GLOBAL CONNECTED TV (CTV) AD SUPPLY CHAIN TRENDS

H2.2022

An analysis of the state of open programmatic CTV advertising, including top devices, trending categories, and ad fraud risk
Pixalate’s data science team analyzed programmatic advertising activity across over 300 million Connected TV ("CTV") devices and over 70,000 programmatic-supported CTV apps to compile this research. Pixalate’s datasets consist predominantly of buy-side open auction programmatic traffic sources.

Pixalate is sharing this data not to impugn the standing or reputation of any person, entity or app, but, instead, to render opinions and report trends pertaining to CTV apps.
98% of U.S. households reachable via open programmatic CTV ads

Apple's tvOS +35% YoY for OS market share; LG rose 137%

+41% YoY in global open programmatic CTV ad spend

Roku devices remain dominant with 50% of open programmatic CTV ad spend market share

+310% YoY in open programmatic CTV ad spend in EMEA.

+16% YoY in Roku apps w/ open programmatic ads, but this number dropped 8% on Amazon Fire TV
CTV TRENDS

THE STATE OF THE AD MARKETPLACE

Household Reach | Ad Spend | Ad Fraud

pixalate
In Q4 2019, only 50% of U.S. households were reachable via open programmatic CTV ads, according to Pixalate’s data.
3.4X increase in open programmatic CTV ad spend vs. H2 2019, according to Pixalate’s estimates.
+$1B increase in open programmatic CTV ad spend in H2 2022 vs. H1 2022

GLOBAL OPEN PROGRAMMATIC CTV AD SPEND TOPS $3 BILLION IN H2 2022
Estimated global open programmatic CTV ad spend, as measured by Pixalate

Estimated Open Programmatic Ad Spend

- **$560M** in H2 2019
- **$2.1B** in H2 2020
- **$2.2B** in H2 2021 (9% YoY change)
- **$3.2B** in H2 2022 (41% YoY change)

YoY Change

- **120%** increase
- **9%** decrease

$1 billion $2 billion $3 billion $4 billion
0% 25% 50% 75% 100% 125%
### CTV AD SPEND: TOP GROSSING CTV APPS H2 2022

Top 5 grossing CTV apps per platform based on estimated open programmatic advertising in H2 2022, as measured by Pixalate.

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<tr>
<th>H222 Rank</th>
<th>App</th>
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~18%

Invalid traffic (IVT) rate in the open programmatic CTV ad marketplace in H2 2022. This reversed a trend dating back to 2020 in which H2 IVT numbers were higher than H1 numbers.
GLOBAL AD SPEND TRENDS

North America | APAC | EMEA | LATAM
3.4X rise in open programmatic CTV ad spend in North America compared to H2 2019, with YoY growth of 40%, according to Pixalate’s data.
20X rise in open programmatic CTV ad spend in EMEA compared to H2 2019, with YoY growth of 310%, according to Pixalate’s data - the second straight year with triple-digit YoY growth.
rise in open programmatic CTV ad spend in APAC compared to H2 2019, with YoY growth of 22%, marking a recovery after a -16% drop in 2021, according to Pixalate’s data.
24.8X rise in open programmatic CTV ad spend in LATAM compared to H2 2019, but YoY spend dropped 10% after two straight years of 250%+ growth, according to Pixalate’s data.
CTV DEVICES

AD SPEND TRENDS BY DEVICE TYPE

Roku | Amazon Fire TV | Apple TV | Chromecast | Smart TVs
50%

open programmatic CTV ad sale share of voice for Roku devices - the highest mark for Roku since H1 2020.

Samsung maintains a comfortable position in second, while Amazon and Apple battle for third.

What this stat means: 50% of all open programmatic CTV ads, as measured by Pixalate, were delivered to Roku devices.
YoY open programmatic CTV ad market share gain for Apple devices.

Sony and Google Chromecast both saw significant market share decreases. Chinese-based device makers MXQ and Xiaomi are rising.
ROKU CHANNEL STORE

OPEN PROGRAMMING
AD TRENDS

App Growth | Open Programmatic | App Categories
70% increase over 2 years in the number of all apps in the Roku Channel Store.
54% growth over 2 years in the number of apps in the Roku Channel Store that support open programmatic advertising*

* minimum 50 invalid traffic-free ads sold per quarter, as measured by Pixalate
+55%

Sports apps on Roku saw a significant YoY bump in open programmatic ad market share, according to Pixalate’s data.

Top 10 Roku app categories with the highest Share of Voice of open programmatic CTV ads in Q221 are shown.
OPEN PROGRAMMING
AD TRENDS
App Growth | Open Programmatic | App Categories
60% increase over 2 years in the number of all apps in the Amazon Fire TV Channel Store.

26% YoY RISE OF TOTAL APPS IN THE AMAZON FIRE TV STORE

# of total apps in Amazon Fire TV Channel Store; indexed against Q420; as measured by Pixalate

- End of H2 2020: 10,604
- End of H2 2021: 13,490
- End of H2 2022: 16,951
63% increase over 2 years in the number of apps in the Amazon Fire TV Channel Store that support open programmatic advertising*

* minimum 50 invalid traffic-free ads sold per quarter, as measured by Pixalate
SPORTS & MOVIES SEE 41%+ GAINS IN QUARTERLY AD SPEND

% change in SOV of ad spend by Fire TV app category, Q421 vs. Q422; open programmatic ads sold proxied for ad spend; as measured by Pixalate

84%

Movies & TV make up 84% of Fire TV's programmatic ad spend SOV, followed by Sports at just 3%.

Top 5 Fire TV app categories with the highest Share of Voice of open programmatic CTV ads in Q221 are shown.
CTV OPERATING SYSTEMS

AD SPEND TRENDS BY OS

Roku | Android | tvOS | Tizen | Windows | Linux | SONY
10%

Linux checked in at No. 3 in terms of OS market share (10%) in Q4 2022, according to Pixalate’s data.
YoY open programmatic CTV ad market share gain for Apple’s tvOS, according to Pixalate’s data.
METHODOLOGY, DISCLAIMER & GLOSSARY
Pixalate’s data science team analyzed programmatic advertising activity across over 300 million Connected TV (“CTV”) devices to compile this research. The research contained herein represents data collected by Pixalate from January 1, 2019 through December 31, 2022.

In the context of this report, programmatic ad transactions, as measured by Pixalate, are proxied for ad spend. The report examines global programmatic advertising activity. Pixalate’s datasets — which are used exclusively to derive these insights — consist predominantly of buy-side open auction programmatic traffic sources. Pixalate monitors over 70,000 programmatic-supported CTV apps, over 300 million CTV devices monitored, and billions of CTV programmatic advertising impressions.
The content of this report reflects Pixalate’s opinions with respect to the factors that Pixalate believes can be useful to the digital media industry. Any data shared is grounded in Pixalate’s proprietary technology and analytics, which Pixalate is continuously evaluating and updating. Any references to outside sources should not be construed as endorsements. Pixalate’s opinions are just that, opinions, which means that they are neither facts nor guarantees.

Pixalate is sharing this data not to impugn the standing or reputation of any entity, person or app, but, instead, to report findings and trends pertaining to programmatic advertising activity across CTV apps in the time period studied. Pixalate does not independently verify third-party information.

Per the Media Rating Council (MRC), “Invalid Traffic’ is defined generally as traffic that does not meet certain ad serving quality or completeness criteria, or otherwise does not represent legitimate ad traffic that should be included in measurement counts. Among the reasons why ad traffic may be deemed invalid is it is a result of non-human traffic (spiders, bots, etc.), or activity designed to produce fraudulent traffic.” IVT is also sometimes referred to as “ad fraud.” Per the MRC, “‘Fraud’ is not intended to represent fraud as defined in various laws, statutes and ordinances or as conventionally used in U.S. Court or other legal proceedings, but rather a custom definition strictly for advertising measurement purposes.
GLOSSARY

Ad market share / share of voice (SOV): Based the proportion of sold programmatic ads that go to a certain device, operating system, category, etc. For example, if Device X received 20 of 100 total ads one quarter, its market share would be 20%. If Device X then received 36 of 120 total ads the next quarter, its market share would have increased by 50% (from 20% to 30%).

Ad spend: In the context of this report, programmatic ads sold, as measured by Pixalate, are used as a proxy for ad spend.

Apps: An app is also sometimes called a “channel” when discussing CTV advertising. This report uses the term “app” for consistency. “Apps with programmatic ads” are based off app Bundle IDs in the ecosystem across all CTV app stores.

Connected TV/OTT: Also referred to as “CTV” in this report. Pixalate defines CTV based on the device being used by the end-user. Examples of CTV devices include Apple TV, Roku, Chromecast, Amazon Fire TV, Smart TVs, and gaming platforms.

Household adoption: The estimated percentage of U.S. households reachable via programmatic CTV advertising, using the total number of U.S.-based IP addresses as a baseline and removing invalid traffic (IVT), as measured by Pixalate.

Programmatic CTV: The report examines global programmatic advertising activity across CTV devices. Pixalate’s datasets consist predominantly of open auction programmatic traffic sources.
Pixalate is the market-leading fraud protection, privacy, and compliance analytics platform for Connected TV (CTV) and Mobile Advertising. We work 24/7 to guard your reputation and grow your media value. Pixalate offers the only system of coordinated solutions across display, app, video, and OTT/CTV for better detection and elimination of ad fraud. Pixalate is an MRC-accredited service for the detection and filtration of sophisticated invalid traffic (SIVT) across desktop and mobile web, mobile in-app, and OTT/CTV advertising. [www.pixalate.com](http://www.pixalate.com)