BETA*

Distributions of Certainty (DOC) Protocol

"It's all so … Bayesian!"

Purpose: *A team-based data inquiry protocol for leveraging professional judgement, surfacing risk, and/or quantifying professional learning.* *Used By:* *Leadership Teams, Management Teams, Oversight Teams, Instructional Teams* *Used For:* *Data-driven organizational improvement* *Strategic Plan implementation* *Initiative implementation or review* *Data Literacy professional development*

Introduction

The Distributions of Certainty (DOC) Protocol is a way for teams to describe, visualize, and quantify their members' professional judgement about current conditions or potential outcomes in their organization. Used as a pre/post assessment tool, it can also be used to describe, visualize, and quantify changes in a team's collective understanding or shifts in its shared professional judgement.

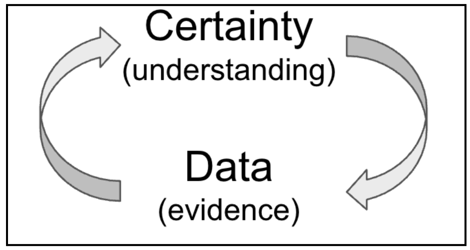
This process is rooted in Bayesian Statistics, though an understanding of that is not necessary to use the protocol. One of the strengths of a Bayesian approach is that it explicitly updates a team's prior knowledge and/or contextual understanding with new data, new evidence of impact, or subsequent professional learning. Since every data point and every data set has a history and a context, working within a Bayesian framework can help a team see a more-complete picture of a particular challenge as it makes decisions about how to move its organization forward. Specifically, it can help a team become more confident and adept at using subjective levels of certainty and data distributions in its decision-making processes.

Process

The two versions of this protocol that follow (Lean Version and Annotated Version) describe the same process, but with different levels of detail and guidance. If your team is new to this protocol, use the Annotated Version. If you have used it or similar protocols several times, you might use the Lean Version. If you are at an intermediate level, you might jump between the two versions as needed by using the embedded links or by having printed copies of each during your session.

Facilitators of this protocol should consider having on hand a copy of the Annotated Version even if their team is using the Lean Version. The "Facilitator's Note" found at the end of each section provide helpful tips for managing the process and conversations that happen along the way.

Final Note



To fully engage in the Bayesian process of updating a prior understanding based on new evidence, three steps are suggested:

1. Complete the full protocol with your team (resulting in individual distributions/graphs and a Team Forest Plot).
2. Engage with new evidence (e.g. student/grade/school/system data or observational/anecdotal evidence, evidence from other schools/systems in studies or journal articles, additional or new data from your local/regional/state context).
3. Repeat the full protocol with your team, comparing the before and after visualizations, measures, conversations, and understandings. Doing this protocol a second time will take 20 - 30 minutes instead of the initial 60 minutes.

***This is a BETA version of the DOC Protocol.**
Please share your experience and feedback with us through a brief survey (link: https://forms.gle/pkUQJZv1BGMJTtBz5) or via email to info@learningcurveanalytics.com.

If you decide to try it out with your team, feel free to email us to get the most up-to-date version. Also, we may be able to provide free facilitation, so please ask! Release of the finalized version is planned for February, 2026.

From our team to yours - THANK YOU!!!
Learning Curve Analytics, LLC

Distributions of Certainty (DOC) Protocol

Lean Version (Annotated Version)

Purpose: to quantify and visualize a team's certainty about a condition or an outcome.

Time	**Materials**
- 60 minutes (first use) - 25 - 30 minutes (subsequent uses)	- 1 printed graph template per person (link) - Distributions spreadsheet (link)

A: Focus *(Develop question and measurement scale)*

	Steps:	Notes:
1. 5 min	**Develop the question your team wants to answer, articulating it in terms of effectiveness, impact, or another amount/degree of a condition or result.** (Question may already be created.)	For example: "How effective do you think intervention X will be at improving student learning about Y?" Or, "How much impact do you think contract negotiations will have on the implementation of the new literacy curriculum?" Or, "How consistent will our target metric be across our district/organization?" Define vague terminology and specify the learners, staff members, or other stakeholders your question is specifically about. ***Write your team's question at the bottom of the graph template.*** (Annotated Version)
2. 5 min	**Determine a realistic best-case / worst-case answer to your question.**	What is the best realistic outcome and the worst realistic outcome? These will be represented by the top and bottom of your scale (100% and 0%, respectively). (Annotated Version)
3. 5 min	**Create a 5-level scale for answering your question.**	Left = "least/lowest"; right = "most/highest." Each level equally represents 20% of the whole. **Write the scale on the top of the graph template.** (Annotated Version)

Two examples: (see Annotated Version for more examples)

Not Effective	*Slightly Effective*	*Somewhat Effective*	*Effective*	*Very Effective*
Very Low Impact	*Low Impact*	*Moderate Impact*	*High Impact*	*Very High Impact*
0% - 20%	*20% - 40%*	*40% - 60%*	*60% - 80%*	*80% - 100%*

B: Collect Data *(Graph individual distributions of certainty then tabulate results)*

Example

4a. 10 min	**On the X-axis (horizontal)**:	Use your professional judgment and knowledge of your context to identify one percentage point or a range of percentages (maximum range of 20 percentage points for the peak of your graph) that you believe is the most likely outcome.
4b.	**On the Y-axis (vertical):**	- Follow the Y-axis (vertical) up to "10". -Mark your percentage(s) with dots or filled-in boxes. If you fill in boxes, the top of the filled-in box should touch the horizontal line labeled with "10".
4c.	**Plot the rest of your graph.**	- You could think about both sides of your graph together, asking yourself for the level "9" on the Y-axis: "Do I have the same level of confidence in the next lower point to the left of my peak as I do for the next lower point to the right of my peak?" -Or, you could think about them separately, asking yourself: "How quickly does my certainty decrease as the percentage decreases to the left or increases to the right?" -Your graph can end at the "0" on the Y-axis or at any height at the "0%" or "100%" on the x-axis.
4d.	**Connect the dots** for a line graph **or shade the blocks** for a bar graph.	Either a line graph or a bar graph is fine. (Annotated Version)

5. 5 min	**Complete the spreadsheet with the coordinates of 10 plotted points on your graph.**	- Complete on "Individual Distribution" (Tab 1) - Enter the percentage (x-axis) in column A and then the level of certainty (y-axis) in column B. (Annotated Version)

C: Analyze (Share-out, aggregate, discuss)

6. 10 min	**Discuss individual graphs** (i.e. "What makes your graph look the way it does?") (Annotated Version)	Gallery walk; share-out; compare/contrast. "What evidence, assumptions, and/or experiences shape your graph?" "Are similarly shaped graphs based on similar evidence, assumptions, and/or experiences?" "Are differently shaped graphs based on different evidence, assumptions, and/or experiences?"

7. 5 min	**Develop Descriptive Statistics** (Annotated Version)	Each team member reads aloud their own mean/expected value (column E, row 14) and standard deviation (column G, row 14) and records their own and the other team members' numbers on the "Team Forest Plot" tab of the spreadsheet.

8. 5 min	**Discuss Team Forest Plot** (Annotated Version)	"As a team, what are we most certain about?" "What inferences or conclusions do we agree on?" "What are we least certain about?" "What risks are we identifying?" "What shape would our full team's distribution of certainty have if we plotted it?" (e.g. "How wide is our peak? How quickly does each side descend?)

D. Understand (Interpret results and answer initial question)

9. 10 min	**Articulate your shared understanding** (Annotated Version)	Discuss the team's collective answer to its question from Step 1. Write an answer in the meeting notes that articulates the team's shared certainties.

***Debrief**: "What did we learn about our team as a whole, about each other, and/or about how we work best together?"*

***Follow-up:** Incorporate results of DOC Protocol into your organization's ongoing improvement process, practices, and/or routines. See "Additional Guidance" in Annotated Version for examples.*

end

Distributions of Certainty (DOC) Protocol

Annotated Version (Lean Version)

Purpose: to quantify and visualize a team's certainty about a condition or an outcome.	
Time - 60 minutes (first use) - 25 - 30 minutes (subsequent uses)	**Materials** - 1 printed graph template per person (link) - Distributions spreadsheet (link)

A: Focus *(Develop question and measurement scale)*

	Steps:	Notes:
1. 5 min	**Develop the question your team wants to answer, articulating it in terms of effectiveness, impact, or another amount/degree of a condition or result.** (Question may already be created.)	For example: "How effective do you think intervention X will be at improving student learning about Y?" Or, "How much impact do you think contract negotiations will have on the implementation of the new literacy curriculum?" Or, "How consistent will our target result be across our district/organization?" Define vague terminology and specify the learners, staff members, or other stakeholders your question is specifically about. ***Write your team's question at the bottom of the graph template.*** (Lean Version)

Additional Guidance:

- To create a distribution, these need to be "how much" or "how many" kinds of questions, and not "what", "which", "how come", or "why" kinds of questions. The team needs to be able to answer this question with relative quantities (e.g. more, less) or qualitative ratings (e.g. "high impact", "moderate impact").
- This question might already have been developed by a team's leader, by another leader or team within the organization, or by a subgroup of the team. The question could also have been developed at an earlier team meeting.
- It is challenging to complete this step in the allotted 5 minutes.

Facilitator's note:

- *As a facilitator, your task in step 1 is to set your team up for productive discussion later in the protocol. The quality and kind of question that is ultimately written* *down in Step 1 will help your team focus throughout this process and will also be a tool for you to use to refocus and, if needed, redirect later conversations.*

- *If a question is articulated as a "how come" or "which" kind of question, you might respond with something like: "how could we rephrase that as a "how much" or "how many" kind of question?*

2. 5 min	**Determine a realistic best-case / worst-case answer to your question.**	What is the best realistic outcome and the worst realistic outcome? These will be represented by the top and bottom of your scale (100% and 0%, respectively). (Lean Version)

Additional Guidance:

- For a positive effect or impact, a team might look to strategic goals to determine this answer. For negative effect or impact, it can be helpful to think both in terms of student learning as well as the conditions that support it, such as staff turnover, organizational climate and culture, and professional learning.
- If your question is about something that has a negative impact, it will probably make sense for this to be represented by the top of your scale (100%). An example of this, shared earlier, is the potential negative impact of contract negotiations on a curriculum's implementation.

Facilitator's Note:

- *A productive starting point for this conversation might be discussing what the current reality or baseline is. You do not need to come to agreement on this, though having a basic level of consensus can be helpful.*

3. 5 min	**Create a 5-level scale at the top of the graph for answering your question.**	Left = "least/lowest"; right = "most/highest." Each level equally represents 20% of the whole. **Write the scale on the top of the graph template.**(Lean Version)

Two examples:

Not Effective	*Slightly Effective*	*Somewhat Effective*	*Effective*	*Very Effective*
Very Low Impact	*Low Impact*	*Moderate Impact*	*High Impact*	*Very High Impact*
0% - 20%	*20% - 40%*	*40% - 60%*	*60% - 80%*	*80% - 100%*

Additional Guidance:

- Some additional examples are:
  - Rarely Consistent, Occasionally Consistent, Moderately Consistent, Usually Consistent, Highly Consistent
  - Seldom Observable, Sometimes Observable, Regularly Observable, Frequently Observable, Almost Always Observable

- Minimally Aligned, Somewhat Aligned, Moderately Aligned, Substantially Aligned, Fully Aligned
  - Little Connection, Partial Connection, Adequate Connection, Strong Connection, Complete Connection
  - Surface Understanding, Basic Understanding, Solid Understanding, Deep Understanding, Comprehensive Understanding
  - Minimal Grasp, Foundational Grasp, Working Grasp, Thorough Grasp, Mastery-Level Grasp
- Keep in mind that the qualitative phrases (e.g. "high impact") and the quantitative values (e.g. 60% - 80%) are describing the same thing. They both describe how close something is to the best case / worst case scenario from question 2.
- This protocol is intentionally framed in terms of certainty instead of uncertainty. Some teams or team members might more easily think in terms of uncertainty, and it is fine to start engaging in this process that way. However, there will ultimately be a need to translate something like "low uncertainty" into "high certainty" or "high uncertainty" into "low certainty", and it can be helpful for a team to make that shift sooner than later. While a graph of certainty is just the inverse of a graph of uncertainty, thinking too much about uncertainty can result in only identifying what a team does not want to do. To reach strategic goals, a lens of certainty can help a team more easily identify productive next steps.
- One potentially helpful way to think about certainty is like this: "how many things need to go right in order for it to happen the way we hope? How much of a chance is there that some of those things will not go right?" Certainty might decrease as that number increases or as we have less control or influence over the conditions identified.

Facilitator's Note:

- *Make sure your scale is only measuring one thing and is not inadvertently measuring two or three things. For example, this 5-level scale measures three different things: "very ineffective, ineffective, neutral, effective, very effective." It measures two levels of ineffectiveness, two levels of effectiveness, and one occurrence of neither ineffective nor effective. The results of this will not be useful to your team. To measure levels of effectiveness, each level needs to be about effectiveness, as in the example shared earlier. This might seem inconsequential at first, but it is an important step in setting this work up to be useful.*
- *Some team members might be more comfortable working with objective measures than with subjective measures. Professional judgement, however, is by definition subjective. One intention behind this protocol is to help surface a team's individual and collective subjective judgements so that its members can be more aware of whatever lens it is looking through as well as the assumptions that shape a discussion. If this feels like a barrier to any team members, it might be helpful to legitimize this kind of thinking for them before the protocol begins. One way to do that is by sharing information about the three different kinds of probability - classical probability (logic), empirical probability (trial and error), and subjective probability (judgement). They are all legitimate areas of probability theory, each with their own uses, contexts, and characteristics.*

B: Collect Data *(Graph individual distributions of certainty then tabulate results)*

Example

4a. 10 min	**On the X-axis (horizontal)**:	Use your professional judgment and knowledge of your context to identify one percentage point or a range of percentages (maximum range of 20 percentage points for the peak of your graph) that you believe is the most likely outcome.
4b.	**On the Y-axis (vertical):**	- Follow the Y-axis (vertical) up to "10". -Mark your percentage(s) with dots or filled-in boxes. If you fill in boxes, the top of the filled-in box should touch the horizontal line labeled with "10".
4c.	**Plot the rest of your graph.**	- You could think about both sides of your graph together, asking yourself for the level "9" on the Y-axis: "Do I have the same level of confidence in the next lower point to the left of my peak as I do for the next lower point to the right of my peak?" -Or, you could think about them separately, asking yourself: "How quickly does my certainty decrease as the percentage decreases to the left or increases to the right?" -Your graph can end at the "0" on the Y-axis or at any height at the "0%" or "100%" on the x-axis.
4d.	**Connect the dots** for a line graph **or shade the blocks** for a bar graph.	Either a line graph or a bar graph is fine. (Lean Version)

Additional Guidance:

- Either a line graph or a bar graph is fine.
- The percentages you choose for the peak of your graph do not need to stay within the bounds of one category. However, the top level of your graph should not be wider than 20 percentage points. For example, you could choose 50% - 70% or 55% - 65% as your starting range, straddling the "somewhat effective" and "effective" categories.
- These levels of certainty are relative and subjective, meaning there is not an objective definition of what each level means. So, regardless of how your level of certainty

compares with another team member's, your individual "most certain" is a 10 and your "least certain" is a 0, regardless of how your level of certainty compares to a teammate's. However, the next step shows how the number you assign to your certainty level connects to the size of the range of these top levels.

Facilitator's Note:

- *If a team member appears to be doing something like putting one point or one box on level 10 of the y-axis and then all the rest on level 9, you should ask what their thinking is behind that. It could suggest a misunderstanding about this step or a lack of engagement in the process. While it technically follows the guidelines for this protocol, the level of certainty generally decreases as the range increases. You might ask a question such as, "Do you think it is equally likely for this to be 'somewhat effective' as 'very effective'?" Or: "How many things need to go right for this to be 'very effective'?" and then, "How likely is it that some of those things won't go right?"*
- *Make sure team members understand that the graph can go down to the "0" on the Y-axis or it can "hit the wall" of the "0%" or "100%" of the X-axis at any height on the Y-axis.*

5. 5 min	**Complete the spreadsheet with the coordinates of 10 plotted points on your graph.**	- Complete on "Individual Distribution" (Tab 1) - Enter the percentage (x-axis) in column A and then the level of certainty (y-axis) in column B. (Lean Version)

Additional Guidance:

- Once you've plotted your distribution visually on the graph, the spreadsheet helps you understand what your professional judgment looks like mathematically. Here's what each column does:
    - **Column C: Probability** This converts your certainty levels into probabilities by dividing each certainty level by the sum of all certainty levels you assigned. This process, called normalization, ensures all probabilities add up to 1.0 (or 100%). Think of this as: 'Out of all the certainty I distributed across the scale, what proportion did I place at this particular percentage level?'"
    - **Column D: Value** This multiplies each percentage (where you placed certainty) by its probability. This weighted value shows how much each point contributes to your overall expectation.
    - **Column E: Cumulative Probability** This adds up the probabilities as you move from left to right across your distribution. It answers the question: "What's the probability that the outcome will be at or below this percentage?" This helps you see where the middle of your thinking lies.
    - **Column G: Variance** This measures how spread out your distribution is. For each point, it calculates the squared difference between that percentage and your expected value (the mean), then weights it by probability. Points further from

your average contribute more to variance. A higher variance means your certainty is spread across a wider range of possibilities. In other words, you are less certain about any specific percentage or smaller sub-ranges.

- **Row 14: Summary Statistics**
    - **Column E: Expected Value/Mean** This is the "measure of central tendency" of your distribution—where your professional judgment points to on average. It's calculated by adding up all the values in Column D.

    - **Column G: Standard Deviation** This is the square root of the sum of all variances. It gives you a single number describing how spread out your certainty is. A smaller standard deviation means your distribution is narrow and peaked (high certainty about a specific range). A larger standard deviation means your distribution is wide and flat (less certainty spread across many possibilities).

- When your team compares these statistics in the Forest Plot, you can quickly see who has similar expectations (similar means) and who is more or less certain about those expectations (comparing standard deviations). For example, someone with a mean of 65% and a standard deviation of 8 has a very different professional judgment than someone with a mean of 65% and a standard deviation of 18 - even though they expect the same average outcome.

Facilitator's Note:

- *You will likely have team members with different levels of comfort and familiarity with this kind of task and thinking. For some team members, you might encourage them to "learn by doing" by just going through the steps even if they do not yet fully understand them. Other team members might be more comfortable and wanting to get started on the next step. However, it is important to go through each step together as a team. Those who are less familiar with this kind of work could benefit from the support and explanation offered by other team members, and those who are more familiar with it could benefit from slowing down and thinking about what it is representing in your context.*

C: Analyze (Share-out, aggregate, discuss)

6. 10 min	**Discuss individual graphs** (i.e. "What makes your graph look the way it does?") (Lean Version)	Gallery walk; share-out; compare/contrast. "What evidence, assumptions, and/or experiences shape your graph?" "Are similarly shaped graphs based on similar evidence, assumptions, and/or experiences?" "Are differently shaped graphs based on different evidence, assumptions, and/or experiences?"

Additional Guidance:
- A useful protocol library can be found at: https://www.clee.org/resources/

Facilitator's Note:
- *If you use another protocol for this step, you will likely need to abbreviate it.*

7. 5 min	**Develop Descriptive Statistics** (Lean Version)	Each team member reads aloud their own mean/expected value (column E, row 14) and standard deviation (column G, row 14) and records their own and the other team members' numbers on the "Team Forest Plot" tab of the spreadsheet.

Additional Guidance:
- Note that on the "Team Forest Plot" tab, columns D and E fill automatically by using what you enter on columns B and C.
- A small (i.e. narrow) standard deviation indicated higher certainty. This means that team members are more confident about the likelihood of a narrower range of outcomes. A large (i.e. wide) standard deviation suggests the team believes that anything could happen.

Facilitator's Note:
- *After everyone has shared out, consider reading your completed list aloud for everyone to confirm and double check the numbers.*

8. 5 min	**Discuss Team Forest Plot** (Lean Version)	"As a team, what are we most certain about?" "What inferences or conclusions do we agree on?" "What are we least certain about?" "What risks are we identifying?" "What shape would our full team's distribution of certainty have if we plotted it?" (e.g. "How wide is our peak? How quickly does each side descend?)

Additional Guidance:
- If your team has discussion or meeting norms, now could be a good time to review them.

Facilitator's Note:
- *To prime the discussion, consider giving one minute for everyone to write down some thoughts on these questions.*
- *If the discussion is slow to get momentum, consider prompts like:*

- *“Can you say more about that?”*
- *“What are some ways what you said is similar to / different from what another team member said?”*
- *“What are some assumptions we are all making? What are some assumptions we do not agree on?”*

D. Understand (Interpret results and answer initial question)

9. 10 min	**Articulate your shared understanding** (Lean Version)	Discuss the team’s collective answer to its question from Step 1. Write an answer in the meeting notes that articulates the team’s shared certainties.

Additional Guidance:
Possible next steps for your team:

- Develop and implement an action plan, then complete individual graphs and Team Forest Plot again as an early- or mid-implementation check in. It can be especially helpful to review any implementation metrics or leading indicators before completing individual graphs for a second time. Note changes in thinking (e.g. a smaller average standard deviation could indicate increased consistency between team members’ assessment of context), celebrate successes, articulate concerns, and determine next steps or plan revisions. For example, the team might adjust the action plan based on which assumptions are being confirmed or challenged and what new factors might have emerged or changed in importance.
- Do additional research, study, data collection, or observation then complete individual graphs and Team Forest Plot again, noting similarities and differences from the first time. Articulate the learning that influenced a change or solidified learning.
- Importantly, this protocol is different from a predictive exercise, where team members might predict what will happen and then see who was the closest to getting it right. Part of the work of continuous improvement is identifying what *could* happen and then identifying elements we have control or influence over that might make the desired outcome more likely to actually happen. If a team has a low level of certainty about that outcome, it might increase specific resources to then increase their certainty (and the likelihood) that it will come to be. This is different from a predictive exercise where the observer does not have any effect on the observed.

Facilitator’s Note:

- *The end of this protocol could present an opportunity to discuss the ways your existing improvement process can support a collective response to the challenges you have identified.*
- *Consider collecting and saving team members’ graphs for reference if you do the DOC Protocol with this same question a second time. The second time through is usually much quicker than the first time.*

Debrief*: "What did we learn about our team as a whole, about each other, and/or about how we work best together?"*

Follow-up: *Incorporate results of DOC Protocol into your organization's ongoing improvement process, practices, and/or routines.*

end

Definitions

Bayesian Statistics
A way of updating predictions of likely outcomes as new information comes in. For example, if a team initially thinks a school will keep struggling based on past performance, but it starts showing improvement, Bayesian thinking provides a structured way to adjust expectations. It's about combining what a team knew and believed before with new evidence to make better decisions about allocating resources such as time, attention, and money.

Certainty / Uncertainty
A team's level of confidence in a predicted outcome. Certainty reflects how well team members understand the situation, how much control or influence they have over key factors, and how predictable the context is based on past experience.

Certainty increases when:

- *The team understands the challenges and has experience with similar situations*
- *Key factors are within the team's control or influence*
- *The context is stable and past patterns are likely to hold*
- *The team has clear strategies and adequate resources*
- *There's strong evidence about what works*

Uncertainty increases when:

- *The situation is novel or the team lacks relevant experience*
- *Important factors depend on external forces (policy changes, budget decisions, community dynamics)*
- *The context is volatile or rapidly changing*
- *Multiple unknowns interact in unpredictable ways*
- *Past patterns may not apply to current conditions*
- *Evidence is limited, mixed, or contested*

Data Literacy
The ability to read, understand, analyze, and communicate with data effectively. For teams from all parts of K-12 education, data literacy means being comfortable collecting information about student performance, organizational conditions, and implementation progress; interpreting what the numbers reveal about learning and operations; and using those insights to make informed decisions about instruction, resource allocation, professional learning, and system improvement.

A data-literate team can look at assessment results, attendance patterns, or implementation metrics and understand not just surface-level outcomes, but also identify underlying patterns - which student groups need targeted support, which practices are gaining traction, where systems are breaking down. Data literacy includes asking good questions about what data means, recognizing when data might be misleading or incomplete, and translating findings into *actionable strategies—whether at the classroom, building, or district level. It also means knowing how to present data clearly to various stakeholders: colleagues, families, school boards, and community members.*

Data literacy is essential because it helps educational leaders and managers move beyond assumptions to evidence-based decision making. Instead of guessing where to focus improvement efforts or which initiatives are working, teams can use data to target their time, attention, and resources where they will have the most impact.

This does not mean that team members need to be statisticians or data scientists. It means developing the confidence to work with numbers, ask the right questions, and use data as one important tool alongside professional judgment, contextual knowledge, and understanding of the students and communities being served.

Descriptive Statistics
Summary measures that describe the main features of a data set—where the center is (i.e. measures of central tendency), how spread out the values are, and what the overall pattern looks like. These include:

Measures of central tendency
- *Mean (average)*
- *Median (middle value)*
- *Mode (most common value/values)*

Measures of spread
- *Range (difference between highest and lowest values)*
- *Standard Deviation (the typical distance of data points from the mean)*
- *Interquartile Range / IQR (the middle 50% of data points, or 25% below the median and 25% above the median)*

Distribution
How data spreads out across different values. When looking at student test scores, for example, the distribution shows whether most students scored in the middle range (normal distribution), whether scores were evenly spread out, or if there were clusters at high and/or low ends.

Probability Distribution
A mathematical description of how likely different outcomes are to occur. It can be based on such things as past results, current reality, and identified trends. Think of it as a prediction tool that shows the chances of getting various results. For example, if a team is looking at reading assessment scores, a probability distribution might tell them there's a 30% chance a randomly selected student will score between 70-79, a 40% chance they'll score between 80-89, and a 30% chance they'll score 90 or above. This helps teams set realistic expectations.

Frequency Distribution

A count of how often each value or range of values actually appears in data. This is what teams observe after collecting information. For instance, after giving an assessment, a team might find that 15% of students scored 70-79, 20% of students scored 80-89, and 15% of students scored 90+. When teams organize this into a table or chart (with number of students on one axis and test scores on the other), they're creating a frequency distribution. This shows the actual pattern of student performance and helps identify where most students are clustering.

Distribution of Certainty

A visual representation of a team's professional judgment that shows both what team members think will happen AND how confident they are about different possible outcomes.

Expected Value

The weighted average of all possible outcomes in a probability distribution, where each outcome is weighted by its probability of occurring. The expected value represents where a team's professional judgment "points to" when considering all possibilities they think are plausible. For example, if a team believes there's a 20% chance an intervention will reach 40% effectiveness, a 50% chance it will reach 60% effectiveness, and a 30% chance it will reach 80% effectiveness, the expected value is: (0.20 × 40) + (0.50 × 60) + (0.30 × 80) = 62% effectiveness.

Forest Plot

A visual display that shows each team member's mean (expected value) and standard deviation side-by-side, making it easy to compare where team members' thinking aligns and where it differs. Each person's estimate appears as a point (the mean) in the middle of a line (representing the standard deviation). This format quickly reveals consensus, outliers, and the overall range of the team's collective judgment.

Graph (Plot)

A visual representation of data that makes patterns easier to see. Instead of looking at rows of numbers, graphs help viewers quickly spot trends, compare groups, and identify outliers. Common types include bar charts (comparing ranges or categories) and line graphs (comparing values).

Peak

The highest point in a probability distribution, representing the outcome considered most likely. When quantifying something like professional judgment, the peak is the visualization of an individual's or team's most confident estimate, representing the outcome believed most likely to occur. For example, if a team thinks 65% - 70% (i.e. "high impact") is the most probable result, that's the peak, even though other outcomes are possible within the distribution.

X-axis

The horizontal line on a graph. This is where teams typically place their categories or the things they're measuring (though for longer lists, the Y-axis can work better). For example, teams might put grade levels, months of the year, or different schools along the x-axis.

Y-axis
The vertical line on a graph. This shows the values or quantities you're measuring. For instance, test scores, number of students, or reading levels would go on the y-axis.

Mean
The average of a set of numbers. Add up all the values and divide by how many values there are. For example, if a class has test scores of 85, 90, 78, and 95, the mean is (85+90+78+95) ÷ 4 = 87.

The mean is a measure of central tendency—it describes where the "center" of a data set sits. In the context of distributions of certainty, the mean represents the "center of gravity" of a team member's professional judgment—the weighted average of all the outcomes they consider possible.

Probability
The likelihood that something will happen, expressed as a percentage or decimal between 0 and 1. If 70% of students typically pass a particular assessment, the probability of a randomly selected student passing is 0.7 or 70%.

Range
The difference between the highest and lowest values in your data. If your highest test score was 95 and your lowest was 65, the range is 30 points. This shows you the ***total spread*** *of student performance, though it doesn't tell you how scores are distributed between those extremes.*

Standard Deviation
A measure of how spread out data points are from the mean (for frequency distributions) or the expected value (for probability distributions). For example, in a dataset of student test scores, a small standard deviation means most students scored close to the average, while a large standard deviation means scores were more scattered. If a class mean is 80 with a standard deviation of 5, most students scored between 75-85. If the standard deviation is 15, scores were much more varied.

In distributions of certainty, standard deviation measures how spread out a team member's professional judgment is. A smaller standard deviation means the distribution is narrow and peaked (higher certainty about a specific range). A larger standard deviation means the distribution is wide and flat (greater relative uncertainty spread across many possibilities).