

2027-04-21 · 80 minutes

Line list

Your goal: Build an outbreak line list and calculate incidence and prevalence from case data.

One product: Outbreak line list with case ID, onset date, symptoms, and outcome for each case, plus calculated incidence, prevalence, and a written trend observation.

Question: How do consistent onset and outcome records support correct counts, proportions and an honest time-pattern observation?

Start the work

Outbreak counts describe occurrence within a population and time; an ethical policy choice also needs a reasoned judgment about benefits, burdens and uncertainty.

1. Open the case data and create columns for case ID, onset date, symptoms, and outcome. Use the supplied original reports; keep official records pending.
2. Enter each case as one row in the line list.
3. Count new cases in each defined window, then calculate incidence proportion using its stated at-risk denominator.
4. Count active cases at the cutoff, then calculate point prevalence using the total population.
5. Write one bounded observation about the observed pattern, supported by the required original onset graph.

Without access or a confirmed route, save the dated work and mark submission pending. The original spreadsheet workspace and missing official assigned dataset remain separately identified.

Words you will use

line list

A table with one case per row and the same fields for every case.

case ID

A unique code linking one case to its source report.

field

A named item of information recorded consistently.

case definition

The criteria deciding which records count as cases.

onset

The beginning of the required illness features.

report date

The date information reaches the recording system.

exposure date

The date of contact with a possible cause; it is not automatically onset.

symptom

An experienced feature of illness.

outcome

The recorded state of a case at the stated cutoff.

active case

A case whose defined illness has not ended by the cutoff.

recovery

The end of the defined illness episode.

cutoff

The final date and time included in a record or comparison.

inclusive

Including both named endpoints.

population

The defined group to which the counts refer.

cohort

A defined group followed over time.

at risk

Eligible to develop the counted new event during the stated period.

first episode

The first counted occurrence for a person in this exercise.

numerator

The counted cases above the division line.

denominator

The eligible group total used as the divisor.

new-case count

Number of onsets in a stated time window.

current-case count

Number of active cases at a stated instant.

incidence

Occurrence of new cases; specify count, proportion or rate.

incidence proportion

New cases divided by the initially disease-free people at risk during the window.

incidence rate

New cases divided by accumulated person-time at risk.

person-time

The total time people contribute while at risk.

point prevalence

Current cases divided by the total population at one instant.

percentage

A proportion expressed per one hundred.

cumulative count

All counted cases accumulated up to the cutoff.

subset

A specified part of a larger set.

duplicate

An extra record of a case already counted.

case finding

The method used to identify cases.

reporting delay

Time between an event and its entry into the reporting system.

time bin

A stated interval used to group events on a graph.

onset graph

A graph showing the number of new onsets in each time bin.

baseline

An expected or earlier comparison level with a stated source.

observed peak

The largest count in the observed record, not necessarily the outbreak's final peak.

trend

A pattern of change across comparable times.

prediction

A statement about a future outcome, with assumptions and uncertainty.

transmission

Passage of an infectious agent from a source to another person.

severity

How serious an illness or its effects are.

causal claim

A claim that one factor produced an outcome.

morbidity

Illness or its burden in a population.

mortality

Deaths in a population during a stated period.

contact tracing

Identifying and following people who may have been exposed to a case.

provenance

The source and history of information.

fictional

Invented for instruction, not observed in actual people.

H1: original records and the full task

This is a new, entirely invented Cedar cohort. No person was observed. Its thirty case reports are not official PLTW data or individual records reconstructed from Alder's aggregate numbers.

Warmup: name the fields you would record for a hypothetical new COVID case. Use a case ID, onset date, symptoms and outcome; do not provide names or personal illness details.

Answer both starting questions: how would you organize thirty sticky-note case reports, and how does sick-now differ from new-this-week? Keep your first answer for revision.

The full product is a thirty-row line list with four required columns, incidence and prevalence calculations, and a written trend observation. Include the onset graph required for this week.

Work independently from the supplied reports. Actual assigned spreadsheets, official case files, prior debate participation and live submissions remain separate when absent.

E1: case records and frequency rules

CDC explains that a common case definition makes counting consistent. A line list uses one row per case and the same fields in every row.

Onset is when the defined illness begins. Report date is when information is received; exposure date is a different event. Do not substitute one for another.

New-case count means onsets inside a defined window. Current-case count means cases still active at the stated instant. Both counts need the population and time to be interpretable.

Incidence proportion equals new cases divided by the initially disease-free people at risk for that window. Point prevalence equals current cases divided by the population at that instant.

Multiply a proportion by 100 for a percentage. Incidence rate uses person-time at risk; that denominator is not supplied, so this lesson does not calculate a person-time rate.

A cases-only list does not supply the full population denominator. Use D1's separate population rules. A five-case practice subset is not a complete population record.

Frequency alone does not measure severity or transmission speed. A change in observed onsets can be described without claiming why it happened.

D1: Cedar population, dates and case rules

Cedar is a fictional residential learning program with 300 adults. Membership is fixed from the start of April 1 through the end of April 14, 2027.

At the start of April 1, all 300 are disease-free and at risk. No births, deaths or moves occur. All thirty reports are unique valid cases from this cohort.

A case first develops both fever and cough. Its onset date is when both required symptoms first coexist. Additional sore throat does not change eligibility.

Recovery is when both required symptoms have ended. Recovery on a date counts as recovered by that date's end. This is a fictional counting rule, not a medical diagnosis.

Each adult can contribute only one first episode. Earlier cases stay excluded from a later at-risk denominator even after recovery; repeat episodes are outside this exercise.

The first window is April 1–7, inclusive. Its initial at-risk denominator is 300. The second window is April 8–14, inclusive; its denominator is 300 minus the first cases counted in April 1–7.

Case finding is complete every day, with the same criteria and no missed cases, duplicate reports or delays stipulated. All outcomes in D2 are known at the end of April 14.

The expected background is stipulated as zero to one new case per seven days in this population under the same method. It is a teaching assumption, not a measured prior series.

No exposure dates, infection-acquisition times, organism, transmission links, severity or treatment effects are supplied. Symptom onset does not locate an exposure or prove a source.

Use the unambiguous YYYY-MM-DD date format. Preserve an active outcome as active at the cutoff; do not invent a future recovery date.

D2: all thirty unsorted original reports

Report K18: both required symptoms first coexisted on 2027-04-10. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-13.

Report K02: both required symptoms first coexisted on 2027-04-03. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-06.

Report K25: both required symptoms first coexisted on 2027-04-12. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K08: both required symptoms first coexisted on 2027-04-05. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-08.

Report K01: both required symptoms first coexisted on 2027-04-02. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-05.

Report K14: both required symptoms first coexisted on 2027-04-09. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-12.

Report K22: both required symptoms first coexisted on 2027-04-11. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K05: both required symptoms first coexisted on 2027-04-04. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-07.

Report K29: both required symptoms first coexisted on 2027-04-13. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K11: both required symptoms first coexisted on 2027-04-06. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-09.

Report K04: both required symptoms first coexisted on 2027-04-04. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-07.

Report K17: both required symptoms first coexisted on 2027-04-10. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-13.

Report K27: both required symptoms first coexisted on 2027-04-12. Recorded symptoms are fever and cough; sore throat. The required symptoms remain active at the end of 2027-04-14.

Report K07: both required symptoms first coexisted on 2027-04-05. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-08.

Report K20: both required symptoms first coexisted on 2027-04-11. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K10: both required symptoms first coexisted on 2027-04-06. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-09.

Report K30: both required symptoms first coexisted on 2027-04-14. Recorded symptoms are fever and cough; sore throat. The required symptoms remain active at the end of 2027-04-14.

Report K03: both required symptoms first coexisted on 2027-04-03. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-06.

Report K23: both required symptoms first coexisted on 2027-04-11. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K13: both required symptoms first coexisted on 2027-04-08. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-11.

Report K06: both required symptoms first coexisted on 2027-04-04. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-07.

Report K26: both required symptoms first coexisted on 2027-04-12. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K16: both required symptoms first coexisted on 2027-04-10. Recorded symptoms are fever and cough. Both required symptoms ended on 2027-04-13.

Report K09: both required symptoms first coexisted on 2027-04-06. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-09.

Report K24: both required symptoms first coexisted on 2027-04-11. Recorded symptoms are fever and cough; sore throat. The required symptoms remain active at the end of 2027-04-14.

Report K12: both required symptoms first coexisted on 2027-04-07. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-10.

Report K28: both required symptoms first coexisted on 2027-04-13. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

Report K15: both required symptoms first coexisted on 2027-04-09. Recorded symptoms are fever and cough; sore throat. Both required symptoms ended on 2027-04-12.

Report K21: both required symptoms first coexisted on 2027-04-11. Recorded symptoms are fever and cough; sore throat. The required symptoms remain active at the end of 2027-04-14.

Report K19: both required symptoms first coexisted on 2027-04-10. Recorded symptoms are fever and cough. The required symptoms remain active at the end of 2027-04-14.

R1: build and check the full line list

Create four columns: case ID; onset date; symptoms; outcome at the end of 2027-04-14. In outcome, preserve the supplied recovery date or write active at cutoff.

Begin with one supplied report as your starter row, not a personal case. Then enter all thirty reports once. Keep each ID attached to its own dates and symptoms.

Check completeness by locating K01 through K30. Compare every row with D2, then sort a copy by onset date. Sorting changes row order, not any case value.

If behind, first enter K01, K02, K03, K04 and K05. Count their onsets within April 1–7 as a five-report exercise, then return to the other twenty-five.

That small set contains five first-window onsets. It does not give the full cohort's new-case count or population incidence; finish the complete file before calculating those.

Count each full window's onsets using inclusive dates. Count active cases at the final cutoff using outcomes, not the total number of historical rows.

Show the numerator, denominator, fraction and percentage for both windows and final point prevalence. State why the second window's at-risk group is smaller.

Restart by checking the four columns, case IDs and cutoff. Then finish the rows, calculate full counts and proportions, and return to the graph and observation.

G1: the original onset graph task

Tally onsets for every date from April 1 through April 14. Include dates with zero cases. The fourteen equal-width daily bins must sum to all thirty reports.

Build an onset-count graph with calendar date on x and number of new onsets on y. Use equal daily widths, whole-number count ticks and a zero baseline.

Use adjacent bars for the daily time bins. Title the graph Original Cedar onset counts, April 1–14, 2027. Label it invented instructional data and state the end-of-April-14 cutoff.

Use each case's onset date, not its recovery date. A report remaining active does not become a new case on every later day.

Write one observation comparing the two complete seven-day windows, with their actual counts or proportions. Also describe the largest observed daily bin and the later observed bins.

The highest observed bin is not proof of a final outbreak peak. The graph stops at its cutoff; no subsequent onsets are known. Do not claim that a control measure caused a change.

Optional extension: predict next week's new-case count conditionally. Name an assumption and explain why the observed data cannot guarantee your prediction; do not enter it as an observed bar.

The linked Cedar practice workbook uses the same reports with blank line-list and graph areas. It is original practice, not the teacher-provided official dataset.

Q1: checks with counts kept separate from proportions

Cedar check: count each window's new onsets first. Divide the first count by 300 and the second by 300 minus the first count, then convert each fraction to a percentage.

At the final cutoff, count only cases still active; recovered cases leave the prevalence numerator. Point prevalence is active cases over 300, not 30/300. Thirty is the cumulative number of case rows.

Whichever complete week has more new onsets, that statement does not establish transmission speed, severity or cause. The daily pattern may differ from the weekly comparison.

Separate self-check: imagine a different fixed population of 500 adults and fifty unique valid case rows by the end of one week. Thirty-six cases were active at the start.

The other 464 adults were initially disease-free and at risk. Fourteen new first cases occur during the week. Eight of the initial cases recover by the cutoff.

All other cases remain active; no new case recovers. No death, move, repeat episode, future onset, missing outcome or duplicate occurs. This is not the Cedar dataset.

Find the new and current counts, then both proportions. The counts are fourteen new and $50 - 8 = 42$ current. Incidence proportion is $14/464$, about 3.02%.

Point prevalence is $42/500 = 8.4\%$. Without the stated outcome and membership assumptions, fifty rows minus eight recoveries alone would not establish the active count.

If your prevalence used every row, reread outcomes. If you called fourteen a rate, state the count first and then supply the correct denominator for the proportion.

P1: actual course, spreadsheet and submission status

Open Project 5.1.1 Disease Detectives and build the line list. The project has versions A and B with separate conclusions; ask your teacher which version you are assigned.

Keep the assigned Disease Detectives diagnostic evidence, epidemiological studies and prevention/control planning separate from this original line-list exercise. Ask your teacher which sections to complete.

Actual evidence reports, study-design materials, later sections, version B, mission files and conclusion questions remain needed. No official case data or assigned stopping point is supplied here.

The absence branch requires the provided spreadsheet outbreak dataset, its assigned window, a line list and both calculations. An original Cedar spreadsheet is a separate practice resource.

Use the complete paper inputs or the linked original Cedar practice workbook. Keep the teacher-assigned spreadsheet task pending until you have its dataset and complete the assigned work. A PDF does not replace that spreadsheet.

After completing the assigned work, save the required line-list screenshot for your Problem 5 evidence portfolio. Mark the upload pending until you have actually uploaded it.

Keep the April 19 debate and any unfinished April 16 Project 4.1.4 work on your checklist. Reading a prior lesson or its take-home does not complete that work.

For April 19–23, keep the Wednesday onset graph, Thursday intervention model, line-list lab, assigned spreadsheet and Friday Public health intervention plan on your checklist.

Problem 5 intervention evidence should be complete by Friday. Your original Cedar table and graph do not complete the missing actual model, plan or official evidence.

April 22 requires 25 minutes of Intervention model preparation in Lab Notebooks and plan submission in Lab Reports. Keep that preparation separate from today's eighty-minute work. No homework is due before this class.

Follow the assignment for April 21, and ask your teacher if you are unsure which tasks and deadlines apply. Keep any confirmed unfinished work on your checklist.

The April 21 assignment lists Data Tables; confirm the folder in your enrolled section before submitting. A course description is not proof of submission.

Save the dated original line list, calculations, graph and observation together as one PDF. Use the linked dated BI assignment and confirm access in your enrolled course section.

Without a confirmed assignment or access, preserve the saved record and mark submission pending. Keep real identities and health details in the teacher-approved private route; record only missing-input status here.

M1: a different four-case worked record

M1 uses a different invented cohort of 250 adults, all initially disease-free, followed completely over Days 1–4. No population changes or repeat episodes occur.

The same fever-and-cough case rule applies. M01 starts on Day 1 and recovers on Day 3. M02 and M03 start on Day 2 and remain active at the cutoff.

M04 starts on Day 4 and remains active at the end of Day 4. Record each ID, onset, symptoms and end-of-Day-4 outcome as one row.

All four are new cases during Days 1–4. Incidence proportion is $4/250 = 1.6\%$. Three are active at the cutoff, so point prevalence is $3/250 = 1.2\%$.

The four daily new-onset bins are 1, 2, 0 and 1. A graph retains the zero on Day 3; recovery on Day 3 does not add a new onset.

Worked observation: the largest observed daily count is two on Day 2, followed by zero and one; the four-day record does not establish what happens next.

This shows complete rows, denominator-based calculations, a graph tally and an evidence-bounded observation. Use Cedar's own thirty reports and dates in the learner record.

Try the decision

Which approach gives a valid Cedar record?

- Count onsets within each window and active cases at cutoff, then use the matching population denominators and preserve graph zeros.
- Treat all thirty rows as active at the cutoff and call thirty the prevalence rate.
- Use the five recovery-practice reports to calculate the whole cohort's incidence and predict exact future cases.

Explain your choice using the reading. Discuss it or say it to yourself. This practice does not add another submission.

Your 80-minute flow

0–5 minutes	Answer the field/organization/current-versus-new warmups.
5–20 minutes	Read the population and case rules; make one starter and the four columns.
20–40 minutes	Enter all thirty reports and check IDs, dates and outcomes.
40–55 minutes	Calculate full counts/proportions and the separate self-check.
55–70 minutes	Build the fourteen-bin onset graph and write the bounded observation.
70–80 minutes	Report exit quantities, check the product and preserve actual-work status.

Your response record

Use these labels in your workbook. Check Turn in your work below for the required file format.

Set up the case record

Answer H1's starting questions. Use one D2 report as the fictional starter; create the four R1 columns and record the D1 population, windows and cutoff.

No personal case is needed. A source report is input, not a claim that you measured anyone.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Enter all thirty cases

Build the full line list from D2. Check every ID, onset, symptom and outcome against its source; preserve recovery dates and active-at-cutoff status.

Use K01–K05 for recovery, then finish the other twenty-five. Do not submit only the starter subset.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

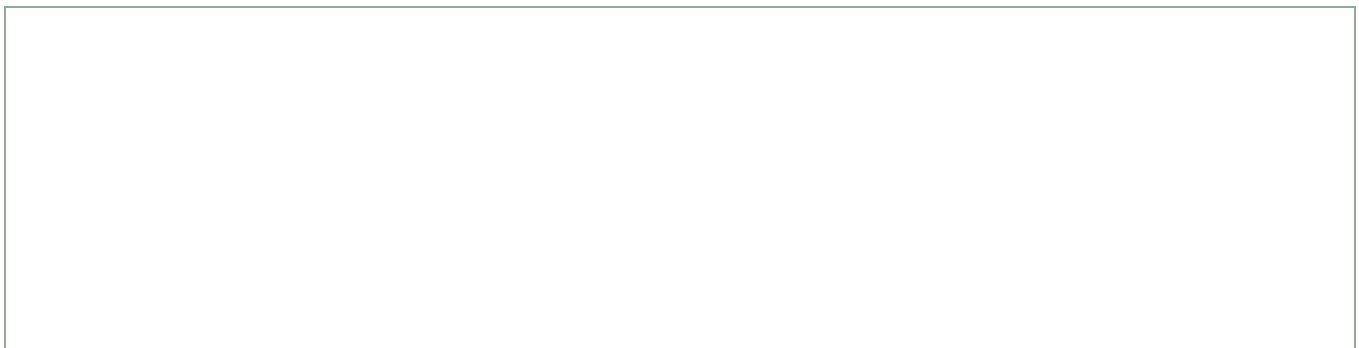


Calculate counts and proportions

Show both full-window new-case counts and incidence proportions, plus final active count and point prevalence. Label every numerator, denominator, time and percentage.

The second at-risk group excludes earlier first cases. Historical case rows are not all still active.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

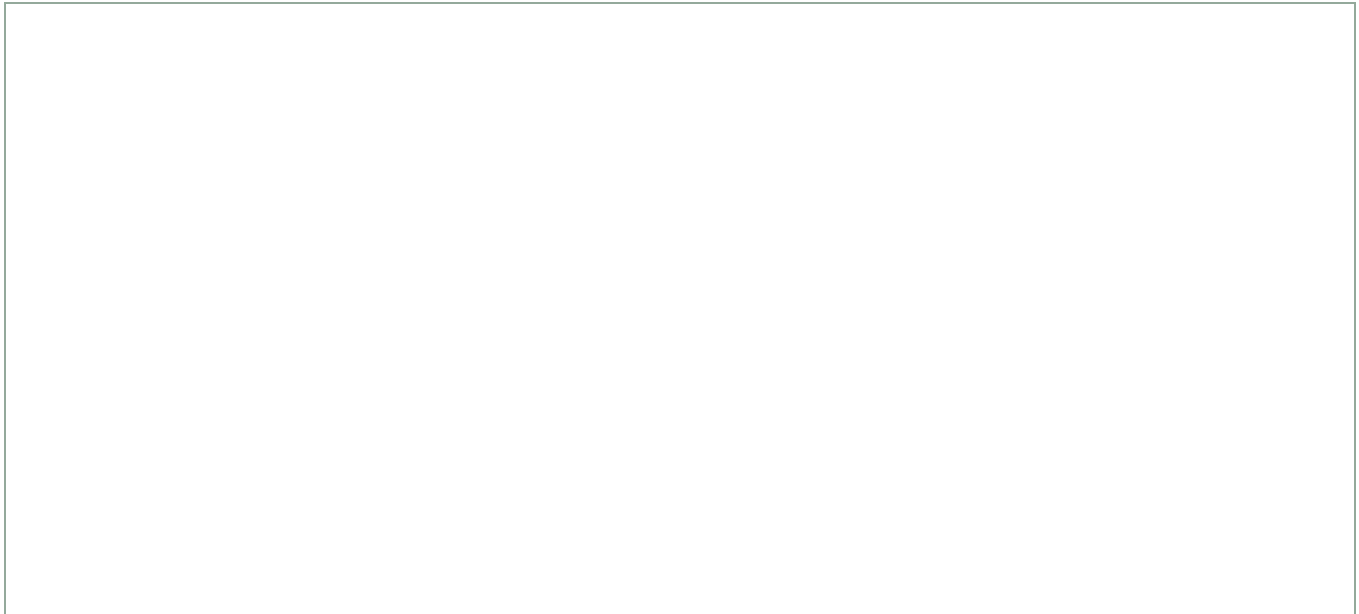


Build the original onset graph

Tally all fourteen dates and draw G1's graph, including zero bins. Compare weekly counts and describe the largest observed daily bin and later bins.

Use onset, not reporting or recovery. Do not call the graph a transmission-speed or intervention-effect estimate.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

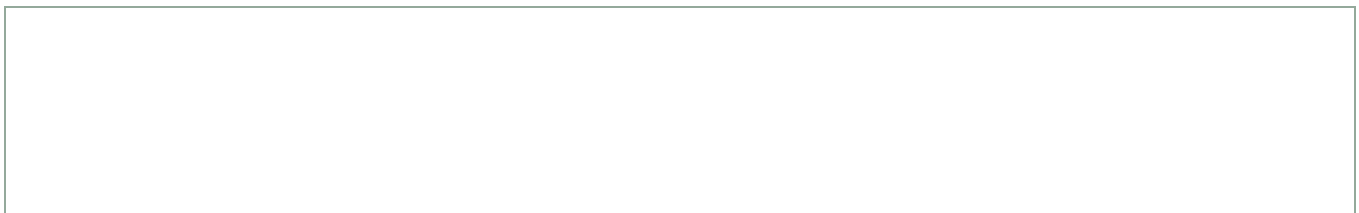


Complete the separate self-check

Solve Q1's separate fifty-case problem with all stated assumptions. Explain why its counts require denominators to become proportions.

Keep Q1's 500-person population separate from Cedar. Use the optional prediction only after the full record is complete.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.



Preserve the complete product

Write the trend observation and exit quantities. Check all thirty rows, both windows, prevalence, graph and source labels; record actual spreadsheet, official evidence and submission status.

P1 keeps the editable original-practice workspace separate from the missing teacher-provided dataset and actual course work.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Check your product

- All thirty cases have the four required fields with correct source values.
- Counts, proportions, denominators and cutoffs are explicit.
- The onset graph includes every daily bin and supports a bounded written observation.
- Original practice, assigned spreadsheet, actual official evidence and submission remain distinct.

Keep the limit: Original invented case reports support checked counts, proportions and an observed time-pattern description; they cannot establish any actual outbreak, exposure source, transmission speed, prognosis, intervention effect or official completion.

Turn in your work

Save the complete original line list, calculations, onset graph and observation as one PDF. Match Line list in the confirmed enrolled assignment; the dated folder is Data Tables.

Without access or a confirmed route, save the dated work and mark submission pending. The original spreadsheet workspace and missing official assigned dataset remain separately identified.

[Open this assignment in Schoology](#)

Carry forward

A line list preserves case identity and time; valid frequency measures also need the right population, denominator and cutoff.

Carry the original graph and evidence limits into plan reasoning while keeping the assigned official case and intervention work separate. Which proposed action follows from the pattern without claiming its cause is known?

Sources and resources

[Open today's page](#)

[Practice workbook](#)

CDC-CASE · Outbreak and Case Definitions

CDC

<https://www.cdc.gov/urdo/php/surveillance/outbreak-case-definitions.html>

CDC-EPI · Describing Epidemiologic Data

CDC Field Epidemiology Manual

<https://www.cdc.gov/field-epi-manual/php/chapters/describing-epi-data.html>

CDC-FREQ · Lesson 3, Section 2: Morbidity Frequency Measures

CDC archived Principles of Epidemiology

https://archive.cdc.gov/www_cdc_gov/csels/dsepd/ss1978/lesson3/section2.html