pcloudy
by opkey

Device Coverage Report 2024

Whitepaper

CONTENTS

#1
Introduction

Hello There,

Welcome to the 5th Edition of the Device Coverage Report. Every year, we release this report to inform the world about the trends around the evolution of our Smartphone devices and web browsers. After much research and analysis of various expert studies, we have arrived at our Device Coverage Report 2024. We believe this guide will help you pace ahead of your competitors and give a HeadStart in the ever- competing race to stay relevant to your users and the device market in general. We look forward to sharing various insights on the new technological advancements and hardware evolutions to keep you updated with all that's happening around us in the app testing space, the technological space of smartphone design and computation.

Our hope with this report is that it will be a guiding light to help you realign your testing goals at the start of the year and invest your time and effort in the meaningful work of technological advancements and get ahead of the curve to stay relevant and agile.

With that said, let's jump right in to understand where the Smartphone market is heading.

#2
New Wave of Connectivity

The advent of 5G brought in a new wave of communications to the world. However, there are still a lot many users who are yet to embrace 5G. The adoption of 5G however, is rampart. GSMA Intelligence predicts that 5G will overtake 4G in 2029 to become the dominant mobile technology by the end of this decade. There is still a significant population of users that are still using 4G services. With mobile devices becoming more affordable and 5G compatible, we are not too far from 5G becoming a network norm globally.


5G and Its Current State

5G, or the fifth generation of mobile network technology, represents a significant leap from its predecessor, 4G. It promises faster data speeds, lower latency, increased connectivity, and the capability to handle a massive number of connected devices simultaneously. As you mentioned, while the rollout of 5G is underway globally, its adoption varies across regions and demographics.

Figure 1

Mobile adoption by technology

Percentage of total connections
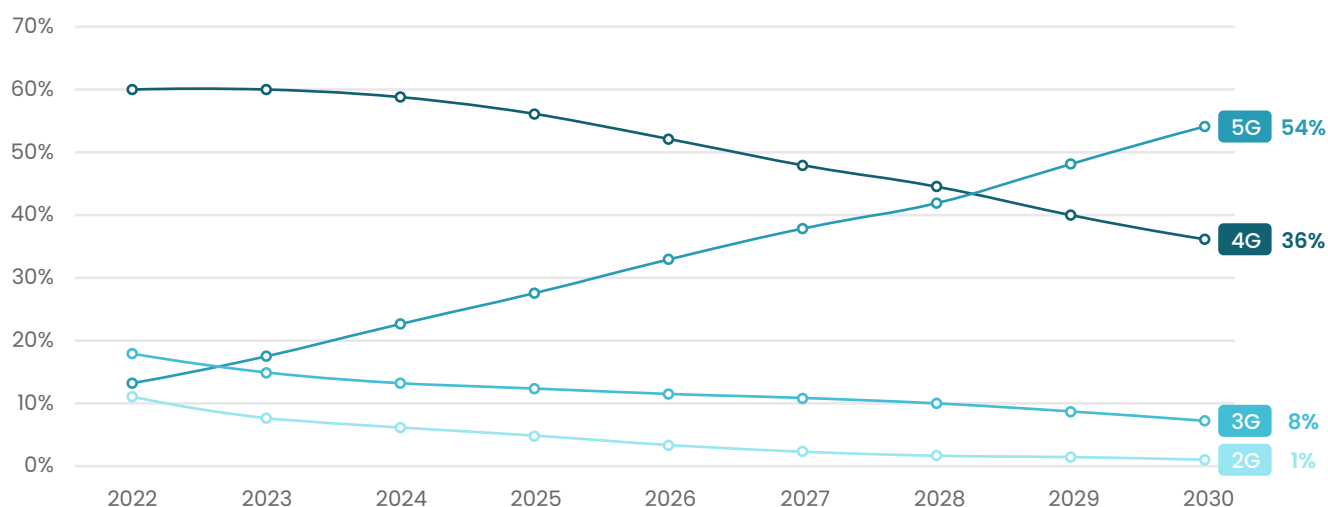
- **Adoption and Coverage:** While urban areas in developed countries might have substantial 5G coverage, rural areas and certain developing regions are still catching up. Factors influencing the adoption rate include infrastructure development, spectrum availability, regulatory policies, and consumer demand.

- **Potential and IoT Connectivity:** Beyond faster mobile browsing, 5G serves as a catalyst for the Internet of Things (IoT). The increased bandwidth and lower latency of 5G networks facilitate seamless connectivity for IoT devices. This paves the way for advancements in smart cities, autonomous vehicles, industrial automation, healthcare, and more.

The Road to 6G

Even as 5G is in its nascent stages of deployment and optimization, the telecommuni-cations industry is already setting its sights on 6G. The telecommunications industry is preparing for the fragmented 6G spectrum standardization. The implementation or adoption of 6G is still a few years away, Japan and China seem to have made headway into the 6G research compared to the West. The implementation of the 6G network spectrum is expected to enter different countries and telecommunications markets in 2028 or 2030.

- **Technological Advancements:** While specifics about 6G remain speculative, it's anticipated to offer even higher data speeds, ultra-reliable low latency communication (URLLC), and novel capabilities like holographic communications, advanced AI integration, and more.

- **Global Progress:** Countries like Japan and China have indeed shown significant progress in 6G research and development. Their proactive approach in setting research agendas, allocating resources, and fostering collaborations with academia and industry stakeholders has positioned them at the forefront. However, it's essential to note that Western countries and other regions are also ramping up their efforts, albeit at varying paces.

- **Expected Timeline:** A widespread implementation of 6G is projected for around 2028 to 2030. This timeline allows for extensive research, standardization efforts, infrastructure development, and regulatory preparations. 5G continues to evolve and expand its footprint globally, the telecommunications industry is laying the groundwork for 6G. The transition between these generations represents a continuum of innovation, offering immense potential to reshape industries, enhance connectivity, and drive societal advancement.

#3
The Growing Device Market

Gone are days where only two or three players existed in the Device market. We've come a long way from simple GSM phones to smartphones that have become powerful computing machines within the palm of our hands. The number of smartphone users globally has significantly increased over the past decade and we're sure that there is no stopping to this trend.

Figure 2

Smartphone users globally 2016-2023*
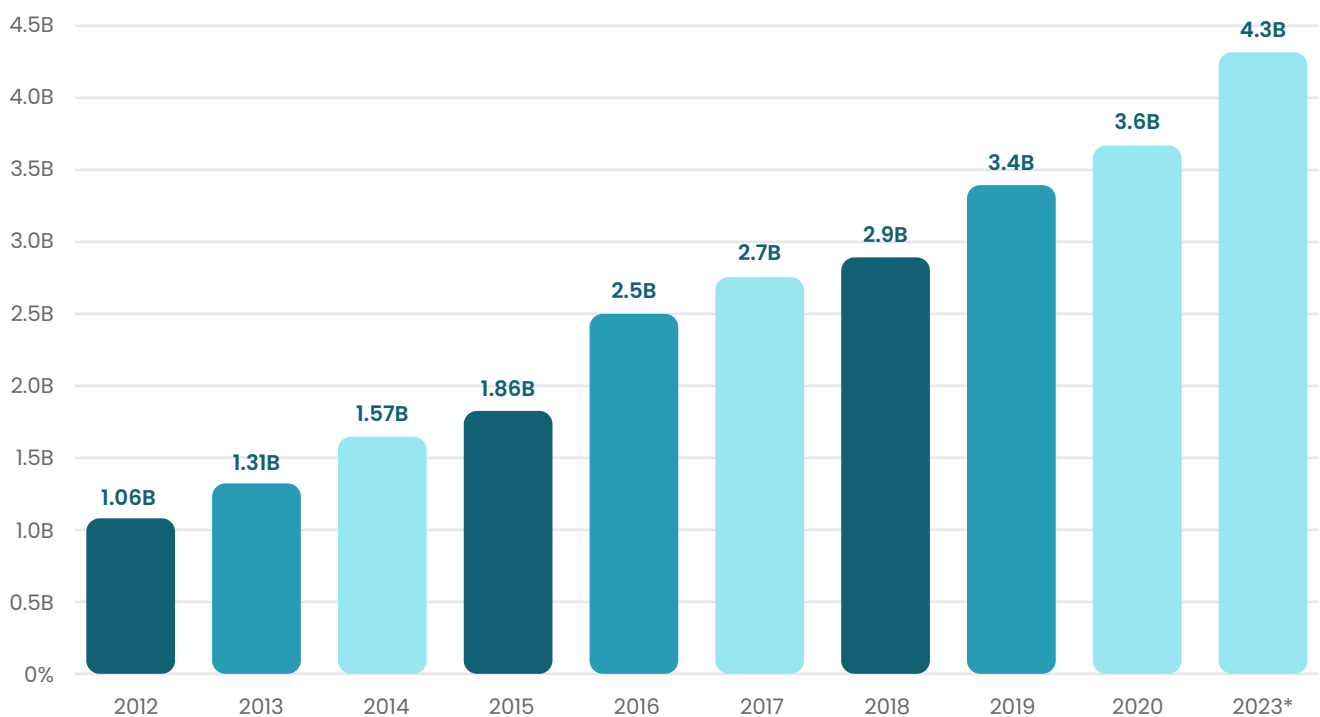
2024 is shaping up to be a game-changer for smartphones! We're not just talking about a spec bump here; we're talking about revolutionary innovations that will redefine how we interact with our trusty pocket companions.

- **The Notchless Camera Revolution:** Imagine a phone with a screen that stretches from edge to edge, uninterrupted by bezels or pesky notches. Thanks to advancements in under-display camera technology, this sci-fi dream might just become reality in 2024. Selfies will be seamless, video calls will be immersive, and you'll finally be able to appreciate that stunning wallpaper without any distractions.

  But the magic doesn't stop there. AI-powered algorithms are taking smartphone photography to the next level. Imagine real-time object tracking that keeps your child in focus during a backyard soccer game, or automatic scene recognition that adjusts settings for the perfect sunset shot. And let's not forget about those telephoto lenses! Get ready to zoom in on faraway objects with DSLR-like quality, capturing every detail from a bird soaring in the sky to the intricate patterns of a distant temple.

- **Foldable Screens: A New Era of Design and Innovation:** Remember those clunky flip phones from the early 2000s? Well, they're back, but with a high-tech twist! Foldable phones are shedding their gimmicky reputation and becoming sophisticated devices that offer the power of a tablet in the palm of your hand. Companies like Apple and Samsung are at the forefront of this innovation. Apple is expected to release a foldable iPad, diverging from the typical foldable phone trend. This device will showcase Apple's approach to integrating foldable technology into its product line. Samsung plans to expand its foldable phone lineup with up to six devices, including the Z Tab, Galaxy Z Flex, Z Fold Ultra, and Z Flip Ultra.

  And it's not just about the form factor. Foldable displays are pushing the boundaries of what's possible. High refresh rates will make scrolling buttery smooth, while variable refresh rate technology will adjust on the fly, saving precious battery life without compromising on performance.

- **Brains and Brawn: The Rise of the AI Powerhouse:** Smartphones are already pretty clever, but in 2024, they're getting downright genius. Powerful processors and dedicated AI chips will bring on-device AI processing to the forefront, making your phone faster, more efficient, and more personal than ever. The introduction of AI-powered chipsets like MediaTek's Dimensity 9300 and Qualcomm's Snapdragon 8 Gen 3 is set to transform the smartphone experience. These chipsets will enable native generative AI functionality, offering a leap in AI-powered tasks such as executing ChatGPT prompts from your phone.

  Imagine a personal assistant that anticipates your needs before you even ask, or a camera app that suggests the perfect filters based on the scene you're capturing. Augmented reality (AR) and virtual reality (VR) experiences will also get a major boost, opening doors to immersive gaming, interactive education, and even virtual try-on features for that new outfit you've been eyeing. With these AI-ready chips, smartphones will perform complex AI computations locally, offering faster, smoother operations with enhanced privacy. The integration of AI into smart assistants and the development of native AI apps will expand the functional horizon of smartphones, particularly in business applications.

- **Virtual Sim Technology: The Shift to eSIMs and iSIMs:** The shift towards eSIMs (embedded SIMs) and iSIMs (integrated SIMs) marks a significant change in mobile connectivity. eSIMs are updated and activated digitally, allowing for easy carrier changes and network switches, especially beneficial for travelers. Multiple eSIMs can be installed on one device, saving physical space for other components and reducing environmental waste.

In 2024, we expect to see the mass adoption of eSIM technology, with major smartphone manufacturers like Apple already launching eSIM-only phones. iSIMs, which integrate SIM functionality directly into the CPU, are emerging as a more power-efficient and compact alternative, though their development complexity may initially favor eSIMs.

- **Beyond the Tech: A Greener Future for Smartphones:** Sustainability is no longer just a buzzword; it's a driving force in the tech industry. Smartphone manufacturers are taking note, incorporating eco-friendly materials and reducing the production processes to manage their environmental impact. Get ready to see phones made from recycled plastics and with manufacturing processes that minimize energy consumption.

And the good news doesn't stop there. The European Union's initiative to introduce a common charger for mobile and electronic devices by 2024 marks a significant step towards standardization and environmental sustainability. This move aims to address the frustration caused by incompatible chargers and the environmental impact of electronic waste. With the USB Type-C connector becoming the standard, consumers can look forward to a more convenient and eco-friendly charging solution for a wide range of devices. This means less electronic waste, lower production costs, and, yes, one less charger to carry in your bag.

The year 2024

The year 2024 is shaping up to be a transformative period for smartphones. Foldable screens are pushing the boundaries of design and usability, virtual SIM technologies are redefining connectivity, and enhanced hardware configurations are bringing AI capabilities to the forefront. These developments promise not only improved performance and user experience but also greater environmental sustainability and innovative applications in various fields. As these technologies mature, they will continue to shape how we interact with our devices and the world around us.

#4
The Need for App Testing

With many mobile devices and browsers being added to the market, there is no doubt that the need to test your apps on multiple devices becomes of crucial importance and vital responsibility. In today's diverse mobile landscape, testing your apps on multiple real devices is no longer a luxury, but a necessity for ensuring consistency, quality, and ultimately, user satisfaction.

The mobile app market is fiercely competitive, and delivering a stellar user experience isn't just a bonus, it's a mandatory ingredient for success. Entering a marketplace riddled with diverse hardware, network conditions, and operating systems app testing becomes quite vital. And skipping testing your app thoroughly is like launching a product without quality control, inviting operational risks and potential user frustration. Bugs become hidden saboteurs, compatibility issues turn into roadblocks, and frustration erodes user loyalty.

However, a structured testing strategy equips your app with the resilience and adaptability it needs to thrive and ensure a flawless user experience in many of the following aspects -

- **Adaptability Across Screen Sizes:** From compact smartphones to expansive tablets, your app needs to flawlessly adjust its layout and visual elements to accommodate diverse screen dimensions. Testing on a range of screen sizes guarantees optimal readability, usability, and visual appeal on any device.

- **Compatibility with Diverse Hardware:** Processing power, memory, and storage capacities vary widely across devices. Testing on different hardware configurations ensures smooth performance, even on resource-constrained devices, preventing crashes and sluggishness.

- **Seamless Handling of Operating System Nuances:** Each operating system has its distinct user interface elements, navigation patterns, and compatibility requirements. Comprehensive testing across multiple operating systems, such as Android, iOS, and Windows Phone, ensures your app integrates seamlessly with each platform's unique characteristics.

- **Optimization for Varying Network Conditions:** Mobile data speeds and bandwidth fluctuate constantly. Testing under different network scenarios, from high-speed 5G to slow 3G or even offline modes, guarantees your app functions consistently and efficiently, regardless of connectivity strength.

Embracing a strategic testing approach is not just a technical exercise, it's a powerful differentiator in the fiercely competitive mobile app landscape. It's an investment in quality, trust, and ultimately, sustainable app success. By equipping your app with the resilience to navigate the complexities of the mobile ecosystem, you pave the way for exceptional user experiences, brand loyalty, and ultimately, a coveted position in the annals of successful mobile apps. Remember, in the ever-evolving digital landscape, adaptability is king.

#5
App Testing Challenges

In the ever-evolving landscape of mobile technology, developers face a formidable foe: fragmentation. This three-headed beast, composed of device fragmentation, OS fragmentation, and screen fragmentation, presents a constant challenge for app testing. Let's delve into each head and explore the challenges they pose.

Device Fragmentation

In a world filled with countless mobile devices, each with its own unique specs and quirks, testing apps becomes a tedious task. And that is the real problem of device fragmentation. The sheer variety of manufacturers, models, screen sizes, processors, and memory configurations make it nearly impossible to test an app on every single device.

Challenge:
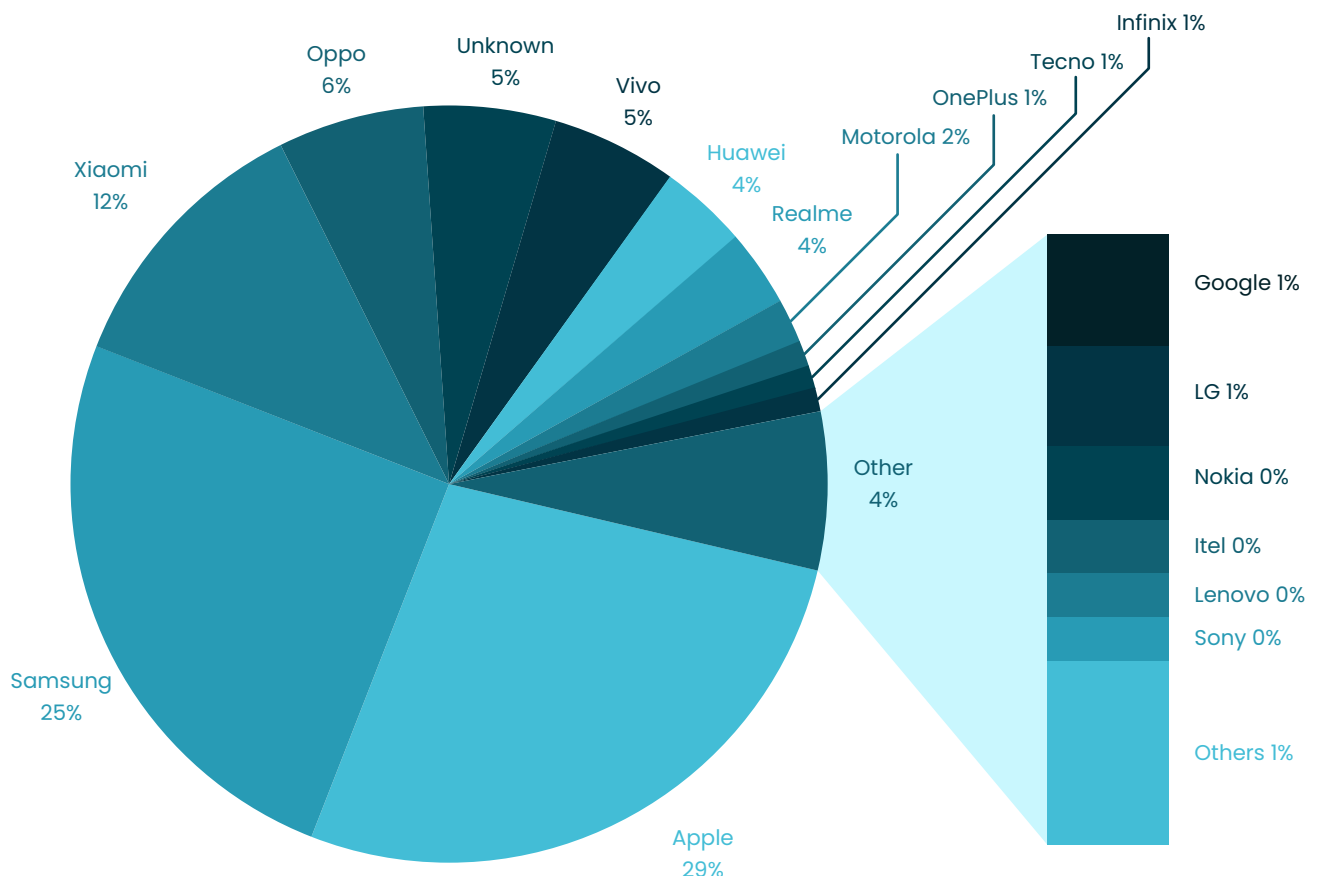
Ensuring app compatibility across a vast and ever-changing hardware landscape.

Impact:

Bugs and glitches might go unnoticed on specific devices, leading to poor user experience and negative reviews.

Figure 3

Device Fragmentation

Os Fragmentation

Adding another layer of complexity is the fragmentation within operating systems. Android, for instance, boasts numerous versions, each with its own set of APIs and functionalities. Even within the same version, customizations by device manufacturers can further complicate matters. Similarly, iOS has a variety of versions that iPhone users still avail.
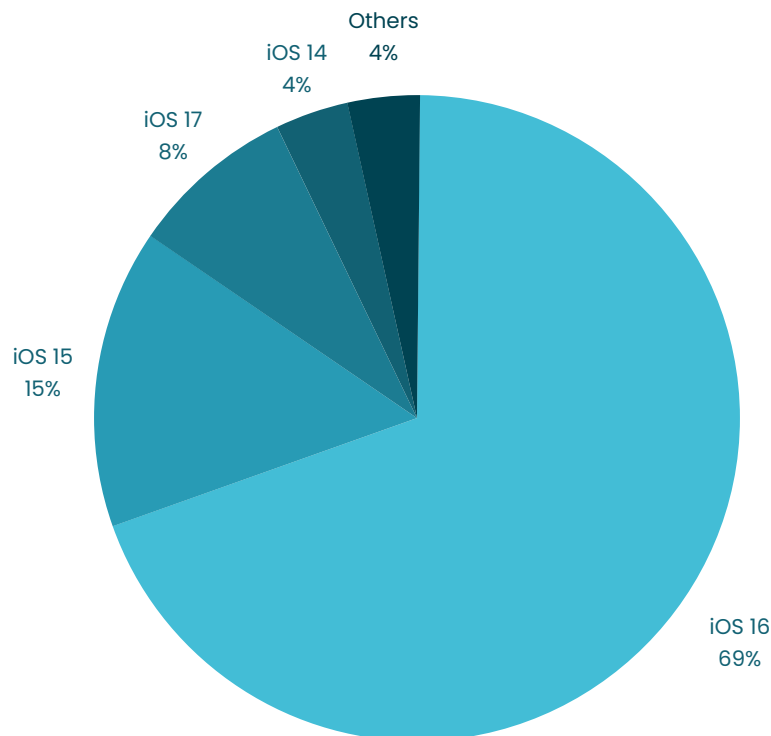
Challenge:
Catering to the diverse needs of different OS versions and customizations.

Impact:
Inconsistent app behavior or even crashes might occur on specific OS versions or devices.

Figure 4

iOS Fragmentation

Os Fragmentation

Android OS Fragmentation
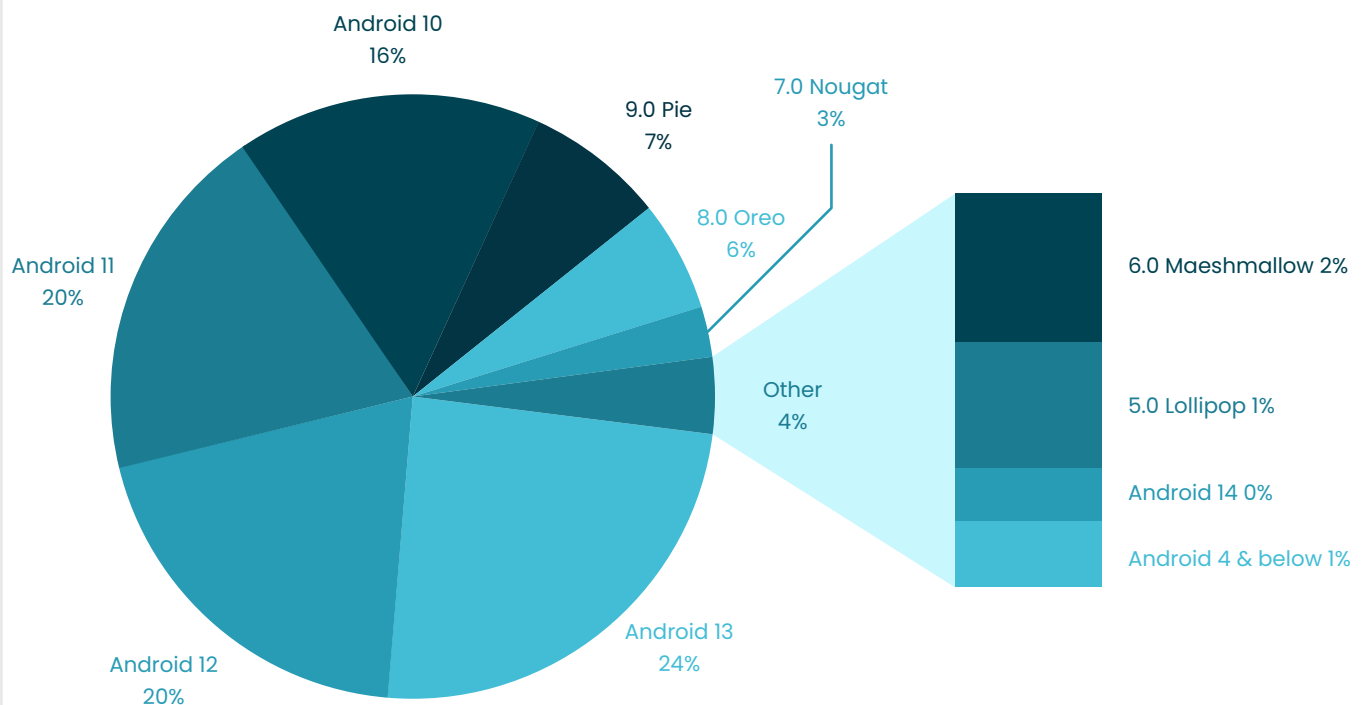
Screen Fragmentation

From the pocket-sized to the tablet-sized, screens come in all shapes and resolutions. This diversity throws another wrench into the testing process. What looks perfect on a high-resolution display might become jumbled and unusable on a lower-resolution one.

Optimizing app layout and functionality for a multitude of screen sizes and resolutions.

Text overflow, distorted elements, and layout issues can mar the user experience on specific devices.

Figure 6

Screen Resolution Fragmentation 2024

- 375x667 3%
- 393x851 3%
- 428x926 3%
- 360x760 3%
- 412x892 2%
- 360x640 3%
- 385x854 3%
- 375x812 4%
- 360x780 4%
- 393x873 5%
- 412x915 5%
- 414x896 6%
- 390x844 7%
- 360x800 11%
- 414x869 37%
- 384x854 2%
- 414x736 2%
- 412x869 1%
- 360x720 1%
- 430x932 1%
- 384x857 1%
- Other 28%

#6
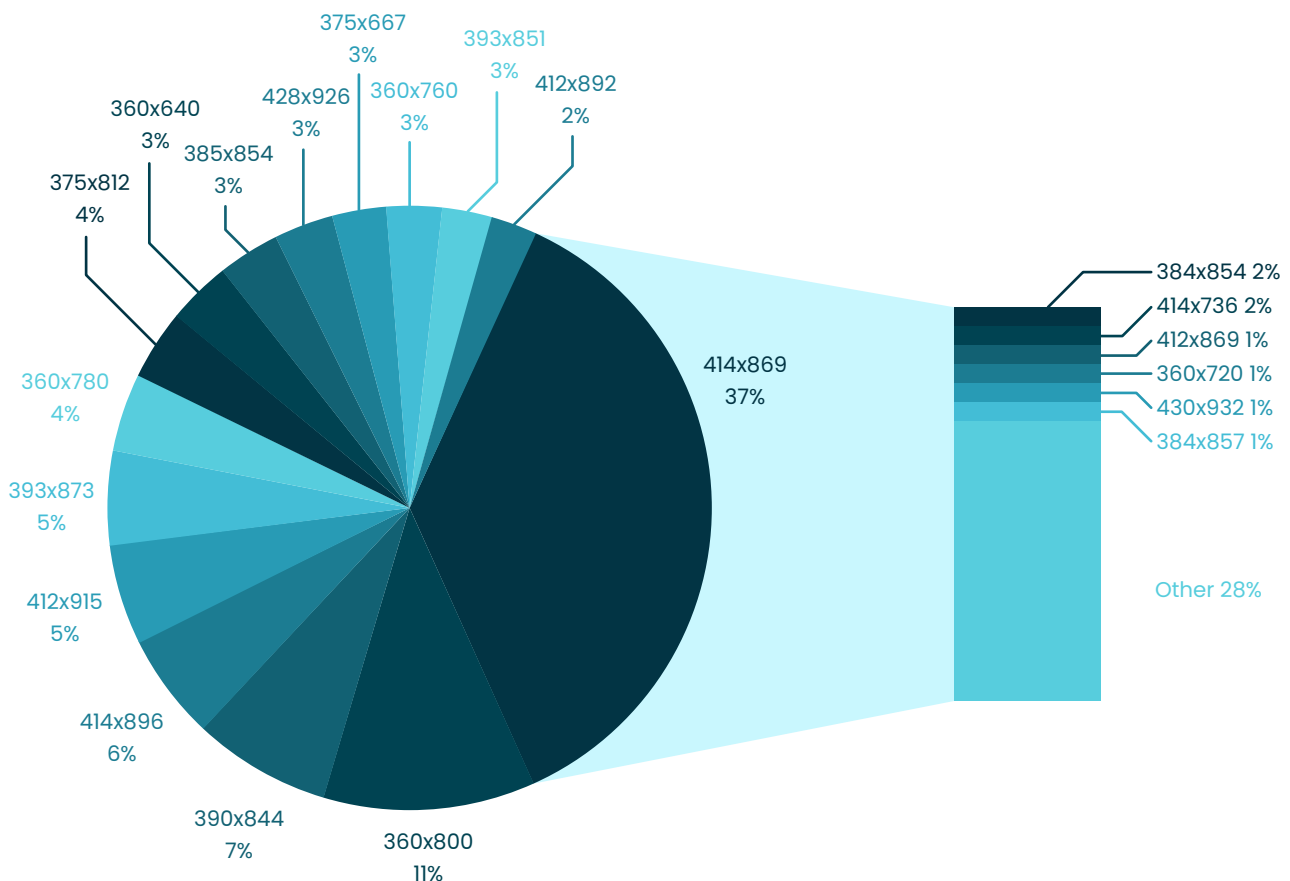
Popular Devices and Browsers used in 2023

Most Used Devices in the India Region

	Sl. No.	Make	Model	Android Version
High Priority Devices to Test On	1	SAMSUNG	Galaxy Note 20	13.0.0
	2	SAMSUNG	Galaxy S10	12.0.0
	3	SAMSUNG	Galaxy S23	13.0.0
	4	GOOGLE	Pixel 2 XL	11.0.0
	5	APPLE	iPhone 11 Pro	15.2.0
	6	SAMSUNG	Galaxy S9	9.0.0
	7	SAMSUNG	Galaxy M12	13.0.0
	8	SAMSUNG	Galaxy S22 Ultra	13.0.0
	9	SAMSUNG	Galaxy Note 9	10.0.0
	10	SAMSUNG	Galaxy F12	12.0.0
Moderate Coverage of Devices	11	APPLE	iPhone 11	17.0.2
	12	GOOGLE	Pixel 7	13.0.0
	13	SAMSUNG	Galaxy A7	6.0.1
	14	GOOGLE	Pixel 6 Pro	13.0.0
	15	SAMSUNG	Galaxy S22 Ultra	14.0.0
	16	GOGLE	Pixel 3	12.0.0
	17	SAMSUNG	Galaxy Note 20	13.0.0
	18	APPLE	iPhone 11 Pro Max	15.0.0
	19	SAMSUNG	Galaxy F22	12.0.0
	20	SAMSUNG	Galaxy A51	13.0.0
Additional Devices for Complete Coverage	21	SAMSUNG	Galaxy S22 Plus 5G	13.0.0
	22	SAMSUNG	Galaxy F23 5G	12.0.0
	23	SAMSUNG	Galaxy A03	12.0.0
	24	MOTOROLA	Edge 30	13.0.0
	25	GOOGLE	Pixel 7 Pro	13.0.0
	26	SAMSUNG	F42	12.0.0
	27	SAMSUNG	Galaxy M42	12.0.0
	28	VIVO	Y50	10.0.0
	29	SAMSUNG	Galaxy M10	10.0.0
	30	XIAOMI	Mi 11X	12.0.0

Most Used Devices Used in the US Region

	Sl. No.	Make	Model	Android Version
High Priority Devices to Test On	1	APPLE	iPhone 14 Pro	16.0.0
	2	APPLE	iPhone 7	14.4.0
	3	APPLE	iPhone 13 Pro	17.0.2
	4	APPLE	iPhone 14 Pro Max	17.0.0
	5	APPLE	iPhone XS	15.0.0
	6	APPLE	iPhone 12 Pro Max	14.6.0
	7	APPLE	iPhone 13 mini	15.2.0
	8	APPLE	iPhone 13 Pro	16.0.0
	9	APPLE	iPhone 13 Pro Max	17.0.0
	10	APPLE	iPhone 12 mini	17.0.2
Moderate Coverage of Devices	11	APPLE	iPhone 13	17.0.2
	12	SAMSUNG	Galaxy Note 10 Plus	11.0.0
	13	APPLE	iPhone 11 Pro	16.4.1
	14	APPLE	iPhone 11 Pro Max	16.3.0
	15	APPLE	iPhone 13 mini	16.4.0
	16	SAMSUNG	Galaxt M30s	11.0.0
	17	SAMSUNG	Galaxy S20 FE	12.0.0
	18	APPLE	iPhone 13	16.0.0
	19	APPLE	iPhone 12 Pro	16.4.0
	20	SAMSUNG	Galaxy S10e	12.0.0
Additional Devices for Complete Coverage	21	SAMSUNG	iPhone 12 mini	13.0.0
	22	SAMSUNG	Galaxy S20 Ultra	13.0.0
	23	GOOGLE	Pixel 3 XL	11.0.0
	24	APPLE	iPhone 12 Pro Max	17.0.0
	25	APPLE	iPhone 12 mini	16.3.0
	26	APPLE	iPhone 12	14.1.0
	27	GOOGLE	Pixel 4	12.0.0
	28	SAMSUNG	Galaxy S20 FE 5G	12.0.0
	29	GOOGLE	Pixel 4a	11.0.0
	30	GOOGLE	Pixel 5	13.0.0

Most Used Desktop Browsers Worldwide

	Sl. No.	Make	Model	Android Version
High Priority Browsers to Test On	1	Mac – BigSur	Safari	15
	2	Mac – Ventura	Safari	16.1
	3	Mac – Monterey	Safari	16
	4	Mac – Catalina	Safari	15.5
	5	Windows 11	Chrome	119.0.6045.160
	6	Windows 10	Chrome	110.0.5481.104
	7	Windows 10	IE	11.00.19041.1
	8	Windows 10	Chrome	107.0.5304.63
	9	Windows 10	MS Edge	108.0.1462.54
	10	Windows 10	Chrome	105.0.5195.102
Moderate Coverage of Browsers	11	Mac – Monterey	Safari	16.6
	12	Windows 10	Galaxy Note 10 Plus	115.0.5790.171
	13	Mac – BigSur	iPhone 11 Pro	14.0.3
	14	Windows 10	iPhone 11 Pro Max	116.0.1938.54
	15	Windows 10	iPhone 13 mini	111.0.5563.65
	16	Windows 10	Galaxt M30s	116.0.5845.141
	17	Windows 10	Galaxy S20 FE	109.0.05714.75
	18	Windows 11	iPhone 13	115.0.5790.171
	19	Windows 10	iPhone 12 Pro	104.0.5112.81
	20	Windows 10	Galaxy S10e	115.0.1901.188
Additional Devices for Complete Coverage	21	Windows 11	MS Edge	120.0.2210.61
	22	Windows 10	Chrome	112.0.5625.121
	23	Windows 11	Chrome	116.0.5615.121
	24	Mac – BigSur	Safari	16.1
	25	Windows 10	Chrome	118.0.5993.118
	26	Windows 10	MS Edge	110.0.1587.50
	27	Windows 10	Chrome	119.0.6045.160
	28	Windows 10	MS Edge	111.0.1661.41
	29	Mac – Monterey	Safari	15.5
	30	Windows 10	Chrome	89.0.4389.72

About the Report

What is this report about?

In this report, the focus is on the dynamic landscape of new devices entering the market. Recognizing the crucial importance of selecting appropriate devices for testing applications, the emphasis is placed on obtaining accurate information about popular devices. Drawing from an extensive user base of over 300K+ testers, the report identifies the most commonly used devices and browsers from a comprehensive array of devices and browsers on real mobile devices, tablets, and desktop computers, offering over 5,000+ device and browser combinations. The objective of this report is to highlight the prevalent mobile devices and browsers utilized on the platform, aiding users in making informed decisions regarding device and browser selection for app testing.

How did we collate this report?

We've collected data based on how our platform users utilize various devices throughout the year. This information offers a comprehensive overview of usage patterns of our devices and browsers. While our client base spans across different global regions, a significant portion primarily originates from the US and India. The report highlights the top 30 preferred devices and browsers for testing within these regions, based on some specific data and parameters.

Device Planner
The Perfect Solution

The Device Planner serves as an essential tool for testers seeking guidance on which devices to prioritize for optimal market reach. With its intuitive features, the Device Planner simplifies the selection process by allowing testers to designate a particular geographical area and specify the desired market penetration percentage. Based on these inputs, the tool curates a list of recommended devices for testing. This targeted approach enables testers to concentrate their efforts on ensuring app compatibility and performance across the most relevant devices within a specific region or geography, thereby enhancing user experience and overall effectiveness.

In essence, the Device Planner transcends traditional device selection approaches by combining geographical focus with market penetration objectives. By empowering testers with actionable insights and tailored recommendations, this feature facilitates more informed decision-making and enhances the likelihood of app success in the targeted regions and demographics.

AI Powered Unified Platform for Mobile and Web App Testing Lifecycle

pcloudy
by opkey
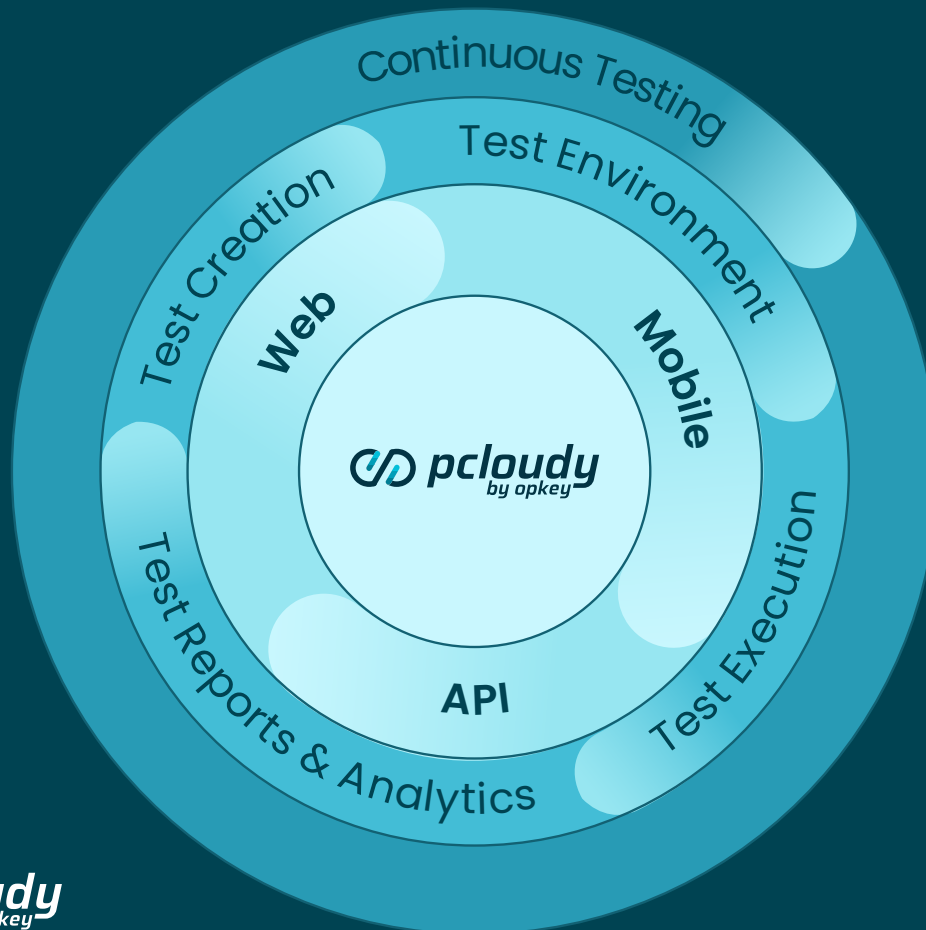
Test Creation Tool

- No Code Test Creation
- Drag-and-drop interface to easily build any test.
- Test recorder to automatically document browser sessions.

Other Supported Open Source Tools

Test Execution Environment

Device Ecosystem

Browser Ecosystem

Non-Standard Devices