

Jeff Pettiross, User Experience Manager

Making Flow Happen: How to Build Dashboards That Persuade, Inform and Engage

Flow is powerful.

Think about a great conversation you've had, with no awkwardness or self-consciousness: just effortless communication.

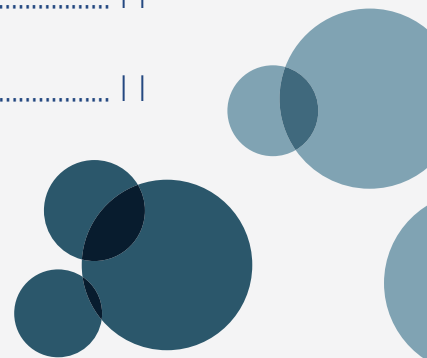
In data visualization, flow is crucial. Your audience should smoothly absorb and use the information in a dashboard without distractions or turbulence. Lack of flow means lack of communication, which means failure.

Psychologist Mihaly Csikszentmihalyi has studied flow extensively. Csikszentmihalyi and other researchers have found that flow is correlated with happiness, creativity, and productivity. People experience flow when their skills are engaged and they're being challenged just the right amount. The experience is not too challenging or too easy: flow is a just-right, Goldilocks state of being.

So how do you create flow for an audience? By tailoring the presentation of data to that audience. If you focus on the skills, motivations, and needs of an audience, you'll have a better chance of creating a positive experience of flow with your dashboards. And by creating that flow, you'll be able to persuade, inform, and engage.

Table of Contents

| | |
|---|----|
| What Gets in The Way of Flow?..... | 3 |
| What Story Are You Telling?..... | 5 |
| Encourage Critique Through Trust and Publication..... | 9 |
| The One-minute Checklist..... | 11 |
| Challenge Yourself | 11 |



What gets in the way of flow?

Before thinking more about data, consider what disturbs flow in everyday life.

You're in a coffee shop writing—but someone is yelling into their phone, breaking your flow.

You're playing pool with friends—but someone breaks a glass, disturbing your concentration and making you miss.

You're watching your favorite TV show—but an annoying neighbor knocks on the door.

You're hard at work—but your supervisor is constantly micromanaging you.

Interruptions and distractions kill flow. As a dashboard designer, it's your job to create the smoothest possible experience for users. You can't control whether a car alarm goes off while someone is using your dashboard, but you can control whether your dashboard has features that are unwelcome and obtrusive.

The following practices can help you minimize annoyances and facilitates flow.

1. Unwrap your brain from the data. (Think of your audience.)
2. Remove everything you can and nothing else. (Think of your audience.)
3. Show your work. Iterate relentlessly. (Think of your audience.)

Notice a theme?

1) Unwrap your brain from the data and focus on your users

So you want to make sure your audience's skills are engaged. You want them to be appropriately challenged. How do you do that?

By thinking of the user—your audience—first. Paradoxically, if you think of the data first, that very data could get lost.

As a data professional, you are likely consumed with data in the same way a music professor is consumed with notes. When that scholar teaches a class, they can't just spill out every single bit of detail they know. An enormous info-dump would be overwhelming, and it would probably turn students off, especially younger or non-major students. Good teachers consider the knowledge and needs of their students.

Hall-of-fame athletes who become coaches face the same dilemma. Many superstars—who had above average talent and work ethic—just can't relate to an average player. The ones who succeed are able to get outside their own experience and in the heads of the people they're trying to reach.



Being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost.

Mihaly Csikszentmihalyi, Psychologist



Similarly, it's crucial for you to set aside your own immersion in the data and ask questions like the following: What does my audience need? How often will they look at this data? What do they need from it? What do they already know about this subject? Have they used dashboards before?

If you spend time figuring out the answers to these questions, your dashboards will be better for the only people who really matter: the people using them.

What story are you telling?

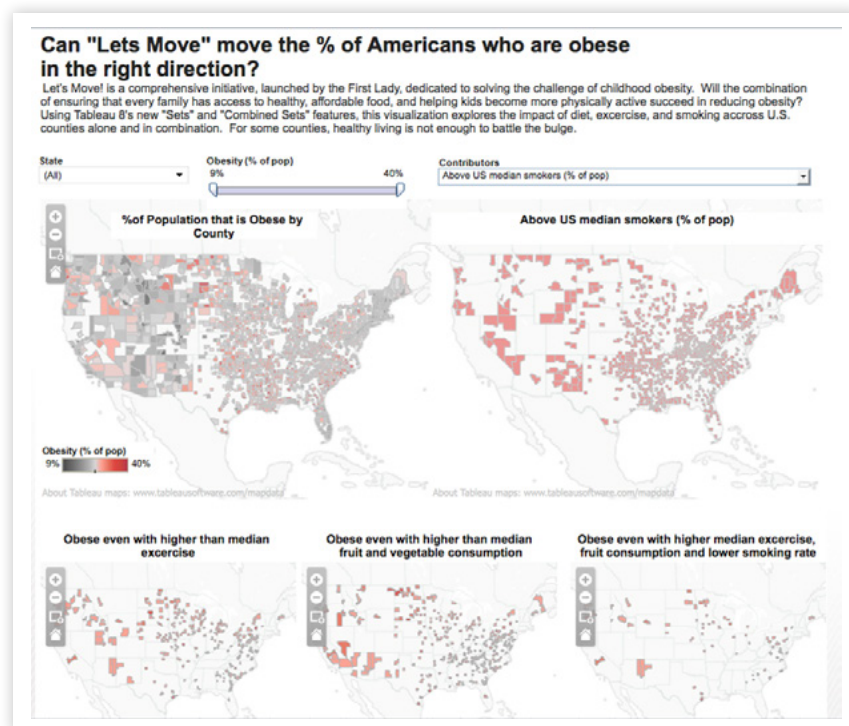
Every data set will have a different audience and different point of view.

For example, these dashboards by Anya A'Hearn show a range of choices. Each has a different audience and point of views. Each demands different skills and challenges.

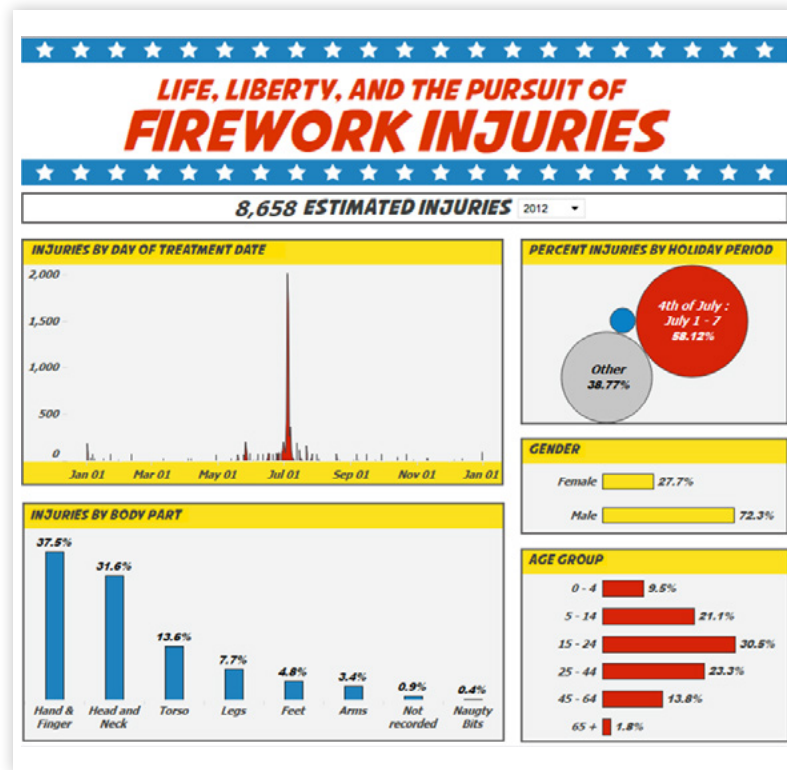
The dashboard on the left is high on intellectual engagement. It is dense with data. This is not for laypeople.

For example, a dataset showing what percentage of America's bridges are substandard (and potentially candidates for collapse) could be harvested in several ways. One dashboard might focus purely on bridge quality.

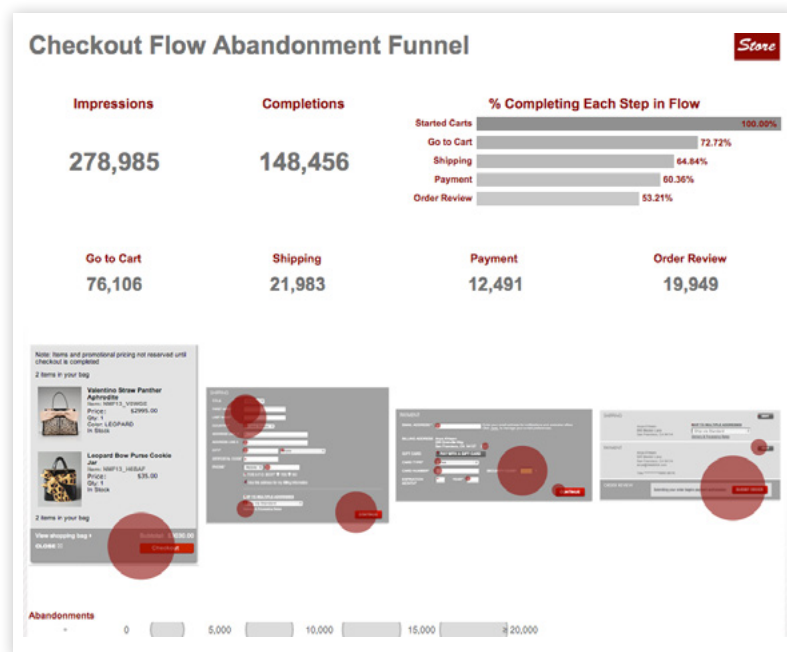
The dashboard below is high on intellectual engagement. It is dense with data. This is not for laypeople.



This next dashboard is colorful and eye-catching. It has a strong, clearly worded message and is working hard to get that message across.



The following dashboard is for a more narrow audience, specifically people already familiar with a certain website. This is a very “inside baseball” data viz.



Each of these dashboards was meant to communicate to specific audiences. They show how different data leads to different dashboards, but more importantly: different audiences need different dashboards.

For example, a dataset showing what percentage of America's bridges are substandard (and potentially candidates for collapse) could be harvested in several ways. One dashboard might focus purely on bridge quality. Another could use census data to factor in how many people use the bridges. Depending on whether the data is intended to warn the public, drum up business for a construction company, or crystallize priorities for the government, different choices will be appropriate.

The same data can tell different stories, depending on what your audience wants—and needs—to hear.

Considering that audience gives you context and helps you define your goals. Just as you're trying to help your audience experience flow, the audience helps you narrow down options for the presentation of data.

2) Remove everything you can—and nothing else

The most popular and revolutionary means of communication these days is probably Twitter. The brevity of Twitter is a huge lesson in how just a few words can make someone laugh or think.

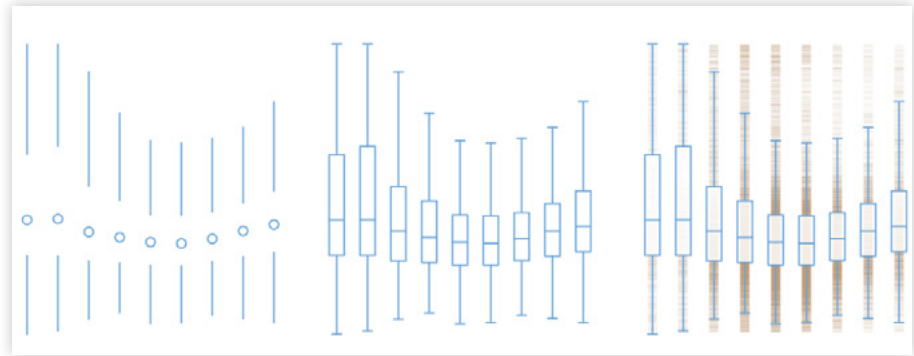
In many ways, Twitter is a validation of some famous writing advice. In their book *The Elements of Style*, William Strunk Jr. and E.B. White advise to “omit needless words.” In writing, redundancies and empty terms can cause static that gets in the way of communication.

The same is true of dashboards. Excess information, confusing graphics, and unnecessary features can also make a dashboard difficult to use and understand.



When making a dashboard, this is a helpful rule of thumb: “Remove everything you can, and nothing else.”

For example, here are three visualizations of the distribution of tornadoes in the United States.



These represent the first nine months of the year. Each vertical line represents time of day, with midnight at the top and noon in the middle. All three visualizations show, among other things, that tornadoes are much more likely to take place in the afternoon during the summer.

The difference is in the amount of visual information used to tell the story. At the left, we have an extremely minimalistic presentation, while at the right, we have a dense, thick presentation.

None of these are inherently better than the rest. The viz on the left may be perfect for audiences intimately familiar with the material: for them, simplicity and removal of redundancy would be quite welcome. For newcomers to the topic—or people who will only look at this visualization once—the explicitness of the visualization on the right might be best.

So how do you know when something is clutter as opposed to emphasize of something important?

This is where your colleagues come in.

3) Show your work. Iterate relentlessly.

As you build a culture of analytics, strive for a culture of critique: supportive, collaborative, frequent critique.

The more versions of something you create, with more feedback along the way, the better the final product will be. Don't get isolated or stuck. Start working on something and then show it to someone else. Use the feedback and get back to work. Continue that process until you're happy with the result.

Think of what it takes to make a diamond. The heat, pressure, and time required are extraordinary. So is the result.

Encouraging critique through trust and publication

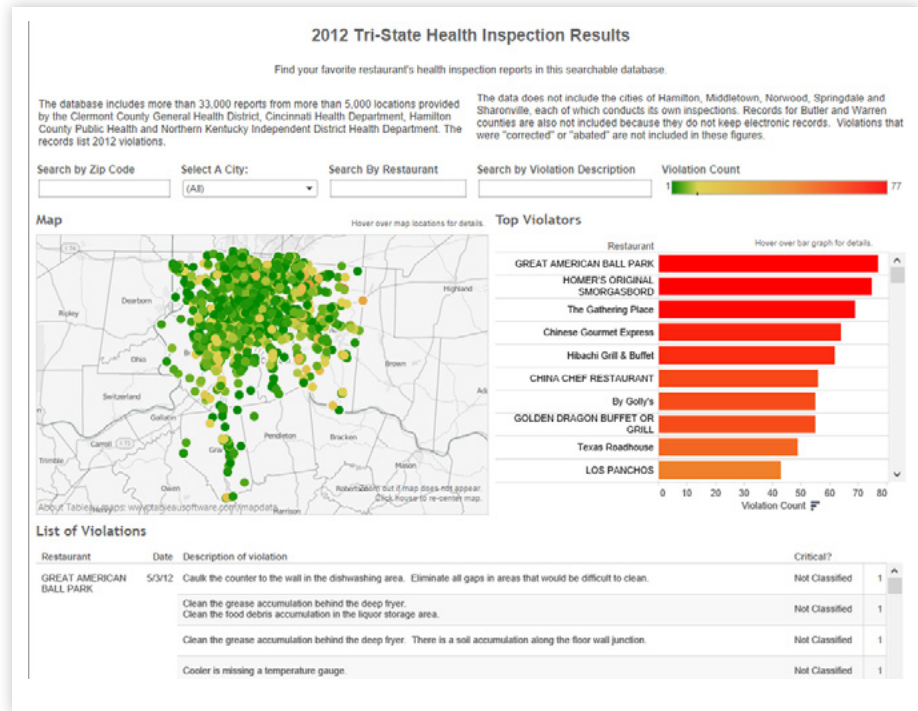
To create a culture of critique, a few things are necessary. For one, you have to trust your colleagues. If you and your coworkers respect each other, you'll trust each other's feedback.

Also, you need thick skin. Since your product is ultimately for the benefit of users and clients, your design should resolve around their needs, not your own preferences. Don't get married to one of your first ideas. Writers often talk about how they have to "kill their darlings"—meaning sometimes their favorite part of a story or script might have to be cut. The same thing can happen for designers. Keep your eye on the big picture and be honest if something isn't working.

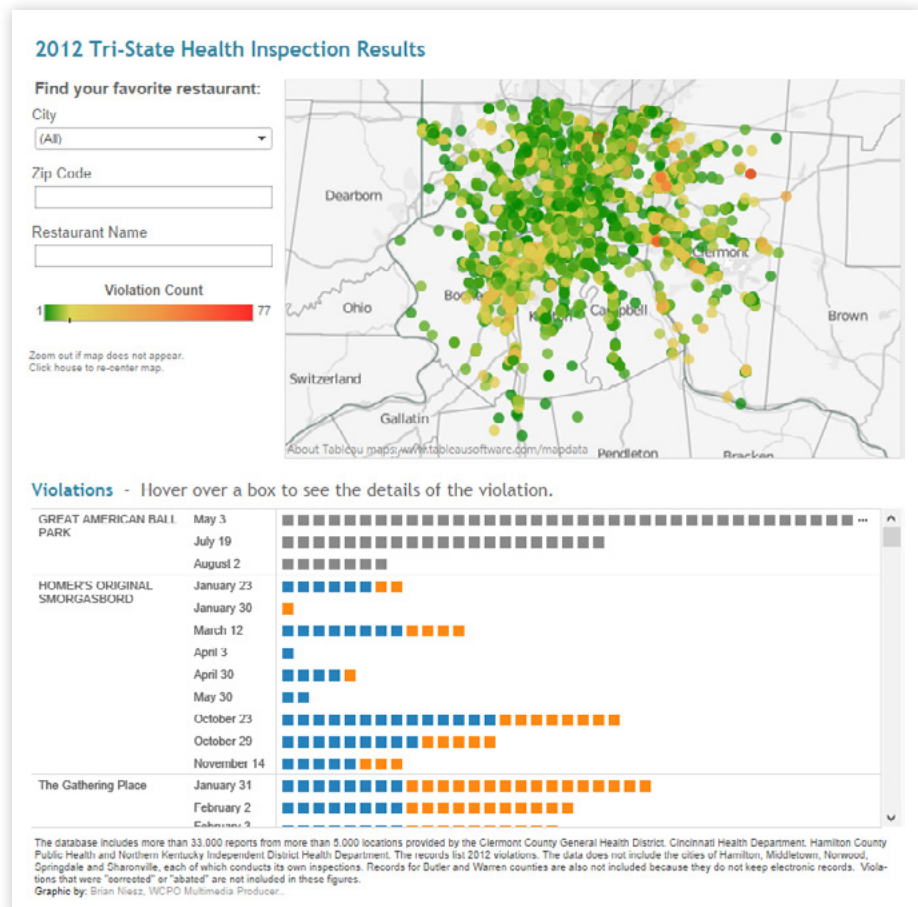
It also helps to have a public place—on a real or virtual wall—for sharing work. We have monitors in our office that allow us to see visualizations, along with who created it. Making work public creates constant opportunities for feedback and improvement.



For example, look at two versions of a data visualization of health inspector reports of restaurants. Here's the original:



Here's a later version that's had the benefit of feedback.



The final result has drastically less noise. Unnecessary text has been cut. Breathing room has been added. Individual information about violations has been replaced with color-coded representations of violations over time. Redundancies have been eliminated. The map is larger and helpful directions for users have been added.

Iterate, refine, polish: This is how good ideas become great.

The One-minute checklist

These principles can be used even if you have hardly any time—in fact, when time is short, those principles are perhaps the most important.

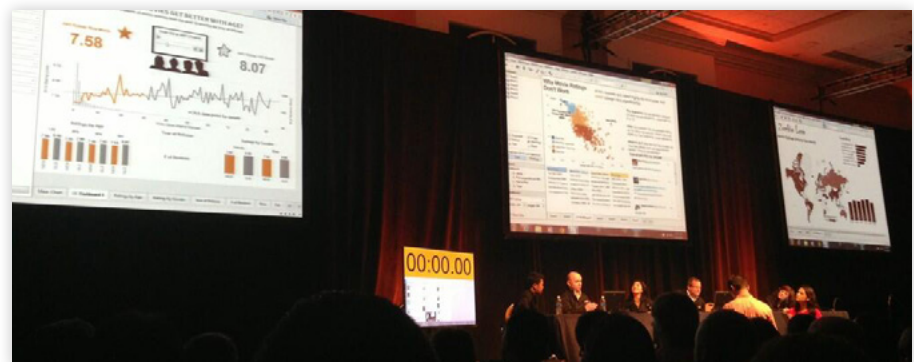
If you have only one minute before a dashboard must be completed, ask yourself what to remove—not what's missing.

In other words, if you're in a time crunch, remove the clutter and pare down what you already have. Boil your dashboard down to the essence by focusing on the story you're trying to tell. That is your best recipe for creating flow.

Challenge yourself

There's a book called *Writing Your Dissertation in Fifteen Minutes a Day* that's been enormously helpful to graduate students trying to squeeze writing and research in to their busy lives. Pushing yourself to work quickly is a great lesson. You might be surprised at how much you can get done in a short amount of time.

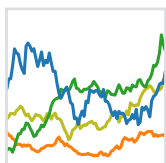
For example, Tableau's Iron Viz contest has become a highlight of the Tableau Conference. For Iron Viz, designers square off—in front of a live audience—to create a dashboard based on a data set in 20 minutes. Besides being fun, this contest shows the power of pressure and focus. The results are always impressive, and it's a great reminder that designer's block, like writer's block, is basically malarkey.



Work quickly. Get feedback. Consider your audience. Omit needless features. Repeat as necessary. This is how you'll create flow for yourself, your colleagues, and your users.

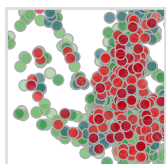
About Tableau

Tableau Software helps people see and understand data. Tableau helps anyone quickly analyze, visualize and share information. More than 19,000 customer accounts get rapid results with Tableau in the office and on-the-go. And tens of thousands of people use Tableau Public to share data in their blogs and websites. See how Tableau can help you by downloading the free trial at www.tableausoftware.com/trial.



Additional Resources

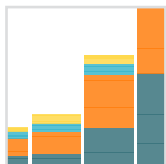
[Download Free Trial](#)



Related Webinars

[Making Flow Happen: Dashboards that Persuade, Inform, and Engage](#)

[See All Webinars](#)

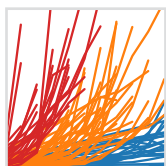


Related Whitepapers

[5 Best Practices for Creating Effective Campaign Dashboards](#)

[Which Chart or Graph is Right for You?](#)

[See All Whitepapers](#)



Explore Other Resources

- [Product Demo](#)
- [Training & Tutorials](#)
- [Community & Support](#)
- [Customer Stories](#)
- [Solutions](#)