DABBLING IN THE DATA

A Hands-on Guide to Participatory Data Analysis | **By Public Profit**

[public profit]

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Distribution Activities
MIND THE GAP

Group Size Small to Medium
Time 15-20 mins.

Mind the Gap is and activity that can be useful for exploring where there are meaningful differences among groups.

In this activity, the focus will be visualizing data to look specifically at differences in order to generate ideas about what may contribute to the differences.

OBJECTIVE

Explore the distribution of data, compare data, and discover gaps that may be important.

MATERIALS

☐ Blank sheets of paper for everyone in the group

☐ Writing utensils

☐ Simple data set that you are interested in analyzing the differences in (ex. Girls vs. Boys, Pre-test vs. Post-test scores, Self-assessment vs. External assessment)

ROOM SET UP

A classroom-style room with tables works best so that people can work in groups and have a surface for writing.

ADAPTATIONS

Try this method with other types of data that you may be interested in analyzing. For example, you may have different types of data that can be assigned to people by categories based on community characteristics to launch a conversation.
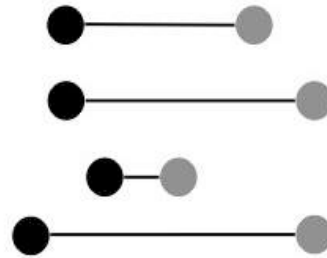
SELECTING DATA & PREP

Prior to meeting, make sure to gather the data you would like to use, review the questions below to guide you in making sure that the data you will be using is ready to go.

What are you calculating?

For example, if you are calculating pre-test versus post-test total score, verify that there is a column (or variable) with those scores in it.

TIP! If your data is not in a spreadsheet, where can people find the data? Consider typing up the data so that it's in a table or worksheet to make it easier to manage with the group.

TIP! If your group is pressed for time, consider doing calculations in advance so that the group can focus on plotting and discussing data. Alternately, you can also break this activity out into multiple sessions.

TIP! If you are using pre-test/post-test make sure you are able to match the pre-test score to the post-test score for each individual.

What variable will be used as the "grouping" category?

What characteristics would be helpful to compare by groups? Is that information in your data?

ACTIVITY STEPS

1	Pass out the data you would like to analyze and walk through it with the group.

Guiding Questions:

- What figure are you interested in learning more about?
- What groups are the most meaningful for us to compare?

Example Data Set:

Based on this data set, the group may decide that it is interested in seeing pre-test and post-test changes for boys versus girls.

STUDENT	GENDER	PRE-TEST	POST-TEST
Student 1	Male	4.1	4.3
Student 2	Female	3.5	3.1
Student 3	Female	2.47	2.6
Student 4	F	3.7	4.1
Student 5	Male	4.5	4.5
Student 6	Female	4.6	4.6
Student 7	Male	3.2	3.3
Student 8	Male	2.1	2.5
Test scores on a scale of 1-5			

2	Ask participants to calculate averages (sum of the all the values divided by the number of values)

Values to Calculate:

- What is the total average for the entire data set?
- What are the averages for each of the groups we are interested in comparing?

Example Calculations:

Based on the example data set in Step 1, you would calculate:

Pre-test avg. for boys: 4.1+ 4.5 + 3.2 + 2.1 = (13.9) / 4 boys = 3.48

Post-test avg. for boys: 4.3 + 4.5 + 3.3 + 2.5 = (14.4)/4 boys = 3.65

Pre-test avg. for girls: 3.5 + 2.47 + 3.7 + 4.6 = (14.27) divided by 4 girls = 3.57

Post-test avg. for girls: 3.1 + 2.6 + 4.1 + 4.6 = (14.4) divided by 4 girls = 3.6

Pre-test avg. for boys and girls: 4.1 + 3.5 + 2.47 + 3.7 + 4.5 + 4.6 + 3.2 + 2.1 = (28.17) divided by 8 boys and girls = 3.52

Post-test avg. for boys and girls: 4.3 + 3.1 + 2.6 + 4.1 + 4.5 + 4.6 + 3.3 + 2.5= (29) divided by 8 boys and girls = 3.62

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Ask participants to set up their individual sheets with the following:

1. Draw a line across their sheets of paper; one line for every group we calculated averages for.
2. Label the length of the line.

1 Boys _____ 5

1 Girls _____ 5
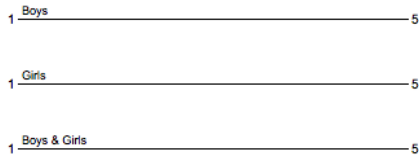
1 Boys & Girls _____ 5

Using the example data from Steps 1 and 2, you would draw three lines for: boys, girls and boys/girls together. The line would be labeled with a 1 one for the smallest (left of the line) and right for the biggest number (right of the line).

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Guide participants in plotting the figures by asking them to draw a bubble along the line that approximately corresponds to the values for each group.

1 Boys _____●○____ 5

1 Girls _____●○____ 5

1 Boys & Girls _____●○____ 5
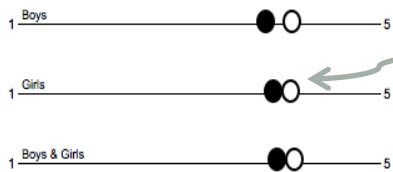
The dots correspond to the group averages you calculated in step 2.

TIP! In this figure, a filled-in bubble represents the pre-test scores and open bubble represents a post-test score to make it easier to tell them apart. You can also use different colors.

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When participants are done plotting their scores, have them determine where the greatest differences or gaps in the data occur.
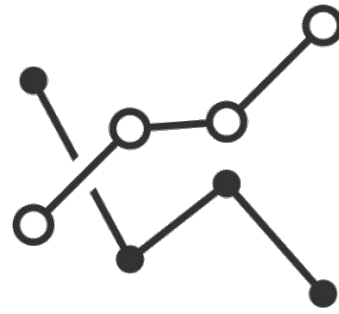
6

Ask participants to share out their responses to the following questions:

- Where are the greatest differences?
- Why might these differences occur?
- What additional information might you need in order to better understand these differences?

YARN SLOPE GRAPH

Group Size Any size
Time 10-15 mins.

Yarn Slope Graph gets groups working side-by-side in creating a graph of one or more types of data that is plotted over time, using common office supplies.

OBJECTIVE

Place data on a life-size slope graph to analyze changes and trends over time.

MATERIALS

- ☐ Foam core board or large piece of chart paper (large corkboard could work also)
- ☐ Thumb tacks if you are using a surface that can be pierced; tape if you are using paper surface
- ☐ Yarn or string
- ☐ Scratch paper
- ☐ Sticky notes
- ☐ Markers in a variety of colors
- ☐ A data set you would like to graph over time, with calculations

ROOM SET UP

Choose a space with enough room for the wall chart.

ADAPTATIONS

Add layers to your story by using multiple pieces of data, and assign each type of data to smaller breakout groups.

SELECTING DATA & PREP

Prior to meeting, make sure to gather the data you would like to use, review the questions below to guide you in making sure that the data you will be using is ready to go.

What is your time period?

Determine what time interval to use (e.g., days, weeks, months) and make sure the data set you bring to share with the group is calculated that way.

Percentage, counts, averages.

When calculating data to prep for visualizing, think through the scale and number format that you will be using. For example, if you are calculating youth attendance by month, you would plot the **count** of youth, at monthly intervals. However, if you were plotting your program's progress towards average daily attendance (ADA) goals, you would plot the **percentage** towards fulfilling your goal. Alternatively, if you were plotting the level of youth satisfaction measured annually through a survey with a scale of 1-10, you may decide to plot the **average**.

TIP! If you are using multiple types of data, make sure to think about how different values can be converted so that they are expressed in the same unit.

ACTIVITY STEPS

1	Write in the time period intervals as the x-axis and the appropriate unit for your y-axis.
2	Take your yarn and tape or pin it to the surface at each data point.
3	Ask the group to brainstorm some key events or changes that were made during this timeline and instruct people to write them down on sticky notes.
4	Depending on the size of the group, either ask people to share out and place their item on the graph, or collect, group, and summarize the groups' input before placing the items on the graph.
5	Take a step back and discuss what you see. Which events appear to have the most impact? What is the data telling you about the relationships you see?

YARN SLOPE GRAPH | EXAMPLE SCENARIO

You want to make a graph of your summer program's attendance. You have averaged the overall attendance for each month. It makes the most sense to measure time in monthly intervals. You draw the x-axis on the plotting surface and label the x-axis with months 1-3 along the bottom. Your y-axis represents the count of participants.

Then you plot the average attendance for each month. In Month 1, you averaged 104 participants. At the Month 1 mark, you pin your yarn to the place that represents 104 participants. During the second month, there was an average of 82 participants; you pin the yarn there. In Month 3, an average of 95 participants came to your program, so you pin the yarn to its final point and cut off the tails.

Next, you brainstorm with your team about the important things that happened in your program and put them on your time line. For example, your program worked really hard to get kids signed up for Month 1 before summer started. You know enrollment dropped during Month 2 because many people went on vacations, but you worked hard to get the word out. The local TV station also did a short feature of your program on the news, and by the time Month 3 came along, enrollment went back up.

Discuss these events in relation to the timeline and the data you have plotted. What are the relationships and impact that seem likely?

Categories
MAGIC QUADRANT

Group Size Small to Medium
Time 15-20 mins.

This structured conversation activity can help your group to reach a decision based on your organizational goals. By categorizing potential solutions to reach a goal, participants will gain an understanding of the impact and related level of effort of each possible step.

OBJECTIVE

Participants will generate potential steps and then categorize each step by the level of effort and impact.
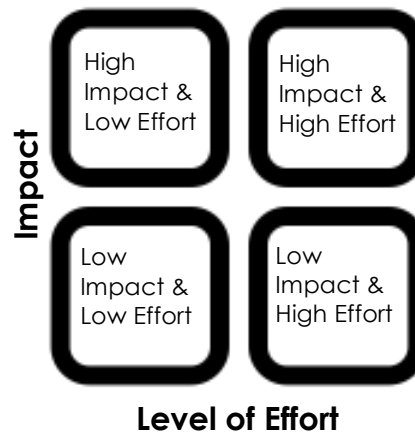
MATERIALS

☐ Chart paper
☐ Markers
☐ Sticky notes (optional)
☐ A goal, topic, or decision that needs to be discussed by the group

ROOM SET UP

A space with empty wall space and room for people to walk around works best.

SOURCE

Gray, D., Brown, S., & Macanufo, J. (2010). Impact & Effort Matrix. *Game Storming: A Playbook for Innovators, Rulebreakers, and Changemakers, 241.* Sebastopol, CA: O'Reilly.

High Impact & Low Effort	High Impact & High Effort
Low Impact & Low Effort	Low Impact & High Effort

Impact (vertical axis)
Level of Effort (horizontal axis)

ACTIVITY STEPS

1 Start by asking the group "What do we need to reach our goal or make our decision?"

2 On a piece of chart paper, draw a 2x2 table with "Effort" along the bottom and "Impact" along the side.

3 Explain what the quadrants mean (see image above).

Generate a discussion with the full group on what it means for your organization to choose activities in each of the quadrants. Decide as a group which quadrant you wish your futures activities to be in.

4 Ask participants to jot down ideas on sticky notes about steps that may help to reach your goal. Post the sticky notes on the magic quadrant at the appropriate levels of impact and effort.

5 Discuss what the group decides and the implications.