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Increased Integration Provides More Opportunities for Pharmacy Analytics
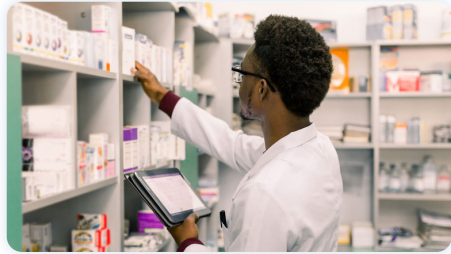
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October 2022

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HIMSS NEW ENGLAND CHAPTER

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Increased Integration Provides More Opportunities for Pharmacy Analytics

by **John Sucich,**
Contributing Writer

Even as healthcare systems have successfully leveraged data to improve their operations, there are still gaps in analytics usage. Some departments are simply overlooked, or it can be too overwhelming to digitally transform every area of the system at once.

One area where many organizations are starting to make more use of their data is in the pharmacy. Experts predict significant technology growth in this market over the next five years as pharmacists look to make their care more efficient and personalized, all while addressing other areas of concern.

Detecting drug diversion

One major element of pharmacy work that organizations are trying to get a handle on is drug theft. The number of medications in a pharmacy can be large—too large in some cases to do a good job of keeping track of missing items. The Healthcare Diversion Network reports that about 10% of healthcare workers in the United States will divert opioids and other medications from patients and facilities at some point in their careers. Investigations into these diversions usually rely on a manual comparison of records.

Researchers have found promising results using artificial intelligence (AI) to break down large data. One study resulted in 96.3% accuracy in detecting transactions at high risk of diversion in the dataset, and the AI did its work within a half hour, as opposed to as many as 20 hours for the manual work.

Evolution of pharmacy data

Pharmacies have never had a shortage of data. They collect data all the time for multiple purposes. As healthcare facilities have made other digital advances, they have had more opportunities to make better use of their pharmaceutical data. They've begun to use pharmacy analytics to turn that data into action items.

The biggest change in many facilities overall has been to more modern electronic medical record platforms. The integration of data from many sources throughout a healthcare system allows for the data to be manipulated in different ways.

How the data can produce results

As in any other department, analytics can save pharmacists time and money. Successful pharmacy analytics teams prevent information overload and achieve maximum efficiency by focusing their work on questions like, "What are the problems we're trying to solve? What are we going to look at? How do we measure it?" That approach works for information that is readily available.

Western Maryland Health System, for example, was able to use data to manage rising drug costs. When the price of IV acetaminophen increased, the hospital used analytics to reduce its spending on acetaminophen by 78% over two years. In another case, it found that spending more on a certain drug ended up reducing hospital stays and saving the organization $112,000 over six months.

The analytics can be used to prepare for the unknown as well, though. During COVID, the Cleveland Clinic set up a medication inventory dashboard allowing for near-real-time monitoring of inventory levels for hard-to-get medications. Healthcare organizations are looking at how predictive analytics can further help them in similar situations when supplies run short. Being able to plan ahead and prepare for possible future disruptions is an area of pharmacy analytics that is still in its infancy.

Healthcare systems are at their best when everyone is working together. By using enterprise-wide analytics to integrate and disseminate data, organizations can get a clearer picture from top to bottom. From the pharmaceutical end, analytics can help a healthcare leadership team make spending decisions. Having a better idea of inventory and more specific data about when and where medications are used can lead to cost savings. Most importantly, though, it can result in better patient care. □

Learn more

To learn more about what analytics can do for your pharmacy, check out our case study.

> "Improving Clinical Outcomes and Decreasing Acetaminophen Costs by 78% with Diver Platform."

HERE!

Like Everything Else, the Cost of Wine is Going Up

by **Meredith Galante,**
Contributing Writer

The average consumer knows that when they walk into the grocery store, they will pay more for items like eggs and chicken. Now they can add wine to the list.

The wine industry saw a 30% increase in costs this year, and multiple factors are to blame. The COVID-19 pandemic didn't help, shuttering restaurants and wineries, and driving up costs per bottle.

Increased gas prices and inflation have made it challenging to distribute wine at the same costs, and much of that has to do with the bottle.

> *"The cost of glass bottles in the U.S. has risen by as much as 20%, according to some brand owners, although most operators have seen much more modest price increases,"*

Stephen Rannekleiv, a global strategist for the beverages division of Rabobank, wrote in the financial giant's second-quarter wine outlook. "However, we would not be surprised to see some glass suppliers implement additional price increases as the year progresses. Nor would we be surprised if the extent to which their input costs are increasing turns out to be structural rather than transitory."

Alternate packaging

Glass bottles have become more costly to make and ship. But if the increased prices keep getting put on consumers, eventually they'll stop buying the wine.

Wine distributors and makers have already taken an interest in alternative packaging as a way to drive costs down.

Alternative packaging can help because lighter materials may be easier to ship and less likely to break than glass bottles. In addition, if done correctly, alternative packaging can offer a novelty to the consumer, such as wine in a can at a sporting event.

Rannekleiv wrote that a complete overhaul of how the industry thinks about packaging might be necessary. "While pricing actions will be necessary, wineries may also need to consider additional measures to help maintain margins and mitigate risks moving forward," he said.

Credit: sheilaf2002–stock.adobe.com

Nouveau prices

Globally, wine lovers are also suffering from price hikes. The price of Beaujolais Nouveau increased 40% in Japan this year, the company announced in July. They blamed rising transportation costs.

Last year, U.S. consumers struggled to find bottles of Beaujolais Nouveau because of a dramatically reduced and delayed harvest. The company has yet to announce if drinkers in the United States will also need to pay more.

Japan consumes most of the notable French wine, with the United States consuming the second largest amount.

How wine distributors and wineries can deal with rising costs

Every business has to deal with inflation and the rising costs of materials, transportation, and labor. Increasing the price of your product is one way to make up for the cost increase.

However, some customers will stop paying up.

Other strategies companies can take include exploring alternative packaging, such as cans or recyclable materials, like boxed wine.

The data can make a difference as well. Companies can look at transportation routes, the costs, and analyze how many bottles were sold last year to help decide what needs to go to each destination. ☐

The Complete Package: Why Packaging Matters in Supply Chain Analytics

by **John Sucich,**
Contributing Writer

The ordinary person doesn't think much about the supply chain until something goes wrong. It's the product that doesn't reach them that draws the most attention. As everyone has come to realize over the past couple of years, any one weak link in the supply chain can cause that product to not reach its destination.

One of the generally unnoticed parts of the supply chain is the packaging. If the supply chain is working smoothly, no one thinks about it. But packaging is something that can end up causing disruption along the line. Here are some of the ways packaging can impact the supply chain and how data can help make sure your organization's packaging is at its most efficient.

The importance of packaging

Packaging is more than a company's well-designed box arriving at your doorstep. Sure, the branding displayed on that box is important to the company, but there were many other packaging components that led to that moment.

Products are moved from factories to ports and from ports to warehouses. The type of packaging a company might use to move hundreds of items in that scenario will likely be different than the packaging for an individual product being shipped directly to a consumer. Companies need to take into account a variety of factors when they decide on what packaging they need.

- Does the packaging allow the item to be easily transported, for example, or does it need to be extra protective?

- Is the item being packaged fragile, or is it likely to need protection from elements like the weather?

- Does the packaging need to simply store an item in a warehouse?

Packaging supply chain

Many people became much more aware of the supply chain as a result of the pandemic. Among the many other supply chain-related consequences of COVID, people's expectations of customer service changed as well. Not only did customers expect products to come to them, either by picking them up at the store without getting out of their cars or having items delivered directly to their homes, but there was also an expectation that companies needed to behave responsibly environmentally. So another consideration for organizations is the right packaging with the lowest environmental impact.

Just as an organization needs to keep track of every step of a product's creation in its supply chain, there is a packaging supply chain as well. It doesn't matter if you have the raw materials for your product if you don't have the materials for packaging that product. During the pandemic, this affected food products, with a shortage of aluminum cans for canned vegetables and certain drinks with plastic caps.

How data makes a difference

The right data solution can help manage packaging inventories:

- **Artificial intelligence (AI)** can predict demand and stock levels so that the appropriate amount of packaging is available without leaving the organization short while also minimizing waste.

- **The Internet of Things (IoT)** can provide unprecedented visibility into complex supply chains. Certain products, like vegetables, need temperature-controlled packaging to extend their shelf life without losing nutrients. When flowers are shipped, they are kept in trucks and planes that are set to certain temperatures. IoT technology allows companies to know exactly where those items are in the shipping process and precisely at what temperatures to ensure quality or pinpoint where something went wrong.

Using technology to maintain packaging inventory creates a more efficient process. This gives decision-makers the time to turn their attention to other issues. Some organizations are using packaging data to figure out where they can be greener. Entire industries are making the same efforts. Winemakers, for instance, have come to realize that their age-old wine packaging (glass bottles) accounts for the industry's largest percentage of greenhouse gas emissions.

The pandemic certainly forced organizations to take a long look at their supply chain to identify issues. For some organizations, it has helped them identify areas they could be more efficient and ended up saving them money. Packaging, as it turns out, can be opened up to deliver even more opportunities. ◻

Proper Use of Color in Data Visualization

The rainbow is a beautiful example of terrible use of color. Well, that's not entirely true. It's wonderful to look at in nature. But it's misused in data visualization.
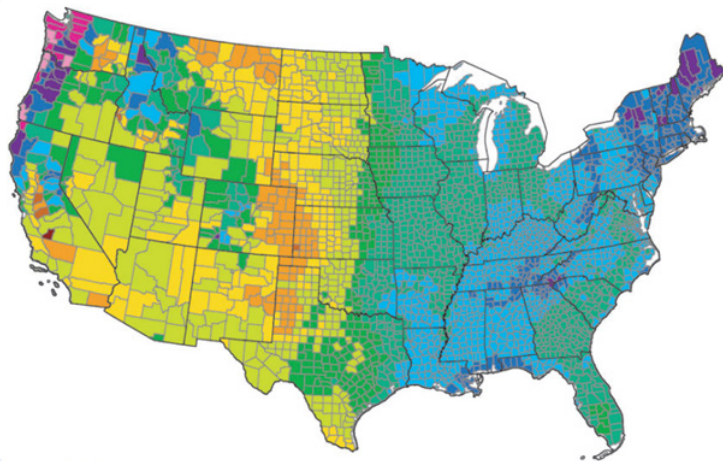
Did you know that there is one right way to design color palettes for data visualizations? It's not just a question of taste. Let's take a look at why certain color combinations just won't work for data visualization and how you can go about designing ideal color palettes.

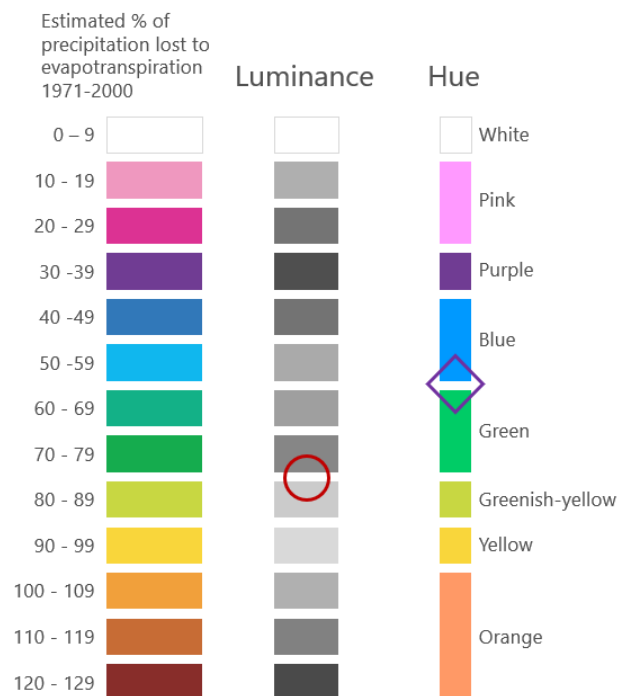**Shaun Foaden**

Managing Director
LinkedIn

The wrong use of color

This map of the United States shows evaporation rates per county across the country, and it uses a rainbow gradient to display the data. While the colors are visually pleasing, the jump from one color to the other makes the viewer think that there are dramatic differences in the rates. There appear to be stark differences in a few places, especially down the middle of the country, where the eastern half looks to be all dark green and blue, while the western half is all light greens, yellow, and orange.

While it looks like there is a huge difference between those colors, the legend shows the values are changing smoothly even though the colors are not. There are two problems here. One is that there are abrupt changes in luminance—the perceived brightness of color—and there are many different hues. The luminance is also scattered—almost to the point that it looks random. The rainbow is a totally inappropriate color palette for this type of visualization, where one wants to show smooth changes in quantities. In fact, the rainbow is never a good palette to choose.


Estimated % of precipitation lost to evapotranspiration 1971-2000 | Luminance | Hue

Range	Hue
0 – 9	White
10 - 19	Pink
20 - 29	Purple
30 -39	Blue
40 -49	Green
50 -59	Greenish-yellow
60 - 69	Yellow
70 - 79	Orange
80 - 89	
90 - 99	
100 - 109	
110 - 119	
120 - 129	

Source: https://onlinelibrary.wiley.com/doi/full/10.1111/jawr.12010

HCL vs. RGB

Most color palettes are designed using red, green, and blue, or RGB—it's what we're used to with TV or laptop screens, and it varies the amounts of pure red, green, and blue to create different colors. But if you look at a black-and-white version of the scale, you can see there's no ordering of the colors, and the luminance changes drastically across the scale.
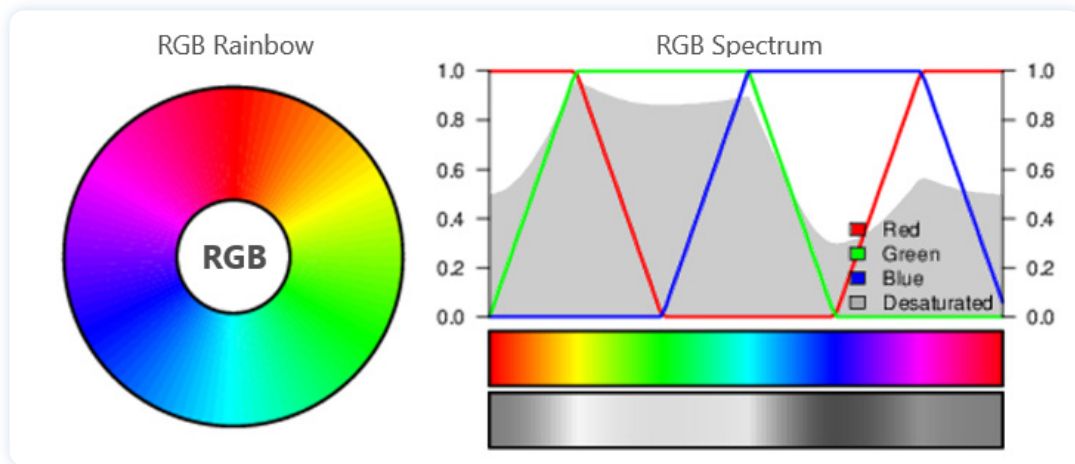
The HCL color space is the better option. HCL stands for hue, chroma, and luminance, and you can fix one of those three elements to make a more visually accurate representation of your data. By fixing the luminance, for instance, you can get colors that are all the same darkness, and you won't get unexpected variations in the way the color is perceived.
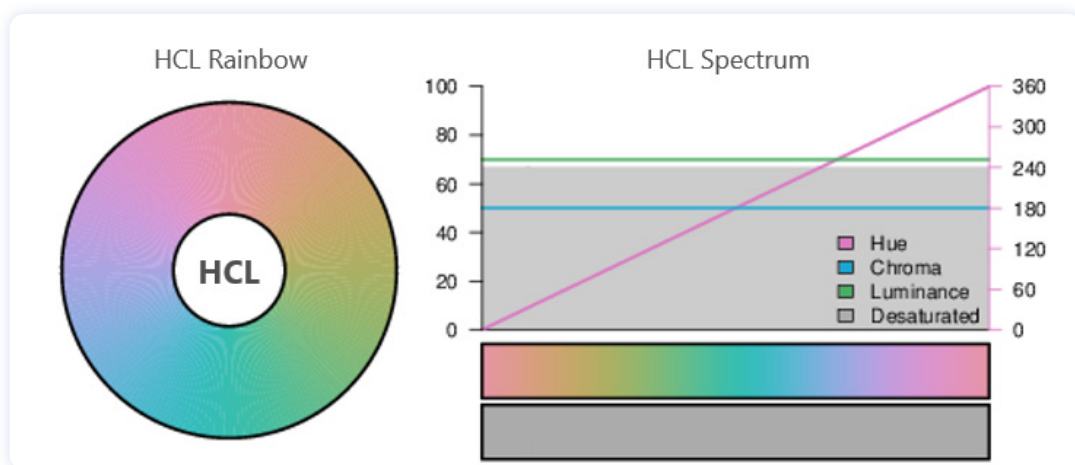
I made a version of the map we saw above with a proper sequential color palette moving from light to dark. You can see the changes, but they're not as dramatic.
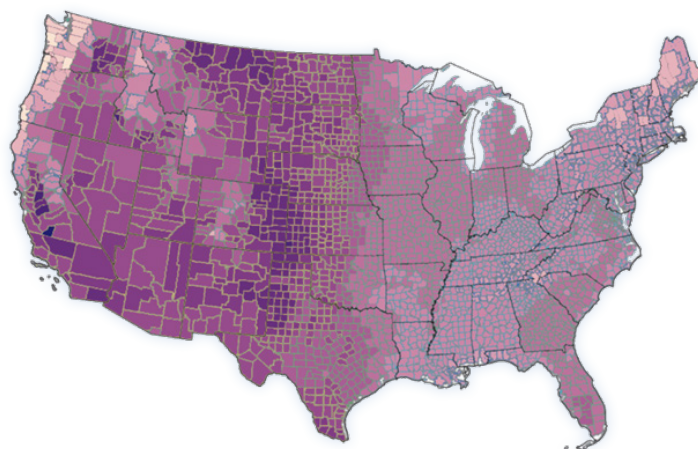
Different types of data need different types of color palettes

Basically, there are two main types of data requiring different types of color palettes—qualitative and ordered.

Qualitative	Peter, Mary, Sally, John	

A qualitative color palette would be used for nominal or categorical data. Think of a set of names – categories where there's no inherent order. There's a conflicting constraint because you want to have colors that show the data from Peter is different from that of Mary, for example, but you also want the colors to be perceived as equally important. You don't want to unwittingly emphasize one category at the expense of the others. It is hard to meet that constraint with RGB, but it's pretty straightforward within HCL.

When you're dealing with ordered data, it's either sequential or diverging data. With sequential, you're going from low to medium to high, and with diverging, you're going across from bad through OK to good—actually two divergent palettes, back-to-back.

Sequential	Low, Med, High	
Diverging	Disagree, No opinion, Agree	

There are a number of HCL color picker tools that allow you to fix the hue or chroma and then vary the luminance of the colors. This allows you to generate a smooth luminance gradient and so accurately represent the change in quantities in your chart. Dimensional Insight Workbench users can manage colors, visualize them in a color palette generator, design them, and easily apply them. We can explore that topic in a future blog post.

We started out talking about the disadvantages of a rainbow. But when you're talking about color palettes, there is a natural phenomenon you should use as a model. A sunrise is a natural color palette with bright yellows, moving through reds and deep purples. It's a perfect model for sequential or diverging data sets.

Sometimes data visualizations use color just for the sake of using color. Color is one of the most important aspects of your data visualization, so you need to be intentional about the palette you choose. If not, you risk emphasizing the wrong information. ☐

New Features Found in Diver Platform Version 7.2

Rose Curtis

Seinor Marketing Manager
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At Dimensional Insight's Users Conference in Washington DC last month, Dimensional Insight's developers announced the release of the next version of Diver Platform, version 7.2. They also showed attendees a sneak peek at the new features of 7.2. So if you missed the conference and are curious about those new features, don't worry. You can read all about what is new in 7.2 in this article.

DivePort Upgrades

My Library

One of the most noticeable changes in 7.2 is the environment's look, feel, and navigation performance. This change is from My Library, one of the many optional features in version 7.2.
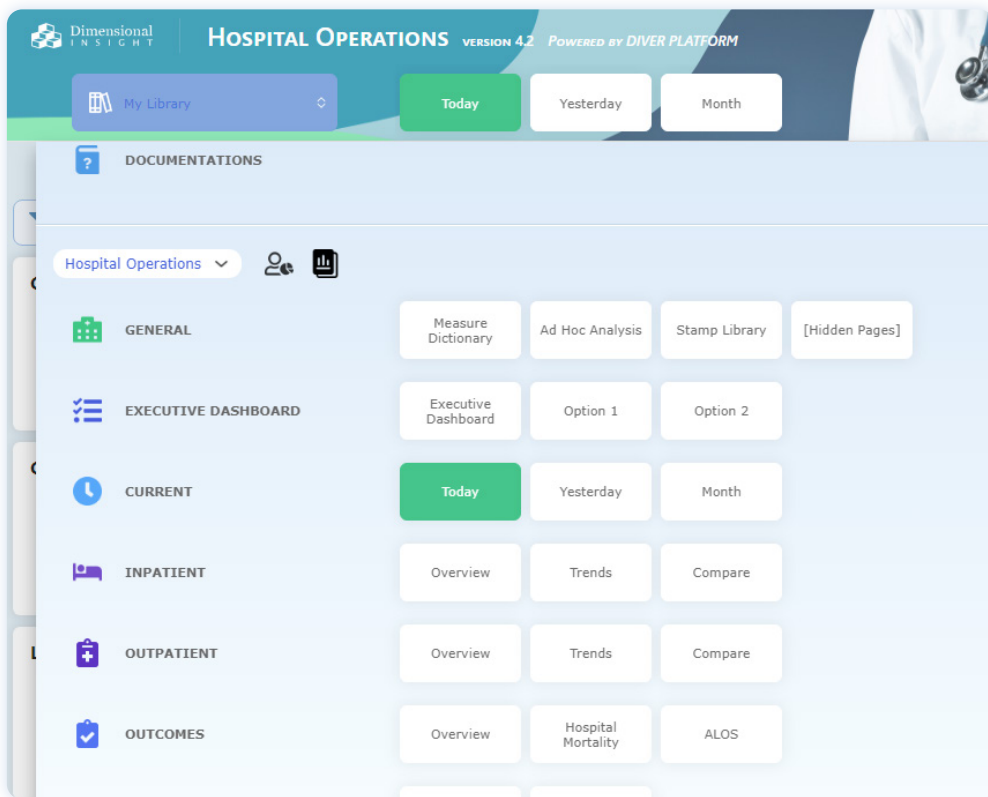

Access all your data with ease, style, and customizability with My Library. Featuring new "shelf" functionality, Diver Platform 7.2 organizes your data and shortcuts in a way that makes navigating a snap. The shortcuts feature helps you find what you need faster than ever before. Your shortcuts are stored on your DiveLine and in shared folders to make co-working a breeze.

New QuickView Portlet Functions
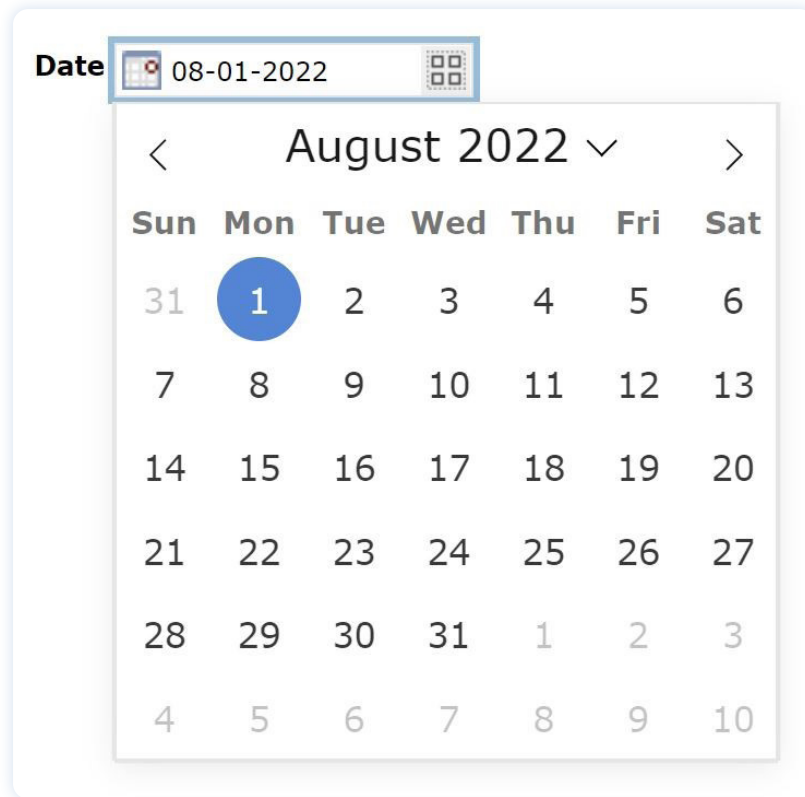
Utilize new button display types such as flex, hidden, and calendar. For example, you can always find the time with the new date picker for Calendar QuickViews.

Additional Default Stamp Types
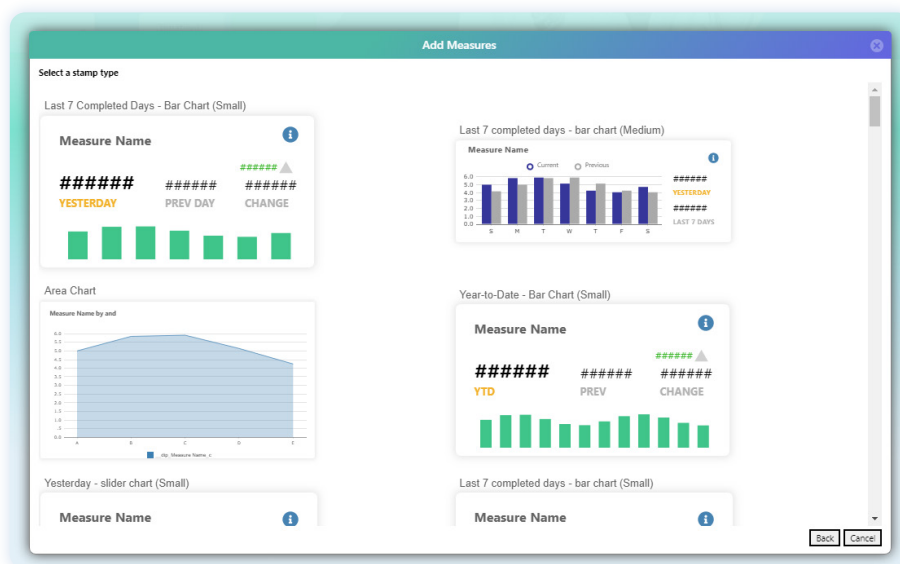
You can create a specific stamp type with default stamp types every time you make a new stamp. Then, find and select measures and filters to accompany your stamps using the newly added dialog boxes.

Spectre Upgrades

Faster cBases

A more efficient design for cBases helps you create them even faster using Spectre Build.

New Input Types

	A	B	C	D	E
1	Data for week ending 9/2/2022				**DRAFT**
2	Not all sites have reported in yet				
3					
4		Entry Date	Product Code	Units	Customer ID
5		29-Aug-2022	P0132	4	C1121
6			P0142	2.5	C1402
7			P0158	3	C0928
8		30-Aug-2022	P0182	9	C0991
9			P0142	3.5	C1342
10			P0101	5	C1450
11		31-Aug-2022	P0119	6	C1190

Excel: Spectre has a new file input type for Microsoft Excel files. Excel spreadsheets can now be imported and processed like other tables. This feature is coming to both Spectre build scripts and the Spectre Build Flow Editor.

```
{
  "extract_id": "10231",
  "extract_date": "2022-09-02",
  "data": [
    {
      "entry_date": "2022-08-29",
      "product": {
        "code": "P0132"
      },
      "customer": {
        "id": "C1121"
      },
      "units": 4
    },
    {
      "entry_date": "2022-08-29",
      "product": {
        "code": "P0142"
      },
      "customer": {
        "id": "C1402"
      },
      "units": 2.5
    }
  ]
}
```

JSON: Diver Platform 7.2 now supports the JavaScript Object Notation file format for Spectre inputs.

Datagen: Need test data fast? Spectre now supports the data generation input. So you can quickly create thousands of rows of test data to ensure that your Spectre scripts are ready for the real deal.

PostgreSQL: Spectre now supports inputs from the world's most advanced open-source database.

Workbench Upgrades

Markdown Editor

Edit rich text documents in style with the new real-time markdown editor. See your changes visually as you make them.
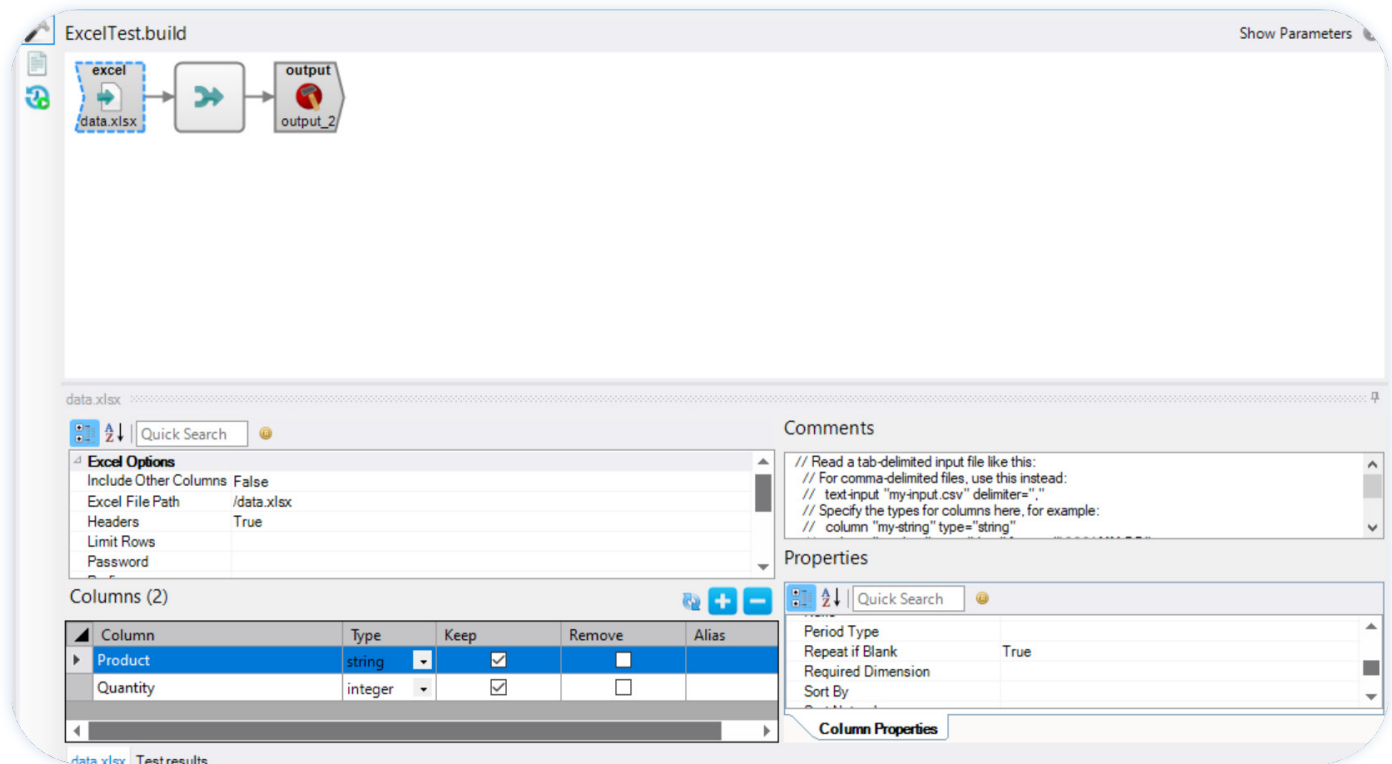
The new table editor lets you make even more changes to tables with ease and speed. Click and drag columns to change their positions, handle large tables more efficiently, and enjoy a comprehensive log of all changes.

ODBC Registry

Connect to multiple data sources with one ODBC connection thanks to the new ODBC registry.

For more information

If you are interested in upgrading to 7.2, please get in touch with your sales rep or write to sales@dimins.com.

Upcoming Events

Convergence—The great mash-up of stakeholder needs. What Health Information Exchange means in a modern health ecosystem.

October 20, 2022 | 7:45am–3:15pm, EDT | Worcester, MA | College of the Holy Cross

Learn more

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Journey to Equitable Health: How Do We Get There and Who is Leading the Way?

November 1, 2022 | 8:00 am–1:00 pm EDT | MHA Conference Center | 500 District Avenue Burlington, MA 01803

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2022 Women's Leadership Council Conference

November 3–4, 2022 | Intercontinental Hotel—The Wharf | Washington, DC

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WINE & SPIRITS
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OF AMERICA

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November 15–18, 2022 | Las Vegas | Las Vegas Convention Center
Booth #2719

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