DATA FINDINGS NOTES

Writing a One-Page Data Findings Note



FINDING / LIMIT

AI & DATA

Writing a One-Page Data Findings Note

Learning outcomes

- Write three findings supported by reproducible calculations.
- Combine one appropriate chart with two material limitations in a one-page note.
- Distinguish observed evidence, interpretation and a proportionate next step.
- Define a reader question and observation scope before selecting findings.
- Build an auditable working table that distinguishes volume, completion percentage and completions per reporting day.
- Select exactly three distinct observations with traceable counts, denominators and comparison units.
- Integrate one readable chart and an equivalent text description without duplicating the entire working table.
- Write two material limitations and a next step proportionate to the evidence.
- Revise a concise note after source corrections while preserving the observation dates and claim scope.

Original teaching material. All organizations, people, records and operational rules in exercises are synthetic. Use only the supplied non-sensitive inputs. This is a practice course, not an accredited or regulated certification.

Study the foundations, work through the applied units, complete the practice tasks, and then attempt the assessment. Use only the supplied fictional practice data. Keep your original inputs and your revised work separate.

Core concepts

Start with the decision and the observation scope

A findings note is not a transcript of every calculation. It is a short explanation of what the evidence shows for a defined question. State the question, dataset, time coverage and unit of observation before presenting conclusions. In this course the question is how observed completion volume and completion rate changed across four synthetic service weeks. The table is complete for the listed business days and uses the same request definition throughout. It does not describe a controlled experiment. A strong opening helps the reader understand what the note can answer and prevents later conclusions from drifting to an unsupported population.

Make each finding independently traceable

A finding needs a claim and numerical support, not just an adjective such as improved. Show the relevant values, denominator and comparison. For a completion percentage, divide completed requests by eligible requests from the same week. For completed requests per business day, use the day count instead. These metrics answer different questions and should not be treated as interchangeable. Keep a small calculation appendix or an audit column in your working file even if the final page is concise. Every number in the prose should trace to a supplied count or a visible formula that another analyst could repeat.

Choose three findings rather than three restatements

The required observations should add distinct information. One might describe the completion-rate change, another compare volume or daily throughput, and a third summarize the pooled period. Avoid presenting the same movement three times in different words. Also look for contrasts: a week can have a higher completion percentage but fewer completed requests because its eligible volume or day count differs. Preserve those distinctions instead of forcing all metrics into a simple good-or-bad story. Use percentage points for differences between rates and percent for relative changes, stating which calculation you mean when both appear.

Use one chart that advances the explanation

Choose a chart that directly supports a finding and avoid packing incompatible measures onto a confusing shared scale. For the required chart, a simple four-point line of weekly completion percentages works because the weeks have a natural order. Label the percent axis, weeks and values; use a consistent definition for every point. The supplied specification uses a 0–100 percent range so the displayed scale is unambiguous. Include the underlying rates as a text alternative. The chart should supplement a complete written finding, not force the reader to infer every important number or limitation from its appearance.

Keep limits close to the claims they qualify

A limitation identifies how interpretation is constrained, not a generic apology. Four weeks cannot establish a long-term seasonal pattern. Observational counts with no information about staffing, difficulty or intervention timing cannot explain why a rate changed. These limits should appear alongside the results and should influence the recommended next step. For example, suggest collecting comparable weeks and case-mix information before attributing the change to a process. Do not invent confidence intervals, missing sample records or causal evidence. Close the note with a proportionate action that follows from what is known rather than a commitment unsupported by this dataset.

Worked example

A separate two-week example records 45 completions from 50 eligible requests, then 54 from 60, over five days in each week. Both completion rates equal 90 percent, while completed volume rises by 9 requests and daily throughput rises from 9 to 10.8. A concise finding says volume increased while the completion percentage stayed constant. It should not say the success rate improved. A useful note pairs that distinction with counts, a suitable chart and a limitation that two observed weeks do not identify a cause or establish a long-run trend.

Foundation practice

Question: How did observed completion volume and completion rate differ across the four service weeks?

Weekly records

week	eligible requests	completed requests	business days
Week 1	100	80	5
Week 2	120	90	5
Week 3	80	68	4
Week 4	100	90	5

Scope

Complete synthetic records for these listed business days only. Each request is eligible once and either completed within the week or not completed within the week. Definitions are unchanged.

Unavailable context

- Request difficulty and staffing
- Intervention assignment and a comparison group
- Earlier seasonal history

Chart specification

Type: Line chart with four unconnected-to-other-series weekly points joined in chronological order

X: Week 1 through Week 4

Y: Completed requests as percent of eligible requests

Y limits

- 0
- 100

Labels: Direct percentage labels plus underlying rates in a text alternative

Note constraints

One page; exactly three main observations, one chart and two explicit limitations. Retain supporting arithmetic in a separate working table.

Foundation tasks

Guided preparation

Instructions

Read the complete input pack. Create the output columns specified in the capstone, keep the original IDs, and state the unit of work. Complete the first two records manually before using an optional AI assistant. Record any assumption that could change the result.

Independent capstone

Instructions

Create a calculation table with each weekly completion rate and completions per business day, plus pooled counts and the pooled completion rate. Write a one-page findings note with a title, scope sentence, exactly three distinct observations supported by numbers, the specified chart, two limitations and a cautious next step. Distinguish completed volume from success percentage and avoid causal claims. Peer-check every number in the prose against the working table.

Peer verification and revision

Instructions

Exchange only your student work with a peer. Ask the peer to trace two ordinary results and every exception back to the supplied input. Record the exact item corrected, the original value, revised value and reason. Submit the revised artifact plus a short explanation of the most important remaining limitation.

01 Treat one page as a decision aid, not a compressed archive

A one-page findings note helps a reader understand a defined question without reading every intermediate calculation. Its job is to select and explain the most useful evidence, not to squeeze an entire analysis into tiny text. The working table remains available separately for audit. The note itself should let a reader identify the scope, three main observations, one chart, two limitations and a proportionate next step. Brevity is achieved by choosing what matters, not by hiding denominators or removing uncertainty.

The main case concerns the fictional Maple service desk. Its manager wants to know how recorded completion volume and completion rate differed across six listed weeks before deciding what additional operational evidence to collect. This is not a request to prove a new process worked, rank individual staff or forecast next quarter. Keeping the question narrow

helps prevent the note from accumulating unsupported claims merely because the numbers can be rearranged into many comparisons.

A useful note has an evidence hierarchy. The title states the main descriptive message. A scope sentence tells the reader which records and period it covers. Three observations each add a distinct point and expose their numerical basis. The chart makes one pattern easier to see. Two limitations explain what the reader cannot safely infer. The next step follows from those limitations and the intended decision. Each component should earn its space by changing the reader's understanding.

Do not begin with a long account of how you opened files, copied columns or chose software. Those details may belong in a reproducibility record, but they are not the finding. Equally, do not begin with a recommendation that outruns the analysis. A sentence such as 'Expand staffing immediately' requires a decision basis that these completion counts may not supply. Start from what the evidence actually shows and build toward the smallest justified action. The result should remain useful even when its limits are read carefully.

02 Read the case contract before computing a headline

Maple supplies six weekly records in assets/maple_weeks.csv. Each request is eligible exactly once in its listed week and is classified as completed or not completed within that same week's defined service window. Definitions are unchanged. Records are complete for the listed business days only. The weeks are sequential synthetic reporting periods M1 through M6, not named calendar dates. Do not attach real dates, holidays or policy events to these labels without source evidence.

The rows are M1:100 eligible, 72 completed, 5 business days; M2:150, 105, 5; M3:80, 64, 4; M4:120, 96, 5; M5:90, 81, 5; M6:160, 128, 5. These are counts of requests and business days, not staff hours. The shorter M3 period affects total volume comparisons, but it does not automatically explain changes in completion percentage. Different metrics use different denominators and answer different questions.

The unavailable context is explicit: staffing, request difficulty, assignment rules, intervention timing, costs and earlier seasonal history are not supplied. Missing context is not the same as missing request records. A note should not invent a data-quality problem by saying that half the requests may be missing when the case declares complete coverage for the listed days. Instead, explain the genuine limitation: the counts do not identify why results differ or whether the observed pattern persists over a longer period.

Write a scope sentence before selecting observations. A suitable version is 'This note describes 700 eligible synthetic Maple requests across six sequential reporting weeks and 29 listed business days, using unchanged within-week completion definitions.' The totals will be verified in the working table. This sentence does not claim a representative sample of all future requests, continuous calendar coverage or a controlled experiment. A precise scope makes later numbers easier to interpret and reduces the temptation to let a short title imply more than the data establish.

Check the data types before calculating. In these fixtures, eligible requests, completed requests and business days are nonnegative integer counts, and every supplied eligible and day denominator is positive. A blank cell is not an observed zero. If a future source has a missing denominator, stop that row's rate calculation and label it unavailable rather than divide by a guessed value. A completed count greater than its eligible count would conflict with this case's within-week definition and require resolution. These checks protect the interpretation of a ratio before any formatting makes it look authoritative.

Week	Eligible requests	Completed requests	Business days
M1	100	72	5
M2	150	105	5
M3	80	64	4
M4	120	96	5
M5	90	81	5
M6	160	128	5

03 Create a metric dictionary that prevents denominator drift

A metric dictionary states each measure's numerator, denominator, unit and interpretation. Completed volume is simply the count of completed requests in a period. Completion percentage is completed divided by eligible, multiplied by 100. Completed requests per business day is completed divided by the number of listed business days. These measures can move in different directions because they summarize different aspects of the workload. A note should not treat them as interchangeable versions of 'performance.'

For M5, volume is 81 requests, completion rate is 81/90=90%, and completions per business day are 81/5=16.2. For M6, volume is 128, rate is 128/160=80%, and completions per day are 128/5=25.6. The later week completes more requests and more per day, but a smaller share of its larger eligible workload. A simplistic 'everything improved' or 'everything worsened' conclusion would suppress one of those facts.

Define the percentage base in plain language. '80% completion' should mean eighty of every hundred eligible requests in the specified observed population, not eighty requests and not eighty percent of business days. Similarly, 25.6 requests per business day is an average volume across the five listed days; it does not imply every day had exactly 25.6 completions. Daily records are not supplied, so the within-week distribution of completions is unknown.

Do not relabel completions per business day as worker productivity. The denominator is days, not staff time, and staffing may differ between weeks. A higher daily volume can coexist with more staff, easier requests or a larger incoming workload. The dictionary should

therefore use neutral, measurable labels. It can support an operational discussion without claiming efficiency or causal effectiveness that the available denominators do not measure.

Measure	Formula	Unit	What it does not establish
Completed volume	Completed count	Requests	Success share or staff productivity
Completion percentage	100×completed/eligible	Percent of eligible requests	Cause of differences
Completed per business day	Completed/business days	Requests per day	Per-worker output or daily distribution

E03-X1 Repair a metric interpretation

A draft says “M6 productivity rose to 128%, compared with M5 at 81%, proving the team became more efficient.” Use the supplied M5/M6 rows to replace it with two accurate sentences covering volume, rate and daily volume without inventing staffing information.

Submit: Two evidence-backed sentences with all three metrics.

04 Build the working table before writing the note

The working table is the numerical backbone of the one-page note. Keep source counts unchanged and add calculated columns rather than replacing the originals. For Maple, the weekly completion percentages are 72, 70, 80, 80, 90 and 80. Daily completed volumes are 14.4, 21, 16, 19.2, 16.2 and 25.6. These values should be visible together so that selecting a finding does not require mental arithmetic or switching between disconnected summaries.

Use full precision in calculations and round only the displayed values. A ratio such as 546/29 is not exactly 18.83, although 18.83 is a suitable two-decimal display. If you round intermediate daily averages and later average them, you can introduce both rounding error and an incorrect weighting rule. Compute the pooled numerator and denominator directly, then format the final result. The source counts remain the most reliable route back to an exact value.

A spreadsheet layout can be simple. Put week in A, eligible in B, completed in C and days in D, with M1 through M6 in rows 2–7. In E2 enter =C2/B2 and format as percent; copy through E7. In F2 enter =C2/D2 and copy through F7. Totals in row 8 use SUM for B:D. Pooled rate E8=C8/B8 and pooled daily volume F8=C8/D8. Do not average column E to obtain the pooled request rate or column F to obtain the pooled daily volume when denominators differ.

The table should also carry a small metric note: complete listed-week records, unchanged definitions, no causal assignment information. This note helps prevent the working file from being detached from its scope when copied. A reviewer should be able to recalculate one ordinary row and the pooled row using only the file. Agreement with a formula is useful, but it does not replace checking that the formula references the correct denominator and that the source row is preserved.

Choose display precision consistently. Here weekly percentages are whole numbers because the supplied ratios produce exact integer percentages, while pooled daily volume needs rounding. Displaying 18.83 requests per day does not mean the original daily counts had decimal precision; the decimal is an average derived from integer counts. Conversely, displaying 78% does not require adding artificial decimal places to look scientific. A reviewer should be able to recover the exact fraction 546/29 from the table even when the note uses a rounded display. Keep the rounding convention with the working table so later edits do not quietly change it.

Week	Completed/eligible	Completion%	Completed/day
M1	72/100	72	14.4
M2	105/150	70	21
M3	64/80	80	16
M4	96/120	80	19.2
M5	81/90	90	16.2
M6	128/160	80	25.6
Pooled	546/700	78	546/29≈18.83

E04-X1 Supply the exact formula map

Use the stated Maple sheet layout A:F and rows 2–7. Provide formulas for E2, F2, B8, C8, D8, E8, F8 and the expected six weekly rate/daily outputs plus pooled outputs. If you do not run a spreadsheet, label these as expected results.

Submit: Formula map, calculated outputs and execution-status statement.

05 Pool counts when the question concerns all requests

A pooled completion rate describes the entire included request population. For Maple, completed counts sum to 546 and eligible counts sum to 700, so the pooled rate is 78%. This can also be reconstructed as a weighted average of weekly rates, with each weight equal to that week's eligible count divided by 700. The weeks do not receive equal weight because they contain different numbers of opportunities.

The simple mean of Maple's six weekly percentages is (72+70+80+80+90+80)/6=78.6667%. That is an equally weighted average week statistic, not the percentage of all 700 requests that completed. It is not mathematically meaningless, but it answers a different question. A findings note should not call it the pooled completion rate or choose it because it looks more favorable. The aggregation rule is part of the measure's definition.

The same principle applies to daily volume. The total 546 completions across 29 listed business days gives 18.8276 per day. The simple mean of the six weekly daily averages is (14.4+21+16+19.2+16.2+25.6)/6=18.7333. The difference arises because M3 has four days while the others have five. A pooled daily average weights weeks by their day counts, not by eligible requests and not equally by week.

Keep pooled and weekly results together without letting one erase the other. The 78% pooled rate gives a useful period summary, but it hides the 70% low in M2 and 90% high in M5. The weekly chart reveals variation, while the pooled number answers the overall accounting question. A strong three-observation note can include both if they serve distinct purposes: one finding about the path, another about a meaningful volume/rate contrast and a third about the period total.

Summary	Calculation	Result	Question
Pooled request rate	546/700	78%	What share of all included requests completed?
Equal-week mean rate	472/6	78.6667%	What is the mean of six weekly percentages?
Pooled daily volume	546/29	18.8276	How many completions per included business day?
Equal-week mean daily volume	112.4/6	18.7333	What is the mean of weekly daily averages?

06 State changes with the correct comparison unit

A change between two percentages is usually most clearly stated in percentage points. Maple's rate rises from 72% in M1 to 80% in M6, a gain of 8 percentage points. The relative increase is (80−72)/72×100≈11.11%. These are two descriptions of the same endpoints using different denominators. Do not write 'an 8% increase' when you mean 8 percentage points, because readers may interpret it as a relative change.

The endpoint change does not describe the whole path. Maple first moves from 72% to 70%, then to 80%, remains at 80%, rises to 90% and returns to 80%. A headline saying 'steady improvement' would be false even though the final rate exceeds the first. 'Higher at the end, after fluctuations' is more faithful. The chart should support that wording by retaining chronological order rather than sorting weeks by rate.

Volume changes need their own base. From M5 to M6, completions rise from 81 to 128, an increase of 47 requests. Relative to 81, this is 47/81×100≈58.02%. Eligible requests rise from 90 to 160, an increase of 70, or 77.78%. Because the eligible workload grows proportionally faster than completed volume, the completion percentage falls from 90% to 80%. This contrast is more informative than calling the week simply good or bad.

Choose the level of numerical detail that serves the note. A one-page reader may need '47 more completions, but a 10-point lower completion rate' rather than both relative

percentages to two decimals. Keep the detailed arithmetic in the working table. Concision should remove unnecessary derived quantities, not blur the meaning of the quantities that remain. Every change statement should name the starting value, ending value or difference, and the relevant unit or base.

E06-X1 Correct change language

Revise these three Maple claims: “Completion improved 8% from M1 to M6”; “M5 to M6 produced a 47% increase in completed volume”; “The rate improved steadily across all six weeks.” Give the exact calculations and a concise corrected sentence for each.

Submit: Three corrected claim/calculation pairs.

07 Use exposure normalization without inventing efficiency

Raw weekly volume can be affected by how many business days are included. Maple M3 has 64 completions in four days, while M1 has 72 in five. M3 has eight fewer completions in total but a higher daily average: 16 versus 14.4. This is a useful example of why a note should not equate lower weekly volume with lower daily throughput. The supplied day counts let the writer make a more comparable exposure-based statement.

Normalization has limits. Dividing by days does not account for staffing hours, task complexity, overtime, queue age or service availability within each day. A 16-per-day average does not establish that workers were more efficient than in a 14.4-per-day week. The denominator says only how many listed business days contributed to the total. Label the measure 'completed requests per business day,' not a broad term that implies unmeasured inputs.

Do not infer the daily distribution from the average. Four days averaging 16 completions could be 16, 16, 16, 16 or 10, 14, 18, 22, among many possibilities. The weekly aggregate does not identify which pattern occurred. If the decision concerns staffing by day, request daily counts and staffing exposure rather than treating the weekly average as a schedule. A one-page note should make such a limitation visible when it materially affects the proposed action.

For Maple's required three observations, the daily comparison is a candidate rather than an automatic fourth finding. If it is less important than the volume/rate contrast and pooled summary, keep it in the working table or incorporate it briefly into the volume observation. The note's structure forces prioritization. Selecting three observations means deciding which distinctions most improve the reader's understanding, not adding every valid calculation simply because it is available.

Comparison	M1	M3	Supported interpretation
Completed volume	72	64	M3 has 8 fewer completions
Business days	5	4	Coverage differs

Comparison	M1	M3	Supported interpretation
Completed/day	14.4	16	M3 has 1.6 more completions per listed day
Worker efficiency	Unknown	Unknown	Staff-time data are unavailable

08 Select three findings that add distinct information

The requirement for exactly three observations is a test of analytical selection. Three sentences can be numerically correct yet repeat the same point. 'M6 is higher than M1,' 'the rate rose 8 points' and 'the final rate is 80%' all mainly describe one endpoint comparison. A reader gains more from a set that covers the trajectory, a volume/rate contrast and the pooled period. Distinctness is about informational contribution, not merely different wording.

For Maple, a strong first observation is that the rate ends above its starting level but fluctuates, with a 90% peak in M5. A second is that M6 has more completed requests than M5 while a lower completion percentage because its eligible workload is larger. A third is that 546 of 700 included requests completed, giving a 78% pooled rate. These observations answer different questions and can all be traced to the working table. The chart primarily supports the first while helping contextualize the second.

Evaluate candidates using relevance, nonredundancy and evidential strength. A true statement such as 'M4 has 120 eligible requests' may be useful supporting detail but not a main finding by itself. An unsupported statement such as 'the new workflow succeeded' should be excluded regardless of how compelling it sounds. A marginally interesting calculation should not displace a material limitation simply to fill a third bullet. The goal is a coherent explanation, not a list of isolated numbers.

Keep a candidate ledger while selecting. Record the candidate claim, its supporting rows, the question it answers and whether it duplicates another selected claim. This does not need to appear on the final page, but it makes selection accountable. If the reader's question changes, the best three observations may change too. A note about resource planning might emphasize daily volume, while a note about observed completion shares might emphasize denominators and pooled rates. Scope and audience determine which facts deserve prominence.

E08-X1 Choose a nonredundant set

Choose exactly three main Maple findings from: A=M6 rate 80% exceeds M1 rate 72%; B=the endpoint gain is 8 points; C=M5 completed 81/90 (90%) while M6 completed 128/160(80%); D=546/700 requests completed overall (78%); E=the new workflow caused improvement; F=all weeks improved monotonically. Explain why the others are not selected.

Submit: Three selected letters with evidence and exclusion reasons.

09 Build every sentence from a claim-evidence link

A finding is auditable when its claim can be traced to source rows and a transparent transformation. Use a small claim-evidence map before drafting. For the endpoint statement, the sources are M1 and M6; the calculations are 72/100 and 128/160; the comparison is 80−72=8 percentage points. For the pooled statement, the sources are all six rows; the transformation is summed completed divided by summed eligible. The map exposes denominator choices that a polished sentence can otherwise hide.

Distinguish facts, calculations and interpretations. 'M6 completed 128 requests' is a supplied count. 'M6's completion rate is 80%' is a calculation from 128/160. 'Higher volume coexisted with a lower share than M5' is a descriptive comparison. 'Extra demand caused the rate decline' is a causal interpretation not established by the counts. A useful note can include the first three while marking the fourth as unresolved rather than presenting it as the explanation.

Choose evidence compactly. A parenthetical count pair such as '80% (128/160)' can make a short sentence auditable, but too many stacked parentheses can become hard to read. For a general audience, '128 of 160 eligible requests, or 80%' is often clearer. Use the working table for repeated details and expose the denominator at least where it changes the interpretation. The final page should not force readers to infer whether a percentage refers to requests, days or staff.

Audit verbs as well as numbers. 'Rose' can describe a chronological change; 'exceeded' can describe a comparison; 'caused' asserts a mechanism. 'Significant' can mean practically important or statistically tested, so avoid it unless the intended meaning and evidence are explicit. Maple supplies no statistical test or business threshold. 'An 8-point endpoint difference' is more precise than 'a significant improvement' and does not require the writer to invent a significance claim.

Treat the claim map as a dependency record rather than a second narrative. A useful entry contains the sentence identifier, supporting row labels, input columns, calculation and displayed result. For example, N3 uses M1–M6, completed_requests and eligible_requests, SUM(completed)/SUM(eligible), and 78%. It does not use business_days, which belongs to a different clause of the same observation. Recording the two calculations separately makes it possible to update one without accidentally changing the other. This is particularly valuable when a source correction alters a numerator while leaving the denominators and observation window unchanged.

Claim	Source rows	Calculation	Scope boundary
End rate 8 points higher	M1, M6	128/160−72/100=0.08	Not a steady trend
More volume, lower share	M5, M6	81→128; 90%→80%	Cause not identified
Pooled 78%	All six	546/700	Listed weeks only

10 Write a title and opening that do not overpromise

A title should tell the reader the main descriptive message without outrunning the evidence. 'Completion rate ended higher, but volume and rate moved differently' captures Maple's central tension. It is more informative than 'Weekly analysis' and more defensible than 'New workflow delivers success.' The title need not contain every number; it should guide the reader toward the note's actual finding and prepare them for the distinctions that follow.

The opening scope sentence should be short but specific. Name the dataset, included period or labels, observation unit and important coverage condition. For Maple, mention six sequential synthetic weeks, 700 eligible requests and 29 listed business days, with unchanged within-week definitions. Do not add a real calendar range to M1–M6, because none is supplied. Do not say 'all company activity' when the case covers only these listed service records.

Avoid burying a material limitation until the end if the headline would otherwise mislead. If one week were missing, that fact would belong near the opening. Maple's weekly records are complete, so the opening need not invent missingness; the two main limitations concern short coverage and unavailable causal context. Good uncertainty communication identifies the actual constraint rather than adding a generic disclaimer that could apply to any dataset.

A useful test is to read only the title and first sentence, as a busy reader might. Would they infer a causal result, a representative population or uninterrupted improvement that the rest of the note later retracts? If so, revise the opening instead of relying on a small caveat to undo it. The top of the page sets the interpretive frame. It should be accurate on its own and remain consistent with the chart, observations and next step.

11 Use one chart to advance the main finding

The required Maple chart is a chronological line of weekly completion percentages. Its horizontal axis lists M1 through M6, its vertical axis is completed requests as a percent of eligible requests, and the displayed range is 0–100%. The six values are 72, 70, 80, 80, 90 and 80. Direct percentage labels make the exact values available without forcing the reader to estimate from gridlines. The chart supports the finding that the endpoint is higher while the path fluctuates.

Do not add completed counts to the same percent axis. A value 128 is a request count, not 128% completion. If volume is an important second finding, explain it in prose with a count pair or supporting table. The one-chart constraint encourages a clear primary visual rather than a dual-axis graphic that asks readers to decode two incompatible measures. The chart should reduce cognitive work, not become a puzzle that consumes the page.

Keep chronological order even if sorting by rate creates a smoother line. A sequence 70, 72, 80, 80, 80, 90 would be a ranking of weeks by rate, not the observed time path. Connecting it would falsely imply steady improvement. Also avoid extending the line beyond M6 into an unobserved future period. The chart contains observations, not a forecast. If a future prediction were required, it would need its own model and uncertainty statement, neither of which is supplied here.

The caption should identify the measure and scope: 'Recorded within-week completion percentage across six synthetic Maple reporting weeks; rates are 72%, 70%, 80%, 80%, 90%, 80%.' A separate text description can state the takeaway rather than repeat every visual detail. Source counts remain in the working table. The figure is a communication aid within an evidence chain, not a substitute for the numerical and scope information that makes the note auditable.

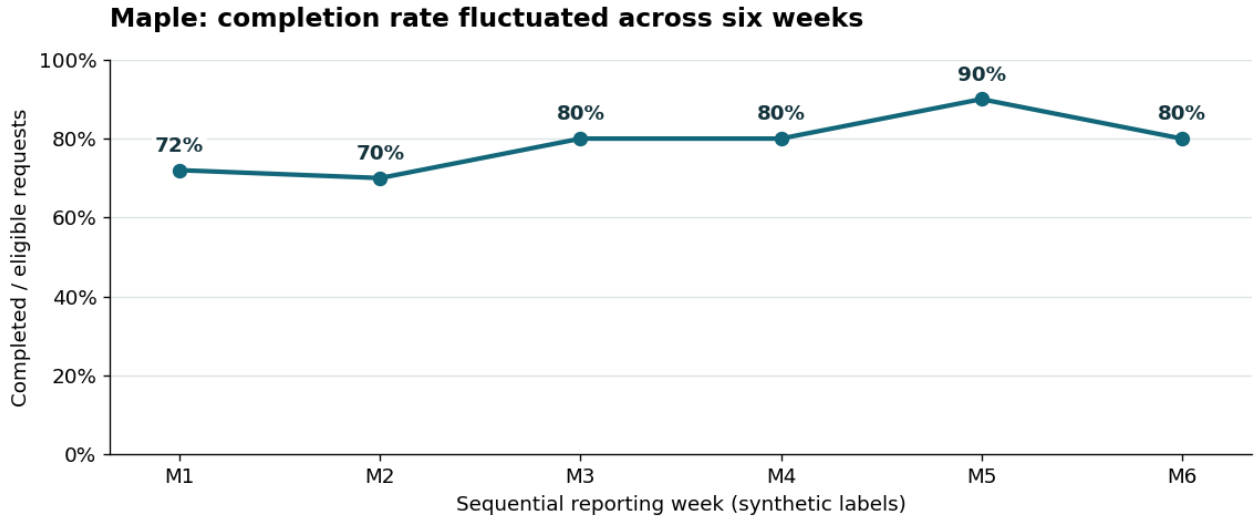


Figure 1. Maple’s recorded completion percentage ends at 80%, above its 72% start, but fluctuates and peaks at 90% in M5. Chronological values are 72%, 70%, 80%, 80%, 90%, 80%; underlying count pairs appear in the working table.

12 Write the text alternative as evidence, not decoration

A useful text alternative communicates the information a reader is expected to learn from the chart. For Maple, it should identify the chronological sequence and the main pattern: the rate dips from 72% to 70%, rises to 80% for two weeks, peaks at 90% and ends at 80%. A description such as 'a blue line with six dots' does not provide the finding. The visual appearance is secondary to the encoded values and their relationship.

Choose the detail based on the reader's task. If the chart is intended mainly to communicate the trajectory, a concise sentence describing the sequence and peak can serve that purpose. If exact values are needed, provide the six percentages or a structured table. In this course both are available because the note must remain auditable and the working table is separate. The final page can use a short caption while the accompanying working file carries the complete count-level evidence.

Do not let the alternative text introduce a stronger claim than the chart. 'The new process steadily improved performance' would be false both because the sequence is not monotonic and because causality is unestablished. The same evidence rules apply to captions, image

descriptions, headings and spoken explanations. Accessibility text is not a place for an unreviewed summary that bypasses the note's numerical and causal checks.

The final medium matters. A static image with a text description does not by itself establish correct document tags, screen-reader order or keyboard behavior in every application. Provide the equivalent information in readable text now, and distinguish actual final-medium checks from unperformed ones. For the learner deliverable, the core requirement is that someone who cannot see the line can still understand its values, ordering and main message without relying on color or visual estimation.

A rate-only chart cannot supply every calculation in the note. Someone reading the six percentages without the source counts cannot reconstruct the pooled 78% merely by averaging those labels. Its text alternative should therefore describe the trajectory, not pretend to be a full replacement for the working table. Link the two forms of evidence explicitly: the chart and equivalent text show the weekly pattern; the table provides completed and eligible counts for weighted aggregation. If a cropped copy of the chart travels without the note, a short scope caption should still identify the measure, synthetic weekly labels and underlying count source.

13 Choose two limitations that change interpretation

A limitation is useful when it explains what the evidence cannot support and why that matters to the reader. Maple's first material limitation is temporal scope: six observed weeks with no earlier seasonal history do not establish a long-run or seasonal trend. The endpoint difference is real for the listed weeks, but it may not describe a stable trajectory beyond them. This limitation qualifies broad generalization, not the arithmetic of the observed rates.

The second limitation concerns explanation: staffing, request difficulty, assignment rules and intervention information are unavailable, so the causes of the weekly differences are not identified. A week with a higher rate may have handled a different workload or had different resources. The note should not assert one of these as the explanation; it should say the current records cannot distinguish them. This limitation directly affects whether a manager can credit a process or make a routing decision from the chart.

Avoid generic or invented limitations. 'The data may be wrong' is not informative unless a specific quality issue is known. 'Many records are missing' contradicts Maple's declared complete coverage for the listed days. 'The sample is small' is incomplete unless the writer explains which inference is constrained. More precise wording is 'Only six weeks are observed, so persistence and seasonality are not established.' The reader then understands the consequence rather than hearing a vague apology.

Keep exactly two explicit limitations in the final note, as required, but make each substantive. You may combine related missing causal context in one limitation rather than listing staffing, difficulty and assignment as three separate bullets. Do not hide an essential restriction in a source footnote if it would change the interpretation of the headline. The limitations should shape the next step: gather longer comparable coverage and relevant context before attributing the observed changes to a process.

E13-X1 Replace weak limitations

A Maple draft lists “the data are probably inaccurate” and “there are not enough numbers.” Replace these with exactly two limitations grounded in the supplied case, each explaining its consequence for interpretation.

Submit: Two explicit, case-specific limitation sentences.

14 Recommend the smallest next step the evidence supports

A findings note can be action-oriented without making an unsupported operational commitment. Maple's evidence supports clarifying the observed volume/rate contrast and collecting context before attributing it to a process. A proportionate next step is to gather additional comparable weeks plus consistent staffing and intake-difficulty information, then reassess the patterns. This follows from the two stated limitations and the manager's question about what evidence to collect next.

Avoid recommendations that assume the missing conclusion. 'Roll out the new workflow everywhere' assumes a causal benefit that the dataset does not identify. 'Reduce staff because daily volume rose' assumes an efficiency interpretation unsupported by the day-based denominator. 'Investigate M6 because its rate fell' may be reasonable as a question, but should preserve the fact that M6 also completed the most requests. A useful next step acknowledges the tradeoff rather than treating one metric as a complete verdict.

Separate a proposed action from an approved commitment. The educational note can recommend collecting certain fields, but it should not invent an owner, deadline, budget or agreement that the case does not supply. If an actual workplace note needs an accountable action, those details should come from the authorized decision process. Concise writing does not justify adding commitments merely to make a closing sentence sound decisive.

A good next-step sentence can name the information, purpose and decision boundary: 'Collect additional comparable weeks with staffing and intake-difficulty measures before attributing the rate changes to a workflow or changing routing.' This tells the reader what to do and why, while making clear what conclusion remains unresolved. The sentence should be proportionate to the evidence and consistent with the rest of the note, not a dramatic recommendation attached after cautious analysis.

Specify proposed context measures carefully enough to make them comparable. Staff hours would permit a different exposure calculation from headcount; neither is supplied here. Intake difficulty would need consistent categories defined before comparing weeks, rather than labels guessed after seeing which weeks had low rates. A future evidence request can name these measurement needs without promising that the new fields will isolate a cause. More observations and context may improve interpretation, but merely adding rows does not automatically create a controlled comparison. The note should identify what is missing and which question it would help answer, not claim the answer in advance.

15 Edit for concision without deleting the evidence

Concise analytical writing removes redundancy while preserving the claim, comparison, denominator and scope. Consider the draft: 'It is important to note that in the sixth week, which is the final week in the dataset, the number of requests that were completed was 128, and this was more than the 81 completed requests in the fifth week, but the completion percentage was lower.' The sentence contains a useful contrast buried in repeated phrasing.

A tighter version is: 'M6 completed 128 requests versus M5's 81, but its completion rate was lower: 80% (128/160) versus 90%(81/90).' The revision retains the counts, direction and denominators while removing phrases that do not change the interpretation. For an audience less comfortable with parenthetical notation, write '128 of 160 eligible requests, or 80%' instead. Concision is audience-sensitive; the shortest string is not always the easiest sentence to understand.

Do not remove qualifiers that carry substantive meaning. 'Recorded', 'listed weeks', 'pooled' and 'percentage points' can be essential. Deleting them may turn a scoped descriptive statement into an ambiguous or overbroad claim. Similarly, replacing 'completed requests per business day' with 'productivity' saves words but changes the measure. Good editing distinguishes expendable phrasing from terms that protect the meaning of the evidence.

Use a final compression pass after the calculations and claims are correct. First remove repeated setup language, then combine closely related numerical details, then move secondary arithmetic to the working table. Do not try to solve an overcrowded page by shrinking the font until the chart and limitations become unreadable. If the note still does not fit, revisit the selection of observations. A one-page constraint is a reason to prioritize, not a reason to conceal the context needed to interpret the selected numbers.

E15-X1 Compress a finding without overclaiming

Rewrite this draft in no more than 55 words: “There has been a very significant improvement in how productive we are because in M6 we did 128 and in M5 we did 81, and the new process is clearly working, though some percentages appear different.” Preserve the useful contrast with exact denominators and avoid unsupported statistical, efficiency or causal claims.

Submit: One corrected finding of 55 words or fewer.

16 Arrange the page around reading order

A one-page note needs a visible reading order. Put the descriptive title and scope at the top, followed by exactly three main observations. Place the single chart close to the observation it supports, with a short caption or text alternative. Keep the two limitations and next step together near the conclusion so that the proposed action follows from the evidence boundary. The detailed calculation table belongs in a separate working attachment, not squeezed into the page as tiny text.

The page is a communication constraint, not a universal word count. A chart with six direct labels needs space; a long title or dense table needs more. Use readable typography and

enough whitespace to distinguish sections. If a layout choice forces the chart labels or limitations below a comfortable reading size, shorten redundant prose or simplify the structure. Do not use a large decorative heading or a stock image at the expense of the evidence.

Exactly three observations means three main claims, not necessarily three isolated numbers. One observation may include the M5–M6 count/rate contrast with both denominators because those details form one coherent point. Avoid disguising a fourth independent finding in the chart caption or next-step sentence just to satisfy the bullet count formally. The note should feel like a selected explanation rather than an unstructured list divided into three containers.

A useful layout test is to ask a reviewer to identify the question, main message, evidence boundary and proposed next step without reading the working table. Then ask them to trace a numerical claim using the table. These are complementary tests of usability and auditability. The note should stand alone for understanding while the working file provides exact reconstruction. Neither a beautiful page with unverifiable claims nor a dense audit table without a clear message completes the task.

Consider a reader who sees only the top half of the page. A title about higher completion volume followed by a chart of completion percentages could create a mismatch unless the observations explain why the measures differ. Put the volume/rate contrast near the chart rather than leaving the denominator explanation in a distant attachment. Conversely, a full calculation table before the three findings may obscure the selected message. Sequence the material so that each new element resolves a likely question raised by the previous one: what was observed, how it is measured, what the pattern means descriptively and what cannot yet be concluded.

17 Study a complete worked findings note

The following Maple note is a complete worked model. It contains exactly three numbered observations and two explicit limitations, uses the single completion-rate chart and keeps supporting arithmetic in the separate working table. The model does not claim that its wording is the only acceptable version. Its strength is the relationship among the question, selected evidence and limits: each observation adds a different piece, and the next step follows from what remains unknown.

Title: Completion rate ended higher, while volume and rate moved differently.

Scope: This note describes 700 eligible synthetic Maple requests across six sequential reporting weeks and 29 listed business days, using unchanged within-week completion definitions.

1. The completion rate ended at 80% in M6 (128/160), above M1's 72% (72/100) by 8 percentage points. The path was not steady: it dipped to 70% in M2 and peaked at 90% in M5 before returning to 80%.

2. M6 completed 128 requests compared with M5's 81, an increase of 47, yet its completion share was lower: 80% versus 90%. The eligible workload rose from 90 to 160. Daily completed volume also rose from 16.2 to 25.6 across these two five-day weeks.

3. Across all six weeks, 546 of 700 eligible requests completed, giving a pooled completion rate of 78%. Total completed volume averaged 18.83 requests per listed business day across 29 days.

Chart: Use the supplied chronological completion-percentage chart. Text alternative: Weekly rates are 72%, 70%, 80%, 80%, 90%, 80%; the series fluctuates, peaks in M5 and ends above its start.

Limitations: First, six weeks without earlier seasonal history do not establish a persistent or seasonal trend. Second, staffing, difficulty, assignment and intervention information are unavailable, so the causes of the differences are not identified.

Next step: Collect additional comparable weeks with staffing and intake-difficulty measures before attributing the changes to a workflow or changing routing.

Notice that the note does not hide the rate decline from M5 to M6, even though M6 has the highest completed volume. It also avoids turning the pooled 78% into an equally weighted average of weeks. The daily figures are included as supporting detail within the volume observation and pooled summary, not as a separate fourth main claim. The limitation language is specific enough to explain why the next step requests both longer coverage and operational context.

18 Revise a note when a source correction changes its numbers

A corrected source can require changes in several places at once. The synthetic correction exercise supplies an earlier Maple export with M4 completed=94 and a later authorized correction to 96, while eligible remains 120 and business days remain 5. The canonical Maple case used throughout this course already contains 96. Treat the earlier value only as a separate correction scenario, not as an alternative current source to blend with the main dataset.

The earlier M4 rate would have been 94/120=78.3333%, and its daily volume 18.8. The corrected values are 80% and 19.2. The earlier pooled completed total would have been 544, giving 544/700=77.7143% and 544/29≈18.7586 per day. The corrected totals are 546, 78% and 18.8276 per day. A revision must update the working table, chart point, text alternative and pooled observation wherever those quantities appear. Merely changing the source cell leaves stale claims elsewhere.

The correction record has two administrative dates: the earlier export was recorded on 2026-10-05 and the correction notice on 2026-10-07. These are source-document dates, not observation dates for M4. The weekly labels remain synthetic sequential periods without calendar dates. Do not relabel M4 as the week of October 7 or claim that operational performance changed on the correction date. The correction changes knowledge of an existing observation, not necessarily the underlying process at that later time.

Keep a concise correction ledger: affected field, old value, new value, source notice and downstream outputs updated. If an earlier note was distributed, the correction should explain the material numerical change without pretending the earlier figure was always different. A correction statement should distinguish the numerical revision from any change in the operational process. The transferable habit is to distinguish a new observation, a revised observation and a new publication timestamp before updating the narrative.

E18-X1 Update every affected claim after a correction

In the separate correction scenario, M4 completed changes 94→96 on a notice dated 2026-10-07; an earlier export was dated 2026-10-05. Eligible 120 and days 5 are unchanged. Calculate old/new M4 rate and daily volume, old/new pooled totals/rate/daily volume, and list the note elements requiring update. State what the administrative dates do not establish.

Submit: A numerical correction ledger and downstream-update list.

19 Write an independent Alder findings note

The independent Alder case asks the same type of question using a new complete dataset: how did observed completion volume and completion percentage differ across five listed weeks? The source file assets/alder_weeks.csv contains A1:80 eligible, 60 completed, 4 business days; A2:100, 80, 5; A3:120, 84, 5; A4:100, 90, 5; A5:100, 85, 5. Definitions are unchanged, every eligible request appears once and outcomes are complete for the listed business days. Staffing, difficulty, intervention assignment and earlier seasonal history are unavailable.

Build a separate working table before writing. Do not copy Maple's totals, rates or narrative merely because the fields match. The Alder sequence contains a different dip and peak, and its unequal denominators make the pooled rate different from the simple mean of weekly percentages. The first week has four days, so endpoint volume comparisons need careful wording if daily exposure is relevant. Use the source counts to decide which three observations are most informative.

The final note must fit one readable page and contain a descriptive title, one scope sentence, exactly three distinct observations, one chronological completion-percentage chart with 0–100% range, exactly two explicit limitations and a cautious next step. Retain the working table separately. The chart must show A1 through A5 in order, with direct percentage labels and a text alternative. Do not add a second chart or use an unlabeled dual axis to fit extra measures into the page.

At least one observation should expose a volume/rate contrast rather than simply repeat the endpoint comparison. At least one should summarize the pooled period using summed counts. Every figure in the prose must be traceable to the working table. The note should not identify the cause of changes, invent missing records or promise that a particular staffing or workflow action will improve results. Your aim is a concise, useful account of what the supplied evidence establishes and what the next decision still needs.

Week	Eligible	Completed	Business days
A1	80	60	4
A2	100	80	5
A3	120	84	5
A4	100	90	5
A5	100	85	5

E19-X1 Deliver the one-page Alder note

Create the full working table and a one-page note satisfying every stated component. Include a volume/rate contrast, an endpoint/path observation and a pooled-period observation. Give exact formulas or count ratios for all rates and daily averages in the working file; state whether calculations were executed in software or manually checked.

Submit: One-page note with one chart, separate full working table and claim-evidence map.

20 Audit the final page as a reader and as a reviewer

Review the note twice using different questions. As a reader, ask whether the title, scope and three observations form one coherent answer. Can you tell which measure is a count, which is a percentage and which is a daily average? Can you understand the chart without a color legend or a separate explanation? Do the limitations clarify the decision rather than contradict the headline? Does the next step follow from the evidence rather than introduce a new unsupported conclusion?

As a reviewer, trace every numerical claim to the working table. Recalculate one ordinary weekly rate, the volume/rate contrast and the pooled result. Check percentage-point versus relative-change language, day denominators and rounding. Confirm that the chart has the correct chronological sequence and that the text alternative matches it. A note can contain individually correct numbers but still be wrong if a title says steady improvement or a comparison uses the wrong baseline.

Use a correction record with exact fields when a peer finds a problem. Record the original claim, revised claim, source rows and reason. 'Made the wording clearer' is insufficient for a numerical correction; 'changed pooled rate 80% to 79.8% because summed counts 399/500 differ from the equal-week mean' is auditable. If no correction is needed, record which checks were performed rather than inventing a change to fill a form.

The final standard is not confidence of tone. It is a complete chain from source records to calculations, selected findings, chart and bounded action. A good one-page note can be brief because the writer has done the detailed work elsewhere and knows which distinctions matter. It should leave the reader with a clear understanding of what happened in the observed data, what remains uncertain and what evidence would help next, without requiring them to trust an unexplained adjective or an impressive-looking graphic.

Assessment

Choose one best answer per question. Questions 1–10 check the foundation concepts; questions 11–20 apply the extended study units. Complete and submit the practical tasks separately. A strong quiz score does not replace correct practical work.

1. Foundation Week 2 completed 90 of 120 eligible requests across 5 days. What is its completion percentage?

A. 90%, using the completed count as a percent

B. 18%, using completed per day

C. 80%, using Week 1’s rate

D. 75%, from 90/120

2. Foundation weekly completed counts 80, 90, 68, 90 sum to 328, and eligible counts total 400. What is the pooled completion rate?

A. 82%

B. 82.5%

C. 17.26%

D. 80%

3. Why does the foundation equal-week average of percentages differ from its pooled rate?

A. Percentages can never be averaged for any purpose.

B. The business-day counts must replace eligible requests.

C. Weekly eligible denominators differ, so the pooled rate uses unequal request weights.

D. The final week must receive all the weight.

4. Foundation rates rise from 80% in Week 1 to 90% in Week 4. Which change statement is precise?

A. A 10% relative increase

B. A 10-percentage-point increase; the relative increase is 12.5%

C. A 90-percentage-point increase

D. A 12.5-percentage-point increase

5. Which foundation pair has equal completed volume but different completion percentages?

A. Weeks 2 and 4:90 completions each, but 75% and 90%

B. Weeks 1 and 4:80 and 90 completions

C. Weeks 1 and 3:80 and 68 completions

D. Weeks 2 and 3:90 and 68 completions

6. Foundation Week 3 has 68 completions across 4 business days. What is its completed volume per business day?

A. 20, using 80 eligible requests

B. 21.25, dividing the 85% rate by 4

C. 68, treating the weekly count as a daily average

D. 17 requests per business day

7. Which foundation limitation follows from the supplied case rather than an invented problem?

A. Half the eligible records are missing.

B. Staffing and request-difficulty information is unavailable.

C. Week 4 was randomized to a new process.

D. The completion counts are known to be inaccurate.

8. Which chart matches the foundation note’s specification?

A. A line sorted from lowest to highest rate

B. A pie of the four weekly percentages

C. A chronological line of completion percentages on a 0–100% axis

D. One axis mixing completed counts and percentages

9. Which foundation conclusion overreaches the evidence?

A. Week 4 completed 90 of 100 eligible requests.

B. Across all weeks 328 of 400 requests completed.

C. Week 2 averaged 18 completed requests per business day.

D. A new process caused the Week 4 rate improvement.

10. What makes a findings-note claim auditable?

A. A confident adjective such as excellent

B. A link from the claim to source counts, denominator and calculation

C. A chart title that repeats the recommendation

D. A rounded percentage with no population definition

11. Maple M5 completed 81/90 and M6 completed 128/160. Which summary preserves both measures?

A. M6 improved on every measure because 128 exceeds 81.

B. M6 had fewer completions because 80% is below 90%.

C. M6 had more completions but a lower completion percentage.

D. M5 was more productive per worker because its rate was higher.

12. What is Maple’s pooled completion percentage?

A. 78.67%, the equal-week average

B. 78%, from 546/700

C. 80%, the final-week rate

D. 18.83%, the daily completion average

13. Maple M3 completed 64 in 4 days and M1 completed 72 in 5 days. What follows?

A. M3 had higher weekly volume and lower daily volume.

B. M3 necessarily used staff more efficiently.

C. The two weeks had identical daily volume.

D. M3 had lower weekly volume but higher completed volume per listed day.

14. Which three Maple candidates are distinct and supported?

A. Endpoint/path, M5–M6 volume/rate contrast, pooled period

B. Endpoint gain, ending rate, endpoint relative increase as three separate main findings

C. New workflow success, improved staff efficiency, guaranteed future trend

D. Three different phrasings of the 90% M5 peak

15. Which limitation is both specific and supported for Maple?

A. The source contains many known missing requests.

B. The plotted percentages cannot be computed.

C. Six weeks without earlier history do not establish a persistent or seasonal trend.

D. M6’s staffing shortage caused its rate decline.

16. Which next step follows from Maple’s limitations without adding an unsupported commitment?

A. Collect additional comparable weeks and staffing/intake-difficulty context before attributing changes to a workflow.

B. Promise a staffing reduction because daily volume increased.

C. Roll out a new process immediately because the endpoint rate rose.

D. Set a guaranteed 90% future rate based on M5.

17. In the correction scenario, M4 completed changes 94→96 while eligible 120 and days 5 stay fixed. What changes?

A. Only M4’s weekly rate changes; the pooled completed total stays fixed.

B. The service-week date becomes the notice date

C. Eligible total rises from 700 to 702

D. M4’s rate becomes 80%, and the pooled completed total becomes 546

18. What is Alder’s pooled completion rate from 399 completed and 500 eligible requests?

A. 80%, the equal-week mean

B. 79.8%

C. 85%, the final-week rate

D. 16.625%, the per-day average

19. Why can Alder A3 complete 84 requests yet have a lower rate than A2’s 80 completions?

A. Its business-day count is smaller.

B. Its eligible denominator is 120 versus 100, giving 70% versus 80%.

C. The higher completed count must be a data error.

D. The rate formula should use only the difference 84−80.

20. Which final-review statement is appropriately precise?

A. The chart looks clear, so no arithmetic checks are needed.

B. The note proves the causes because it has two limitations.

C. Expected formula outputs count as executed spreadsheet tests.

D. Every prose number should trace to source rows or a calculation, and actual checks should be distinguished from expected results.

Sources and further reading

NIST/SEMATECH: Comparing a Sample Proportion
https://www.itl.nist.gov/div898/handbook/prc/section2/prc24.htm

UK Government Analysis Function: Data Visualisation Charts
https://analysisfunction.civilservice.gov.uk/policy-store/data-visualisation-charts/

NIST/SEMATECH: Scatter Plot
https://www.itl.nist.gov/div898/handbook/eda/section3/scatterp.htm

UK Government Analysis Function: Communicating quality, uncertainty and change
https://analysisfunction.civilservice.gov.uk/policy-store/communicating-quality-uncertainty-and-change/