



Testing Better with Data Insights

We are in the age of continuous testing. Using automation at scale, teams are testing more often throughout the software development lifecycle. But as testing volume grows, how do you know its impact on your ability to deliver quality software faster? Do you know where automation adds value, and where it might be creating risk? How do you best optimize your testing efforts to ensure the maximum return on investment? In this white paper, we will explore how analytics and insights can bring a level of control and visibility by presenting test data in a meaningful and actionable way. Pointing to key metrics that show where testing is succeeding, and where there are areas for improvement, readers will understand how these insights can improve efficiency and create digital confidence.

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WHY ANALYTICS?

With the advent of continuous testing practices, many teams have successfully integrated quality into every step of their pipeline, and are executing tests at a higher rate than ever before (from once a month or quarter to multiple times a day!). With this increase in frequency comes larger sets of data. However, many teams are struggling with how to best use this data to continuously improve, and deliver the most value. This is why data analytics tools have become an important component of the modern testing pipeline. By taming the data beast, the insights gained from analytics tools allows organizations to better understand where quality risks still might exist in their pipeline, and informs them on how to continuously improve their processes.

Test insights can best be utilized to help teams in the following key areas:

- Provide high-level organizational visibility to help understand test trends
- Evaluate testing efficiency and costs across teams and projects via KPIs
- Easily identify, prioritize, and remediate inconsistent tests

All the above points help teams decrease time spent on costly debugging efforts, and more importantly help them focus their valuable time delivering flawless digital experiences. The goal of analytics is to discover and use key knowledge to improve the software delivery process—and therefore, the business.

ORGANIZATIONAL VISIBILITY

Understanding your test or build test history at a macro level provides important insights into your applications. The patterns that can arise when viewing these high-level trends often help drive well-informed decisions on how to spend your teams' resources. Often these insights are presented in long reports that are difficult to conceptualize, and aren't flexible enough to filter for key metrics that have been determined critical to the business needs. Even more, while reports can offer data for a particular group, it becomes more difficult to compare across multiple teams.

Analytics can visualize key metrics that can help you understand where your testing practices are working best, and where there might be room for improvement. This can be accomplished by filtering test data by a number of key factors, such as browser or OS version, owner, team, time period, and more.

This organizational visibility can help you understand a number of different factors:

- Quality trends across teams within an organization - get the macro view of how tests are performing across all of your teams and applications
- Pass/fail rates by team - gain visibility into which tests and teams need to focus resources into better development/test practices
- Infrastructure usage - see if your team is getting the most out of your capacity, or if you need to prioritize parallelization
- Performance indicators across teams - understand which teams are testing most efficiently so you can share their practices across the organization

TESTING EFFICIENCY

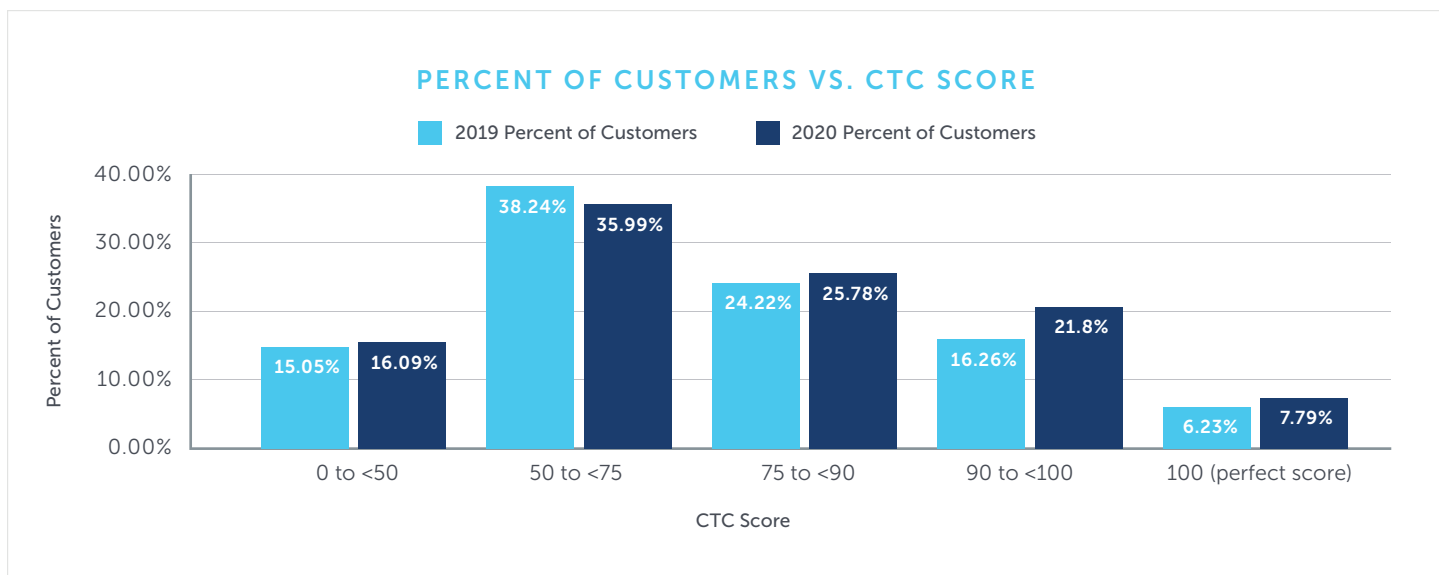
Key Performance Indicators, or KPIs, are tactical-level metrics that allow you to understand how to prioritize resources. For testing, metrics to consider include (but are not limited to):

- Test coverage across different browsers, OS versions and devices
- Error/failure rates over time to help identify potentially flaky tests
- How quickly/slowly tests are running and builds are passing
- Tool usage across different teams to better allocate capacity and avoid tests from queueing up, thus creating bottlenecks in your pipeline

By using data insights to visually represent your highest impact metrics in clear and customizable views, you can make informed decisions on where to focus time and money. In turn, this gives your teams the ability to accelerate the debugging of your code, which leads to accelerated releases.

FAILURE ANALYSIS

Sophisticated analytics tools can do much more than just present data in a visually appealing way. With the advent of machine learning, there is an opportunity to use it to analyze test data to create a roadmap to help teams to continuously improve and meet industry benchmarks.



The above image is from the 2020 Sauce Labs Continuous Testing Benchmark Report. Based on the data from billions of tests run on our Continuous Testing Cloud, we found that a majority of Sauce Labs users have test pass rates of less than 90%. For teams that are running hundreds or, or even thousands, of tests per day, these failures create a lot of noise. Basic dashboards can help present those failures in aggregate, but how can developers make sense of it all? With machine learning technology, analytics can perform failure analysis to identify commonalities across failed tests, and then visualize which of those patterns are most pervasive across a team or test suite. This can be a gamechanger, as it leads to:

- **Improved efficiency** - by providing a roadmap of the most persistent issues that lead to test failures, developers can focus on those that will have the largest impact without having to spend hours chasing down root causes.
- **Reduced quality risks** - With actionable data being put to use, teams can use analytics to remediate problem tests and improve pass rates. A decrease in failures leads to fewer bugs released into production, meaning an improved user experience.
- **Great testing ROI** - An optimized testing practice can help contribute to larger business objectives. With analytics continuously presenting data on how testing is performing, and offering insights into where it can improve, that value is validated to leadership.

INSIGHTS AND SAUCE LABS

Sauce Labs understands the power of your test data, which is why we provide our own solution to help you understand how your teams can improve. Our [Insights](#) platform provides real-time visibility into your testing efforts. With customizable views to help you quickly identify bottlenecks and high impact issues, along with actionable insights into how you can improve efficiency, Insights identifies what to fix first so you can build digital confidence and release better software faster.

Insights is available to all Sauce Labs customers on an Enterprise plan. To learn more about all of our Enterprise features, contact our team at sales@sauce labs.com.

CONCLUSION

Analytics tools can give teams full visibility into their fast-moving pipelines and help them become more productive developers and testers. Using macro and micro data to tell the story of how your tests are performing allows engineers to quickly identify which issues to address first. This speeds up not only the time it takes to uncover and debug issues with your testing strategy, but also the amount of time it takes for your applications to get to market.

From the level of the single test, to the larger organizational trends, data insights allow every level of the business to ensure that they are meeting critical business objectives for all of their users, all of the time. By quickly surfacing issues through data, everyone in the organization can own quality and take the steps necessary to provide their customers the best possible experience.



ABOUT SAUCE LABS

Sauce Labs is the leading provider of continuous testing solutions that deliver digital confidence. The Sauce Labs Continuous Testing Cloud delivers a 360-degree view of a customer's application experience, ensuring that web and mobile applications look, function, and perform exactly as they should on every browser, OS, and device, every single time. Sauce Labs is a privately held company funded by Toba Capital, Salesforce Ventures, Centerview Capital Technology, IVP, Adams Street Partners and Riverwood Capital. For more information, please visit saucelabs.com.



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