ABANDONED MOBILE APPS REPORT

Q4.2022

An analysis of abandoned apps across the Google and Apple app stores

pixalate

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Abandoned Apps

Pixalate uses the date in which an app was last updated to determine the degree of apparent abandonment. For high-level data points, we consider an app to have a heightened risk of "abandonment" if it has **not been updated in at least two years** (as of the end of Q4 2022). However, this report also provides data showing different levels of apparent abandonment in six-month increments, up to apps that have not been updated in more than five years.

Why is this important?

Outdated and abandoned applications are potential privacy and data security risks because vulnerabilities may go unpatched, leaving end-users at risk of attack.

KEY STATS: ABANDONED APPS IN Q4 2022

1.8MM+ abandoned apps in Q4 2022, up 6% from Q3, the highest volume in 2022

97% of Apple apps with **no privacy policy URL** are abandoned (61% on Google) as of Q4 2022

$29MM estimated programmatic **ad spend** on abandoned apps in 2022
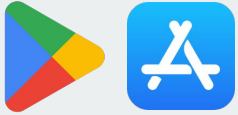
45% (22k+) of abandoned apps registered in **Russia** are **abandoned**, 40% (35k+) in **China**, and 38% (128k+) in the **U.S.**

86% (13k+) abandoned apps with ads transmitted geo location in ad bid stream
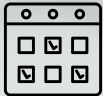
50% (68k+) of likely child-directed apps in the Apple App Store are abandoned as of Q4 2022
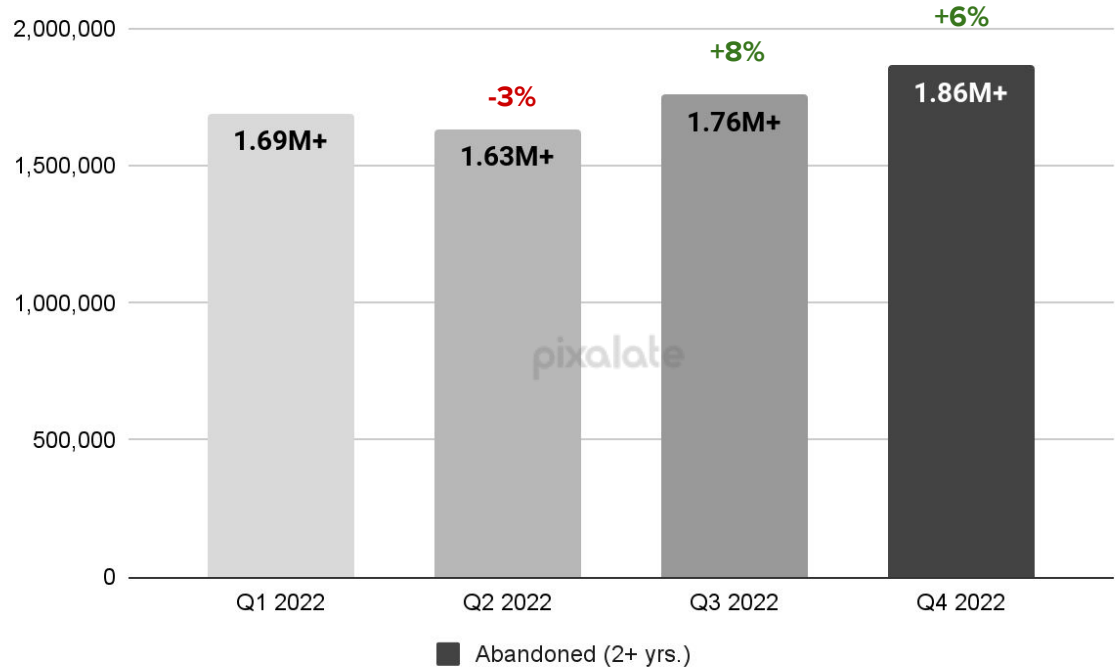
+6%

increase in abandoned apps across Google Play and Apple App Store in Q4 vs. Q3 2022, according to Pixalate's data.

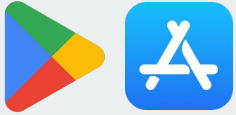*Want more app data? Schedule a demo: pixal.at/demo*

Q4 2022: 1.8MM+ ABANDONED APPS ACROSS GOOGLE, APPLE

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

Chart showing Abandoned (2+ yrs.) apps by quarter:
- Q1 2022: 1.69M+
- Q2 2022: 1.63M+ (-3%)
- Q3 2022: 1.76M+ (+8%)
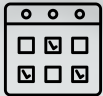- Q4 2022: 1.86M+ (+6%)

■ Abandoned (2+ yrs.)

An app is considered "abandoned" if it has been 2+ years since its latest update
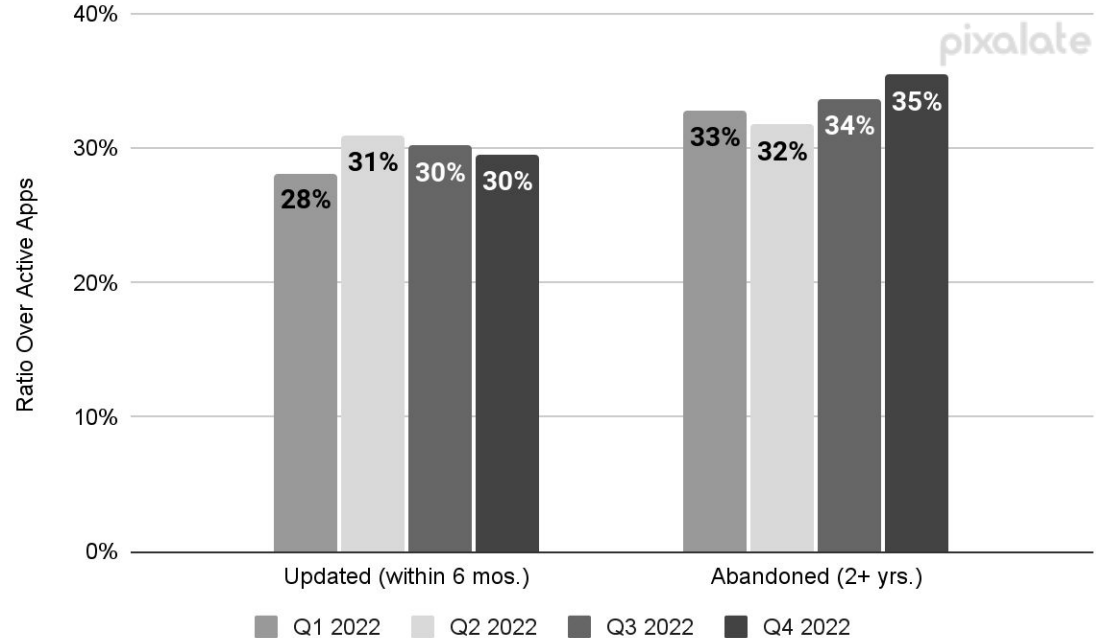
35%

Percentage of apps in Q4 2022 that were abandoned, a slight increase from 34% in Q3 2022, according to Pixalate's data.

Want more app data? Schedule a demo: *pixal.at/demo*

Q4 2022: MORE ABANDONED APPS (35%+) THAN RECENTLY UPDATED APPS (30%)

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE
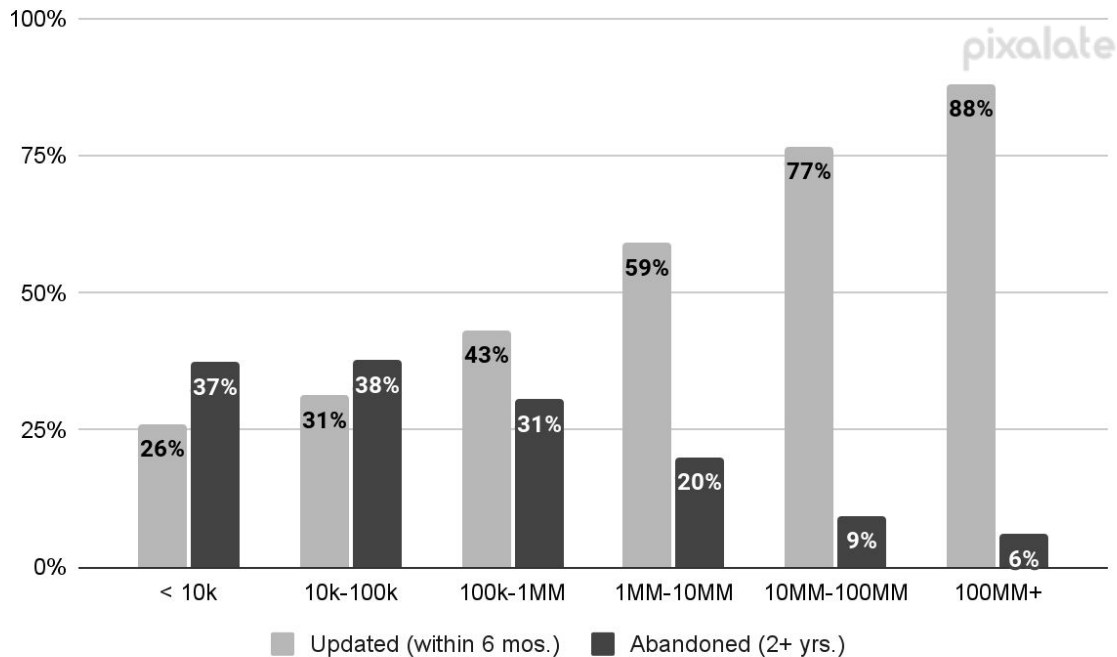
921

apps with >10MM downloads that were abandoned as of Q4 2022 the in Google Play Store, according to Pixalate's data.

Want more app data? Schedule a demo: pixal.at/demo

MEGA-POPULAR APPS (100MM+ DOWNLOADS) ARE LIKELY UPDATED, SMALL APPS (<10k) MORE ABANDONED

AS OF THE END OF Q4 2022; GOOGLE PLAY STORE; AS MEASURED BY PIXALATE

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	< 10k	10k-100k	100k-1MM	1MM-10MM	10MM-100MM	100MM+
Updated (within 6 mos.)	26%	31%	43%	59%	77%	88%
Abandoned (2+ yrs.)	37%	38%	31%	20%	9%	6%

■ Updated (within 6 mos.)   ■ Abandoned (2+ yrs.)

Downloads only available for Google Play Store
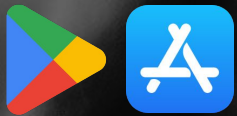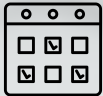
ABANDONED APPS
PROGRAMMATIC ADS
2022

15k+

of active apps with programmatic ads as of Q4 2022 that were abandoned (last updated +2 years), according to Pixalate's data.
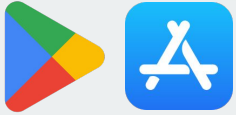
Want more app data?
Schedule a demo:
pixal.at/demo

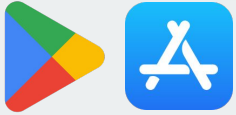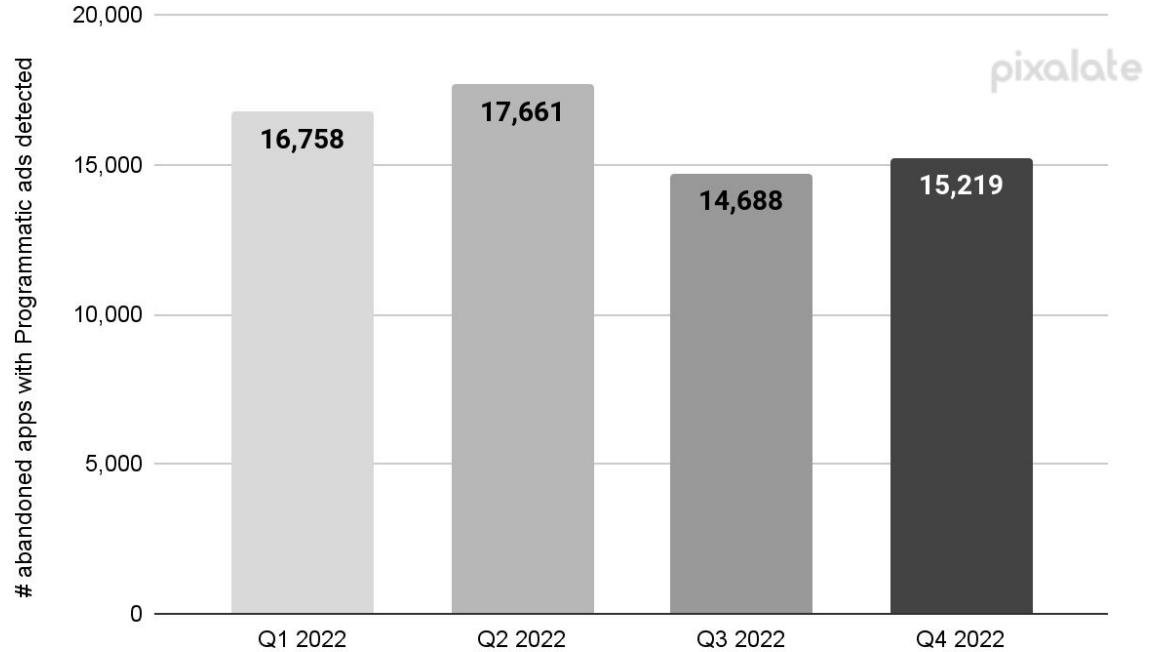## ~500 NEW ABANDONED APPS WITH PROGRAMMATIC ADS
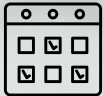
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abandoned apps with Programmatic ads detected

	Q1 2022	Q2 2022	Q3 2022	Q4 2022
Value	16,758	17,661	14,688	15,219

15k+

abandoned apps that have detected programmatic ads in Q4, out of 123k+ apps with programmatic ads detected across Google and Apple app stores, according to Pixalate's data.

Want more app data? Schedule a demo: pixal.at/demo

12% OF APPS WITH PROGRAMMATIC ADS ARE ABANDONED IN 2022

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

% apps with ads that are abandoned (24m+)

	Q1 2022	Q2 2022	Q3 2022	Q4 2022
	12%	12%	11%	12%
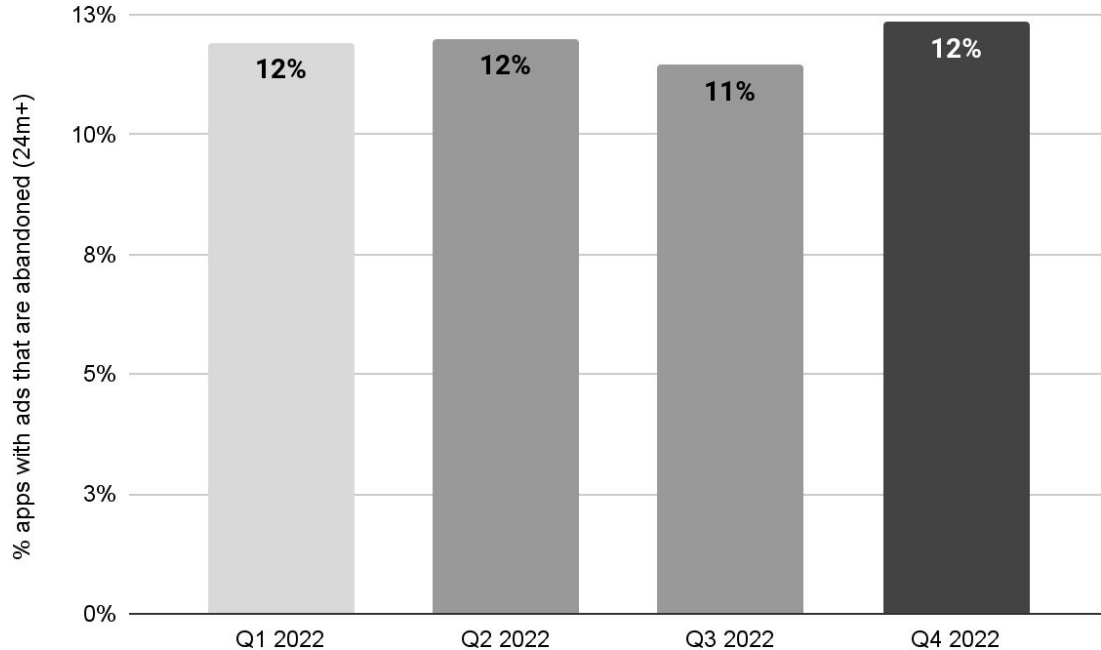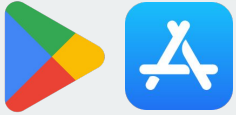
$4.6MM+

More than $4.5MM estimated ad spend in Q4 2022 on abandoned apps, according to Pixalate's data, the lowest figure of the year.
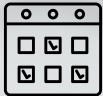
Want more app data? Schedule a demo:
pixal.at/demo

$29MM ESTIMATED AD SPEND ON ABANDONED APPS IN 2022

pixalate

Estimated Ad Spend on abandoned apps

Q1 2022	$10MM
Q2 2022	$6.4MM
Q3 2022	$7.8MM
Q4 2022	$4.6MM

10.00
8.00
6.00
4.00
2.00
0.00
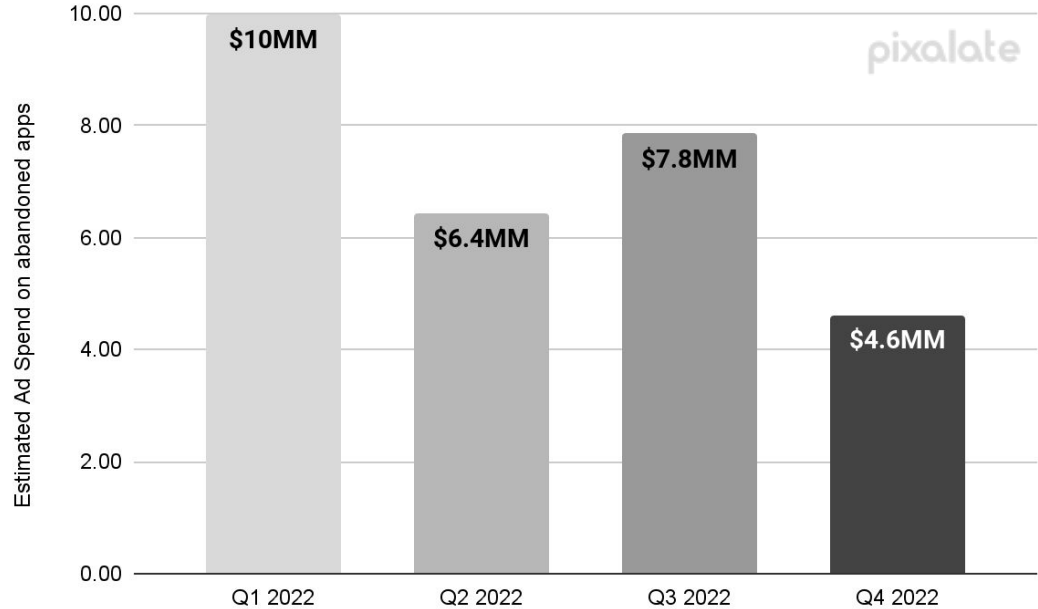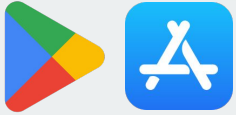
Estimated ad spend is measured in Millions of USD
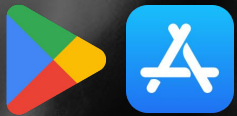
ABANDONED APPS
GOOGLE PLAY & APPLE APP STORE
2022

pixalate

-2%

decrease in abandoned apps in the Apple App Store in Q4 vs. Q3 2022, according to Pixalate's data.

+9%

increase in abandoned apps in the Google Play Store in Q4 vs. Q3 2022, according to Pixalate's data.
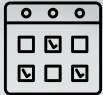
Want more app data? Schedule a demo: *pixal.at/demo*

9% INCREASE IN ABANDONED APPS ON GOOGLE STORE
GOOGLE + APPLE APP STORES; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

pixalate

1500000

+9%

+12% 1.3M+

+16% 1.2M+

1.1M+

967k+

1000000

723k+

-29% -1% -2%

500000

514k+ 508k+ 496k+

Abandoned (2+ yrs)

Q1 Q2 Q3 Q4   Q1 Q2 Q3 Q4

0

Active Apps in Google Play   Active Apps in Apple App Store

An app is considered "abandoned" if it has been 2+ years since its latest update

GOOGLE: 37% OF DOWNLOADABLE APPS ARE ABANDONED

GOOGLE PLAY STORE; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE
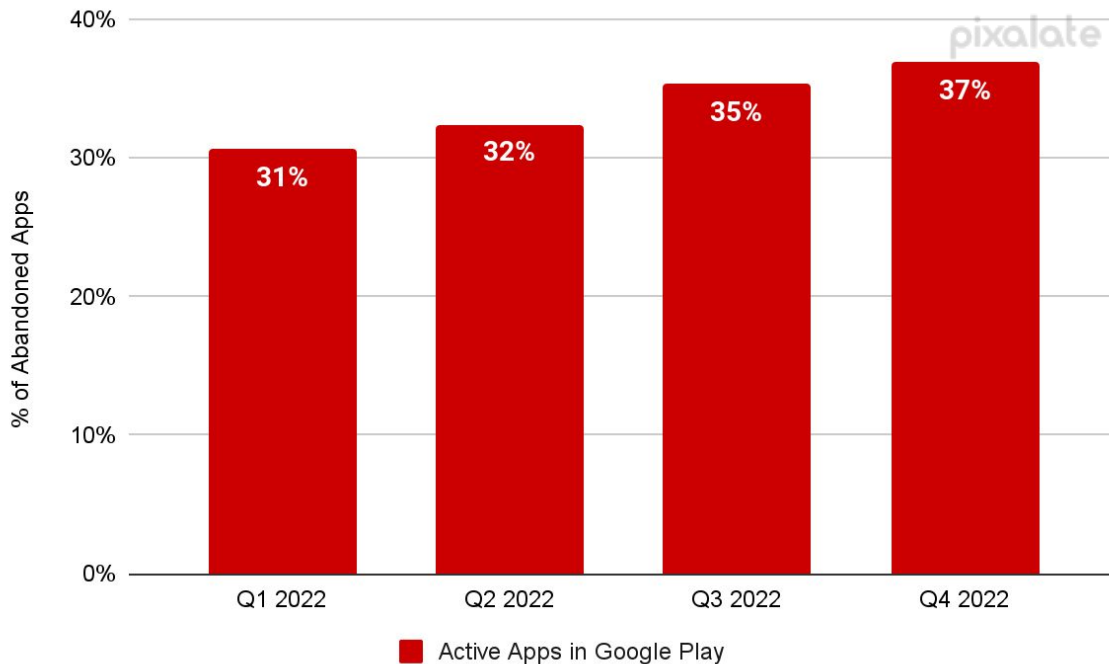
19%

more abandoned apps in the Google Play Store in Q4 2022 vs. Q1 2022, according to Pixalate's data.

Want more app data?
Schedule a demo:
pixal.at/demo

pixalate

Quarter	% of Abandoned Apps
Q1 2022	31%
Q2 2022	32%
Q3 2022	35%
Q4 2022	37%

■ Active Apps in Google Play

9%

of Apple apps are "Super-Abandoned" (last update 5+ years), while that is 6% in Google Store. These values have remained consistent through 2022, according to Pixalate's data.
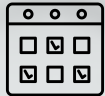
Want more app data? Schedule a demo:
pixal.at/demo

348K+ "SUPER-ABANDONED" APPS (LAST UPDATE 5+ YEARS)

GOOGLE + APPLE APP STORES; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

pixalate

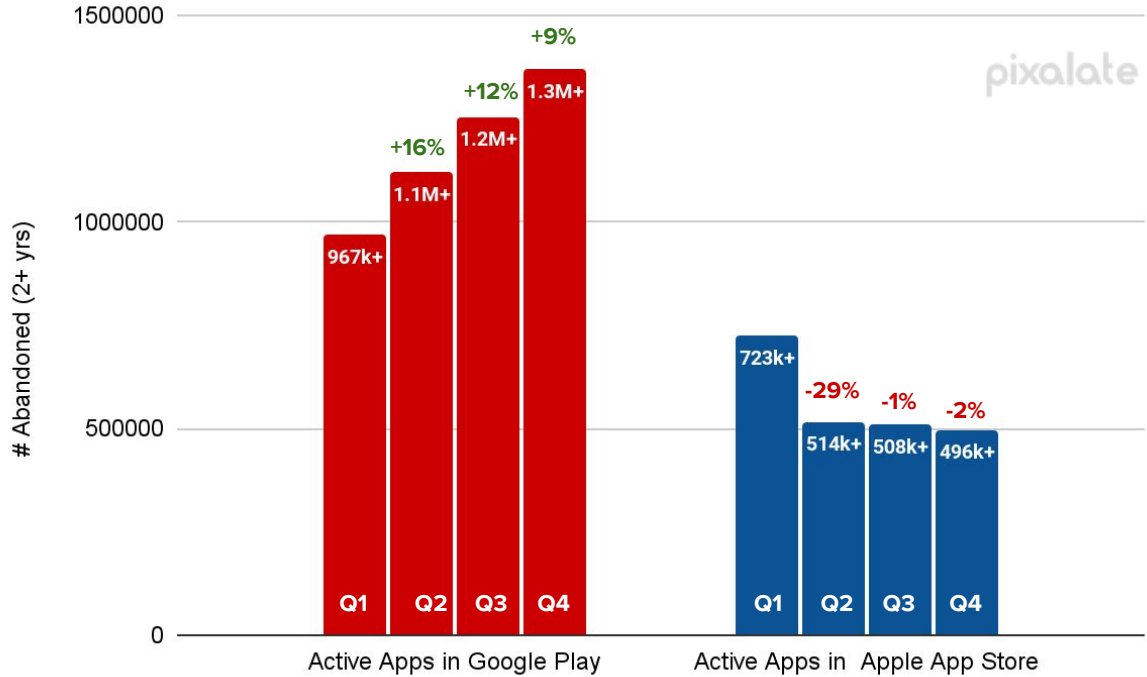| Time since last update	Google Play	Apple App Store
6 mos.	28%	33%
6-12 mos.	15%	15%
12-18 mos.	10%	10%
18-24 mos.	10%	9%
2-3 yrs.	17%	13%
3-4 yrs.	10%	7%
4-5 yrs.	4%	3%
5 + yrs.	6%	9%

Time since last update

■ Google Play   ■ Apple App Store
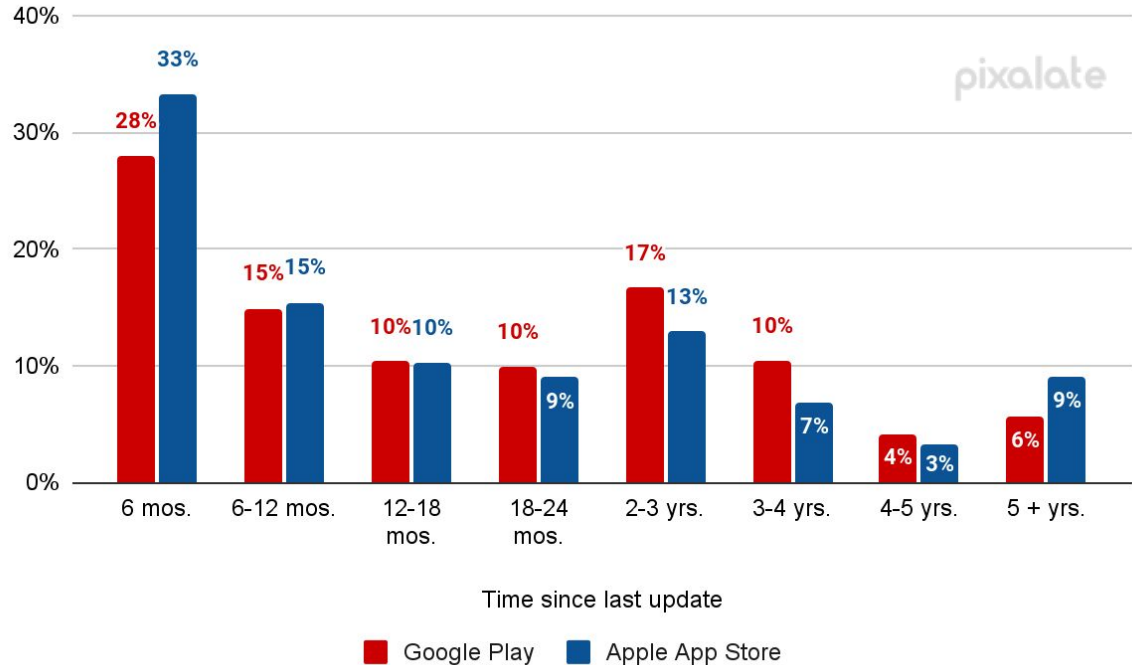
ABANDONED APPS
TRANSPARENCY ANALYSIS
2022

pixalate

390k+

apps with no detected URL to a privacy policy that were abandoned as of Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo: **pixal.at/demo**

68% APPS WITH NO DETECTED PRIVACY POLICY URL ARE ABANDONED

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

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% of Privacy Policy URL not detected

Quarter	Value
Q1 2022	60%
Q2 2022	55%
Q3 2022	61%
Q4 2022	68%
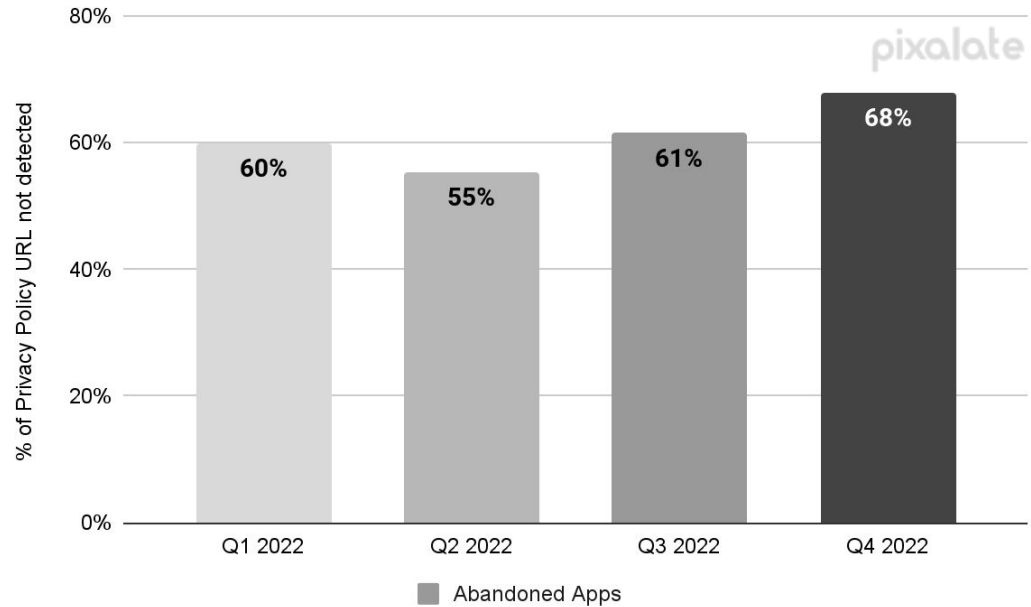
■ Abandoned Apps

280k+

Google Play Store apps with no detected URL to a privacy policy were abandoned as of Q4 2022, according to Pixalate's data

GOOGLE: 61% OF APPS WITHOUT A PRIVACY POLICY URL ARE ABANDONED - UP 49% IN 2022

GOOGLE PLAY STORE; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

pixalate

% of Privacy Policy URL not detected

80%	
60%	61%
40%	41% 45% 52%
20%	
0%	Q1 2022 Q2 2022 Q3 2022 Q4 2022

■ Google % over no privacy policy
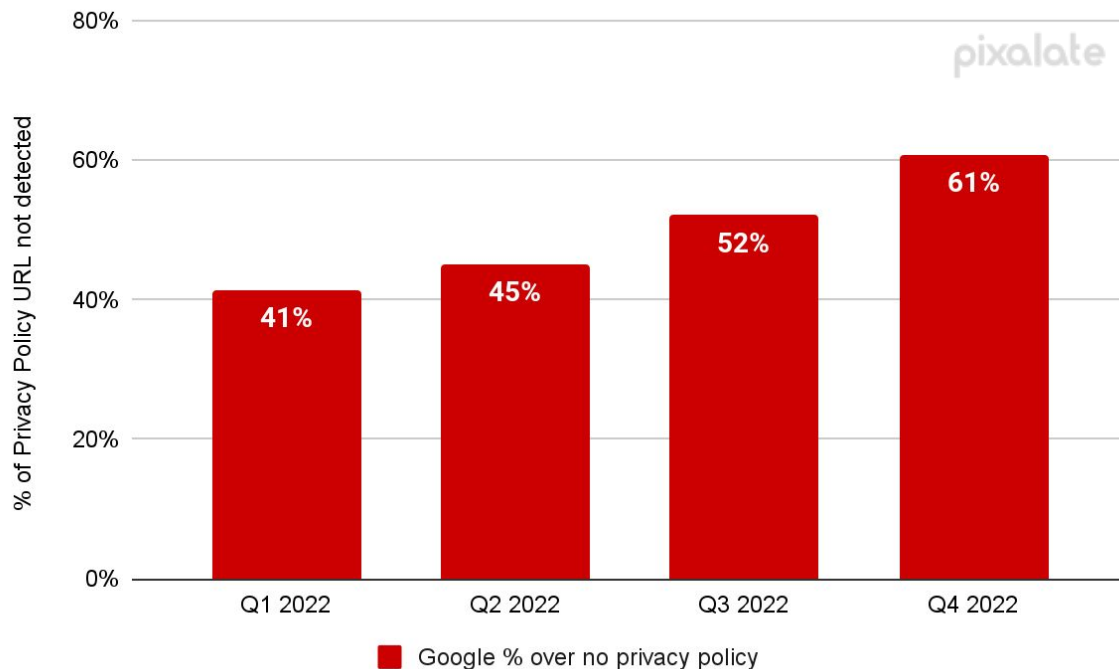
110k+

Apple App Store apps with no detected URL to a privacy policy were abandoned as of Q4 2022, according to Pixalate's data

Want more app data? Schedule a demo:
pixal.at/demo

APPLE: 97% OF APPS WITHOUT A PRIVACY POLICY URL ARE ABANDONED

APPLE APP STORE; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

pixalate

% of Privacy Policy URL not detected

Q1 2022	Q2 2022	Q3 2022	Q4 2022
99%	92%	98%	97%

■ Apple % over no privacy policy
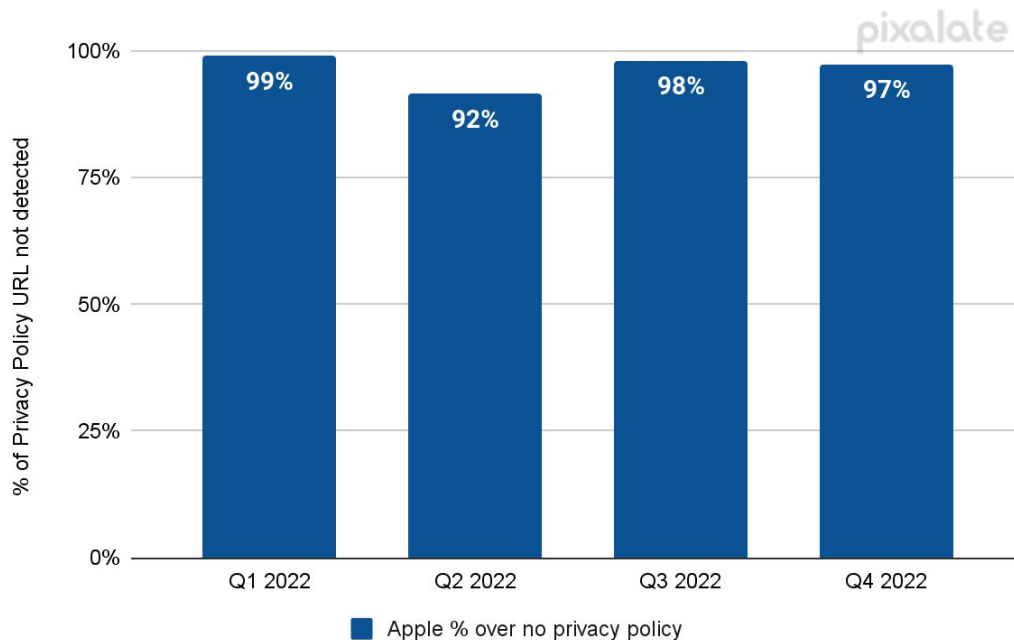
31%

of abandoned apps that have programmatic ads transmitted both IP address and user location data in the ad bid stream in Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo:
pixal.at/demo

86%+ (13k+) ABANDONED APPS WITH ADS TRANSMITTED END-USER LOCATION IN AD BID STREAM IN Q4

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE
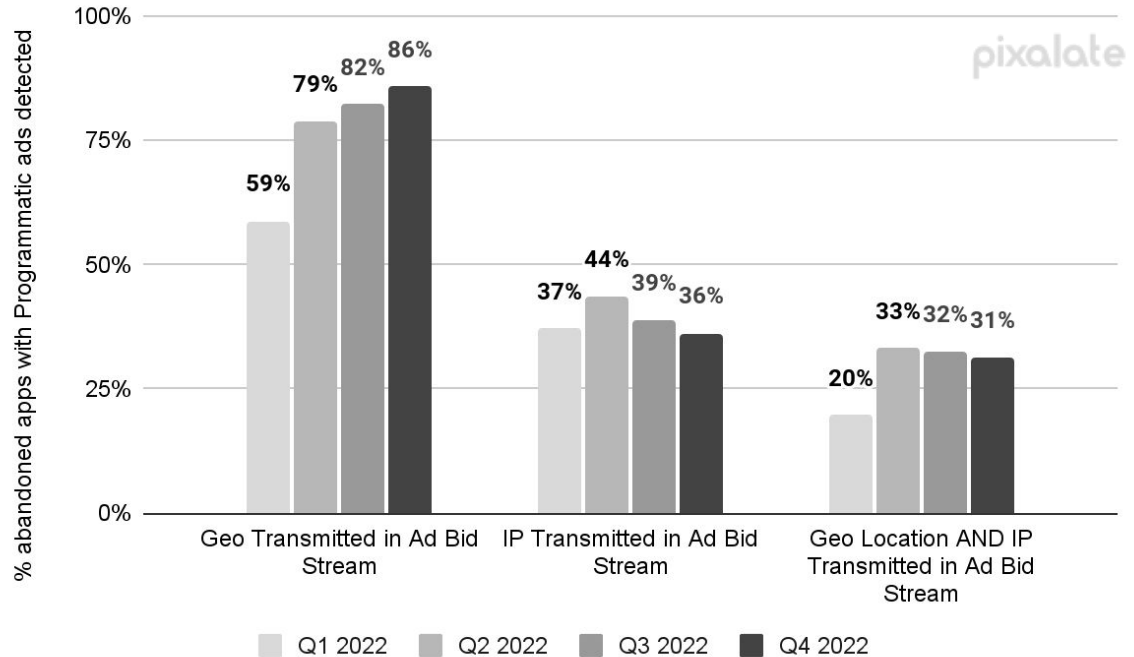
pixalate

Geo Transmitted in Ad Bid Stream: 59%, 79%, 82%, 86%
IP Transmitted in Ad Bid Stream: 37%, 44%, 39%, 36%
Geo Location AND IP Transmitted in Ad Bid Stream: 20%, 33%, 32%, 31%

% abandoned apps with Programmatic ads detected

- Q1 2022
- Q2 2022
- Q3 2022
- Q4 2022

ABANDONED APPS
COUNTRY OF REGISTRY
2022

pixalate

GOOGLE: 47% OF RUSSIAN-REGISTERED APPS AVAILABLE TO DOWNLOAD WERE ABANDONED AS OF Q4 2022

GOOGLE PLAY STORE; BY COUNTRY OF REGISTRY BASED ON % OF ABANDONED APPS; AS OF THE END OF Q4 2022; AS MEASURED BY PIXALATE

42%

Of Google Play Store apps with no identified country of registry were abandoned as of the end of Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo: pixal.at/demo

47%

UK=43%

40%

45%

Google Play
Average 37%

0.122   0.664

pixalate
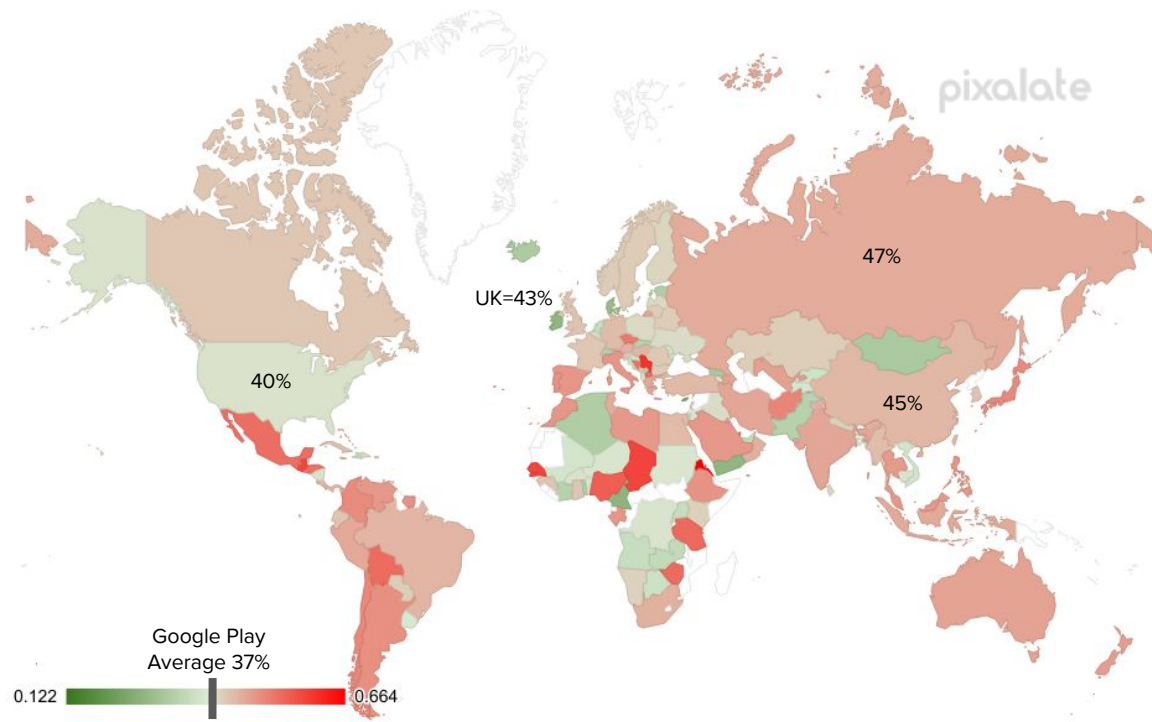
APPLE: 39% OF RUSSIAN-REGISTERED APPS AVAILABLE TO DOWNLOAD WERE ABANDONED AS OF Q4 2022

APPLE APP STORE; BY COUNTRY OF REGISTRY BASED ON % OF ABANDONED APPS; AS OF THE END OF Q4 2022; AS MEASURED BY PIXALATE

33%

Of Apple App Store apps with no identified country of registry were abandoned as of the end of Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo:
pixal.at/demo

UK=36%

39%

33%

34%

Apple Store Average 32%

0.17   0.601
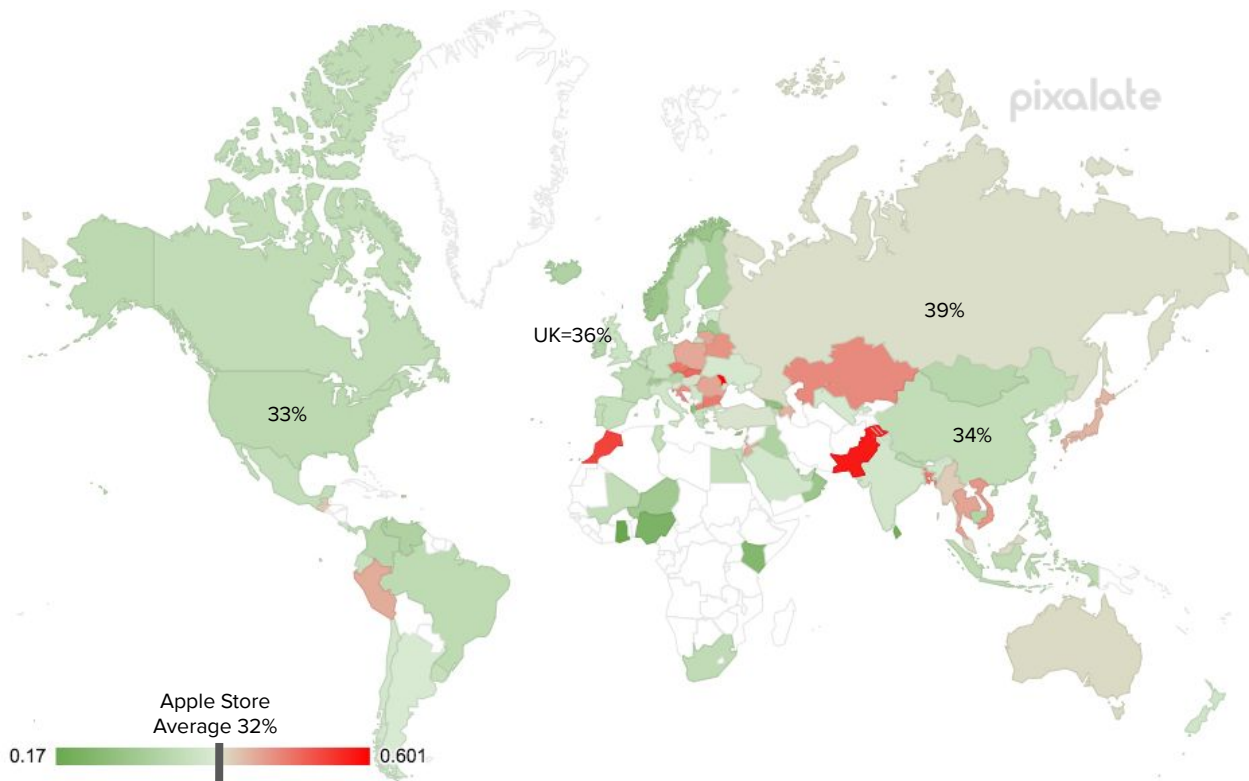
128k+

of abandoned apps registered in the U.S. that were last updated 2 years ago or more, out of 341k+ total U.S.-registered apps, across Google and Apple app stores combined, according to Pixalate's data

Want more app data?
Schedule a demo:
pixal.at/demo

38% OF APPS REGISTERED IN THE U.S. ARE ABANDONED

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

Bar chart showing abandoned app percentages:

Updated (within 6 mos.): Q1 2022: 33%, Q2 2022: 32%, Q3 2022: 31%, Q4 2022: 31%

Abandoned (2+ yrs.): Q1 2022: 36%, Q2 2022: 35%, Q3 2022: 36%, Q4 2022: 38%

Legend: Q1 2022 | Q2 2022 | Q3 2022 | Q4 2022

🇬🇧

23k+

of abandoned apps registered in the U.K. that were last updated 2 years ago or more, out of 57k+ total U.K.-registered apps, across Google and Apple app stores combined, according to Pixalate's data

Want more app data?
Schedule a demo:
pixal.at/demo

41% OF APPS REGISTERED IN THE U.K. ARE ABANDONED

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

	Updated (within 6 mos.)	Abandoned (2+ yrs.)
Q1 2022	27%	38%
Q2 2022	29%	38%
Q3 2022	29%	40%
Q4 2022	28%	41%

35k+

of abandoned apps registered in China that were last updated 2 years ago or more, out of 87k+ total registered apps in China, across Google and Apple app stores combined, according to Pixalate's data

Want more app data? Schedule a demo:
pixal.at/demo

40% OF APPS REGISTERED IN CHINA ARE ABANDONED

GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

Bar chart showing abandoned mobile apps.

Updated (within 6 mos.): Q1 2022 28%, Q2 2022 29%, Q3 2022 30%, Q4 2022 31%

Abandoned (2+ yrs.): Q1 2022 40%, Q2 2022 38%, Q3 2022 39%, Q4 2022 40%

Legend: Q1 2022 | Q2 2022 | Q3 2022 | Q4 2022
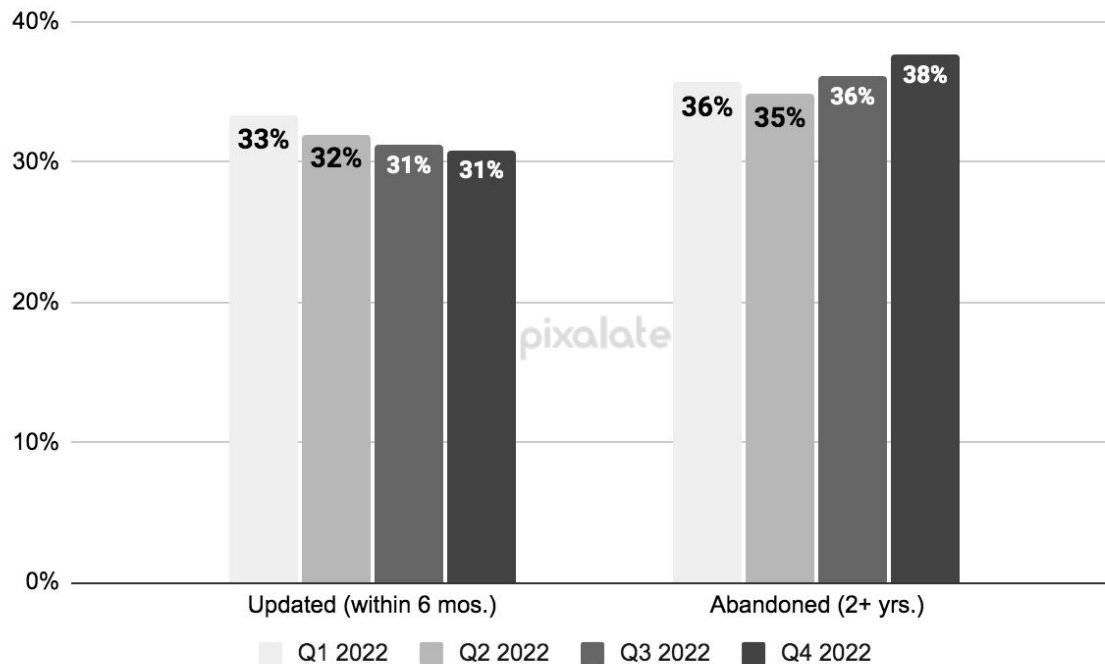
22k+
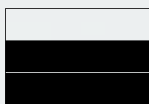
# of abandoned apps registered in Russia that were last updated 2 years ago or more, out of 50k+ total registered apps in Russia, across Google and Apple app stores combined, according to Pixalate's data

Want more app data? Schedule a demo:
pixal.at/demo

45% OF APPS REGISTERED IN RUSSIA ARE ABANDONED

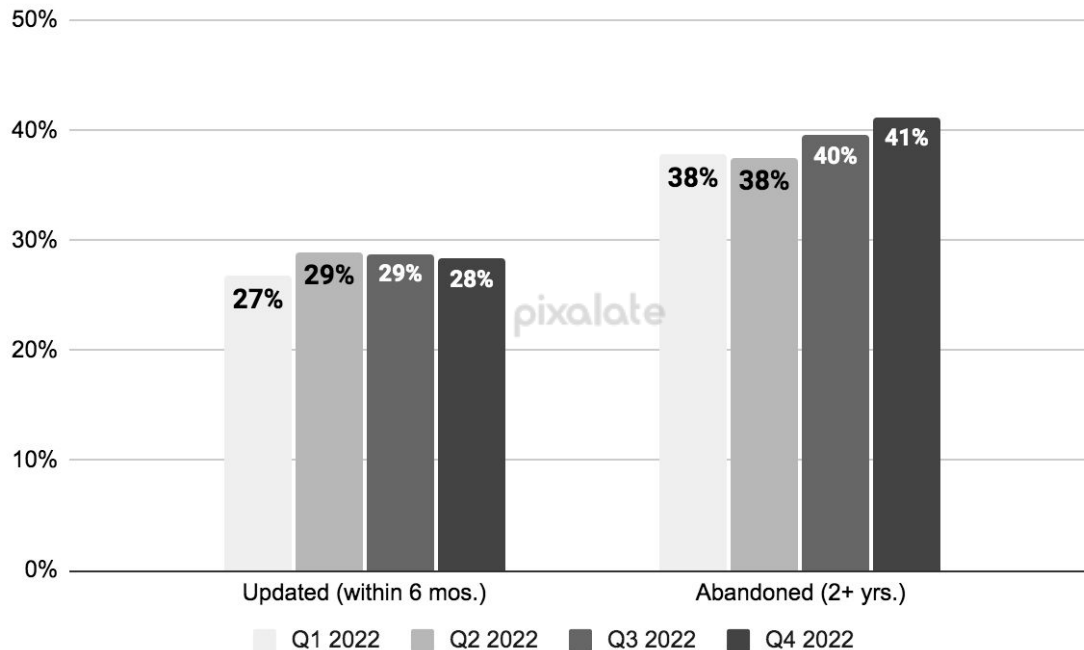**GOOGLE + APPLE APP STORES COMBINED; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE**

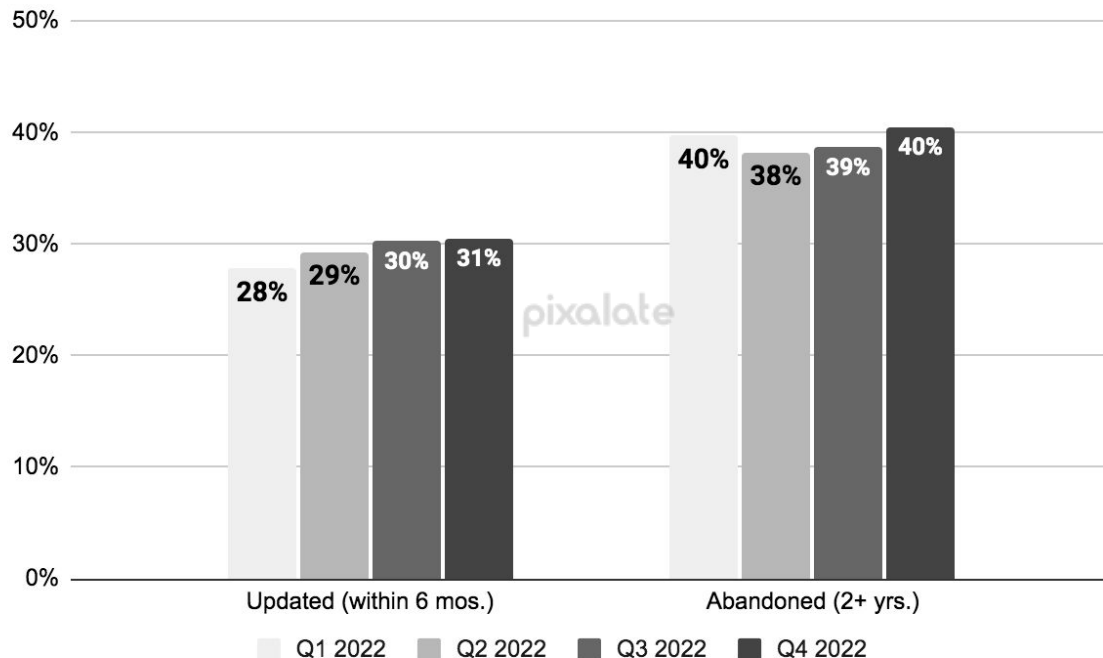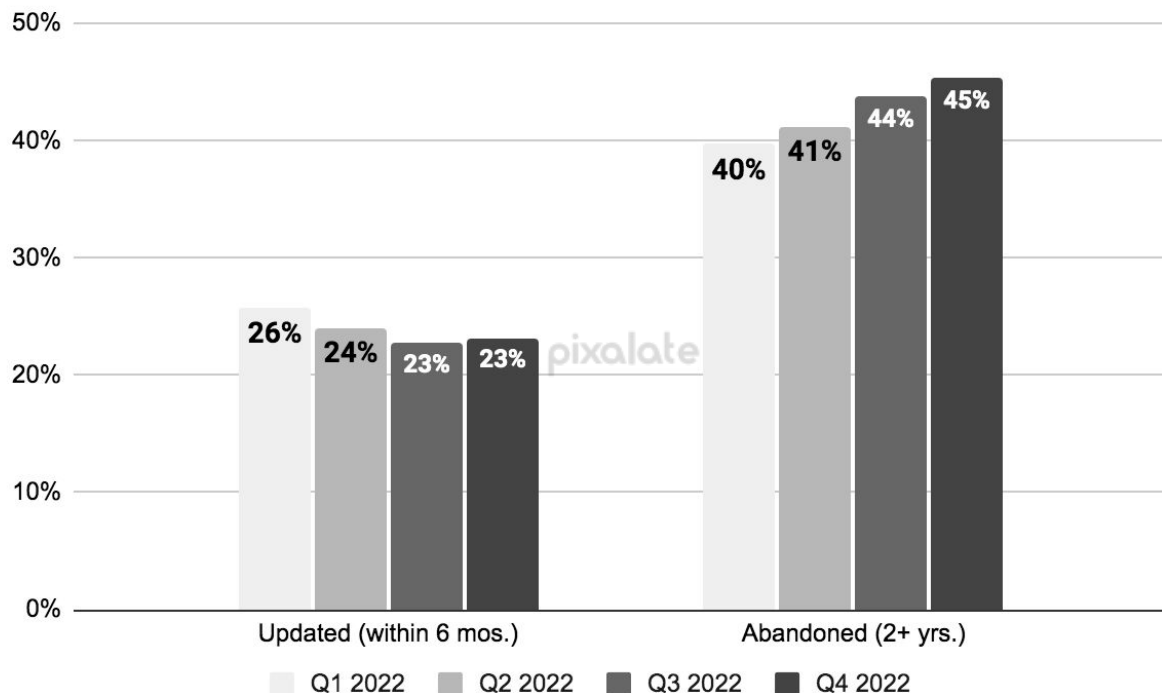Updated (within 6 mos.): Q1 2022: 26%, Q2 2022: 24%, Q3 2022: 23%, Q4 2022: 23%

Abandoned (2+ yrs.): Q1 2022: 40%, Q2 2022: 41%, Q3 2022: 44%, Q4 2022: 45%

Legend: Q1 2022, Q2 2022, Q3 2022, Q4 2022

ABANDONED APPS
APP STORE CATEGORIES
Q4 2022

pixalate

GOOGLE STORE: 38% (148k+) OF EDUCATION APPS ARE ABANDONED

AS OF THE END OF Q4 2022; AS MEASURED BY PIXALATE; TOP 14 CATEGORIES IN TERMS OF # OF ABANDONED APPS SHOWN

35%

43k+

of apps in Health & Fitness category are abandoned (last updated +2 years) in the Google Play Store in Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo:
pixal.at/demo

Category	%
Games	38%
Education	38%
Business	38%
Tools	39%
Music & Audio	37%
Entertainment	33%
Books & Reference	43%
Lifestyle	36%
Shopping	32%
Productivity	37%
Food & Drink	34%
Personalization	35%
Health & Fitness	35%
Travel & Local	42%

% of abandoned apps (2+ yrs. since last update) in Google Play Store in Q4 2022
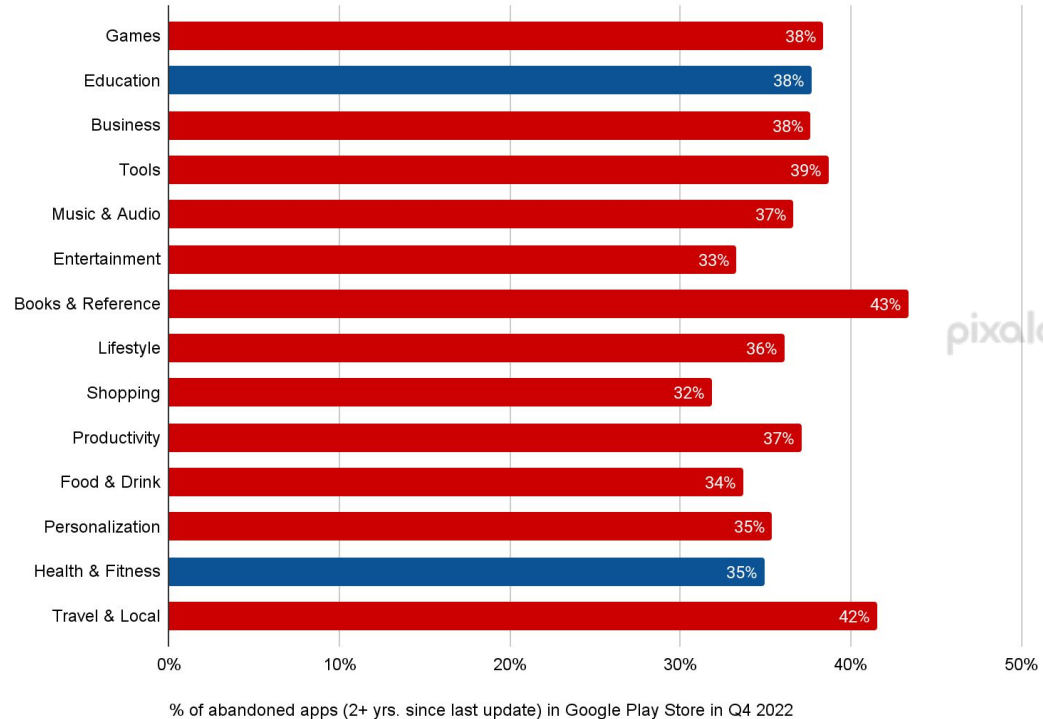
pixalate

37%

56k+

of apps in the Education category are abandoned (last updated +2 years) in the Apple App Store in Q4 2022, according to Pixalate's data.

Want more app data? Schedule a demo: pixal.at/demo

APPLE: 52% (96k+) OF GAMES APPS ARE ABANDONED

AS OF THE END OF Q4 2022; AS MEASURED BY PIXALATE; TOP 15 CATEGORIES IN TERMS OF # OF ABANDONED APPS SHOWN

Category	%
Games	52%
Education	37%
Utilities	30%
Business	25%
Lifestyle	28%
Entertainment	41%
Food & Drink	23%
Productivity	27%
Health & Fitness	25%
Travel	32%
Shopping	19%
Music	44%
Photo & Video	50%
Medical	29%

% of abandoned apps (2+ yrs. since last update) in Apple Store in Q4 2022
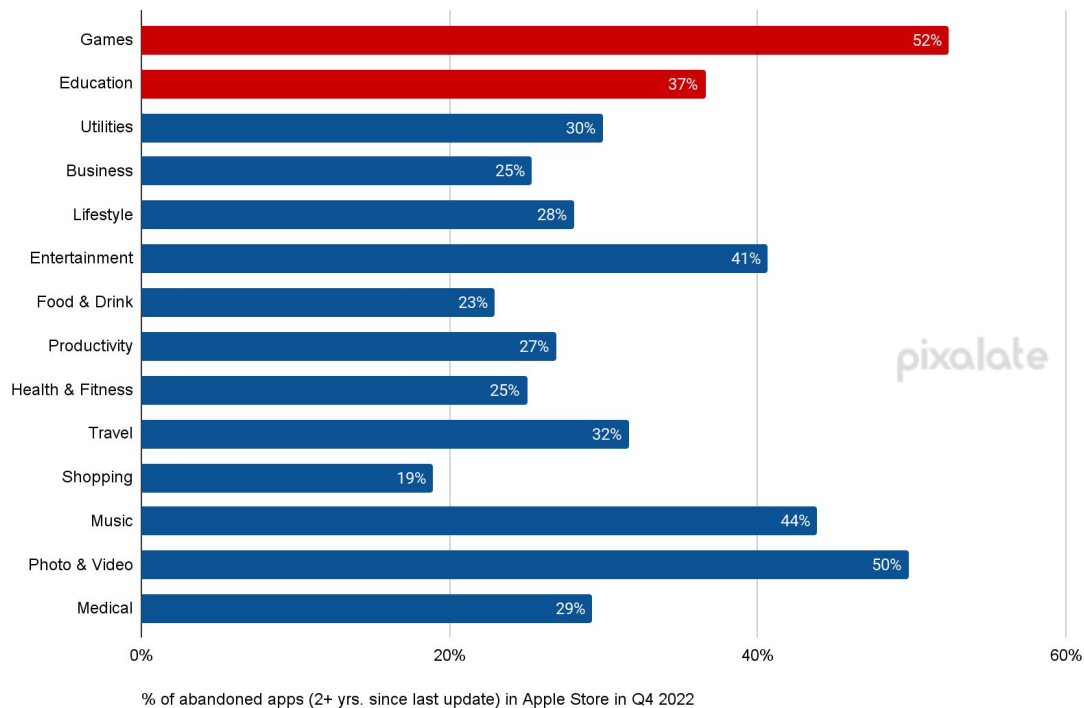
pixalate

ABANDONED APPS LIKELY CHILD-DIRECTED APPS
2022
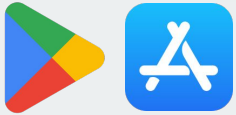
pixalate

20%+

The number of likely-child directed apps that are abandoned increased in the Google Play Store by 20%, while it decreased in Apple App Store by 2%, according to Pixalate's data.

Want more app data? Schedule a demo: pixal.at/demo

108k+ LIKELY CHILD-DIRECTED APPS ARE ABANDONED IN GOOGLE PLAY; 68k+ IN APPLE APP STORE IN Q4

GOOGLE + APPLE APP STORES; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

pixalate

 # abandoned (24m+) apps

Likely Child-Directed Apps in Google Play:
- Q2: 81k+
- Q3: 90k+ (+11%)
- Q4: 108k+ (+20%)
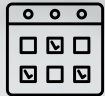
Likely Child-Directed Targeting Kids Apps Apple App Store:
- Q2: 75k+
- Q3: 69k+ (-7%)
- Q4: 68k+ (-2%)

APPLE APP STORE: 50% OF LIKELY CHILD-DIRECTED APPS ARE ABANDONED (18% ABOVE STORE AVERAGE)

APPLE APP STORE; QUARTERLY DATA 2022; AS MEASURED BY PIXALATE

68k+
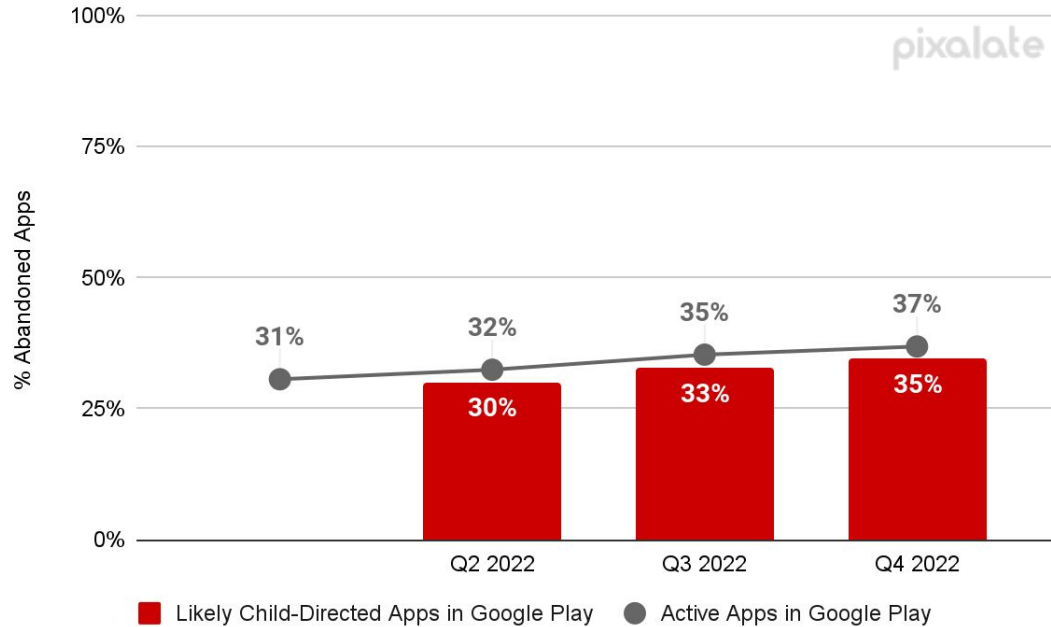
of likely child-directed apps that are abandoned (last updated +2 years), out of 135k+ total likely child-directed apps in Apple App store, according to Pixalate's data

Want more app data? Schedule a demo:
pixal.at/demo

% of Abandoned Apps (y-axis)

- 36%
- Q2 2022: 50% / 30%
- Q3 2022: 49% / 30%
- Q4 2022: 50% / 32%

Legend:
- ■ Likely Child-Directed Targeting Kids Apps Apple App Store
- ● Active Apps in Apple App Store
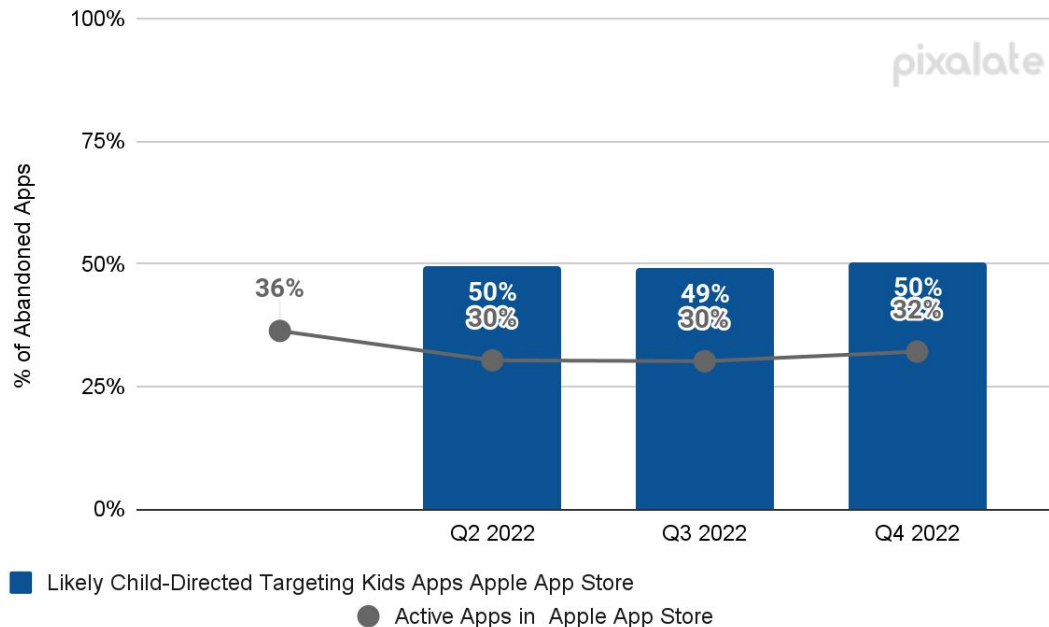
METHODOLOGY & DISCLAIMER

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METHODOLOGY

General

Pixalate's data science and analyst team analyzed apps and app developers from the Google Play Store and Apple App Store available to download during Q4 2022 (October 1 through December 31, 2022).

Pixalate uses the date of release of the current app version to determine the degree of apparent abandonment. For high-level data points, we consider an app to have a heightened risk of "abandonment" if it has not been updated in at least two years (as of the end of Q4 2022). However, this report also provides data showing different levels of apparent abandonment in six-month increments, up to apps that have not been updated in over five years. Updated apps are defined as those apps that have been updated within the last six months, and were active during Q4 2022. "Active" means the app was available for download.

Country of Registration

The country of registration for a given app is determined only if a) the app has a physical address published in its app store page, or otherwise b) from the registrant physical address of the publisher domain listed in the app store page excluding privately registered ones. If none is available, the physical address associated with an app cannot be determined. Sometimes, the same developer may list different countries of registration for different apps.

Downloads and user ratings

Top 10 lists referred to within this report are determined based on the published number of downloads (Google Play Store) or user ratings (Apple App Store); Apple Store does not provide download values; data derived from crawls of the respective app stores performed by Pixalate or one of Pixalate's third party licensors.

METHODOLOGY (CONT.)

"Apps with ads"

In the context of this report, an app is considered to be an "app with ads" if Pixalate detected programmatic ad impressions on the app.

Estimated Ad Spend

Pixalate calculates estimated programmatic ad spend through statistical models that incorporate programmatic monthly active users (MAU), the average session duration per user, the average CPM for the category of a given app, and ad density. It is expressed in USD.

URL to Privacy Policy

An app is considered to have a detectable URL to privacy policy if crawls of the Google or Apple app stores resulted in detection of content that Pixalate's proprietary system classified as a privacy policy. Otherwise, the app is considered to have either no or an undetected URL to Privacy Policy - i.e, "missing URL."

Transmits Residential IP

Pixalate examines the traffic associated with an app and determines if the end-user IP is transmitted through the advertising pipeline that can expose granular information about the user's location.

Passes Location

Pixalate examines the traffic associated with an app and determines if the end-users' GPS coordinates are being transmitted through the advertising pipeline that exposes granular information about the user's location.

METHODOLOGY (CONT.)

Likely Child-Directed Apps

Pixalate uses automated processing derived from a combination of signals (which at times is coupled with human intervention) to determine if an app is likely to be child-directed, including the app's category, sub-category, content rating, and contextual signals (specifically, child-related keywords in app's title or the app's description). Pixalate also leverages manual app review by the Pixalate Trust & Safety Advisory Board. See our full methodology for more.

DISCLAIMER

The content of this report reflects Pixalate's opinions with respect to the factors Pixalate believes may 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.

The mere fact an app does not appear to have been updated in a certain period of time does not necessarily mean that such app's publisher has abandoned the app, or is otherwise violating any policy, best practice, or regulation. Instead, we are merely noting the apparent inactivity and rendering an opinion that this apparent absence of updates may be suggestive of heightened risks to end users.

Pixalate is sharing this data not to impugn the standing or reputation of any entity, person or app, but, instead, to render opinions and report trends pertaining to apps available for download via the official Apple App Store and Google Play Store.

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ABOUT PIXALATE

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 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 CTV advertising. www.pixalate.com

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