



Web DevSat

Web Platform H1 Research for WebDX CG

April 2023

Objectives and Methodology

This research seeks to understand:

- What key problems and pain points are experienced by web developers?
- What resources do web developers need, but do not currently have?

Online survey conducted among n=852 developers who work at least part-time:




- Must be a web developer, mobile web developer, Tech Lead/Engineering Manager, CTO, or web designer who has developed for the Web in the past 12 months
- Recruits come from panel sample

Research conducted March 14th - March 27th, 2023. Average survey lasted 26 minutes.

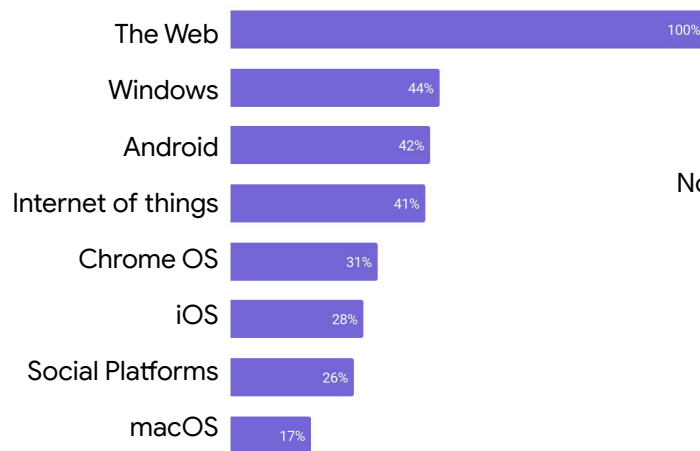
Significance testing across groups is shown throughout this report; letters indicate significance at 95% confidence.

Sample Characteristics

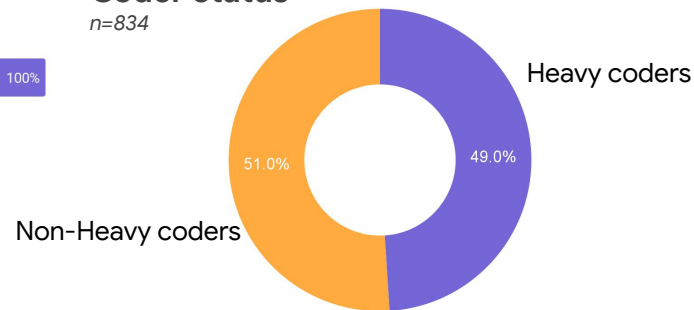
- Respondents must have developed for the web in the past 12 months.
- Quotas were established at the country level, controlling for org size (small, midsize, large) and coder status (heavy, non) to ensure a representative mix of web developers.

Country		
	US	n=295
	UK	n=273
	India	n=284

Development Platforms
n=852



Coder Status
n=834



Note: Heavy Coders = Spends 50%+ of their time coding;
Non-Heavy Coders = Managers or coders who spend less than 50% of their time coding.

01

Executive summary



97%

Overall satisfaction with the Web, as a platform and set of tools, to enable you to build what you need or want

“

Its market share is very high, allowing developers to take advantage of a wealth of tools and resources to quickly develop applications.

Agency, non-heavy coder

“

The Web provides a vast array of options for developers, designers, and content creators to build and deploy their creations.

Agency, non-heavy coder

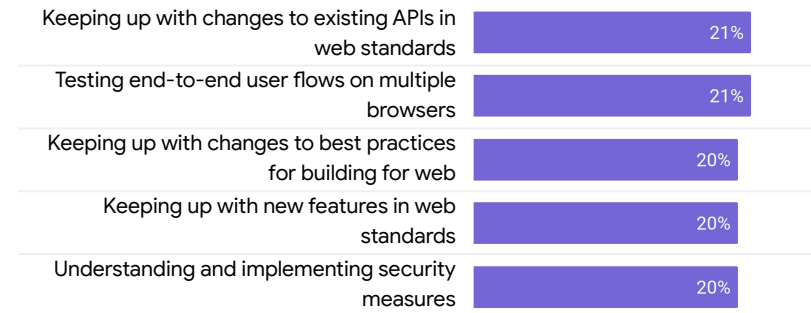
Question text found in speaker notes

Devs continue to be highly satisfied with the web due to its ease of use

Despite the ability to easily develop for web, a common challenge is keeping up with changes (to APIs, best practices, features), consistent with previous waves. WebDevs are equally divided on what makes keeping up with web standards a challenge. Nearly all are aware of the changes, but either lack of tools/resources or priorities makes it challenging.

Challenges to the Web Platform

All Developers, *n=852*



Executive summary of insights

1 Developers love the web, but...

Satisfaction is high with the web, but it is not without challenges. **Keeping up with changes** continues to be a top issue for WebDevs, and often the reasons for the challenges stem from **lack of tools/resources or prioritization**.

In addition to issues with changes, **end-to-end testing and security measures are also relatively big challenges** for web developers. Consistency, framework code, and difficulty achieving the desired experience are top challenges with building UI.

2 Performance, Security, & Privacy

Performance and security drive anticipated increases in investment in both mobile and desktop web products and **privacy is top-of-mind for all business and technical decisions**. Most WebDevs believe they have all the web app functionality they need.

Understanding and implementing security measures became more challenging for WebDevs wave-over-wave. The limited negative open-ended feedback involved difficulties with tools and security/privacy concerns.

02

Detailed findings

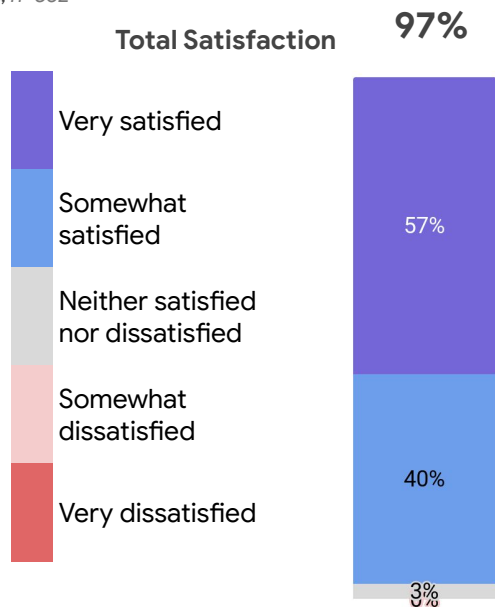
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Web development overall

Developer satisfaction with the web is high, with over half “very satisfied”

Developer Satisfaction

All Developers, $n=852$



Top Box [Very Satisfied] by Developer Type



Ease of use/access is a commonly mentioned reason for satisfaction with web

Developers use the web because of its **ease and reliability**. Their high satisfaction often stems from the ability to easily **create web apps and websites accessible from anywhere**. The productivity afforded to them from developing for the web reduces effort for the often resource-strapped developers.

Cost is frequently a reason for satisfaction, with many of the **free tools and resources** allowing for high productivity and efficiency.

The limited negative feedback mostly involves **difficulties with tools** and **security concerns**.

“

An awesome tool for bundling applications and it will help me manage my dependencies. Measuring customer satisfaction can show you where your business is getting it right and where you're struggling to meet people's expectations. One thing that should be extremely obvious about developers is that they love to create their own tools and scripts and the like, even if there is already something else that does the job they are writing a tool to do.

Agency, non-heavy coder

“

Easy data sharing & collaboration on projects is made very much easier with web based tool.

Agency, non-heavy coder

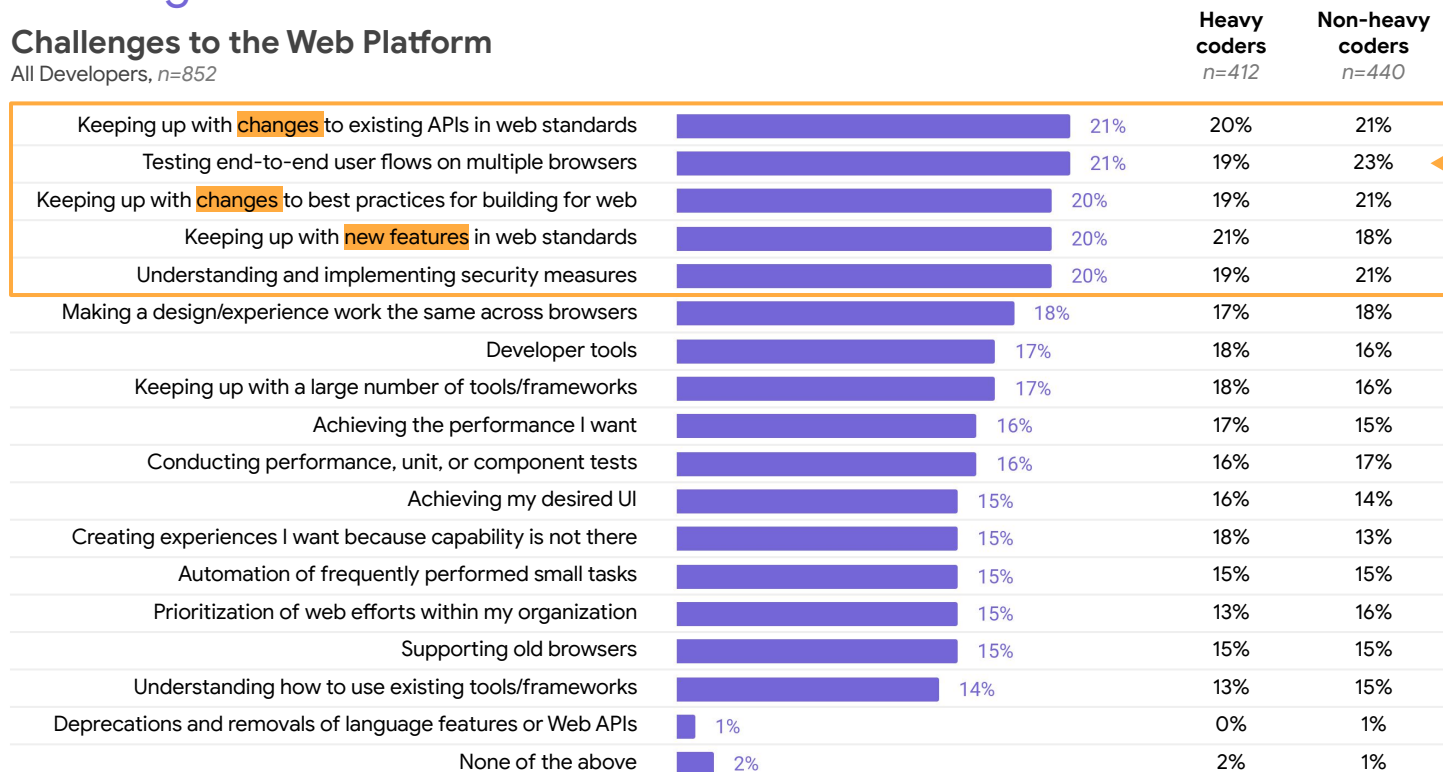
It's very developer-friendly and it's easy to separate the front and back end of development.

Agency, heavy coder

Keeping up with changes (to APIs, best practices, features) is a common challenge for WebDevs

Challenges to the Web Platform

All Developers, n=852

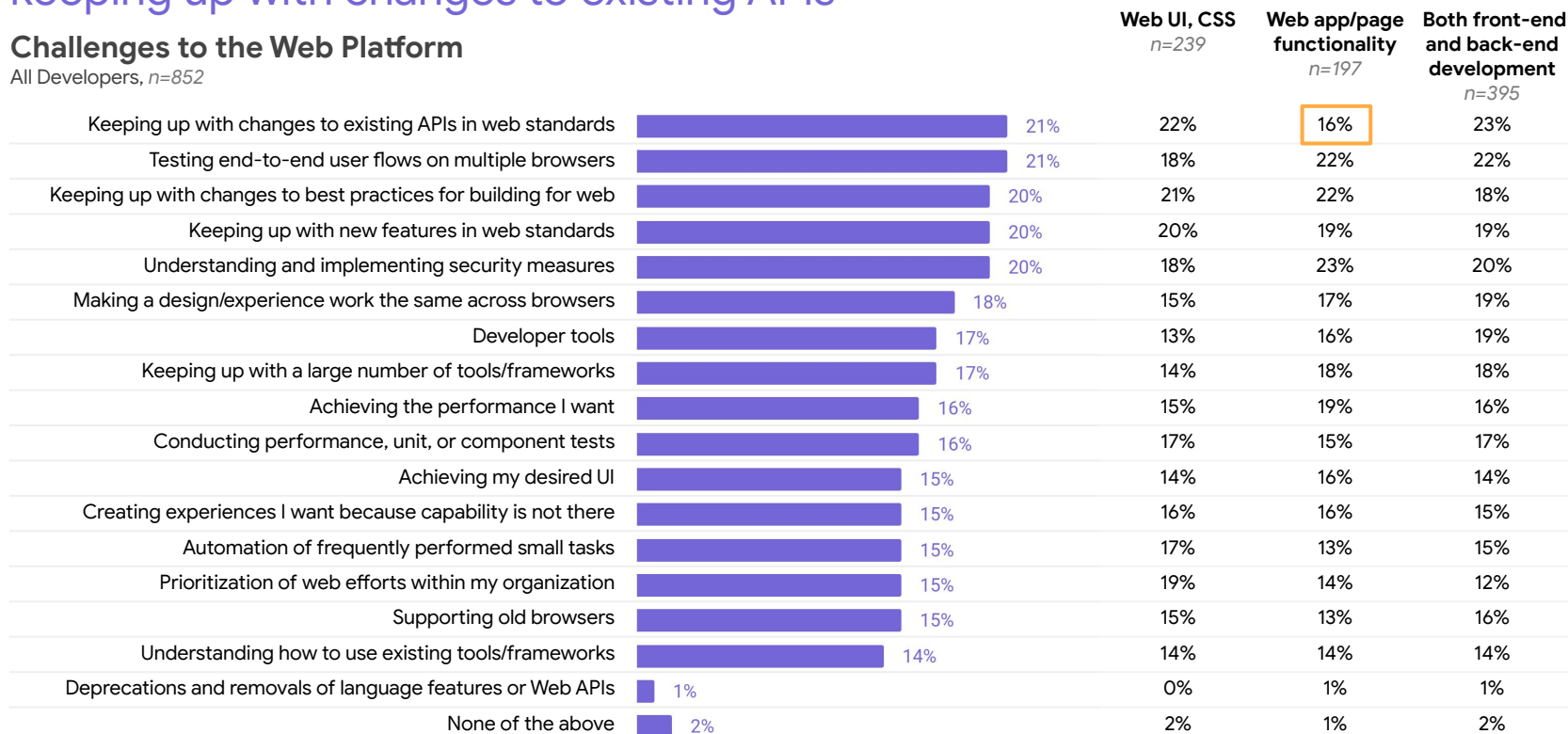


In addition to issues with changes, **end-to-end testing** and **security measures** are also relatively big challenges for web developers.

Devs focusing on web app/page functionality feel less challenged with keeping up with changes to existing APIs

Challenges to the Web Platform

All Developers, n=852

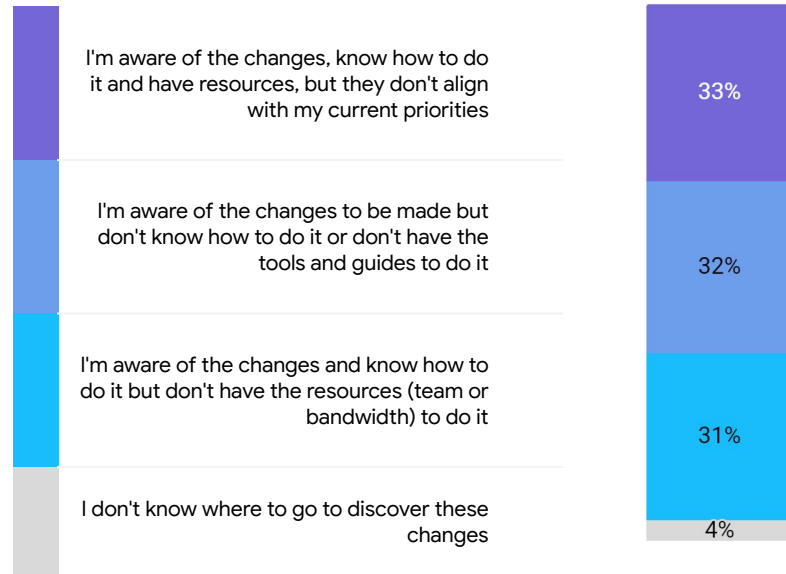




WebDevs are equally divided on why keeping up with changes to web standards is a challenge

Reasons why keeping up changes to the web are a challenge

Among those experiencing challenge, *n*=419



Heavy coders
n=198

Non-heavy coders
n=221

Agency
n=353

Non-agency
n=66

34%

33%

35%

24%

30%

33%

31%

35%

31%

31%

30%

35%

6%

3%

4%

6%



Performance and automated end-to-end are most common test types

Tests create and perform regularly

Among those experiencing challenge, $n=295$

		Heavy coders $n=135$	Non-heavy coders $n=160$	Agency $n=233$	Non-agency $n=62$
Performance tests	53%	53%	52%	53%	52%
Automated end-to-end tests	52%	44%	58%	53%	47%
Manual tests	43%	41%	44%	43%	42%
Component tests	42%	39%	45%	42%	42%
Cross-browser tests	39%	39%	39%	39%	39%
Unit tests	37%	37%	37%	40%	26%
Screenshot tests	30%	27%	33%	30%	29%

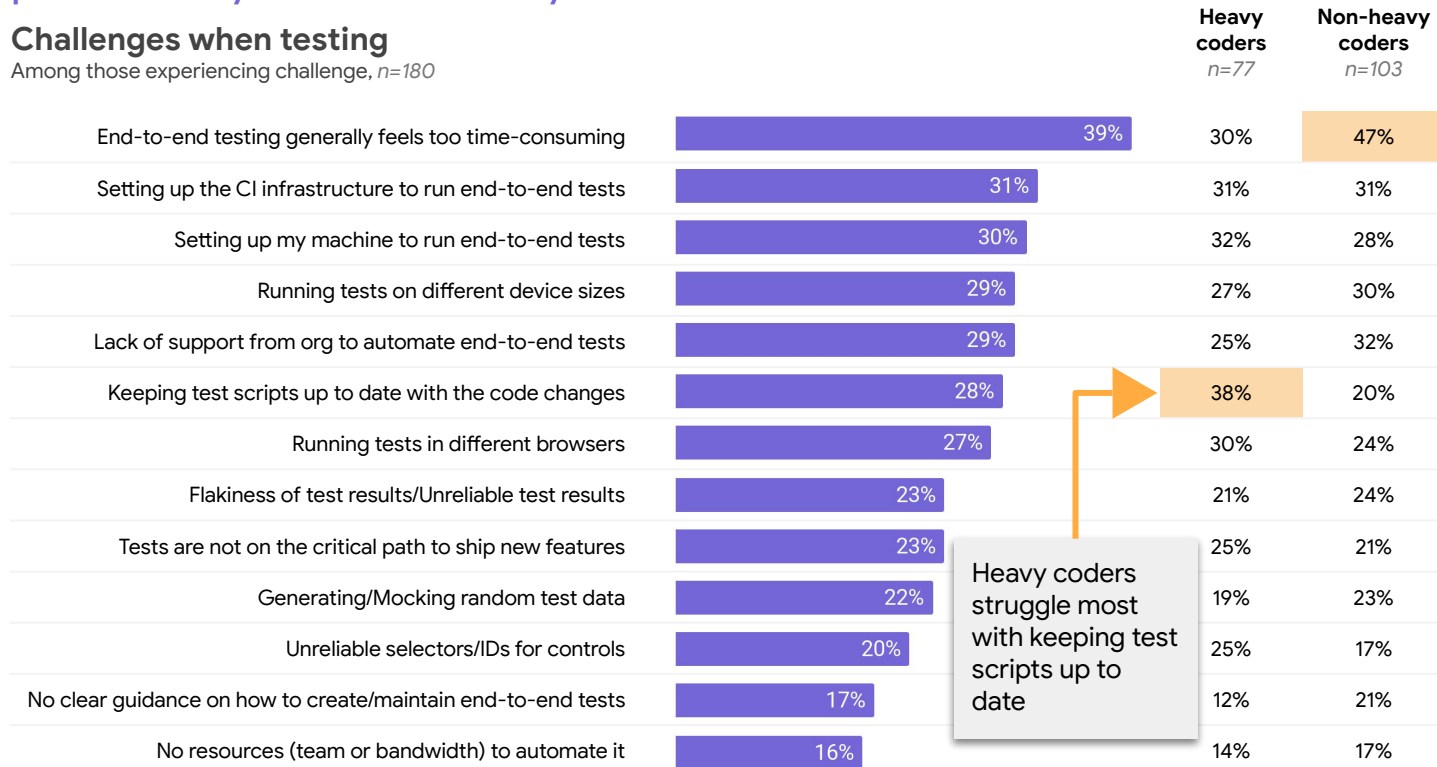
Non-heavy coders perform more automated end-to-end tests, and tend to do more types of testing than do heavy coders.



Feeling end-to-end testing is too time consuming is the top challenge - particularly for non-heavy coders

Challenges when testing

Among those experiencing challenge, $n=180$



Heavy coders struggle most with keeping test scripts up to date



Trend Notes:

Challenges are shuffled and reordered this wave, e.g., *being too time consuming* emerging as the leading challenge after posting a middling performance in Q4.

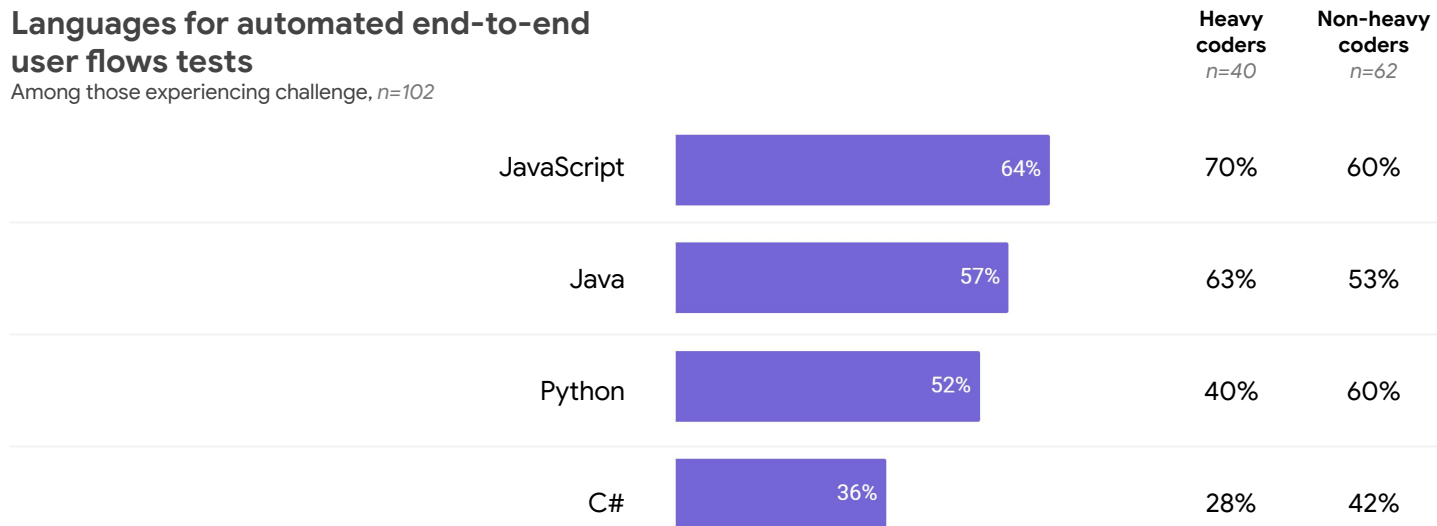
While multiple factors are likely at play, markets play a role: this quarter's top challenges have historically been highly ranked in the US, India, and the UK, and less important in other markets not included in this wave's research.



JavaScript is most common for end-to-end user testing

Languages for automated end-to-end user flows tests

Among those experiencing challenge, $n=102$

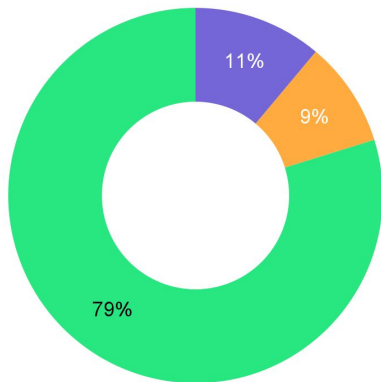




Keeping test infrastructure up to date is the most common challenge for those automating cross-browser tests

Cross-browser testing

Among those experiencing challenge, $n=116$



Manually only	Automation only	Both manually and automated

The small subset of WebDevs who *only* perform manual cross-browser tests are doing so because the **majority of their end users are using just one browser**; a feeling that manual tests are sufficient or only running a cross-browser test when bugs are reported are also common reasons.

Challenges with automating cross-browser tests

Among those automating cross-browser tests, $n=103$

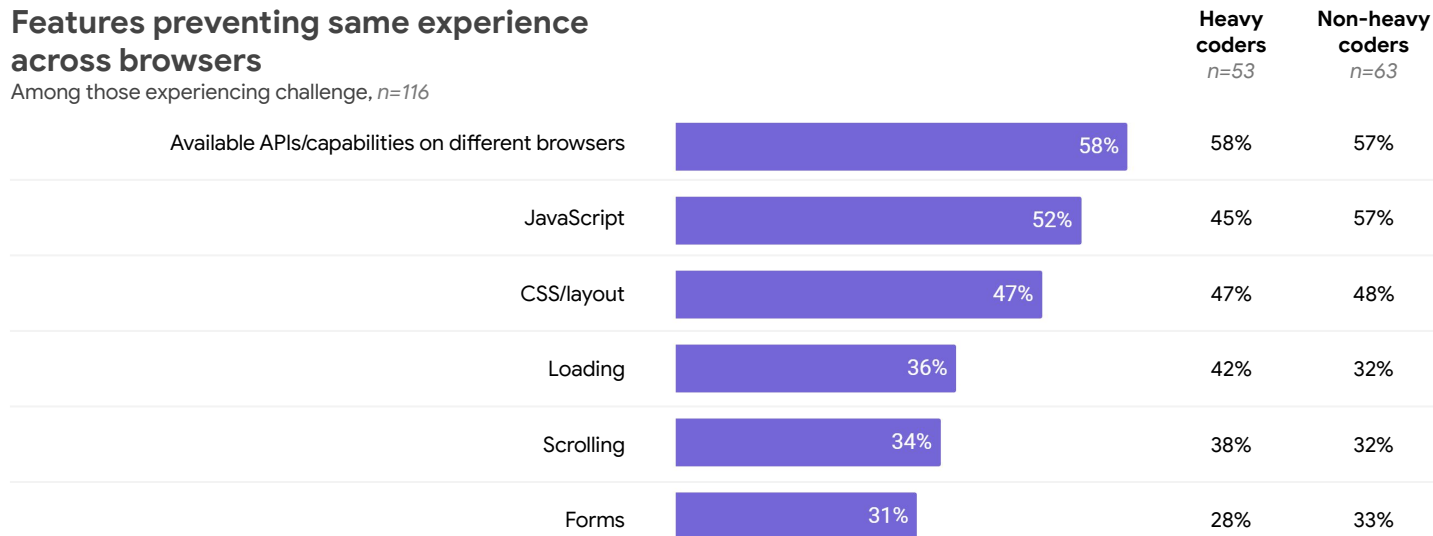
		Heavy coders $n=46$	Non-heavy coders $n=57$
Keeping test infrastructure up to date	42%	28%	53%
Time investment to automate cross-browser tests is too high	37%	37%	37%
Setting up the CI infrastructure to run cross-browser tests	34%	26%	40%
The tests take too much time to run	33%	33%	33%
Setting up my machine to run cross-browser tests	32%	28%	35%
Getting tests to run on multiple browsers	32%	35%	30%
Tests are not on the critical path to ship new features	31%	37%	26%
Finding the root cause after a test has failed	30%	26%	33%
Flakiness of test results/Unreliable test results	24%	28%	21%
No clear guidance on how to create/maintain cross-browser tests	22%	17%	26%



Differing APIs and capabilities across browsers poses the biggest challenge

Features preventing same experience across browsers

Among those experiencing challenge, $n=116$



Bugs and/or missing features render consistent browser experiences difficult

Reasons same experience across browsers is challenge

Among those experiencing challenge, n=150

		Heavy coders n=71	Non-heavy coders n=79	Agency n=122	Non-agency n=28
Bugs in features in some browsers	69%	72%	66%	66%	82%*
Missing features in some browsers	62%	59%	65%	66%	46%*
I don't know what will work across browsers	12%	11%	13%	11%	14%*

Question text found in speaker notes.
*Small base size (n<30)



Slow or buggy tools are the biggest challenge, particularly for non-heavy coders - heavy coders struggle most with missing documentation

Challenging aspects of developer tools

Among those experiencing challenge, *n*=143

		Heavy coders <i>n</i> =73	Non-heavy coders <i>n</i> =70	Agency <i>n</i> =110	Non-agency <i>n</i> =33
Developer tools are slow, unreliable or have bugs	43%	32%	54%	45%	33%
Developer tools are hard to use	39%	32%	47%	43%	27%
Developer tools are missing documentation	33%	40%	26%	36%	21%
There is no developer tool for the problem I'm trying to solve	27%	25%	29%	29%	18%
Correct developer tools exists, but they are missing key features	27%	25%	29%	29%	18%

Consistency, framework code, and difficulty achieving the desired experience are top UI challenges

Challenges with building UI components/experiences

All Developers, n=852

		Heavy coders n=412	Non-heavy coders n=440	Agency n=693	Non-agency n=159
Creating a consistent user experience across browsers	44%	45%	43%	45%	39%
Making sense of the HTML+JS+CSS code generated by my frameworks or tools	44%	37%	50%	45%	37%
Trouble achieving the UI/user experience I want	42%	40%	43%	42%	42%
Needing to use a plug-in or library, instead of building from native primitives	36%	37%	35%	39%	24%
None, I have not struggled to build/customize UI components/experiences	10%	13%	8%	10%	11%

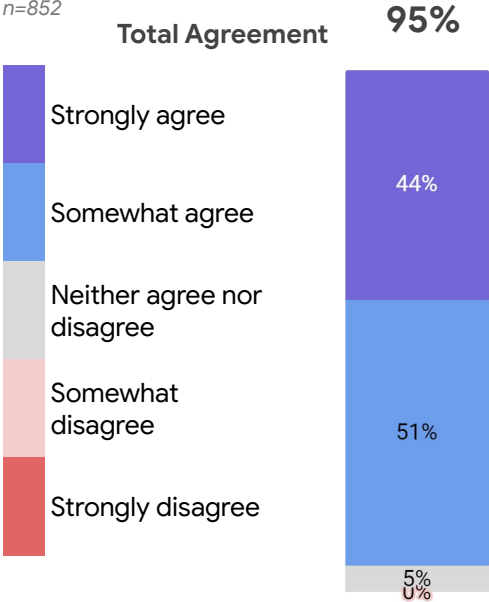
“React helps us build pages quickly and provide commonly used components.” Heavy coder, agency

“I use Angular Frameworks to build or customize because Angular makes clear the two essential reason to use this: their speed & performance, incredible tooling.” Heavy coder, non-agency

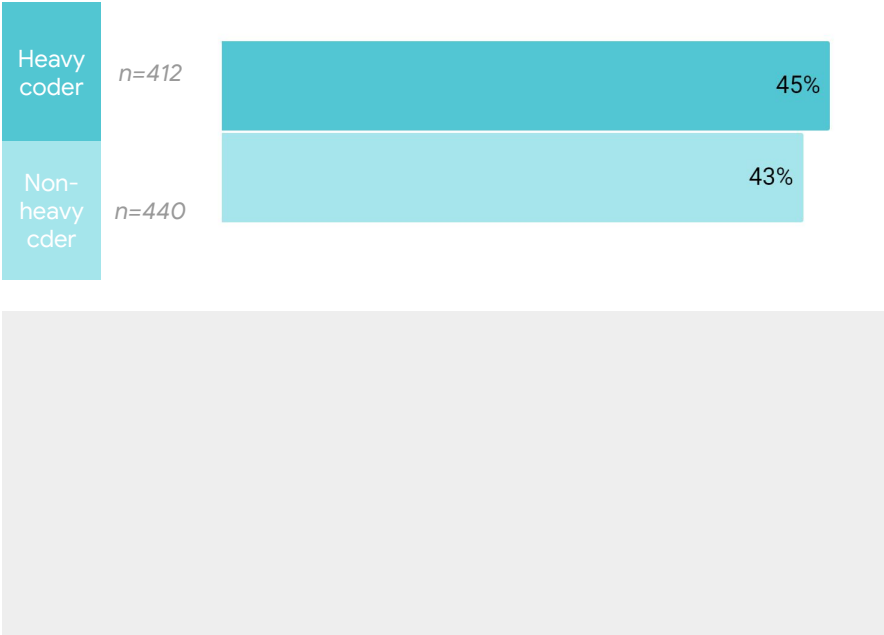
WebDevs agree they have all the functionality they need to build their web apps

Functionality to build web app available on Web platform

All Developers, n=852



Top Box [Strongly agree] by Developer Type



03

Profiling

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Profiling

Gender	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Male	75%	79%	71%	73%	83%
Female	25%	21%	29%	27%	17%
Country	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
United States	35%	34%	35%	35%	33%
United Kingdom	32%	30%	34%	32%	32%
India	33%	36%	30%	33%	35%
Development type	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Desktop	25%	24%	26%	20%	48%
Mobile	3%	3%	2%	3%	1%
Both	72%	73%	72%	77%	51%

Profiling

Employment status	Total <i>n</i> =852	Heavy coders <i>n</i> =412	Non-heavy coders <i>n</i> =440	Agency <i>n</i> =693	Non-agency <i>n</i> =159
Working as a full-time employee	94%	95%	93%	94%	97%
Working at a company or business I own	3%	4%	2%	3%	1%
Working as a freelancer	2%	0%	3%	2%	1%
Working as a part-time employee	1%	<1%	1%	1%	1%
Working as a consultant	<1%	0%	<1%	<1%	0%
A student	<1%	0%	<1%	<1%	0%

Business focus	Total <i>n</i> =852	Heavy coders <i>n</i> =412	Non-heavy coders <i>n</i> =440	Agency <i>n</i> =693	Non-agency <i>n</i> =159
Develop products for end consumers	19%	16%	22%	17%	28%
Develop products for other companies	5%	7%	4%	5%	4%
Develop products for both end consumers and other companies	76%	77%	74%	78%	67%

Profiling

Development services	Total <i>n</i> =852	Heavy coders <i>n</i> =412	Non-heavy coders <i>n</i> =440	Agency <i>n</i> =693	Non-agency <i>n</i> =159
Yes	81%	79%	84%	100%	0%
No, we only develop in-house to meet our own needs	19%	21%	16%	0%	100%

Org size	Total <i>n</i> =852	Heavy coders <i>n</i> =412	Non-heavy coders <i>n</i> =440	Agency <i>n</i> =693	Non-agency <i>n</i> =159
1-49 employees	14%	16%	11%	13%	18%
50-249 employees	17%	15%	19%	17%	16%
250-499 employees	20%	14%	25%	17%	31%
500-999 employees	19%	13%	26%	19%	23%
1,000-9,999 employees	22%	28%	15%	24%	11%
10,000+ employees	9%	14%	4%	10%	1%

Profiling

Number of team members	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
1	7%	10%	5%	8%	3%
2	3%	3%	2%	3%	2%
3-4	8%	10%	7%	8%	12%
5-9	16%	16%	17%	18%	6%
10-19	36%	32%	39%	31%	58%
20+	30%	29%	30%	32%	18%
Development focus	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Web UI, CSS	28%	19%	36%	33%	8%
Web app/page functionality	23%	17%	29%	18%	46%
Server side functionality	2%	1%	4%	2%	4%
Both front-end and back-end development	46%	62%	32%	47%	42%

Profiling

Job role <i>Among employees/business owners</i>	Total <i>n=834</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=422</i>	Agency <i>n=677</i>	Non-agency <i>n=157</i>
Web Developer	71%	73%	70%	70%	77%
Web Designer	33%	35%	31%	34%	29%
Mobile Web Developer	24%	19%	29%	27%	13%
Android Developer	20%	21%	19%	20%	20%
CTO	19%	17%	20%	19%	15%
iOS Developer	18%	13%	23%	17%	20%
IoT Developer	17%	10%	25%	18%	15%
Director of IT	17%	10%	23%	18%	11%
Tech Lead / Engineering Manager	15%	10%	20%	17%	5%
Business developer	10%	4%	15%	12%	3%
Product Manager	6%	4%	8%	8%	1%
User Experience Designer / Researcher	6%	3%	8%	6%	2%
Quality Assurance Tester	3%	3%	4%	4%	2%
Director of Support	3%	1%	5%	3%	1%
Sys Admin	3%	1%	4%	3%	1%
Marketer	2%	1%	3%	2%	3%

Profiling

Job responsibilities <i>Mean %</i>	Total <i>n=834</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=422</i>	Agency <i>n=677</i>	Non-agency <i>n=157</i>
Front-end hands-on coding, testing or optimizing	27%	40%	15%	27%	29%
Planning or designing software, applications or services	14%	15%	14%	14%	14%
Managing staff who design, architect, code or test software, applications or services	13%	11%	16%	13%	16%
Managing CI pipelines	11%	8%	14%	11%	13%
Investigating technology and platform choices	10%	6%	13%	10%	7%
Back-end hands-on coding, testing or optimizing	9%	15%	4%	9%	10%
Designing visuals or interactions for web users	8%	4%	12%	9%	6%
Sales, marketing and business-development -related activities	7%	3%	11%	8%	5%

Profiling

Development platforms	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Windows (WPF, UWP, Windows Forms, Win32)	44%	37%	51%	44%	45%
Android (native apps/games)	42%	45%	38%	38%	58%
Internet of things	41%	38%	45%	37%	62%
Chrome OS	31%	14%	47%	34%	20%
iOS (native apps/games)	28%	27%	29%	25%	42%
Social Platforms (e.g., Facebook, WeChat, Whatsapp)	26%	15%	36%	28%	16%
macOS (native apps/games)	17%	8%	25%	14%	28%

Profiling

Development platforms <i>Mean %</i>	Total <i>n=834</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=422</i>	Agency <i>n=677</i>	Non-agency <i>n=157</i>
The Web	45%	55%	35%	47%	36%
Windows (WPF, UWP, Windows Forms, Win32)	10%	9%	11%	10%	11%
Android (native apps/games)	11%	12%	10%	10%	16%
Internet of things	11%	10%	11%	10%	16%
Chrome OS	7%	3%	10%	7%	4%
iOS (native apps/games)	7%	6%	7%	6%	9%
Social Platforms (e.g., Facebook, WeChat, Whatsapp)	7%	3%	11%	8%	3%
macOS (native apps/games)	3%	2%	5%	3%	6%

Profiling

Industry	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Design & Development service agency	29%	26%	31%	24%	47%
Business	8%	4%	11%	8%	6%
Media Editors or building software	6%	8%	5%	7%	2%
Finance	6%	4%	7%	6%	5%
Art & Design software	5%	5%	5%	6%	0%
Tools	5%	6%	4%	6%	3%
Games	5%	7%	2%	3%	11%
Communication	4%	3%	4%	4%	3%
Productivity	4%	6%	2%	4%	3%
Auto & Vehicles	3%	3%	3%	3%	1%
Entertainment	3%	4%	2%	3%	1%
Utility	2%	3%	2%	3%	1%
Enterprise	2%	3%	1%	2%	2%
Marketing/Market Research/Advertising	2%	1%	3%	2%	1%
Health & Fitness	2%	3%	1%	2%	1%
Education	2%	1%	2%	1%	3%

Profiling

Company revenue	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Less than \$10,000	<1%	<1%	1%	<1%	1%
\$10,000–\$49,999	1%	1%	2%	2%	0%
\$50,000–\$99,999	2%	1%	2%	2%	1%
\$100,000–\$499,999	3%	4%	3%	3%	3%
\$500,000–\$999,999	4%	6%	2%	4%	3%
\$1 million to just under \$5 million	6%	6%	6%	6%	8%
\$5 million to just under \$10 million	12%	12%	11%	11%	17%
\$10 million to just under \$25 million	17%	14%	20%	15%	25%
\$25 million to just under \$100 million	17%	13%	21%	17%	17%
\$100 million to just under \$500 million	15%	14%	16%	16%	8%
\$500 million to just under \$1 billion	10%	11%	9%	11%	8%
\$1 billion to just under \$5 billion	5%	5%	5%	4%	6%
\$5 billion or more	7%	12%	3%	8%	3%

Profiling

User journeys	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Subscription purchases	55%	58%	52%	54%	58%
Product purchases	54%	48%	60%	56%	45%
Customer acquisition / lead generation	51%	47%	54%	52%	45%
Media (audio/video) streaming	47%	43%	50%	46%	50%
Content consumption (reference guides, written materials)	20%	20%	20%	20%	18%
Gaming	13%	13%	14%	14%	9%
Development products <i>Mean %</i>	Total <i>n=852</i>	Heavy coders <i>n=412</i>	Non-heavy coders <i>n=440</i>	Agency <i>n=693</i>	Non-agency <i>n=159</i>
Products for consumers ("B2C")	36%	36%	35%	36%	35%
Products for other businesses ("B2B")	36%	36%	36%	37%	32%
Products for internal users	28%	27%	29%	27%	33%