From broad complaint to a testable problem

Convert counts into comparable rates, define a focused problem and choose the next breakdown without treating a difference as proof of cause.

The smaller error count hides the larger rate

Fictional request-processing review: team A reports 20 errors in 1,000 cases; team B reports 10 in 100. Manager Elif initially assigns all improvement attention to A because its error count is larger. The shared error definition and case mix still need checking.

Your role and the reference condition

Process analyst with both team representatives.
Normal: Counts and denominators refer to the same period and definition; comparisons state their scope.
Gap: Raw counts suggest one priority while rates suggest another.

Work within these conditions

1. Treat each count as cases with at least one defined error for this exercise, not unrestricted defects per case.

2. Different case mix, detection or periods can invalidate a direct team comparison.

Fictional teaching case. Supplied observations support the exercise; proposed actions are not verified customer results.

See how the method works

A broad complaint rarely gives a team enough direction to test a cause. Define what counts as the problem, over what period and out of how many opportunities. Break comparable observations down by useful factors such as request class, location or shift. Distinguish large counts from high rates. Then observe where the concentrated gap occurs and choose an analysis method suited to its mechanism. A ranking can guide attention but cannot establish causation. Keep reopened work and exceptions within the declared boundary so that an apparent improvement does not simply move the problem out of the measure.

Team	Errors	Cases	Rate
A	20	1000	2%
B	10	100	10%

Compare definitions, case mix and period. The difference is a question to investigate, not a causal conclusion.

Method exhibit: Team A, Team B, Before interpreting.

Follow the evidence and decisions

Inspect the supplied case inputs

Team	Cases with error	Total cases
A	20	1,000
B	10	100
Period	Same fictional week	Definition pending confirmation
Case mix	Routine and exception requests	Breakdown not yet supplied

01 / Define what is being counted

Elif confirms that numerator and denominator refer to completed cases in the same week and asks whether both teams apply the same error rule.

Why: Twenty defects and ten defective cases are not comparable numerators.

Evidence / check: A written definition and period are attached before interpreting.

02 / Normalize the comparison

Calculate A as 20 / 1,000 x 100 = 2% and B as 10 / 100 x 100 = 10%. Keep counts alongside rates.

Why: The denominator exposes different opportunity volume, while the counts show the size of the observed burden.

Evidence / check: Rate bars use one percent scale and retain both sample sizes.

03 / Break down toward the actual work

Request routine/exception case counts and error counts for each team, then examine where and when the specific error occurs. Avoid collecting every available category without a question.

Why: A useful stratum narrows the gap or tests a comparability concern; it does not simply make another chart.

Evidence / check: The next collection plan names case type, event definition and handoff point.

04 / Write a focused, provisional problem

State that B has 10 error-containing cases among 100 in the supplied week, with case mix and detection comparability unresolved. Assign the next observation before choosing a cause.

Why: A higher observed rate does not establish worse effort or a causal mechanism.

Evidence / check: Problem statement includes denominator, time, uncertainty and next owner.

Completed denominator-aware comparison

Team / measure	Calculation	Interpretation
A error-containing cases	20 / 1,000 = 2%	Higher count; lower observed rate
B error-containing cases	10 / 100 = 10%	Higher observed rate; smaller volume
Combined	30 / 1,100 = 2.73%	Weighted total, not mean of rates
Next breakdown	Case type and occurrence point	No cause assigned

The apparent team effect is mixed with case type

Further fictional records show B handles mainly exceptions and A mainly routine cases, but type-specific denominators have not yet been reconciled.

Decision

Do not rank team capability from the pooled rates. Obtain comparable within-type counts and examine the work conditions.

Reasoning

Case mix can change aggregate rates even when a named team is not the cause.

What would change the decision?

Retain original totals and reconcile each stratum back to them before interpretation.

Practise with a changed case

Same percentage, different burden

New fictional comparison: team C has 12 error-containing cases among 240 and D has 8 among 160 in one week under a shared definition.

Team	Error cases	All cases
C	12	240
D	8	160

Your task

1. Calculate each rate and the combined rate.
2. Explain whether the counts alone justify claiming C performs worse.
3. Specify one useful next breakdown and its required fields.

Use the next page to record your reasoning before reading the answer.

Your practice worksheet

Same percentage, different burden

Numerator definition / period

Rate calculation with denominator

Comparison and limitation

Next stratum / fields

Focused observation owner

Complete your reasoning before turning to the answer. Use the separate learner workbook for group practice.

Check your reasoning and transfer it

1. C is 5% and D is 5%; together 20 / 400 = 5%. C has more errors because it also has more cases in this sample.

2. Equal observed rates do not prove identical processes or future performance. Case mix, detection and variability remain relevant.

3. A defensible next step might separate request type and occurrence handoff, with errors and all cases counted consistently in each group.

Suggested completed record

Measure	Calculation / interpretation
C	12 / 240 = 5%
D	8 / 160 = 5%
Combined	20 / 400 = 5%
Conclusion	No worse-rate claim from raw counts

Plausible wrong turns

1. Do not average 2% and 10% to obtain the combined rate when volumes differ.

2. A stratum associated with an error is not automatically its cause.

Evidence of a sound answer

1. Use matching numerator/denominator definitions.

2. Reconcile totals and rates.

3. Choose a breakdown that answers a specific question.

Take the learning back to work

Commitment	Agreed follow-through
Owner	Process analyst and representatives who apply the event definition
Record	Stratified counts/rates with data definitions
Review	After collection and before causal analysis or prioritization
Verification evidence	Reconciled denominators, comparable scope and point-of-occurrence observations
If unresolved	Repair definitions or collect missing denominators rather than rank people from incomplete counts.

Help someone else apply the method

Prepare

1. Count/denominator cards
2. Blank comparison sheet
3. Calculator

Minutes	Activity and coaching prompt
4	Show counts before denominators What changes when volume is revealed?
7	Calculate and reconcile Why is the combined rate not 6%?
8	Practice equal-rate case What claim can you support?
5	Choose next breakdown Which question will the new category answer?

Debrief

1. Check definitions before correcting arithmetic.
2. Ask what would make a comparison unfair.

Individual or remote practice

Calculate the combined rate from summed counts, then write one cautious problem statement.

Connect the method and check its boundaries

Before application

1. Operational definition

2. Comparable populations

Outside this lesson

1. Largest count need not mean highest rate

2. Pareto ranking does not prove cause

LEI LeanTech: Prompting for Problem Solving

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Analysis method must fit problem; model must not default blindly to 5 Whys

Method reference; original OPEX scenario and diagram are synthetic teaching content, not source case results.

ASQ: Stratification

ASQ: Stratification

Plan source/category fields before collection and examine relevant groups separately to reveal patterns hidden by aggregation.

Method principle only; OPEX team counts and calculations are original fictional examples. No source diagram or template is reproduced.

Open this lesson and its visual aids