Best Practices for Dashboard Design

Introduction

A successful safety department is an informed one. These departments know the current state of their sites and are aware of when they need to step in and take control of a situation to achieve their goals. They can tie their data back to actual worksites to identify a risk and furthermore, mitigate that risk.

To be an informed department, you first need data that describes your work environment. Secondly, you need a good way to transform that data into insights. This is completed through a well-designed dashboard.

A well-designed dashboard takes time and the ability to mold your data into a story. This dashboard will help the viewer understand information quickly, get more value, and identify possible risks to act sooner and mitigate any future risk.

Dashboard Pre-Work

Think about what you are creating and why before starting a new dashboard. These are the topics you need to focus on prior to designing a dashboard.

- *Comprehend the business problem you want to solve*
- *Clarify dashboard focus*
- *Define time period*
- *Identify the level of detail you need*
- *Understand the needs of the end user*

Comprehend the business problem you want to solve. *Is this dashboard meant to help executives understand an established process and prescribe results, or is it meant to explore a new course of action?*

- An *Informative Dashboard* tells viewers information and *prescribes* results. This is where you would either see that there is not a glaring risk on your worksite OR the dashboard would start to tell you there is a risk.
    - Use key performance indicators (KPIs) and easy to understand visualizations.
    - Conclusions can be determined in a matter of seconds.
- An *Analytic Dashboard* is used as a platform for further analysis and *exploration*. This dashboard will dive a little more into the details of who, what, when, where, and why's of the potential risk.
    - Use more filters and allow the ability to segment and drill down into details.

Clarify dashboard focus. *Will your dashboard be created to complete a specific task, or is it meant to achieve a broader goal of measuring performance across the company?*

- A *Specific Dashboard* answers a question that was asked and should be kept simple. This type of dashboard would be used to determine if each observer hit their goal for the month.
    - Use few visualizations and standard KPI's or metrics.
    - Good idea to use color alerts to identify if a goal has been met.

- A *Broad Dashboard* answers many different questions about a company. This type of dashboard would be used to get an overview of the inspections being completed, and where the risks have occurred.
    - The use of more widgets and filters will be needed.
    - Good idea to group similar sets of charts together and show relationships between different parts of the data.

Define time period. *Is this dashboard going to be examining a project retrospectively, or will it be looking only present data?*

- A *Retrospective Dashboard* looks at long term trends and the ability to compare different time periods. This dashboard would be used to trend inspections and observations overtime. It also could look at what occur last year during the current quarter, and where you are now.
    - Need to determine the amount of time is necessary.
- A *Present Dashboard* is used to monitor and assist in decision making. This type of dashboard would be good for looking at incidents real time, and identify if there are any actions you can take to mitigate any future incidents.
    - Threshold type widgets and the ability to highlight outliers would be good for this dashboard.

Identify the level of detail you need. *Is this dashboard going to be a complete picture with static detail of the company, or will it be more granular?*

- A dashboard with *Static Detail* is meant to be an overall picture of what is happening and is used for people that do not have the need to dive in deep to filters. An executive dashboard with an overview of projects and inspections would be static.
    - Use KPIs that are known to the user.
    - Visualizations would be good in this type of dashboard to see information quickly.
- A dashboard with *Granular Detail* is used to narrow down to certain levels. This type of dashboard would be used to keep track of the inspectors and certain projects.
    - Different filters are used for this dashboard.

Understand the needs of the end user. *Will the user of this dashboard already be familiar with the data within it, or are they completely new?*

- Creating a dashboard that is for users *familiar* with the data means that the dashboard should stay as is and aligns to the standard processes for the company.
- Creating a dashboard for *new users* should include more visualizations and possible text boxes to explain any metrics or calculations.

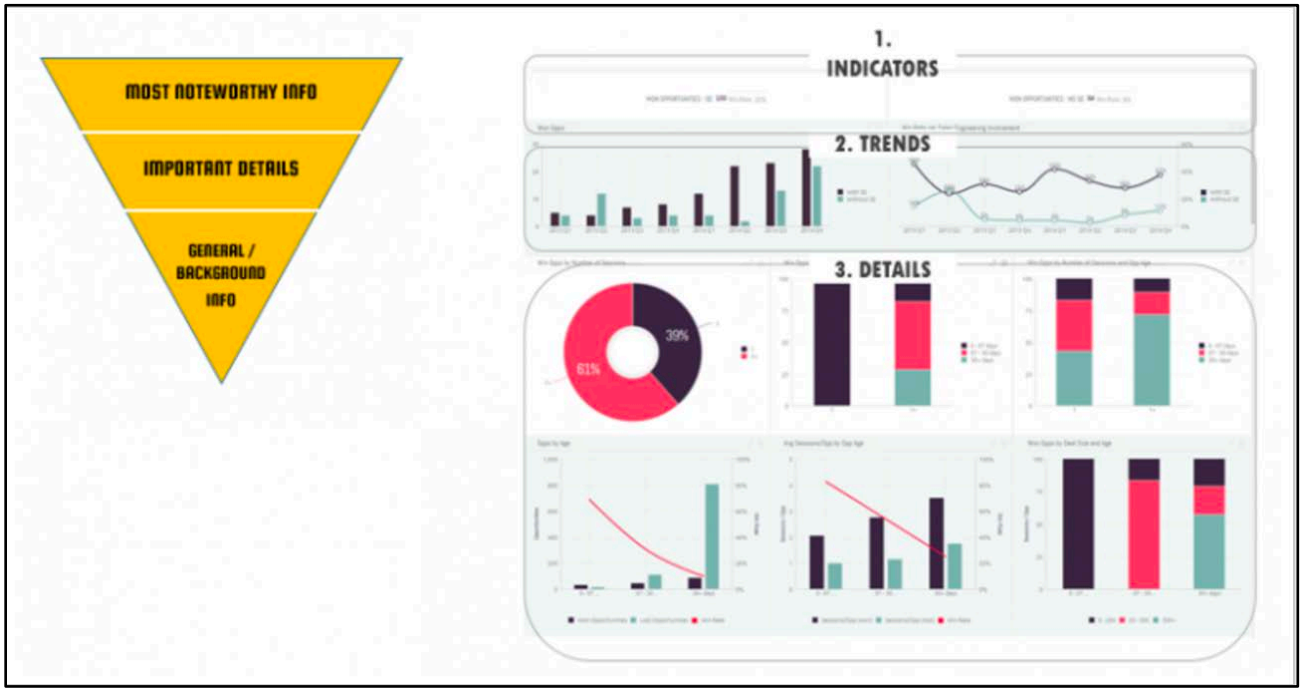
Creating the Dashboard

There are core principals to follow when creating a good dashboard. Your final dashboard must make the complex simple, tell a clear story, express the meaning of the data, and only reveal details if needed. In order to accomplish the previous characteristics of a good dashboard, you should follow these 4 main principals:

1. The 5 Second Rule
2. Logical Layout: The Inverted Pyramid
3. Minimalism: Less is More
4. Choosing the Right Data Visualization

1. **The 5 Second Rule**: Your dashboard should provide the relevant information in about 5 seconds.
   - The user of the dashboard should be able to find the answer to a frequently asked question after one glance.
   - This rule should take effect for all key metrics they are looking for. This also means that you must know who your user is, and what they are expecting from the dashboard.

2. **Logical Layout**: The Inverted Pyramid: Display the most significant insights on the top part of the dashboard, trends in the middle, and granular details at the bottom.
   - This technique divides the dashboard into 3 key sections: the most important and substantial information at the top, follow by the significant details that help you understand the overview above, and at the bottom is the general and background information.



3. **Minimalism**: Less is more: Each dashboard should contain no more than 5-9 visualizations.
    - Cognitive psychology tells us that the human brain can only comprehend 7 +/- 2 widgets on one dashboard. More widgets just translate into clutter and visual noise that distracts and detracts from the dashboard's intended purpose.
    - Ways to avoid the visual clutter would be to use filters and hierarchies or to break the dashboard up into multiple dashboards.

4. **Choosing the Right Data Visualization**: Select the appropriate type of data visualization according to its purpose.
    - Each visualization should serve a specific purpose and convey specific fact in a more effective way than the basic tabular format.
    - Before choosing a visualization, consider which type of information you are trying to relay:
        - Relationship – Connection between two or more variables.
        - Comparison – Compare two or more variables side by side.
        - Composition – Breaking data into separate components.
        - Distribution – Range and grouping values within data.