PROGRAMMATIC
INSIGHTS
REPORT
SPOTLIGHT ON QUALITY

Q4 2017 GLOBAL DATA UPDATE

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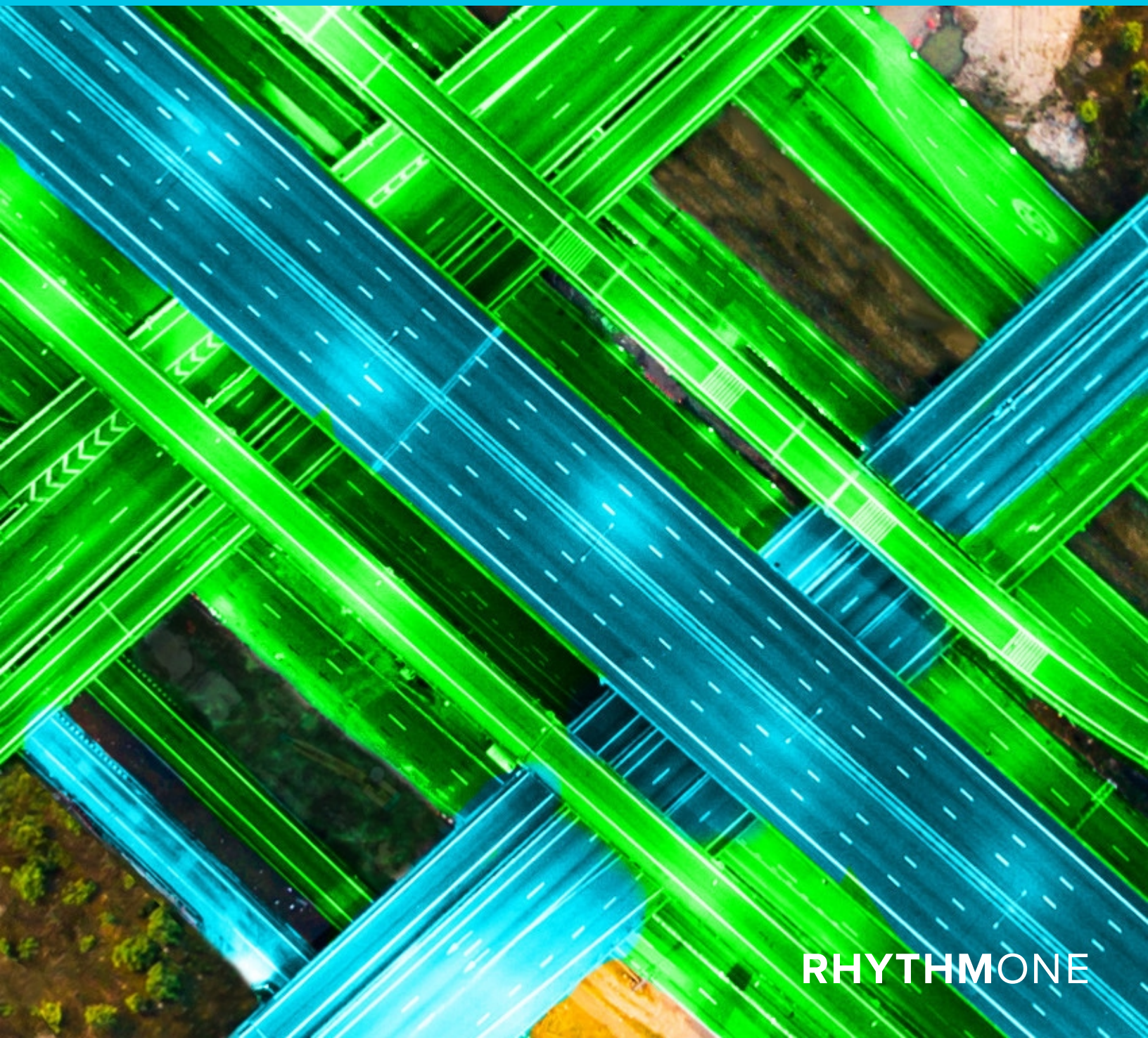
RHYTHMONE

Contents

Introduction

Since the advent of programmatic buying, advertisers and brands have been contending with inventory quality and brand safety. These issues — quality and safety — are as vital as ever: By 2019 in the US alone, 83.6% of digital display ad dollars are projected to transact programmatically, accounting for an estimated $45.72 billion.* Marketers are proactively addressing quality and safety head on, as more than 90% of US CMOs have begun making changes to their digital strategy due to brand safety concerns — including nearly 60% who plan to increase spending on channels that can prove they are brand safe.**

A DYNAMIC GLOBAL REPORTING ENVIRONMENT

This *Programmatic Insights Report: Spotlight on Quality* is the third installment in our series of reports addressing inventory quality in the RhythmOne marketplace. Because our business is increasingly global in nature, the report now expands beyond North America and covers ad blocking averages across the globe for the fourth calendar year quarter of 2017 (Q4 2017; October-December). It now includes breakouts for North America (US and Canada), the United Kingdom, and Europe. The report focuses on our inventory blocking rates as a barometer of supply quality, offering transparency into trends around the traffic our marketplace blocks by device and type, as well as by creative (North America only).

ENSURING QUALITY

RhythmOne's advertising marketplace processed more than 31 trillion raw ad opportunities in the last 12 months, ending in December 2017 — an average of 2.6 trillion opportunities per month. In the fourth calendar year quarter of 2017 (Q4 2017; October-December), our platform saw on average nearly 2.8 trillion ad opportunities per month.

This volume allows us to provide multi-channel, multi-format inventory at scale for demand-side platforms, agencies and brands. It also puts us on the front line of ensuring inventory quality and brand safety.

> ## Advertisers will lose an estimated $19 billion to fraudulent activities in 2018.
> — Juniper Research, September 2017

RhythmGuard is our proprietary filtering technology that uses first- and third-party data and machine learning algorithms to identify and block all types of suspicious inventory in fractions of a second before, during, and even after a bid request is made. The blocking rates you see detailed in this report are a result of RhythmGuard.

On average, RhythmGuard blocks 45%-55% of raw ad opportunities (i.e., bid requests) which have underperformed, in some respect, based on our traffic quality scans. This does not mean that 45% of our inventory is suspicious, rather, it represents the portion blocked based on specific filtering parameters designed to predict suspicious traffic. As a result, we are proud to offer one of the industry's largest footprints of targetable, verified, and pre-filtered inventory — and our platform consistently tops independent rating lists such as Pixalate's Global Seller Trust Index.

In addition to real-time filtering, we also monitor and make adjustments to the supply we allow to enter our marketplace in the first place. We dynamically increase or decrease inventory we get from certain providers. We may go so far as to temporarily suspend or permanently terminate relationships in order to remediate consistent quality concerns. As such, the overall amount we block from reporting period to reporting period may change significantly — as evidenced in "Beyond Blocking: Ensuring Quality at the Source" on page five.

*eMarketer, September 2017
**Teads, November 2017

Getting Clear on Quality

It's helpful to start by defining terms. Invalid traffic (IVT) — the practice of falsifying traffic or traffic-related activities in order to charge advertisers for impressions, engagements, or conversions that did not actually occur, is currently classified in two main categories by the Media Rating Council (MRC):

GIVT General Invalid Traffic

GIVT is non-human traffic. This is typically considered the most basic type of fraud and is somewhat easier to identify and combat.

TYPES OF GIVT:

- Bots
- Spiders
- Crawlers
- Invalid domains
- Invalid IPs

SIVT Sophisticated Invalid Traffic

Sophisticated invalid traffic includes more advanced deception techniques that aren't picked up by typical botnet filters.

TYPES OF SIVT:

- Bots or crawlers pretending to be legitimate
- Ads delivered via hijacked or malware-infected devices
- High frequency of impressions from same user, cookie, or device
- High click-through rates from the same user, cookie, or device
- Domain and URL spoofing
- Publisher fraud including falsified sites, stacked, or popup ads
- Invalid form completes or conversions

Combatting Techniques

- Global IP, domain, User Agent, and device ID block lists derived from first- and third-party data sources
- Manual verification of publisher quality, including domain history, privacy policies, and content quality
- Real-time verification leveraging multiple third-party verification data
- GIVT and SIVT scoring algorithms
- Ad creative verification
- Post-bid verification to check on domain spoofing

- Contextual blocking via Grapeshot that dynamically segments and tags pages by weighting specific words and phrases
- Monitoring and eliminating publishers that consistently underperform
- Enabling ads.txt (the IAB initiative) by content owners to specify authorized sellers and prevent misrepresentation
- Adherence to the IAB's LEAN principles in effort to bolster transparency and security

Global Trends by Type

RhythmOne categorizes its inventory into three main types: banners, video, and native.
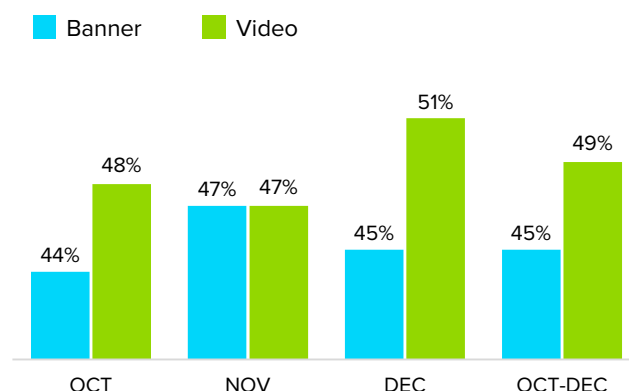
In Q4 2017 across the globe, RhythmOne's average blocking rate for video advertising slightly edged out banner advertising (49% vs. 45%).

Video advertising comes in different forms including in-stream, outstream, in-banner, and interstitial delivered by different players, either in-app or in browser, which makes the identification and elimination of suspicious traffic all the more challenging — and necessitates enhanced implementations of both GIVT and SIVT measurement.

Banners as an ad type have the longest history and greatest volume in our marketplace. Those who combat suspicious activity have had time to develop sophisticated detection and elimination techniques to keep suspicious banner inventory from reaching advertisers.

With regards to native advertising (i.e., advertising that can match the form/function of a site), advertisers typically have low demand for this type.

BLOCKING RATE BY AD TYPE, GLOBAL (Q4 2017)

Legend: Banner, Video

- OCT: Banner 44%, Video 48%
- NOV: Banner 47%, Video 47%
- DEC: Banner 45%, Video 51%
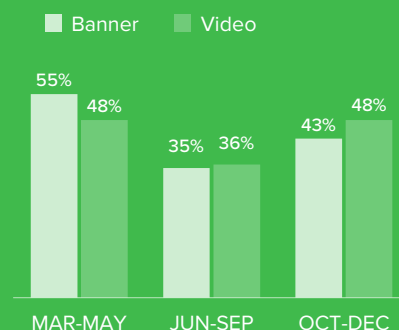- OCT-DEC: Banner 45%, Video 49%

Requests for native inventory typically originate from web servers before the content is rendered to the device, making it inherently difficult to commit fraud. That said, across the globe in Q4 2017, we blocked 34% of native bid requests. Due to relatively low statistical significance across regions, breakouts for the native type are not included in this data update.

Beyond Blocking: Ensuring Quality at the Source

This report primarily addresses the blocking of inventory once it enters the RhythmOne marketplace. Another important lever we have to control quality is the inventory we allow to enter our marketplace in the first place. Which supply partners we work with, and the quality they bring to the marketplace, are variables we constantly scrutinize. We may add new partners or suspend relationships that require quality remediation. This is why over time, the average amount of inventory we block may vary. For example, as detailed to the right, there is fluctuation among our North American banner blocking rates across our 2017 reporting periods (i.e., 55%, 35%, and 43%). This is because we review and adjust certain supply partners' contributions to the marketplace. As demand for different types of inventory varies over time, averages may go up or down based on efforts to normalize quality across our supply. This way, our partners can rest assured that we will provide the scale they need and the quality they expect.

BLOCKING RATE AVERAGES BY REPORTING PERIOD, NORTH AMERICA (2017)

Legend: Banner, Video

- MAR-MAY: Banner 55%, Video 48%
- JUN-SEP: Banner 35%, Video 36%
- OCT-DEC: Banner 43%, Video 48%

Global Trends by Device

In Q4 2017 across the globe, we blocked more inventory on desktop vs. mobile devices. As the data illustrates, suspicious and underperforming traffic generally resulted in RhythmGuard blocking 56% of overall ad opportunities on desktop devices and 38% on mobile devices. While this traffic was eliminated before it was sent to demand partners, these figures underscore the challenge.
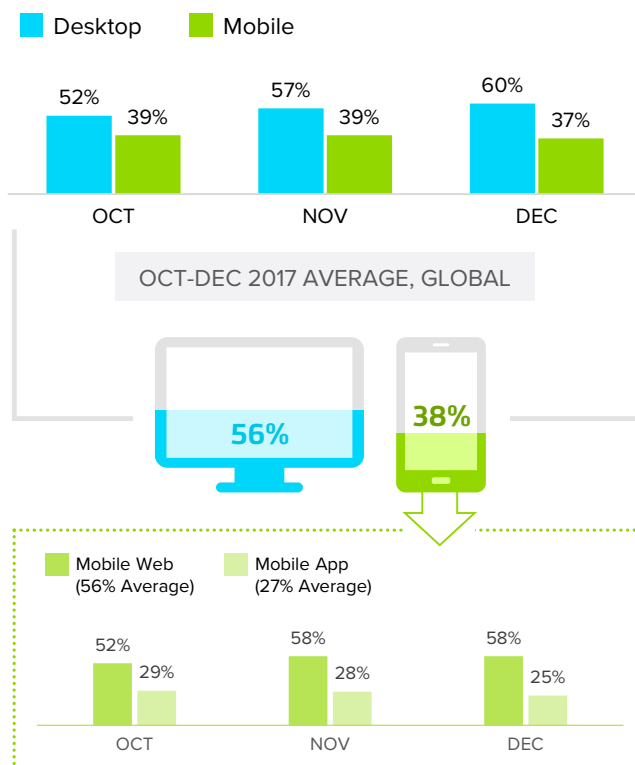
MOBILE WEB VS. IN-APP

With mobile ad spending projected to account for 74.7% of total digital advertising spending in 2018 in the US*, many of the techniques used to perpetuate IVT as well as detect it have migrated from desktop to mobile. Mobile advertising is broken into two broad categories — mobile web (including mobile-optimized versions of websites) and mobile app. IVT on mobile web is similar to desktops since ads are delivered via a browser.

The average Q4 2017 rates (global) at which we blocked ad opportunities on mobile web (56%) and mobile app (27%) showed some month-to-month fluctuation. Fraud on mobile apps is inherently complicated — making detection more varied, and therefore more challenging.

*eMarketer, September 2017

BLOCKING RATE BY DEVICE, GLOBAL (Q4 2017)

Legend: Desktop / Mobile

	OCT	NOV	DEC
Desktop	52%	57%	60%
Mobile	39%	39%	37%

OCT-DEC 2017 AVERAGE, GLOBAL

Desktop: 56% Mobile: 38%

Mobile Web (56% Average) / Mobile App (27% Average)

	OCT	NOV	DEC
Mobile Web	52%	58%	58%
Mobile App	29%	28%	25%

Five Types of IVT on the Mobile Web and Apps

1. **Audience Fraud.** Mislabeled inventory often takes the form of incentivized inventory that is not labeled as such — opening up the ability to re-sell the inventory as non-incentivized at a higher cost. Fraudsters can also alter demographic and geographic attributes while re-selling impressions as surplus inventory.
2. **Impression Fraud.** Affecting both banners and video, fraudsters can either "stack" multiple ads or load ads in the background to rack up impressions on mobile apps.
3. **Click Fraud.** Bot clicking is the most common IVT scenario on mobile devices. It can be lucrative for fraudsters and disastrous for advertisers, especially when combined with impression misrepresentation.
4. **Click Injection.** Click injection can appear on older versions of Android. Fraudsters can potentially see new apps as they appear on an end-user's device and fire a click on an ad in an app that the user has not opened once.
5. **Install Fraud.** The most complex kind of mobile IVT (to date), install misrepresentation occurs when a large number of fake physical/virtual devices spoof user engagement and action via sophisticated software. After each install, the virtual machine's device identifier is changed — so fraudsters can "rinse and repeat."
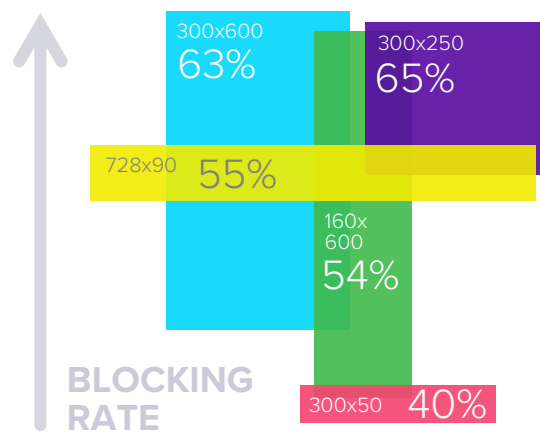
Global Trends by Creative

Some ad sizes tend to be a greater target of fraud vs. others. The likely rationale for this variation is the hardcoded methods used to perpetuate fraud.
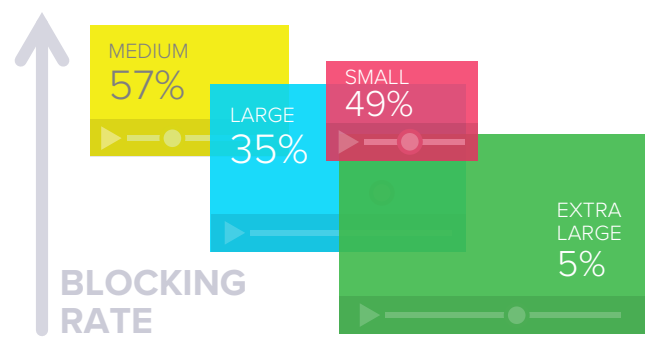
For example, a malicious program (malware or adware) may only be programmed to look for certain sized content containers to override and inject. Moreover, some fraudulent inventory is generated using pop-under windows with static content, resulting in skewed data by size. Suspicious/invalid inventory is also often sold on a tag basis, which focuses on a single ad size.

In Q4 2017, blocking rate by banner size was consistent (with minor fluctuations) among North America, the UK, and Europe.

BLOCKING RATE BY VIDEO SIZE, GLOBAL (Q4 2017)

MEDIUM
57%

LARGE
35%

SMALL
49%

EXTRA LARGE
5%

BLOCKING RATE

BLOCKING RATE BY BANNER SIZE, GLOBAL (Q4 2017)

300x600
63%

300x250
65%

728x90
55%

160x 600
54%

300x50
40%

BLOCKING RATE

With video, we generally see lower blocking rates across ad sizes compared with banner sizes. The extra large video size in particular experiences a low block rate compared with other sizes — something that is attributable to the lower volume of ads purchased at this size, and because the smaller sizes are typically standard, so they tend to be more attractive for fraudsters. That said, the extra large size had higher blocking rates in Europe (37%) and the UK (28%) vs. North America and the overall global average (both 5%). This is attributable to change in the global and regional traffic mix (i.e., volume for specific SSPs).

Private Marketplaces as a Conduit to Quality

RhythmOne's Private Marketplaces (PMPs) offer a unique way for advertisers to access select inventory designed to meet specific goals, package unique inventory or reach a specific audience.

Compared with OpenRTB, our PMPs have stricter IVT thresholds than base DSPs and typically have higher block rates. This is largely attributable to the select inventory we offer through our PMPs or supply that meets specific data or targeting criteria. All filtering is done prior to PMP assignment. Once a request has been determined as available for a DSP, we check to see if that DSP has any PMPs configured for it. If it does, we check the rest of the criteria for the PMP (e.g., audience targeting, etc.). PMPs are a great way to ensure additional scrutiny is applied to campaigns.
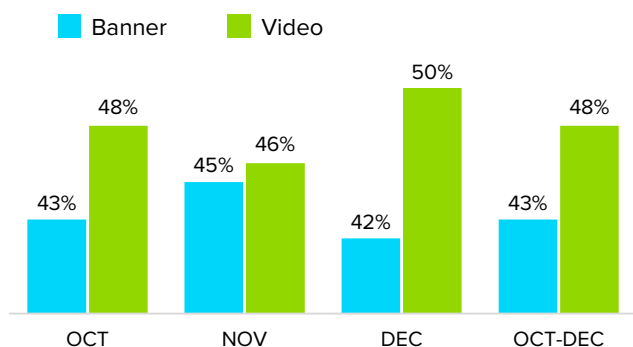
North America in Focus

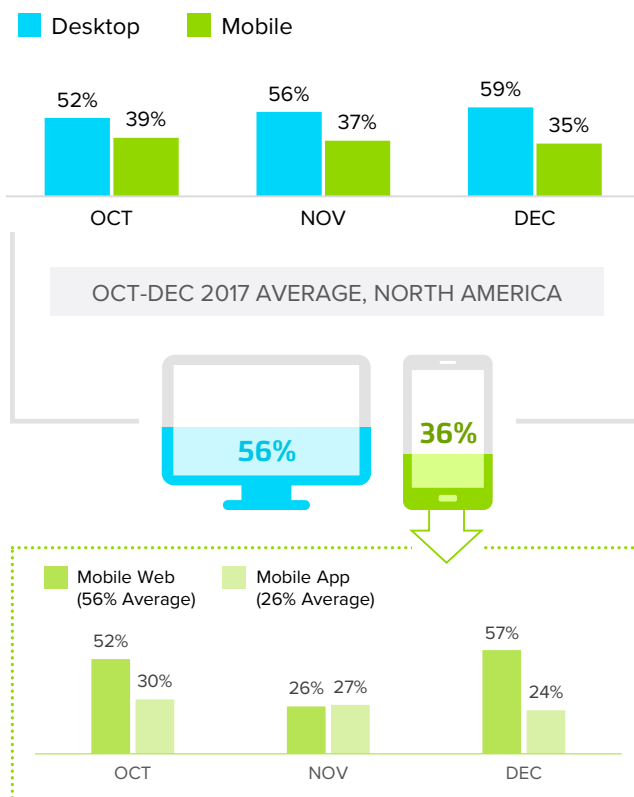Programmatic spending in North America (US and Canada) is on the rise.

By 2019 in the US, 83.6% of digital display ad dollars are projected to transact programmatically, accounting for $45.7 billion and representing a 16.9% change over 2018.* In Canada, programmatic spending is projected to be 71.2% of total digital display ad spending in 2019 and account for $2.2 billion – a 20.0% change over 2018 projections.**

Q4 2017 blocking rates in North America are in-line with the global averages, with some small month-to-month fluctuations (e.g. 60% vs. 52% desktop blocking in December).

BLOCKING RATE BY AD TYPE, NORTH AMERICA (Q4 2017)

■ Banner ■ Video

	OCT	NOV	DEC	OCT-DEC
Banner	43%	45%	42%	43%
Video	48%	46%	50%	48%

BLOCKING RATE BY DEVICE, NORTH AMERICA (Q4 2017)

■ Desktop ■ Mobile

	OCT	NOV	DEC
Desktop	52%	56%	59%
Mobile	39%	37%	35%

OCT-DEC 2017 AVERAGE, NORTH AMERICA

Desktop: **56%** Mobile: **36%**

■ Mobile Web (56% Average) ■ Mobile App (26% Average)

	OCT	NOV	DEC
Mobile Web	52%	26%	57%
Mobile App	30%	27%	24%

*eMarketer, September 2017
**eMarketer, December 2017

Verification for Video Publishers Across the Globe

In an effort to ensure that we always represent the highest levels of quality to both our buyers and publishers, RhythmOne recently added a new global verification process for video publishers. We scan new publishers for the source of video content — i.e., in-banner video (IBV) or pre-roll — or potentially misrepresented video. We then review these properties manually to ensure they have the type of video ads that they are selling in RhythmMax. If we see any inconsistencies, we take action to prevent this inventory from appearing in our exchange.

We also re-scan existing publishers that demonstrate a sudden change in video inventory levels, and our supply team also regularly reviews all of our publishers for quality.
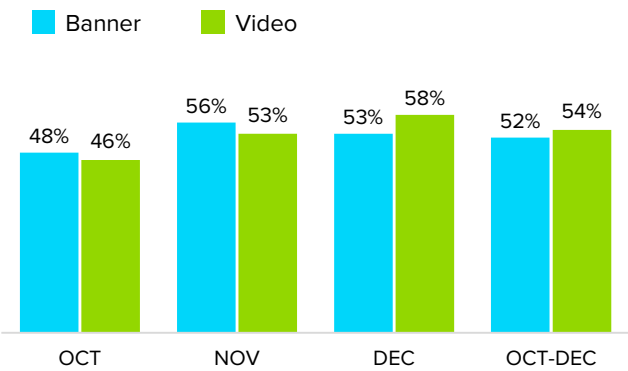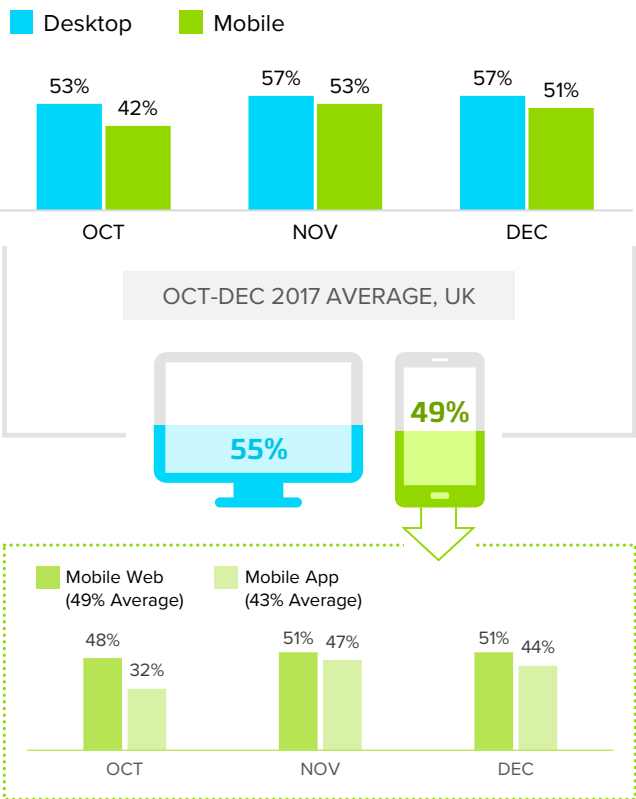
United Kingdom in Focus

Programmatic spending in the United Kingdom (UK) is on the rise, too. By 2019 in the UK, 84.5% of digital display ad spending is projected to transact programmatically — a slightly larger figure than what is expected for the US (83.6%).*

New additions to our *Programmatic Insights Report: Spotlight on Quality* series for Q4 2017 are average blockage rates by type and device for the UK and Europe. Compared with our North American and global measures for the same three-month period, blocking rates for the UK are generally higher, especially with mobile devices (49% vs. 36%, North America and 38%, global). As noted earlier, a change in the global and regional traffic mix (i.e., volume for specific SSPs) in Q4 2017 drove ripple effects with fluctuating blockage rates.

BLOCKING RATE BY DEVICE, UK (Q4 2017)

Desktop ■ Mobile ■

	OCT	NOV	DEC
Desktop	53%	57%	57%
Mobile	42%	53%	51%

OCT-DEC 2017 AVERAGE, UK

55% 49%

Mobile Web (49% Average) ■ Mobile App (43% Average) ■

	OCT	NOV	DEC
Mobile Web	48%	51%	51%
Mobile App	32%	47%	44%

*eMarketer, November 2017

BLOCKING RATE BY AD TYPE, UK (Q4 2017)

Banner ■ Video ■

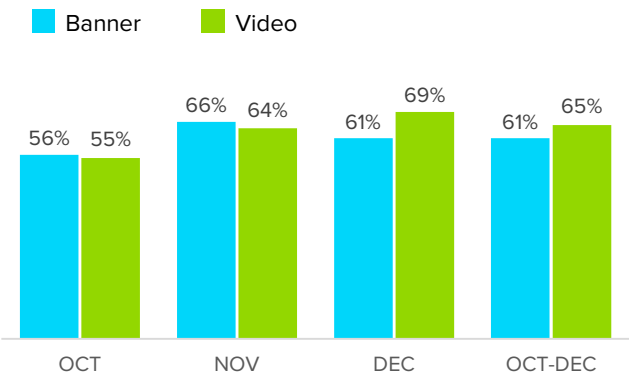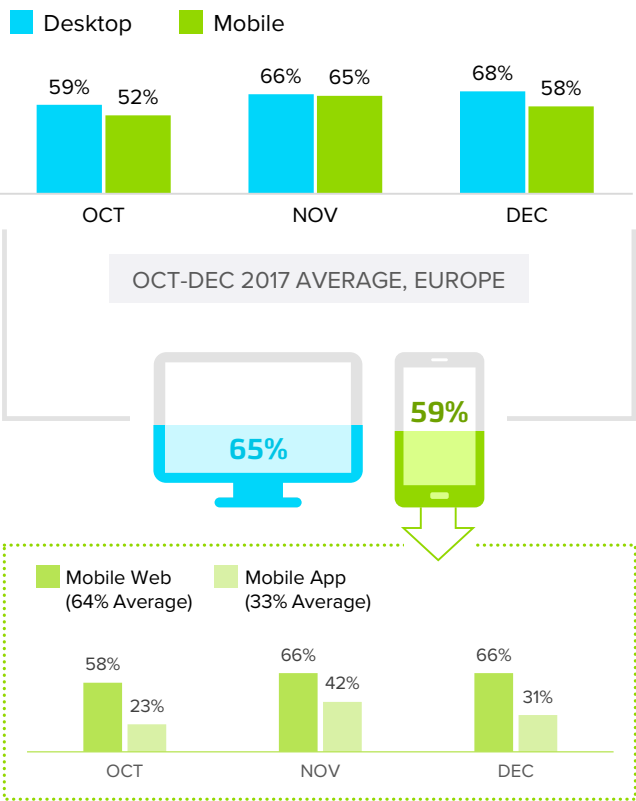|	OCT	NOV	DEC	OCT-DEC
Banner	48%	56%	53%	52%
Video	46%	53%	58%	54%

Europe in Focus

Programmatic spending in Europe is on the rise, too: France is on track to allocate a projected 81.5% of its digital display ad spending to programmatic channels by 2019.* In Germany by 2019, programmatic will represent a projected 74.0% of digital display ad spending.**

Compared with our North American, UK, and overall global measures for the same three-month period, our blocking rates for Europe (excluding the UK) are generally higher, especially with mobile devices (59% vs. 36%, North America; 49%, UK; and 38%, global).

BLOCKING RATE BY AD TYPE, EUROPE (Q4 2017)

Banner **Video**

	OCT	NOV	DEC	OCT-DEC
Banner	56%	66%	61%	61%
Video	55%	64%	69%	65%

BLOCKING RATE BY DEVICE, EUROPE (Q4 2017)

Desktop **Mobile**

	OCT	NOV	DEC
Desktop	59%	66%	68%
Mobile	52%	65%	58%

OCT-DEC 2017 AVERAGE, EUROPE

Desktop: **65%**   Mobile: **59%**

Mobile Web (64% Average)   **Mobile App (33% Average)**

	OCT	NOV	DEC
Mobile Web	58%	66%	66%
Mobile App	23%	42%	31%

*eMarketer, December 2017
**eMarketer, December 2017

Conclusion

RhythmOne is committed to providing transparency into the trends we're seeing with inventory quality and brand safety. These vital components are at the core of our mission to deliver effective and efficient solutions for our demand and supply partners — not to mention providing a trusted digital marketing environment for consumers.

The sophistication of invalid traffic has never been greater — and with increasing spend and focus on mobile by marketers, mobile IVT is catching up quickly to IVT on desktops.

To continue the fight against IVT, the industry must:

- Focus on eliminating fraud at the source, rather than just monitoring and measuring
- Agree to universal quality standards and measurement criteria
- Push supply partners and direct publishers to adopt both ads.txt and LEAN ads to enhance transparency and foster a more secure advertising environment
- Commit to discourage IVT at every opportunity

HOW YOU CAN USE THIS INFORMATION

Advertisers need to be aware of the constantly changing programmatic landscape and be proactive in learning how IVT is evolving in its attempt to stay one step ahead of detection methods. They should ask questions of their partners regarding the supply they're accessing — and the measures their underlying platforms are taking to combat IVT at the source.

When it comes to blocking trends by type, device, and creative, advertisers should consider:

- Setting expectations appropriately about what will be measured in mobile and desktop campaigns
- Leveraging non-standard ad sizes, such as the extra large video unit
- Enabling contextual blocking tactics that go "beyond the URL" to further ensure brand safety at the page level
- Running campaigns in Private Marketplaces (PMPs) to ensure a high-quality and transparent environment with greater control over placement

What Advertisers Should Look For in Their Partners

So, what should advertisers look for in their supply and verification partners? Some key considerations:

- Work with partners that can analyze and provide transparency based on multiple approaches
- Look for supply providers and technology platforms that can offer real-time evaluation and elimination of suspicious traffic vs. after-the-fact reporting
- Work with providers that offer transparency into their methodology and inventory quality
- Confirm that verification takes place both pre- and post-bid
- Look for supply platforms that own and operate web properties and apps — they have a real stake in successfully eliminating IVT, and have the added benefit of being able to test new detection methods at the source
- Make sure you work with technology partners that rank highly on independent, objective quality measures, like Pixalate's Global Seller Trust Index™
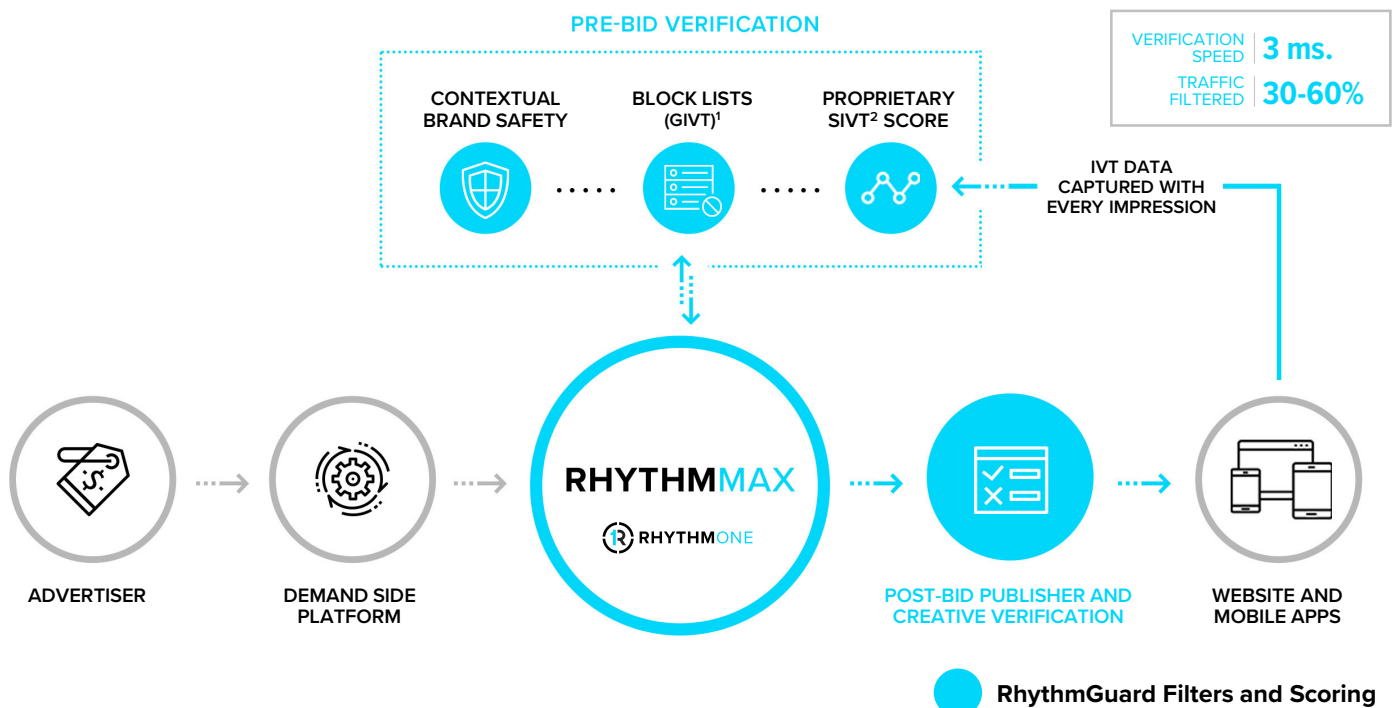
RhythmGuard

STANDING BEHIND OUR INVENTORY

RhythmGuard is the brand safety technology built into our unified programmatic platform, RhythmMax. It's designed to actively combat fraud within our marketplace. Our proprietary algorithm, which utilizes unique detection technology combined with data and measures from leading third-party verification partners, helps to provide uniform quality across supply and demand partners.

pixalate
RATED IN THE TOP **5**
GLOBAL SELLER TRUST INDEX
US AND INTERNATIONAL

RhythmGuard In Action

PRE-BID VERIFICATION

CONTEXTUAL BRAND SAFETY ..... BLOCK LISTS (GIVT)[1] ..... PROPRIETARY SIVT[2] SCORE

VERIFICATION SPEED **3 ms.**
TRAFFIC FILTERED **30-60%**

IVT DATA CAPTURED WITH EVERY IMPRESSION

ADVERTISER → DEMAND SIDE PLATFORM → **RHYTHMMAX** ℞ RHYTHMONE → POST-BID PUBLISHER AND CREATIVE VERIFICATION → WEBSITE AND MOBILE APPS

● **RhythmGuard Filters and Scoring**

VERIFICATION PARTNERS

pixalate   whiteops   CONFIANT   DV DoubleVerify
grapeshot   IAS Integral Ad Science   MOAT   THE MEDIA TRUST

ASSOCIATIONS AND CERTIFICATIONS

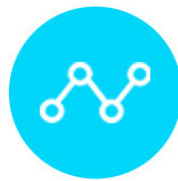DTSG UK BRAND SAFETY   JICWEBS   OPEN VIDEO VIEWABILITY
tag   iab.

Filter and Blocking Methodology

Block Lists (GIVT)
Extensive block lists based on:
- Domain
- Device ID
- User Agent
- IP Address

SIVT Scoring
Proprietary scoring algorithms combine the data from our exchange with top third-party verification providers.

Contextual Brand Safety
Review of contextual placements and keywords to ensure ads do not appear near suspicious or objectionable sites or news.

Publisher and Creative Verification
After the bid, but before the impression is served, RhythmGuard verifies the creative ID and checks for domain spoofing.

Solutions

We make it easy to buy our premium inventory whether you're looking for turnkey managed service or self-managed through your chosen Demand-side Platform (DSP).

Private Marketplaces

"Always-on" and custom Private Marketplaces leverage supply-side audience data, offering reach, transparency, and accuracy:

- Owned and operated sites and apps
- Exclusive header-bidder audience segments
- Supply-side access to most major third-party data providers
- Easily combine with Guaranteed Marketplaces[3]

Guaranteed Marketplaces

Guaranteed Marketplaces[3] take the fear out of programmatic trading. Our Guaranteed Marketplaces can be combined with other audience targeting to ensure viewability and verification goals are met — guaranteed. Available segments:

- 70% viewable
- <1% SIVT
- 50% or 100% InView (confirms an ad is in the viewable area of the user's browser at time of ad serve)

Custom Campaigns

- Activate your first-party data through our managed service demand-side platform.
- Proprietary analytics capture intent-based signals across paid, earned, shared and owned channels — including dark social.
- Audience segments can be built off these highly-engaged prospects, allowing you to reach new consumers.

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[1] GIVT: General Invalid Traffic — Includes traffic identified through routine and list-based means of filtration — such as bots, spiders, other crawlers; non-browser user agent headers; and pre-fetch or browser pre-rendered traffic.

[2] SIVT: Sophisticated Invalid Traffic — Includes traffic identified through advanced analytics, multipoint corroboration, human intervention — such as hijacked devices, ad tags, or creative; adware; malware; misappropriated content.

[3] RhythmOne ensures delivery based on the above viewability or IVT thresholds as measured by any MRC-accredited performance measurement technology. While we do not anticipate this will occur, should you find that your measurement reporting demonstrates that we have not met the pre-set threshold, RhythmOne will provide DOUBLE the difference between the pre-set amount and the measured amount, included as a value-add on future campaigns. Clients have up to thirty days from the last day of each calendar month to report any discrepancies occurring during such month provided that such report is in the form of an MRC-accredited report that isolates RhythmOne traffic during the relevant period.

About RhythmOne

WE ARE ONE

RhythmOne brings to the market unique customer insights, audience segmentation, targeting technology, and premium demand relationships — a combination that creates value for demand and supply partners alike. RhythmOne is one of a handful of global players with a complete end-to-end technology stack within the digital advertising ecosystem.
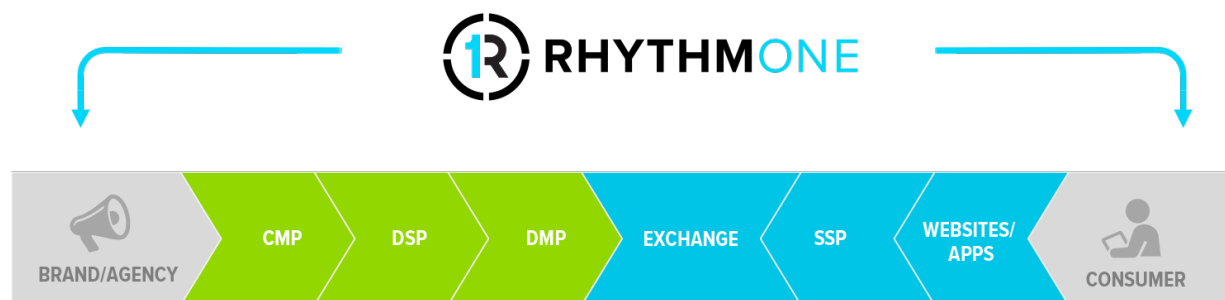
Our technology stack delivers faster transactions for advertisers, lower latency for publishers, and a better user experience for consumers. Cutting out point solutions in between is what makes RhythmOne more efficient, and ultimately more cost effective for all our clients and partners.

What Makes Us Different

- Proprietary Analytics
- Viewability and Verification Guarantees
- Unique Targeting Opportunities

- Quality, Brand-Safe Inventory
- Creative Innovation with Personalized Campaigns

- Automated Optimization
- Unparalleled Reach
- ROI-driven Programmatic Influencer Marketing

James Murphy | VP, Programmatic

James Murphy is Vice President, Programmatic at RhythmOne. He oversees RhythmOne's programmatic division, including business development and operations. With over 20 years' experience in digital media — and over five in developing world-class programmatic platforms — his insight and operational knowledge ensure RhythmOne is constantly exceeding the expectations of our supply and demand partners alike.

Learn More

Visit us at **RhythmOne.com** or contact James Murphy at **jmurphy@RhythmOne.com.**

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