LIFTOFF

Mobile App
Trends Report

A GROWING MOBILE ECONOMY

2019

DATING

ENTERTAINMENT

SHOPPING

FINANCE

GAMING

TRAVEL

LIFTOFF

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Introduction

The global App Economy is firing on all cylinders, and more countries than ever offer marketers value for money.

- Consumers are expected to spend an incredible $120 billion in app stores in 2019, 5x the growth rate of the global economy. ([App Annie](#))
- The mix of top mobile countries is shifting (measured in app downloads) with India leading the pack, followed by the U.S., Brazil and Russia. ([Sensor Tower](#))
- Indonesia, Southeast Asia's largest economy, is the fastest-growing country for app marketers, followed by Brazil, Korea, Malaysia, and Turkey. ([Adjust](#))

Mobile and apps have cemented their lead position as the global "go-to" for commerce, content, communication—and more. Indeed, 2018 wasn't just [the biggest year for mobile yet](#). It was the year that time spent on mobile shot into the stratosphere. Overall, audiences consume media on their devices for roughly 10 minutes out of every hour.

The seismic shift in app market dynamics demands an audience-first approach. This report breaks new ground, combining app market intelligence and Liftoff internal data to provide marketers a holistic view of the trends and metrics impacting user acquisition, engagement and retention across a variety of app categories (Dating, Finance, Gaming, Shopping and Utility) and regions (APAC, EMEA, LATAM and North America). Finally, this report draws from a survey of app marketing experts to provide a fresh perspective on key opportunities (programmatic) and challenges (mobile ad fraud) shaping the global app marketplace.

A report of this breadth and depth requires collaboration with companies across the app and customer lifecycle. We want to thank our partners for contributing their data and insights, ensuring your app remains at the center of the customer experience.

Methodology

Date Range: Sep 1 2018 - Aug 31 2019
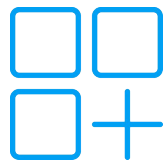
992	**349**	**5.35**	**128**	**21.4**	**76.6**
Apps Included	Impressions (B)	Clicks (B)	Installs (MM)	First Time Events (MM)	Total Post-Install Events (MM)
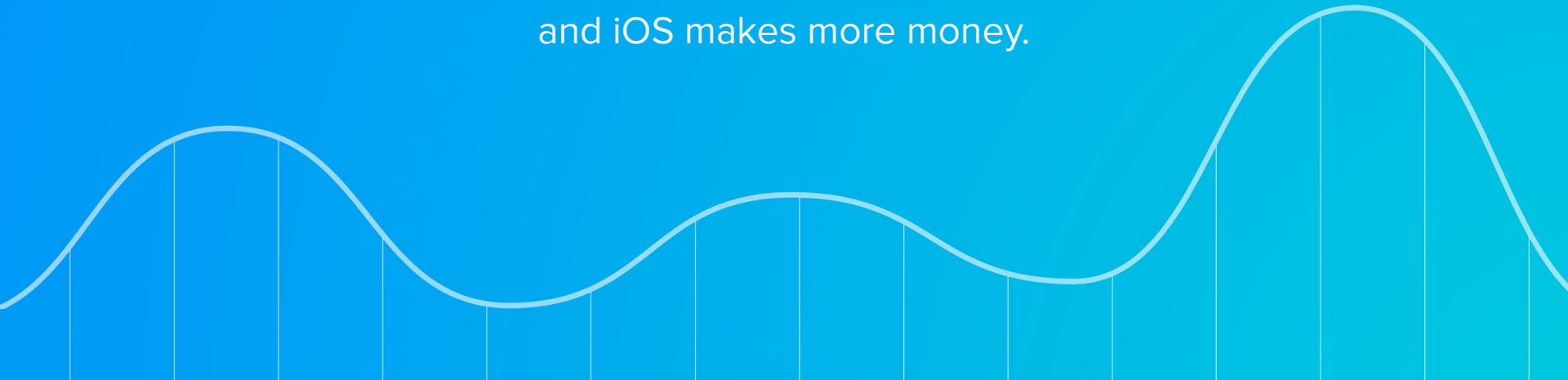
App Economy

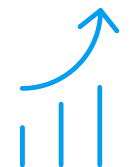More apps chase more users —
and iOS makes more money.

Android dominates with an avalanche of new app uploads.

- At 1.45 million, the total number of new Android apps outnumbers iOS apps (489K) by a ratio of nearly 3:1.
- Google Play is a magnet for new games, outnumbering iOS by a ratio of 4:1.

New Apps Added by App Category

Number of New Apps Added

Category	iOS / Google Play
BUSINESS	59,299 / 88,594
COMMUNICATION	42,232
DATING	11,263
EDUCATION	43,261 / 120,020
ENTERTAINMENT	25,654 / 160,069
FINANCE	16,390 / 39,619
FOOD & DRINK	29,480 / 47,846
GAMES	55,572 / 222,903
HEALTH & FITNESS	24,017 / 40,332
LIFESTYLE	50,979 / 65,778
MAPS & NAVIGATION	5,125 / 15,869
MUSIC & AUDIO	7,977 / 154,456
NEWS & MAGAZINES	7,656 / 28,356
PERSONALIZATION	71,650
PHOTO & VIDEO	7,193 / 34,072
PRODUCTIVITY	24,741 / 47,305
SHOPPING	28,004 / 47,616
SOCIAL	15,539 / 37,197
SPORTS	10,668 / 25,182
TOOLS	100,218
TRAVEL & LOCAL	18,943 / 32,310
UTILITIES	54,303
VIDEO PLAYERS & EDITORS	15,614
WEATHER	991 / 2,754

0   50,000   100,000   150,000   200,000   250,000   300,000

■ iOS APP STORE   ■ GOOGLE PLAY

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App download numbers show iOS is a strong contender to Android.

- At 143 billion, the total number of apps downloaded outpaces the number of new apps uploaded (1.45 million). Moreover, Android's lead over iOS shrinks to a ratio of nearly 2:1.
- **Gaming** apps lead the pack measured by the number of total downloads, a dynamic that also benefits iOS. The near even split in downloads across **Finance**, **Health & Fitness**, **Travel** and **Sports** suggest these are attractive app categories with universal appeal.

Downloads by App Category

Downloads in Millions

Category	iOS App Store / Google Play
BUSINESS	1.2 / 1.2
COMMUNICATION	4.7
DATING	0.4
EDUCATION	1.5 / 1.7
ENTERTAINMENT	2.7 / 5.7
FINANCE	2.4 / 2.8
FOOD & DRINK	1.0 / 1.4
GAMES	15.3 / 41.2
HEALTH & FITNESS	1.3 / 1.5
LIFESTYLE	2.1 / 1.7
MAPS & NAVIGATION	0.6 / 1.4
MUSIC & AUDIO	1.5 / 2.8
NEWS & MAGAZINES	0.7 / 1.1
PERSONALIZATION	1.7
PHOTO & VIDEO	3.3 / 3.7
PRODUCTIVITY	1.6 / 2.4
SHOPPING	2.5 / 3.5
SOCIAL	2.4 / 4.4
SPORTS	1.3 / 1.8
TOOLS	5.9
TRAVEL & LOCAL	1.7 / 1.8
UTILITIES	2.7
VIDEO PLAYERS & EDITORS	3.0
WEATHER	0.3 / 0.9

Axis: 0 1B 2B 3B 4B 5B 60B

■ iOS APP STORE ■ GOOGLE PLAY
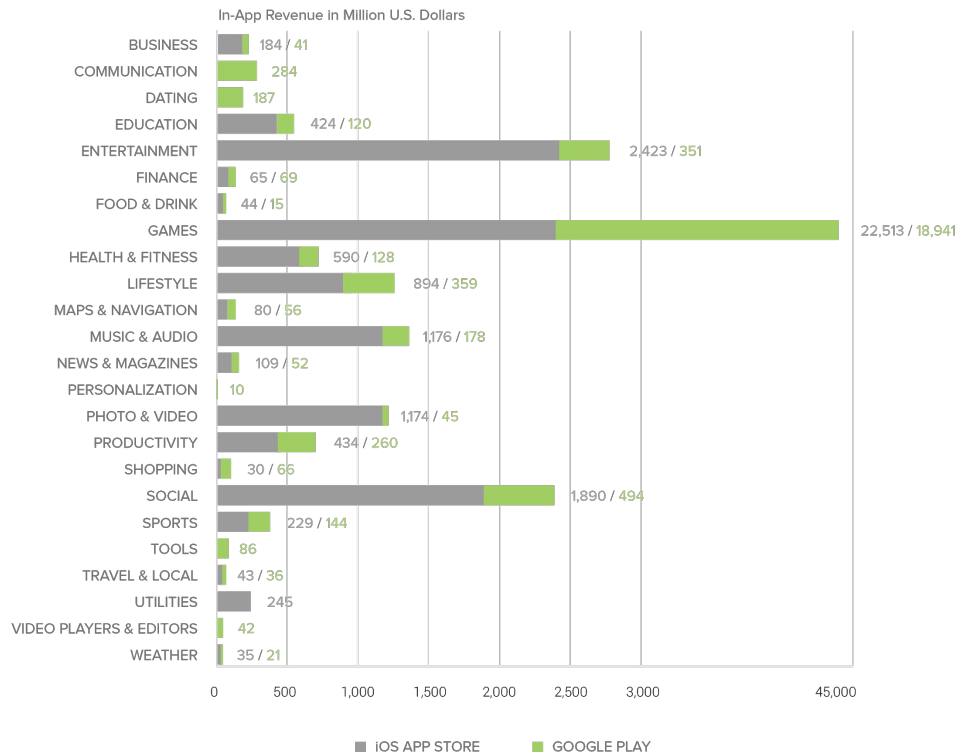
Android downloads move the needle, but iOS continues to be a massive money-maker.

- Android may have significant mindshare, but iOS has a much larger share of wallet. iOS apps account for 1.5x the amount of revenue ($32.6 billion) compared to Android ($22 billion).
- From **Gaming** & **Music Streaming** to **Entertainment** & **Social**, the top-grossing app categories are synonymous with leisure time and pastimes. It's no coincidence that these categories are also where iOS accounts for the lion's share of revenues.

In-App Revenue by App Category

In-App Revenue in Million U.S. Dollars

Category	Value
BUSINESS	184 / 41
COMMUNICATION	284
DATING	187
EDUCATION	424 / 120
ENTERTAINMENT	2,423 / 351
FINANCE	65 / 69
FOOD & DRINK	44 / 15
GAMES	22,513 / 18,941
HEALTH & FITNESS	590 / 128
LIFESTYLE	894 / 359
MAPS & NAVIGATION	80 / 56
MUSIC & AUDIO	1,176 / 178
NEWS & MAGAZINES	109 / 52
PERSONALIZATION	10
PHOTO & VIDEO	1,174 / 45
PRODUCTIVITY	434 / 260
SHOPPING	30 / 66
SOCIAL	1,890 / 494
SPORTS	229 / 144
TOOLS	86
TRAVEL & LOCAL	43 / 36
UTILITIES	245
VIDEO PLAYERS & EDITORS	42
WEATHER	35 / 21

0   500   1,000   1,500   2,000   2,500   3,000   45,000
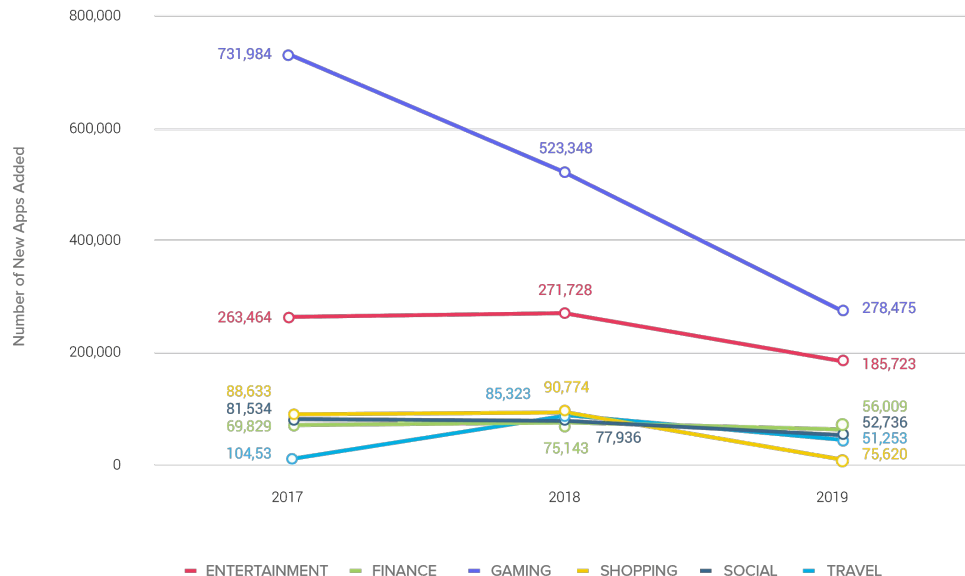
■ iOS APP STORE   ■ GOOGLE PLAY

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Non-gaming apps are positioned to power the next wave of App Economy growth, and betting on fewer apps to do it.
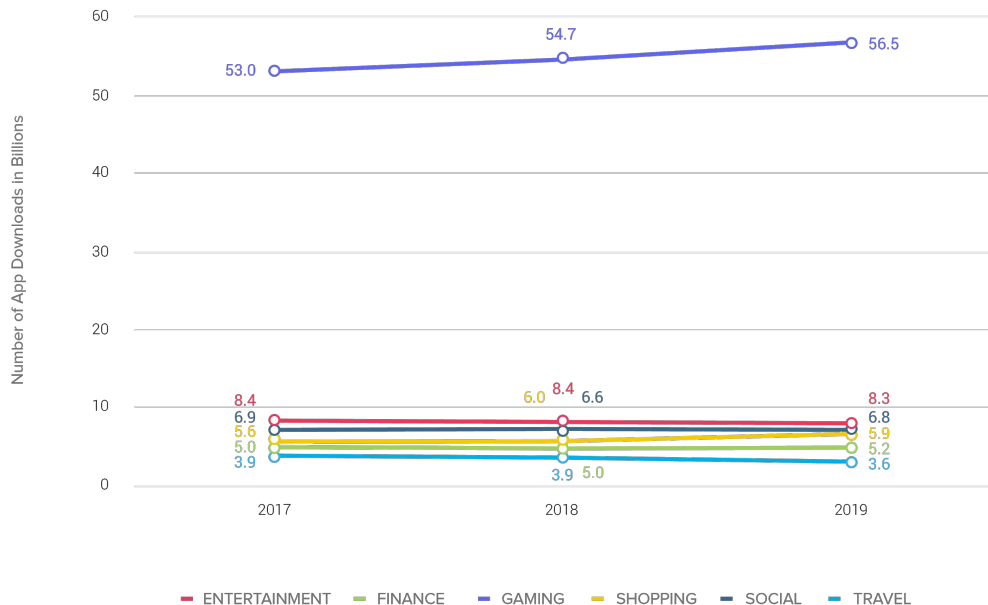
A massive drop in the number of **Gaming** apps (down 47% YoY) and **Entertainment** (down 32% YoY) suggests grabbing a greater share of audience attention is an uphill battle.

Across non-gaming categories, new app uploads are stalled at a lower level, but the decline is greater, signifying less competition, consolidation of services, or both. **Travel** leads the pack, (down 40%) followed by **Social** (-32.3%), **Finance** (-25.5%) and **Shopping** (-16.7%).

New Apps Added by App Category YoY

Number of New Apps Added

	2017	2018	2019
GAMING	731,984	523,348	278,475
ENTERTAINMENT	263,464	271,728	185,723
	88,633	90,774	56,009
	81,534	85,323	52,736
	69,829	77,936	51,253
	104,53	75,143	75,620

■ ENTERTAINMENT   ■ FINANCE   ■ GAMING   ■ SHOPPING   ■ SOCIAL   ■ TRAVEL

Source: apptopia Global, iOS App Store & Google Play Combined, Sept 2017 - Aug 2019

Downloads by App Category YoY

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Growth isn't easy in a market where downloads have already hit record heights.

App downloads totaled 86.3 billion in 2019, up from 84.6 billion. **Gaming** apps growth (up 3.3%) has slowed, similar to **Entertainment** and **Travel** apps. Meanwhile, **Shopping** apps dropped by 1.7% from 6.0 billion to to 5.9 billion.
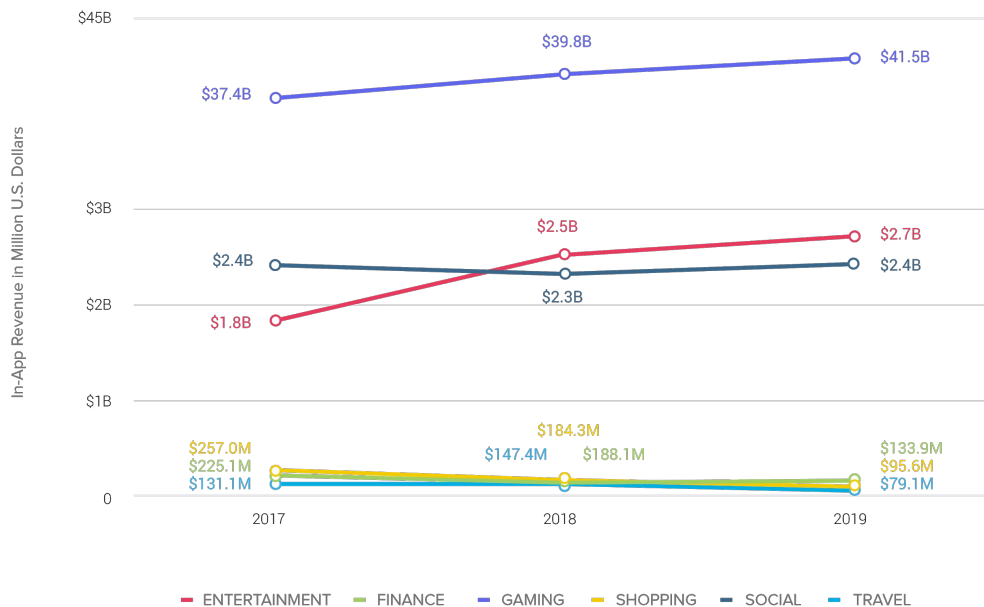
At 6.8 billion downloads, the number of **Social** apps increased 3.0% over the previous year, while downloads of **Finance** apps increased 4% to 5.2 billion.

Gaming, Entertainment and Social apps are raking in significant (and growing) revenues.

Gaming app revenue grew 4.27% to reach $41.5 billion up from $39.8 fuelled by ad-supported models that monetize audience attention. Notably, **Entertainment** and **Social** also chalked up big wins.

Meanwhile, some app categories are showing revenue fatigue. **Shopping** apps revenue decreased 48% (to $95.6 million). **Travel** follows a similar trajectory, down 46.3% ($79.1 million). Finally, **Finance** comes in at $133.9 million, down 28.8% from the previous year.

In-App Revenue by App Category YoY

In-App Revenue in Million U.S. Dollars

	2017	2018	2019
GAMING	$37.4B	$39.8B	$41.5B
ENTERTAINMENT	$1.8B	$2.5B	$2.7B
SOCIAL	$2.4B	$2.3B	$2.4B
SHOPPING	$257.0M	$184.3M	$95.6M
FINANCE	$225.1M	$188.1M	$133.9M
TRAVEL	$131.1M	$147.4M	$79.1M

Legend: ENTERTAINMENT · FINANCE · GAMING · SHOPPING · SOCIAL · TRAVEL

A decade on and the Sharing Economy is going strong.

- Sharing economy app downloads got off to a strong start in 2017, but then dipped slightly (down 4.7%) to reach 567 million in 2018.
- Downloads in 2019 are back on track, reaching 572 million (up 0.9% from the previous year).

Sharing Economy App Downloads YoY
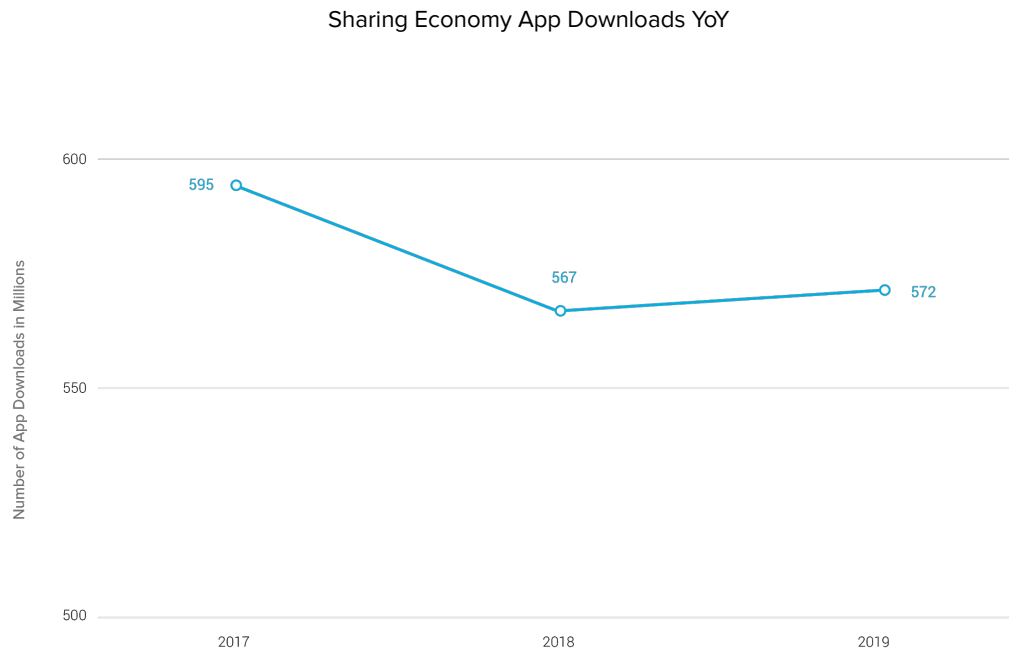
Ride sharing app downloads plummet, putting pressure on marketers to emphasize the value-add.

- Ride sharing app downloads are sluggish, a negative development that pushes marketers to do more to stand out from the competition.
- Downloads have dropped 28% since 2017 (when downloads totaled 435 million) to reach 313 million in 2019.

Ride Sharing App Downloads YoY

Number of App Downloads in Millions

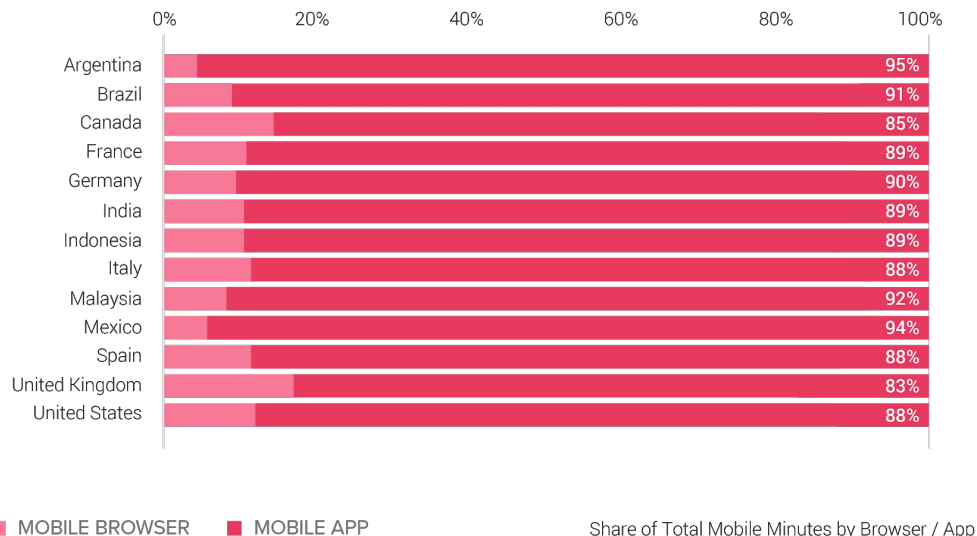|	
500	
435	
400	384
300	313

2017   2018   2019

14
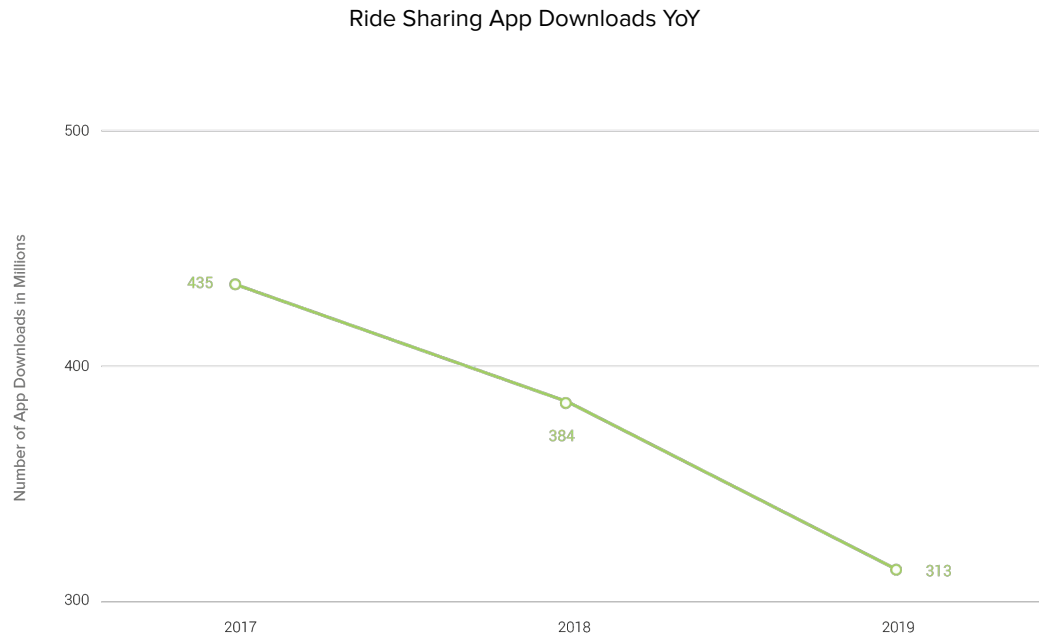
Globally, mobile apps account for 80% of all time spent in mobile—with no signs of stopping.

Data from audience measurement company comScore declares the smartphone the "dominant platform" measured in total minutes.

comScore also reports mobile apps now account for over 80% of *all* mobile time across all markets surveyed, making them the primary way consumers across 13 markets interact and transact daily.

Apps Account for Over 80% of Mobile Time

Country	Mobile App %
Argentina	95%
Brazil	91%
Canada	85%
France	89%
Germany	90%
India	89%
Indonesia	89%
Italy	88%
Malaysia	92%
Mexico	94%
Spain	88%
United Kingdom	83%
United States	88%

■ MOBILE BROWSER ■ MOBILE APP
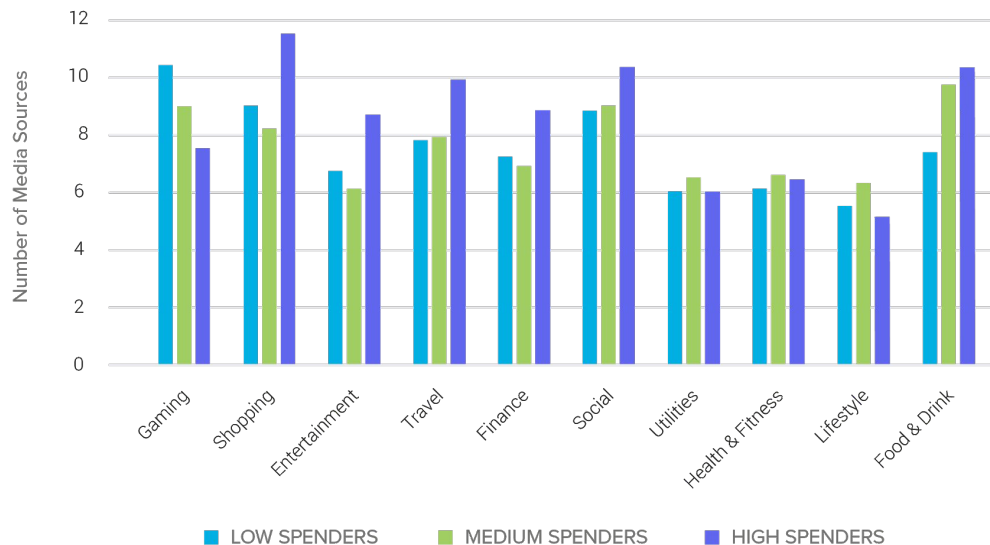
Share of Total Mobile Minutes by Browser / App

Source: comscore Mobile Metrix, Dec 2017

Determined to capture and convert bigger audiences—marketers are enlisting the help of more media partners.

Spend and network usage are highly correlated, according to data from AppsFlyer. While smaller advertisers are apt to focus budget on Facebook and Google, this shifts as campaigns meet and exceed growth targets. High-spenders run with nearly 25% more media partners to drive the needed scale.

Average Number of Media Sources

Number of Media Sources

Gaming · Shopping · Entertainment · Travel · Finance · Social · Utilities · Health & Fitness · Lifestyle · Food & Drink

■ LOW SPENDERS   ■ MEDIUM SPENDERS   ■ HIGH SPENDERS

Marketers are moving outside their comfort zone to work with more media partners, Liftoff survey results show.

App marketers are naturally eager to address new audiences, but are split roughly 70-30 on whether to stay with a handful of partners or experiment and optimize with 6+ media partners. Significantly, the percentage of respondents (25.8%) sticking with just one partner is comparable to the percentage of marketers (15.6%) engaging with 11+ partners.

Number of Media Media Partners Marketers Work With

Percentage of Responses

- 1: 25.8%
- 2: 12.3%
- 3: 9.9%
- 4: 10.1%
- 5: 10.1%
- 6: 5.2%
- 7: 4.0%
- 8: 1.9%
- 9: 1.2%
- 10: 4.0%
- 11+: 15.6%

Number of Media Partners

Facebook and Google rule the roost, but programmatic is making a strong showing.

Global Ad Trends data from Warc crowns 2019 as the first year that advertisers spent more on digital than traditional media, and the first time that Google and Facebook's share of digital ad spending is set to decline. While Warc estimates one in four dollars (or $144.6 billion) went to the "Duopoly," other platforms and social networks (such as Twitter, Reddit and Amazon) continue to chip away at Google and Facebook's market share.

Liftoff's survey pegs Google and Facebook at the top of the scale (combined spend 71%). Other channels account for 17%, followed by programmatic (12%). Together they account for nearly one-third (29%), a share of spend (see U.S spend trends from eMarketer) that is forecast to grow as more marketers diversify channels and build media plans on an audience-first strategy vs a channel buy.

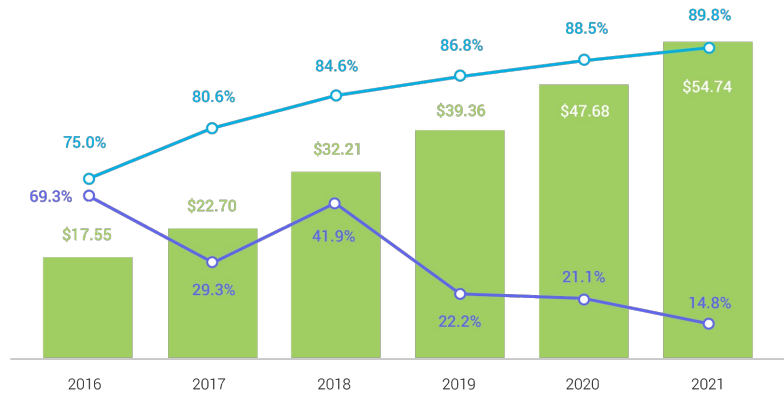Mobile Acquisition Marketing Spend by Top Channels

OTHER
17%

GOOGLE
33%

PROGRAMMATIC
12%

FACEBOOK
38%
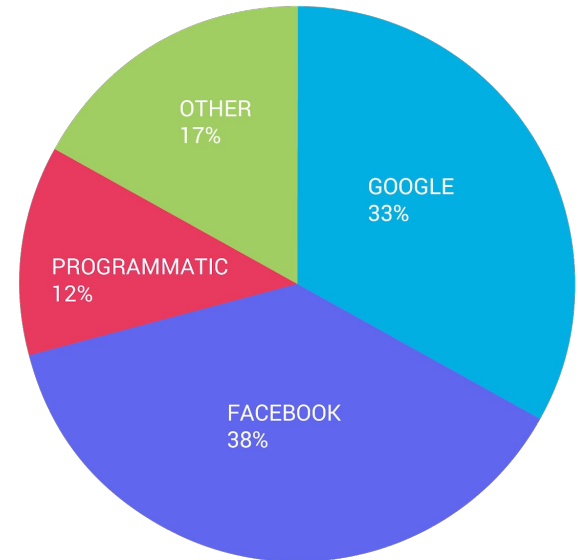
The "programmatic boom" is closer than you think as mobile takes the lead.

Global mobile ad spend is on course to reach $153.2 billion this year (compared to $138 billion in 2018), buoyed by a programmatic "boom", according to Warc's latest Global Ad Trends report.

The U.S. continues to set the pace, a major trend that research firm eMarketer puts into perspective. Mobile programmatic display ad spend (nearly $40 billion) accounts for 86.8% of total mobile display ad spend. While it may appear that the penetration of programmatic advertising in mobile display is plateauing, mobile programmatic in the in-app space are expected to see significant growth.

US Mobile Programmatic Display Ad Spending

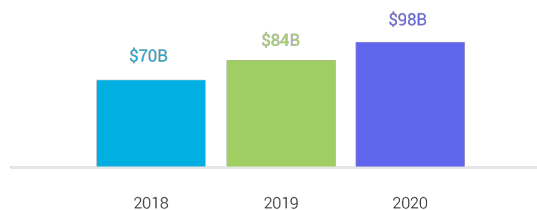|	2016	2017	2018	2019	2020	2021
MOBILE PROGRAMMATIC DISPLAY AD SPENDING	$17.55	$22.70	$32.21	$39.36	$47.68	$54.74
% CHANGE	75.0%	80.6%	84.6%	86.8%	88.5%	89.8%
% OF TOTAL MOBILE DISPLAY AD SPENDING	69.3% / 29.3%	41.9%	22.2%	21.1%	14.8%	

■ MOBILE PROGRAMMATIC DISPLAY AD SPENDING ━ % CHANGE ━ % OF TOTAL MOBILE DISPLAY AD SPENDING

Billions, % change and % of total mobile display ad spending

Source: eMarketer, US Programmatic Ad Spending Forecast, April 2019

65% of all money spent on advertising in digital media in 2019 will be programmatic.

The U.S. leads in programmatic spend and growth, according to Zenith's Programmatic Marketing Forecasts. It pegs spend at $40.6 billion in 2018–58% of the total. China is in a distant second place ($7.9 billion), followed by the U.K. ($5.6 billion).

Global Programmatic Ad Spend

$70B — 2018
$84B — 2019
$98B — 2020

Top Markets for Programmatic Ad Spend | 2018

$40.6B (United States)
$5.6B (United Kingdom)
$7.9B (China)

CHINA · UNITED KINGDOM · UNITED STATES

Source: Zenith, Programmatic Marketing Forecast, 2018
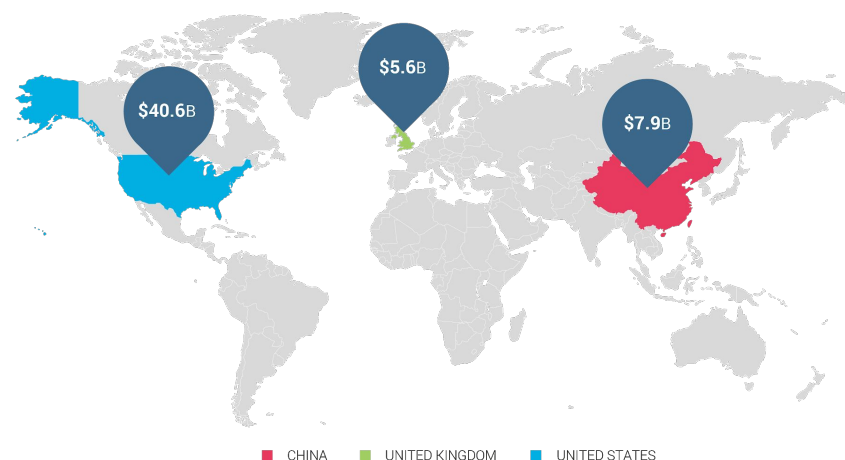
User Acquisition Trends

Gaming app users offer value for money—conversions soar in Finance and Shopping.

Costs by Action YoY
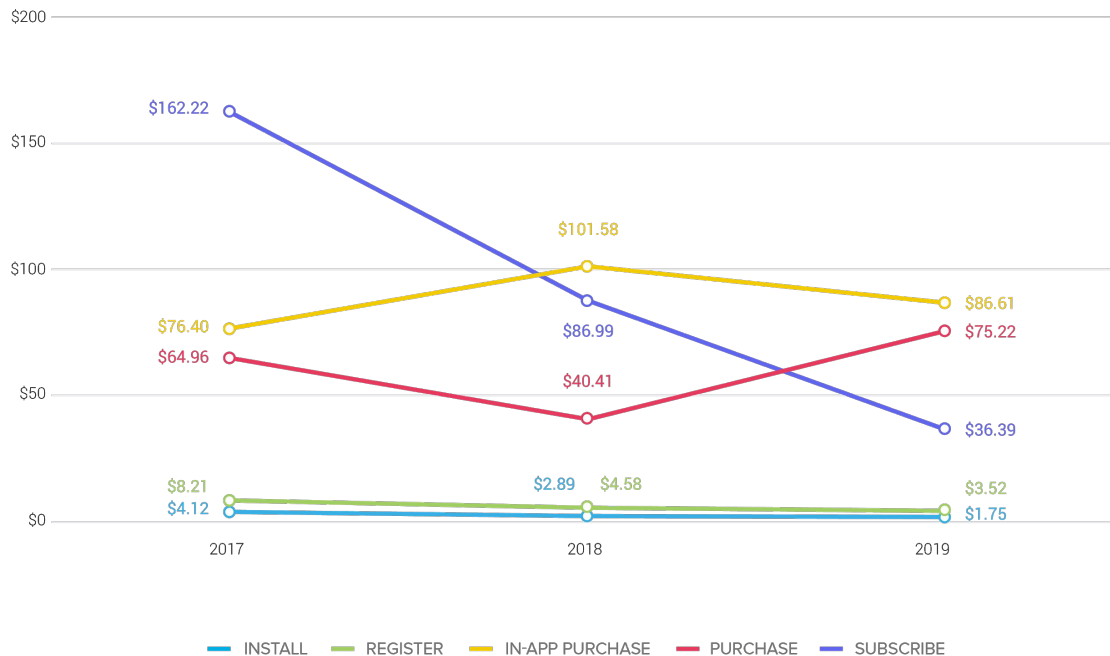
The price tag for most engagement activities is attractive, and subscription costs are down by 58.2%.

Source: LIFTOFF Internal data, September 2017 - August 2019

Users buy into subscriptions, but purchases are harder to convert.

Engagement Rates by Action YoY

IN-APP PURCHASE PURCHASE SUBSCRIBE

Data points:
- PURCHASE: 6.4% (2017), 7.2% (2018), 2.3% (2019)
- IN-APP PURCHASE: 5.4% (2017), 2.8% (2018), 2.0% (2019)
- SUBSCRIBE: 2.5% (2017), 3.3% (2018), 4.8% (2019)
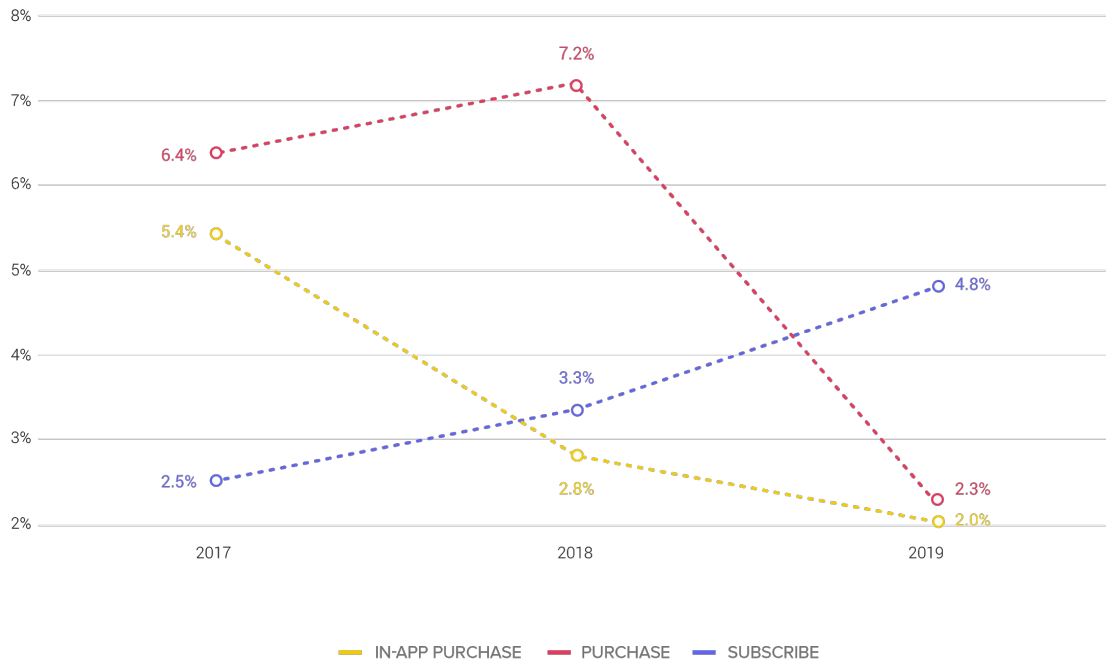
Commitment comes at a cost—across all app categories.

Purchase is the prize, but it's also the most expensive engagement activity across all app categories. While **In-app Purchase** is marginally more expensive, it's also not the only way **Gaming** apps can make money. The advance of ad-supported models and rewarded video provide smart marketers lucrative alternatives.

Gaming and **Utility** apps lead the pack in price for deep-funnel conversions, with an average of 199.2% over the cost to generate a **Shopping** app purchase, and 122.5% over the cost to generate a **Finance** app conversion.
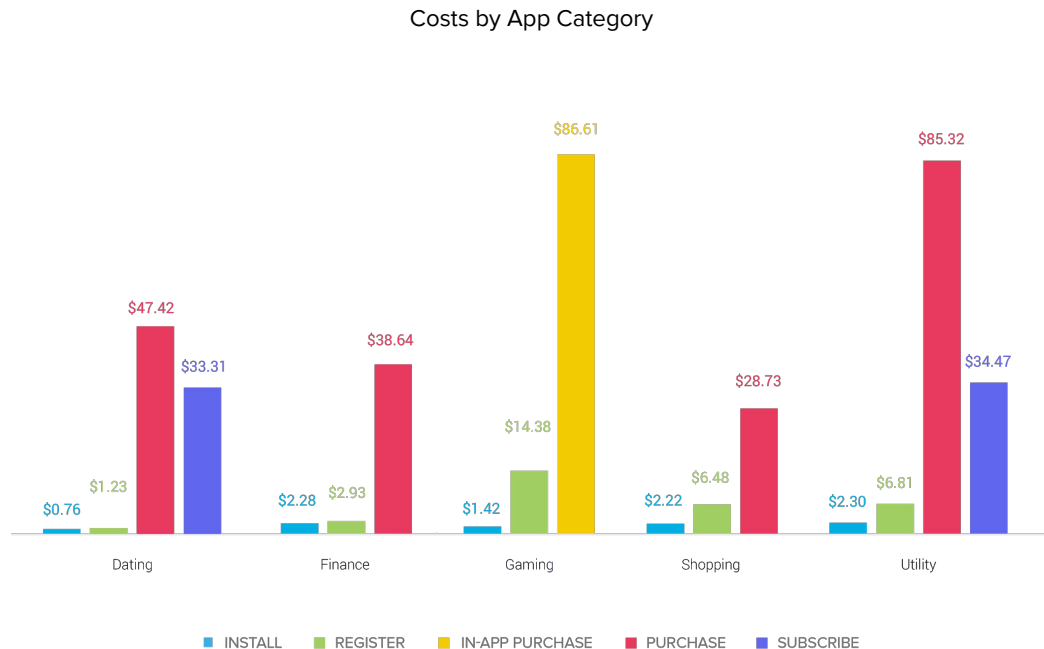
Costs by App Category

Chart: Costs by App Category

Dating: INSTALL $0.76, REGISTER $1.23, PURCHASE $47.42, SUBSCRIBE $33.31

Finance: INSTALL $2.28, REGISTER $2.93, PURCHASE $38.64

Gaming: INSTALL $1.42, REGISTER $14.38, IN-APP PURCHASE $86.61

Shopping: INSTALL $2.22, REGISTER $6.48, PURCHASE $28.73

Utility: INSTALL $2.30, REGISTER $6.81, PURCHASE $85.32, SUBSCRIBE $34.47

Legend: ■ INSTALL ■ REGISTER ■ IN-APP PURCHASE ■ PURCHASE ■ SUBSCRIBE

Cheap to acquire and easy to activate: E-commerce and Finance apps are the crowd-pleasers.

Engagement Rates by App Category

Registration is a walk in the park for all app categories. So why aren't marketers getting more mileage out of their audiences? Clearly, marketers have mastered what it takes to drive middle-funnel activity, but they are failing to trigger purchases. In the case of **Shopping** apps nearly 27% of users register but don't purchase.

While the cost for a first **Purchase** may be pricey, the engagement rates—7.7% for **Shopping** and 5.9% for **Finance**—are the highest.

	Dating	Finance	Gaming	Shopping	Utility
REGISTER	61.8%	77.8%	9.9%	34.3%	33.8%
IN-APP PURCHASE			1.6%		
PURCHASE		5.9%		7.7%	2.7%
SUBSCRIBE	2.3%				

REGISTER · IN-APP PURCHASE · PURCHASE · SUBSCRIBE

High-intent app categories are converting at top speeds.

There is a strong correlation between need and speed. **Finance**, an app category users generally download with a strong sense of purpose (pay a bill, check a credit score, make an investment) is the the fast-mover in the group. It takes only 1 hour 10 minutes for users to take the plunge and make a purchase.

Dating comes in second place, with an install-to-purchase time that lags behind **Finance** by roughly 13 hours 18 minutes. **Shopping** and **Gaming** apps, two app categories that prime users to purchase, take longer to clinch the deal.

Time from Install to Purchase by App Category
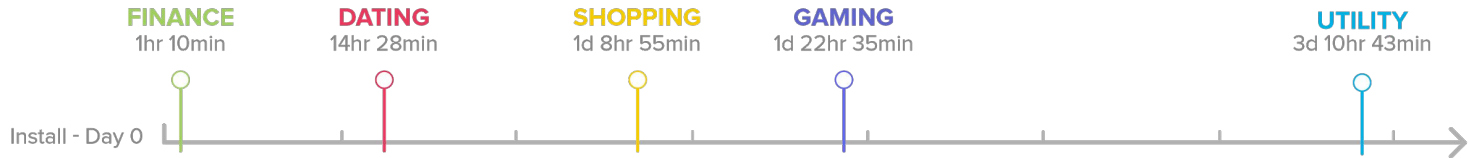
FINANCE	DATING	SHOPPING	GAMING	UTILITY
1hr 10min	14hr 28min	1d 8hr 55min	1d 22hr 35min	3d 10hr 43min

Install - Day 0

What is retention and what does it measure?

User retention is about keeping people coming back to your app.

- Retention shows the stickiness of your app.
- Retention measures the percentage of people who continue to use your app over a given period (week, month or quarter).
- Retention is the mirror test for your app and business because it doesn't matter how many installs you have if you're not able to retain those users.

Don't panic if your **Day 30** retention rate hits single digits. It doesn't mean 95% of your users have churned. Retention also reflects app use and frequency, and what you can realistically expect from your audience. After all, not all users will shop, travel or order food daily. Understanding your app value and user behavior will help you set the right retention targets for your app.

App retention data suggests marketers should take action before Day 3.

A review of AppsFlyer retention data shows 25.2% of users continue to interact with apps on **Day 1.** It's a solid figure that predictably goes south, dropping 48% from **Day 1** to **Day 3**, marking a critical period when engaging campaigns and relevant messaging could the odds in a marketer's favor.

By **Day 7** marketers have lost a whopping 65.9% of their users. It's a dramatic decline that underlines the merits of getting a much earlier start on re-engagement efforts to extend the app user lifecycle.

Global Mobile App User Retention

Day	Retention
Day 1	25.2%
Day 3	13.1%
Day 7	8.6%
Day 14	5.8%
Day 30	3.5%
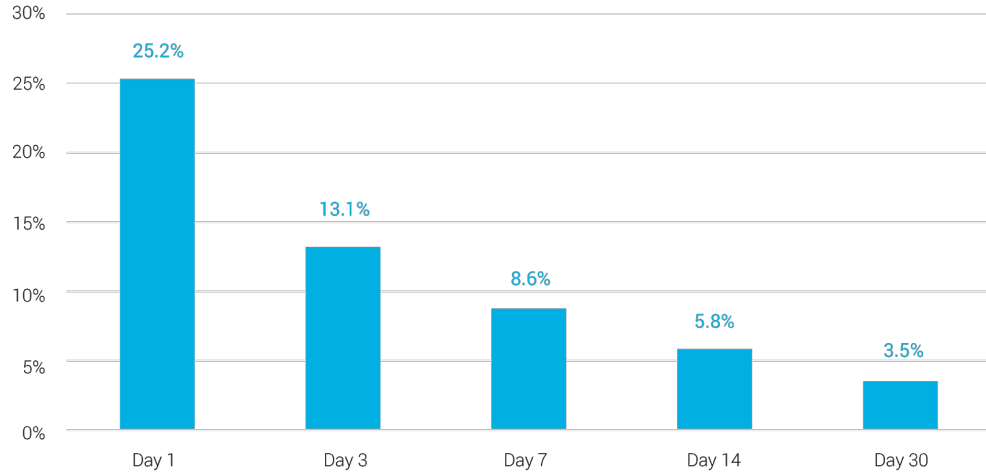
Most marketers focus on re-engaging users after the thrill is gone.

Although it makes sense for marketers to do all they can on **Day 1** to keep high-intent users highly engaged, Liftoff survey show only 15% of marketers are following this approach.

More worrying is the near 10% of marketers who don't pursue efforts to re-engage users at all.

When Marketers Begin Re-Engaging New Mobile App Users

Bar chart titled "When Marketers Begin Re-Engaging New Mobile App Users". Y-axis: Percentage of Responses (0% to 30%).

Category	Percentage
Day 1	15.0%
Day 2	5.5%
Day 3	7.7%
Day 7	21.8%
Day 14	9.5%
Day 30	4.6%
After Day 30	26.4%
Don't Re-Engage	9.5%
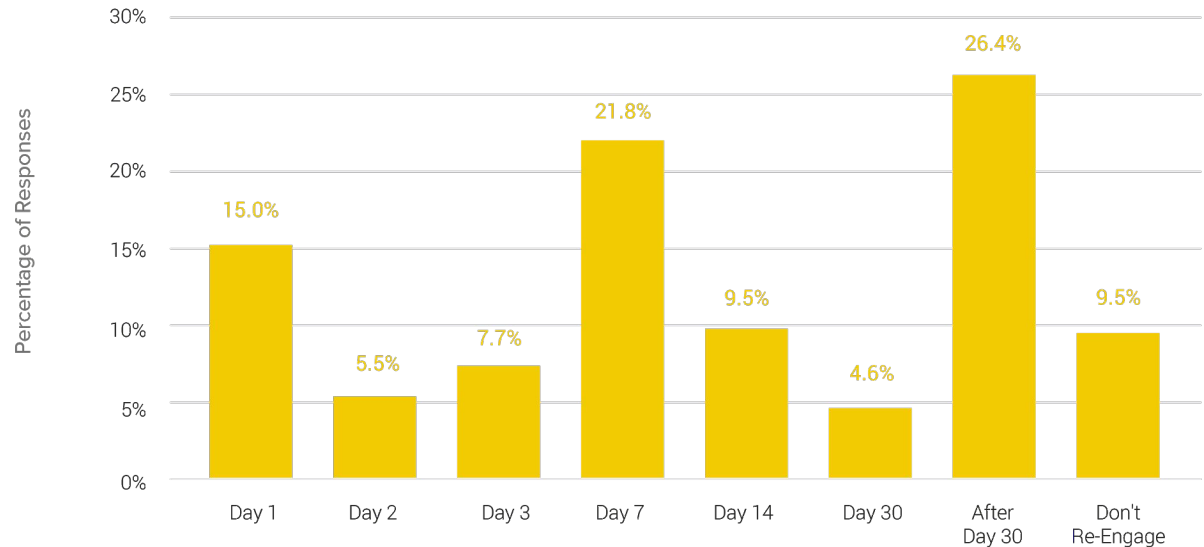
65% of marketers are focused on acquiring users, not necessarily retaining them.

Liftoff research shows spending patterns are sharply skewed toward user acquisition campaigns. It's a dangerous disconnect in a digital marketplace where a single-digit increase in retention can mean a double—or even triple—digit increase in profits.

Currently, 65% of respondents are spending 20% or less budget on re-engagement efforts.

Mobile App Marketing Spend on Re-Engagement vs User Acquisition

Percentage of Responses

Budget %	Response %
5%	28%
10%	15%
15%	5%
20%	17%
25%	4%
30%	9%
35%	3%
40%	6%
45%	0%
50%	5%
60%	2%
65%	2%
70%	3%
75%	0%
80%	1%
90%	1%
95%	1%

Percentage of Budget spent on Re-Engagement (the Remainder Being Spent on User Acquisition)
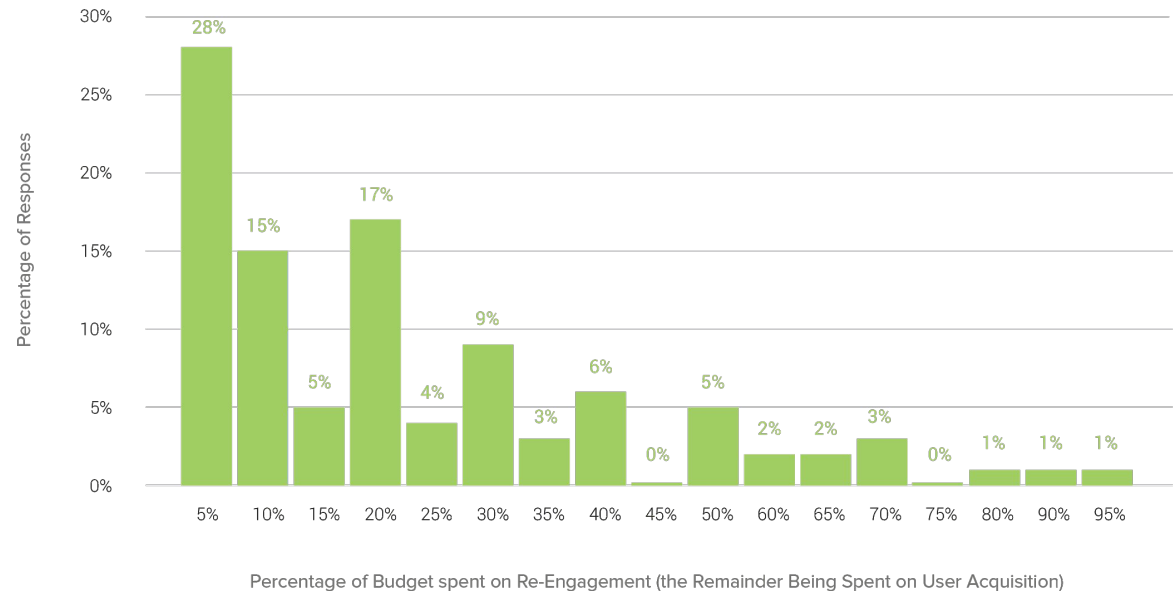
Day 1 retention rates across app categories get off to a good start, but some are higher than the average.

Apps offering fun and useful content grab are stickiest on Day 1. Winners include **News** (32.9%) and **Comics** (32.3%). Significantly, **Gaming** apps as a category hover around an impressive retention rate of 30.2%.

Day 1 Mobile App User Retention by App Category

Category	Rate
Auto & Vehicles	20.2%
Beauty	22.3%
Books	21.9%
Business	22.7%
Comics	32.3%
Communication	24.1%
Dating	26.3%
Education	19.3%
Entertainment	21.4%
Finance	22.2%
Food & Drink	15.1%
Gaming-Casual	31.1%
Gaming-Hardcore	29.0%
Gaming-Midcore	29.3%
Gaming-Social Casino	31.2%
Health & Fitness	20.5%
House & Home	19.9%
Lifestyle	20.2%
Maps & Navigation	18.6%
Medical	18.2%
Music	20.1%
News	32.9%
Parenting	23.4%
Personalization	13.1%
Photography	17.5%
Productivity	18.9%
Shopping	22.8%
Social	27.6%
Sports	28.1%
Travel	19.7%
Utilities	23.0%
Video Players	19.7%
Weather	29.1%

Day 7 retention data shows rates are mixed as app appeal loses luster at a rapid pace.

Some app categories, like **News**, a category that has become part of the regular routine thanks to fresh content, strong personalization and a well-timed and highly relevant flow of alerts, have what it takes to keep user attention.

Day 7 Mobile App User Retention by App Category

Category	Retention
Auto & Vehicles	7.7%
Beauty	8.6%
Books	8.6%
Business	9.6%
Comics	15.4%
Communication	10.3%
Dating	8.1%
Education	5.9%
Entertainment	7.7%
Finance	8.1%
Food & Drink	6.2%
Gaming-Casual	9.8%
Gaming-Hardcore	9.0%
Gaming-Midcore	7.3%
Gaming-Social Casino	12.2%
Health & Fitness	8.1%
House & Home	8.0%
Lifestyle	7.4%
Maps & Navigation	7.2%
Medical	6.1%
Music	7.6%
News	19.4%
Parenting	9.8%
Personalization	3.5%
Photography	5.7%
Productivity	7.5%
Shopping	9.6%
Social	9.6%
Sports	13.9%
Travel	7.2%
Utilities	9.0%
Video Players	7.1%
Weather	15.1%

Day 30 retention rates highlight shortcomings, set expectations and provide a reality-check.

Day 30 Mobile App User Retention by App Category

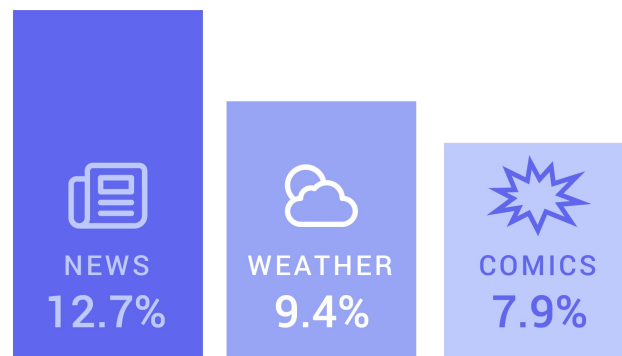| Category	Retention
Auto & Vehicles	3.5%
Beauty	4.0%
Books	4.2%
Business	4.4%
Communication	5.6%
Comics	7.9%
Dating	3.0%
Education	1.9%
Entertainment	3.3%
Finance	4.1%
Food & Drink	2.9%
Gaming-Casual	3.5%
Gaming-Hardcore	3.0%
Gaming-Midcore	2.0%
Gaming-Social Casino	5.3%
Health & Fitness	3.6%
House & Home	3.7%
Maps & Navigation	3.6%
Lifestyle	3.4%
Medical	2.9%
Music	3.5%
News	12.7%
Parenting	4.7%
Personalization	1.4%
Photography	2.4%
Productivity	3.7%
Shopping	4.7%
Social	3.9%
Sports	7.4%
Travel	3.1%
Utilities	4.3%
Video Players	3.3%
Weather	9.4%

Day 30 retention rates highlight shortcomings, set expectations and provide a reality-check.

Significantly, 12 app categories place well under the 3.5% global retention benchmark. For some app categories, Day 30 marks the final lap, for others it could be the starting point. In both cases, Day 30 retention rates help marketers map out realistic growth projections and engagement goals.

Notably, there are some standout categories that outperform others. Among these, **Comics** are a strong show, taking third place behind Weather and News.
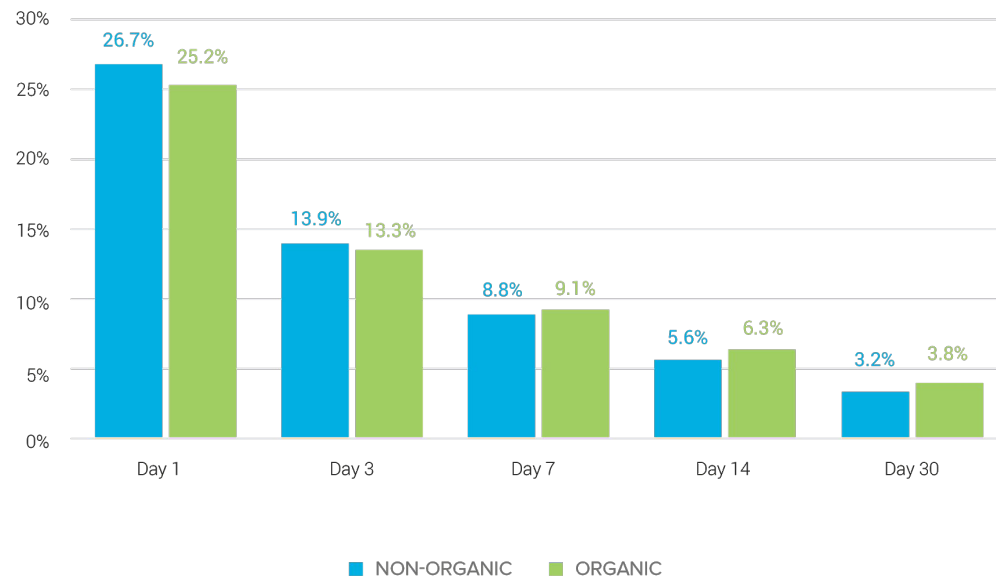
Sports (7.4%) is a slow-burner—but a steady performer—taking 4th place at every stage of the retention curve.

NEWS
12.7%

WEATHER
9.4%

COMICS
7.9%

Source: AppsFlyer Internal data, September 2018 - August 2019

Paid advertising makes a measurable—and positive—difference when it matters most.

Does saving money on advertising at the start cost more in the end? AppsFlyer data confirms organics have advantages—but suggests paid promotion early in the retention curve pays even greater dividends.

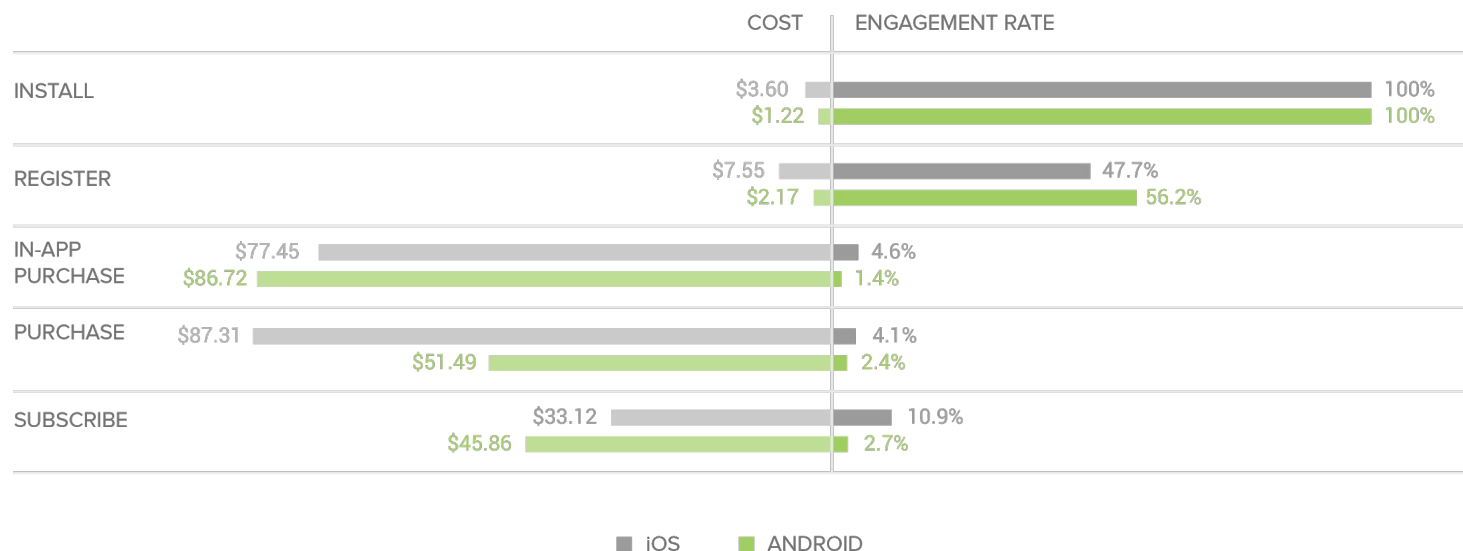### Mobile App User Retention by Source

Legend: ■ NON-ORGANIC ■ ORGANIC

	Day 1	Day 3	Day 7	Day 14	Day 30
NON-ORGANIC	26.7%	13.9%	8.8%	5.6%	3.2%
ORGANIC	25.2%	13.3%	9.1%	6.3%	3.8%

Platform

Users on both platforms are loyal,
but iOS offers significant value for money.

LIFTOFF

Android is more attractive, but iOS offers marketers value for money—especially when subscription is the goal.

Platform: Costs & Engagement Rates

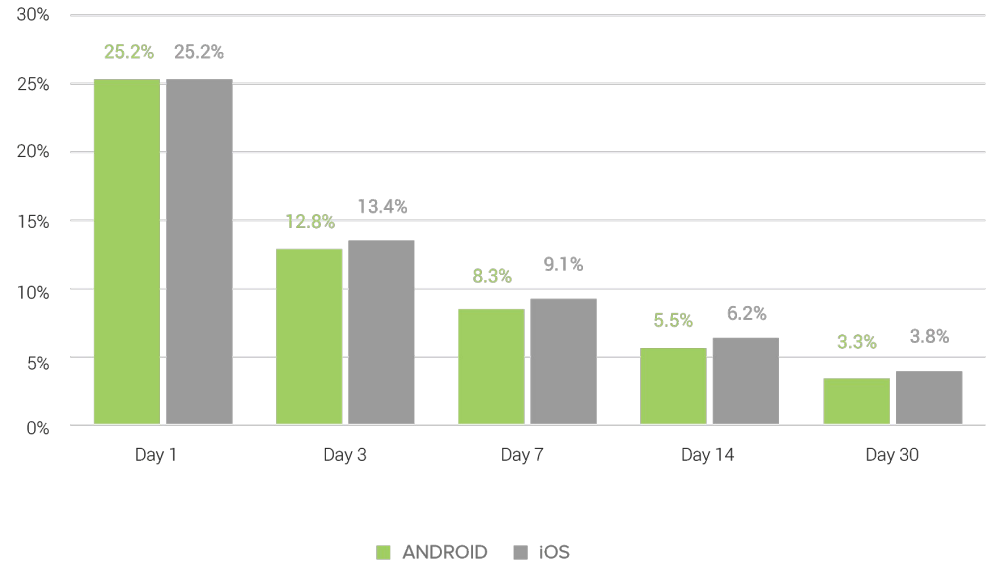|	COST	ENGAGEMENT RATE
INSTALL	$3.60	100%
	$1.22	100%
REGISTER	$7.55	47.7%
	$2.17	56.2%
IN-APP PURCHASE	$77.45	4.6%
	$86.72	1.4%
PURCHASE	$87.31	4.1%
	$51.49	2.4%
SUBSCRIBE	$33.12	10.9%
	$45.86	2.7%

■ iOS   ■ ANDROID

Retention rates on both platforms are similar, but iOS has the edge.

Day 1 retention rates are identical, suggesting users on both platforms download apps with a high intent and a strong appreciation for the value they offer.

On **Day 3** the gap between iOS users and Android users is only 0.6%. This widens to reach 0.8% on Day 7. On **Day 30** the curve dips into low single-digits and the difference in retention rates between platforms reaches 0.5%.

Mobile App User Retention by Platform

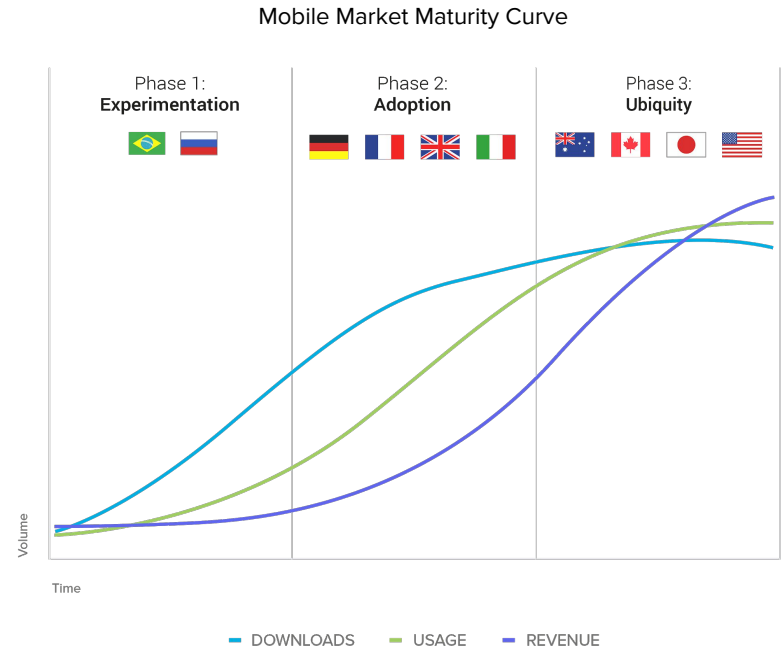|	Day 1	Day 3	Day 7	Day 14	Day 30
ANDROID	25.2%	12.8%	8.3%	5.5%	3.3%
iOS	25.2%	13.4%	9.1%	6.2%	3.8%

■ ANDROID   ■ iOS

Source: AppsFlyer Internal data, September 2018 - August 2019

The App Economy is firing on all cylinders—but different regions are moving at different speeds.
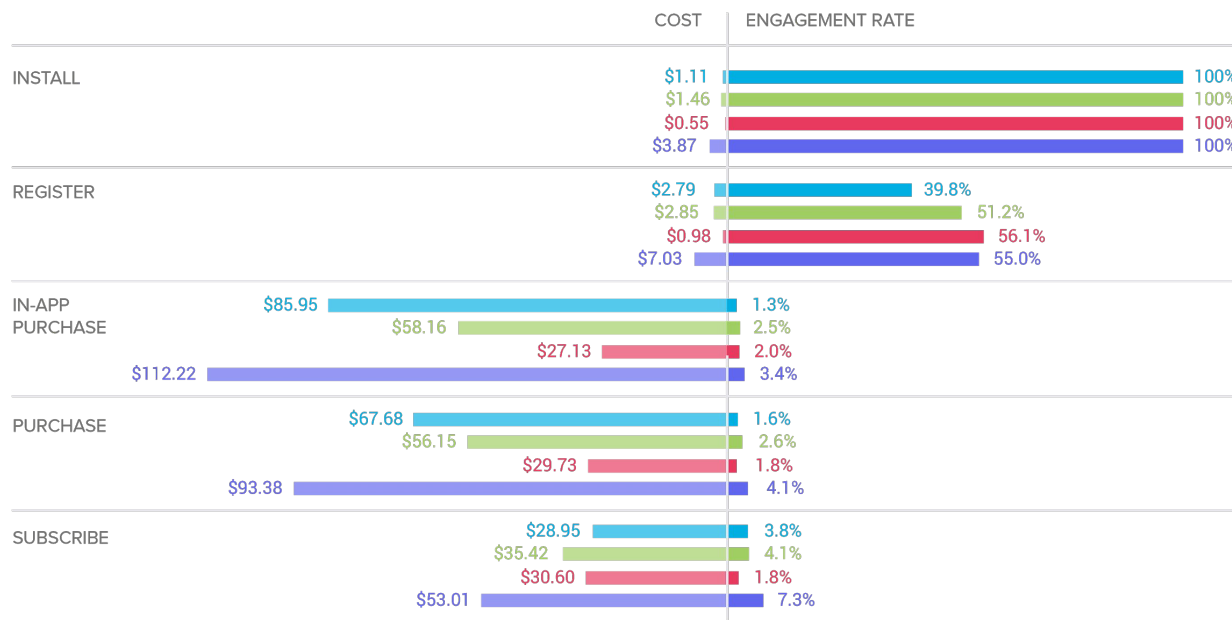
Borrowing from App Annie, we group some of the key countries that power the App Economy according to where they find themselves on the market maturity curve.

- **Phase 1:** Experimentation is all about discovery. Downloads surge driven by new users, new devices entering and a pent-up demand for apps.
- **Phase 2:** Expansion is all about going deep, not wide. Users have made choices about the types of apps that are the most useful to them and are warming to frequent use.
- **Phase 3:** Maturation is all about sustainability. Countries in this group are advanced and established, and users buy into the value proposition apps offer. However, engagement activities come at a price.

Mobile Market Maturity Curve

Phase 1:
Experimentation

Phase 2:
Adoption

Phase 3:
Ubiquity

Volume

Time

— DOWNLOADS   — USAGE   — REVENUE

Source: App Annie, State of Mobile Report 2019

Mature markets offer highly engaged audiences at a high price, but EMEA offers the better balance.

Region: Costs & Engagement Rates

	COST	ENGAGEMENT RATE
INSTALL	$1.11	100%
	$1.46	100%
	$0.55	100%
	$3.87	100%
REGISTER	$2.79	39.8%
	$2.85	51.2%
	$0.98	56.1%
	$7.03	55.0%
IN-APP PURCHASE	$85.95	1.3%
	$58.16	2.5%
	$27.13	2.0%
	$112.22	3.4%
PURCHASE	$67.68	1.6%
	$56.15	2.6%
	$29.73	1.8%
	$93.38	4.1%
SUBSCRIBE	$28.95	3.8%
	$35.42	4.1%
	$30.60	1.8%
	$53.01	7.3%

■ APAC   ■ EMEA   ■ LATAM   ■ NA

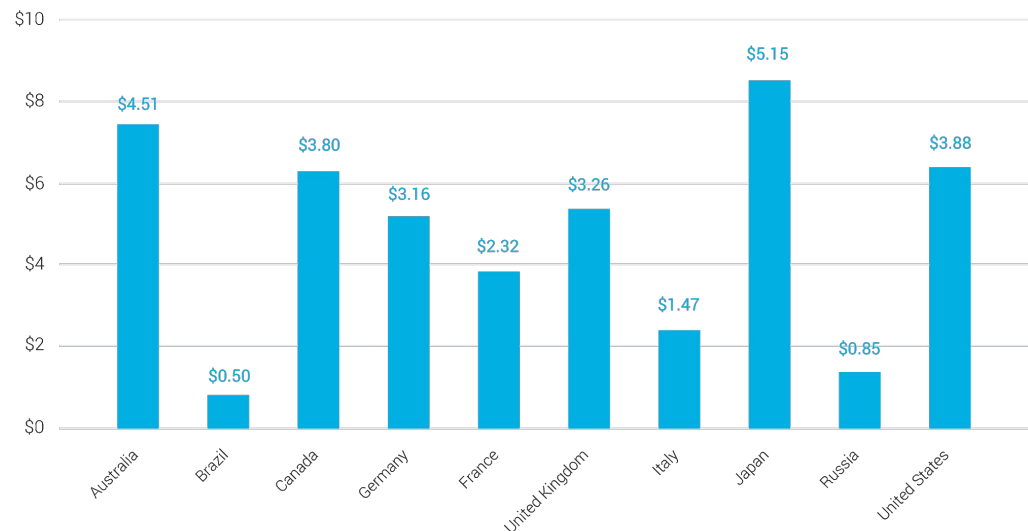Source: LIFTOFF Internal data, September 2018 - August 2019

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Install: Costs in mature markets are more expensive.

Mature Phase 1 markets are moving at a fierce pace with a ferocious appetite for apps, but attracting users requires effort and budget. At $5.15, Japan is most expensive, followed by Australia. The U.S. comes in third, nearly one-third under the cost of an install in Japan.

In EMEA, the average cost to acquire a user is attractive at $2.55. Significantly, Russia, a Phase 1 country, offers considerable value for money is a bargain if we consider that most app categories there (particularly Games) are poised for massive growth. At $0.50, CPIs in Brazil are a steal.

Install Costs by Country

Country	Cost
Australia	$4.51
Brazil	$0.50
Canada	$3.80
Germany	$3.16
France	$2.32
United Kingdom	$3.26
Italy	$1.47
Japan	$5.15
Russia	$0.85
United States	$3.88

Register: A mid-funnel activity with a moderate price tag.

Phase 3 countries may be attractive, but they are also expensive. At $8.73, Japan leads the pack ahead of the U.S. and Australia.

Phase 2 countries shows striking similarities—most likely because users at this stage are are asked to take action, not open their wallets. The average cost to acquire a user who complete a registration is just $4.35.

Predictably, Phase 1 countries Russia and Brazil offer outstanding value for money.

Register Costs by Country

Country	Cost
Australia	$6.67
Brazil	$0.73
Canada	$5.40
Germany	$4.84
France	$4.58
United Kingdom	$4.33
Italy	$3.66
Japan	$8.73
Russia	$1.25
United States	$7.23

In-App Purchase: It may be driven by passion, but commitment comes at a cost.

At $112.76, the cost to acquire a user in the U.S. is marginally more expensive than in Japan ($111.64). Canada, which placed a distant 4th to Australia, now closes the gap with a nearly identical price tag.

Among Phase 2 countries, Germany is the most expensive– a full 6.2% more than France and 9.2% more than the U.K. However, acquiring users in Italy, a market on the move, offer significant value for money (coming in 35.8% cheaper than their German counterparts).

Once again, Phase 1 countries Russia and Brazil offer lowest costs.
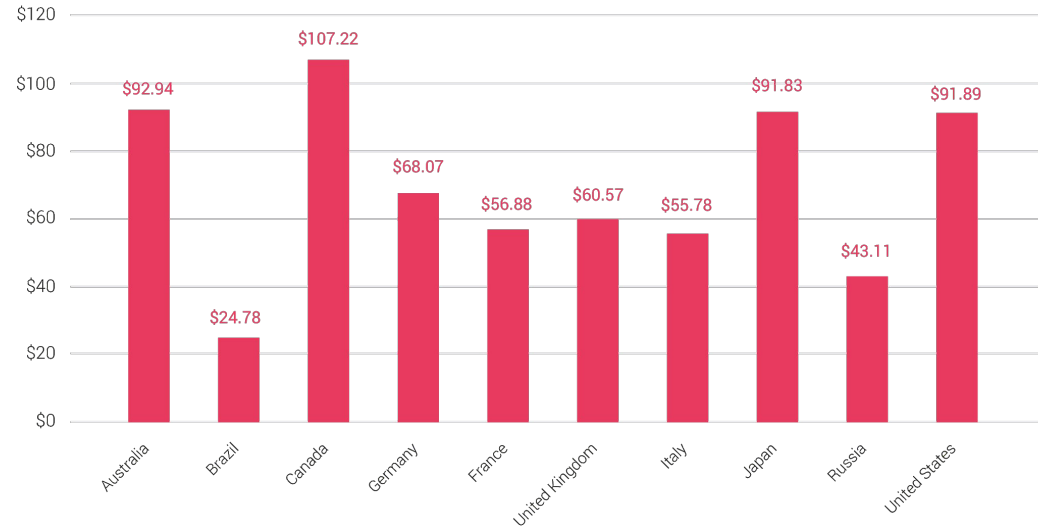
In-App Purchase Costs by Country

Country	Cost
Australia	$104.65
Brazil	$24.01
Canada	$104.09
Germany	$70.84
France	$66.68
United Kingdom	$64.85
Italy	$45.45
Japan	$111.64
Russia	$39.03
United States	$112.76

Source: LIFTOFF Internal data, September 2018 - August 2019

Purchase: Market maturity and commerce readiness play a major role.

Mature Phase 3 markets accustomed to mobile commerce and shopping naturally take the lead, but the mix has shifted. This time it's Canada in first place, 16.7% more than U.S. and 16.8% more than Japan.

Among Phase 2 countries, Italy closes the price gap with its neighbors. Significantly, the average cost to acquire a user who makes a purchase costs an average of $60.33 (two-thirds of Japan and the U.S. combined).

Russia closes the gap to EMEA.

Purchase Costs by Country

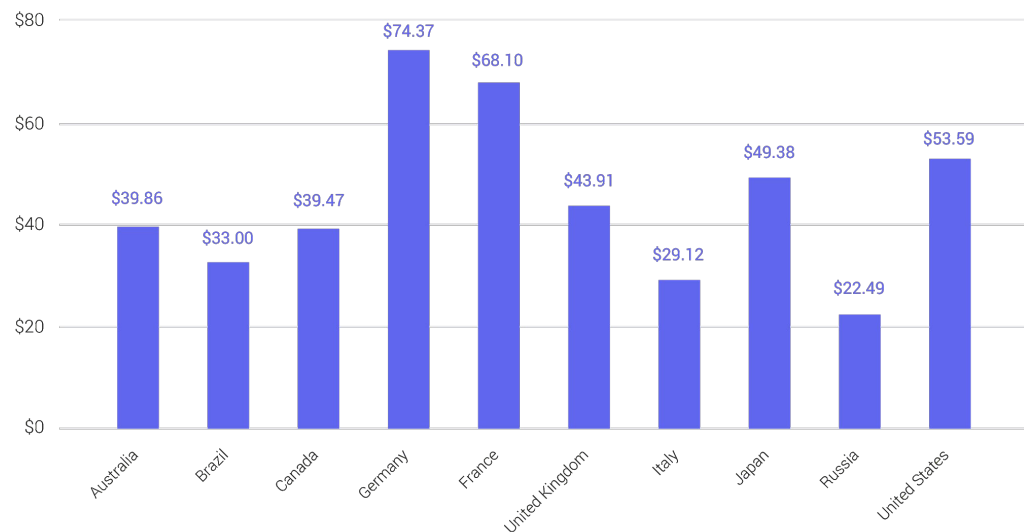| Country	Cost
Australia	$92.94
Brazil	$24.78
Canada	$107.22
Germany	$68.07
France	$56.88
United Kingdom	$60.57
Italy	$55.78
Japan	$91.83
Russia	$43.11
United States	$91.89

Subscribe: Mature markets are primed to purchase.

Phase 3 markets that were hard to win over for purchases are a pushover for subscriptions. At $53.59, the cost to acquire a subscriber in the U.S. is 41.7% cheaper than the cost to acquire a purchaser. It's a similar situation in Japan.

Among Phase 2 countries, Germany is the most expensive in Europe. The U.K. is attractive, but conditions for commerce post-Brexit may be a different story.
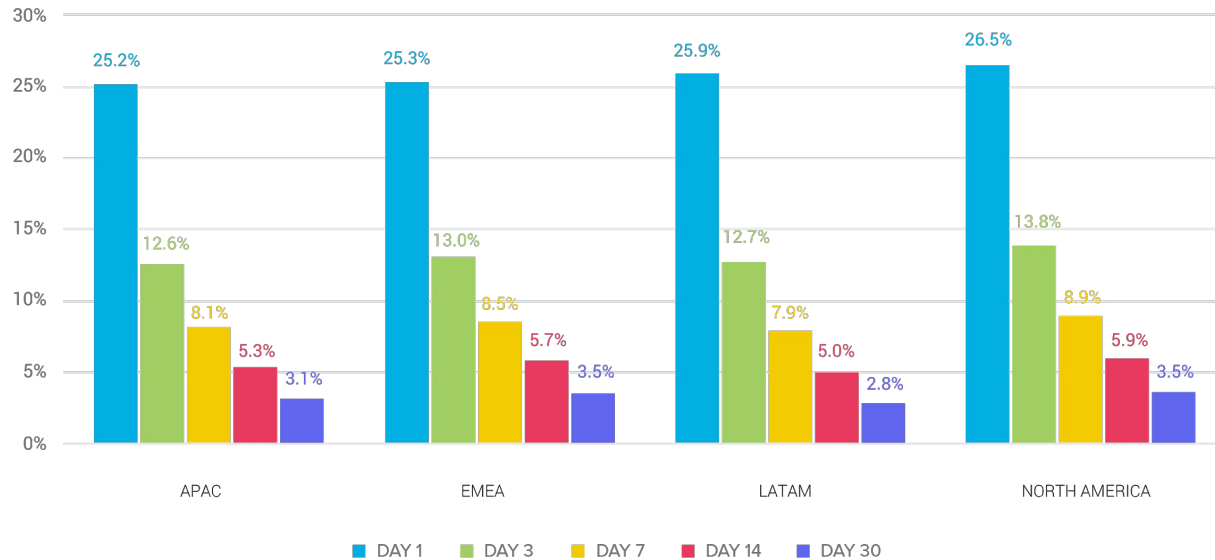
However, Phase 1 country Russia ($22.49) offers the biggest bargain of them all.

Subscribe Costs by Country

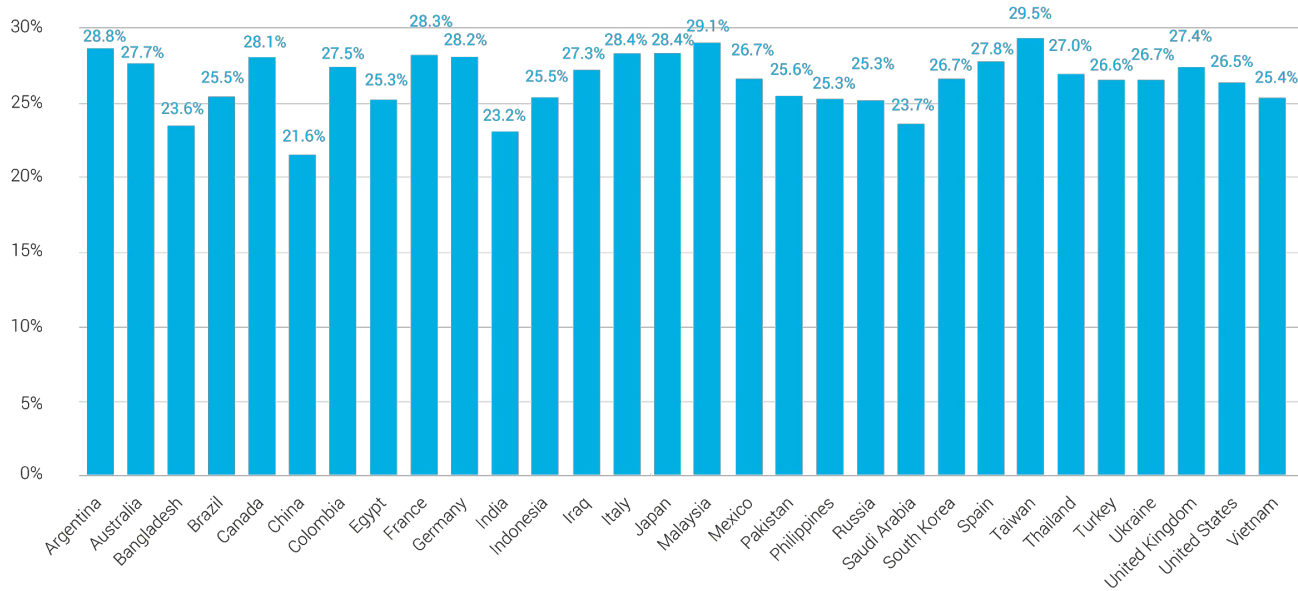| Country	Cost
Australia	$39.86
Brazil	$33.00
Canada	$39.47
Germany	$74.37
France	$68.10
United Kingdom	$43.91
Italy	$29.12
Japan	$49.38
Russia	$22.49
United States	$53.59

LIFTOFF

Retention rates are strikingly similar, but users in North America are consistently more loyal to their apps.

Mobile App User Retention by Region

Region	DAY 1	DAY 3	DAY 7	DAY 14	DAY 30
APAC	25.2%	12.6%	8.1%	5.3%	3.1%
EMEA	25.3%	13.0%	8.5%	5.7%	3.5%
LATAM	25.9%	12.7%	7.9%	5.0%	2.8%
NORTH AMERICA	26.5%	13.8%	8.9%	5.9%	3.5%

■ DAY 1   ■ DAY 3   ■ DAY 7   ■ DAY 14   ■ DAY 30

Source: ⬥AppsFlyer Internal data, September 2018 - August 2019

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Day 1 Retention: Asia is home to some of the highest-performing countries in the data set.
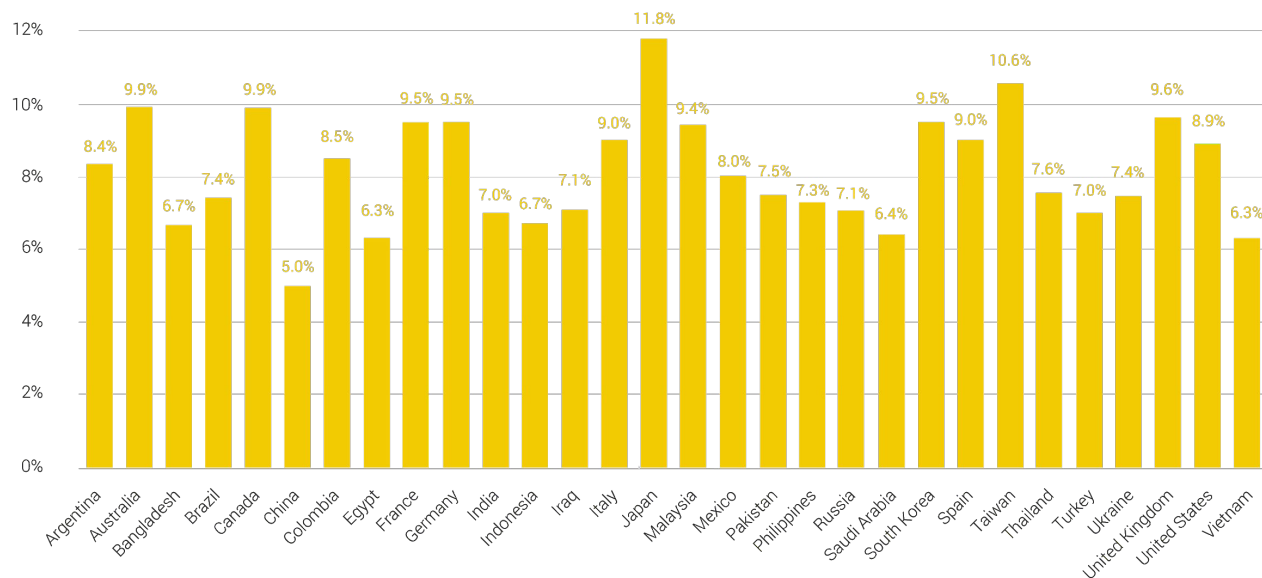
Day 1 Mobile App User Retention by Country

Country	Retention
Argentina	28.8%
Australia	27.7%
Bangladesh	23.6%
Brazil	25.5%
Canada	28.1%
China	21.6%
Colombia	27.5%
Egypt	25.3%
France	28.3%
Germany	28.2%
India	23.2%
Indonesia	25.5%
Iraq	27.3%
Italy	28.4%
Japan	28.4%
Malaysia	29.1%
Mexico	26.7%
Pakistan	25.6%
Philippines	25.3%
Russia	25.3%
Saudi Arabia	23.7%
South Korea	26.7%
Spain	27.8%
Taiwan	29.5%
Thailand	27.0%
Turkey	26.6%
Ukraine	26.7%
United Kingdom	27.4%
United States	26.5%
Vietnam	25.4%

Taiwan outperforms the average retention rate in APAC (25.2%), followed by Malaysia. Argentina comes in third place, but still well ahead of the average for LATAM (where Day 1 hovers at 25.9%).

Source: AppsFlyer Internal data, September 2018 - August 2019

Day 7 Retention: Mature markets are the most loyal to the apps they love.

Retention rates in 12 of the 30 countries in this data set, most of them mature marketers, outperform the 8.6% global retention benchmark.

Japan stands out as the most loyal market, leading at 11.8%. China places last and lowest with a 5% retention rate.
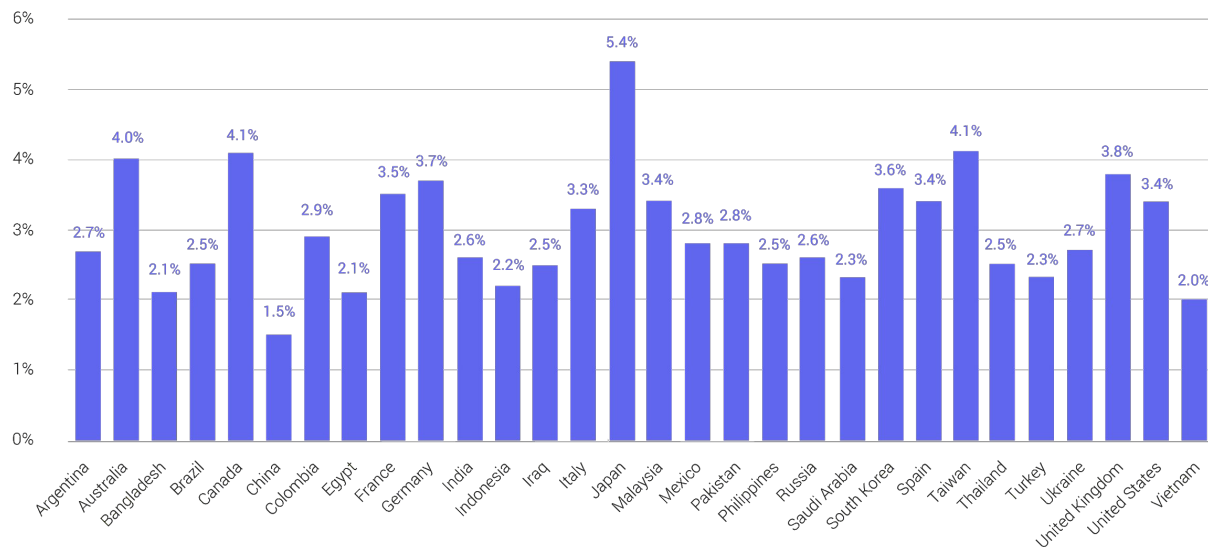
Day 7 Mobile App User Retention by Country

Country	Retention
Argentina	8.4%
Australia	9.9%
Bangladesh	6.7%
Brazil	7.4%
Canada	9.9%
China	5.0%
Colombia	8.5%
Egypt	6.3%
France	9.5%
Germany	9.5%
India	7.0%
Indonesia	6.7%
Iraq	7.1%
Italy	9.0%
Japan	11.8%
Malaysia	9.4%
Mexico	8.0%
Pakistan	7.5%
Philippines	7.3%
Russia	7.1%
Saudi Arabia	6.4%
South Korea	9.5%
Spain	9.0%
Taiwan	10.6%
Thailand	7.6%
Turkey	7.0%
Ukraine	7.4%
United Kingdom	9.6%
United States	8.9%
Vietnam	6.3%

LIFTOFF

Day 30 Retention: Japan leads with the longest lasting loyalty.

25% of the countries are home to the most loyal users—and many are also mature markets. A standout example is Japan, where retention towers at 5.4%.

Across the remaining 75% of the data set, retention rates are mixed—ranging from 3.4% in Spain to 2% in Vietnam. Predictably, China once again places last, this time plummeting to 1.5%.
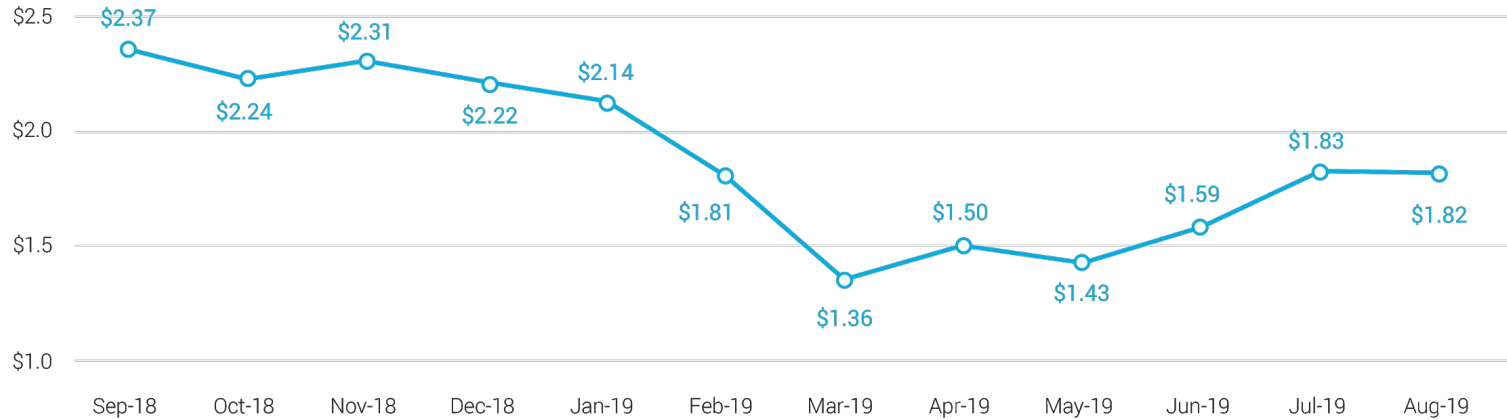
Day 30 Mobile App User Retention by Country

Country	Retention
Argentina	2.7%
Australia	4.0%
Bangladesh	2.1%
Brazil	2.5%
Canada	4.1%
China	1.5%
Colombia	2.9%
Egypt	2.1%
France	3.5%
Germany	3.7%
India	2.6%
Indonesia	2.2%
Iraq	2.5%
Italy	3.3%
Japan	5.4%
Malaysia	3.4%
Mexico	2.8%
Pakistan	2.8%
Philippines	2.5%
Russia	2.6%
Saudi Arabia	2.3%
South Korea	3.6%
Spain	3.4%
Taiwan	4.1%
Thailand	2.5%
Turkey	2.3%
Ukraine	2.7%
United Kingdom	3.8%
United States	3.4%
Vietnam	2.0%

Source: AppsFlyer Internal data, September 2018 - August 2019

Seasonal Trends

Highs and lows throughout the seasons reveal exciting periods of opportunity when marketers can get value for money.

Install: Costs across the year are favorable, but spring is the standout season.
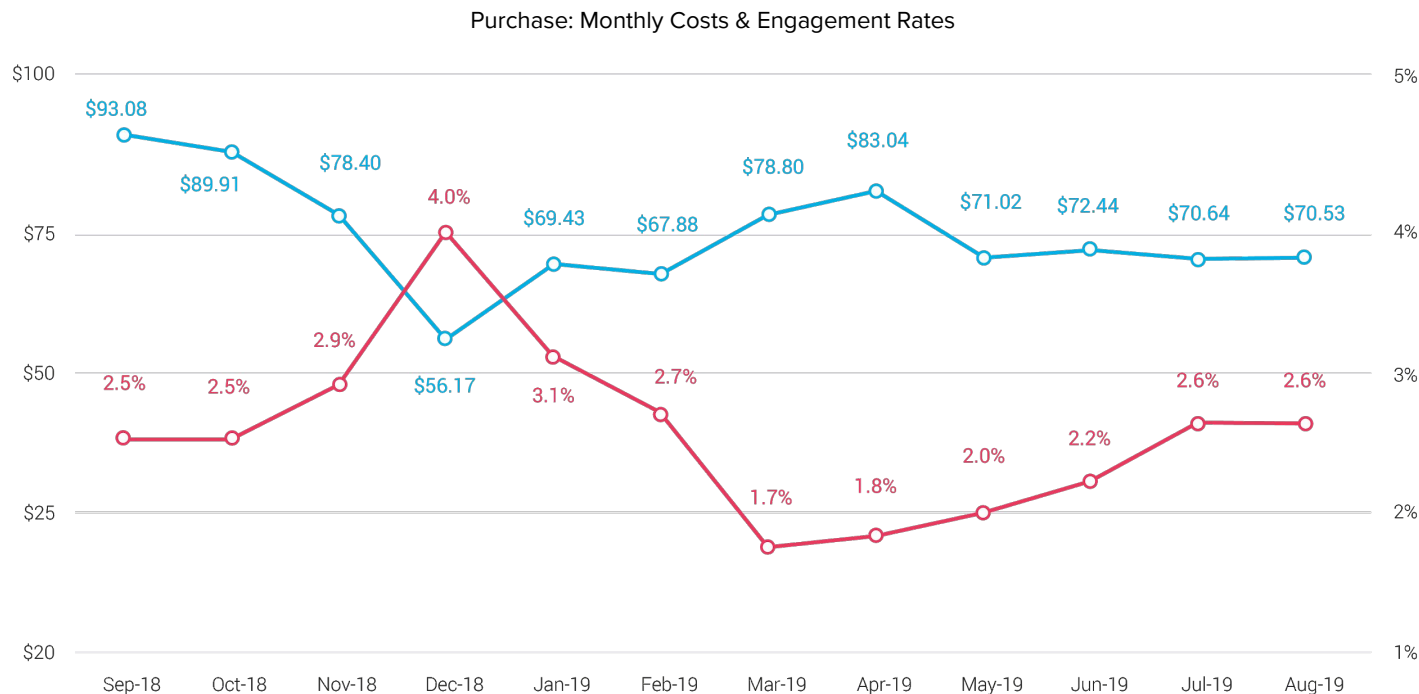
Install: Average Monthly Costs

Month	Cost
Sep-18	$2.37
Oct-18	$2.24
Nov-18	$2.31
Dec-18	$2.22
Jan-19	$2.14
Feb-19	$1.81
Mar-19	$1.36
Apr-19	$1.50
May-19	$1.43
Jun-19	$1.59
Jul-19	$1.83
Aug-19	$1.82

Register: Costs and conversion rates are in rare balance from September through February.

Register: Monthly Costs & Engagement Rates

Source: LIFTOFF Internal data, September 2018 - August 2019

54
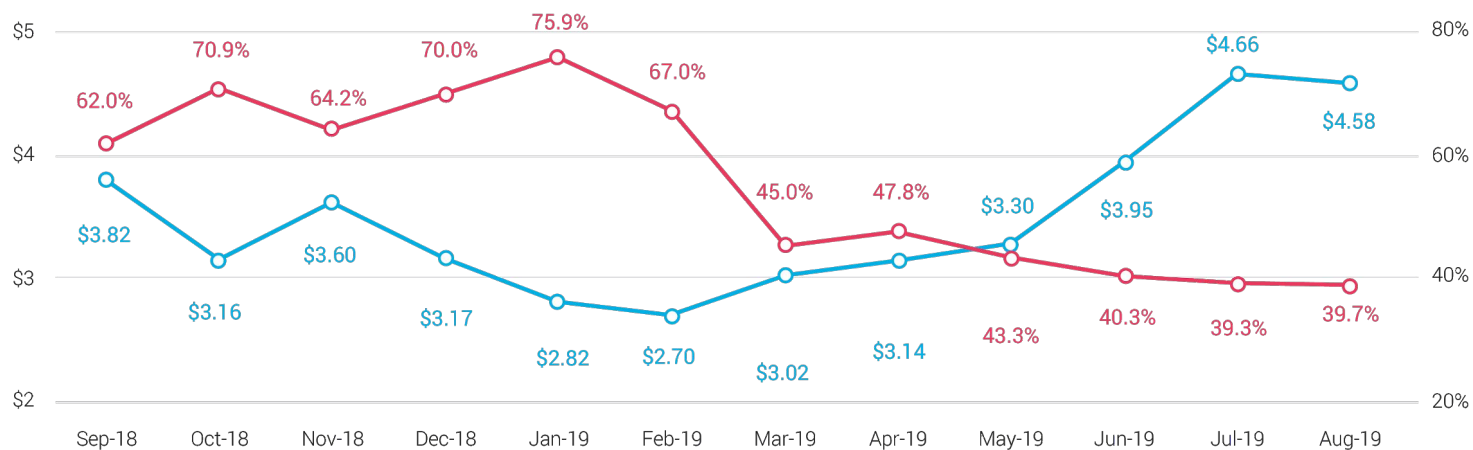
Purchase: A post-install action that comes at a cost—and a significant one at that.

Purchase: Monthly Costs & Engagement Rates

$93.08
$89.91
$78.40
$56.17
$69.43
$67.88
$78.80
$83.04
$71.02
$72.44
$70.64
$70.53

2.5% 2.5% 2.9% 4.0% 3.1% 2.7% 1.7% 1.8% 2.0% 2.2% 2.6% 2.6%

$100
$75
$50
$25
$20

5%
4%
3%
2%
1%

Sep-18 Oct-18 Nov-18 Dec-18 Jan-19 Feb-19 Mar-19 Apr-19 May-19 Jun-19 Jul-19 Aug-19

Source: LIFTOFF Internal data, September 2018 - August 2019

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In-App Purchases: Users warm to purchases in spring, and summer is a hot time to capture share of wallet.

In-App Purchase: Monthly Costs & Engagement Rates
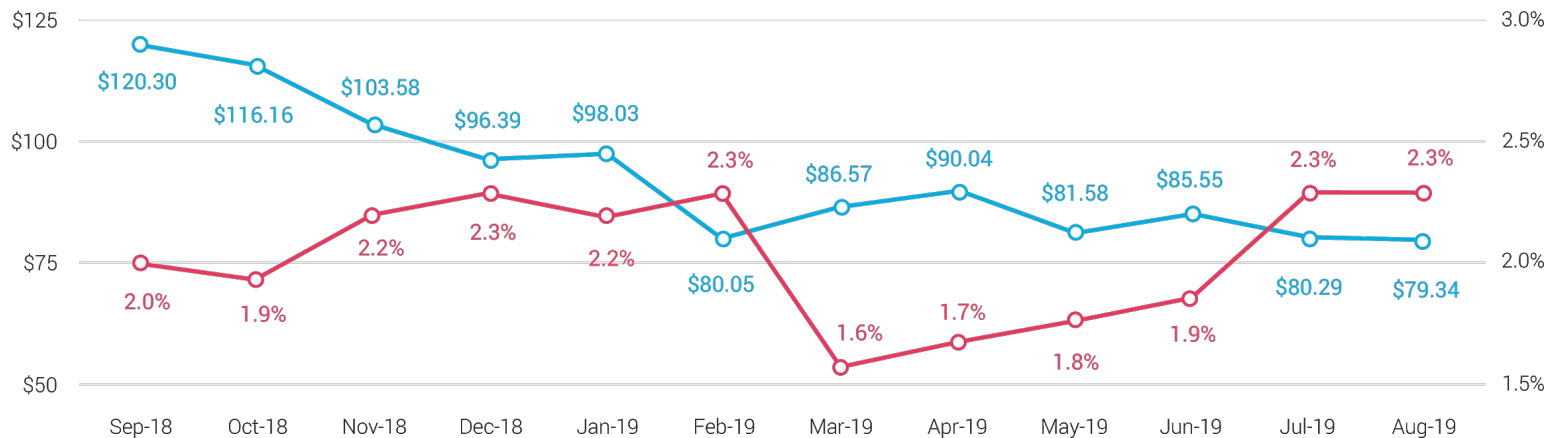
Subscribe: An engagement activity marketers get right—at a much lower cost.

Subscribe: Monthly Costs & Engagement Rates
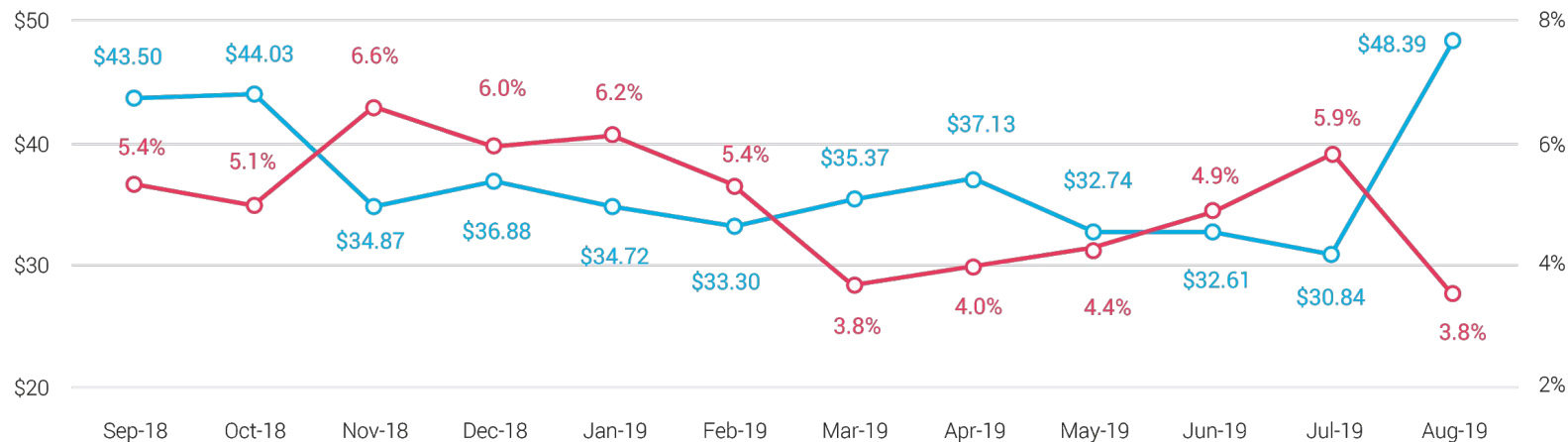
Challenges

Mobile ad fraud climbs up the agenda—and one step ahead of marketers' effort to combat it.

LIFTOFF
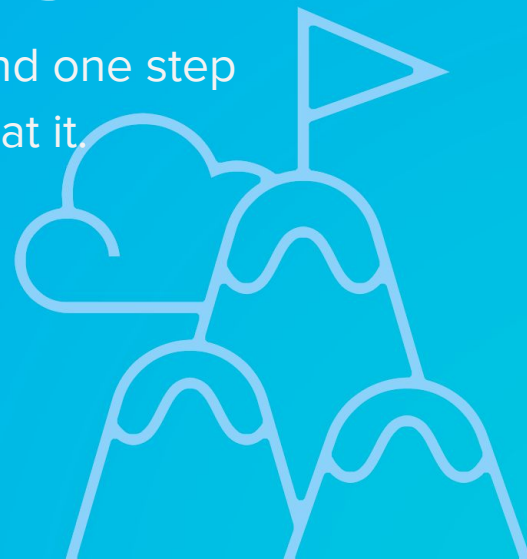
Increasingly sophisticated ad fraud permeates the ecosystem.

Mobile ad fraud is a massive problem—and only getting worse as automation makes it more difficult to differentiate between bots and actual humans.

A snapshot from mobile measurement company Adjust reveals fake installs—accomplished by fraudsters who use device emulation software in virtualized environments to fake installs—account for nearly 40% of ad fraud.

SDK Spoofing (33.4%) comes in a close second. In practice, SDK Spoofing tricks attribution providers into thinking they're receiving real data from a real app on an actual device. But in reality, the data is only devised to look like the real thing. What's worse, it's an attack strategy that affects every SDK in every device on the planet.

Mobile Ad Fraud Types Blocked

CLICK INJECTION 18.6%

CLICK SPAM 8.1%

FAKE INSTALLS 39.9%
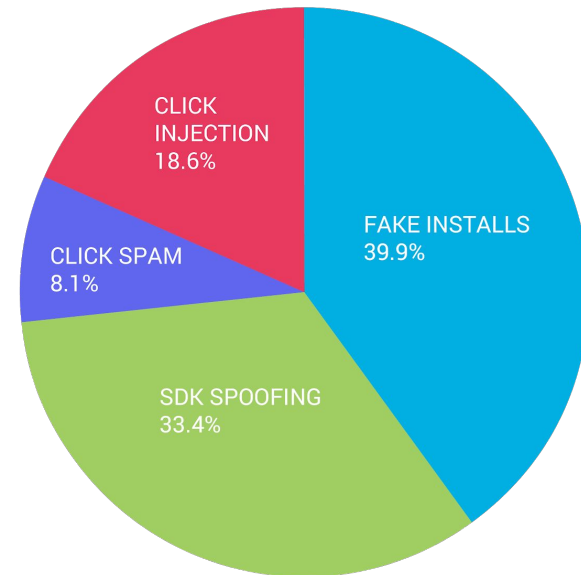
SDK SPOOFING 33.4%

SDK Spoofing is nearly undetectable, but not unstoppable.

SDK Spoofing is a fraud type that dominates the number of installs Adjust rejects. SDK Spoofing may have "evolved to perfection," according to Andreas Naumann, Head of Fraud at Adjust and a Mobile Hero, but the tools to detect it are also far more sophisticated. "Making sure it's not possible to spoof an SDK is the best protection," Naumann explains. The drop in instances rejected is (down significantly from an all-time of 11.7 million) is a strong testament to this.

Trends in Mobile Ad Fraud Types

Fraud Instances Rejected

— FAKE INSTALLS   — SDK SPOOFING   — CLICK SPAM   — CLICK INJECTION

60
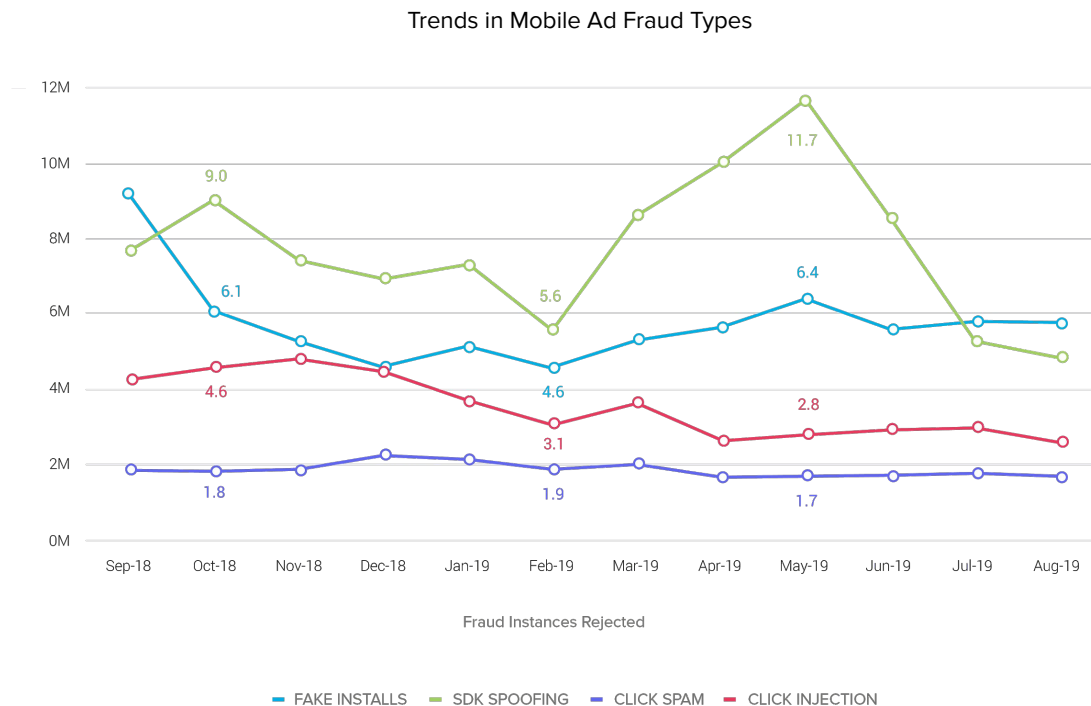
Estimates of the total scale and cost of mobile ad fraud vary hugely, due to the complexity of fraud types and the difficulty of detection.

Ad fraud currently costs companies billions, and estimates vary wildly, ranging somewhere between **$6.5 billion** (Association of National Advertisers) and **$19 billion** (Juniper Research).

Mobile ad fraud data is also sketchy, but shows marketers are winning the war on fraud and highlights top verticals and operating systems still under siege.

- Global fraud rates fell to 16% in the period from November 2018 to April 2019 thanks to the advance of protection solutions that counter attacks.
- E-commerce is at most risk, a vertical accounting for nearly one-third (30.76%) of rejected fraudulent app installs.
- Fraudulent installs are higher on Android than on iOS. In 2018, 27% of Android installs were fraudulent, compared with 21% of iOS installs.

31%
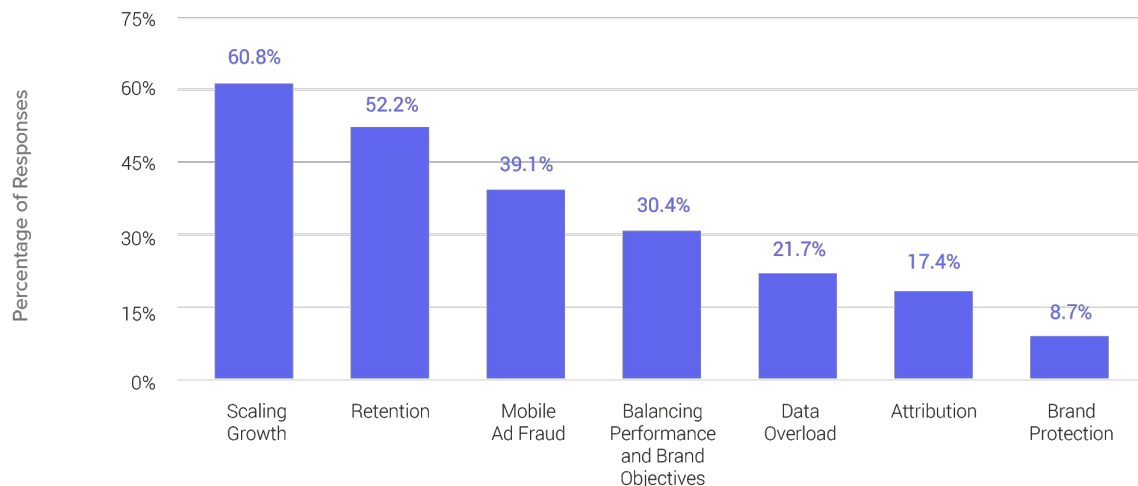E-commerce accounts for 31% of rejected fraudulent app installs

27%
Fraudulent installs are 27% higher on Android than on iOS

Mobile ad fraud is one of the Top 3 challenges marketers face today.

Marketers are focused on filling the funnel (scaling growth - 60.8%) and plugging a leaky bucket (retention - 52%). Mobile ad fraud, which can endanger both, is the number three challenge.

Further down in the list, only 21.7% of marketers are concerned about data overload. This counters a recent study of CMOs by Singular that found data overload (and more importantly the lack of meaningful and actionable insights from the data) is a major headache.

App Marketers' Biggest Challenges

Percentage of Responses

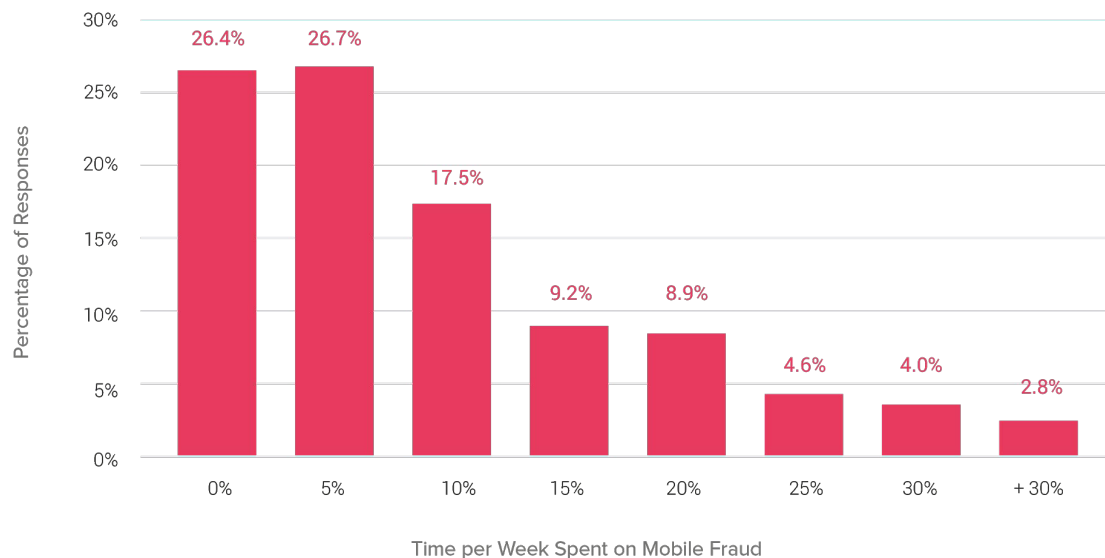| Challenge	%
Scaling Growth	60.8%
Retention	52.2%
Mobile Ad Fraud	39.1%
Balancing Performance and Brand Objectives	30.4%
Data Overload	21.7%
Attribution	17.4%
Brand Protection	8.7%

However, marketers are not vigilant, and more than half spend 5% or less time on fraud per week.

While the industry has made significant headway against ad fraud, the worst isn't over–yet. The bigger battle looms on mobile, but Liftoff survey data suggests marketers are unprepared, or uninterested–or both.

More than half of marketers spend 5% or less on addressing the problem per week and 35.6% spend between 10-20% on their time on this activity.

Time per Week App Marketing Teams Spend on Mobile Ad Fraud

Percentage of Responses

Time (x-axis)	Value
0%	26.4%
5%	26.7%
10%	17.5%
15%	9.2%
20%	8.9%
25%	4.6%
30%	4.0%
+ 30%	2.8%

Time per Week Spent on Mobile Fraud

LIFTOFF

Liftoff is a performance-based mobile app marketing and retargeting platform which uses post-install user data to run true cost-per-action user acquisition and re-engagement campaigns. Powered by advanced machine learning and lookalike targeting, Liftoff campaigns are optimized to drive actions beyond the install, like booking a hotel, making a reservation, or renewing a subscription. Liftoff's cost-per-action model helps customers scale and grow by acquiring users that actively spend in revenue-producing events. Headquartered in Palo Alto, CA with offices in New York, London, Singapore, Tokyo, South Korea and Paris, Liftoff works with leading app publishers and brands across the globe.

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