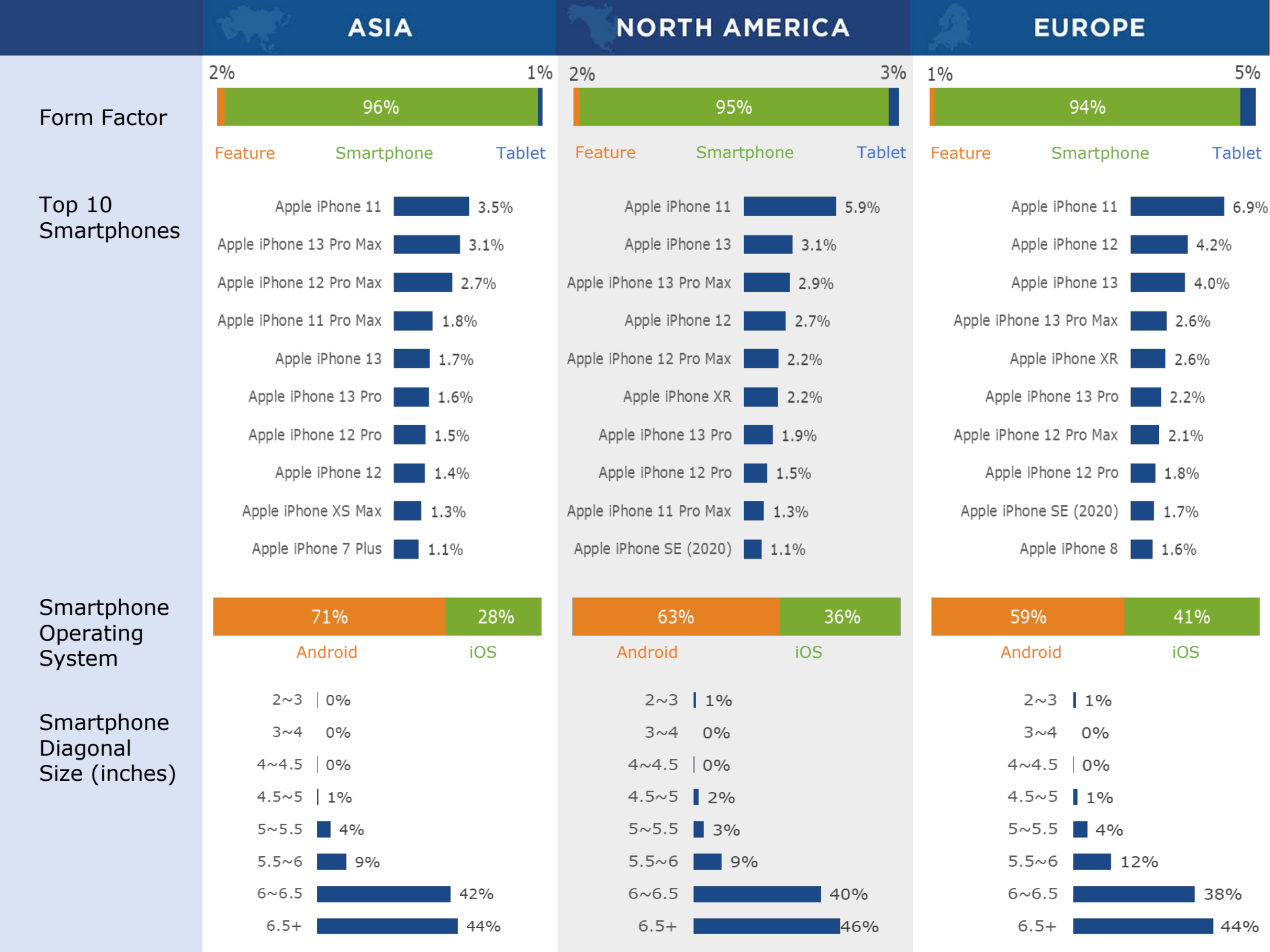
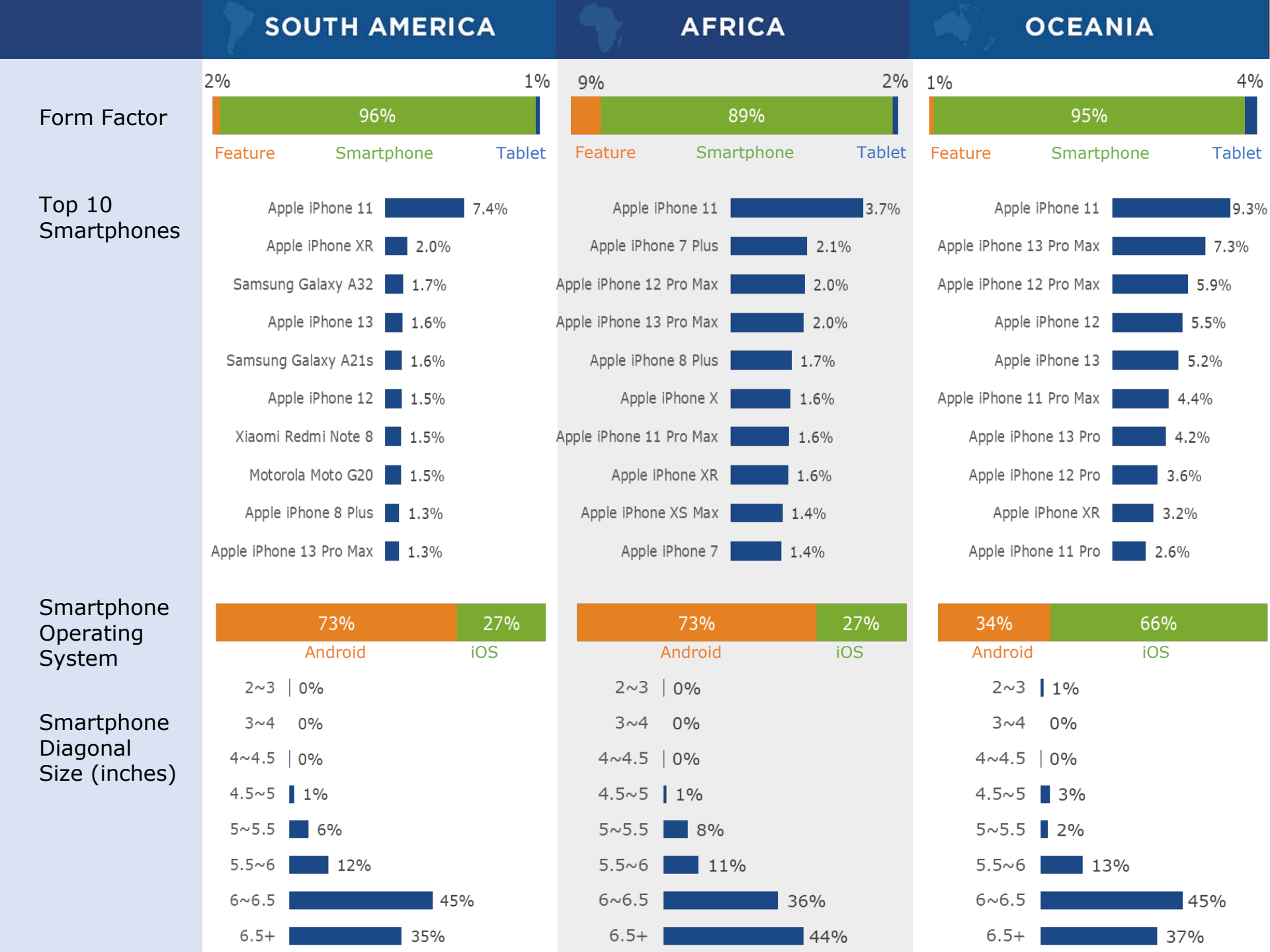
MOVR

Mobile Overview Report

OCT - DEC **2022**


ASIA
NORTH AMERICA
EUROPE
Form Factor
2%
96%
1%
Feature
Smartphone
Tablet
2%
95%
3%
Feature
Smartphone
Tablet
1%
94%
5%
Feature
Smartphone
Tablet
Top 10 Smartphones
Apple iPhone 11 3.5%
Apple iPhone 13 Pro Max 3.1%
Apple iPhone 12 Pro Max 2.7%
Apple iPhone 11 Pro Max 1.8%
Apple iPhone 13 1.7%
Apple iPhone 13 Pro 1.6%
Apple iPhone 12 Pro 1.5%
Apple iPhone 12 1.4%
Apple iPhone XS Max 1.3%
Apple iPhone 7 Plus 1.1%
Apple iPhone 11 5.9%
Apple iPhone 13 3.1%
Apple iPhone 13 Pro Max 2.9%
Apple iPhone 12 2.7%
Apple iPhone 12 Pro Max 2.2%
Apple iPhone XR 2.2%
Apple iPhone 13 Pro 1.9%
Apple iPhone 12 Pro 1.5%
Apple iPhone 11 Pro Max 1.3%
Apple iPhone SE (2020) 1.1%
Apple iPhone 11 6.9%
Apple iPhone 12 4.2%
Apple iPhone 13 4.0%
Apple iPhone 13 Pro Max 2.6%
Apple iPhone XR 2.6%
Apple iPhone 13 Pro 2.2%
Apple iPhone 12 Pro Max 2.1%
Apple iPhone 12 Pro 1.8%
Apple iPhone SE (2020) 1.7%
Apple iPhone 8 1.6%
Smartphone Operating System
71%
28%
Android
iOS
63%
36%
Android
iOS
59%
41%
Android
iOS
Smartphone Diagonal Size (inches)
2~3 0%
3~4 0%
4~4.5 0%
4.5~5 1%
5~5.5 4%
5.5~6 9%
6~6.5 42%
6.5+ 44%
2~3 1%
3~4 0%
4~4.5 0%
4.5~5 2%
5~5.5 3%
5.5~6 9%
6~6.5 40%
6.5+ 46%
2~3 1%
3~4 0%
4~4.5 0%
4.5~5 1%
5~5.5 4%
5.5~6 12%
6~6.5 38%
6.5+ 44%


SOUTH AMERICA
AFRICA
OCEANIA
Form Factor
2%
96%
1%
Feature
Smartphone
Tablet
9%
89%
2%
Feature
Smartphone
Tablet
1%
95%
4%
Feature
Smartphone
Tablet
Top 10 Smartphones
Apple iPhone 11 7.4%
Apple iPhone XR 2.0%
Samsung Galaxy A32 1.7%
Apple iPhone 13 1.6%
Samsung Galaxy A21s 1.6%
Apple iPhone 12 1.5%
Xiaomi Redmi Note 8 1.5%
Motorola Moto G20 1.5%
Apple iPhone 8 Plus 1.3%
Apple iPhone 13 Pro Max 1.3%
Apple iPhone 11 3.7%
Apple iPhone 7 Plus 2.1%
Apple iPhone 12 Pro Max 2.0%
Apple iPhone 13 Pro Max 2.0%
Apple iPhone 8 Plus 1.7%
Apple iPhone X 1.6%
Apple iPhone 11 Pro Max 1.6%
Apple iPhone XR 1.6%
Apple iPhone XS Max 1.4%
Apple iPhone 7 1.4%
Apple iPhone 11 9.3%
Apple iPhone 13 Pro Max 7.3%
Apple iPhone 12 Pro Max 5.9%
Apple iPhone 12 5.5%
Apple iPhone 13 5.2%
Apple iPhone 11 Pro Max 4.4%
Apple iPhone 13 Pro 4.2%
Apple iPhone 12 Pro 3.6%
Apple iPhone XR 3.2%
Apple iPhone 11 Pro 2.6%
Smartphone Operating System
73%
27%
Android
iOS
73%
27%
Android
iOS
34%
66%
Android
iOS
Smartphone Diagonal Size (inches)
2~3 0%
3~4 0%
4~4.5 0%
4.5~5 1%
5~5.5 6%
5.5~6 12%
6~6.5 45%
6.5+ 35%
2~3 0%
3~4 0%
4~4.5 0%
4.5~5 1%
5~5.5 8%
5.5~6 11%
6~6.5 36%
6.5+ 44%
2~3 1%
3~4 0%
4~4.5 0%
4.5~5 3%
5~5.5 2%
5.5~6 13%
6~6.5 45%
6.5+ 37%

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Q3 2022 to Q4 2022 Comparisons

Top Smartphones

Top Smartphones	Africa	Asia	Europe	N. America	Oceania	S. America	Global
Apple iPhone 11	3.66%	3.50%	6.86%	5.91%	9.29%	7.45%	5.32%
Apple iPhone 11 Pro	0.70%	0.92%	1.48%	0.88%	2.64%	0.54%	0.98%
Apple iPhone 11 Pro Max	1.61%	1.80%	1.38%	1.28%	4.44%	0.81%	1.33%
Apple iPhone 12	1.01%	1.44%	4.17%	2.67%	5.49%	1.55%	2.67%
Apple iPhone 12 Pro	0.73%	1.46%	1.80%	1.49%	3.56%	0.63%	1.51%
Apple iPhone 12 Pro Max	2.04%	2.70%	2.10%	2.20%	5.93%	0.97%	2.24%
Apple iPhone 13	1.23%	1.66%	4.00%	3.10%	5.20%	1.58%	2.69%
Apple iPhone 13 Pro	0.70%	1.62%	2.21%	1.85%	4.23%	0.80%	1.79%
Apple iPhone 13 Pro Max	2.01%	3.05%	2.63%	2.92%	7.30%	1.26%	2.69%
Apple iPhone 7	1.39%	0.55%	1.07%	0.90%	0.87%	1.25%	0.87%
Apple iPhone 7 Plus	2.11%	1.14%	0.49%	0.77%	0.73%	1.14%	0.78%
Apple iPhone 8	0.76%	0.39%	1.59%	0.91%	1.19%	1.13%	1.01%
Apple iPhone 8 Plus	1.68%	1.04%	0.92%	1.00%	1.57%	1.30%	1.00%
Apple iPhone SE (2020)	0.28%	0.29%	1.73%	1.11%	1.13%	0.99%	1.16%
Apple iPhone X	1.65%	1.07%	1.16%	0.80%	1.45%	0.78%	0.95%
Apple iPhone XR	1.59%	1.02%	2.56%	2.18%	3.24%	2.05%	2.06%
Apple iPhone XS Max	1.43%	1.27%	0.74%	0.69%	1.71%	0.53%	0.80%
Motorola Moto G20	0.00%	0.00%	0.02%	0.20%	0.00%	1.46%	0.27%
Samsung Galaxy A21s	0.84%	0.45%	0.72%	0.69%	0.41%	1.55%	0.76%
Samsung Galaxy A32	0.96%	0.54%	0.44%	0.55%	0.25%	1.67%	0.74%
Xiaomi Redmi Note 8	0.37%	0.73%	0.25%	0.39%	0.03%	1.49%	0.56%
Others	**73.24%**	**73.34%**	**61.70%**	**67.48%**	**39.32%**	**69.09%**	**67.84%**

- iPhone 11 continues as the most popular smartphone, with 5.32% globally
- iPhones account for the top 17 devices globally
- Budget phones from Samsung, Motorola and Xiaomi are the only exceptions to the iPhone's dominance, and these only break the top 10 in S. America, and Africa.

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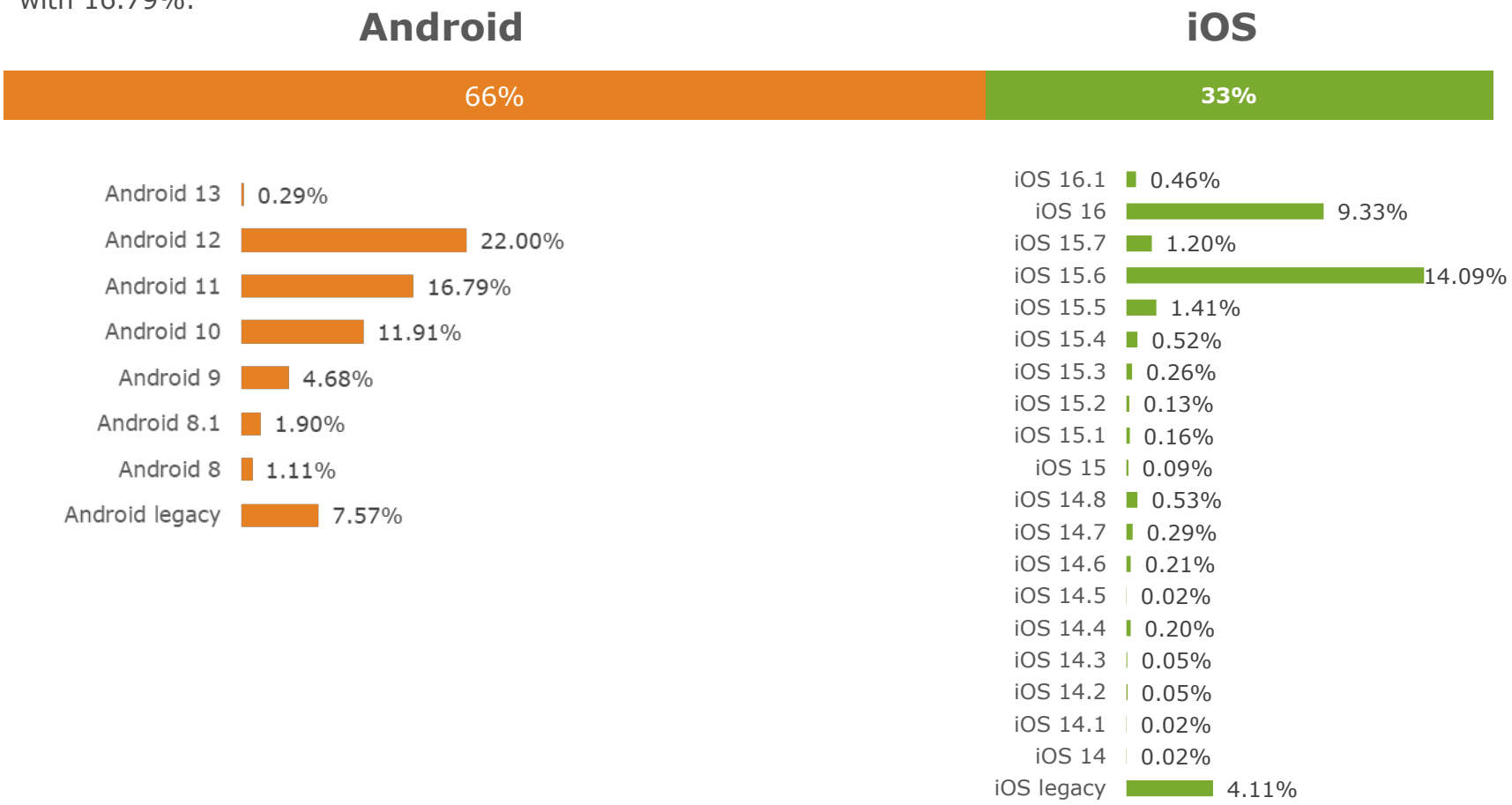
Source: ScientiaMobile. Note: figures reflect percentage point (2021Q4)

Global Smartphone OS Versions

- Android has 66% of operating system share among smartphones globally.
- Android 12 is the most popular version, with 22% of global market share. It has surpassed Android 11 with 16.79%.

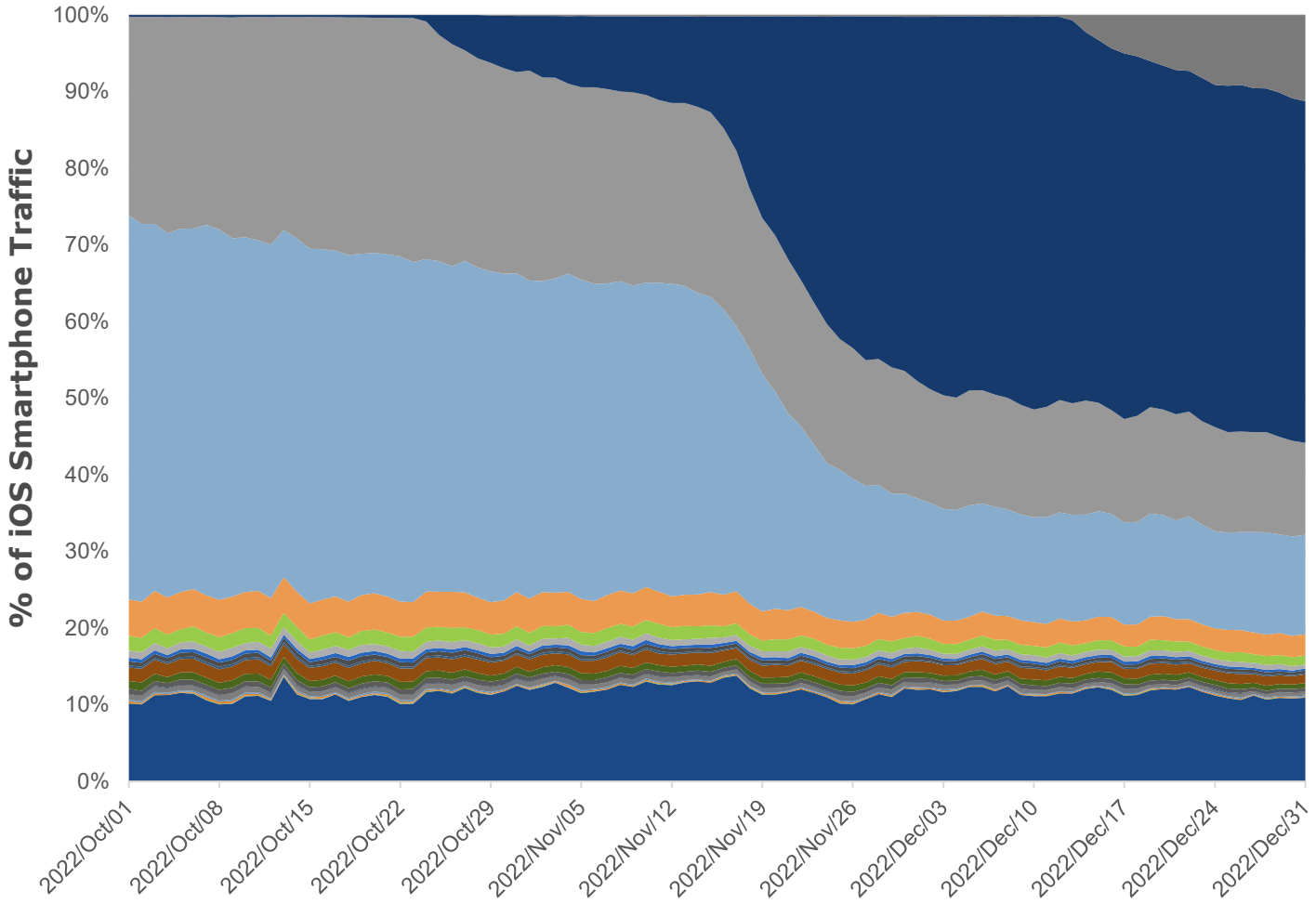
- iOS has 33% of OS share.
- iOS 15.6 is the most popular version with 14.09% globally.



Legacy Definition: iOS before 14, Android before 8

iOS Smartphone Operating System Trends

- iOS 16.1 ended 2022 Q4 as the most popular iOS operating system with 44.58%.
- New iOS 16 (versions 16.0 to 16.2) released in September 2022 has 67%.



Version	End of Q4
16.2	11.25%
16.1	44.58%
16.0	12.00%
15.6	12.98%
15.5	2.79%
15.4	1.17%
15.3	0.53%
15.2	0.25%
15.1	0.36%
15	0.16%
14.8	1.11%
14.7	0.68%
14.6	0.44%
14.5	0.00%
14.4	0.54%
14.3	0.17%
14.2	0.10%
14.1	0.00%
14	0.00%
IOS Legacy	10.92%

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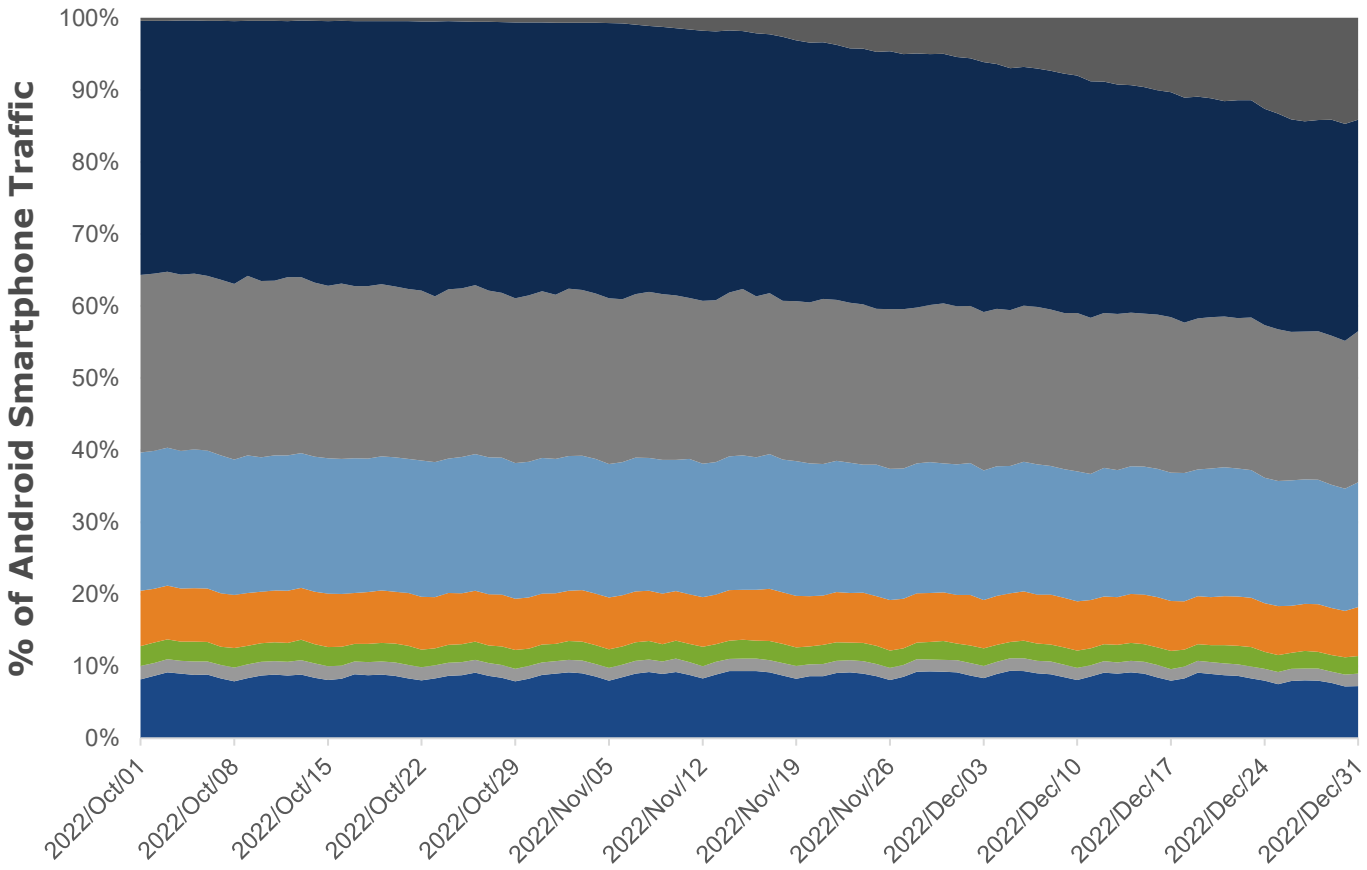
Legacy Definition: before iOS 14

Android Smartphone Operating System Trends

- By the end of 2022 Q4, Android 12 had surpassed prior versions with 29.36% of Android OS smartphones.



Version	End of Q4
13	14.15%
12	29.36%
11	20.95%
10	17.32%
9	6.80%
8.1	2.46%
8.0	1.70%
Android Legacy	7.26%

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Legacy Definition: before Android 8

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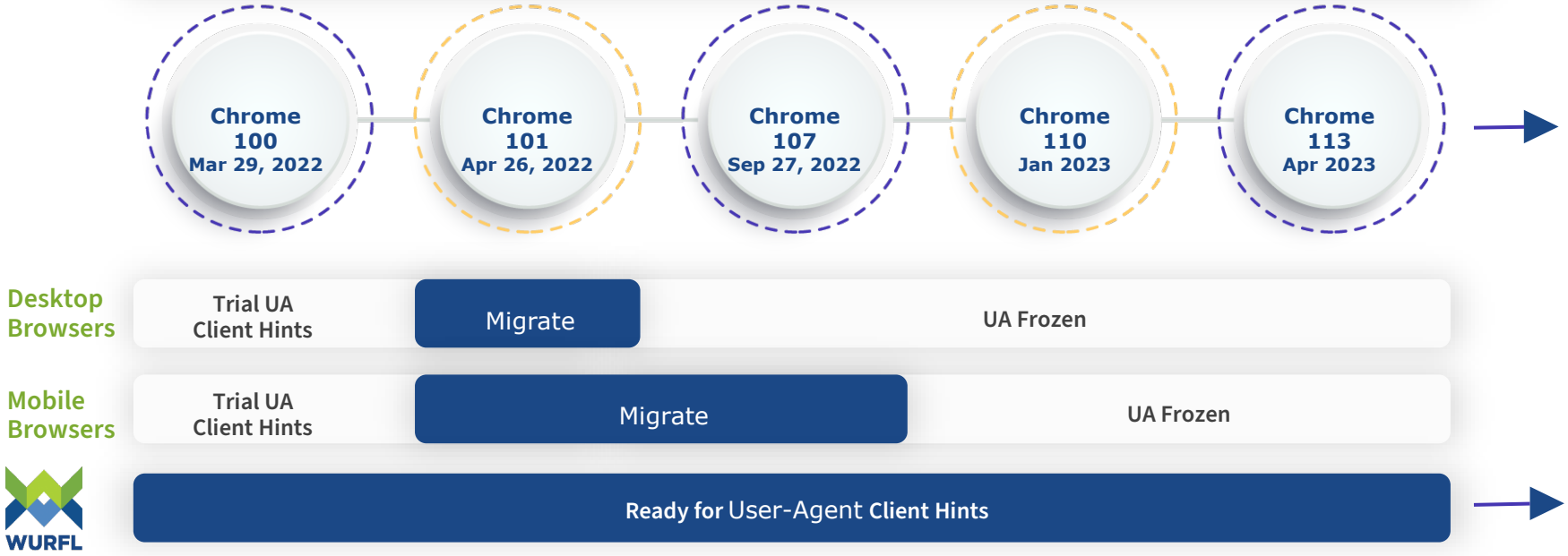
Chrome Updates, Frozen User Agents, and Client Hints

Timeline for Freezing User Agents, Migration to User-Agent Client Hints

- In 2022 Q2, Google started to migrate to user-agent client hints for desktop.
- In 2022 Q3, mobile devices will start migrating.
- **In 2023 Q1,** mobile device user-agent strings will start to freeze.
- **Learn more** about keeping device detection accurate with WURFL.



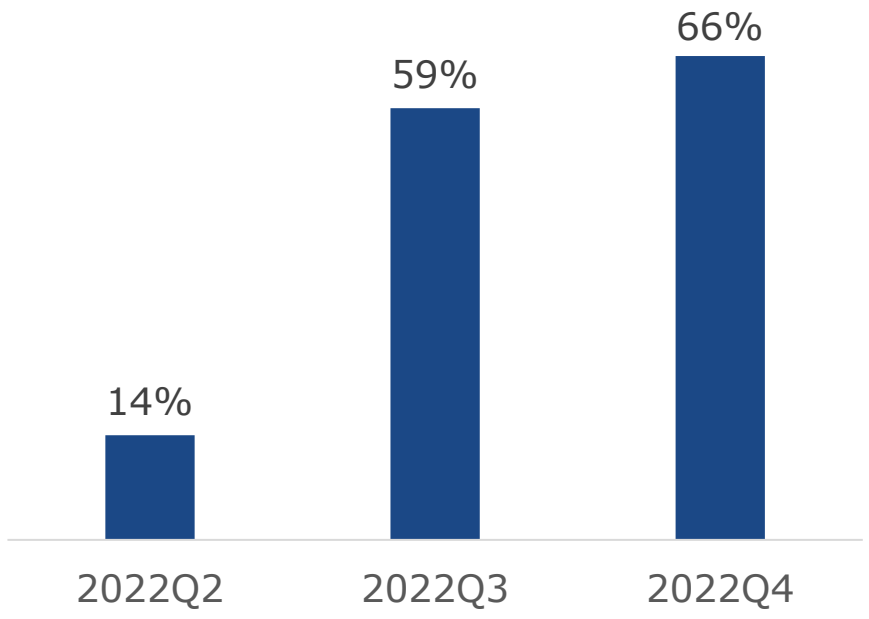
WURFL API Update (1.12.5.0, released in March 2022) accepts User-Agent Client Hints and reconciles them with User-Agents Strings. WURFL is already prepared for Google's plans to freeze mobile UA strings in Feb 1 2023.

https://www.chromium.org/updates/ua-reduction/#TOC-Proposed-Rollout-Plan

Chrome Frozen User Agent String

- The majority Chrome Desktop User Agent (UA) strings are frozen in 2022 Q4.
- As of 2022 Q4, 66% of all Desktop UA observed from Chrome were frozen.
- Almost no Mobile UA strings were frozen during 2022 Q4.
- We anticipate that in February 2023, we will see a large uptick in frozen user-agent strings from Chrome.

Frozen Chrome Desktop UAs



Frozen Chrome Mobile UAs

- Frozen Chrome Mobile user-agent strings remain below 0.002% at the end of 2022 Q4.
- Freezing is anticipated to start with Release of Chrome 110, with stable versions distribution early February 2023.

Turn On User-Agent Client Hints Now!!

- Google Chrome is starting to freeze both desktop and mobile browser user agent strings.
- Be prepared for frozen user agent strings. Configure your application and HTTP servers to request additional Client Hints headers.
- Example:

```
Accept-CH: sec-ch-ua-platform-version,sec-ch-ua-full-version,sec-ch-ua-full-version-list,sec-ch-ua-model,sec-ch-ua-arch,sec-ch-ua-bitness,sec-ch-ua-wow64
```

Learn more here:
https://www.scientiamobile.com/add-support-for-user-agent-client-hints-now/

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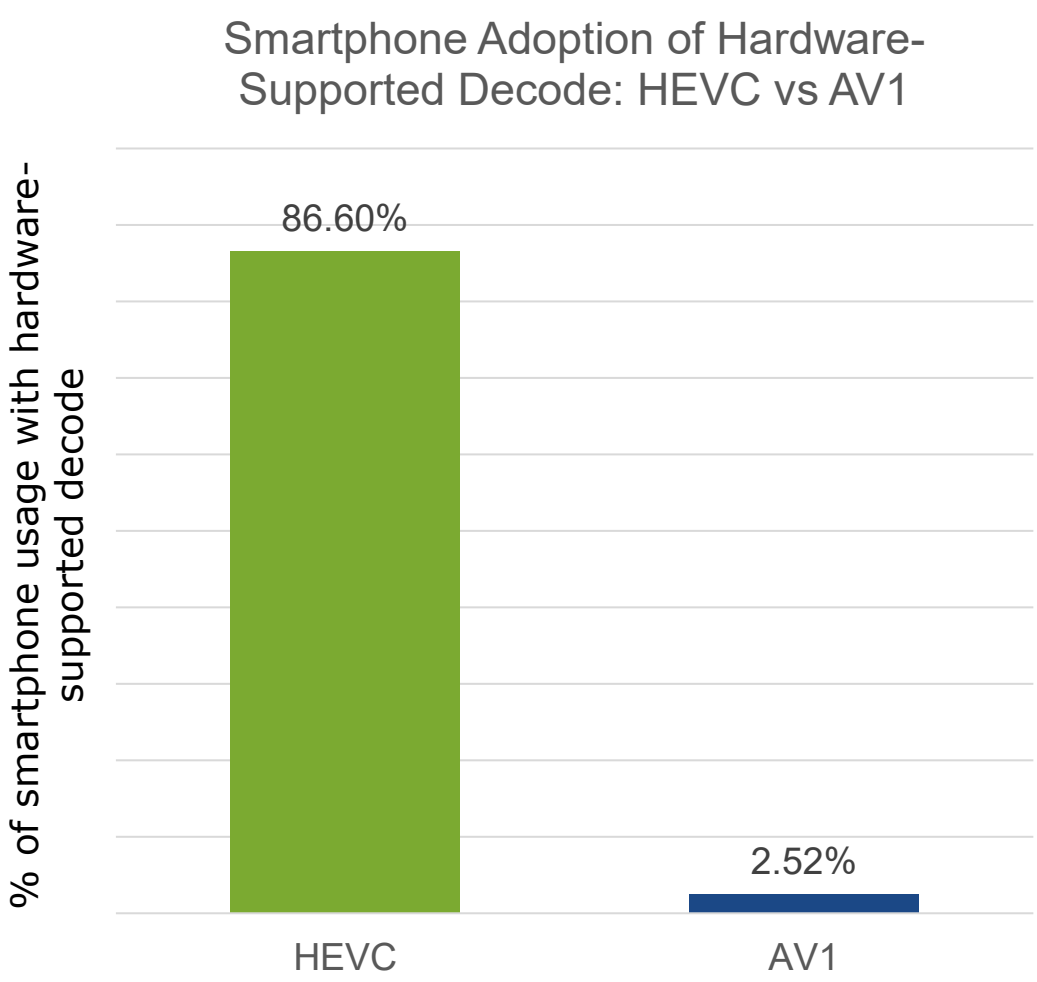
Smartphones with Hardware-Supported Decode for AV1 and HEVC Video Codecs

HEVC vs. AV1 Adoption



- By 2022 Q4, 86.60% of smartphone usage came from devices with hardware-support for HEVC decoding.
- Smartphone chipset and GPU manufacturers have provided HEVC support for many years, so this high level of support is expected.
- While AV1 codec has been adopted at the software level by most browsers (expect for Apple Safari browser), hardware support is currently low.
- Chipset manufacturers are just beginning to add AV1 decode support to GPUs.
- As of today, only 2.52% of smartphones used have hardware-supported AV1 decode.

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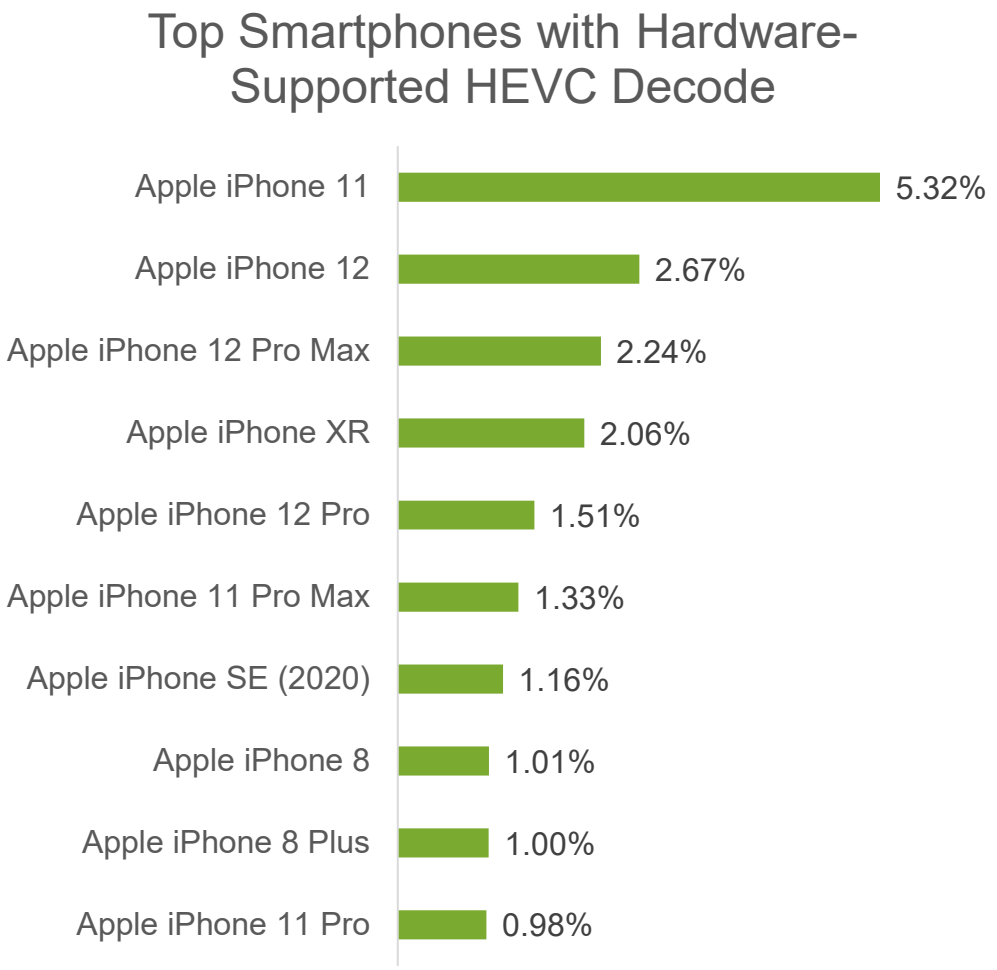
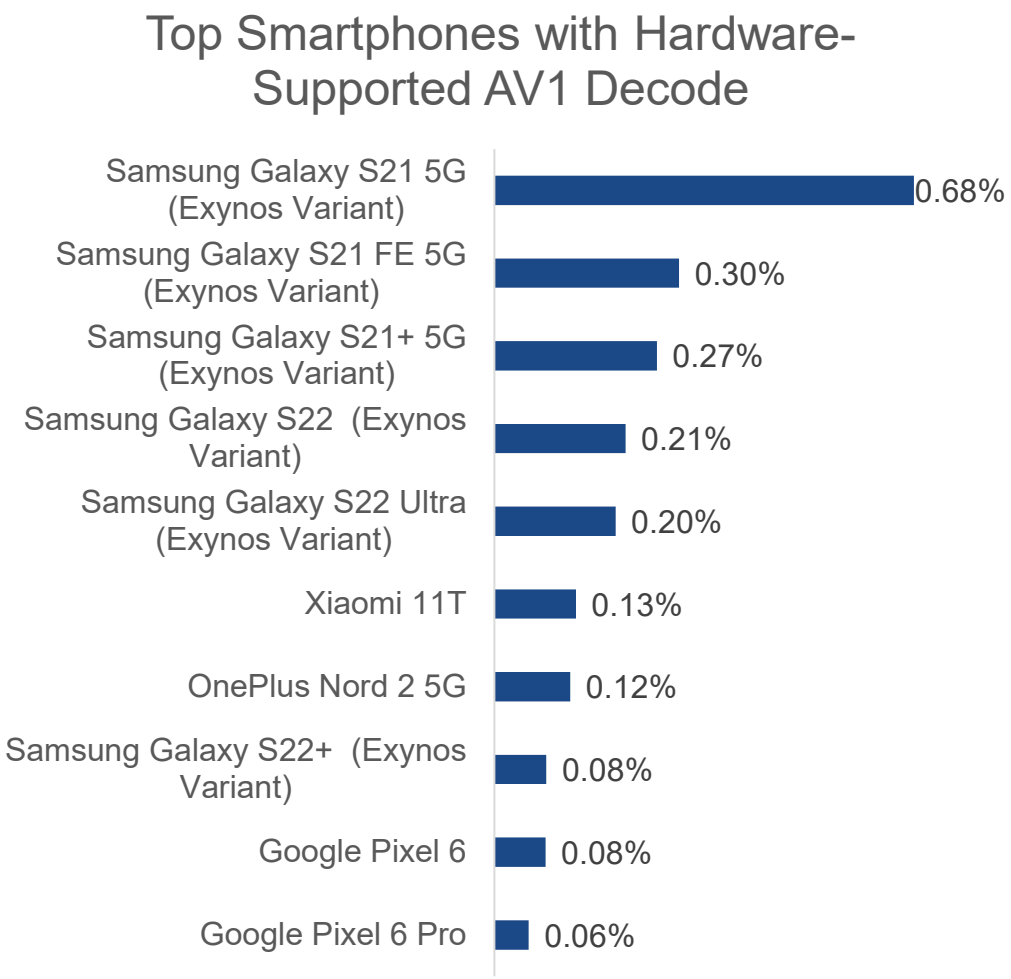
HEVC Supported Top Smartphones

- Hardware-support for HEVC decode is available on most iPhones in use today.
- Given that iPhones are the most-used models of smartphones, HEVC has a high-level of support across smartphones today.
- The Apple iPhone 11 is the most used-device in the world today, representing 5.32% of all smartphone use, and it's hardware supported HEVC decode.



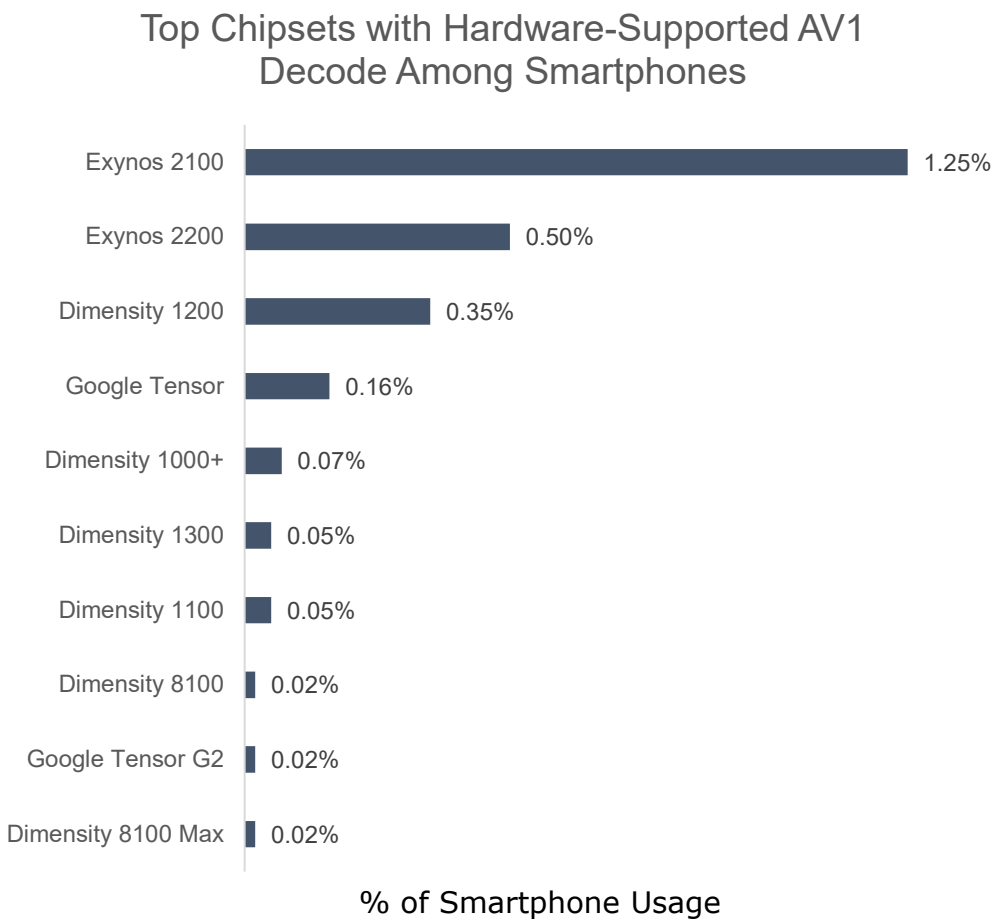
AV1 Supported Top Smartphones

- To date, adoption of chipsets that have AV1 decode has been limited.
- The most popular devices that have AV1 hardware decode support are the Samsung Galaxy S21 5G built with the Exynos chipset.
- Most of the "Exynos Variant" are sold outside of the N. American market.
- Other popular softphones with hardware decode support for AV1 are the Xiaomi 11T, the OnePlus Nord 2 5G, and the Google Pixel 6.



Smartphone Chipsets with Hardware-Supported AV1 Decode

- The chipset of the smartphone is the key determinant of hardware support the for the AV1 codec.
- Right now, the Exynos 2100 and 2200 are the most popular chipsets supporting AV1.
- Google's Tensor (manufactured by Samsung) and the Dimensity GPU also support AV1.
- We expect more chipsets to hardware decode support during 2023.



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Get a Custom MOVR

Get Customized Mobile Data Reports

- **Geography**: select global, continents, or over 40 countries from developed of emerging markets
- **Device Capabilities**: select from over 500 device capabilities including form factor, OS, browsers, apps, display & resolution, chipsets, video, and economic information.
- **Time Frame**: analyze trend and make comparisons by selecting the time frame of the report
- **Delivery Frequency**: select how often the MOVR data delivered, including annual, quarterly, monthly, weekly, or daily

- Contact: sales@scientiamobile.com

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https://www.scientiamobile.com/products/mobile-data-reports/

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How the Mobile Overview Report is Possible

Add Device Detection, Including iPhones, to Your Analytics Today with WURFL.js

With WURFL.js Basic, Standard or Pro, You Get:

- Accurate identification of iPhone and iPad models
- Integrate with Google Analytics
- Over 20 of WURFL's most popular capabilities
- Easy-to-use JavaScript snippet works with ScientiaMobile's cloud-based DDR
- SLA and high reliability
- Helpdesk support

Get WURFL.js: https://www.scientiamobile.com/products/wurfl-js/

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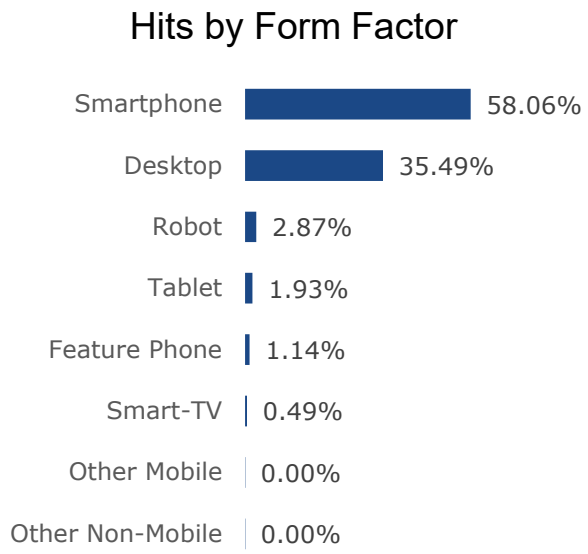
About this Report & Resources

Report Specifications

- Purpose of Report
  - ScientiaMobile publishes MOVR to provide the mobile Web community with timely information on mobile Web device usage.
  - Our goal is to stimulate interest in mobile device trends, device capabilities, and tools for analyzing and managing device fragmentation.
- Sources of Data and Filtering
  - The information in this report is based on a representative sample of a larger data set. The sample size is more than 222 billion requests from April 2014 to end of December 2022.
  - MOVR focuses on mobile devices, consisting of smartphones, tablets, and feature phones.
  - While the data set includes desktops, laptops, smart TVs, game consoles, apps, and robots, we have excluded them, unless otherwise noted.
  - We have used an Equivalent Weighted Sites (EWS) methodology that indexes the traffic at each site and assigns an equal weight to each site.
  - Samples sizes for Africa and Oceania are small enough that we have a low level of confidence that these figures are representative. However, the source data from these continents continues to grow. Over time, we will improve the quality of these figures. In the meantime, we feel that more information is better than less for people looking for insights in these continents.
  - To download the data files supporting MOVR, or subscribe to future publications of MOVR, please visit us at www.scientiamobile.com/movr



Definitions

- *What is a "hit"?* Each time a user visits a Web page and a user agent (UA) is generated and tested by WURFL (through a number of mechanisms), a "hit" is recorded in the ScientiaMobile dataset. All data reported in MOVR reflects hits, not the count of physical devices generating the hit.
- *What is a smartphone?* A smartphone must meet several criteria: it must be a wireless device, have a touch screen with horizontal resolution greater than or equal to 540px, run either Android 6.0 or iOS 9 or later, and not be considered a tablet.
- *What is a tablet?* Criteria for a tablet include: a wireless device, be marketed as a tablet, and running a mobile or tablet OS. One exception is that a full version of Windows running on a tablet is considered to be a laptop.

Definitions (continued)

- *What is a feature phone?* It is a wireless device that falls into one of the three categories: classic feature phones, modern feature phones, and old smartphones.
  - **Classic feature phone:** Typically a bar, slide, or clamshell form factor with limited possibilities to install apps and a proprietary OS. Other criteria include a physical keyboard and a low price range. Examples are Nokia Series 30 and 40 or Motorola Razr devices.
  - **Modern feature phone:** These phones also have a low price range. They are "smartphone-like", but targeted at the classic feature phone market. They may have a smartphone OS. They borrow features from classic feature phones, such as size or screen size. Examples are Nokia Asha series or Samsung Galaxy Pocket.
  - **Old smartphones:** These smartphones are older. Classic Blackberry devices and Symbian-based devices fall into this category. More recent devices with a touch screen, but with older hardware or older versions of Android, iOS or Windows Phone also fall into this category.
- *What is MNO Traffic?* Traffic originating from Mobile Network Operators (MNO). It is defined, in our research method, as the connection type provided by the browser navigator.connection API.

About WURFL

- ScientiaMobile uses its WURFL solution to collect and analyze the device intelligence contained in the MOVR report. WURFL is a Device Description Repository (DDR) that integrates an API and XML to provide an always-updated source for detecting devices and their capabilities. For more than 10 years, WURFL has been the industry standard for device detection. Today, ScientiaMobile offers a number of WURFL products to match a range of needs, from small developers to large enterprises.
- WURFL OnSite and WURFL InFuze provide businesses with high performance server-side device detection solutions.
- WURFL.js provides front-end developers with access to device detection through JavaScript snippets.
- WURFL InSight provides business intelligence analysts with a table-based device detection tool that will integrate easily with data analysis tools.
- ImageEngine combines mobile device detection with image resizing, image file optimization, and Content Delivery Network (CDN)-type delivery. It provides significantly faster downloads, especially on mobile devices.

About ScientiaMobile

- ScientiaMobile provides the industry's most accurate and flexible device detection solution, helping customers deliver great web experiences and manage the increasingly fragmented mobile device ecosystem. ScientiaMobile sells WURFL, a constantly-updated repository that catalogues thousands of devices and their capabilities and provides access to them via range of API languages. The WURFL framework enables many organizations, including Fortune 500 companies, to effectively design and analyze web experiences for an ever-growing range of smartphones, tablets, smart TVs, and game consoles.
- For more information about ScientiaMobile and its commercial products, please visit us at: www.scientiamobile.com
- WURFL.io offers a number of free tools for device detection and image optimization.
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