

**Paper SAS3529-2019**  
**Telling Your Data Story**  
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## ABSTRACT

The most powerful person on the planet is the storyteller. From Winston Churchill in world politics to J.K. Rowling on the pages of a book—the people who move the world tell compelling stories. This paper explores the most effective tools and techniques in SAS® Visual Analytics to tell your data story and move your organization.

## INTRODUCTION

Your most exciting insight that was painstakingly gathered from data won't make a difference if it doesn't tell a story. In this paper, you'll learn how to tell your data story.

We experience the world moment to moment, in sequence. For better or for worse we filter everything about the world through this perspective. That's what makes stories so compelling. We encounter a lot of random data as we go about our lives. So, we quickly filter out these random bits of information. If I stop you and tell you that the temperature is 77°F, you'll probably quickly forget it and then get on with your day. If instead I stop you and tell you that after a long and bitter 3-month winter, the temperature is finally 77°F today, you'll probably alter the course of your day to take advantage of that lovely 77°F weather. Stories help information pass through our filter. Stories place information, knowledge, wisdom, data, and insights into a linear, sequential package that can pass our story filter. Data that's embedded and delivered in a story will move people. Data that is offered as a statistic will have a much harder time getting people to act. It's time to learn how to tell your data story.

## THE FUNDAMENTAL ELEMENTS OF A DATA STORY

For us, a data story is a sequence of connected events. That's it. Let's break this down.

Data stories have a time component. The audience of a story is transitioned through time sequentially. No matter how hard you try, they can only experience one thing at a time. Usually, this sequence moves in one direction: from the past to the present, and sometimes into the future. This is the clearest way to tell your data story. It is the clearest way to tell your data story because this sequence is the order that your audience is most familiar with. They've lived in the past, they are currently in the present, and they have a future ahead of them. Putting your story in this sequence isn't always easy. The process of extracting insights from data often leads you to traverse the time dimension out of order. You might discover something about yesterday and then something about a decade ago. It can be easy to think this random order is how you should present your insights.

Let's use a simple example to illustrate the difference chronological order makes:

*He instantly knew what had happened. He walked back out to the living room, after having found the broken cup in the kitchen he had earlier stepped into, and there he spotted the dog hiding under the coffee table looking guilty.*

Now let's look at the same story in chronological order:

*He walked into the kitchen and found a broken cup. He then walked back out to the living room. There he spotted the dog hiding under the coffee table, wearing a guilty expression. He instantly knew what had happened.*

Both stories illustrate the following chronological events:

1. The man walks into a kitchen.
2. The man discovers a broken cup.
3. The man walks back out to the living room.
4. The man finds the dog hiding under the coffee table wearing a guilty expression.
5. The man deduces what had happened.

The first is out of chronological order. The second is in chronological order. Which one could you understand better?

When in doubt, present your data story in its natural chronological order. It's the best way to make it understandable to your audience.

The other component of our definition is connectedness. Stories are curated. They filter things out until all that's left is what is essential to the telling of the story. While you might feel tempted to include more details to the story and share every insight you discovered, it is best to consider that more unrelated detail can make it more confusing for your audience to understand the story.

Take our story about the man and the broken cup. The following adds more details to the original story:

1. The man stops reading a book.
2. The man walks into a kitchen.
3. The man grabs a glass of cold water.
4. The man drinks the glass of water.
5. The man thinks to himself how refreshing the water is.
6. The man discovers a broken cup.
7. The man hears birds chirping outside.
8. The man walks back out to the living room.
9. The man finds the dog hiding under the coffee table wearing a guilty expression.
10. The man deduces what had happened.

Each additional detail might enrich our understanding of the man, but it does not support the data story. Remember that you aren't writing a novel but trying to get people to act on data. Keep the events connected and relevant to one another.

Once you have insights from your data, and you have your chronological sequence, and filtered out the unimportant details, it is time to build your data story.

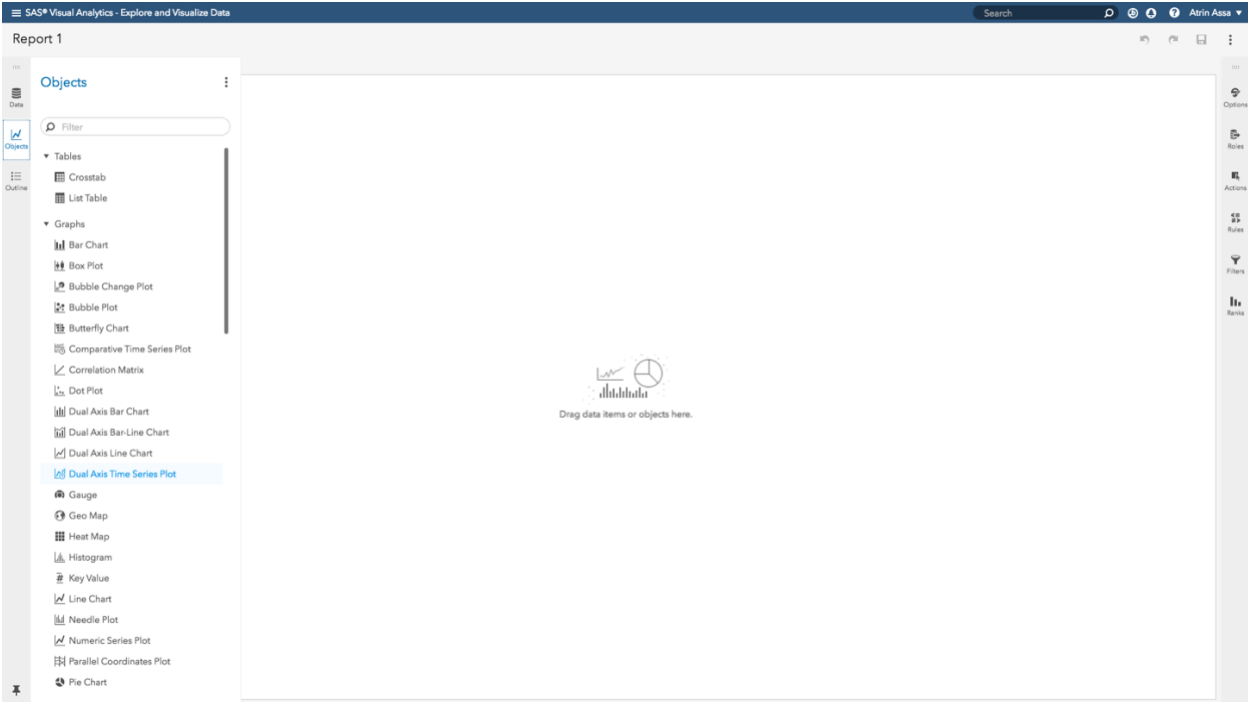
## **TELLING YOUR DATA STORY WITH SAS® VISUAL ANALYTICS**

SAS® Visual Analytics makes it easy to tell your data story. Over 40 different visualizations, combined with powerful layout and design features mean you can tell virtually any data story in a way that makes impact. Not only can you tell your story, but you can publish it

where you need it. You can publish your story on the web, mobile, or embedded in your apps and websites.

## VISUALIZATIONS

The Objects pane in SAS Visual Analytics, shown in Figure 1, provides over 40 different visualizations that can help you create your data story. You can choose from the classic and ever-popular bar chart, to fresh and eye-catching parallel coordinates plots to help your audience see the flow of your data.



**Figure 1. The Objects Pane**

One of the best ways to tell a compelling story is to introduce an element of novelty. That means not showing bar chart after bar chart. Imagine watching a movie where the action all happens on the same set. It's not impossible to make an interesting movie with this constraint, but it is a lot harder to do so. With over 40 different visualizations to choose from, you'll have more options at your fingertips to tell your story with familiar and novel visualizations together.

Sometimes you need something a little bit more out there. That's why SAS Visual Analytics has one more object with some special powers. The Data Driven Content object lets you connect your story to your own visualizations made with any JavaScript-based visualization technology (for example, D3 and C3).

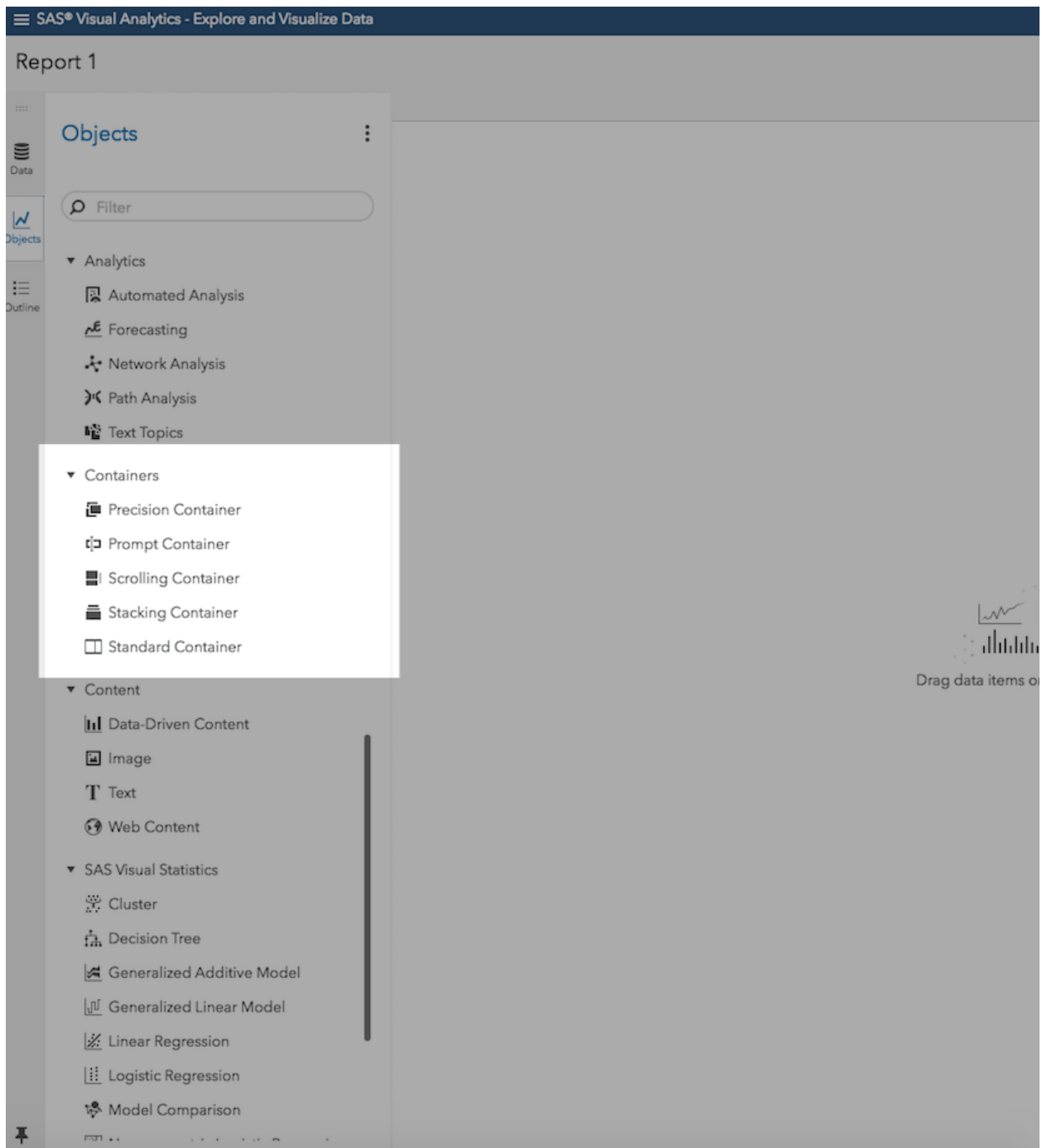
## LAYOUT

By default, SAS Visual Analytics provides a responsive layout system that lets you make a report, dashboard, or story once and then see it on a wide variety of screens without having to redesign your work. The layout algorithms handle the work for you. So, you can build reports on your laptop, and then see a beautiful report on your extra wide screen monitor, your tablet, and your phone.

Remember that your layout should support your story. If you're telling a story that moves chronologically through time, your layout should support that structure. For example, you

don't want to tell a chronological story where each page of your story jumps from past to future to present to past. As the audience progresses through the story, whether they are clicking on subsequent pages or scrolling through, they should move forward in time. If you are being more creative with your time sequence, then your layout should support that time sequence.

Sometimes, however, you need a little bit more control to tell your story. In the Objects pane, as shown in Figure 2, you'll find some unique containers that will help you get that control. You can make an entire page one of these containers, or you can mix and match them for your needs. Let's look at some of them.



**Figure 2. The Containers in SAS Visual Analytics**

### **The Precision Container**

The precision container gives you precise control over your layout. You can place objects exactly where you want, size them to take the amount of space that you want, and you can even layer objects together. For example, you can place an image of a beautiful blue sky and then place a graph that explains annual weather patterns on top of it.

## **The Scrolling Container**

The scrolling container lets you create a scrolling layout, like you would on a website. This allows you create one long page. It lends itself well to a linear story-telling style. As users scroll down, you can move them forward through time.

## **The Stacking Container**

The stacking container lets you show one object at a time, with controls to navigate between the objects. So, for example, you can have a bar chart, a pie chart, and a parallel coordinates plot all in one stacking container. The user would first see the bar chart, then they can click to see the pie chart, and then they can click to see the parallel coordinates plot. A variety of control options are available through the options menu. Stacking containers help put a story, or sub-story, in a layout where things are consumed in a progression.

## **CONVEYING YOUR STORY**

Every now and then a chart by itself can convey a complete story. You'll need nothing else other than the chart itself. Most of the time that's not the case. You'll need to connect different charts and walk the audience through the story, step by step. You'll sometimes need to explain specific concepts, or even what the audience is looking at. With SAS Visual Analytics, you have some great features at your disposal to do that.

If you need to explain a concept, you can embed web content, like videos and even web pages, like a Wikipedia page right into your story. Create a video and plug it into your story as a way to help explain complicated concepts.

With the text object, you can help convey the story with rich text that audiences can quickly skim. It's best to keep the text short and focused. Short blurbs work better than paragraphs. To make the story more engaging, and keep the audience moving along, it is better to reveal information progressively rather than all at once.

The image object is another way to make your data story more engaging. You can upload images from your computer or link to images hosted elsewhere. The relevant visual context can help structure your story or just add that little bit of immersion that holds people's attention better and helps the message stick. You can add background images, icons, and more, to build a lively storytelling experience.

## **CONCLUSION**

The most important aspect of telling your data story is to remember that a story is just a sequence of connected events. That gives you everything you need to start crafting your story. Take the insights that you want to convey and determine where they fall in place in time. Then put them in sequence, preferably chronological, since that makes it easiest for you to work with, and for your audience to understand. Filter out anything that's not really connected or relevant to the story that you want to tell. Then use the rich tools in SAS Visual Analytics to build up and design that story. Publish your story on the web, mobile, or in your own custom apps and see the difference a story makes.

## **CONTACT INFORMATION**

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