Adjust Global App Trends 2019

Global Benchmarks Report

Contents

Introduction

By the end of 2018, the number of mobile subscriptions outgrew the global population, with 7.9 billion connections vs. 7.7 billion people. Mobile technologies and services also generated more revenue than ever, at a value of $3.9 trillion globally. 2018 was, by all indications, a record-breaking year.

But for app marketers, 2018 will be remembered as a challenging year. More apps resulted in increased competition, both for users and also ad space. Straightforward user acquisition was overshadowed by more complex marketing tactics, as marketers valued retention, lifetime value, and retargeting more than ever before.

To equip app marketers with the data and deep insights they need to understand the dynamics of growth, the mechanics of retention and the impact of mobile ad fraud Adjust draws on data at key points of the app lifecycle.

The Adjust Global App Trends Report examines data (from January 1, 2018, to December 31, 2018) across the top 1,000 performing apps on the platform. This data set spans over 7 billion installs and 120 billion sessions.

To provide a more complete view of the ecosystem, we manually recategorized app verticals into the following 23 sub-vertical categories. All feature in the report, though some do not feature in each section:

Primary	Sub-verticals
Business	Banking, Payment
E-commerce	Deal Discovery, Marketplace & Classifieds, Shopping
Entertainment	Music, Video & Streaming
Food & Drink	Food Delivery, Recipes
Games	Casino, Casual, Mid-core, Sports
Health	Health
Publications	Comics, News
Social	Communication, Dating, Social Network
Travel	Rideshare, Ride-Hail & Taxi, Travel Booking
Utilities	Tools, Weather

Overall, this report covers a host of valuable metrics, including app installs, growth, retention rates, sessions, time spent and fraud rates. It also offers a deep dive into three leading app verticals (Shopping, Banking and Travel), breaking down the data by installs and engagement.

From our dataset, we were able to draw out insights and stories that make up the picture of 2018 in mobile.

App installs

In 2018, app installs exceeded 194 billion in total, with revenues reaching $101 billion, according to App Annie data. How did marketers respond to such a busy marketplace to increase their share? Simple, they spent much more on advertising. By ratio, paid installs grew 4% in 2018, an increase that's consistent with growth Adjust noted in 2017.

Ratio of paid growth over 2018
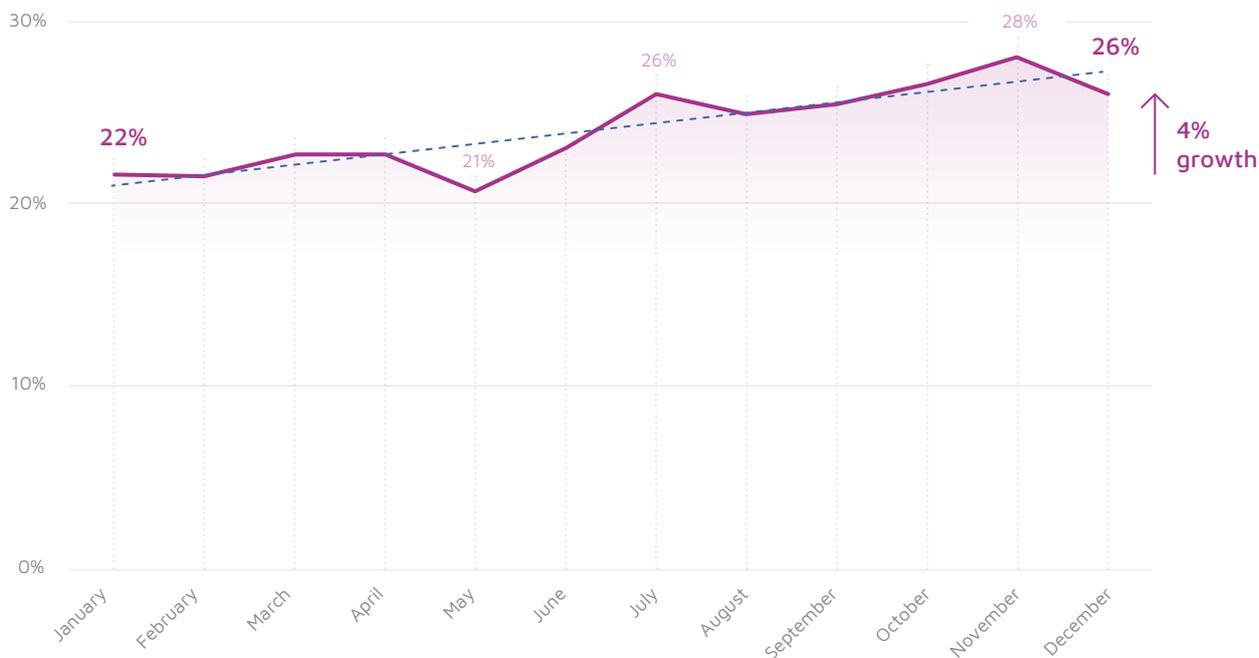
This chart translates into a large portion of a recorded $188 billion in global mobile ad spend, according to eMarketer data. As the trend is set to continue, it could result in marketers feeling more pressured to increase ad spend just to keep up with the pace of competition.

A breakdown of Adjust's install data by operating system shows that **Android has been the driver of growth**, rising 5% from January to December. A possible explanation is due to expansion in developing markets (see our Growth Index summary).

A further analysis of app installs reveals the most popular app categories in each country. Adjust finds that Gaming and Social are the most downloaded types of apps, reaching the top ranking in four countries: China, Japan, Germany and the U.S.

Top performing vertical by country

	CHINA	GERMANY	JAPAN	U.S.
1	Games Mid-core	Games Casual	Games Mid-core	Games Casual
2	Games Casual	Communication	Games Casual	Communication
3	Games Sports	Games Mid-core	Shopping	Music
4	Communication	Music	Marketplace & Classifieds	Games Mid-core
5	Video & Streaming	Marketplace & Classifieds	Music	Games Sports

Though Games dominate the install landscape, the Games subcategory differs by country.

- In the U.S. and Germany, Casual games (including Arcade, Simulations and Puzzles) are the top app vertical.

- In China and Japan, Mid-core gaming (such as RPGs, Shooters and Strategy) come out on top.

Social apps also appear high on our install list globally. The exception is Japan, where consumers prefer E-commerce apps, appearing twice in our top five. Meanwhile, Communication apps sit in eighth place measured by install popularity.

Paid vs. organic: How do users find their apps?

App downloads are usually, if not always, organic. However, many marketers are expecting their share of paid installs to grow in 2019. And, as Adjust has found, not all verticals have organics as their main driver of traffic. In fact, paid can be the real source of growth for certain applications.

Adjust looked at how app discovery differs between paid and organic sources to highlight how users find apps in radically different ways.

Paid vs. organic install ratio by vertical

28%
Average Paid

$ Paid   Organic
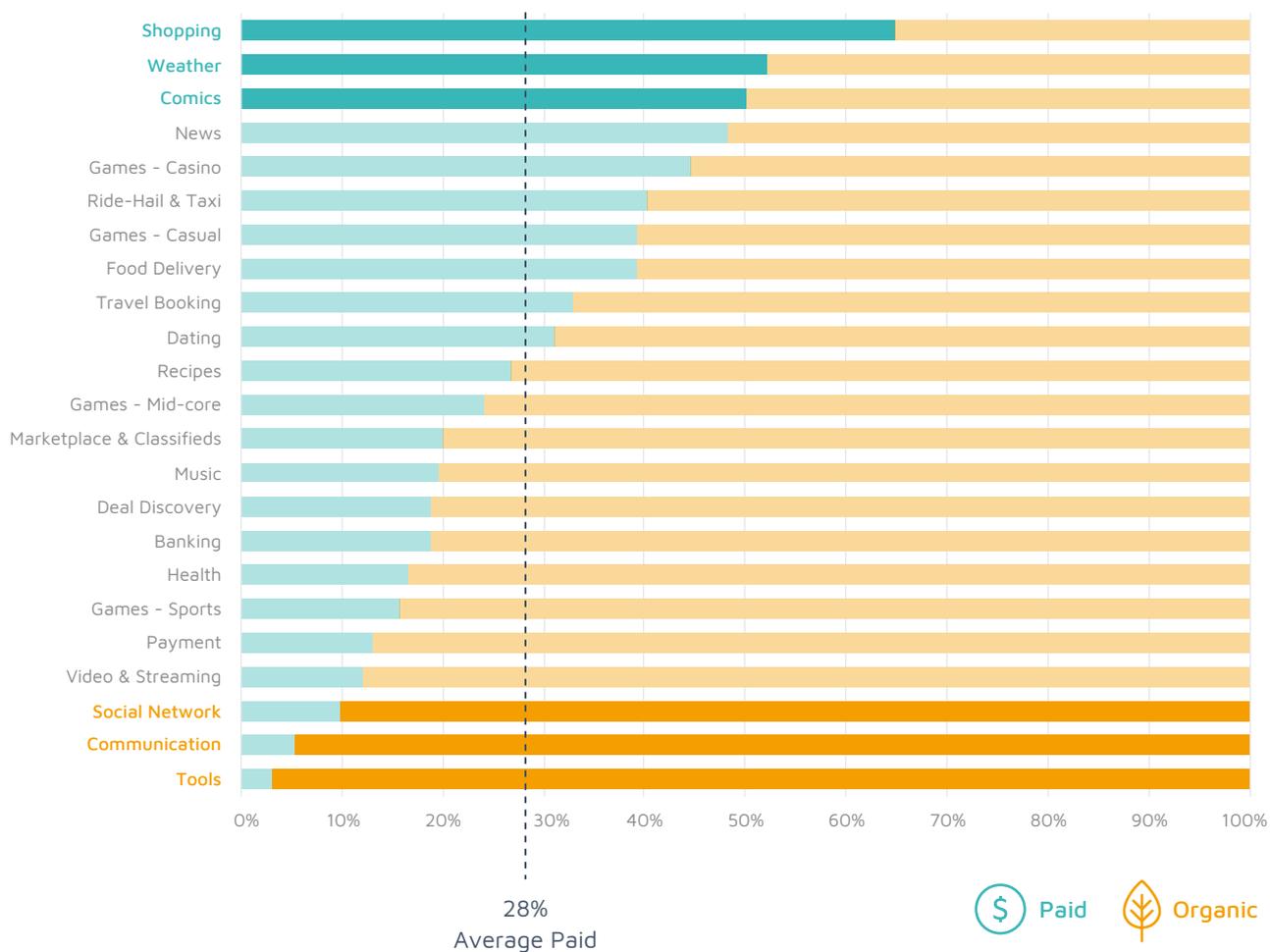
We'd expect that for most apps, organic traffic would drive more installs. It's a rule that holds for apps that have especially strong word-of-mouth advertising or offer utility to users. That said, app categories where competition is higher for users are having to rely more on paid promotion to attract audiences.

Strong organics:

Tools (97% organic)
Communications (95% organic)
Social networks (90% organic)

Strong paid performance:

Shopping (65% paid)
Weather (52% paid)
Comics (50% paid)

This share of paid is expected to grow. Many marketers are predicting this, including Paula Neves, CMO of Gazeus Games. She observes that "paid will be a bigger source of installs because ASO and other non-paid techniques are more competitive. So, paid is still our sure-shot of success."

Mobile growth consultant Thomas Petit believes that installs from paid ads will increase in 2019, thanks to a variety of factors:

• Big "offline" or "traditional" FMCG brands moving budget there for improved efficiency

• A focus on internationalization from major apps in the U.S., with emerging countries given more focus thanks to huge potential (such as Brazil, India, Russia)

• Decreasing returns in organic (features and organic uplift being less important than they used to be, and ASO reaching a ceiling for some), as shown by organic vs. tracked trends over the last few years

• Increasing first-party inventory alternatives beyond the duopoly

• A renewed era of growth for programmatic after some consolidation

• Many players are also increasing efforts in paid advertising which results in "hidden organic" installs (influencers, podcasts, TV, OOH), also known as K-Factor

A rise in paid traffic can be attributed to the growth of Hyper-casual Games. Here, monetization is based on users viewing and engaging with ads. This new focus is changing how marketers think about extracting more revenue from their user base. Yury Bolotkin, Growth Specialist at App Game developer Popcore says:

POPCORE

"For developers who use ad monetization as the primary revenue driver for their apps, growing installs volume is essential — and will remain so well into 2019."

Yury Bolotkin,
Growth Specialist

For marketers thinking of ad monetization, it's vital to take the reins of your data with the help of the right attribution provider. Amir Shaked, ironSource's VP of Revenue, says: "Without user-level data and analytics on ad revenue, 100% ad-based developers couldn't identify who their high-quality users or 'ad whales' are, and therefore, which marketing channel, campaign, or creative drove that individual ad whale's install."

Growth Index

New to Adjust benchmark reports, we've created the Growth Index — a snapshot of the rise of apps to better understand app uptake across 2018.

To define growth, we took the number of installs per month and divided them by monthly active users (known as MAU) for each vertical and country in our dataset. This tells us the rate of growth that apps receive from installs against their monthly active user base. The more users that install in relation to the MAU, the higher the score. Payment apps and Tools were not included in this sample.

$$\text{Growth Index} \quad = \quad \frac{\text{NO. OF INSTALLS PER MONTH}}{\text{MONTHLY ACTIVE USERS (MAU)}}$$

Low growth score   **High** growth score

Growth by app vertical

A breakdown of the data by vertical shows that Mid-core Games experienced a massive rate of growth in 2018 at 18.52 on our Growth Index score. This is the highest install base of any app. The healthy growth can be linked to the rise of Battle Royale and multiplayer online battle arena (MOBA) games. Another factor is the advance of more powerful mobile devices that can cut down on latency and boost the enjoyment of gameplay.

Some apps experienced rapid growth over 2018

| Category	Growth Score
Games - Mid-core	18.52
Ride-Hail & Taxi	17.63
Games - Sports	15.07
Video & Streaming	12.34
Dating	11.28
Games - Casual	10.50
Shopping	10.10
Games - Casino	7.72
Communication	7.64
Food Delivery	6.13
Travel Booking	4.76
Marketplace & Classifieds	4.52
Weather	4.11
Health	3.99
Comics	3.82
Music	3.81
Banking	3.80
Social Network	2.29
News	2.11
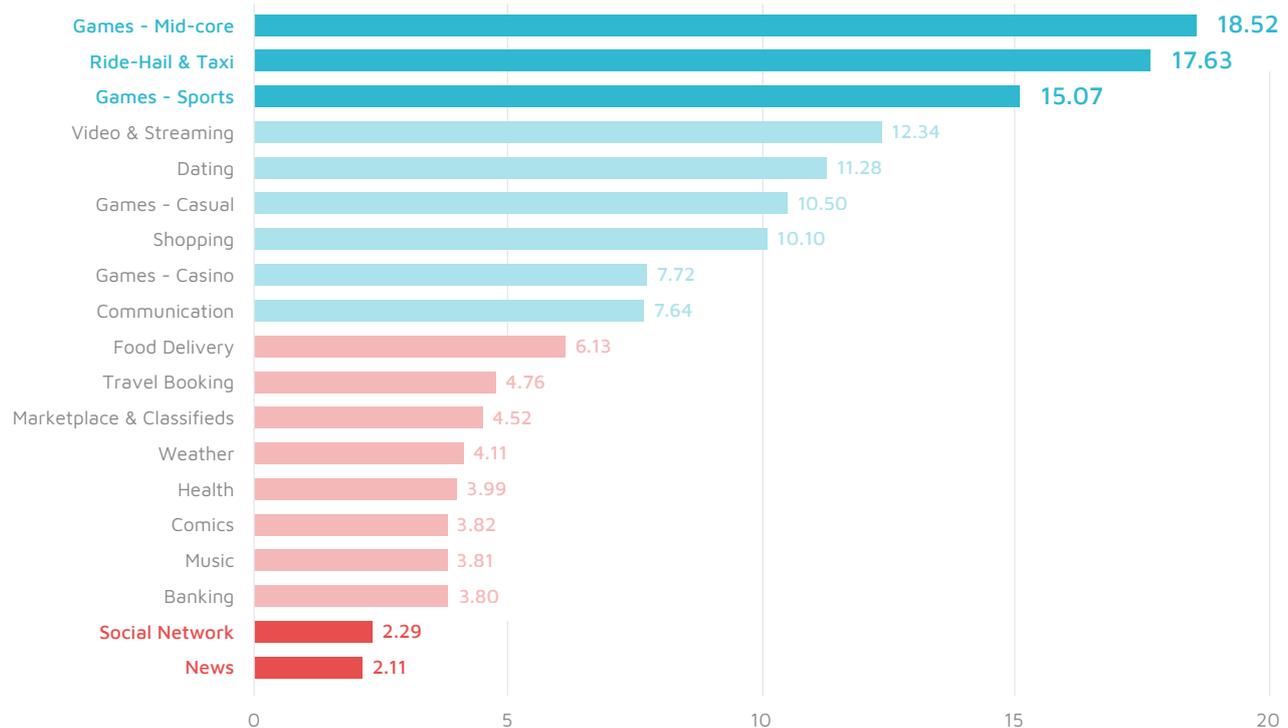
Elsewhere, Rideshare, Ride-Hail & Taxi apps experienced huge increases in traffic in 2018 (17.63). Comparatively, Travel booking apps saw low growth (4.76), suggesting that the daily use of Ridehail drives higher installs.

Video & Streaming also benefited from the immense popularity of blockbuster content, from Game of Thrones to major movie franchises, as well as increasing interest in streamers and eSports, with a growth score of 12.34.

Dating apps continue to go mainstream seeing an 11.28 growth score in 2018. Dating apps are beginning to discover new growth avenues, from finding friends to matching interests.

News and Social Networks saw stunted growth in 2018 (2.11 and 2.29 respectively) The lackluster performance of News apps is likely linked to high competition for a limited resource: user attention. Users consume most of their news via other channels (including online and social networks). Social apps appear to have plateaued at a high level.

Country-level growth

A breakdown of growth data by country exposes some notable trends. In 2018, emerging markets saw massive upswings in app attention. **Indonesia** (17.62) was the fastest growing market. **Brazil** (9.39), **Korea** (9.11) and **Malaysia** (8.23) increased faster than most other countries in our data set.

Fastest growing countries
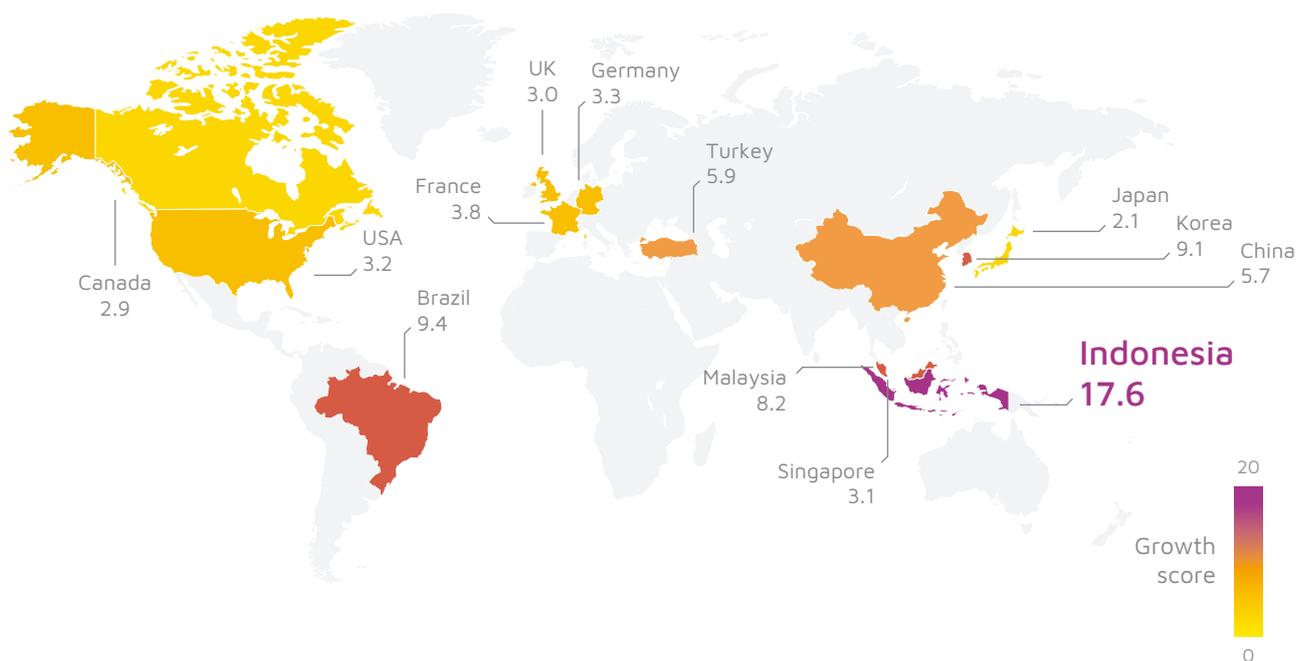
In APAC, **Korea and Japan are opposites in their uptake of apps.**
Korea (9.11) is the third fastest growing market while Japan is in last place (2.14) — a marked difference in performance.

What's driving growth in Indonesia? One factor is the popularity of Video apps and streaming services, which see the most substantial uptake (with a Growth Index score coming in at the high end with 34.56). The increased interest in video apps is confirmed by data from Cable, which shows that Indonesia has the 17th lowest price of internet in the world, at an average of $1.21 per GB. Affordable access explains the sizeable increase in streaming, which is the main driver of app growth in the country. Gaming, Shopping (18.91) and Weather apps (30.06) are also at the top of Indonesia's Growth Index list of apps.

Indonesia's fastest growing apps

Video & Streaming — 34.56
Weather
Games - Mid-core
Games - Casino
Games - Sports
Communication
Shopping
Travel Booking
Dating
Marketplace & Classifieds
Games - Casual
Music
Ride-Hail & Taxi
Health
Social network
Food Delivery
Comics
Banking
News

0   5   10   15   20   25   30   35
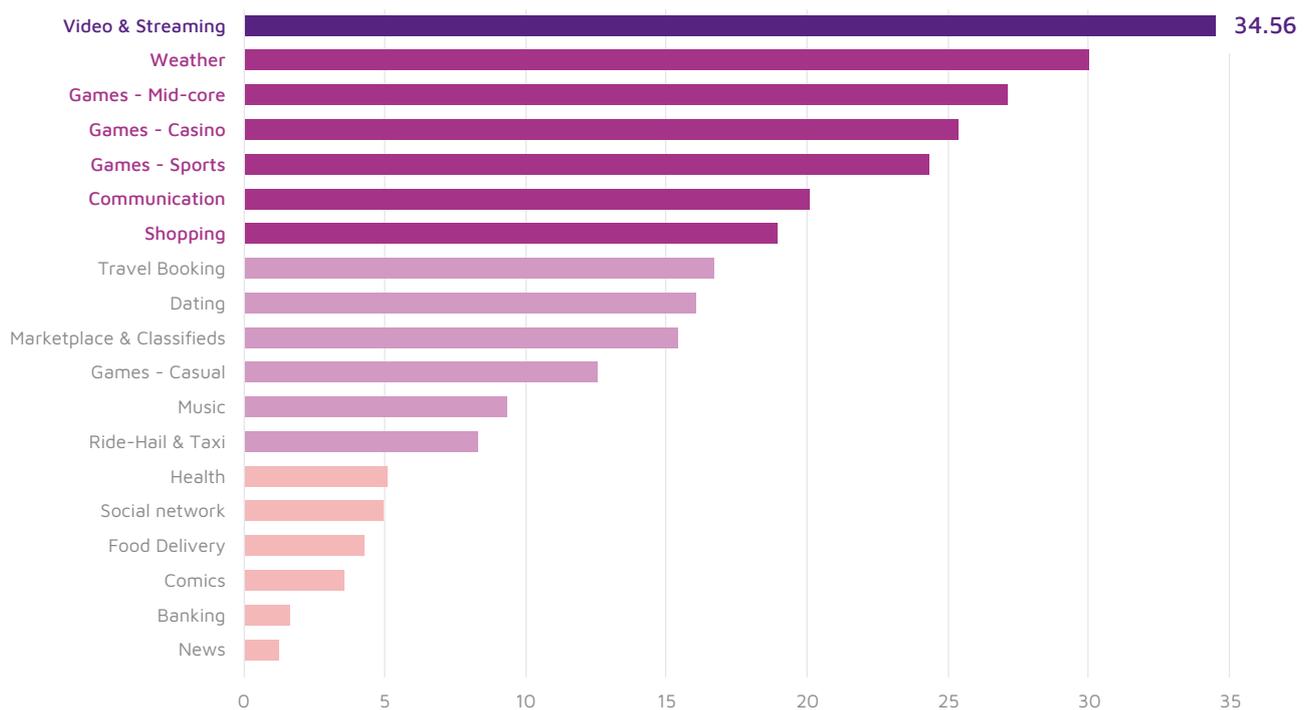
Shopping

2018 was a boom year for mobile commerce, both in revenue generated and records broken. Worldwide, shopping app downloads grew to 5.7 billion in 2018, up 9.3% over 2017. Research firm eMarketer predicts that "U.S. retail m-commerce sales will reach $268.78 billion in 2019, up nearly 30% year over year." Most of this activity will occur in-app, with a sliver taking place on the mobile web.

Installs

2018 was a boom year for mobile commerce, both in revenue generated and records broken. Worldwide, shopping app downloads grew to 5.7 billion in 2018, up 9.3% over 2017. Research firm eMarketer predicts that

"U.S. retail m-commerce sales will reach $268.78 billion in 2019, up nearly 30% year over year." Most of this activity will occur in-app, with a sliver taking place on the mobile web.

Shopping app installs in 2018


Total   Paid   Organic
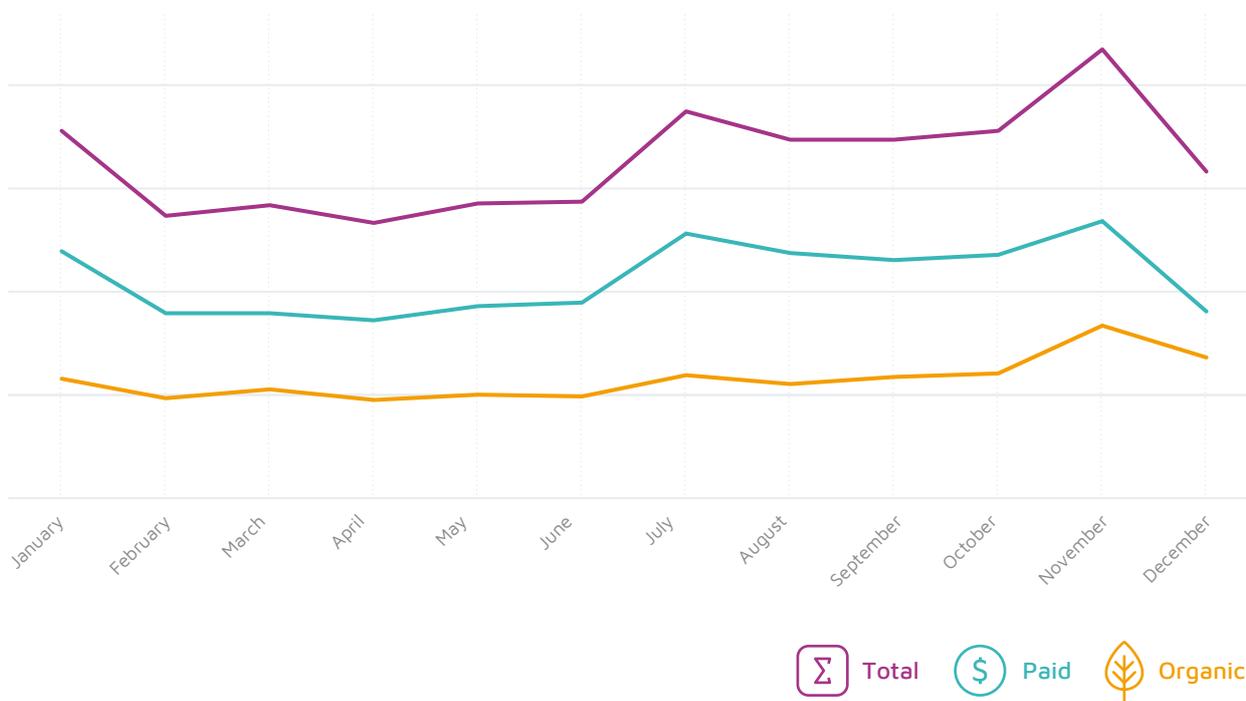
- November peaked, registering 33% more downloads than the average. This is due to Black Friday, Single's Day, and Christmas holiday shopping. By comparison, December saw 3.3% less installs than the average.

- Paid traffic made up 65% of the total throughout the year — a vast difference in performance to other verticals.

- Shopping apps grew fastest in Brazil, scoring 43.14 on our Growth Index. The U.S.A. (22.04) and Indonesia (18.91) also grew. Other markets in APAC didn't see so much growth, with Japan at the tail end (1.88). This is likely due to a mass amount of monthly active users in the country.

Engagement

- Shopping apps are used a little less than twice a day — 1.69 sessions on average. Of these, organic users are slightly more active at .06 difference on iOS, and .02 on Android.

- Talking retention rates on Day 1, around 25% of shoppers return to visit a Shopping app once more. By Day 7, rates of return are about 14%. As such, retailers may need to do more to make sure they are keeping customers engaged and transacting through the app.

But are numbers down due to user churn? Or have users simply deleted your app to re-install it? You can find the answer with Lifecycle tracking. This feature helps pinpoint where users feel most frustrated, letting you find out if drop-off is just churn, or a full deletion of your app on a user's device.

Shopping app sessions in 2018

		Value
Paid	iOS	1.66
	Android	1.68
Organic	iOS	1.72
	Android	1.70

0.00   0.50   1.00   1.50   2.00
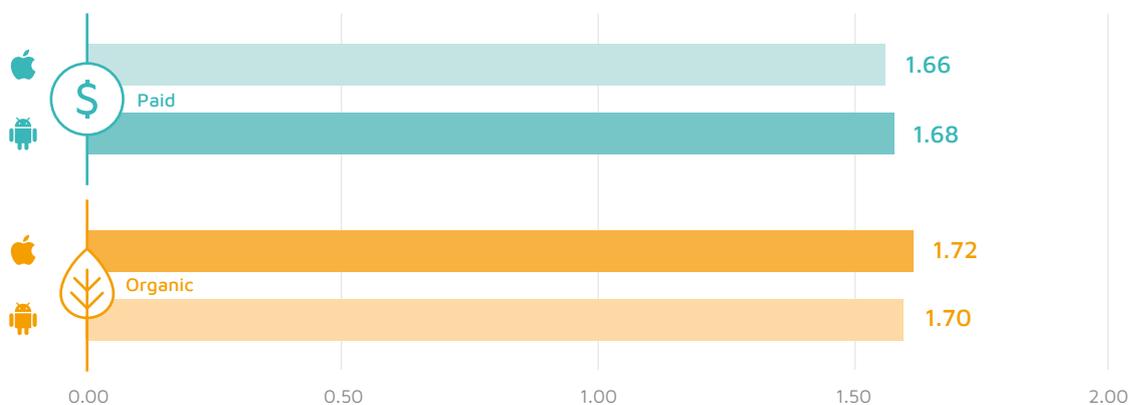
Retention

Retention is the crux of lifetime value (LTV). True LTV can only be calculated with accurate churn data — if you don't know, you have an inaccurate reading on your users' true worth. Furthermore, in-app advertising is growing as a means of generating revenue and contributes heavily to LTV calculations for many categories of apps, but not all.

These factors contribute to a marketer's more nuanced understanding of retention rates, with one simple discovery: not all apps retain equally. This is the observation of Andy Carvell, Co-Founder of Phiture, a noted app growth consultancy.

◆ Phiture

"Since games often solve the 'problem' of boredom and short attention spans, they typically have a high natural usage frequency (translating to relatively high n-Day retention), vs. a Travel Booking app where people often go months between travel bookings."

Andy Carvell,
Co-Founder and Partner

79%
of users are lost
within **the first week**
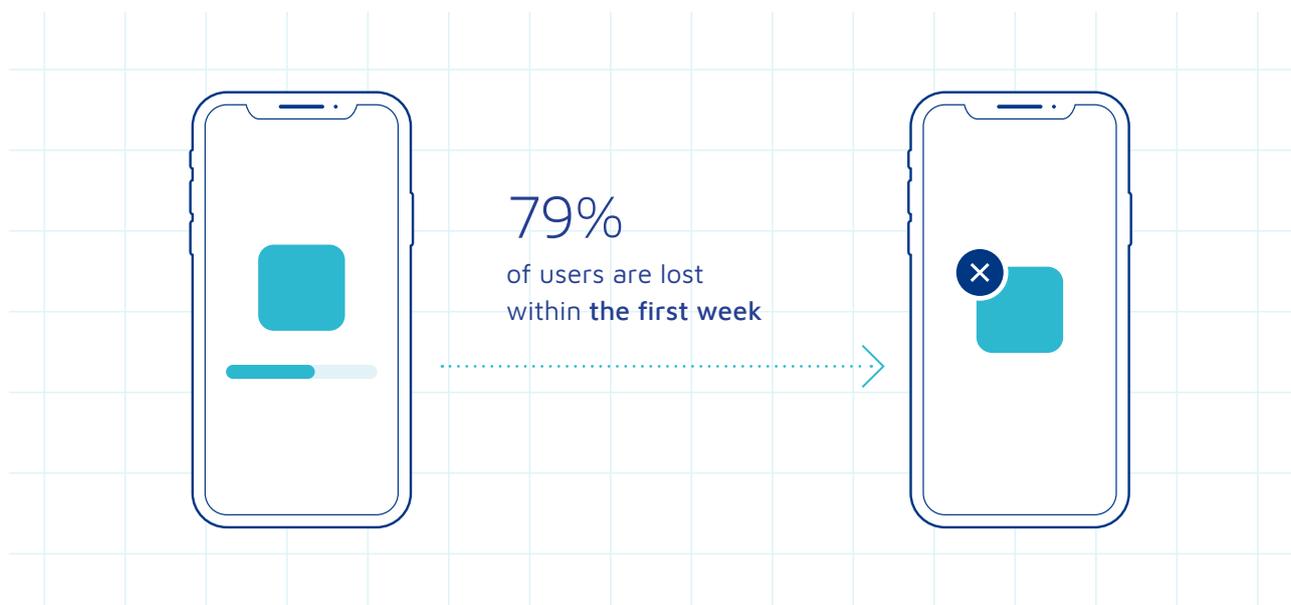
So, if all apps retain differently, what are the typical rates of retention for each vertical?
Overall, from Day 0 (date of install) to Day 1, apps lose on average 69% of all their users. From Day 1 to Day 7, overall average retention decreases to 21%. Put simply, an app loses 79% of users in the first week of install.

A look at retention by vertical: Day 1 after install

High-retaining verticals
Games, Publications (News and Comics) and Social (Dating, Messaging and Social Networks) are the highest retaining verticals in our dataset. This could be linked to the low barrier to engagement and low cost. Typically, these apps don't require purchases, but instead provide content or connections to their users which results in daily use.

Low-retaining verticals
Food Delivery loses all but 16% of its user base by Day 1. Meanwhile, Shopping (25%) and Travel (20%) also have high churn. In contrast to our high-retaining verticals, which allow users to consume or enjoy content, these apps are focused on commerce. Users often install, purchase and churn on the same day of use, making the most of an incentive to try before churning (or returning some weeks after their initial purchase).

Retention per vertical on **day 1** after install

| Vertical	Retention
Games - Casino	39%
Dating	39%
News	39%
Games - Sports	38%
Games - Casual	38%
Communication	38%
Comics	37%
Marketplace & Classifieds	37%
Social Network	35%
Music	33%
Games - Mid-core	32%
Weather	32%
Health	31%
Banking	30%
Video & streaming	30%
Tools	29%
Deal Discovery	25%
Recipes	25%
Shopping	25%
Ride-Hail & Taxi	24%
Travel Booking	20%
Food Delivery	16%

31%
Global Average
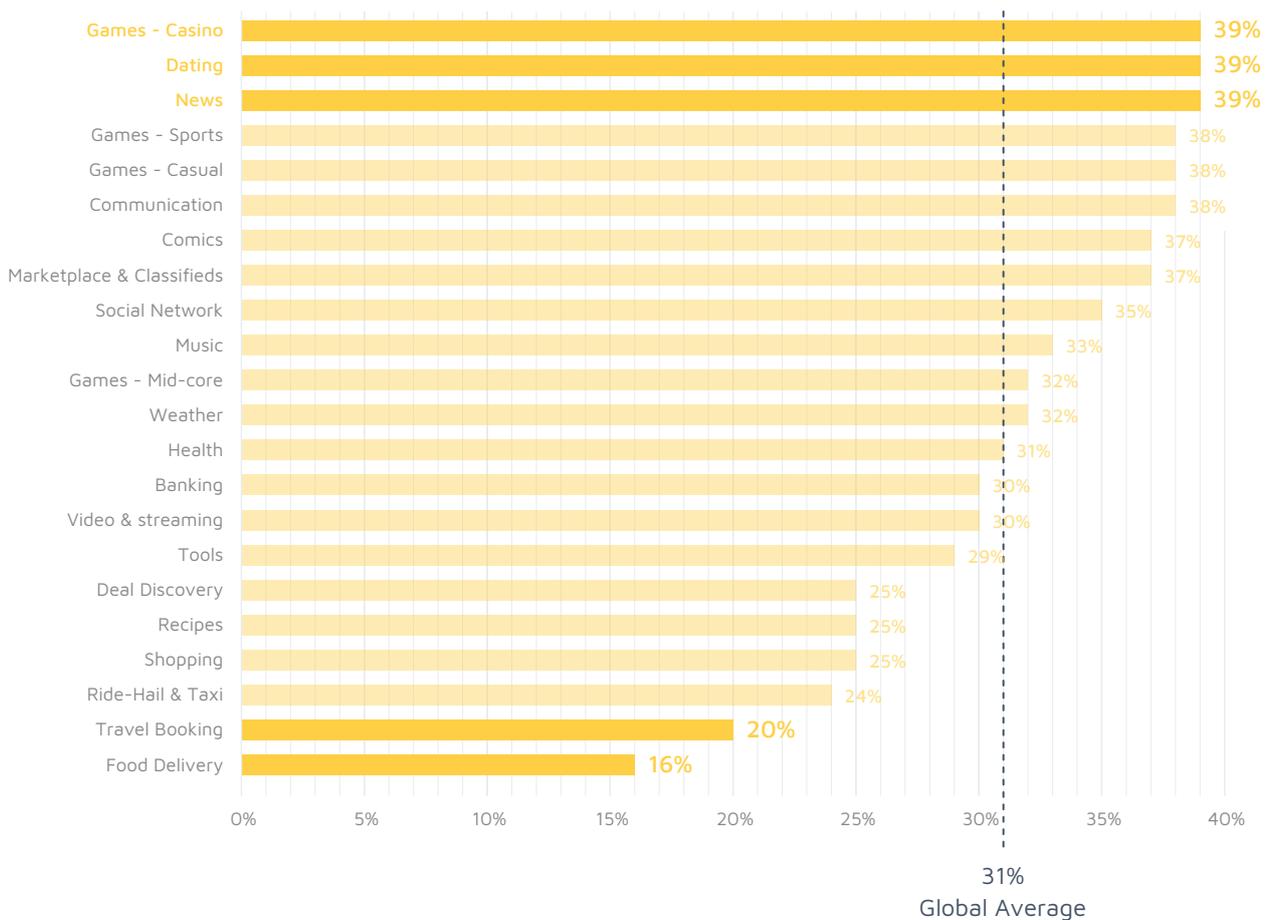
Chinese users have the lowest retention (20% on Day 1) with the quickest loss of users in the first week (12% from Day 1 to Day 7).

Across APAC, Japan keeps playing its Mid-core games the longest (12% of users retained at day 30, 4% above the next best market).

Shift happens: Day 1 to Day 7

The data shows that winners can become losers. News (31%) and Comics (28%) apps have the highest retention rates by Day 7 of install. Each app has around 2.2 sessions per day on average.

The trend continues with some Gaming apps, who tend to have some of the highest churn rates between Day 1 and Day 7. For instance, Sports lose 18%, and Mid-core Games lose 14% of users. On average, Gaming apps lose

10% of their initial user base between Day 1 and Day 7.

Though Casual Games lose 17% of their user base within a week, this is not necessarily a bad thing. This is because Casual Games rely on in-app advertising to generate revenue. However, it's vital for them to find "ad whales," the users with high retention who also like to engage with ads.

Retention per vertical on **day 7** after install
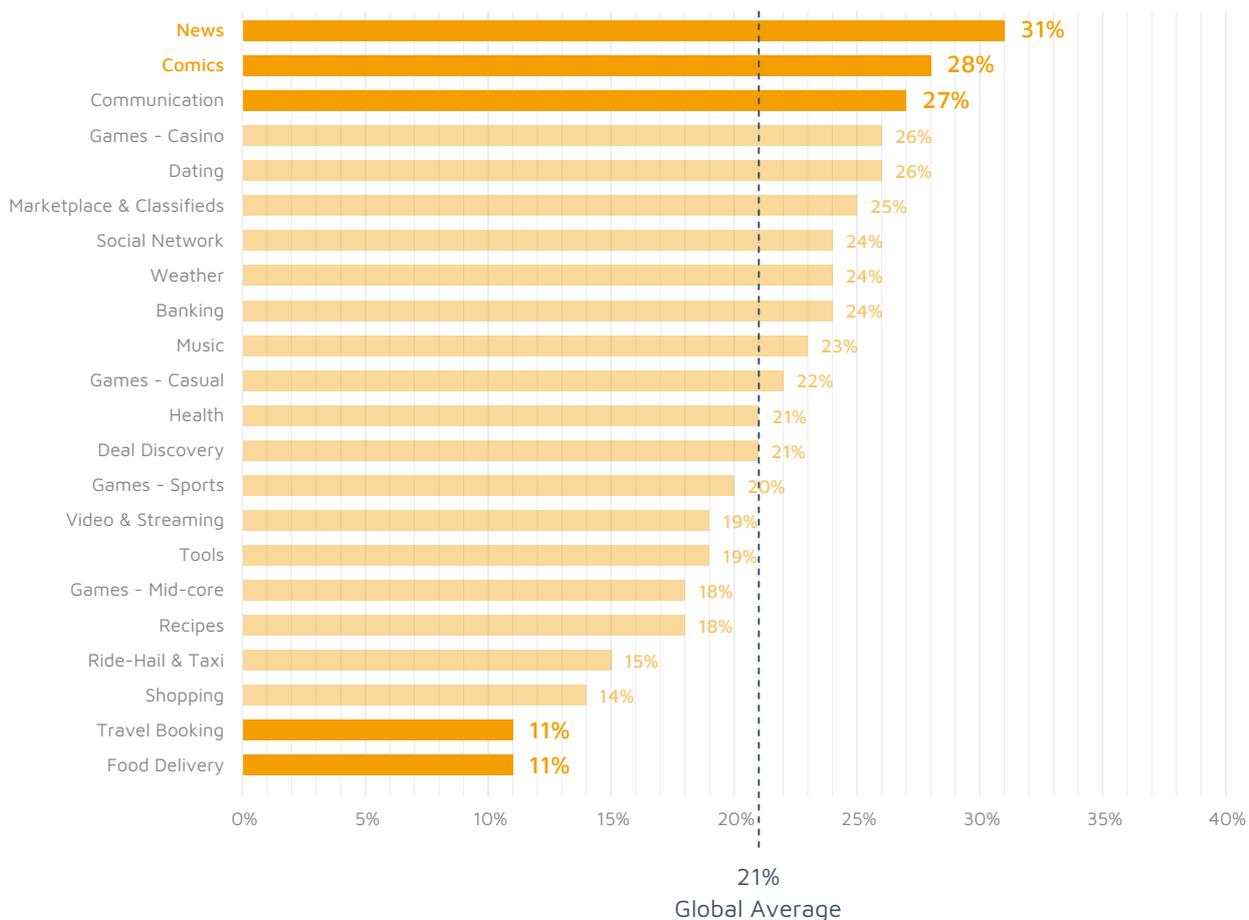
Canadian users retain better than any other country
(34% on Day 1, 25% on Day 7 - both 4% higher than their
next counterpart, the U.S.)

Day 30 after install

By the end of the 30-day period, the average retention rate for apps is 14%. While News apps (24% at Day 30) retain best overall, Communications apps (20%) also keep a significant amount of users engaged over a relatively long amount of time.

◆ Phiture

Ultimately, a "healthy" retention rate corresponds to the natural usage frequency that can be reasonably expected, based on how often the average user encounters the problem which the app solves.

Andy Carvell,
Co-Founder and Partner

Retention per vertical on **day 30** after install

Vertical	Retention
News	24%
Communication	20%
Comics	20%
Banking	19%
Weather	17%
Games - Casino	17%
Marketplace & Classifieds	17%
Social Network	16%
Music	16%
Dating	16%
Deal Discovery	15%
Health	15%
Tools	13%
Recipes	12%
Video & Streaming	12%
Games - Casual	12%
Games - Mid-core	10%
Games - Sports	10%
Ride-Hail & Taxi	9%
Shopping	8%
Travel Booking	6%
Food Delivery	6%

14%
Global Average
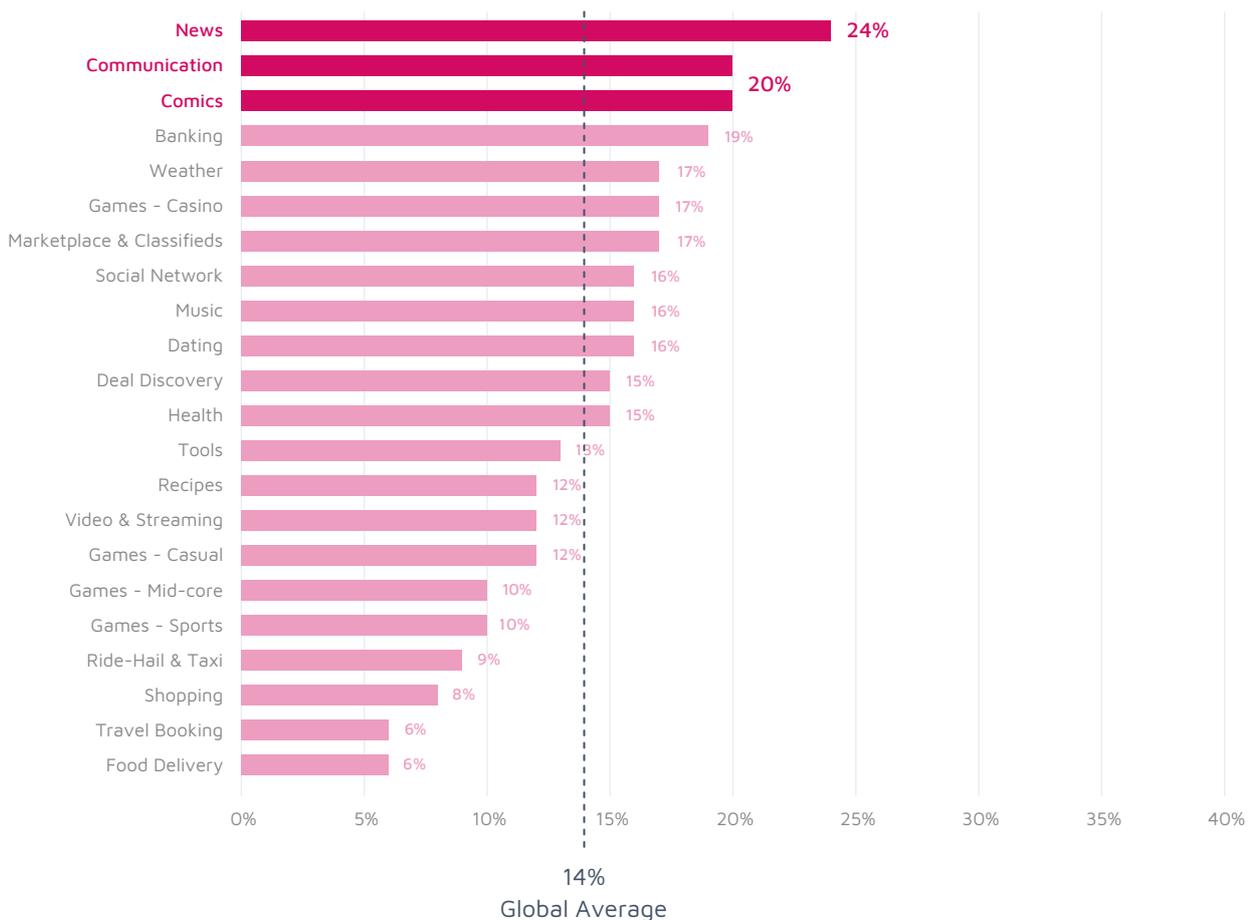
Sessions

Sessions are an indication of app engagement, revealing how often users return to an app in the course of a day. In our data below, we've averaged 30 days of session performance to calculate the number of app opens per day, in each vertical and country.

Among the findings:

- The average number of sessions per user, for all apps, is 2.18 per day.

- Social apps, such as Dating (3.47) and Communication (2.76), have high levels of engagement, which are to be expected by those checking messages, or checking out potential next dates.

- Food apps (Recipes at 1.54 and Food Delivery at 1.38) have low amounts of daily use, on average. As we noted in the section on retention, the aim for Delivery apps isn't necessarily high traffic, but healthy purchasing behavior.

Average sessions per user, per day
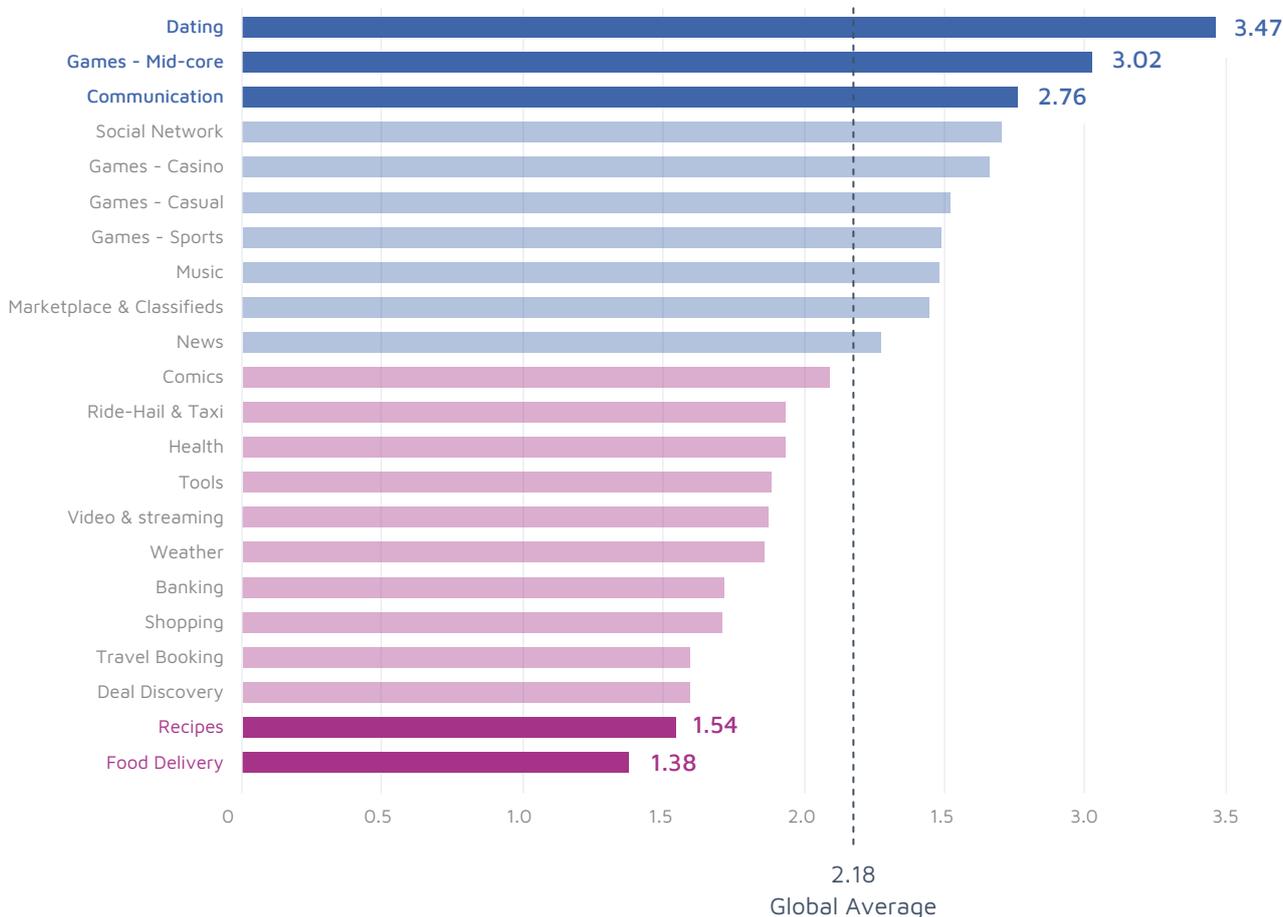
A breakdown of sessions by country provides a granular view of the distinct differences between countries. In contrast to installs, Mid-core Games tops the charts in three countries, with approximately three sessions per user, per day. Notably, while Casual Games drive the most installs, it's the Mid-core Games that drive the deepest user engagement in 3 of the 4 countries we highlight below.

Sessions by country

	CHINA	GERMANY	JAPAN	U.S.
1	Games Mid-core	Games Mid-core	Social Network	Games Mid-core
2	Social Network	Social Network	Games Mid-core	Social Network
3	Games Sports	Music	Dating	Communication
4	Communication	Games Casual	Games Casual	Music
5	Deal Discovery	Communication	Music	Games Casino

No matter which vertical, or country, there is one standard measurement that all apps have in common: the more sessions per user, the better.

This is because sessions correlate with overall user engagement with your brand/product (and also revenue). Raul Truckenbrodt, Co-Founder of Customlytics, has a few tips on how to improve sessions:

CUSTOMLYTICS

"There are a couple of ways to increase average sessions, ranging from mCRM activities like push notifications to paid retargeting or adding gamification elements that incentivize users to revisit. It's worth mentioning that the metric of session/user is a great (early) indicator to judge on the quality of paid traffic."

Raul Truckenbrodt,
Co-Founder

Banking

Customers are becoming more confident about using mobile phones to make decisions and transactions, such as taking a loan or setting up a mortgage. The GMSA reports that there were 866 million registered mobile money accounts in 2018 — a 20% year-on-year increase. Furthermore, banks such as Akbank have made major strides in applying their product to new, mobile technology.

Installs

### Banking app installs in 2018

Total   Paid   Organic
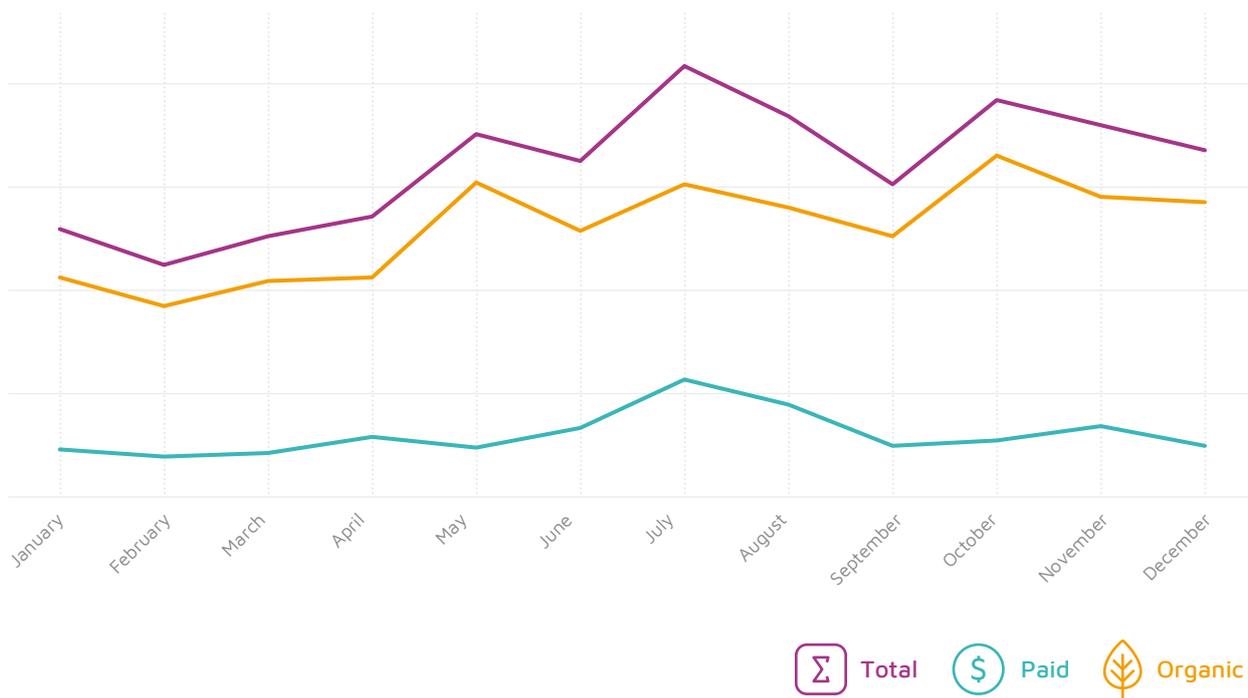
- Installs of banking apps tracked by Adjust increased 30% in 2018. This is thanks to the increasing number of banks turning to mobile to attract and maintain customers.

- Adjust found that markets such as Brazil and Turkey are major growth markets, scoring 6.67 and 3.04

respectively on our Growth Index — which averages at 2.37 with all countries combined.

- The main driver of Banking installs is organic downloads, which made up 81% of total traffic.

Engagement

- Adjust observed that banking apps on Android devices are used almost twice a day on average. iOS users (particularly from paid traffic sources) are the least likely to open an app, at a rate of just over 1.6 sessions per day.

- In spite of those high session figures, app retention for paid Android users is low — 25% on Day 1 (11% lower than iOS paid on the same day).

- This is likely due to a combination of factors. As of Q1 2018, Gartner reports that Android had 85.9% of the fintech app market share. As such, we'd expect to see more Sessions for Android because those devices are more frequent in areas where mobile banking is experiencing faster growth.

Banking app sessions in 2018
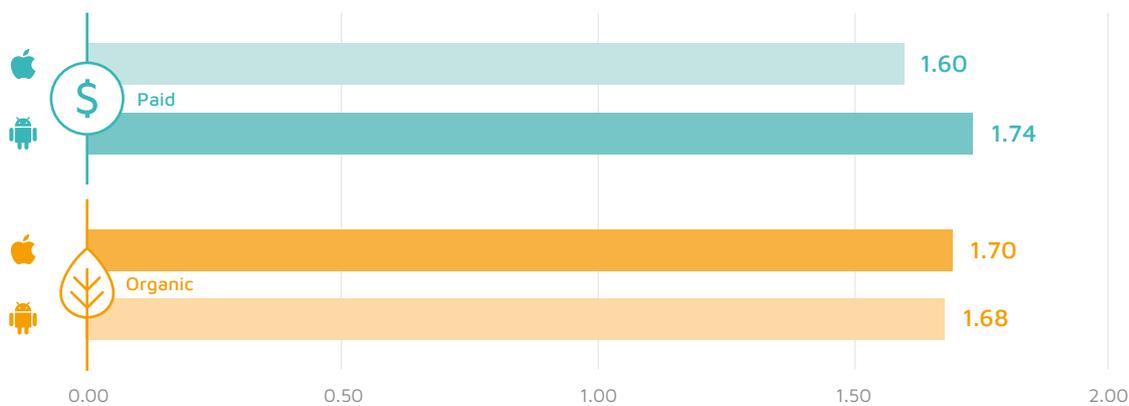
Turkish and Brazilian users spend the most time on Banking apps among countries per day (1-3% of total app use per day). Japan spends the least (less than 0.5%).

Time spent

What does a day in the life of a mobile app user look like? We charted app use at all hours of the day (across all the verticals that make up the daily journey) to find out.

Time spent represents an average week (Monday through Friday). We took a snapshot of the Summer of 2018 based on three months of data from that period.

Weekday in-app activity by vertical
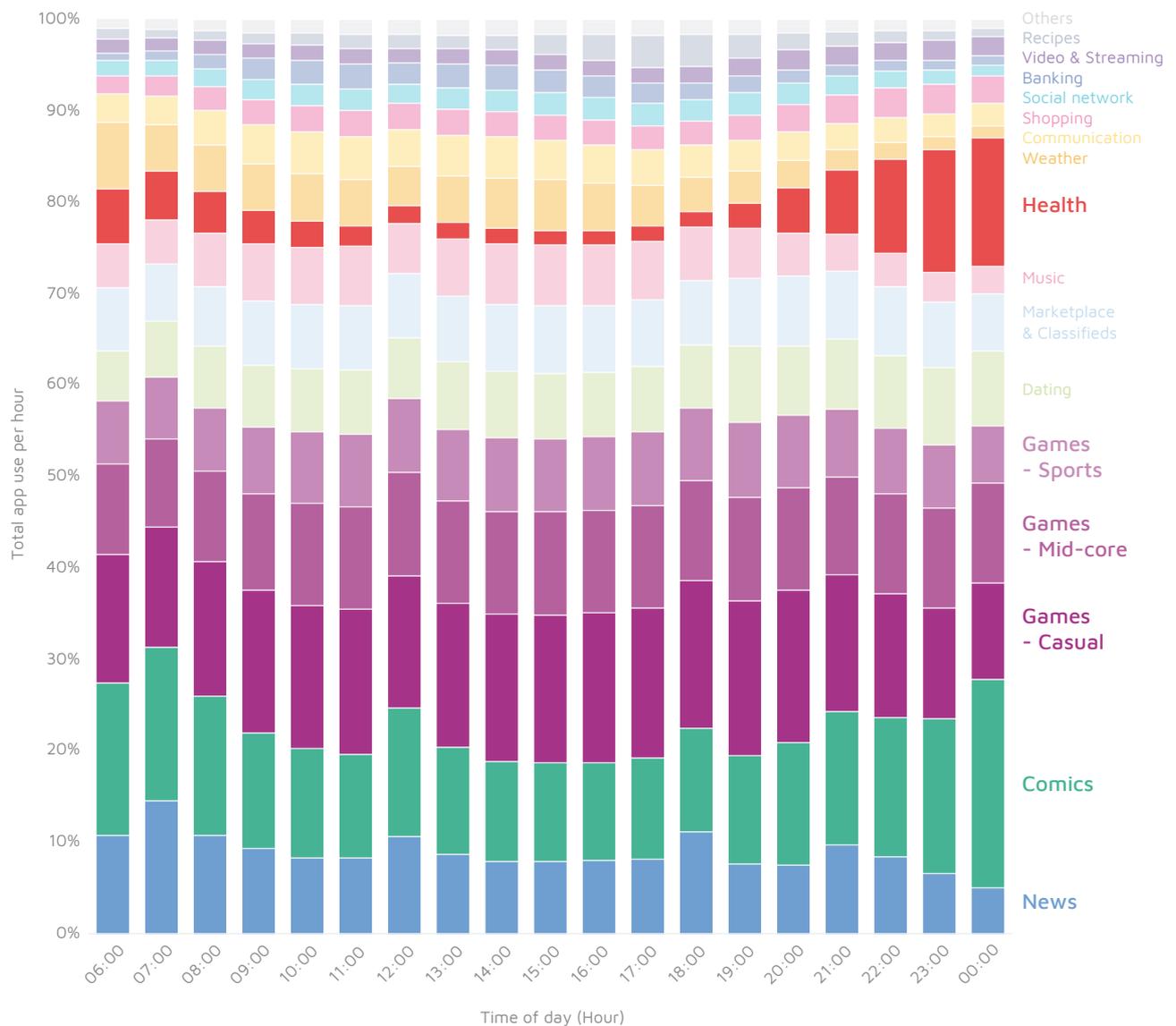
This chart:

- Includes 19 of 23 verticals

- Represents an average week (Monday through Friday). We have excluded data for weekends

- Factors time zones into our results

- Collates Food Delivery, Rideshare and Travel booking into "other"

In a day of global app use, Comics, Mid-core Games and Casual Games were the apps most active throughout the week. Comics owes its popularity to late night readers, while News readers tend to be active at 7 am.

And though users are constantly playing games, it's Casual & Sports Games that are used the most between 4 and 8 p.m., while Mid-core Games are in favor during the wee hours of the morning, mainly between midnight and 3 a.m.

Health apps are used mostly between 11 p.m. and 2 a.m. This is due to the prevalence of sleep trackers, which are activated while a user is, themselves, asleep. Chinese users are the most active users of Health applications at this time.

Germans spend a lot of time in News apps (6.5-19%, depending on the time of day). Meanwhile, French users access news apps the least (consistently below 5%).

Fraud

2018 was the year that the world faced up to ad fraud. It was widely reported that authorities are beginning to crack down on the practice, and marketers have become savvier to the effects of fraud on not only their budgets, but also their data. Fraudsters have also become more sophisticated — and the general trend is one of increasing complexity, with more work on the part of MMPs and the wider industry to end fraud for good.

Adjust rejected 269,036,991 fraudulent installs in 2018. Of these, 124,022,906 were from paid traffic sources. Spoofed Attribution schemes (fraud that spoofs ad engagements for real users) were the most prevalent type of fraud. Methods like Click Spam and Click Injections made up 73% of all fraudulent engagements Adjust blocked in 2018.

Fraud type

25.59%
Click Spam

17.32%
SDK Spoofing

9.43%
Fake installs

47.66%
Click Injection
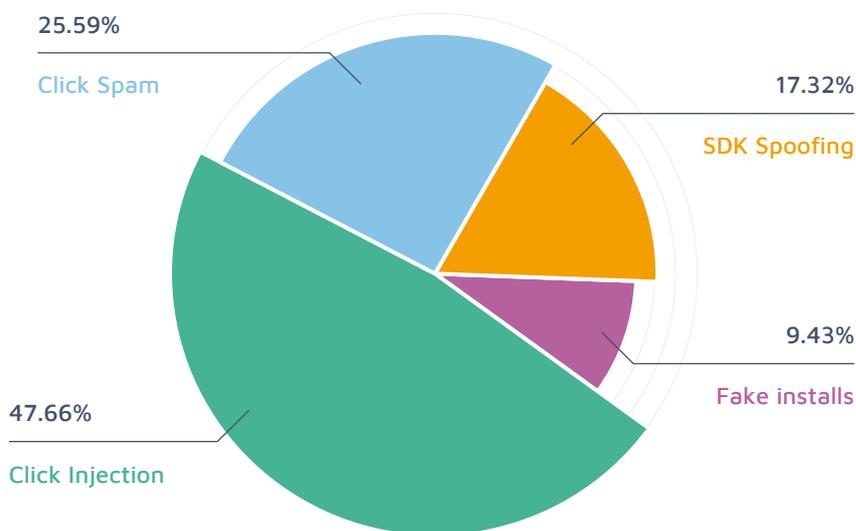
There are four methods of mobile ad fraud that Adjust actively stops: Click Spam, Click Injections, Fake installs and SDK Spoofing. The pie chart shows the average share of each type of fraud blocked over 2018.

The introduction of new anti-fraud filters accounts for this distribution. Adjust's SDK Signature released at the beginning of 2018 and the introduction of new Click Injection filters at the end of the year accounted for 40% of all blocked fraudulent behavior.

Fraud impact on verticals

When we looked at the data by vertical, we saw a wider distribution of fraud than we anticipated.
Dating, Banking and Shopping topped the charts for the most affected apps. This could be linked to the sample sizes of each vertical, as verticals with fewer apps have a bigger effect on the figures. Yet, our data also suggests that apps with high Cost Per Action (campaigns based on post-install actions, also known as CPA) spend have become the biggest targets for fraudsters.

Marketers working on a CPA basis only pay out once their new users complete an action, such as a registration event. Based on data from Liftoff, an app marketing platform and member of the Coalition Against Ad Fraud, we see that CPAs vary significantly depending on vertical. The larger the cost, the bigger the motivation for fraudsters to go after them.

Q4 2018	E-commerce	Finance	Dating
Cost per Install	$3.80	$6.85	$2.82
Cost per Registration	$11.06	$26.35	$4.69
Cost per Purchase, Activation, or Subscription	$30.51	$40.37	$120.48

LIFTOFF

"As more advertising dollars flow into mobile marketing, it's not surprising to see fraudsters focus their efforts on stealing ad attribution from advertisers in app categories with significant consumer spend"

Dennis Mink,
VP of Marketing

It's crucial to be aware of the higher risk of fraud when running a CPA campaign. You are not just a victim of fraud — you can also take action. There are three steps you can take to combat fraudsters to drive positive business results for your app. Here are three things you can also do:

1 Be selective. If you're set on CPA, start slowly, and experiment as you go. Don't dive in, wade in.

2 If you want to discover sources of CPA fraud, play the fraudster's game. Set up a bait event tied to a campaign that pays out for triggering that single event, but that real users can't complete. Track the sources that trigger this event. You'll discover which sources are spoofing, and which ones are legit.

3 Stop campaigns altogether. Though it's extreme, the best defense is simple: don't run CPA campaigns if you find fraud runs rampant.

We'd recommend these approaches for marketers experienced with fighting fraud. However, as fraud is everyone's problem, there are simple and effective tools that let anyone take on fraud. Activating the Fraud Prevention Suite from Adjust is a surefire way to combat fraud at the source. For more on Adjust's stance on ad fraud, read our white paper here.

Travel

In our analysis of Travel apps, we tracked a combined 200 million installs from two verticals, "Travel Booking" and "Rideshare, Ride-Hail & Taxi" (RRT). The former covers hotel, train, flight and other long-distance travel bookings. RRT are apps that allows you to hail a ride, or share one with others, locally.

Installs

Travel app installs in 2018

|			
─── RRT	Σ Total	$ Paid	Organic
----- Travel Booking			
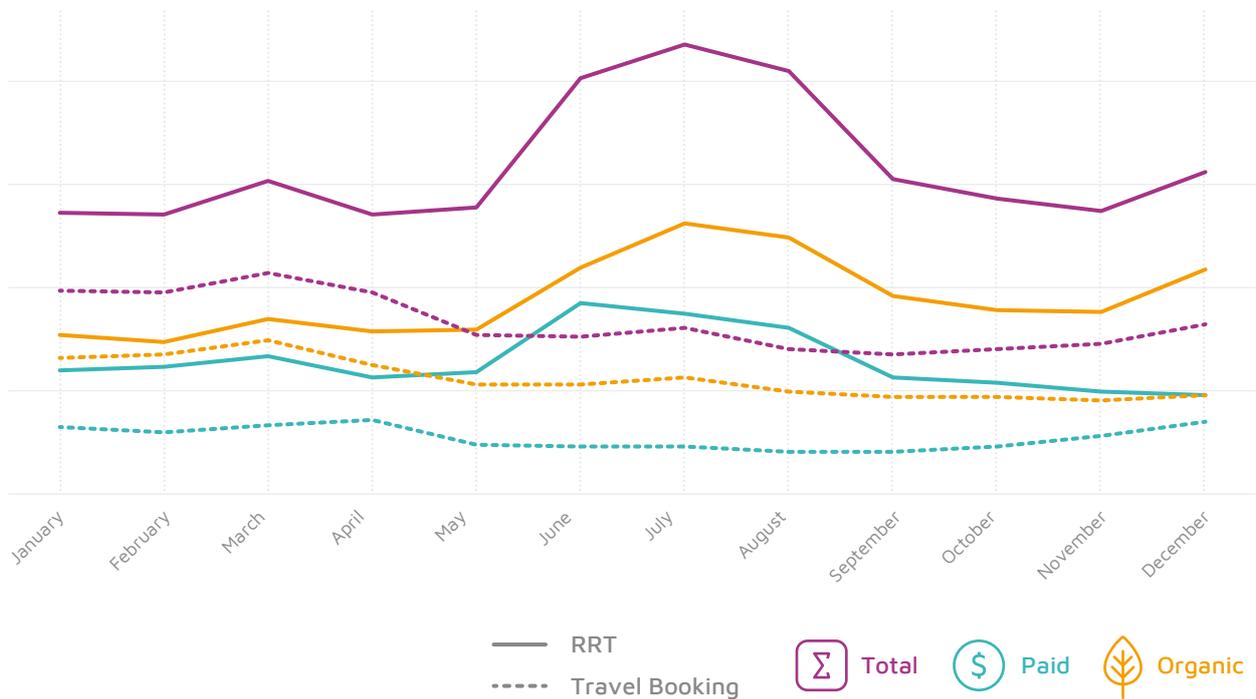
- Seasonally, RRT apps experience a massive bump over summer, with July the biggest month of growth — 126% above the average.

- Paid traffic share for RRT apps was 40% in 2018. For Travel booking, this ratio was slightly less, 33% of the total.

- Brazil's growth score is 21.54 for RRT apps — the fastest growing market. Malaysia (15.94) and Korea (13.48) have notably fast growth. For Travel booking apps, Brazil (18.1), Indonesia (16.69) and Germany (13.76) all represent booming countries.

Engagement

- Travel apps represent about 1% of all time spent in-apps per day, overall. Neither vertical demands lengthy use, though they result in more costly single purchases.

- Sessions are notable for their uniformity across platforms and sources. RRT apps average 1.86 sessions per day, while Travel booking averages 1.6.

- RRT apps retain better than Travel booking, with 30% of users sticking around the day after install vs. 20% for booking apps.

- Notably, retention of RRT apps varies depending on the user's device and source of install, whereas Travel booking has a very clustered retention rate. There is a 12% difference between Android paid and iOS organic on Day 1 after install for RRT apps, whereas the most significant difference is about 2% for Travel booking apps.

Travel app sessions in 2018

	Paid			Organic	
iOS Travel Booking	1.59	iOS RRT	1.76	iOS Travel Booking	1.62
Android Travel Booking	1.59	Android RRT	1.86	iOS RRT	1.84
				Android Travel Booking	1.61
				Android RRT	1.97

Legend:
- Travel Booking
- RRT
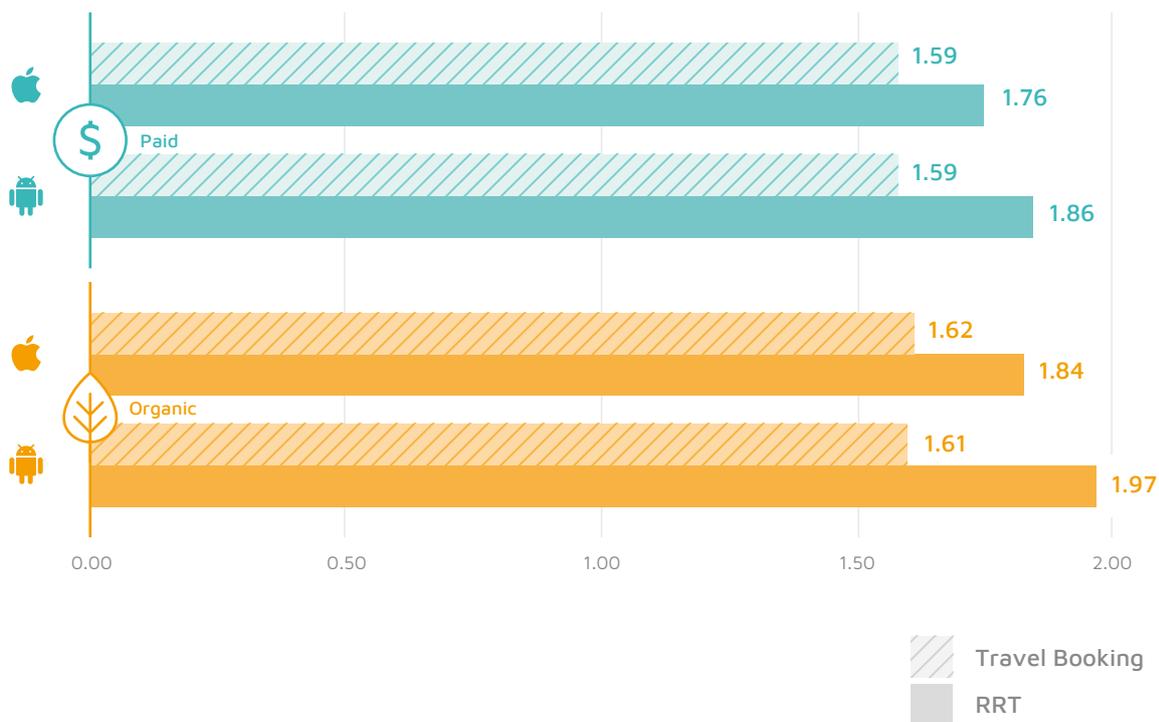
App trends lowdown

The real takeaways for you to do your marketing better

- Indonesia, Brazil and Korea were the fastest growing markets in 2018 — followed by Malaysia, Turkey and China.

- Of all verticals, Mid-core games experienced massive growth in 2018 at 18.52 on our Growth Index score — the highest score of any app. Other fast growing apps include RRT apps (17.63) and Sports Games (15.07).

- Mid-core games are most popular in China and Japan, and have the highest average sessions per day (3.02). Other games also have high sessions, such as Casual games (2.52) and Sports (2.48).

- Fraud remains a serious issue for mobile marketers — with E-commerce, Dating and Banking apps the hardest hit. Adjust rejected 269,036,991 fraudulent installs in 2018. Click Injection accounted for almost half of these, with 48%, followed by Click Spam (26%), SDK Spoofing (17%) and Fake Installs (9%).