

Your Guide to Preparing and Giving Scientific Posters & Presentations

DataJam
Pittsburgh DataWorks

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I. Introduction to Scientific Presentations

Hello and welcome to your own personal guide to preparing and giving your presentations for the DataJam! This manual will tell you all about the important sections that should be included in your presentation, about making a poster and/or a PowerPoint, and about helpful tips for giving your presentations in front of an audience. The purpose of this guide is to make your presentations as great as can be, so let's get started!

II. Components of a Scientific Presentation

To be able to effectively represent all of the information that you've gathered and communicate its significance, your presentation should consist of several sections, including:

a. Title

I know what you may be thinking; it's a no-brainer that everything needs a title! However, the title plays a more important role than you may expect it to. It makes a statement; it's the first thing that your audience sees, reads, and hears! The title of your presentation should describe as much of your topic as possible without being too lengthy or giving away too much.

Ex. "Traffic Patterns in Pittsburgh" vs. "Changes in Pittsburgh Traffic Patterns from 1975-2014" (the second option is the better choice!)

b. Introduction

It's exactly what it sounds like, folks; your introduction should inform listeners of what exactly it is that you're going to be talking about in your presentation by providing them with background info on the subject and your hypothesis.

i. Background Information

The purpose of including background info is to give the audience some insight about your topic so that they can better understand your results and conclusions. The material that you include does not need to go super in-depth; you want to make sure that everyone can understand the facts that they are presented with and relate them to the rest of your project. As a side note, be sure to cite the source of any piece of info that you use in the References section of your presentation (we'll talk about that a little later)!

ii. Question/Hypothesis

Your intro should also include the question that you were trying to answer while analyzing your data and your hypothesis that you formed concerning that question before beginning your research. This lets the audience know what the goal of your project was and what you were trying to find out with the data that you found/received and will be presenting to them.

c. Methods

The methods section is where you discuss the steps that you took throughout the entire process of examining your data, determining its significance, and drawing conclusions from it that answer the question that you asked. These steps will include, but are certainly not limited to:

i. What dataset are you using/where did you find your data?

Include what specific dataset you are using for your project (like its name) and what kind of information it contains. Provide a few sample visualizations to showcase its specific measures and dimensions. It is also a good idea to talk about how you obtained the data sets that you used for your project. Did you find them on websites? If so, what websites did you find them on?

ii. How did you visualize the data?

Explain/summarize the steps that you took, such as using Tableau Public to create tables and graphs that helped you to decipher and draw conclusions from your data (these will be included in your presentation later on!).

Ex. We imported data into Tableau Public, added certain data sets/dimensions to the x and y axes, used the bar graph visualization option, inspected height of bars/correlation to other data points, etc. to determine significance of data.

- (Note: this is just a short example, so it is more vague than you should be!) Be sure to add more detail in your description so people know exactly what you did.

iii. How did you interpret the data?

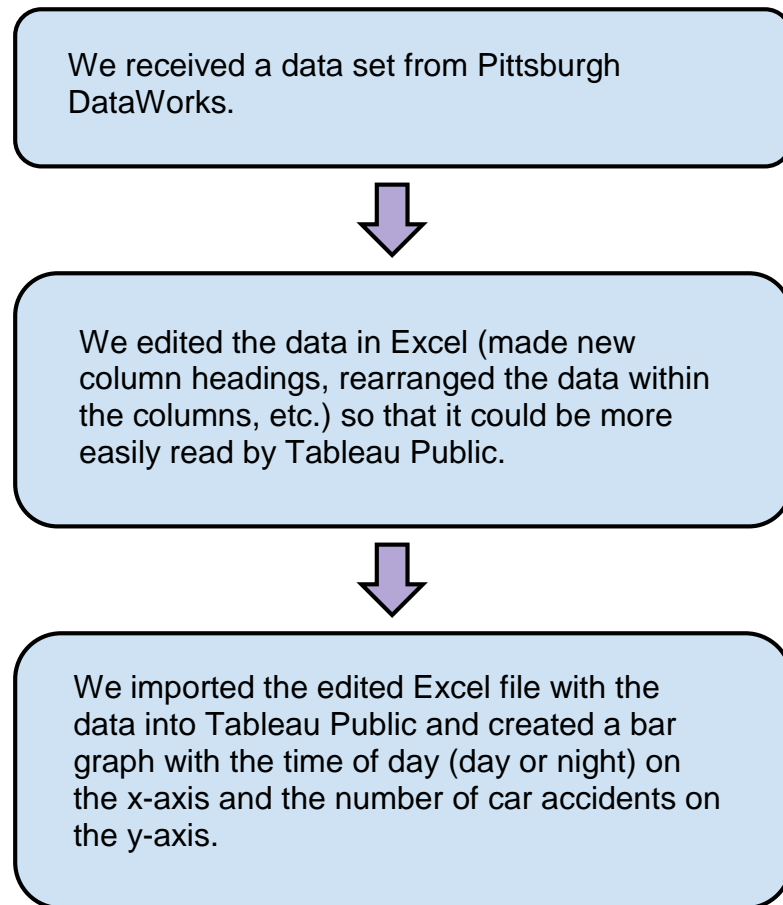
After constructing the visualization(s) of your data, talk about how you examined them to draw conclusions about your data. How did you use the graphs/charts you made to answer the question that you asked earlier?

Ex. To determine how many car accidents occurred at each time of day, the height of each bar in the bar graph was reviewed.

iv. Ways to Format Your Methods Section

When it comes to your methods section, sometimes less can be more. Now, you want to be sure that you explain everything that you've done throughout your project (don't skip any steps!), but it is not necessary to type out a long paragraph for each segment. Be descriptive yet brief; bulleted lists and flow charts are best suited for methods sections!

Ex. This is a **short section** of a flow chart (the entire chart should be longer).



d. Results

The results section will include all of the visualizations that you've created! Your charts and graphs will now show your audience what they showed you before; they'll represent what information that was held in your data set in a manner that is easier on the eyes and on the brain (rather than looking at a bunch of numbers).

i. Including Graphs/Tables of Your Data

As stated above, you'll want to include pictures of all of the graphs and charts you've created that have helped you analyze your data. Make sure that they're large enough for everyone to read! Also, you should include a few small sample graphs that show the dimensions and measures of the data set you used.

ii. Adding Legends and Captions

It is very important that the visualizations included in the results section are accompanied by legends and captions. Both are important in ensuring that the audience understands every component of your graph. First off, legends will tell those looking what every color or symbol that may appear on a graph means. Many computerized graphic programs like Tableau Public automatically generate legends whenever you are making a visual! Secondly, captions are very helpful because they explain in words what someone is looking at whenever they check out your graph. They can be included underneath your visuals.

Ex. of a simple caption: In the graph above, the time of day is plotted on the x-axis the number of car accidents is plotted on the y-axis. The height of the bars in the bar graph represents how many car accidents occurred at each time of day in the Pittsburgh area.

e. Analysis

This may be the best part; the analysis section of your presentation is where you finally get to explain what you found by visualizing and analyzing your data! **Note: It might be easier for you to combine you analysis and conclusion sections!**

i. Explaining What Your Results Mean

Now's the time to discuss what your data and visualizations are actually telling you. By this point, everyone knows what your graphs are *showing* them, but what is *significant* about the information? What's so special about that really tall bar shown on your graph?

Ex. After examining the height of each bar on the graph, we found that the greatest number of accidents occur at night. We analyzed this statistically by collapsing all of the data occurring during daylight hours (8 AM - 6 PM) and the data occurring during nighttime hours (6 PM - 8 AM) in each city and then using a Student's t-test to determine if there was a significant difference between daytime and nighttime accidents overall.

f. Conclusion

Hooray! You're almost finished. The conclusion is where you wrap everything up and leave the audience feeling like they understood the purpose and results of your project.

i. and ii. Tying Back to Your Intro While Summarizing Your Results and Data Analysis

In the conclusion, you should try relate your findings to the information provided in your introduction. How does it all fit together? The conclusion should also give a brief summary (just a few short phrases) of what your results and data analysis told you about the significance of your data set once again.

iii. Addressing any Problems

Take this time to also talk about any issues you ran into while visualizing your data in and trying to interpret it (include 1-3 comments). What was confusing to you? Did you try using a certain type of graph that ended up being very difficult to read?

g. References

Your reference section should follow your conclusion. It should include a list of any sources that you used to build your project and presentation such as where you found your background information, where you got your data set from, etc.

III. Types of Presentations

The two most straight-forward ways to present your information are by using either a poster or a PowerPoint presentation. Believe it or not, you will use PowerPoint to create either kind of presentation (yes, that includes posters!). We'll walk you through the steps to making a great visual accompaniment to your speech.

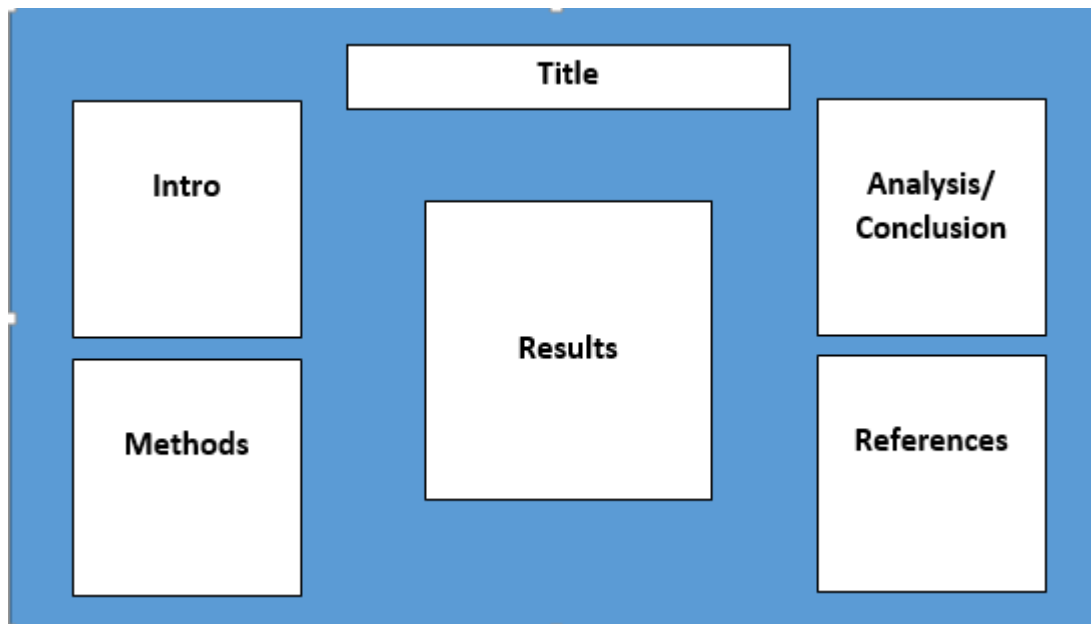
a. Creating a Poster

A poster is a great way to showcase every part of your project at once. The audience will look at it and immediately be able to see each section (intro, results, etc.). Your poster should be colorful and eye-catching, but be sure to keep it professional (color schemes/fonts should not be too "loud" or obnoxious). Additionally, the sections of your project should be arranged in an organized, logical way.

Just a Quick Sidenote: There's no need to make your poster extremely text-heavy; bulleted lists and charts should become your best friend. They are much easier to look at and read than mountains of typing. The info represented on your poster should be thorough, but remember, you will be giving a verbal presentation.

Whatever isn't written down word-for-word is something you can elaborate on while your talking with your audience!

Example Poster Layout: (though it does not need to look *exactly* like this, just make sure that all of the components mentioned are present on your poster)



- **Be sure to also include the name of each member of your team and the name of your high school on your poster!**

Using PowerPoint to Create Your Poster

You will essentially be building your poster on a single PowerPoint slide and then printing that lone slide onto a large poster (trust me, this will make things a lot easier!)

Steps making a poster in PowerPoint:

1. Open PowerPoint
2. Create a blank slide
3. Click the "Design" tab along the top of the program
4. On the right side of the toolbar, click "Slide Size" and select "Custom Slide Size..."

5. Enter in 24 in for the width and 36 in for the height of the slide and click OK (or vice versa-you can do what works best for you); these measurements will be the dimensions of your physical poster!
6. Click the “Insert” tab along the top and then click “Text Box”
7. Add text boxes to your slide-you will type out the sections of your poster (Methods, Conclusion, etc.) in side of them! Move them around as you would like.
8. Remaining on the “Insert” tab, click “Pictures” to place your visualizations onto the slide.
9. Be sure to save often!
10. More information will be provided later, but when you are finished building your poster, you will save your PowerPoint file as a .pdf and send it to us.

b. Creating a Slide Presentation

A PowerPoint is another a great way present your research; they are very clean-cut and easy to create. They will also follow a similar format to how a poster is built, just in slide form!

Tips: Take a look back at the section of this manual entitled “Components of a Scientific Presentation.” There should be a slide (or a few, depending on how much info you have for that section) for each one of these components. Again, as you would for a poster, be sure not to include too much text on one-slide. Seeing a PowerPoint that’s nothing but print can be a little intimidating and make it difficult to really engage your audience. As stated before (in the poster section), make use of bulleted lists and include pictures and such. Keep in mind that whatever concept is not explained in full on a slide is something that can be explained verbally while giving your presentation. Finally, try to pick a color scheme that isn’t too out-there, and go easy on the transitions (we know that can be fun, but they can be time-consuming.)

You want to make sure you do not have too many slides. On average you want to have about 1 slide per minute of your presentation, so 10-12 slides for a 10-minute presentation. An example of a slides set may be:

- A title slide (with the title, a relevant picture, your team name and the names of all students on your team
- A slide with relevant background information
- A slide with your question and hypothesis
- One or two slides with your methods
- Two-three slides with your results
- A slide with the summary of your findings
- A slide with your conclusions

IV. Giving Your Presentation

For the DataJam final presentation you will be presenting to a panel of judges. Don't panic! This process doesn't need to be scary. By using the suggestions and instructions included in this section, you'll have all the tools to give a top-notch scientific presentation!

a. Appropriate Dress

What you wear to give a presentation is important. You want to look polished so that those who are listening to your presentation perceive you in a professional manner; if you look professional, the audience will think "Wow, they look like they know what they're talking about! I better listen up" (which is what you want, of course). For this specific presentation, there's no need to dress like you're attending the Oscar's. A pair of slacks and button-up shirt for guys and a nice blouse, pants or a skirt for girls will do the trick.

b. Presentation Techniques

The following are essential skills that you should practice and utilize to make your presentation great!

i. Volume

Be sure to speak loud enough so that the people you are speaking to can hear and understand you (not too loud, though; you don't want to be shouting). Also,

ii. Eye Contact

The #1 message here is to try not to look at your poster or slides for the entire length of the presentation and read directly from it. To engage the audience, try to look at each person you are speaking to while giving your presentation-it helps to keep their attention!

iii. Timing

Your presentation should be 9-10.5 minutes long. Meeting a specific time requirement can seem daunting, but as you continue to practice your presentation (which is super important: practice makes perfect!), it should become easier to hit your mark. A good strategy is to assign each group member the sections that they will be talking about and determining how long everyone should be talking for. When you practice, you can adjust time frames as needed. If you find that your presentation is too long, try to focus on the most important pieces of information from each section. If your presentation is coming up a little short, try to elaborate on the information included in each section!

iv. Confidence!

If you seem to always get a little nervous when you're about to give a speech in front of others, you're not alone. Most people, even experienced public speakers, get a little antsy before giving presentations. What you have to remember is that this is your time to shine and share the information that you have worked so hard to find. Own it! Be proud of it! It's also important to remember that you'll be presenting with the rest of your group; you'll be there to back each other up and offer support!

V. Conclusion

Well there you have it, folks! You now have all the tools needed to put together a grade A poster and deliver a wonderful presentation that showcases your interesting findings and wows the judges! We know you all will do a great job. If you have any questions, please do not hesitate to email us at PittsburghDataJam@pghdataworks.org.

***Additionally, it is essential that you review the document titled “Requirements for DataJam Poster” on the DataJam webpage to ensure that your poster and presentation include everything that the judges will be looking for!**

