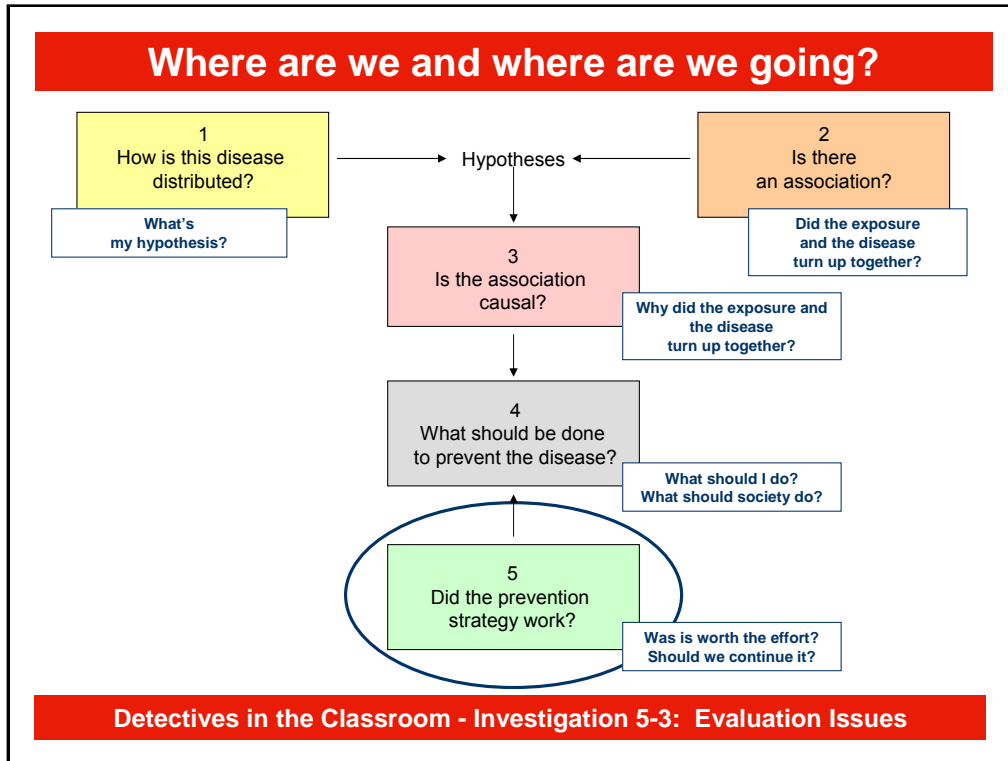


In **Investigation 5-3: Evaluation Issues**, students will explore two evaluation issues that must be considered when determining if a risk management strategy worked: the efficiency of the strategy and its offsetting effects.

Next Slide



Remind students again that in the Module 5 investigations, they are learning how to answer the question “Did the prevention strategy work?”

Next Slide

Evaluation Issues



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- On what basis do you decide what you will eat at a restaurant?

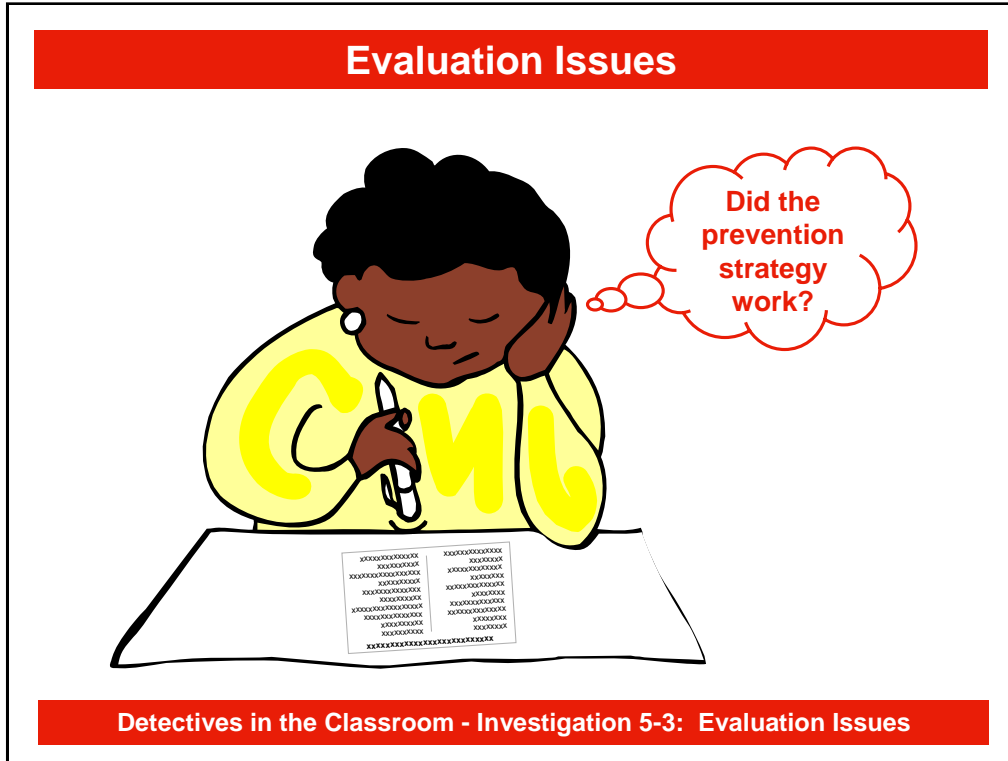
Probe until students mention such considerations as cost, taste, nutritional value, calories, and the time they have to eat.

Ask students:

- How do you finally decide what you will eat?

Discuss until students realize that, depending on what foods they like and on the amount of money and time they have, they weigh the costs and benefits of eating the different foods.

Next Slide



Point out that we have limited time, energy, and money. Resources invested in one risk management strategy cannot be invested in another. Therefore, it is important to use our resources wisely.

Ask students:

- How would you determine if the resources invested in a risk management strategy were well spent? (Weigh its costs and benefits)

Next Slide

Epi Talk

Efficiency
The effects achieved in relationship to the time, energy, and money expended.

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students to find “Efficiency” in the **Epi Talk** list.
Review its definition.

Next Slide

Epi Talk

Epi Talk

Cost-Benefit Analysis
A tool for deciding how to allocate money based on a comparison of the dollar value of implementing a risk management strategy (cost) to the dollar value of what the strategy will accomplish (benefit).
Results in a cost-benefit ratio.

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

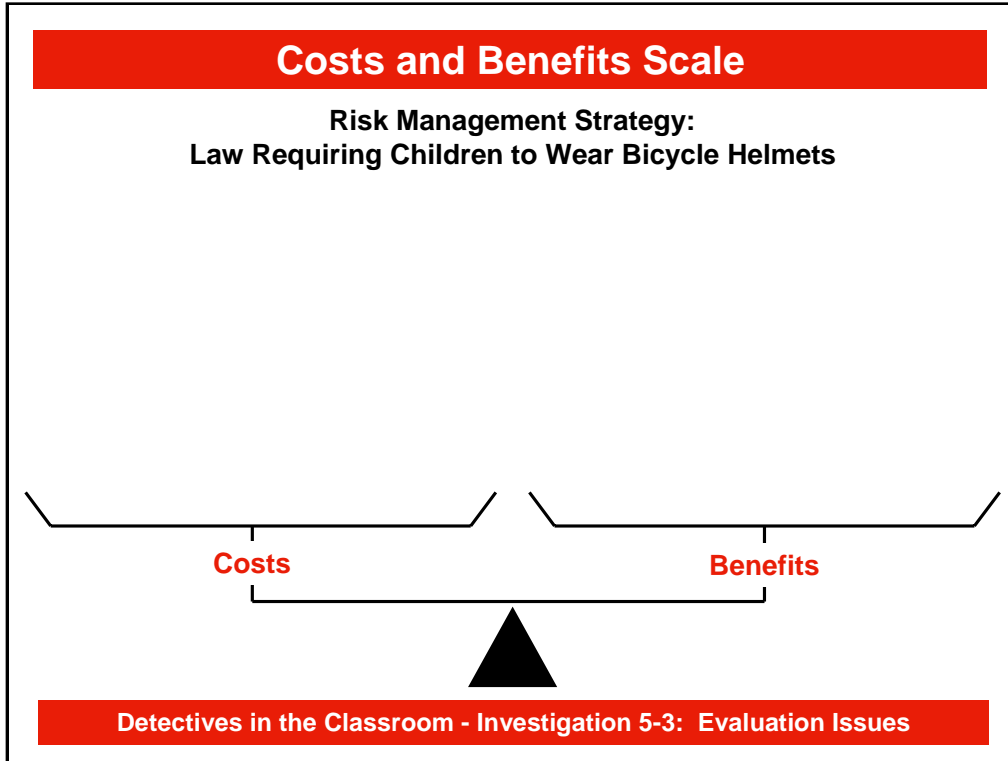
Ask students to find “Cost-benefit analysis” in the **Epi Talk** list.

Review its definition.

Ask students:

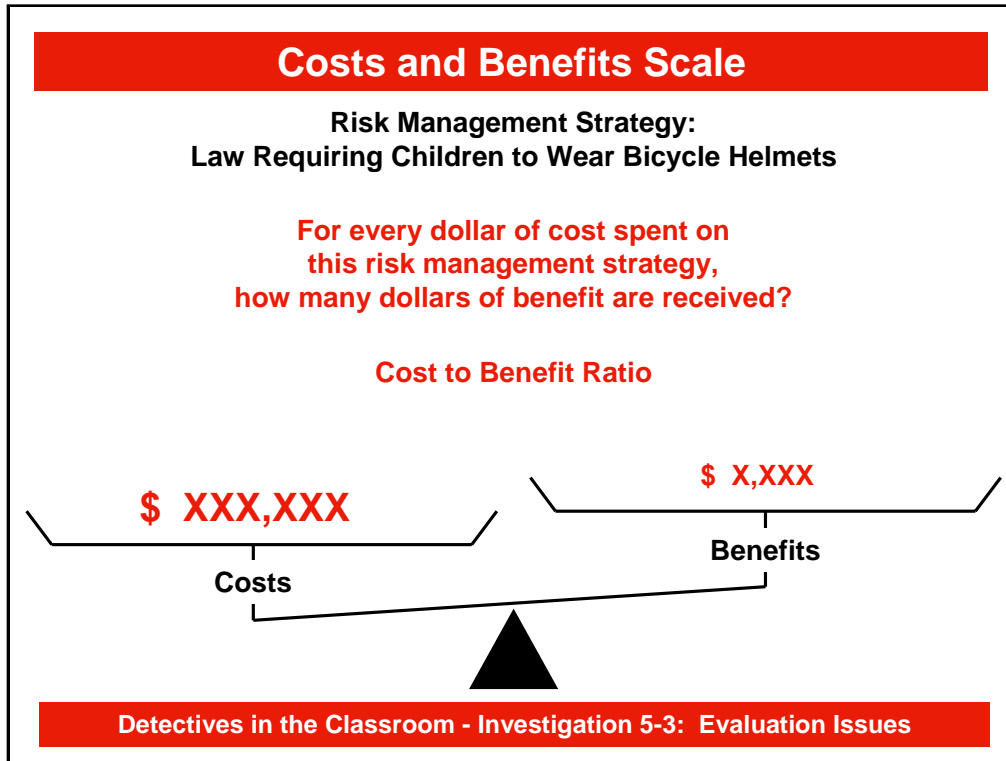
- How would a cost-benefit ratio look if it suggested that a risk management strategy should continue? (The benefits would outweigh the costs.)
- How would a cost-benefit ratio look if it suggested that a risk management strategy should *not* continue? (The costs would outweigh the benefits.)

Next Slide



Tell students to think of a scale. On one side of it they are going to place all the costs of implementing a risk management strategy, and on the other side they are going to place all the benefits of implementing the strategy. In this case, the strategy is a law requiring children to wear bicycle helmets.

Next Slide



When students have finished with the scale, they will be able to answer the question “For every dollar of cost spent on this risk management strategy, how many dollars of benefit are received?” This will be done by calculating a cost to benefit ratio.

Ask students:

- Do the benefits outweigh the costs in this example of the scale? (No, the costs outweigh the benefits; that is, the cost dollars are higher than the benefit dollars.)
- What would you do about a risk management strategy that has this cost-benefit ratio? (Consider discontinuing it)

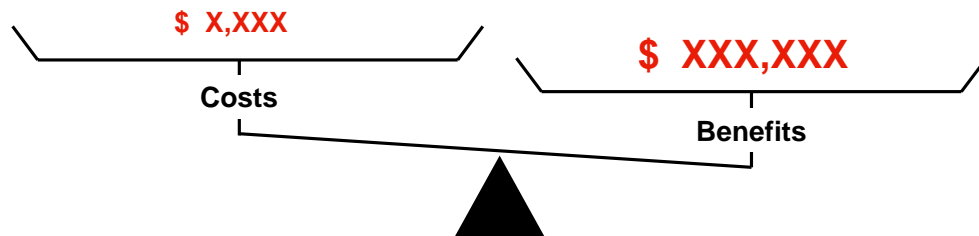
Next Slide

Costs and Benefits Scale

**Risk Management Strategy:
Law Requiring Children to Wear Bicycle Helmets**

**For every dollar of cost spent on
this risk management strategy,
how many dollars of benefit are received?**

Cost to Benefit Ratio

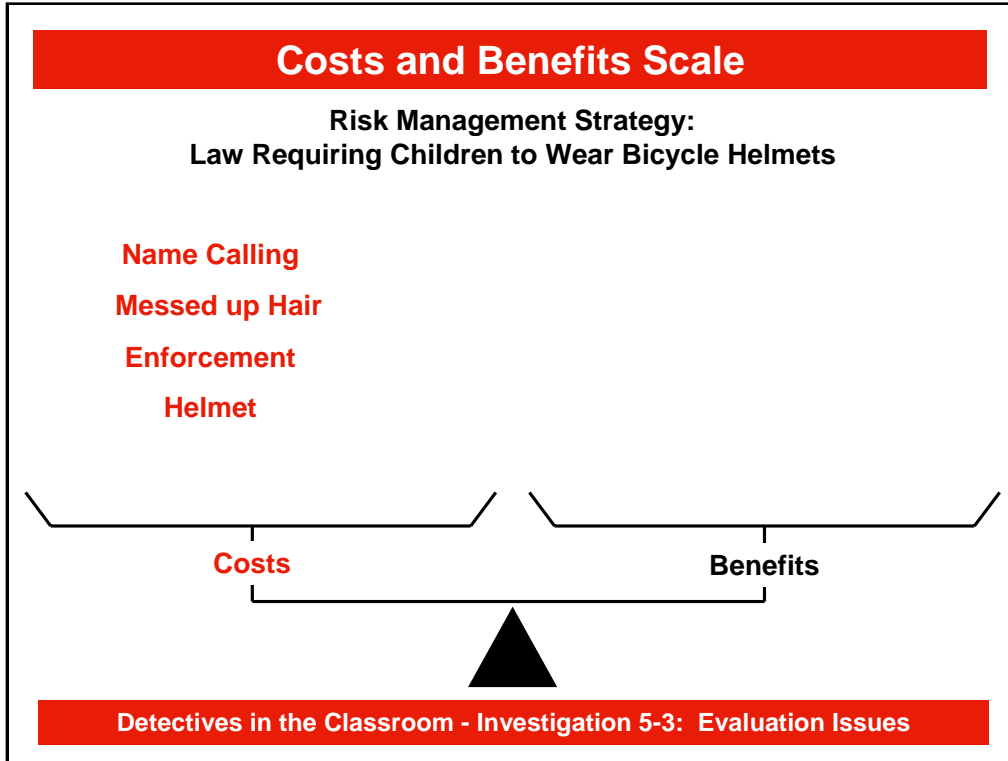


Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- In this example of the scale, do the benefits outweigh the costs? (Yes)
- What would you do about a risk management strategy that has this cost-benefit ratio? (Consider continuing it)

Next Slide



For the purpose of this example, we will focus on the costs of the helmets themselves, of enforcing the law, of messing up children’s hair, and of being called names. However, encourage students to write down any other ways they think this risk management strategy would generate costs.

☀ Teacher Alert: Note that it may be difficult or impossible to place a dollar value on some of the “costs.” This is one of the challenges of carrying out a cost-benefit analysis.

Next Slide

Costs and Benefits Scale

Detectives in the Classroom
Investigation 5-3 Epi Log Worksheet

Name: _____ Date: ____/____/____

Evaluation Issues

1.

Risk Management Strategy: Law Requiring Children to Wear Bicycle Helmets

_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
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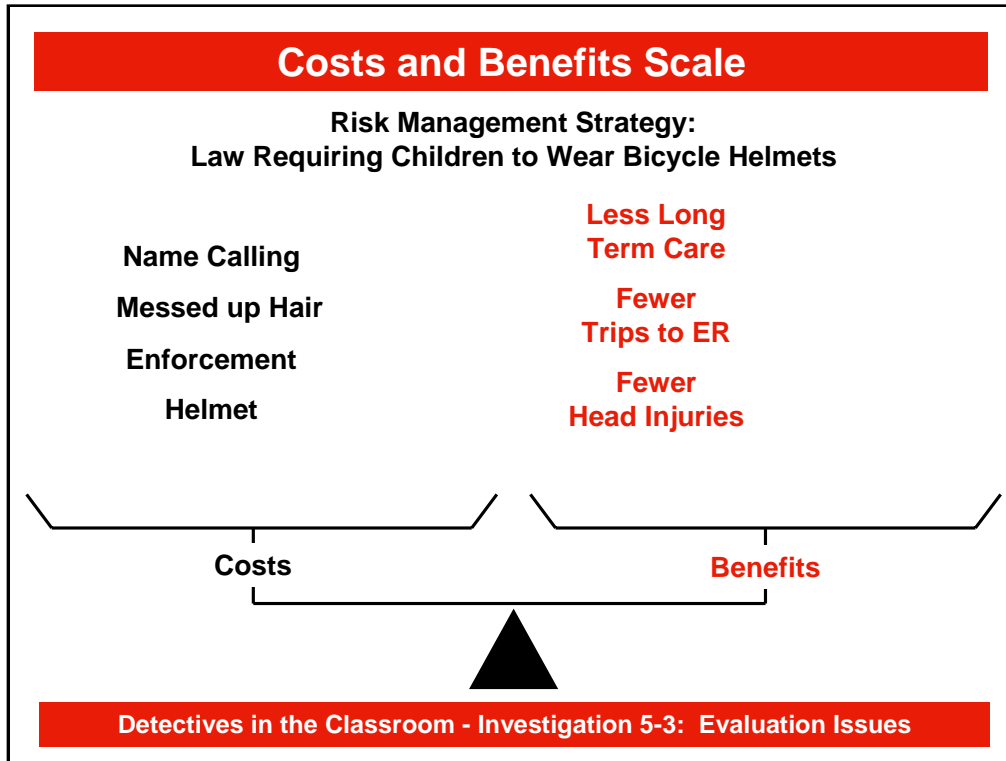
Costs

Benefits

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Now have students write down ways in which a law requiring children to wear bicycle helmets would generate benefits. They should write on the longest lines on the benefits side (right) of the scale.

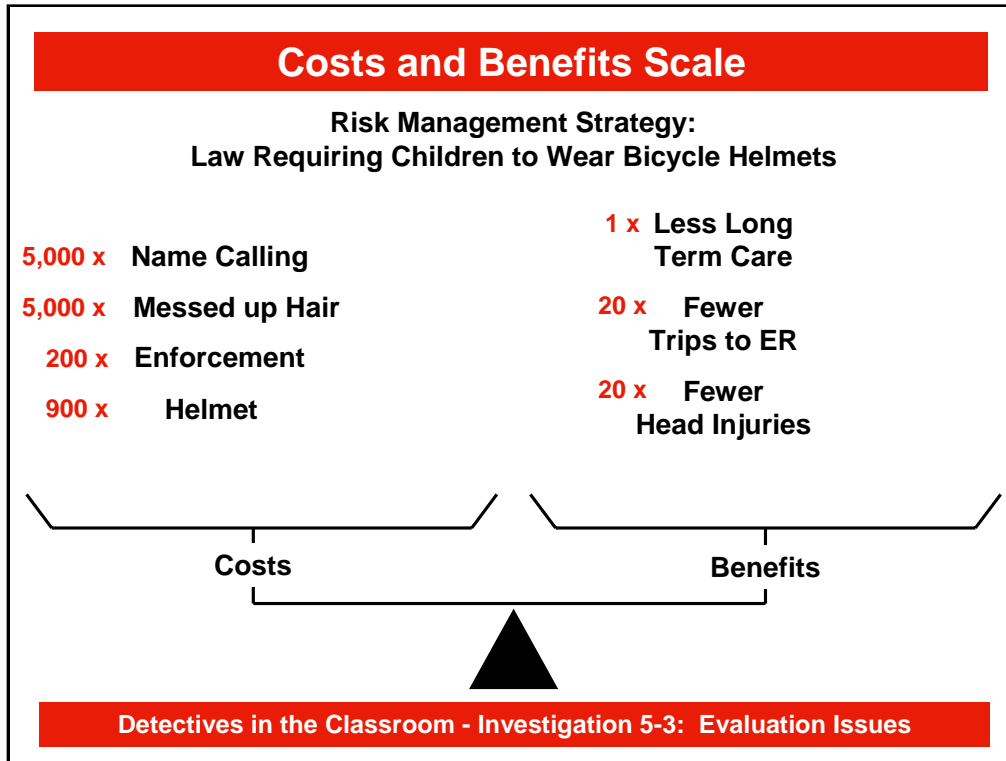
Next Slide



For the purpose of this example, we will focus on the benefits of having fewer head injuries, fewer visits to the emergency room, and fewer people in need of long-term care. However, encourage students to write down any other ways they think this risk management strategy would generate benefits.

☀ Teacher Alert: Other benefits include lowering parental concern about bicycle injuries and making children more safety conscious in other aspects of their lives.

Next Slide

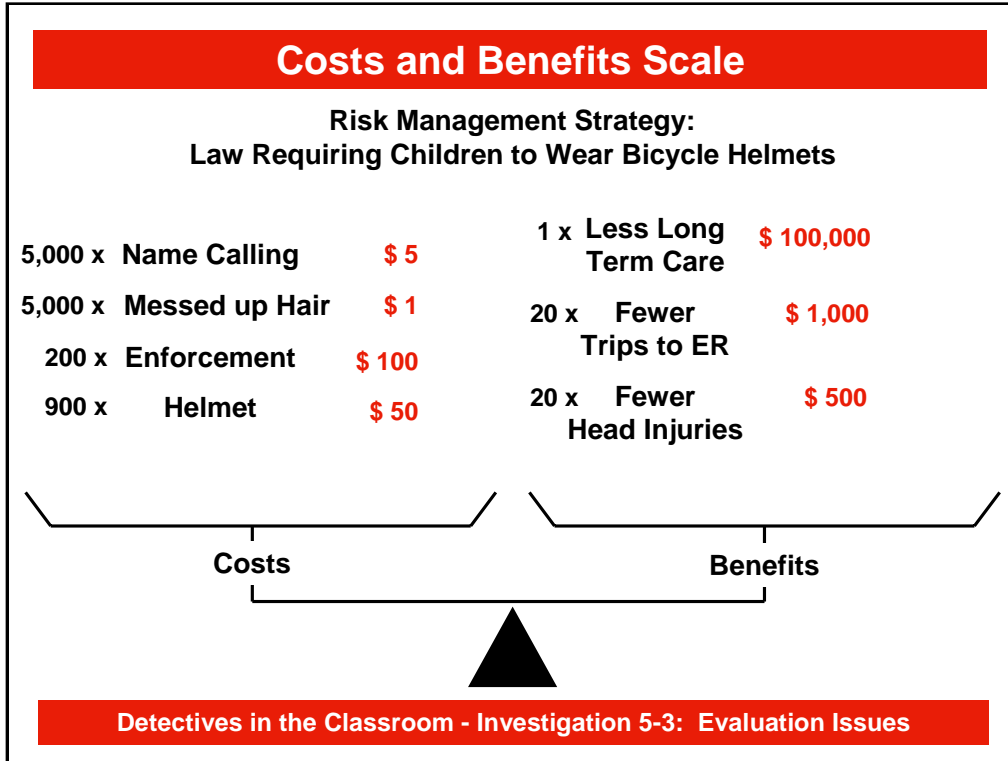


For the purpose of this example, the estimates of the frequencies are as shown on the slide.

☀ Teacher Alert: Emphasize that these are estimates. Encourage each student to make a best guess. One advantage of a cost-benefit analysis is that it makes people think about specific estimates. One disadvantage is that such specific estimates are very difficult to determine and people's estimates may vary. Do not insist that students agree with each other.

☀ Teacher Alert: Realize that, in a population of 1,000 children, a cost or a benefit can occur more than once to a person—hence, the estimate of 5,000 name callings and messed up hair.

Next Slide



For the purpose of this example, the estimates of the dollar values are as shown on the slide.

☀ Teacher Alert: Emphasize that these are estimates. Encourage each student to make a best guess. Do not insist that students agree with each other. Putting dollar values on these estimates is probably the most difficult aspect of carrying out a cost-benefit analysis. The fact that people's estimates will be different is another challenging aspect of the analysis.

Next Slide

Costs and Benefits Scale

Detectives in the Classroom
Investigation 5-3 Epi Log Worksheet

Name: _____ Date: ____/____/____

Evaluation Issues

1.

Risk Management Strategy: Law Requiring Children to Wear Bicycle Helmets

_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____

Costs

Benefits

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Now have students calculate the total dollar value of each cost and benefit by multiplying its estimated frequency by its estimated cost.

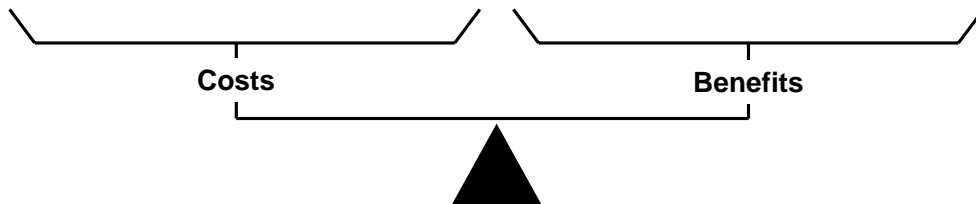
Students should write their estimates on the lines immediately to the right of the equal (=) signs.

Next Slide

Costs and Benefits Scale

Risk Management Strategy: Law Requiring Children to Wear Bicycle Helmets

5,000 x Name Calling	\$ 5 = \$25,000	1 x Less Long Term Care	\$ 100,000 = \$100,000
5,000 x Messed up Hair	\$ 1 = \$5,000	20 x Fewer Trips to ER	\$ 1,000 = \$20,000
200 x Enforcement	\$ 100 = \$20,000	20 x Fewer Head Injuries	\$ 500 = \$10,000
900 x Helmet	\$ 50 = \$45,000		



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

For the purpose of this example, the estimates of dollar values are as shown on the slide.

Next Slide

Costs and Benefits Scale

Detectives in the Classroom
Investigation 5-3 Epi Log Worksheet

Name: _____ Date: ____/____/____

Evaluation Issues

1.

Risk Management Strategy: Law Requiring Children to Wear Bicycle Helmets

_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
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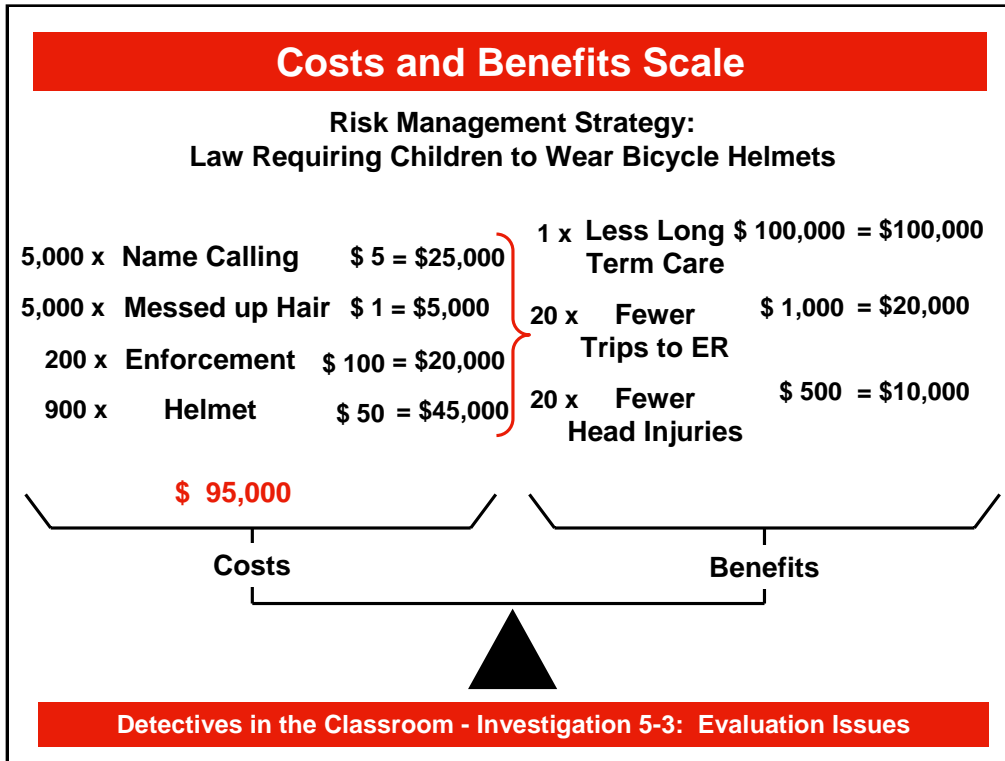
Costs

Benefits

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Now have students add all the dollar values of all the costs of this risk management strategy and place the total on the costs side of the scale.

Next Slide



For the purpose of this example, the total dollar value of all the costs was \$95,000.

Ask students:

- Is a risk management strategy that generates costs of \$95,000 a good use of resources? (It depends on, among other things, the total dollar value of the benefits.)

Next Slide

Costs and Benefits Scale

Detectives in the Classroom
Investigation 5-3 Epi Log Worksheet

Name: _____ Date: ____/____/____

Evaluation Issues

1.

Risk Management Strategy: Law Requiring Children to Wear Bicycle Helmets

_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____
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_____ x _____ \$ _____ = \$ _____	_____ x _____ \$ _____ = \$ _____

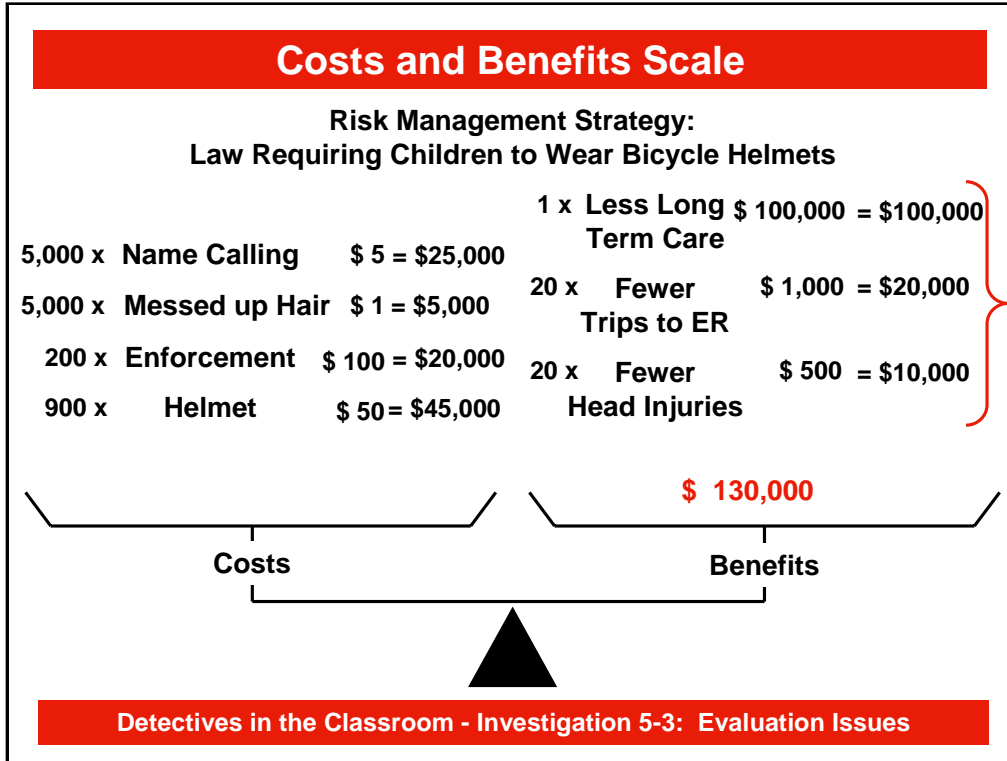
Costs

Benefits

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Now have students add all the dollar values of all the benefits of this risk management strategy and place the total on the benefits side of the scale.

Next Slide

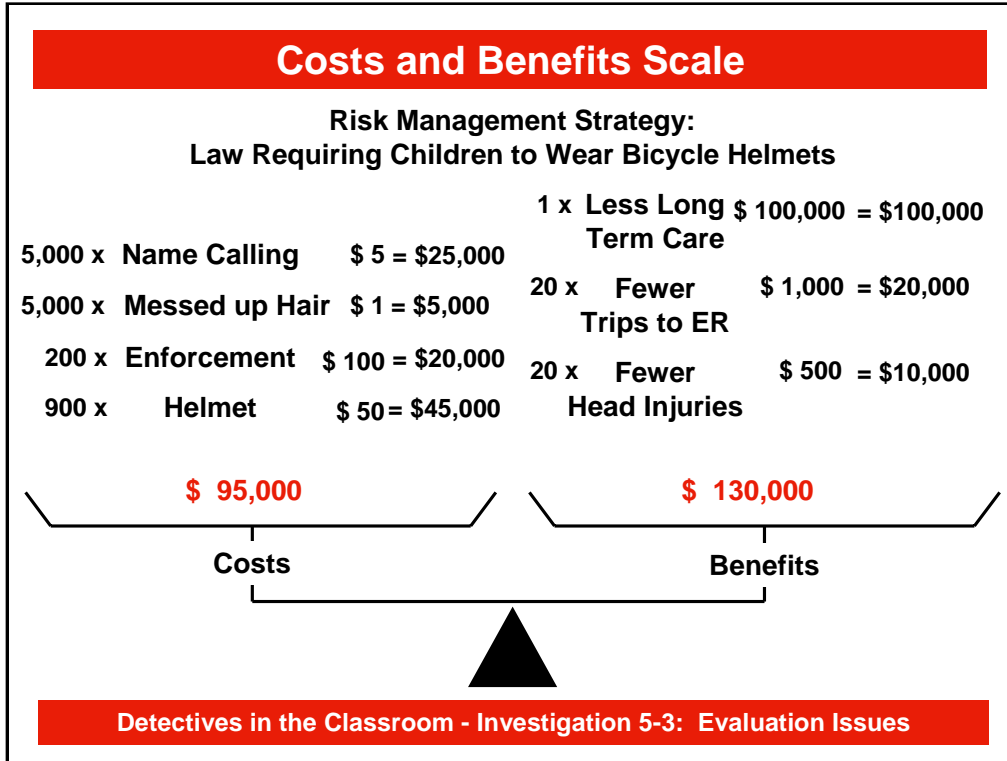


For the purpose of this example, the total dollar value of all of the benefits was \$130,000.

Ask students:

- Is a risk management strategy that generates benefits of \$130,000 a good use of resources? (It depends on, among other things, the total dollar value of the costs.)

Next Slide



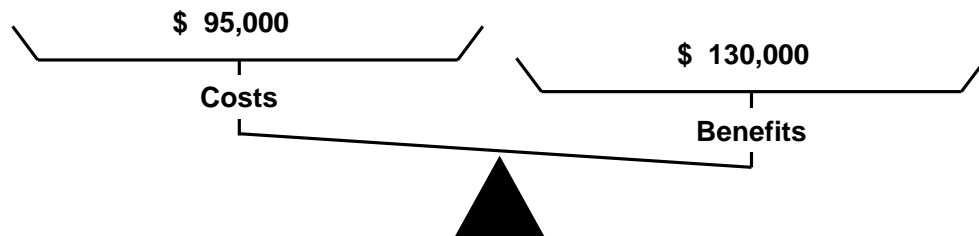
Have students compare their answers with the slide.

Next Slide

Costs and Benefits Scale

**Risk Management Strategy:
Law Requiring Children to Wear Bicycle Helmets**

**For every dollar of cost spent on
this risk management strategy,
how many dollars of benefit are received?**



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- What mathematical computation would answer the question “For every dollar of cost spent on this risk management strategy, how many dollars of benefit are received?” (Divide the dollar value of the benefits by the dollar value of the costs.)

Students should do this computation.

Next Slide

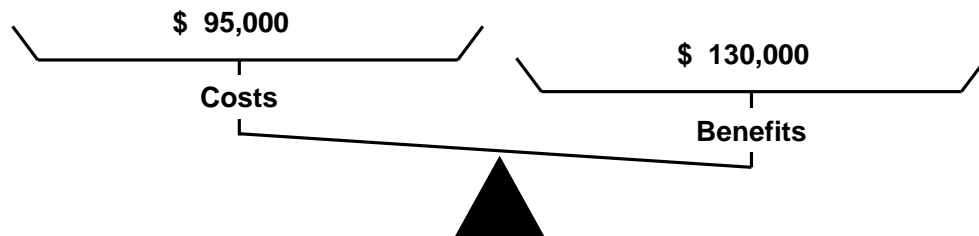
Costs and Benefits Scale

**Risk Management Strategy:
Law Requiring Children to Wear Bicycle Helmets**

**For every dollar of cost spent on
this risk management strategy,
how many dollars of benefit are received?**

$$\text{\$130,000} / \text{\$95,000} = 1.37$$

Cost to Benefit Ratio



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Have students compare their answers with the slide.

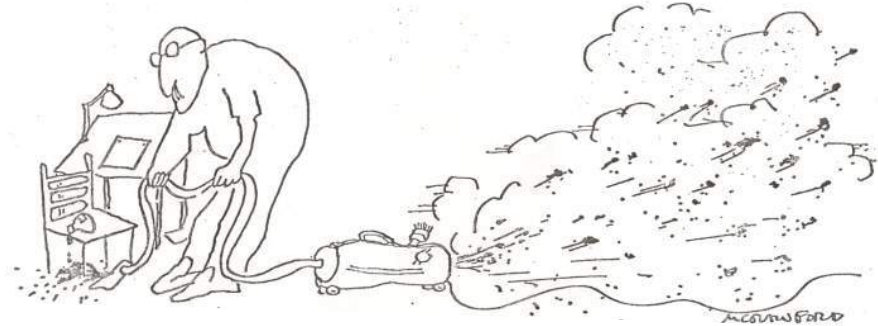
Point out that they have just calculated a cost-benefit ratio.

Ask students:

- Can you complete the following sentence "For every dollar spent on this strategy, _____ dollars of benefit are gained."? (\$1.37)
- How would you describe the efficiency of this risk management strategy?
- Is this risk management strategy cost beneficial?
- Should this risk management strategy be continued?

Next Slide

Offsetting Effects



**Other risks that are created
by implementing a risk management strategy.**

Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- How does the cartoon on the slide relate to the offsetting effects of implementing a risk management strategy? (In attempting to solve one problem, cleaning up the ink, this man has created a bigger problem by splattering the ink over a larger area.)

Unlike what is depicted in this cartoon, offsetting effects are not necessarily a larger version of the original problem. Offsetting effects can be entirely different.

Next Slide

Offsetting Effects



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- Can you identify an offsetting effect of a risk management strategy to reduce the risk of smallpox by requiring people to get a smallpox vaccination? (Some people who receive the vaccination will have an adverse response.)

☀ Teacher Alert: These offsetting effects are often called “side effects” in medicine and “collateral damage” in war.

Next Slide

Offsetting Effects



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- Can you identify an offsetting effect of a risk management strategy to reduce injuries to children in airline accidents by requiring a parent or guardian to purchase a ticket or seat for a child? (Because of the cost of an extra airline ticket for the child, parents may choose to drive instead of fly. However, on a per-mile-traveled basis, driving is more risky than flying.)

Next Slide

Offsetting Effects



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- Can you identify an offsetting effect of a risk management strategy to reduce the risk of accidental consumption of medicine by children? (Because the containers have so-called child-resistant caps, instead of hiding medicines from children, parents, guardians, or babysitters may leave containers of medicine in places where children can get to them. But some children can open these caps!)

Next Slide

Offsetting Effects



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- Can you identify an offsetting effect of a risk management strategy to reduce the risk posed by being overweight? (In an effort to lose weight, some people will start to smoke cigarettes.)

Next Slide

Offsetting Effects



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Ask students:

- Can you identify an offsetting effect of a risk management strategy that eliminates school lockers to reduce the risk posed by hidden guns and drugs? (Students will need to carry their books from class to class and thus increase their risk of back pain.)

Next Slide

Essential Question 5



Detectives in the Classroom - Investigation 5-3: Evaluation Issues

Remind students that to answer Essential Question 5—“Did the prevention strategy work?”—they must evaluate the strategy.

In this investigation they explored two evaluation issues that must be considered when determining if a risk management strategy worked: the efficiency of the strategy and its offsetting effects.

Next Slide

Evaluation Issues



Detectives in the Classroom – Investigation 5-3: Evaluation Issues

This concludes **Investigation 5-3: Evaluation Issues** and students can now put away their **Epi Logs**.