Poster: Sharable Data Presentations for a Non-Analytical Audience

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ABSTRACT

Since existing reporting and visualization products cater their presentation to an audience comfortable with data, non-technical stakeholders lack a form to sufficiently understand and communicate with data amongst themselves and with analysts. We present Slice, a significant first step that demonstrates how analysts and presenters of data can wrap their findings in context, purpose, and share-ability for their non-technical stakeholders. To achieve this goal, the product Slice is built around three integral design elements: building block visualization groups called *Slices* that answer specific questions, purposeful messaging that guides the presentation, and interconnections between the previous two elements that emphasize narrative sequence amongst visualizations.

KEYWORDS: Data presentation, communication-minded visualization.

INDEX TERMS: H.5.2. [Information Interfaces & Presentation]: User Interfaces – Graphical User Interfaces (GUI)

1. INTRODUCTION

Organizations are emphasizing the need to be "data-driven." However, only a small subset of employees have the skills to effectively analyze data. Of these, few can pair their analysis skills with an ability to effectively communicate their results to a broader audience. The remaining "non-technical" audience, while motivated to make informed decisions, do not have the skills or tools to engage with this data, understand it as presented by the analysts, or communicate with data to influence decision making. This gives "big data" a relatively small opportunity for distributed insight.

A primary inefficiency in current solutions is that their data presentations, whether interactive or static in nature, are too broad, often have no supporting description, and result in information overload. Most analysts try to satisfy many different kinds of stakeholder questions at once, causing their audience to either be lost in a complex exploratory tool or labor through irrelevant static analyses in reports and powerpoint decks. Audience attention can be quickly derailed by data presented with unclear personal relevance. Furthermore, these presentation forms are especially intimidating to a third-party stakeholder that a recipient may want to share the presentation with. The third-party's ability to reconnect and contribute insight to the original context in which the data was presented is all but lost in absence of a collaborative data presentation workflow.

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Our goal is to equip analysts to present their findings to a non-analytical audience with the most potential for shared understanding and action. We draw a distinction between analysis and presentation of data. Analysis is for discovering findings. Presentation is for communicating those findings. In line with the charge by Kosara and Mackinlay to explore data storytelling as a notable presentation form [1], we believe a combination of purposeful messaging and exploratory context introduces a non-linear narrative structure well suited to solve many of these problems.

2. DESIGN OF SLICE

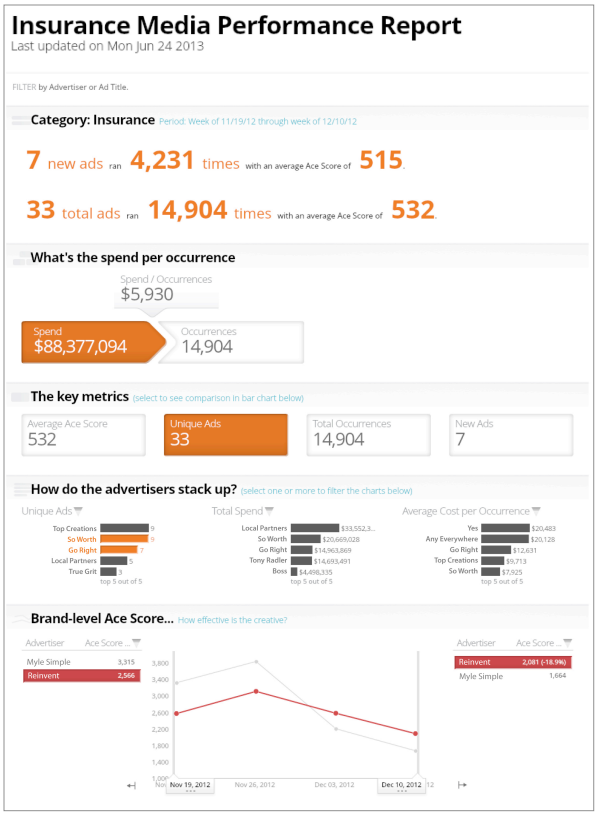

Figure 1: Slice Report sample

2.1. Overview of Slice

Slice is a toolkit for building interactive data presentations that engage a non-analytical audience in the data they care about. Analysts can 1) connect and format data, 2) create and link data visuals, 3) customize styling options, and 4) share the presentation through PDF, URL, or embedding it on any HTML webpage. The tool is a significant first step in demonstrating how data should be presented to a non-analytical audience with context, purpose, and share-ability.

There are over 60 clients in the current deployed version of Slice. Though the tool is industry agnostic, there is a concentration of medium size companies related to Marketing, Marketing Research, and Operational departments. Generally, the technical approach is a SaaS based model that processes clients' spreadsheet data on the back end and sends it to the presentation front end layer. Though currently in flash, the presentation layer is actively being reengineered in HTML based technologies to support the diversity of screen sizes and mobile applications.

Regardless of the data domain, we believe there are only a handful of data question types that, when ordered in the appropriate sequence, will answer the most frequently asked questions. That is why the first, and most fundamental, design element of Slice is a series of data visualizations called *slices* that provide focused answers to these questions. The form factor points out specific data points amongst the context of other relevant values. Second, stakeholders want to clearly understand the value a visualization brings before they want to explore it; so, each slice leads with prominent titling that explains the content and purpose of the visualized data in the form of a question or statement. Finally, since too much flexibility can lead audience members to veer off the primary course [2], Slices are stacked in sequence down the page to provide a guided, interactive tour through the data (Figure 1). This structure reads like reports that non-analysts are used to seeing and simultaneously allows flexibility to make the data relevant to different audience members by interacting with each slice down the page.

2.2. Slices

There are different types slices that are used for different purposes. The Trend Slice focuses on metric change over time while showing context on group value ranking and metric calculations at the two selected endpoints. A Treemap Slice focuses on group hierarchy and shows the context of change between two discrete time periods by use of color variation. The Funnel Slice is akin to the idea of a pipeline in that it gives equal emphasis and focus to both the meaningful sequence and the calculation values of several metrics at once. Each slice type seeks to balance the level of focus and context appropriate for the kind of data being presented to their audience.

2.3. Purposeful Messaging

While showing data values in chart labels or a table may suffice for the analytically minded, most people need to start with text that provides a description of what they are looking at and the insight of why they should care. Just like slices, these text based interpretations of data are needed at varying levels of context and focus.

Descriptions use common language to explain the context of what is seen in the form of short statements or questions, using specific measure names where appropriate. Insights also use common language but direct attention in a focused way towards a qualitative judgement of what is seen. Identifying why someone should care and communicating that message clearly is imperative to capturing people's attention.

Slices currently provide space for description and insight in a few key ways. Each slice is interpreted with a visually emphasized title and an optional subtitle. Measure label names are formatted to be precise, and, in the case of metrics, calculations (i.e. sum, average, etc) are abbreviated and prefixed automatically. In different scenarios, labeling serves as both legend and an opportunity to interact and customize content views.

2.4. Narrative Flow

Data storytelling has been clearly identified as a useful form of communicating with data. There are two relevant elements of focus: sequential insight and non-linear flexibility. Slices may be linked in a vertical sequence called a stack that begins to address both of these elements.

Just as slices address common questions, we suggest there are common patterns to question sequence, and these may be addressed in different slice combinations. The topmost slice in a stack creates the contextual question for subsequent slices which allow the user to drill down into more depth than the previous slice. Therefore, as slices also have a collapsed mode which show the titling only and provide an overview summary of descriptions or insights within. Any selection in a slice also filters the linked slices below. This provides a high level of flexibility within the narrative sequence. Additionally, filters may be added that focus all slices at once.

3. Conclusions and Future Work

Slice is a publicly available data reporting and presentation solution. Though many existing clients know their data well and use the built in editor to create Slice reports on their own, the majority of business organizations still struggle to know the right data to present alongside a purposeful message.

The next version of Slice is currently being reengineered with significant improvements to each of the three core design elements, including the ability to add more granular annotations to slice selections, the ability to interconnect those annotations, and present those narratives in the fullscreen mode that many audience members prefer [3].

References

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