- Do you think this ban was effective in stopping the spread of COVID-19? Why or why not?

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Excerpt D

But daft rules that didn't help the public health effort did not end with seeds. Lockdowns across the country, at least in principle, stopped people visiting their empty second homes, from using their boats or jet-skis in solitude, and from having people visit at a safe distance in their gardens or yards.

—*Economics in One Virus*, pp. 88-89

- Identify three activities that the author considers to be low-risk. Why does he think these are low-risk activities?

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- Why do you think the government lockdowns prohibited these activities?

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# Why was I banned from going fishing?

## Peer Effect Reading/Check for Understanding

In their defense, politicians would argue that there is a behavioral reason why some seemingly safe activities can't be allowed. They would say that any exemptions from stay-at-home orders are likely to bring some additional interactions between people, not least in traveling to the beach or fishing site. But mostly they will be wary of *peer effects*—the idea that some people going out and engaging in activities will influence others' behavior. Perhaps I may not be willing to take the risk of socializing as I once did, but if everyone else is out fishing or being active, it may influence my own risk preferences.

—*Economics in One Virus*, pp. 88

- According to the author, how might the peer effect change the behavior of people during lockdowns?

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- How does this reading influence the way you feel about the hypothetical situation in the warm-up? Would it be valid to say that allowing some people to order food delivery in some situations would encourage others to do it anyway? Why or why not?

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# Why was I banned from going fishing?

## Policy Analysis Worksheet

Policy to prevent the spread of COVID-19	Costs of the policy and who bears the cost	Benefits of the policy and who receives the benefits
People are not allowed to go fishing		
People are not allowed to go paddleboarding		
People are not allowed to buy nonessential items in grocery stores		
People cannot travel over state lines		
People cannot go jet-skiing		
People can't have friends over for socially distanced gatherings in the backyard		

# Why was I banned from going fishing?

## Marginal Thinking Readings

### Excerpt A

Famous anti-communist Sen. Joseph McCarthy (R-WI) once suggested that having even one communist in the State Department was one community too many. Yet this was an obvious failure to think on the margin. The marginal cost of rooting out every last communist would have been massive. It seems incredibly unlikely that just one communist among all State Department employees could have such a damaging influence to justify the vast cost in time, resources, false allegations, and employee morale.

We could likewise eliminate lots of pollution by banning all industrial activity, most travel, and the burning of various fuels. But the cost of doing so would be huge. On the margin, it would soon become clear that reintroducing some activity, such as a power system to prevent many people from dying of hypothermia, would be very, very good, on net, for society. Or, as another example, we might believe that providing government support for education has some positive impacts on society. But mandating another additional two years of formal schooling on top of existing mandates might have vastly higher marginal costs than societal marginal benefits.

—*Economics in One Virus*, p. 92

- Define marginal thinking according to the texts above.

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- According to the text, how does marginal thinking affect government policy? Provide an example from the reading.

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- Using one of the policies previously discussed (prohibiting watersports, prohibiting the sale of nonessential items, prohibiting travel, etc.), explain how marginal thinking might lead to a policy that better balances costs and benefits.

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Excerpt B

What happened after the initial, crude lockdowns was an implicit admission that the developers of these lockdowns did not think enough on the margin. Most reopenings occurred in stages. Lower-risk activities were allowed first, such as eating in outdoor restaurants with strict social distancing protocols. Mass gatherings, including concerts and sports events, were banned for much longer—these are, it is now believed, highly likely to have been the sources of superspreader events that possibly propelled infection rates. The marginal social costs of such gatherings are therefore highly likely to exceed the benefits.

—*Economics in One Virus*, p. 95

- According to the text, how did marginal thinking change the way many governments approached COVID-19 policies? Provide evidence from the text.

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Excerpt C

Not that all marginal thinking points in favor of looser public health guidance or mandates, however. For many weeks during the initial lockdown, the most risky activity most people undertook each week was a visit to the grocery store. But at that time here in Washington, DC, there were no initial requirements from government or the retailers to wear facemasks or coverings within the stores, or indeed limits on how many people could enter. The requirements by stores that came later, however, almost certainly had marginal social benefits that exceeded the marginal social costs. Having to wait outside for a short time or cover your face while inside would usually be a relatively small cost imposition on each individual relative to the potential benefits of stopping the spread of the disease.

—*Economics in One Virus*, p. 93

- According to the text, identify a COVID-19 policy that balanced marginal costs and benefits appropriately. Provide evidence from the text.

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# Why was I banned from going fishing?

## Policy Reading 2 Exit Ticket

Then there were the huge congressional spending packages. Lots of funding and relief spending was thrown around left, right, and center. But clearly some uses could have a much bigger payoff than others. Although there was great uncertainty over whether we could fund a robust test-trace-isolate regime, or a successful vaccine or treatment for COVID-19, the reduction in economic pain that any of these ideas could have delivered was always huge. We knew, too, that vaccines in particular usually take years to roll out, in part because they entail incredibly risky investments in manufacturing capacity specific to the particular vaccine.

Given the potential social benefits of any of these public health innovations compared to the upfront costs, the case for a huge investment in testing, treatment research, and advanced orders for vaccines was extremely strong. Recent research by Tim Johnson, a business professor at the University of Illinois Urbana-Champaign, and others, has used stock market reactions to vaccine progress to estimate that a vaccine cure that ended this pandemic and its uncertainty would be worth around 5–15 percent of global wealth. The marginal benefits of any measures that encourage economic normalization by speeding up the end of this pandemic by just a few months then would be absolutely enormous, especially relative to the marginal costs of the investment, which were tiny in the grand scheme of things. And yet, as Nobel Prize–winning economist Paul Romer has observed, governments around the world, including in the United States, spent tiny, tiny fractions on medical innovation and testing through this pandemic relative to more direct relief to households and businesses.

And this was despite the fact that all the while the prevalence of the virus was high, the marginal benefit of additional “stimulus” was low in terms of its impact in reviving activity, especially relative to steps that got the virus under control.

—*Economics in One Virus*, p. 98

- Imagine that Congress has developed a congressional committee to investigate the response to the COVID-19 pandemic and to prepare for future pandemics. Create a short elevator pitch-type speech to present to your congressperson at the weekly coffee meetings he holds. Make sure you use the concept of marginal thinking and information from the text above in your presentation.

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