# Overall Satisfaction With the Web

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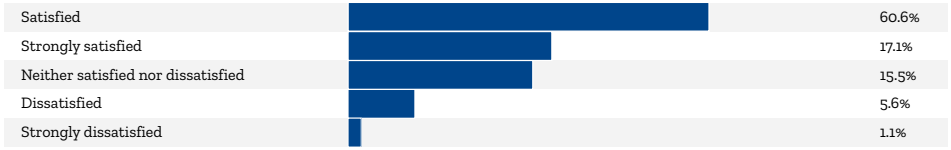
In 2019, we established a question about web developers' overall satisfaction with the web. We intended for the question to be repeated in future studies, creating a baseline measurement to see how satisfaction ratings change over time. The question was repeated in this year's survey, with a slight word change from very to strongly. We also changed the position of the question having it appear before the Needs Assessment. We thought asking a question about satisfaction after having respondents sort through things that cause frustration when developing for the web might lend a negativity bias to the results.

We asked survey respondents, "How would you rate your overall satisfaction with the Web, as a platform and set of tools, to enable you to build what you need or want?"

We learned that a majority, 77.7%, of respondents are either strongly satisfied or satisfied with the Web, whereas 6.7% are either very dissatisfied or dissatisfied. This represents a slight but not appreciably meaningful increase in satisfaction compared to last year, with a concomitant slight decline in dissatisfaction.

In 2019, 77% of respondents were very satisfied or satisfied with the Web, whereas 8.4% were very dissatisfied or dissatisfied.




*n = 6,645*

# Satisfaction by Subcategory

For a more nuanced view of overall web satisfaction, we added new questions for 2020. We asked respondents to rate their satisfaction with different subcategories of the web. We chose the categories based on the need themes from 2019. The subcategories were:

- Browser compatibility (differences between implementations)
- Documentation for the Web platform (HTML, CSS, JavaScript, etc.)
- Documentation for frameworks and libraries
- Browser developer tools
- IDEs
- Automated browser testing tools
- Tools for understanding and improving performance
- Tools for understanding and improving accessibility
- Tools for understanding and improving privacy and security

Each of the Satisfaction subcategories are shown below, as compared to the mean overall satisfaction score:


*n = 6,645*

Satisfaction with the following rates higher than the overall satisfaction, whereas the remaining sub categories score lower than overall satisfaction:

- Documentation for the Web platform (HTML, CSS, JavaScript, etc.)
- Browser developer tools
- IDEs

# Needs Assessment

# What is a Need?

Before sharing the top ten needs, we're briefly describing what a need is to help set the context for the following Findings section.

The need statements were informed from the fourteen pilot interviews conducted at the beginning of this project. The statements are written from the point of view of a web developer. The outline we used to create the need statements was:

I am a _____ (persona) trying to _____ (verb) but _____ (barrier) because _____ (cause), which makes me feel _____ (emotional reaction).

Putting this into action, it could read as follows:

I am a tourist trying to travel to another country but am struggling to understand the Visa process because it's complex and poorly communicated, which makes me feel frustrated.

We drew upon common practices in design thinking as well as product-development processes for inspiration when deciding to use need statements in the survey. Because they are written from the point of view of developers, we felt it would be an intuitive way to read, interpret, and rank to get to the top ten.

The need statements for this project were centered around the emotional reaction of frustration. If a web developer experiences frustration in regards to web development, there may be an underlying opportunity for browser vendors to help solve that frustration.

**Changes Between 2019 and 2020**

We made changes to the needs list between the first and second iteration of the study, but kept the overall list at 28. There were minor edits to the phrasing of some of the need statements, but more importantly we removed some statements and added new ones.

We removed the following need statements in the 2020 survey:

- Deciding what to learn next to keep my skill set relevant. *(Ranked 19 in 2019)*
- Finding a community of peers. *(Ranked 27 in 2019)*
- Fixing a bug once it's been identified. *(Ranked 28 in 2019)*

Those were replaced with these new need statements:

- Working with different tracking protection and data storage policies in browsers.
- Using web technologies in a native or hybrid context (e.g. using WebViews, Electron, CEF, or mini-apps).
- Lack of support for progressive web apps (PWAs)

# Ranking Methodology

Using the Maximum Difference Scaling (MaxDiff) methodology, we asked survey respondents to evaluate a total of 28 need statements. Respondents saw sixteen sets comprising five need statements, ensuring that each of the 28 needs was seen ~3x by each respondent over the length of the exercise. For each set they were instructed to pick the one need that causes them the least frustration and the one need that causes them the most frustration. A single need statement could appear more than once within the sixteen sets.

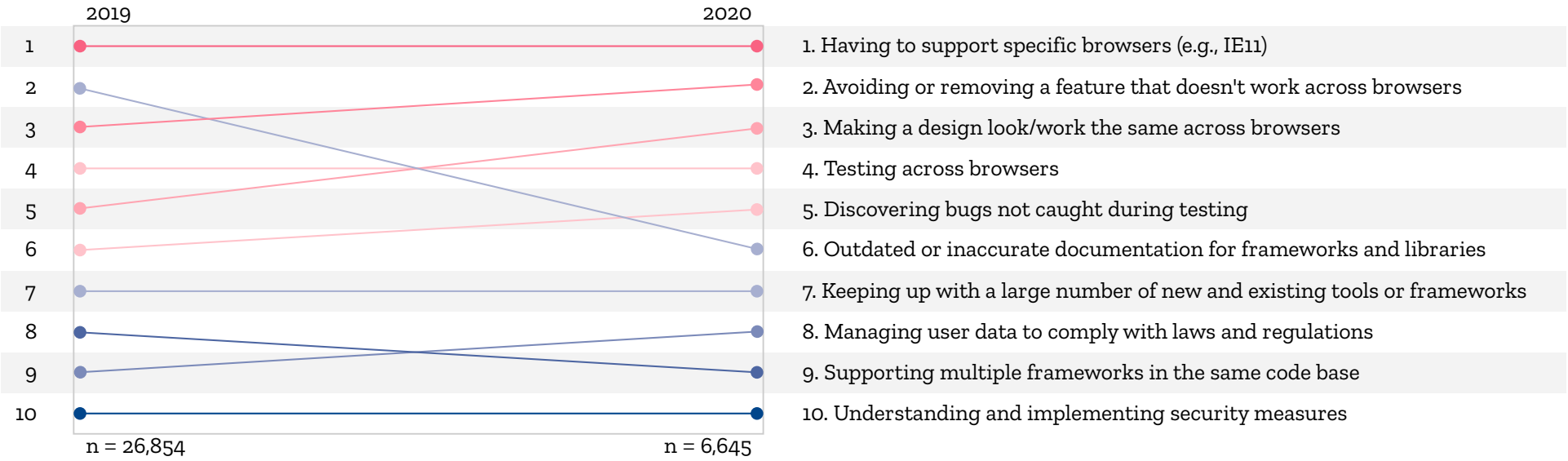
It is important to note that just because a need may not rank as the least frustrating within a set, that does not mean it causes the least frustration. It could imply that the respondent does not have experience with the subject matter or does not prioritize that subject within their work.

For 2020, we employed more sophisticated analysis of the MaxDiff data. We expand on that in the methodology section. In short, this year we:

- Used Python to code, clean, and visualize the data
- Employed the Choice-Based Conjoint/Hierarchical Bayes (CBC/HB) standalone estimation module from Sawtooth Software to estimate MaxDiff utilities
- Eliminated inconsistent responders
- Eliminated speeders who were below a response consistency threshold
- Ratio scaled the needs, converting them to importance (frustration) scores that sum to 100 across the set of items

# Top Ten Needs

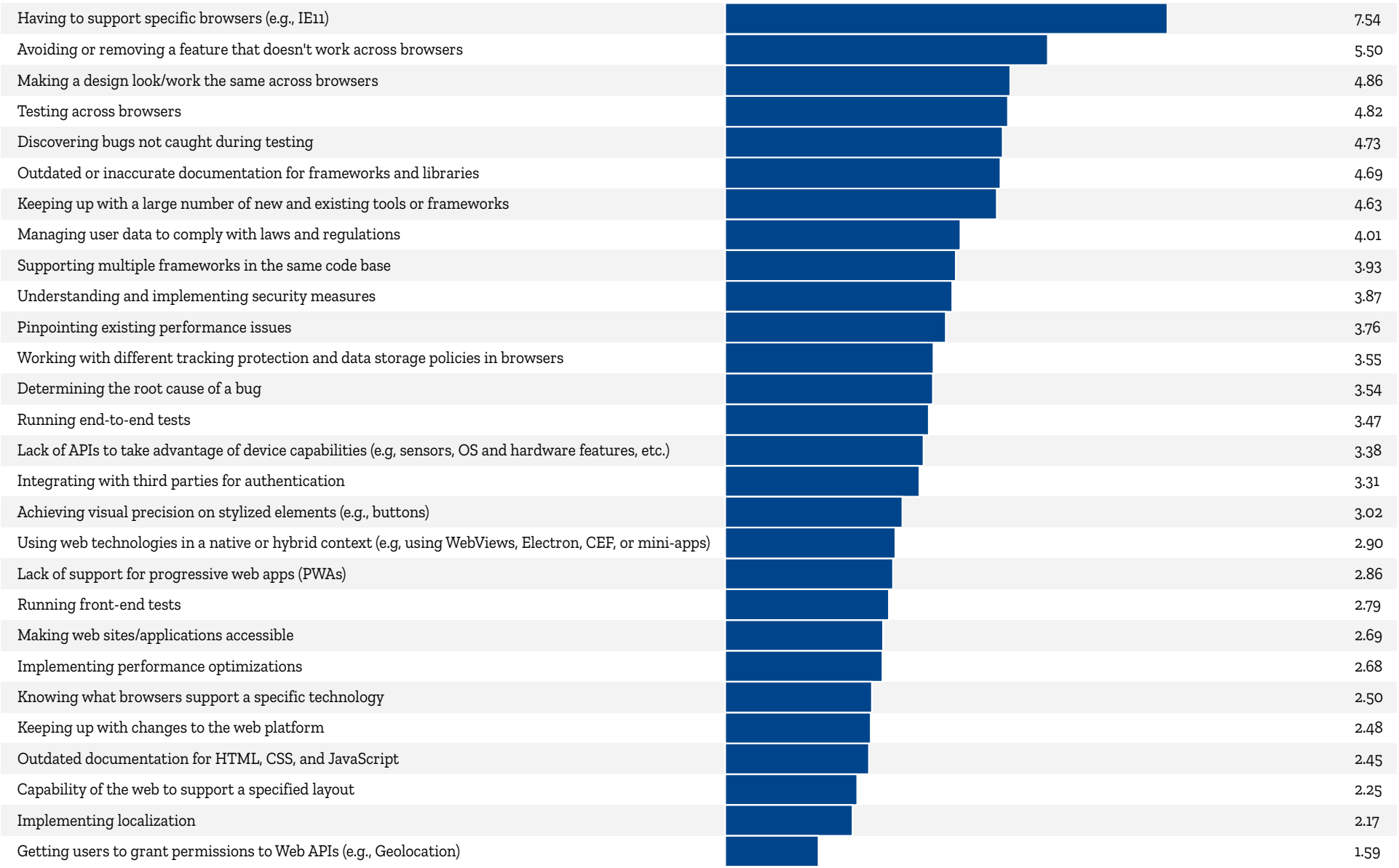
The chart below shows the changes in the top ten needs between 2019 and 2020. The top ten needs stayed the same, however their order changed.



# Ranking of All Needs

The chart on the following page display bars of the mean frustration scores for all 28 needs. These sum to 100 across the needs and are ratio scaled. Any mathematical relationship can be evaluated across the items. For example, an item with a score of 6 is 2x more frustrating than an item with a score of 3; an item with a score of 5 is 5x more frustrating than an item with a score of 1. Simply divide the larger score by the smaller score to learn any ratio difference between items.

# Ranking of All Needs

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# Needs Segmentation

Underneath the surface, there is a large degree of heterogeneity when it comes to developer needs and frustrations. The mean Max-Diff scores can hide this heterogeneity. New for this year are results of a segmentation analysis to better understand the richness of the data. Seven segments emerged. We created somewhat-whimsical names based on which needs pop up as more important for each group.

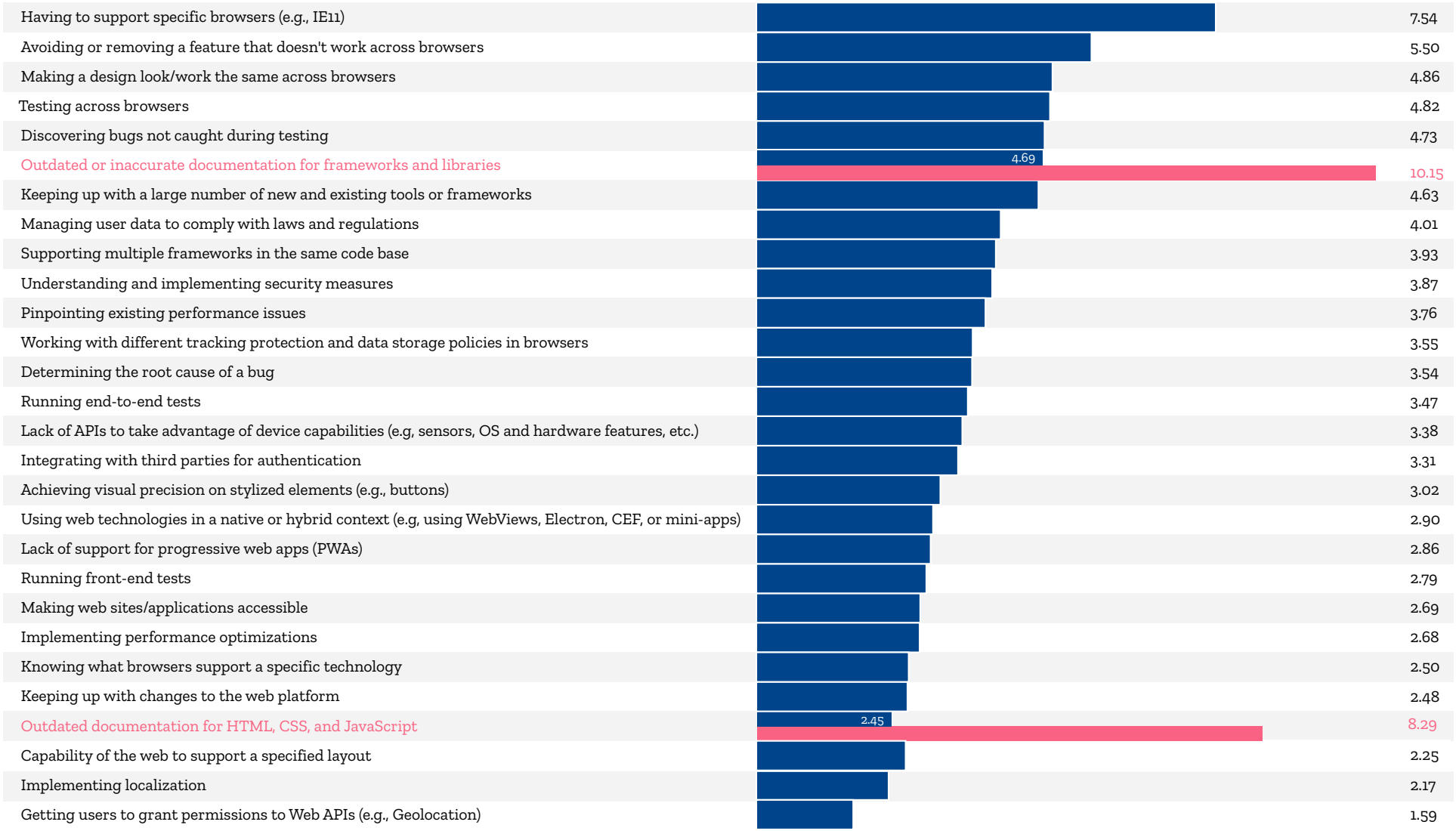
1. Documentation Disciples
2. Browser Beaters
3. Progressive Programmers
4. Testing Technicians
5. Keeping Currents
6. Performance Pushers
7. Regulatory Wranglers

We arrived at these segments from a k-prototypes model with seven clusters or segments. More on how we arrived at these segments, and why we chose the k-prototypes model is in the methodology section.

Each segment has widely divergent needs that surface as the most frustrating when compared to the overall mean scores.

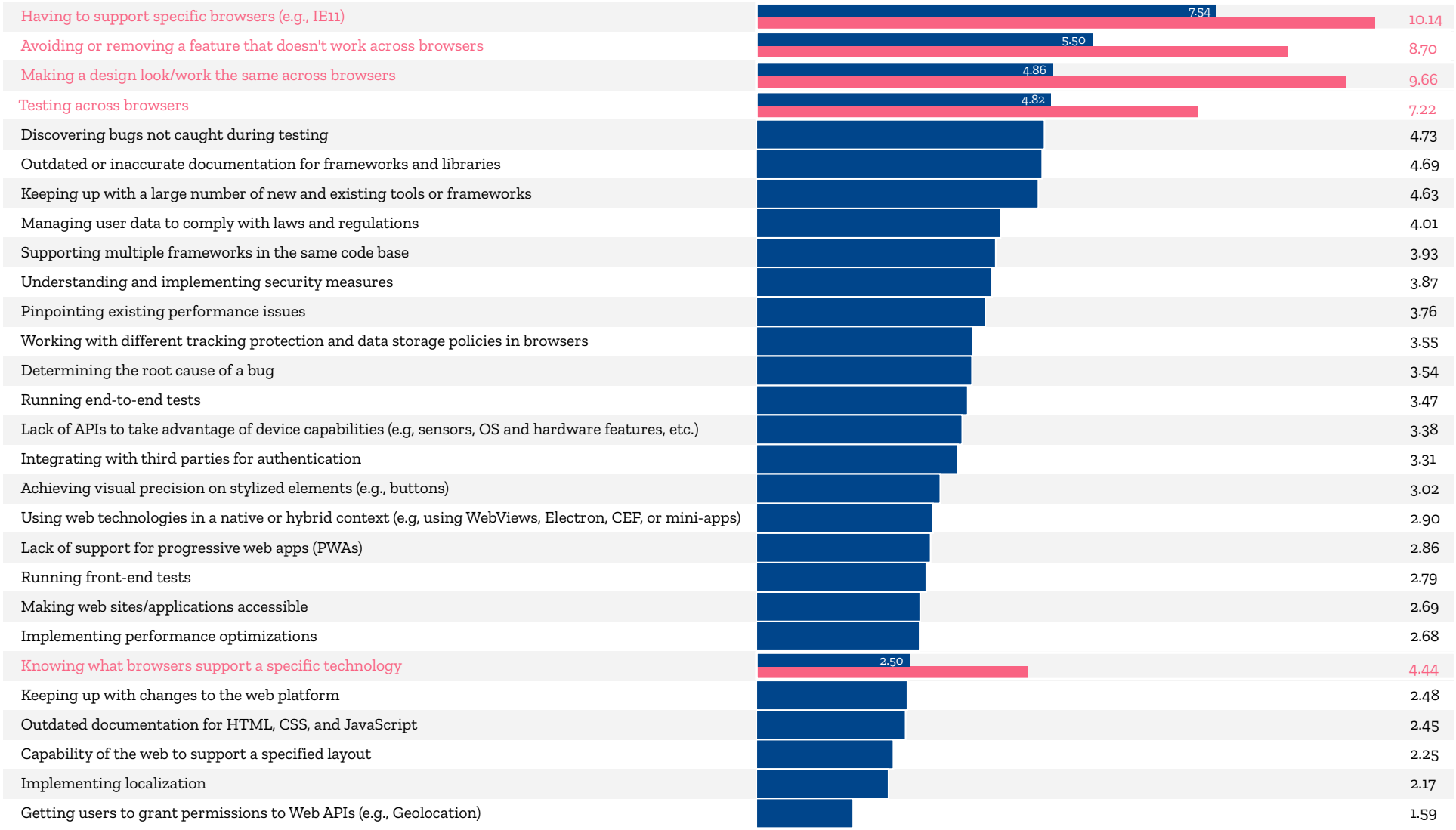
# Documentation Disciples

This segment makes up 13% of our respondents. As you may have noticed with the name, their top frustrations are outdated documentation for frameworks and libraries and outdated documentation for HTML, CSS, and JavaScript. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



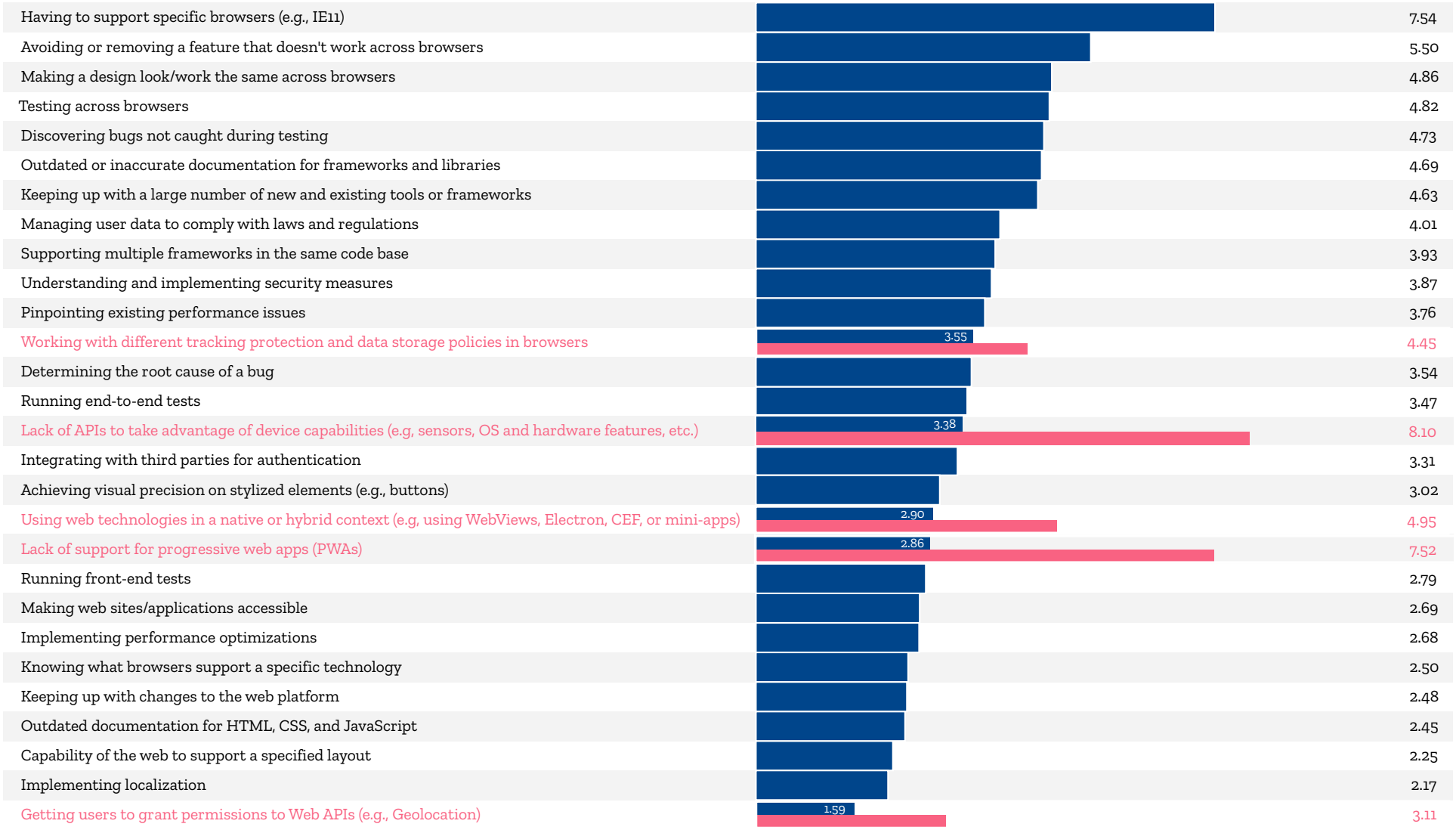
# Browser Beaters

This segment makes up 21% of our respondents, and is the largest segment. Their top frustrations are clustered around issues with browser compatibility, design and layout. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



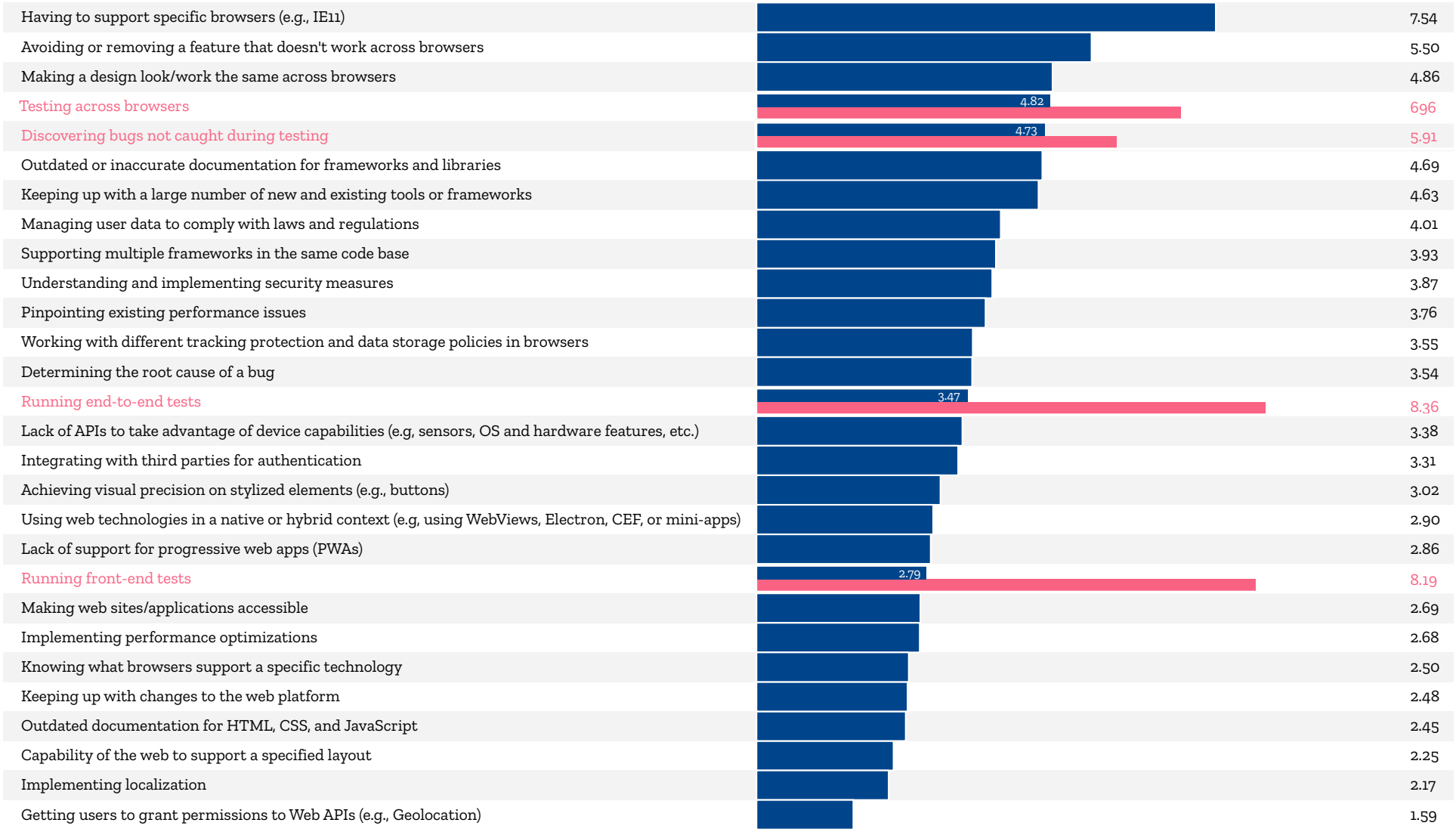
# Progressive Programmers

This segment makes up 11% of our respondents. Their top frustrations are clustered around lack of APIs, lack of support for Progressive Web Apps (PWAs), and using web technologies. For them, browser related needs were typically less frustrating than the overall mean. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



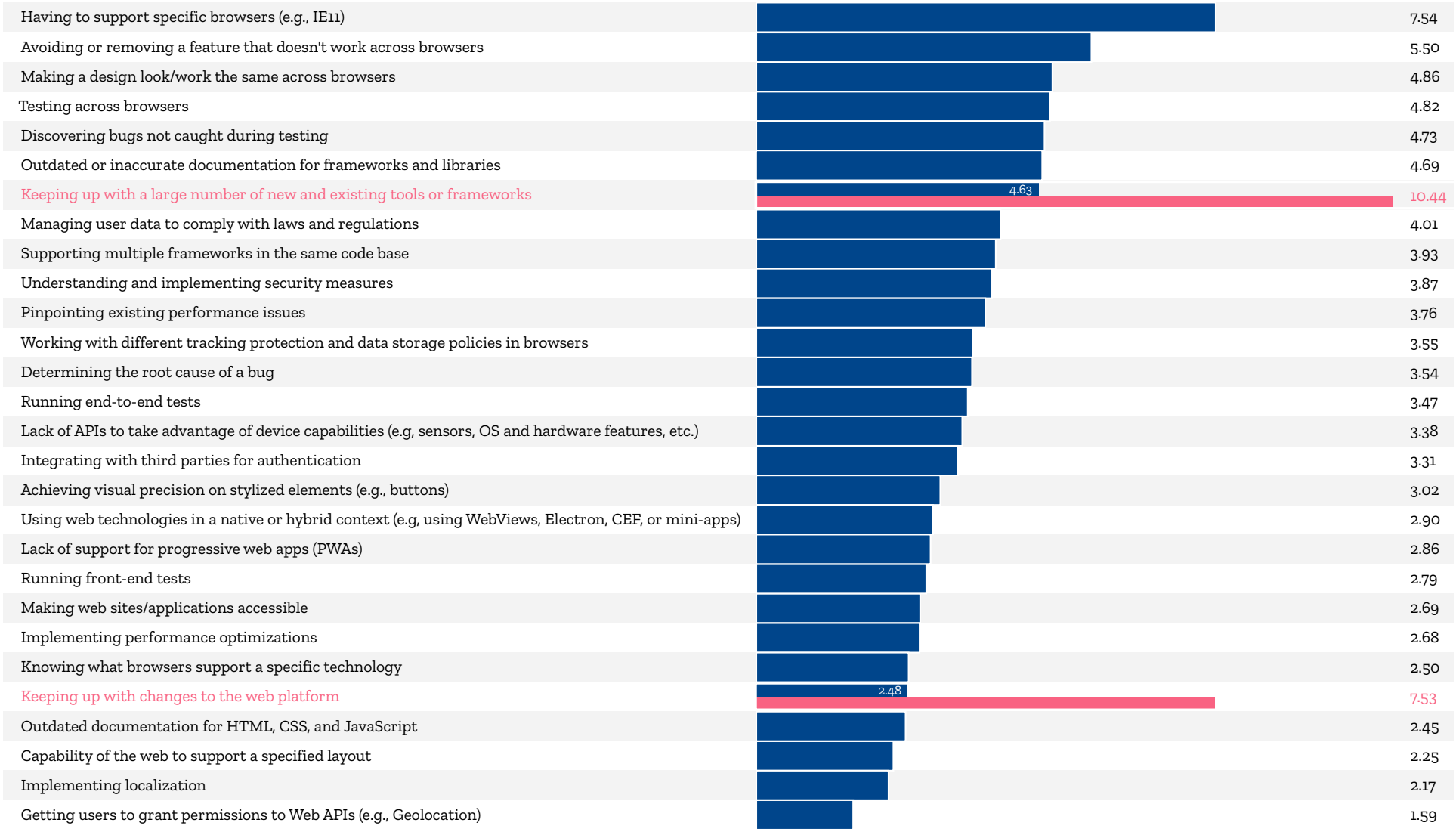
# Testing Technicians

This segment makes up 13% of our respondents. Needs statements relating to testing, whether end-to-end, front-end, or testing across browsers, caused the most frustration for this segment.  Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



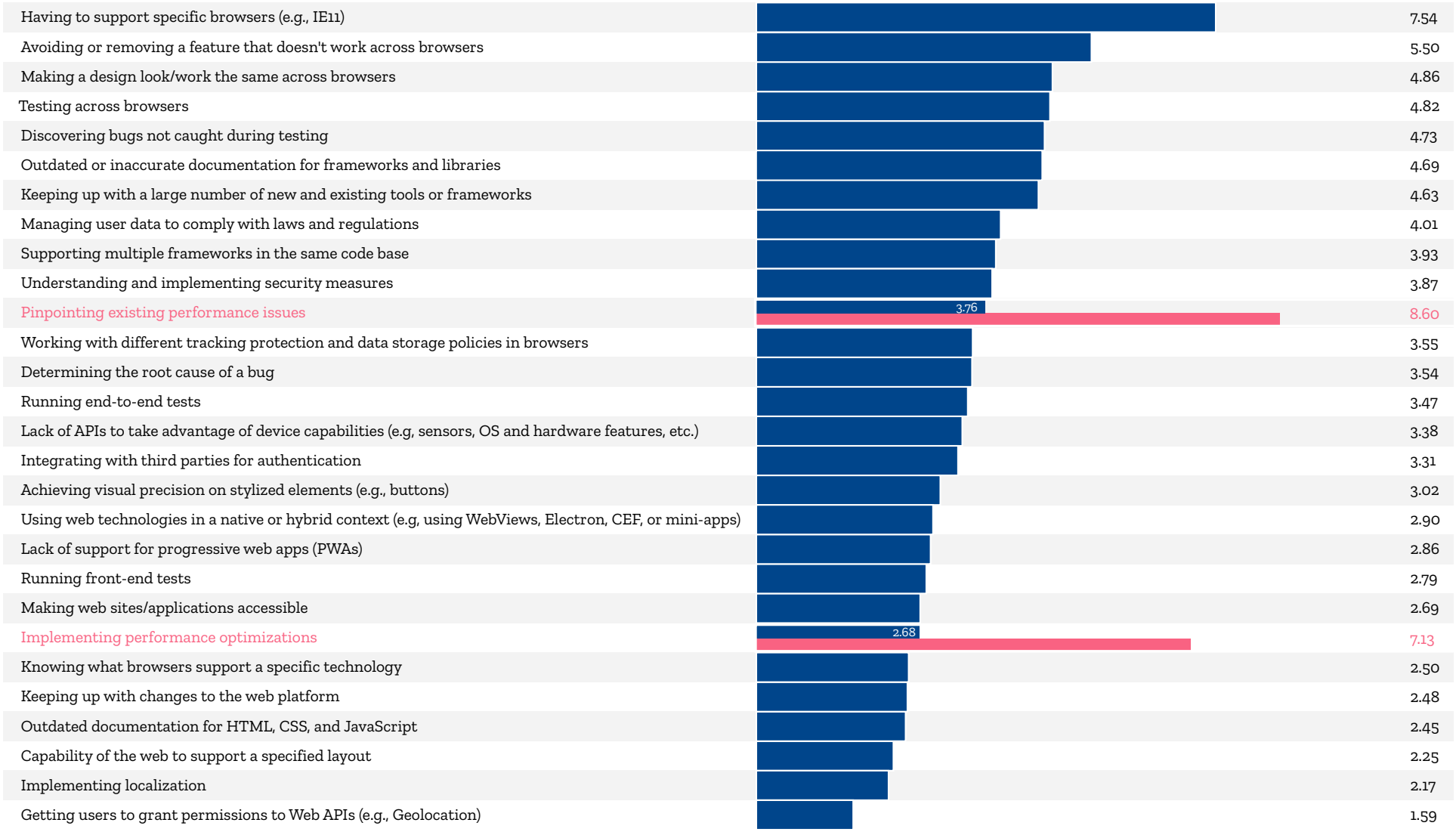
# Keeping Currents

This segment makes up 13% of our respondents. The need statements that this segment found most frustrating were keeping up with a large number of new and existing tools and frameworks and keeping up with changes to the web platform. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



# Performance Pushers

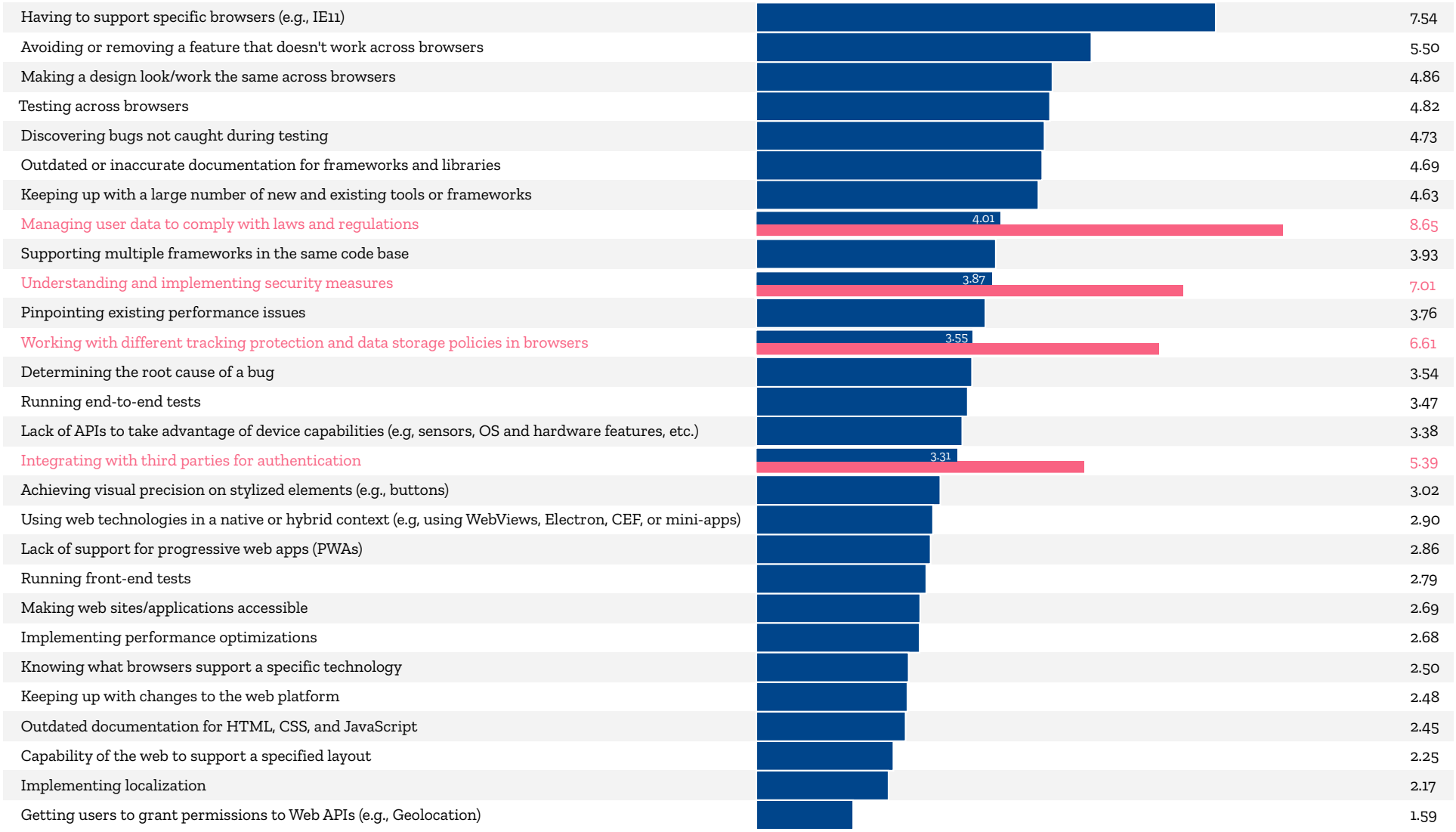
This segment makes up 15% of our respondents. Needs statements relating to performance and bugs are the top frustrations for this segment. Needs related to testing were rated as less frustrating than the overall mean, but discovering bugs not caught during testing is higher. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.




*n = 6,645*
*n = 979*

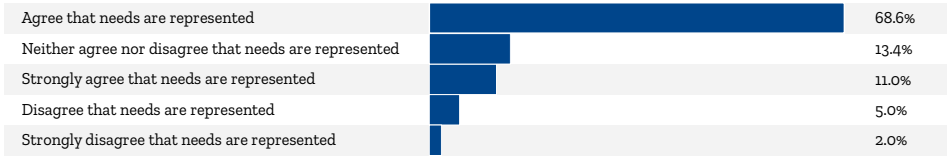
# Regulatory Wranglers

This segment makes up 14% of our respondents. This is the more eclectic segment, with a bigger assortment of needs rating higher than the overall mean. However, compliance with laws and regulations for managing user data is the most frustrating need. Their mean importance scores vary on each need statement, but the chart only highlights the top frustrations for this segment.



# How Developers Felt About the Needs List

Because the Developer Needs Assessment is intended to be reproduced annually, we asked survey respondents whether the list of 28 needs was a fair representation of the needs they experience as a web developer. While most respondents agreed the list was representative, 13.4% neither agreed nor disagreed which means there is room for improvement in the needs list. This is an improvement from 2019, where 21.6% neither agreed nor disagreed.

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