Tracing the Cause

Weigh competing explanations of a cholera outbreak

MWH.P.1.2 "Develop practices which demonstrate an understanding that social studies involves the evaluation of evidence. Develop, investigate, and evaluate plausible answers to essential questions that reflect enduring understandings across time..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two observations that support Snow's explanation, circle the pattern Farr used, and put a star beside two limits on what the evidence can prove.

What Spread Cholera?

1. In 1854, cholera swept through a crowded part of London, causing severe diarrhea and sometimes death within hours. Many people blamed *miasma*, or poisonous air from filth. Physician John Snow asked a sharper question: Why did people near Broad Street fall ill while some nearby people did not? He recorded where deaths occurred and interviewed residents about the water they used. Deaths clustered around the Broad Street pump, a public source of drinking water. A cluster is a clue, not a verdict. Crowded streets might also share foul air, so a map alone could not settle the cause.

2. Snow looked for cases that tested both explanations. Workers at a nearby brewery had relatively few cholera deaths; the brewery had its own water supply, and workers often drank beer. A woman living miles away died after receiving water brought from the Broad Street pump. Those details fit Snow's claim that contaminated water spread cholera better than a claim based only on distance from bad air. Still, interviews could be incomplete, and Snow did not isolate a disease-causing organism from the pump water. His evidence supported a cause, but it did not turn every uncertainty into a fact.

3. Statistician William Farr had found that London districts at lower elevations suffered higher cholera death rates. He took this pattern as support for the polluted-air explanation, since low areas were thought to trap foul air. Snow and Farr agreed that place mattered, but they disagreed about which environmental exposure carried the disease. Elevation could also be linked to the water people used, so Farr's pattern did not rule out Snow's claim. Officials removed the Broad Street pump handle, but the outbreak was already declining. The timing alone cannot prove that removing the handle stopped the outbreak.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which two observations beyond the cluster of deaths support Snow's explanation? Explain how each helps.

2. How could Snow's and Farr's location patterns both be accurate even though their explanations differed?

3. Why does the passage reject the claim that removing the pump handle stopped the outbreak?

4. What records could help distinguish Farr's air explanation from Snow's water explanation? Explain what you would compare.

3 YOUR TURN

Your own words

Write your own supporting question about a group of London residents not investigated in the passage. Name two specific records you would seek to compare the water and air explanations, then describe a finding that would challenge the explanation you favor.

ANSWER KEY

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HIGH SCHOOL · MWH.P.1.2

PART 1 · READ AND MARK

Underline two observations that support Snow's explanation, circle the pattern Farr used, and put a star beside two limits on what the evidence can prove. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which two observations beyond the cluster of deaths support Snow's explanation? Explain how each helps.	**Brewery workers had relatively few deaths and used a separate water supply. A woman living miles away died after receiving Broad Street pump water. Both observations link illness more closely to water use than to nearby air.**
2	How could Snow's and Farr's location patterns both be accurate even though their explanations differed?	**Both found that cholera deaths varied by place. Snow connected the pattern to water use, while Farr connected higher death rates in low areas to polluted air; elevation could also be linked to water use.**
3	Why does the passage reject the claim that removing the pump handle stopped the outbreak?	**The outbreak was already declining when officials removed the handle, so the timing does not establish that removal caused the decline.**
4	What records could help distinguish Farr's air explanation from Snow's water explanation? Explain what you would compare.	**Compare residents' water sources and cholera cases in areas at similar elevations. Different death rates among people sharing similar air but using different water sources would support Snow's explanation.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Did households on the same street but served by different water companies have different cholera death rates? I would compare water-company service ledgers with household death registers for that street. If households sharing the same air had different death rates by water supplier, that would favor contaminated water. If death rates were similar despite different supplies, that would challenge my preferred water explanation.

Accept other specific records or observations when the student explains how they would test the competing explanations. A strong response identifies evidence that could count against the student's favored explanation.