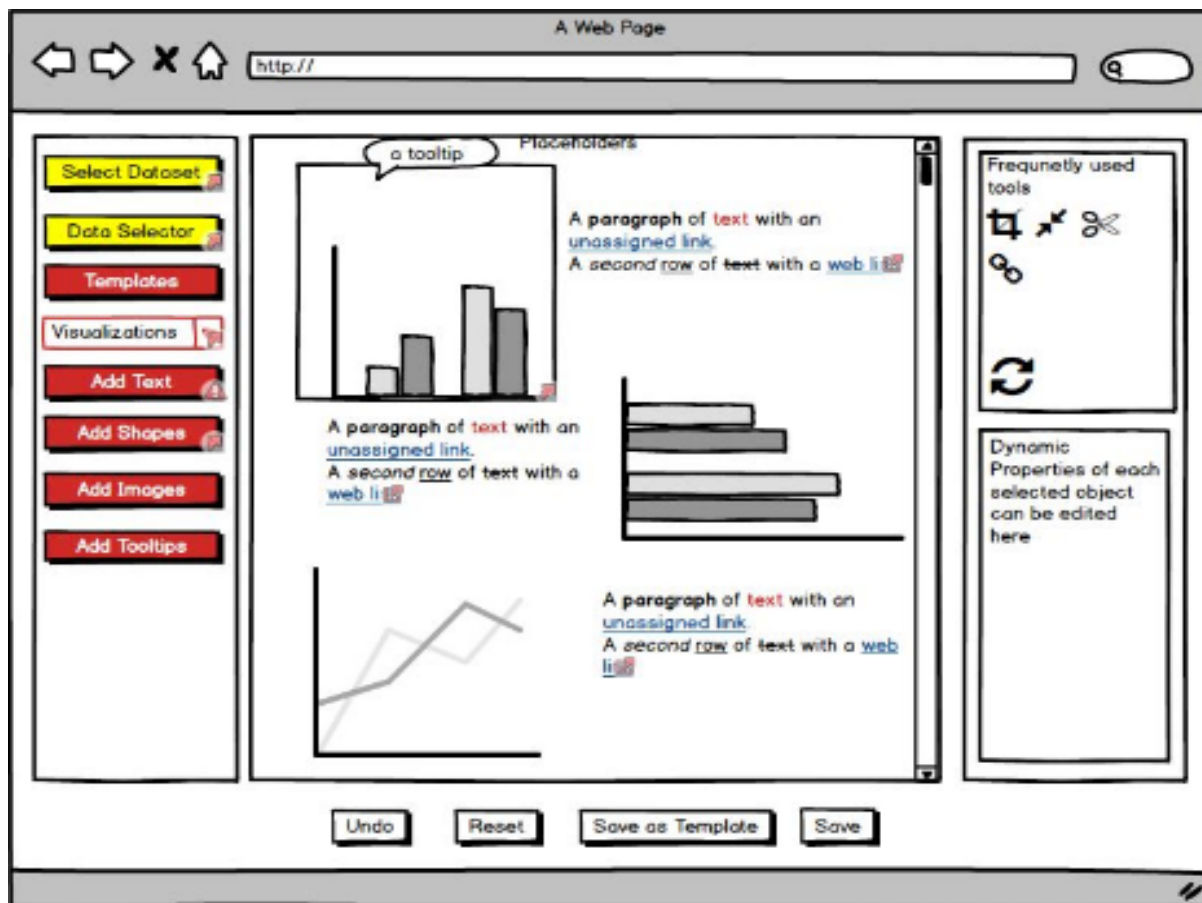# SAS Infographics Toolkit Test Results

## Team #2

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## Formative Evaluation

A formative evaluation was carried out on the early Balsamiq prototype. This involved semi-structured interviews with task observations while the participants carried out the given tasks as well as a survey at the end of each task. Two participants were recruited for this evaluation, both with some statistics/data analytics experience. The detailed results for the interview and survey are provided in the appendix A below. A summary of the results can be drawn as follows:

- Positives: Simple, clean interface and layout
- Needs Improvement: Unclear language

## Prototype Development

Based on the feedback received from the early-prototype evaluation, the Balsamiq prototype was further improved and changes were made where necessary. The reviewed Balsamiq prototype looked like this:
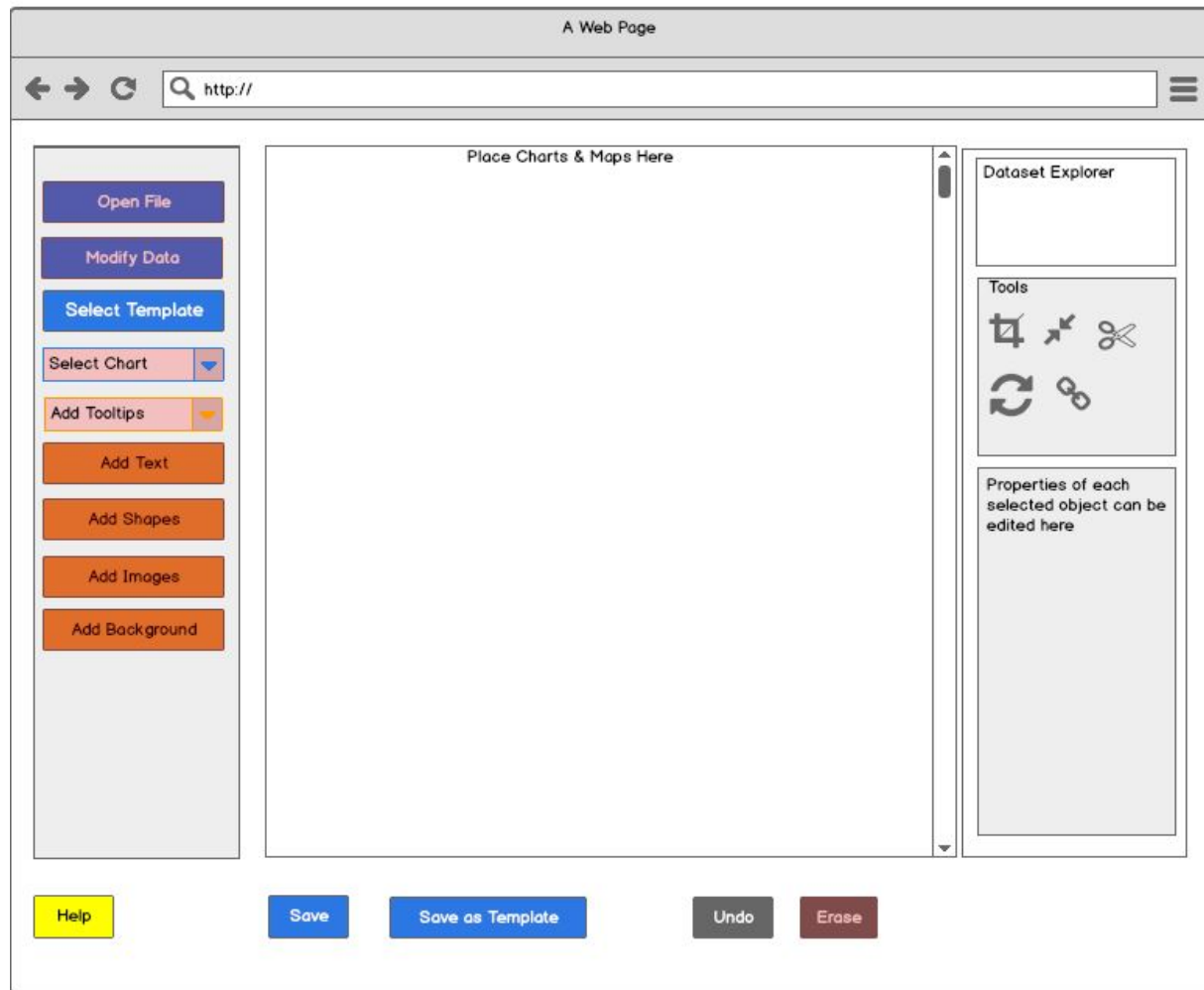
A web application was developed for the high fidelity prototype which focussed on few of the mentioned use cases.

## Final Evaluation and Testing

A final round of evaluations was done to carry out a thorough survey of all the tasks included in the prototype and to gauge the improvement over early prototype. Overall, participants rated the onboarding and adding visualizations tasks as being easy. Some aspects that negatively impacted ratings were the prototype fidelity and terminology used in the Tooltips controls and dialog boxes. The detailed results of the final user evaluation and testing is given in the appendix B below.

## Discussion

The early-prototype and post-development surveys and user testing revealed that the ease of use of the low fidelity prototype was highly affected by the restrictions posed in various

functionalities of Balsamiq. The wireframe prototype does not provide any way for direct manipulation of elements on the canvas, and it lacks certain transitions between the tasks. To facilitate the understanding and breakdown of each task, a wizard based interface was designed for the low-fidelity prototype. But the high fidelity prototype takes a more modern approach. Direct manipulation, such as dragging objects, clicking on the objects to change properties, resizing , etc, can be done using the high fidelity prototype.

# Appendices

## Appendix A: Formative Evaluation and Results

### Preliminary Interviews

These involved semi-structured interviews where in the participants were given certain task-scenarios and performance of the participants was observed.

**Script**

*Hello, thank you for helping out. My team is developing a new set of features for a data analytics application. These features will allow users to augment their data graphs to improve visual appeal and increase comprehension. It's intended to be designed for people like you, so we'd like to know what you think about it, what works, and what doesn't work. It's currently in an early stage of development, so not everything is functioning in the tool. Today, I'm showing you an early prototype. I'm going to ask you to complete several tasks and answer some questions. I have a small questionnaire that I'd like you to complete, too. Once we begin, I would like you to vocalize your thoughts as you view and work with the prototype. Describe what you are looking for, what is confusing, or anything that surprises you. It may seem unnatural to do so, but your thoughts are very important for the development of this prototype. I will take notes and ask questions throughout the session. Before we begin, I need to inform you of your standard rights as a participant today. You may stop at any time. You may ask questions at any time. We will not identify your name with data that are collected so your answers will be kept confidential. There is no deception involved. Any questions?*

*Questions-Initial Screen*

What do these buttons (labels) mean?

| sk |
| --- |
| **btask: Open existing visualization** |
| |

| |
|---|
| **sk: Modify size of images connected to bar** |
| **al:** Change size of images connected to bar |
| enario: Now that you've added images to your bar chart, you decide to make the images smaller. odify the images to be smaller. |
| eps: |

| |
|---|
| **sk: Add tooltips** |
| **al:** Add tooltips to each marker on the bar graph such that more information is shown when user vers over each marker. |
| enario: The Safety, Occupational, & Environmental Health director wants a report showing a line aph with the following: the incidents in January, February, and March for Stations 1 and 15.  He nts you to use the information in "Station1and15Data" in a line graph.  He would like the report to ow the average time taken to clear fires, number of civilian injuries, and number of fire fighter uries for Jan., Feb. and March.  However, he doesn't want to overwhelm his audience with too much ormation.  He wants to hide the information unless he hovers or clicks over a point in the line chart. e additional information pertaining to a specific station and month will show only after hovering er or clicking a point. |
| eps:<br><br>Generate visualization subtask<br>tooltips" dropdown button<br>tooltip under Step 1: Select style<br>ction<br>" button<br>marker under Step 2: Display on<br>ClearTime, CivilianFires and FighterFires<br>e" button |

| sk: **Replace pie slices with ring charts** |
|---|
| **al:** Replace pie slices with ring charts that provide percentage corresponding to slice |
| enario: You generated a report including a pie chart with the percentage of incidents for Stations 1, and 3. The Safety, Occupational, & Environmental Health director did not like the pie chart.  He nts you use another type of circular graph, which resembles a donut.  Modify "PieStation1_2_3" cording to his request. |
| eps:<br><br>Generate visualization subtask<br>ace Slices"<br>g charts + percentages"<br>e" button |

| sk: **Build report with multiple maps that have different data.  User controls which map currently own (only one at a time can be displayed).  User builds controls that filtering so that the correct ap is shown on the screen** |
|---|
| **al:** Show filtered data using the custom filtering feature |
| enario: |
| eps:<br><br>Generate visualization subtask |

*names of buttons and other elements make sense?*
*(For each element): What are your expectations for the behavior/content of this button?*

**Tasks**

| sk: **Connect Images to Bar Elements of a Visualization** |
|---|
| **al:** Add images to individual elements on a graph to add context to the data |
| enario: The Safety, Occupational, & Environmental  Health director wants a report showing the mber of all reported incidents that were due to building fires, cooking fires, chimney fires, and lock |

ts.  He wants you to use the information in "JanIncidentTypeData" for the report.  His instructions
e to create a bar chart with each type of incident represented with a different bar.  Each bar will
present the number of incidents for that particular incident type. (One bar for building fires, one for
oking fires, etc.)  He wants you to use pictures to label each incident type on the graph because
me viewers have a difficult time seeing the text labels.

eps:

Generate visualization subtask
Images" button
ge
ct"
ge to place above bar

**btask: Generate visualization**

al: Create visualization that will include the infographics

The results of these semi-structured interviews and task observations are tabulated below:

**First Prototype - Interview/Scenario-based Test Results**

*Interviewer's observations/recommendations are highlighted in red. Participants'
feedback is in black.

| Issue/Benefit | Screen | Description |
| --- | --- | --- |
| Layout of app is adequate.  The graphics were simple. | Initial Screen | Colors of boxes on left represent grouping of commonly used task actions.  Center has workspace bottom has save and undo functions so user does not have to search for them.  Properties box on bottom right is well place as is tools on top right. Use another color instead of red for important buttons b/c |

| | | <span style="color:red">of color blindness (small % have some form)</span> |
|---|---|---|
| Frequently used controls | Initial Screen | No where in the application to select tools so how would frequently used tools be populated. |
| Visualizations - language | Initial Screen | User didn't know what this meant. One thought it meant change the way the data or template looks like; |
| Placeholders | Initial Screen | One user thought these were graphs/text are connected to things that were worked on in the past. Relabel as "Placeholders for Charts" |
| Reset button | Initial Screen | Confusion: revert back to state upon opening file or last save? Move away from undo to prevent people from losing work? |
| Dynamic properties - language | Initial Screen | Very common term for programmers; non-programmers don't understand meaning? Use "Properties." Also "Custom Assets" is used on other screens. Needs to be consistent. |
| Opening file - function | Initial Screen | Select dataset  is unclear. User does not know that each file contains a single dataset. I thought that open file was missing since I assumed  that a file contain many datasets so I was looking for an open file button and once file is open the within file I select datasets from the file.  Needs to be clear that each file is the dataset.  Then how do you |

| | | have multiple datasets in your charts.<br><br>Select dataset- range of data that you need to use e.g., cells, rows, columns in data set that you want to use in graph; Data Selector - tool to help select the data (if data are not standard format, would use wizard/walkthrough to select the data; What about filtering data (e.g., showing certain values from a column).<br>**Expected the dataset to appear on the middle panel. Are we supporting multiple data sets?** |
|---|---|---|
| Data Selector- language | Initial Screen | Sounds very similar to "Select dataset." Rename "Select data" |
| <span style="color:red">Sequence of opening data set and selecting data within data set</span> | <span style="color:red">Initial Screen</span> | <span style="color:red">The buttons are displayed as if user has choice to select any of the buttons.  Seems like we are assuming that they will click "Select Dataset" first. What happens if they select "Data Selector" or "Visualizations" before selecting a data set?</span> |
| <span style="color:red">Data Selector – missing labels</span> | <span style="color:red">Data Selector</span> | <span style="color:red">Missing labels for each combo box; some users might not know what are row and column data, esp. in really large data sets where they have  100+ variables, 1000+ people</span> |
| Help | | Include help function for some functions (for example tooltips, select data) |

| Incorrect image properties | Add Images | Image properties should not have font, font size, margins and color box. Should be length, width in either or both pixels or inches with option to maintain aspect ratio, ratio and rotation **Can multiple images be selected at once?** |
|---|---|---|
| Select style & direction – language | Tooltip Wizard – Screen 1 | Select style and select direction are clear |
| Display marker/line – language | Tooltip Wizard – Screen 2 | Display on marker/line not sure what this means; unnecessary b/c tooltip should be at each point |
| Select content to display - language | Tooltip Wizard – Screen 2 | Unclear language |
| Image tooltip - label | Tooltip Wizard – Screen 1 | Label the image tooltip with "LABEL" to indicate an image will be uploaded there; File icon should have label "Upload Image" |
| Rotation – spin box | Tooltip Wizard – Screen 1 | If one rotate option is selected, does the spin box update to reflex that choice? Is it possible to add radio button for 3rd choice even though it is a separate control |
| Tooltip properties and view | Add Tooltip | Show dots on graph where tooltips were inserted vs actual tooltips; Sizing, aspect ratio, fill and line color, transparency, rotation, line thickness/no line, have option to hide/show indicator (but will show info if hovered/clicked), font properties |

| Replace Slice – button | Line Chart | Didn't notice button. Change the color of it OR move to properties |
|---|---|---|
| Replace Slice - language | Line Chart | Thinks replace slice means to change underlying data for that slice "I thought replace slices means change column within dataset to be displayed." Have a separate button for Replace with Ring chart (Circular progress bar??); Another button for replace pie chart with images |
| Replace slice - options | Replace Slice Wizard | Have option to show/hide percentages along with choice of ring chart vs image. Option including percentage as tooltip |
| Replace with - language | Replace Slice Wizard | percentages is unnecessary in the option b/c pie chart is % |
| Replace with options | Replace Slice Wizard | Using same image for all slices doesn't make sense |
| Replace slices with images | Replace Slice Wizard | Should have preset images to choose from and then option to upload file on the same screen. |
| Properties | ?? | Option to order items sequentially: small-largest % vice versa; Image properties; percentages checkbox (and use tooltips for percentages) |

# Appendix B: Final evaluation and User Testing

## Script
*Introduction: Hello, thank you for helping out. My team is developing a new set of features for a data analytics application. These features will allow users to improve visual appeal and increase comprehension of data reports. It's intended to be designed for people like you, so we'd like to know what you think about it, what works, and what doesn't work. Today, I'm showing you a prototype. It's currently in an early stage of development, so everything is not functioning in the tool. For example, some button options are not clickable and some options cannot be changed. Dragging and direct manipulation (e.g., stretching images) does not work in this prototype. However, it will be available on later versions. I'm going to ask you to complete several tasks. I have a small questionnaire that I'd like you to complete, too. Before we begin, I need to inform you of your standard rights as a participant today. You may stop at any time. You may ask questions at any time. We will not identify your name with data that are collected so your answers will be kept confidential. There is no deception involved. Any questions?*

*Ask to fill out Demographics: Please complete the first set of questions about your age, education, data analysis experience, etc. Once you reach the question "Overall, the task was:" please stop and let me know that you are finished with the first set of questions.*

*Read scenario aloud: <Show picture to participant> Your director* has requested a report with various statistics regarding incidents handled by Raleigh fire departments. Here is some information that he wants: comparison of incidents caused by car fires and those caused by cooking fires in 2013 and 2014, percentage of cooking fires handled by Fire Stations 1 and 2 in 2013 and 2014, comparison of false alarm calls vs fires, and a chart showing the change in the number of fire incidents responded to during 2013 and 2014. Your task is to build the report with the information he has requested. I will guide you with instructions on what to add and in what order. Use the picture provided to help you.

Task 1: Onboarding (select dataset and data, change background, add title)
Subtask: Select dataset and data
Open file
Select DataSet in list
Click on Select Data tab OR button
Click on Column and press arrow button OR follow note
Click on Select All rows
Click Done button

\*Read aloud: Locate the data needed to build the report. The variables that you need are in dataset1.ext. The variables are: cooking, false alarms, and cars.

Subtask: Change background of canvas
Click Add Background button
Click Color box
Click Done button
 \*Read aloud: Change the background of the canvas to match the picture

Subtask: Add a text box with Report title
Click Add Text button (adds text box to canvas)
Select text box to edit text
Read aloud: Make the title for the report

<u>COMPLETE SURVEY</u>

**Task 2: Add Visualizations and Image**
**Subtask: Add a column chart**
**Read aloud: add a bar graph**

**Subtask: Add Image**
**Read aloud: Add the fire truck**

**Subtask: Add pie chart**
**Read aloud: Add pie graphs to the wheels of the fire truck**
**Subtask: Add line chart**
**Read aloud: Add a line graph**

**COMPLETE SURVEY**

**Task 3: Add Infographics tooltips and images for pie slices**
**Subtask: Add formatted text tooltip**
**Read aloud: Add a caption that shows the number of cooking fires handled in 2013**

**Subtask: Add query tooltip**
**Read aloud: Add a caption that the percentage of cooking fires handled by stations 1 and 2 in 2014.**

**Subtask: Add row chart tooltip**
**Read aloud: Add a caption that displays a bar graph (show picture)**

**Subtask: Connect Images to Markers on line chart**
**Read aloud: show pictures at some points of the graph (see picture for example)**

**COMPLETE SURVEY**

**Task 4: Replace pie slices as images & change visibility property of tooltip**
**Subtask: Replace pie slices**

**Read aloud: Change one pie graph to show pictures instead of using different color slices (show new picture)**

**Subtask: Change Tooltip property**
**Read aloud: Change the caption with the row graph to show only when the mouse hovers**

**COMPLETE SURVEY AND SUS**


**\*\*Should have asked SEQ after each mini task**


## Survey

Survey questions were asked after the tasks were completed to evaluate the prototype based on various measures. The results to these survey questions are given below:

## 1. What is your gender?

| # | Answer | | Response | % |
|---|--------|---|----------|---|
| 1 | ✔ Male | | 2 | 67% |
| 2 | ✔ Female | | 1 | 33% |
| | Total | | 3 | 100% |

| Statistic | Value |
|-----------|-------|
| Min Value | 1 |
| Max Value | 2 |
| Mean | 1.33 |
| Variance | 0.33 |
| Standard Deviation | 0.58 |
| Total Responses | 3 |

## 2. What is your age?
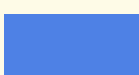
| # | Answer | | Response | % |
|---|--------|---|----------|---|
| 1 | ✔ 18 - 22 years old | | 0 | 0% |

| | | | | | |
|---|---|---|---|---|---|
| 2 | ✔ 23 - 27 years old | | | 0 | 0% |
| 3 | ✔ 28 - 32 years old | | | 1 | 33% |
| 4 | ✔ 33 - 37 years old | | | 2 | 67% |
| 5 | ✔ 38 - 42 years old | | | 0 | 0% |
| 6 | ✔ 43 - 52 years old | | | 0 | 0% |
| 7 | ✔ 53 - 62 years old | | | 0 | 0% |
| 8 | ✔ 63 and over | | | 0 | 0% |
| | Total | | | 3 | 100% |

| Statistic | Value |
|---|---|
| Min Value | 3 |
| Max Value | 4 |
| Mean | 3.67 |
| Variance | 0.33 |

| Standard Deviation | 0.58 |
|---|---|
| Total Responses | 3 |

**3. What is the highest level of school you have completed or the highest degree you have received?**
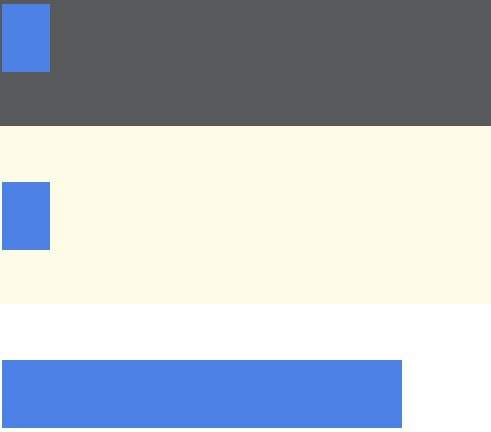
| # | Answer | | Response | % |
|---|---|---|---|---|
| 1 | ✔ Less than high school diploma | | 0 | 0% |
| 2 | ✔ High school diploma or equivalent (e.g., GED) | | 0 | 0% |
| 3 | ✔ Some college but no degree | | 1 | 33% |
| 4 | ✔ Associate degree | | 0 | 0% |
| 5 | ✔ Bachelor degree | | 0 | 0% |
| 6 | ✔ Graduate or professional degree | | 2 | 67% |
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---|

| | |
|---|---|
| Min Value | 3 |
| Max Value | 6 |
| Mean | 5.00 |
| Variance | 3.00 |
| Standard Deviation | 1.73 |
| Total Responses | 3 |

### 4. Are you currently a student?

| # | Answer | | Response | % |
|---|---|---|---|---|
| 1 | ✔ Yes | | 0 | 0% |
| 2 | ✔ No | | 3 | 100% |
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---|
| Min Value | 2 |
| Max Value | 2 |
| Mean | 2.00 |
| Variance | 0.00 |
| Standard Deviation | 0.00 |
| Total Responses | 3 |

### 5. What is your major?

| Text Response |
| --- |

| Statistic | Value |
| --- | --- |
| Total Responses | 0 |

## 6. What is your occupation?

| Text Response |
| --- |
| Software Developer |
| Esthetician |
| Associate Professor |

| Statistic | Value |
| --- | --- |
| Total Responses | 3 |

## 7. How experienced are you with data analysis?

| # | Answer | | Response | % |
| --- | --- | --- | --- | --- |
| 1 | ✔ Not all experienced | | 0 | 0% |
| 2 | ✔ Somewhat experienced | | 1 | 33% |
| 3 | ✔ Experienced | | 1 | 33% |
| 4 | ✔ Very experienced | | 0 | 0% |

| 5 | ✔ Extremely experienced | | 1 | 33% |
|---|---|---|---|---|
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---|
| Min Value | 2 |
| Max Value | 5 |
| Mean | 3.33 |
| Variance | 2.33 |
| Standard Deviation | 1.53 |
| Total Responses | 3 |

**8. What applications have you used to analyze data and/or build graphs?**

| # | Answer | | Response | % |
|---|---|---|---|---|
| 1 | ✔ IBM SPSS | | 1 | 33% |
| 2 | ✔ SAS | | 1 | 33% |
| 3 | ✔ Microsoft Excel | | 2 | 67% |

| 4 | ✔ Other | | 1 | 33% |
| --- | --- | --- | --- | --- |

| Statistic | Value |
| --- | --- |
| Min Value | 1 |
| Max Value | 4 |
| Total Responses | 3 |

### 9. What system do you prefer to use on your desktop or laptop?

| # | Answer | | Response | % |
| --- | --- | --- | --- | --- |
| 1 | ✔ PC | | 1 | 33% |
| 2 | ✔ Mac | | 1 | 33% |
| 3 | ✔ Other | | 1 | 33% |
| | Total | | 3 | 100% |

**Other**

| Linux | |
| --- | --- |

| Statistic | Value |
| --- | --- |
| Min Value | 1 |
| Max Value | 3 |
| Mean | 2.00 |
| Variance | 1.00 |
| Standard Deviation | 1.00 |
| Total Responses | 3 |

## 10. Score

| Statistic | Value |
| --- | --- |
| Mean Score | 21.67 |
| Score Standard Deviation | 4.51 |
| Weighted Mean of Items | 2.83 |
| Weighted Standard Deviation of Items | 1.47 |
| Items | 23.00 |

## 11. (Onboarding: select data, background, add title)  Overall, this task was:

| # | Answer | | Response | % |
| --- | --- | --- | --- | --- |
| 1 | 1=Very Difficult | | 0 | 0% |
| 2 | 2 | | 1 | 33% |

| | | | | |
|---|---|---|---|---|
| 3 | 3 | | 1 | 33% |
| 4 | 4 | | 0 | 0% |
| 5 | 5 | | 0 | 0% |
| 6 | 6 | | 0 | 0% |
| 7 | 7=Very Easy | | 1 | 33% |
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---:|
| Min Value | 2 |
| Max Value | 7 |
| Mean | 4.00 |
| Variance | 7.00 |
| Standard Deviation | 2.65 |
| Total Responses | 3 |

## 12. Why? Explain your rating.

**Text Response**

Background was simple enough from add background button as well as text from add text button.  Selecting certain columns from dataset was simple using dual box with add/remove arrows.

Creating a title and  changing the background color were easy but finding the data to use to build the chart made no sense.  It was confusing.  I'd prefer to be able to open file with info to use and have it visible.

The process for adding the data was somewhat unintuitive.  Also, buttons for changing the background and adding text boxes would be more intuitive if place in a toolbox or inspector window.

| Statistic | Value |
|---|---|
| Total Responses | 3 |

## 13. (Visualizations) Overall, this task was:

| # | Answer | | Response | % |
|---|---|---|---|---|
| 1 | 1=Very Difficult | | 0 | 0% |
| 2 | 2 | | 0 | 0% |
| 3 | 3 | | 0 | 0% |
| 4 | 4 | | 1 | 33% |
| 5 | 5 | | 0 | 0% |

| | | | | |
|---|---|---|---|---|
| | | | | |
| 6 | 6 | | 1 | 33% |
| 7 | 7=Very Easy | | 1 | 33% |
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---|
| Min Value | 4 |
| Max Value | 7 |
| Mean | 5.67 |
| Variance | 2.33 |
| Standard Deviation | 1.53 |
| Total Responses | 3 |

### 14.  Why? Explain your rating.

| Text Response |
|---|
| All the charts were simple enough to just click on the drop down menu for select charts, selecting chart type then selecting data and moving onto canvas.  For the image a simple click of the add image button and selecting desired image and positioning on the canvas was easy. |
| It was simple because there was a clear menu to show where to create charts. |
| The wording to add a graph is somewhat awkward.  It should likely be Add Graph as opposed to Select Graph.  Also, methods for previewing the graph once you identify the data you want in it would be helpful.  A button for choosing a image from file would also be helpful |

| Statistic | Value |
|---|---:|
| Total Responses | 3 |

**15. (Infographics) Overall, this task was:**

| # | Answer | | Response | % |
|:---:|---|---|:---:|:---:|
| 1 | 1=Very Difficult | | 2 | 67% |
| 2 | 2 | | 0 | 0% |
| 3 | 3 | | 1 | 33% |
| 4 | 4 | | 0 | 0% |
| 5 | 5 | | 0 | 0% |
| 6 | 6 | | 0 | 0% |
| 7 | 7=Very Easy | | 0 | 0% |
| | Total | | 3 | 100% |

| Statistic | Value |
| --- | ---: |
| Min Value | 1 |
| Max Value | 3 |
| Mean | 1.67 |
| Variance | 1.33 |
| Standard Deviation | 1.15 |
| Total Responses | 3 |

**16.  Why? Explain your rating.**

| Text Response |
| --- |

For tooltips not sure about the two options I chose quick add first.  After selecting tool tip wizard options after not clear.  For adding tooltip I was going to just use text again but it was done using query.   Adding bar chart caption I chose add chart first then went to tooltip wizard option.  For adding images to line chart I chose add image first rather then going to select chart to find correct option.

The wording of the formatted tooltip text option wasn't clear. The word "text" helped me figure out this was the right one, but the rest didn't make sense. I thought the second the tooltip would use the same option (formatted one) but it wasn't. I don't know anything about queries.  It should be worded differently to guide me.

Adding text and images to graphs is a bit unintuitive.  It may be more intuitive to put the "tool tips" option under shapes and provide the option to link to a particular graph.  Also, there should be some kind of formula builder or query mechanism for building the text for text boxes.  The language for the query building was also unclear.  The drop down box for quick add and tool tip wizard was unintuitive.  Adding images to graphs were also unintuitive.  It may be more appropriate to select the graph and have the option to link images to it in some kind of inspector window.

| Statistic | Value |
| --- | ---: |
| Total Responses | 3 |

**17. (Modifying infographics) Overall, this task was:**

| # | Answer | | Response | % |
|---|---|---|---|---|
| 1 | 1=Very Difficult | | 0 | 0% |
| 2 | 2 | | 1 | 33% |
| 3 | 3 | | 0 | 0% |
| 4 | 4 | | 2 | 67% |
| 5 | 5 | | 0 | 0% |
| 6 | 6 | | 0 | 0% |
| 7 | 7=Very Easy | | 0 | 0% |
| | Total | | 3 | 100% |

| Statistic | Value |
|---|---|
| Min Value | 2 |

| | |
|---|---|
| Max Value | 4 |
| Mean | 3.33 |
| Variance | 1.33 |
| Standard Deviation | 1.15 |
| Total Responses | 3 |

## 18.  Why? Explain your rating.

**Text Response**

Didn't know about clicking in canvas to change tooltip property, I went to tooltip menu instead.  For the pie chart image task I found the select image option from chart option and was not obvious from clicking in canvas and using properties.

for tooltip didn't know there were options because that box was always empty. didn't that i could click on tooltip because i couldn't click on other things

It would be more intuitive if images could be added via an inspector or properties window.

| Statistic | Value |
|---|---|
| Total Responses | 3 |

## 19.  For each of the following statements, select one circle (corresponding with a number) that best describes your reactions to the application.

| # | Question | 1=Strongly disagree | 2 | 3 | 4 | 5=Strongly agree | Total Responses | Mean |
|---|---|---|---|---|---|---|---|---|
| 4 | I thought the application was easy to use. | 1 | 1 | 1 | 0 | 0 | 3 | 2.00 |
| 11 | I think that I would like to use this application frequently. | 3 | 0 | 0 | 0 | 0 | 3 | 1.00 |

| 12 | I found the application unnecessarily complex. | 0 | 0 | 1 | 2 | 0 | 3 | 3.67 |
|---|---|---|---|---|---|---|---|---|
| 13 | I think that I would need the support of a technical person to be able to use this application. | 0 | 1 | 0 | 0 | 2 | 3 | 4.00 |
| 16 | I found the various functions in this application were well integrated. | 0 | 1 | 2 | 0 | 0 | 3 | 2.67 |
| 17 | I thought there was too much inconsistency in this application. | 0 | 0 | 1 | 1 | 1 | 3 | 4.00 |
| 18 | I would imagine that most people would learn to use this application very quickly. | 2 | 0 | 0 | 0 | 0 | 2 | 1.00 |
| 22 | I found the application very cumbersome to use. | 0 | 0 | 2 | 1 | 0 | 3 | 3.33 |

| 25 | I felt very confident using the application. | 1 | 1 | 1 | 0 | 0 | 3 | 2.00 |
|----|----------------------------------------------|---|---|---|---|---|---|------|
| 27 | I needed to learn a lot of things before I could get going with this application. | 0 | 0 | 1 | 1 | 1 | 3 | 4.00 |

| Statistic | I thought the application was easy to use. | I think that I would like to use this application frequently. | I found the application unnecessarily complex. | I think that I would need the support of a technical person to be able to use this application. | I found the various functions in this application were well integrated. | I thought there was too much inconsistency in this application. | I would imagine that most people would learn to use this application very quickly. | I found the application very cumbersome to use. | I felt very confident using the application. | I needed to learn a lot of things before I could get going with this application. |
|-----------|---|---|---|---|---|---|---|---|---|---|
| Min Value | 1 | 1 | 3 | 2 | 2 | 3 | 1 | 3 | 1 | 3 |
| Max Value | 3 | 1 | 4 | 5 | 3 | 5 | 1 | 4 | 3 | 5 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 2.00 | 1.00 | 3.67 | 4.00 | 2.67 | 4.00 | 1.00 | 3.33 | 2.00 | 4.00 |
| Variance | 1.00 | 0.00 | 0.33 | 3.00 | 0.33 | 1.00 | 0.00 | 0.33 | 1.00 | 1.00 |
| Standard Deviation | 1.00 | 0.00 | 0.58 | 1.73 | 0.58 | 1.00 | 0.00 | 0.58 | 1.00 | 1.00 |
| Total Responses | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |

**20. Rate the application on originality, pleasantness, attractiveness, and innovation. Use the text descriptors to guide you.**

| # | Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total Responses | Mean |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1=Original:7=Ordinary | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 3.67 |
| 2 | 1=Pleasant:7=Unpleasant | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 4.67 |
| 3 | 1=Attractive:7=Unattractive | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 4.33 |
| 4 | 1=Innovative:7=Conservative | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 3 | 5.00 |

| Statistic | 1=Original:7=Ordinary | 1=Pleasant:7=Unpleasant | 1=Attractive:7=Unattractive | 1=Innovative:7=Conservative |
|---|---|---|---|---|
| Min Value | 1 | 2 | 3 | 3 |
| Max Value | 6 | 7 | 6 | 6 |
| Mean | 3.67 | 4.67 | 4.33 | 5.00 |
| Variance | 6.33 | 6.33 | 2.33 | 3.00 |

| | | | | |
|---|---|---|---|---|
| **Standard Deviation** | 2.52 | 2.52 | 1.53 | 1.73 |
| **Total Responses** | 3 | 3 | 3 | 3 |