

# Lecture 14: Public Goods

December 1, 2020

# Overview

Course Administration

In Class

Defining Public Goods

Optimal Level of Public Goods Provision

Equilibrium Provision of Public Goods

Public Provision of Public Goods

# Course Administration

## 1. Reading quiz

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2. Evaluations: mine and the school's
  - mine: <https://forms.gle/8Wu9uWpEzVLSbtim6>
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6. Any questions?



# Ripped from the Headlines

This is it!

# In-Class Plan

1. Outstanding questions?
2. Public and private good examples
3. In-class problems, time permitting

# Public and Private Goods

- Round 1
  - In your group, come up with three goods
  - Place them on the public-private chart on the next slide
  - Make a shareable powerpoint slide/google slide with the chart
- Round 2
  - Use the chat to send a list of your three goods (not the chart!) to a member of the group with the number one higher than yours
  - Put their goods on a new chart
  - You should end up with two charts
- All together, we review the charts

## Think of Goods as Lying on a Grid of Public-ness

|                            |     | Is consumption of good rival? |                    |
|----------------------------|-----|-------------------------------|--------------------|
|                            |     | Yes                           | No                 |
| Is consumption excludable? | Yes | Private good                  | Impure public good |
|                            | No  | Impure public good            | Public good        |

## Afternoon Groups

| Room | Name    | Room | Name     |
|------|---------|------|----------|
| 1    | Merritt | 3    | Benjamin |
| 1    | Blair   | 3    | Lizbet   |
| 1    | Brett   | 3    | Jacob    |
| 2    | Brian   | 4    | Chris    |
| 2    | Quinn   | 4    | Tara     |
| 2    | Diane   | 4    | AJ       |
| 5    | Alie    | 4    | Junran   |
| 5    | Atticus |      |          |
| 5    | William |      |          |

## Evening Groups

| Room | Name     | Room | Name      | Room | Name      |
|------|----------|------|-----------|------|-----------|
| 1    | Christa  | 3    | Timberly  | 6    | Alexis L. |
| 1    | Danielle |      |           | 6    | Alek      |
| 1    | Malka    |      |           | 6    | Nicole    |
| 2    | Laura    | 4    | Angele    | 7    | Jack      |
| 2    | Jonathan | 4    | Richard   | 7    | Patrick   |
| 2    | Andres   | 4    | Alexis H. | 7    | Adrienne  |
| 3    | Dylan    | 5    | Emma      | 8    | Fady      |
| 3    | Sarah    | 5    | Lydia     | 8    | Julia     |
| 3    | Charles  | 5    | Trey      | 8    | Ellaina   |

# In-Class Problems

time permitting

# The End!

It's been a pleasure. Thanks for working with the oddities of online school.

Please go do my evaluation! <https://forms.gle/8Wu9uWpEzVLsbtim6>

See you for the final Dec. 15.



# Lecture 14: Public Goods

December 1, 2020

# Today

1. Defining public goods
2. Optimal provision of public goods
3. Equilibrium provision of public goods
4. Public provision of public goods

# Defining Public Goods

## Defining Public Goods

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Public goods are **not** necessarily publicly provided goods.

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  - non-excludable, but rival: road at rush hour
  - non-rival, but excludable: very big park

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  - construction of the purple line
  - bond issuance

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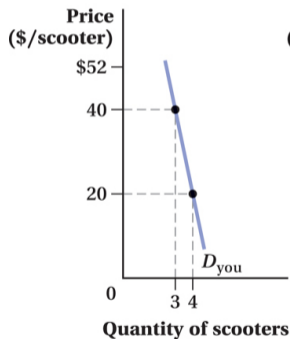
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How do public goods from podcasts fit in this?

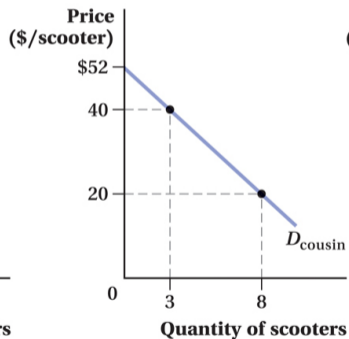
# Optimal Provision of Public Goods

# Optimal Provision of Private Goods

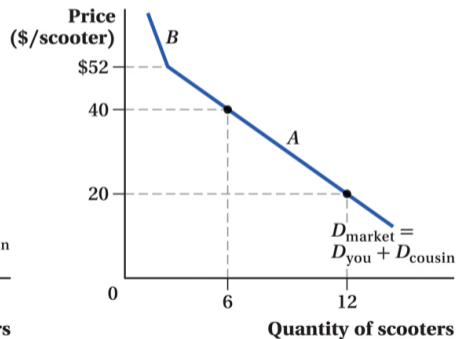
(a)



(b)



(c)



## Using Algebra To Do This

Suppose we have two demand curves

- $Q_{Joe} = 5 - 0.05P$
- $Q_{Jack} = 13 - 0.25P$

This is a piece-wise linear function. What are the pieces?

- At  $P > \$52$ , Jack doesn't want any more
- At  $P > \$100$ , Joe doesn't want any more

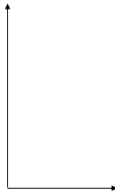
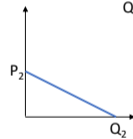
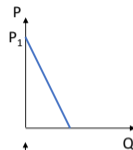
We write this as

$$Q_M = \begin{cases} 18 - 0.3P & \text{if } 0 < P < 52 \\ 5 - 0.05P & \text{if } P > 52 \end{cases}$$

Why doesn't this work for public goods?

# Optimal Provision of Public Goods?

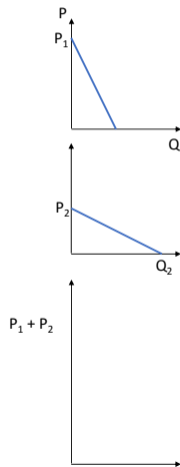
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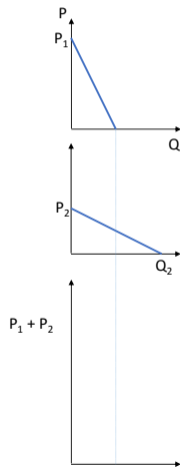
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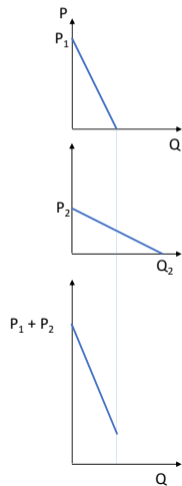
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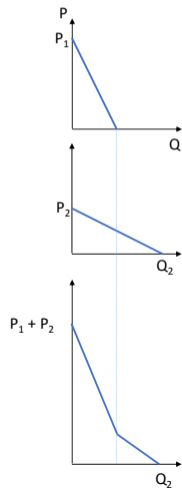
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## Adding Market Demand for Public Goods in Math

- For public goods, we add up  $P$  at a given quantity,  $Q$
- For 300 fireworks, how much is everyone willing to pay?
- Mechanically, add  $P = g(Q)$
- Note that this may have a kink(s) where after quantities where people drop out of the market

# Equilibrium Provision of Public Goods

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Bottom line: Equilibrium provision of public goods  $<$  optimal provision of public goods

## Why Underprovision?

- People may not truthfully reveal demand due to free rider problem
- People may not know their demand
- To reiterate, two equivalent statements
  - In general, private markets **underprovide** public goods
  - Even goods that a whole group wants and is willing to pay for may not be provided

## When Does Private Market Provide Some Public Goods?

- The smaller the group, the more likely the provision
- When one, or a few, members care a lot
- Altruism
- Warm glow

# Public Provision of Public Goods

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  - And consumers have an incentive to underestimate
- Government provision “crowds out” private provision
  - Before the government firework show, you might have bought some of your own. Now you do not. Other examples?
- Costs and benefits hard for government to measure

## Recap of Today: Public Goods

- Definition
- Optimal market provision
- Equilibrium market provision
- Role for government

# The End!

It's been a pleasure. Thanks for making it to the very end.