Programmatic 2019
The New Normal

October 2019

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MAGNA's Programmatic Intelligence Report is published twice a year in collaboration with Cadreon. The Spring Programmatic Report investigates key trends and drivers in the Programmatic ecosystem. The Fall Programmatic Report (such as this one) analyzes the size and growth of programmatic advertising globally and in key focus markets and regions.

Key Findings (1/2)

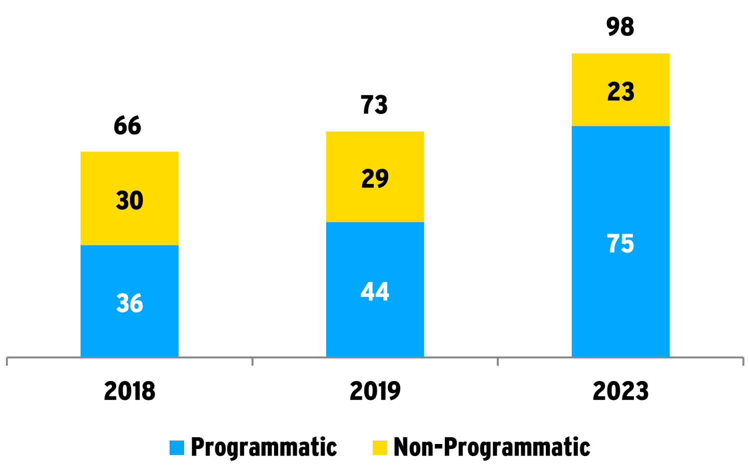
"Programmatic" in this report refers to advertising transactions that use a technology platform rather than a traditional I/O process. It includes transactions on open exchanges as well as other types of automated transactions. The market valuation does not include the transaction fees accrued by technology companies in the programmatic economy, and only tracks revenues received by media owners.

The global programmatic market will grow from **$44 billion** in 2019 to **$75 billion** in 2023. Programmatic transactions as a share of banner and video formats will represent **76%** of total transactions by 2023, up from 60% this year.

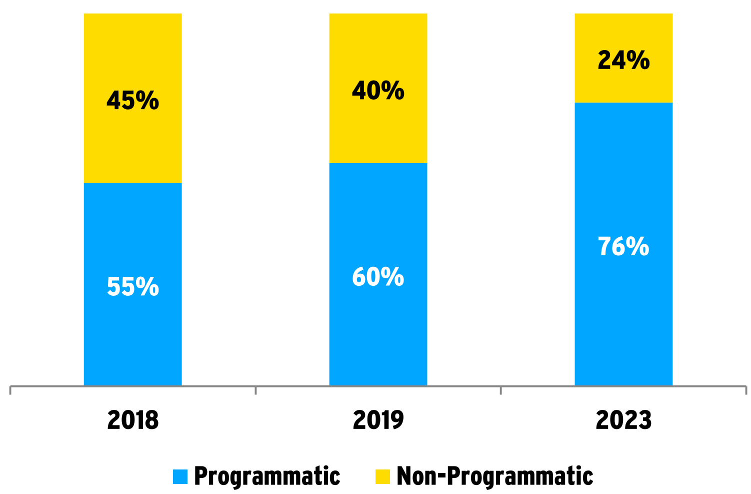
Growth in 2019 is expected to be +21% y/y, following 2018's +24% growth rate. While global growth *rates* are slowing as the market matures, 2019's $7.4bn of incremental programmatic dollars outstrips the $7.0bn of additional programmatic spending in 2018.

The United States remains the largest programmatic market by spend in the world by far, representing nearly half of all global programmatic spend (45%), thanks to one of the highest adoption rates (71%). It is followed by China, the UK, and Japan.

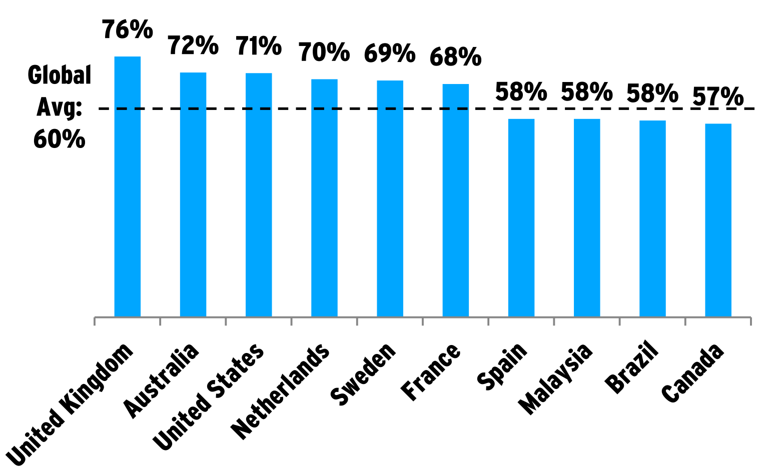
(1) Global Ad Spend on Banners and Video ($bn)



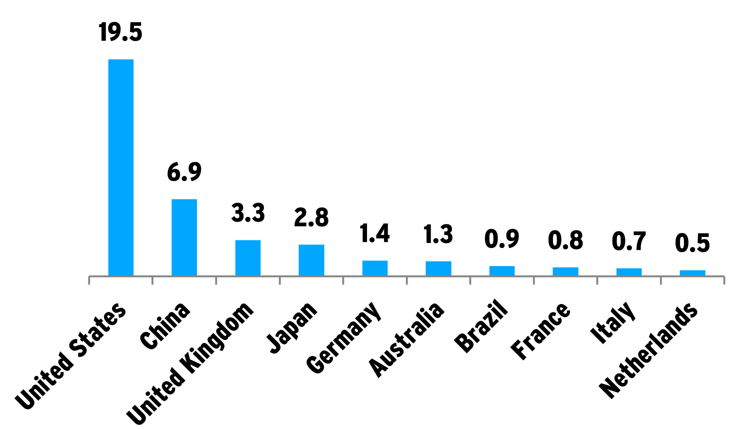
(2) Programmatic Adoption (%)



(3) Programmatic Adoption by Country (2019)



(4) Programmatic Spend by Country 2019 ($bn)



Source: MAGNA 2019 Programmatic Forecast
* Programmatic adoption equals the share of total display and video spend that is executed via programmatic methods.

Key Market Developments (2/2)

Consumer data is the fuel that powers the programmatic ecosystem. Until the past few years, however, consumer data was simply a tool to enhance the outcomes of campaigns. It is a controversial, hot button topic, touching on ethics, morality, ownership, and control, especially during the past two years.

Even in today's public debate forum, however, there is good data usage, and bad data usage (from the consumer point of view). "Good" data usage is where the consumer is made explicitly aware of the value trade-off (content in return for ad targeting), or deterministic login data used for targeting only on that authorized site. "Bad" data usage, on the other hand, is used to target children (as in the latest YouTube settlement with the FTC*) for example, or data that is too intrusive. These are only fringe cases, however, and there is a whole spectrum of data in-between. Login-based, authorized data usage is ok as long as the publisher is not too big and pervasive. Third party data used to target on other websites is invasive unless it's for a product that a consumer really wants, in which case it's just a fortunate turn of events.

Consumer behavior suggests that consumers have not yet made up their minds as to what degree of personal data usage is acceptable in return for free content. Similarly, governments and regulators are still exploring when and how they will penalize or force change at big publishers and data providers. In this type of volatile and unpredictable regulatory environment, it is helpful to step back and look at what irrefutable facts we know about the programmatic landscape and associated consumer behavior:

1) Public debate is not over whether consumer data should be used in advertising or not, but rather to what degree. There is enough deterministic, authorized data, collected in PII-compliant ways, to power the programmatic ecosystem.
2) In the year since GDPR, the most significant privacy regulation to date, went into effect, there has been no measurable change in the volume of programmatic spending in the marketplace. In fact, spending growth estimates increased from prior expectations.

For this reason, the forecasts in this document anticipate no significant deviation from previous expectations. That status quo represents continued GDPR enforcement, as well as implementation of CCPA and additional regulations that extend GDPR's requirements globally. It also represents continued periodic fines for large publishers, but nothing so significant as to cause widespread changes in the business models in the programmatic ecosystem.

In this environment, brands will continue to focus on squeezing programmatic fees, increasing transparency, and streamlining operations, rather than harnessing more and more granular data to push the envelope further on targeting (see our Spring Programmatic Report). Furthermore, the gap between programmatic campaign outcomes and non-programmatic campaign outcomes are so significant that despite constant shifts around auction pricing rules, technology partners, and data collection requirements, total budgets are rarely impacted.

The challenged programmatic advertising economy is faced with serious issues, but MAGNA's view is that they are manageable issues. The pace of innovation and regulation, spurred by pressures from brands, publishers, and most importantly consumers, is up to the task of keeping the programmatic ecosystem on track. It's far too late to put the programmatic genie back in the bottle; the way through will be messy but manageable. It's important to remember that the opposite of programmatic is not transparency, but rather manual inefficiency.

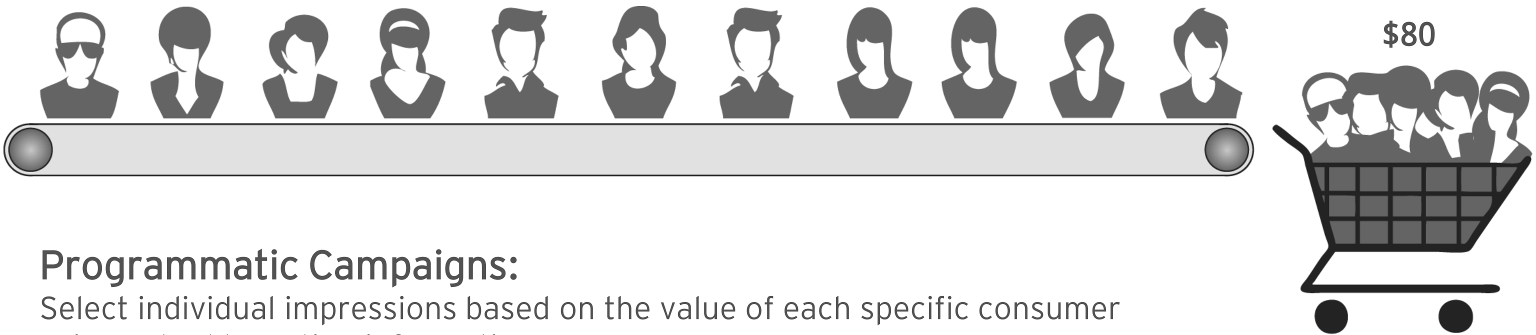
Source: MAGNA 2019 Programmatic Forecast
*YouTube settled claims they were inappropriately collecting information on children to serve targeted advertising.

What is Programmatic Trading?

Programmatic trading is simply the buying and selling of digital advertising inventory in an automated fashion. It allows for the targeting of specific impressions rather than buckets of impressions and as a result is more efficient than traditional ad inventory purchase methods due to fewer wasted dollars.

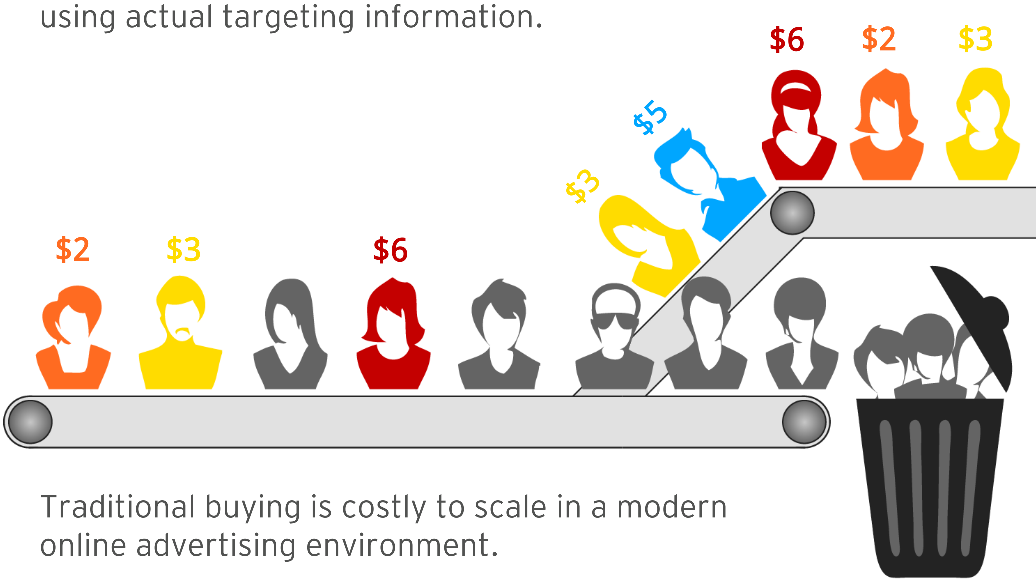
Traditional Campaigns:

Purchase a bucket of impressions based on assumptions about a website's readers.



Programmatic Campaigns:

Select individual impressions based on the value of each specific consumer using actual targeting information.



Traditional buying is costly to scale in a modern online advertising environment.

Programmatic buying allows for consumer targeting at scale. Efficiencies are increased by outsourcing most of the heavy lifting to computer search algorithms.

The shift to programmatic advertising is not limited only to digital media formats. The same technologies are fast being put to use in the television space (addressable linear TV advertising, and via OTT), digital audio, and even digital OOH. Targeting an audience with a robust data set almost always delivers better outcomes compared to a scattershot approach.

Selection Criteria:

- Retargeting / Pre-targeting
- Location
- Demographics
- Interests
- Online Behavior
- Custom/Lookalike Targets
- Extended Reach

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How MAGNA Defines "Programmatic"

"Programmatic" includes *all* advertising spend transacted through a technology platform rather than a traditional I/O process. MAGNA further breaks down spend into two categories: RTB and Non-RTB programmatic.

RTB includes any transaction executed on an individual impression basis and in which pricing is determined in real time. This includes open auctions, invitation-only auctions, Deal ID transactions, some private marketplace transactions and any other transaction where price discovery (whether through highest bid or another mechanism) occurs in real time.

Non-RTB includes transactions executed through technology platforms where significant information about inventory and pricing is known in advance. This includes "automated guaranteed" transactions, reserved inventory transactions, unreserved fixed-rate transactions, preferred deals, non-digital programmatic transactions, and, more generally, any transaction where a technology platform is used but price is not determined in real time.

The term "programmatic" has been used in various ways since its inception and continues to evolve. The difference between RTB and non-RTB (automated) transactions within programmatic can be recognized by whether the transaction is...

	RTB	Non-RTB
Driven by advanced technology and streamlines the traditional media-buying workflow...	✓	✓
Integrated with, and empowered by, media usage and consumer data...	✓	✓
Capable of addressing discrete impressions as opposed to packages of impressions, in a cost efficient way...	✓	✓
Targeting specific demographic groups or behavioral groups while being vendor-agnostic and content-agnostic...	✓	
Able to be priced in "real-time," allowing for a feedback loop and continued optimization in campaign settings...	✓	
Matching demand and supply from multiple vendors and multiple buyers through bidding mechanisms.	✓	

Programmatic Direct & Private Marketplaces

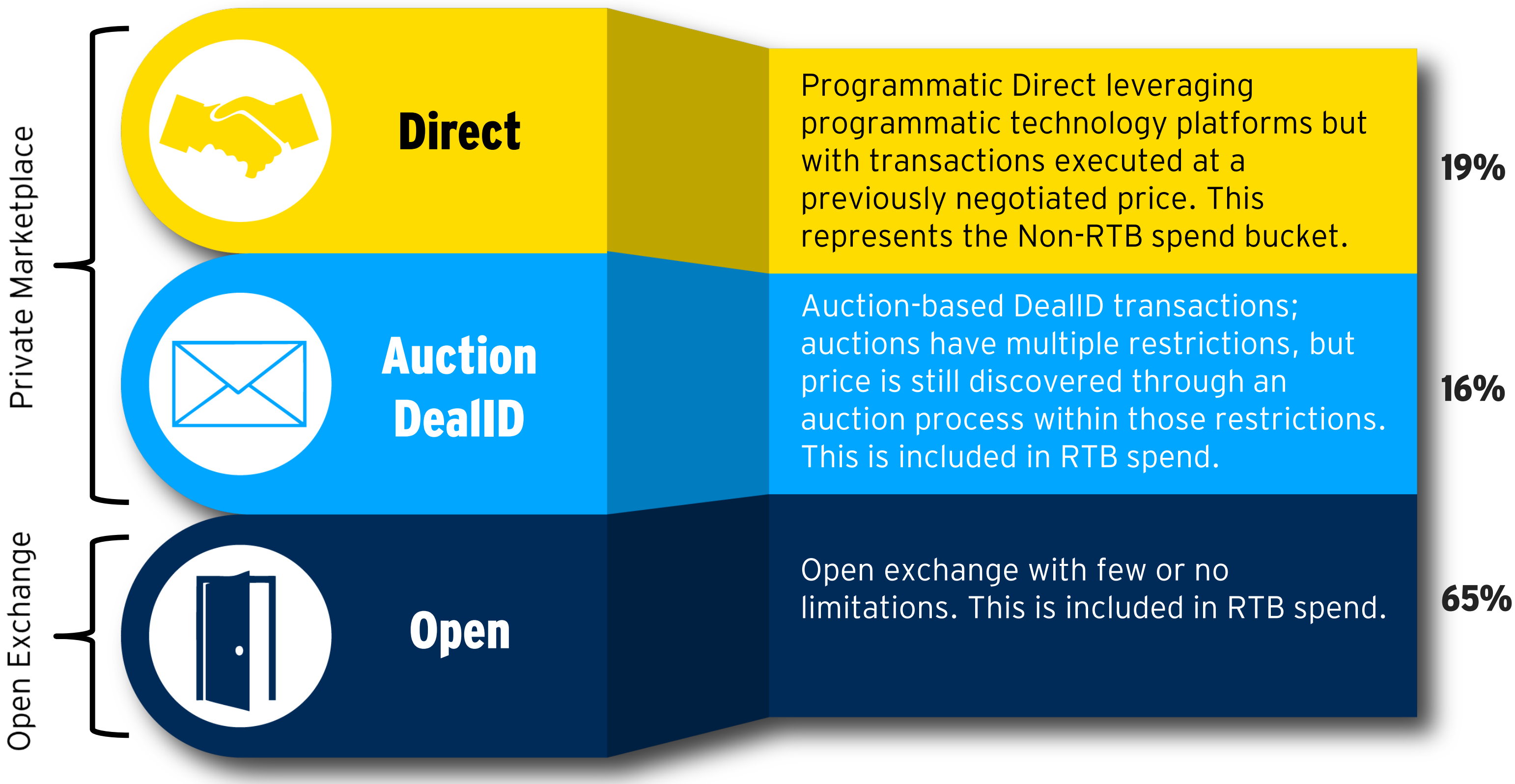
Because MAGNA's programmatic estimates exclude social media ad spend, they can differ significantly from the estimates of other sources. Search and Social media advertising is, and has always been, 100%, so including it would only distort the numbers (see page 9 for further details). Furthermore, MAGNA's split of spend between RTB and Non-RTB is based on the belief that a key value proposition of programmatic trading is auction based price discovery, rather than classifying 'Programmatic Direct' as anything where the publisher is known.

Ultimately, the rise of private marketplaces with restricted auctions (participant whitelists, price floors, inventory restrictions, priority access, etc.) via DealID technology allows brands and publishers additional comfort with the programmatic process, opening up additional inventory while maintaining most of the efficiencies from auction based price discovery.

Furthermore, classifying fixed-price programmatic transactions in the same category as Facebook, YouTube TrueView, or a premium publisher private auction among whitelisted bidders, makes no sense. The scale of a platform like Facebook means that it has far more in common with an open exchange RTB transaction than with Programmatic Direct.

Finally, the advent of header bidding has proven on a wide scale that increasing the number of bidding parties increases publisher yield significantly. For this reason, while restricted auction private marketplaces are a sensible response to concerns of fraud, brand safety, or even the desire to leverage brand or publisher scale and reputation, the long term value-maximizing equilibrium is a broader exchange with true price discovery.

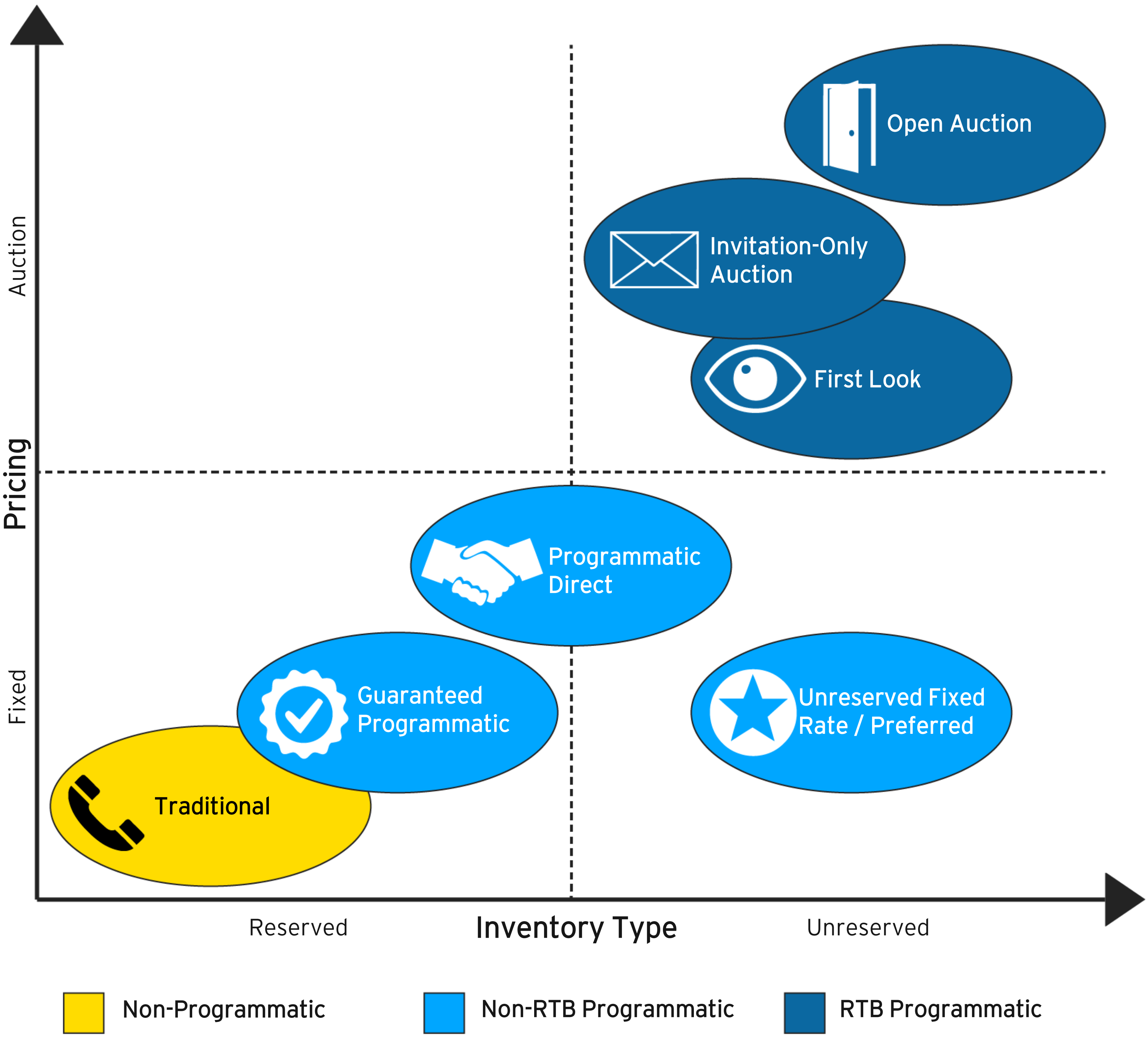
Programmatic Transaction Types



Source: MAGNA 2019 Programmatic Forecast. Values represent share of programmatic spending attributed to each transaction type in 2019.

Programmatic Transaction Types

MAGNA's categorization of programmatic transaction types mirror the ways that many brands and publishers categorize their own budgets and inventory (auction based vs. non-auction based pricing, reserved vs. non-reserved inventory). In addition, they are designed to be future-proof and able to grow to accommodate expected future evolution in transactions. There is a plethora of transaction terminology in the market, however, and the chart below demonstrates how some other transaction terminology fits into the MAGNA programmatic breakdown.



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Programmatic & Social Advertising

This report focuses on programmatic advertising within banner display and video formats. It does not include other formats, and all shares and adoption values in the report are given with a denominator that is only the total spend on banner display and video.

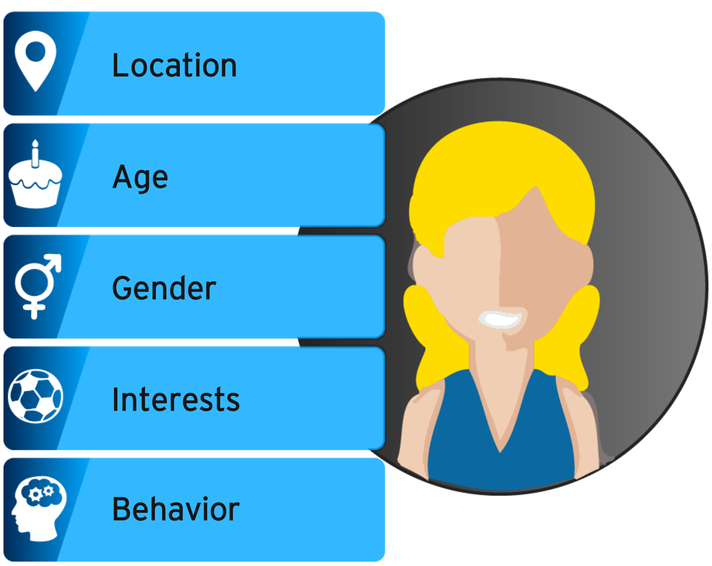
Search is the largest portion of digital budgets, and social is both large in size and growing rapidly. MAGNA no longer considers search and social (including social video) in this programmatic report, however. This is not because they are not programmatic. It is because they have always been 100% programmatic, and were designed that way from inception. Adoption would be irrelevant because it has always been 100%. Including search and social in programmatic calculations would only dilute the informational content of this report's findings by inflating the adoption of programmatic across the board.

Instead, this report aims to monitor the progression of programmatic trading within the two formats that are *transitioning* to programmatic methods: banner display and video inventory.

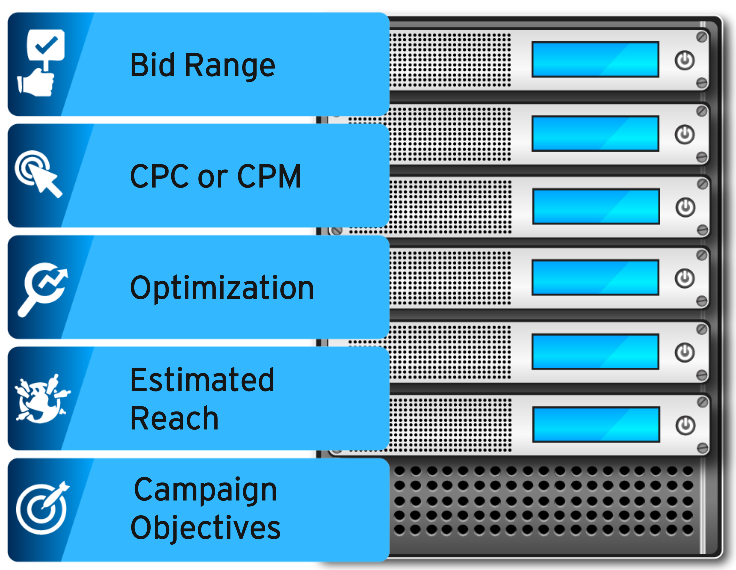
To better understand why social is entirely programmatic, one can examine the social campaign process below. Regardless of the social network or the purchase platform, a brand targets an audience through demographic and behavior criteria, and then sets bidding considerations for a campaign. This relies entirely on a technological platform, and aligns very closely to our framework for a programmatic transaction.

The following two pages give context to how large programmatic advertising is in the broader digital advertising ecosystem, and how programmatic advertising is shaping the development of the advertising economy.

Step 1: Targeting an Audience



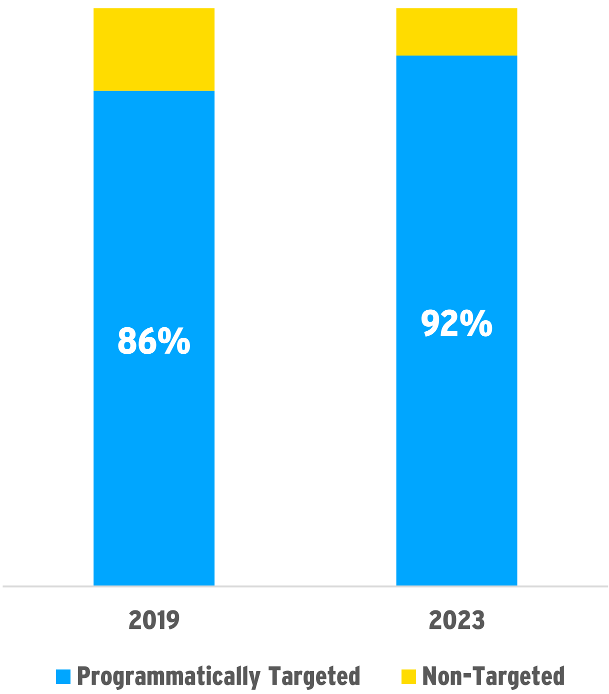
Step 2: Bidding Considerations



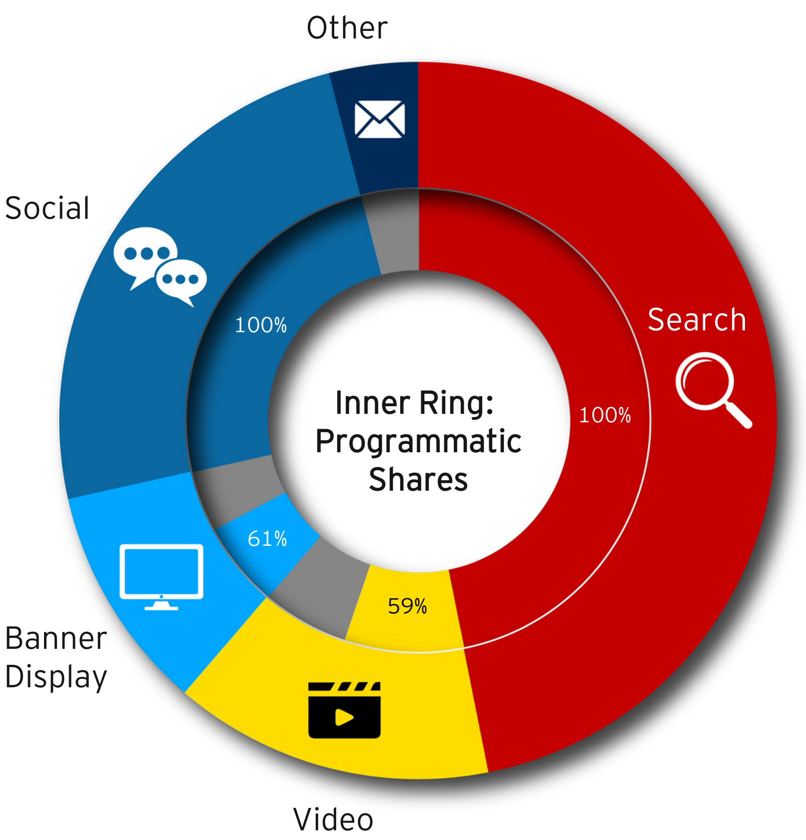
Holistic Online Advertising Budgets

It is important to keep in mind, however, that brands are approaching digital spend holistically. Programmatic trading still represents only about half of banner display and video spend, but when search and social are included, the portion of total spend that is executed programmatically approaches 90%.

The chart below shows on the outer ring total digital spend. The inner ring is colored to represent the portions of each format that are programmatic, and greyed out to represent the portions of each format that are still traded on a traditional basis.



Digital Spend by Format



When combined, the spend on the inner ring represents the majority of total online budgets. The evolution of this holistic targeted spend total is highlighted in the chart above. By 2023, more than 90% of online dollars will be targeted on a 1:1 basis.

Brands are already in the position where inventory that is not able to be purchased through programmatic methods and augmented with data is the outliner, not the norm. As the share of spend that is executed programmatically grows, inventory that cannot be augmented with data and interacted with through technology will be increasingly marginalized.

Source: MAGNA 2019 Programmatic Forecast

The Rise of Personalized Advertising

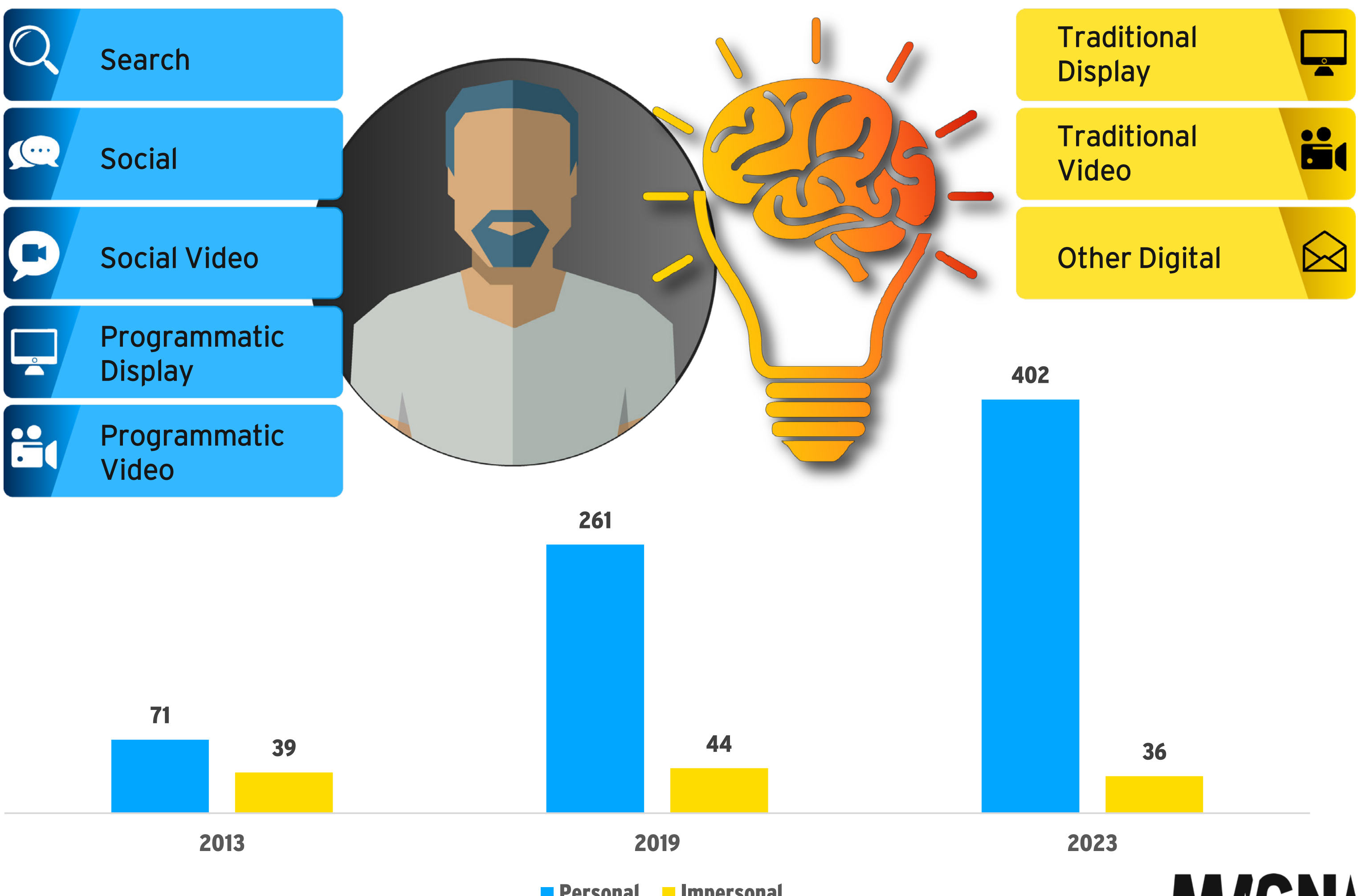
As demonstrated, holistic online advertising budgets are moving towards programmatic display, programmatic video, search and social. Brands know that consumers do not want to see generic ads, and as a result targeted advertising performs better. Consumers expect advertising that is relevant for them, delivered in a timeline manner, and most importantly, personalized.

The formats winning in digital advertising share several important features, including being easy to use, offering comprehensive data support, allowing for individual impression targeting, and providing more compelling attribution. Most importantly, they are catered to each specific recipient depending on their individual circumstance and demonstrated behavior. Put simply, it's personalized advertising.

Combined, in 2013 the personal advertising formats (search, social/social video, programmatic display/video) were less than twice as large as impersonal formats (non-programmatic, online classifieds). This year, they will represent nearly six times as much spend. By 2023, they will represent more than 10 times as much spend. Search and social continue to dominate, but programmatic targeting keeps banner and video inventory relevant.

As programmatic grows, brands think less about programmatic campaigns vs. non-programmatic campaigns. Instead, every campaign will be infused with data and technology to make a better experience for the consumer and a more efficient outcome for the brand.

Global Personalized Online Advertising Formats ($bn)



Programmatic Spend Continues to Grow

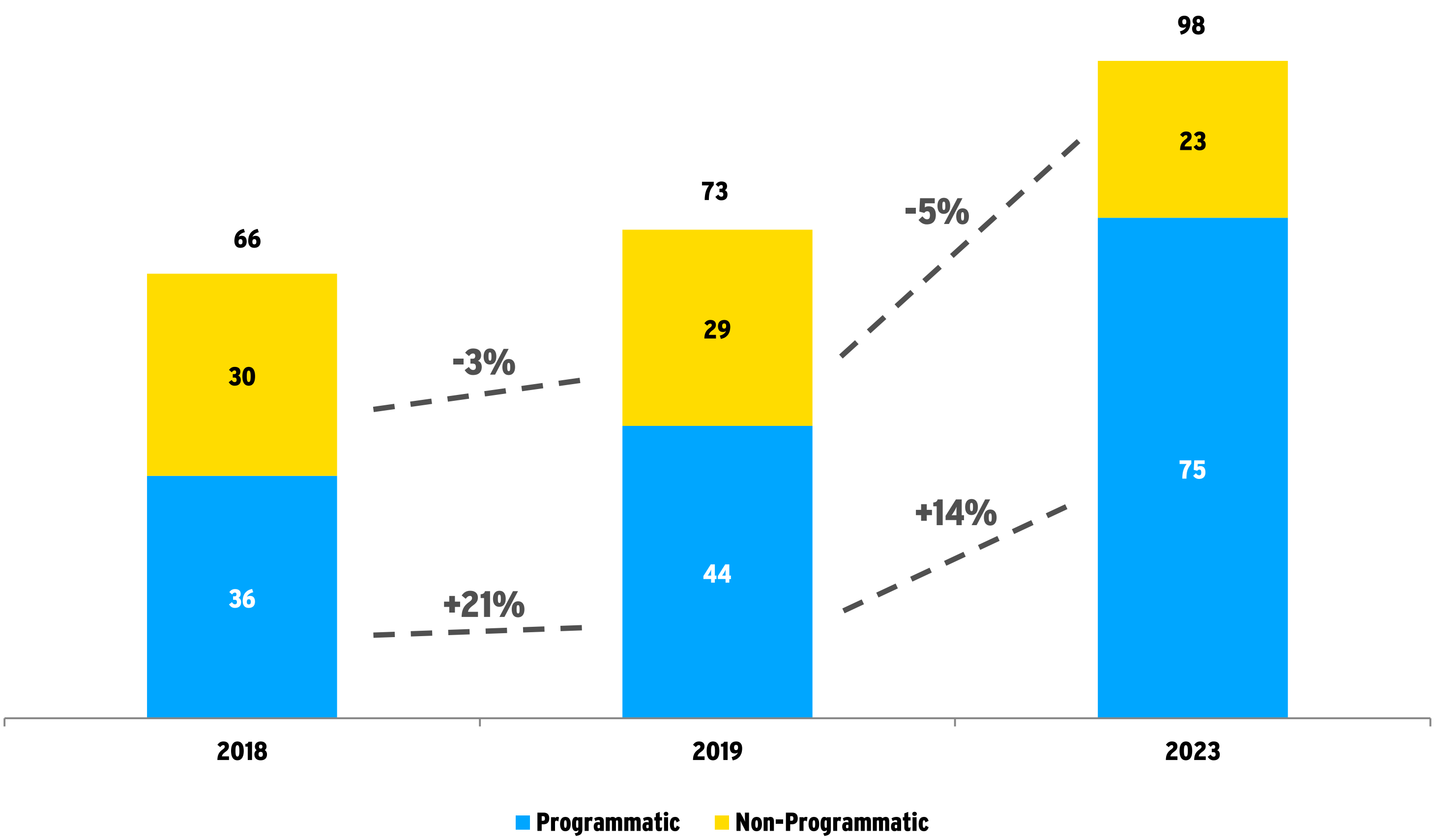
The global programmatic market will grow from $44 billion this year in 2019, $75 billion by 2023. This represents 21% growth expected y/y in 2019 following 24% growth in 2018. By 2023, programmatic transaction methods will represent 76% of total spend of digital display (banners and video).

This $34 billion represents spend compiled by MAGNA from approximately 50 markets, from the highly developed (the United States, Western Europe, Australia), to the emerging programmatic markets (Indonesia, Philippines, Romania, Slovenia). Because it's easier to implement existing tech than develop new technology, however, emerging markets are developing at a rapid rate.

The slightly slowing growth rate of programmatic spend in 2019 y/y is due in large part to the increased global base of programmatic spend. 2019 will actually see more total incremental programmatic dollars spent than were spent in 2018. Because of the larger base, however, this still translates to a slower growth rate.

Global programmatic spend will grow by an average +14% CAGR through 2023. This compares to non-programmatic display spend which will shrink by -5%. More than 100% of display-related growth in digital over the next five years will come from programmatic campaigns. This is part of a larger trend of brands gravitating towards personalized advertising formats.

Global Programmatic Spend ($bn)



Source: MAGNA 2019 Programmatic Forecast

Programmatic Spending Dominates

The $44 billion of programmatic spend in 2019 represents 60% of global banners and video. This is split between RTB (49%) and non-RTB (11%).

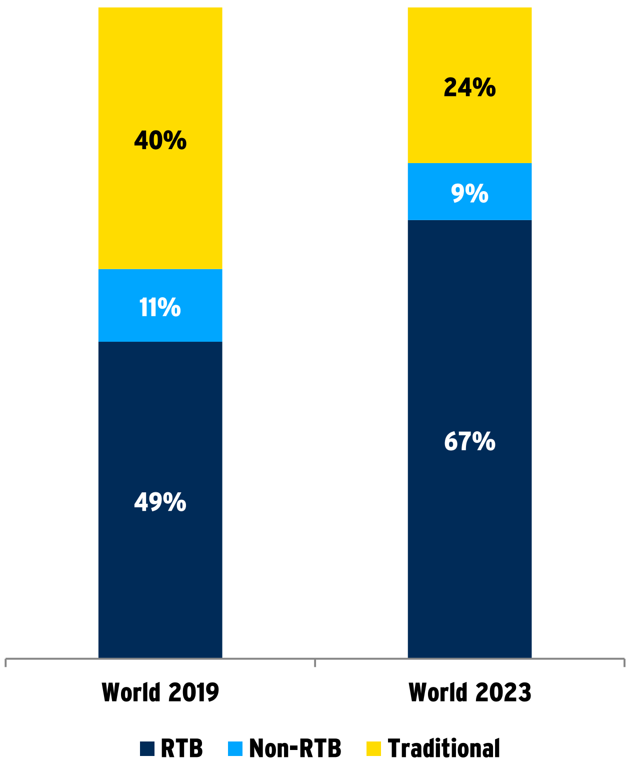
RTB includes transactions where pricing is determined in real time, for example open auctions, invitation-only auctions, Deal ID transactions, private marketplace transactions, YouTube TrueView, etc., as long as pricing is still determined through a flexible auction (no matter how limited). Open exchanges represent the bulk of that RTB spending (about 80% of RTB spending occurs on open exchanges), but private marketplace transactions using auction based pricing are now a significant part of that RTB spending – around 20% of the total.

Non-RTB programmatic includes transactions where significant information about inventory and pricing is known in advance, for example guaranteed programmatic transactions, reserved inventory transactions, unreserved fixed rate transactions, preferred deals, and other transactions via process automation platforms.

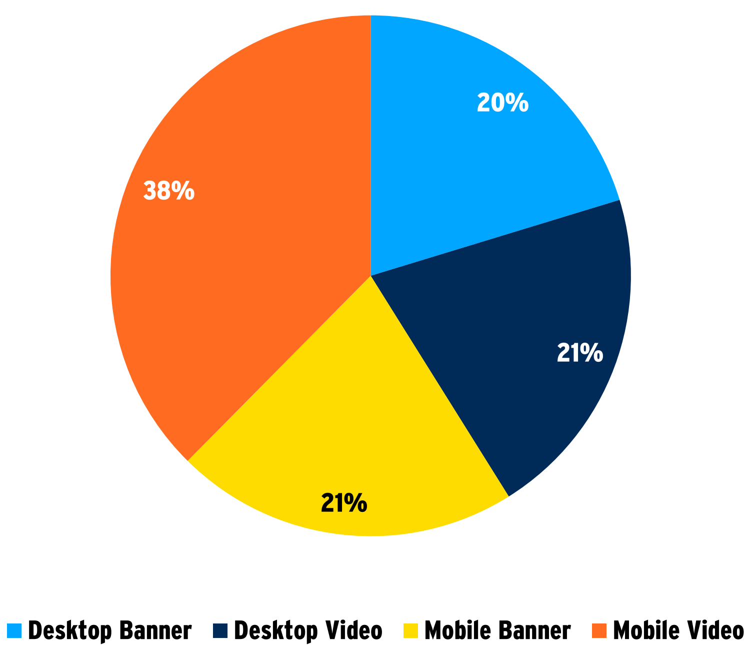
By format, global programmatic spending is skewing towards mobile formats. Mobile video is now by far the largest portion of programmatic spending worldwide. By 2023, desktop display will represent the smallest share of total programmatic spend.

While tech challenges remain for programmatic transactions and targeting in the mobile media environment, MAGNA expects significant mobile programmatic expansion by 2023. The most important driver of this programmatic growth will be the increase in total mobile digital budgets. Mobile spend is the fastest growing sub-segment of overall digital budgets (comparable to video and higher than social), and as a result mobile programmatic spend is expected to expand due to increases in both spend and adoption.

(1) Global Programmatic Spend by Method



(2) Global Programmatic Spend by Format



Source: MAGNA 2019 Programmatic Forecast

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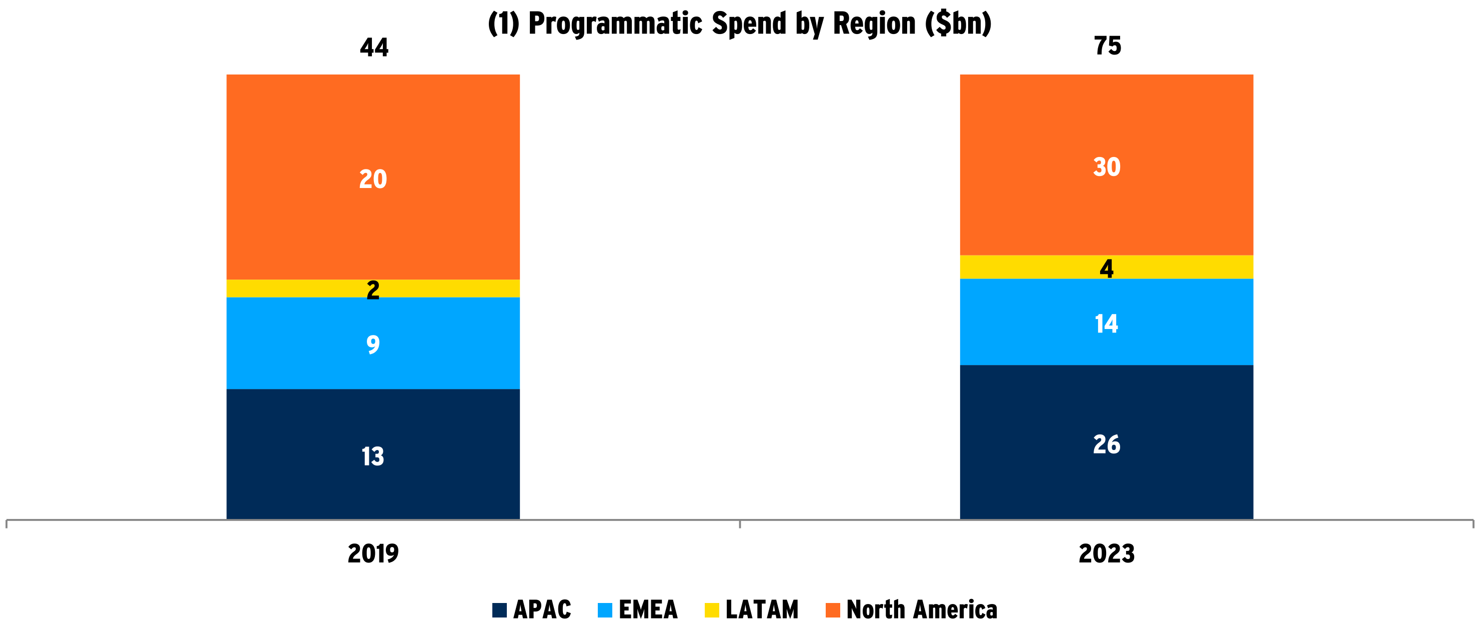
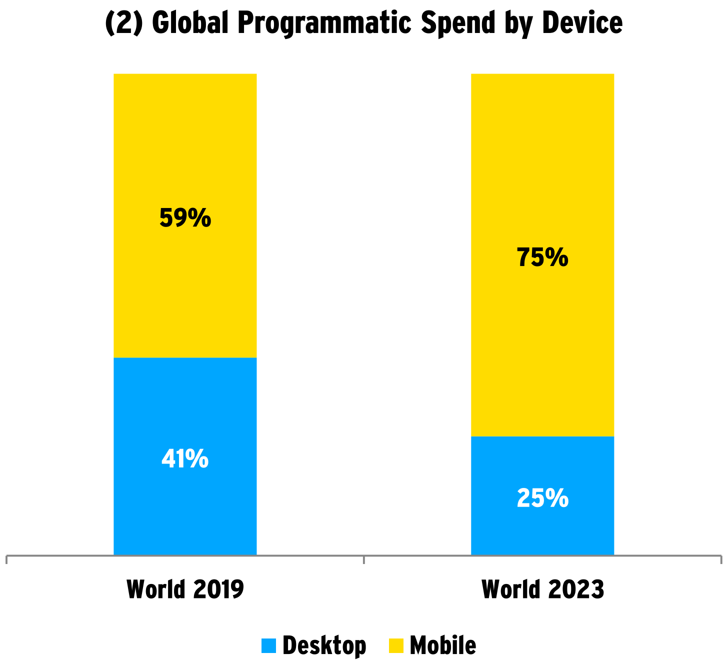
N. America Leads Programmatic Spending

By region, programmatic spend is still concentrated in highly developed markets, by virtue of both total size of those markets, and the level of development. North America still represents just under half of the global programmatic pie, and will continue to take the lion's share of global programmatic spend in 2023 (41%), although APAC will be coming close to the top spot by then.

Many markets are growing faster than the United States, even large programmatic markets such as China and Japan. Many small markets are catching up and experiencing high rates of growth, but spend is growing from such a low base that it doesn't impact regional averages significantly.





Mobile programmatic spend will expand from 59% of total programmatic spend in 2019 to 75% of total programmatic spend by 2023. This will be driven by markets like Japan, Australia, China, Taiwan, India, the United States, and others, where mobile represents a large share of total programmatic spending today, and where it will represent an even more dominant share by 2023. Programmatic (like all online advertising) is rapidly becoming mobile-first.

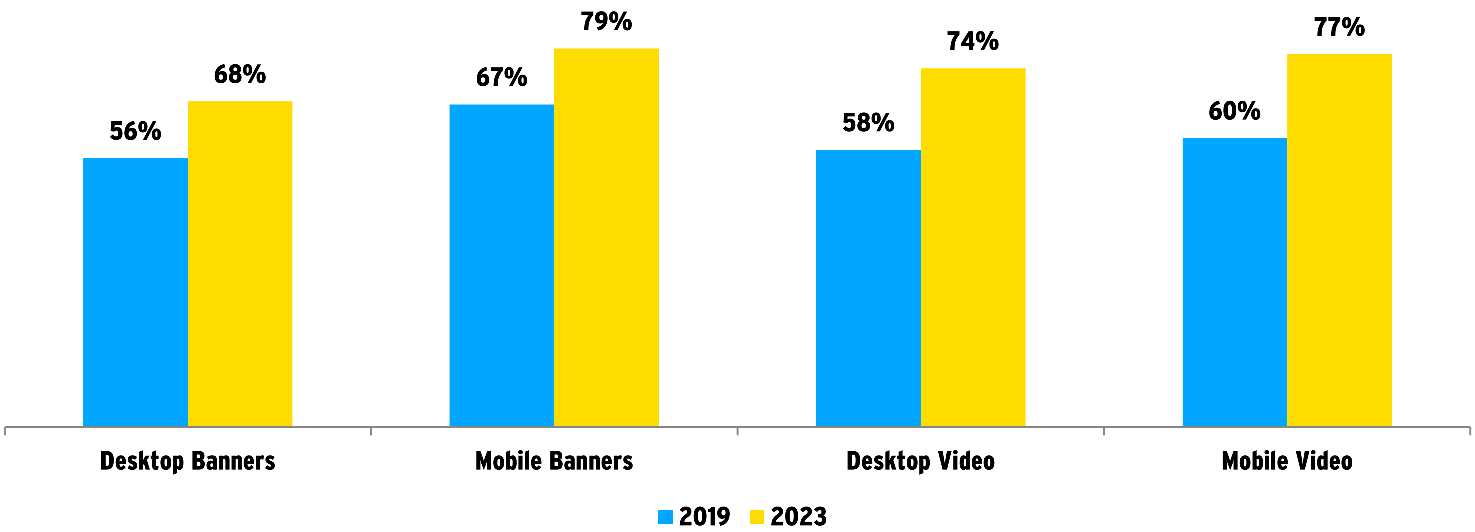
Source: MAGNA 2019 Programmatic Forecast

Programmatic Adoption Marches Onward

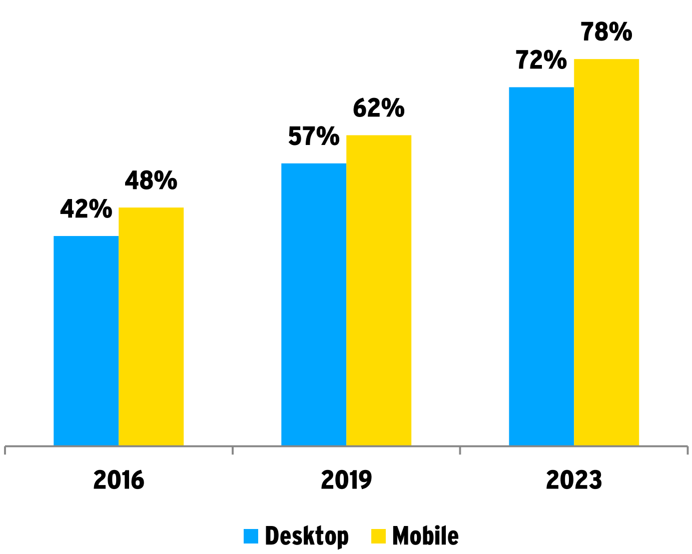
The adoption rates of programmatic transactions are expected to increase across the board for all format and device combinations through 2023.

Conventional thinking is that desktop and banner display programmatic adoption is higher since that's the technology that programmatic trading was originally built for. This increasingly not true; the technology gap between desktop and mobile is functionally nonexistent. In addition, while most video is premium inventory which is still able to be fully sold by direct sales teams, auction-based platforms like YouTube TrueView represent a significant share of video inventory (especially in many international markets where it can be the majority and therefore skew total mobile video programmatic adoption higher). Finally, in-app inventory is also largely available programmatically.

(1) Global Programmatic Adoption by Format



(2) Programmatic Adoption by Device



Improvements in the mobile technology landscape and the mobile data landscape have also resulted in mobile programmatic adoption being comparable (and even slightly higher) than that of desktop platforms. By 2023, programmatic adoption will be approximately 3/4 of total display and video spend on both mobile and desktop platforms. This is adoption, however; mobile spend will be significantly higher and growing, while desktop spend will be shrinking (a reflection of continued consumer behavior trends).

Source: MAGNA 2019 Programmatic Forecast

Programmatic Growth by Segment & Region

Growth varies significantly across formats and devices, in part due to variations in the progression of programmatic technology, but also largely due to the underlying growth of the formats (for both programmatic and non-programmatic spend). Desktop banner programmatic display spend is actually shrinking through 2023, as it is becoming increasingly marginalized as a format and device combination. In many developing markets, the online advertising ecosystem went straight to mobile-first, and there is no incumbent desktop spending allocation.

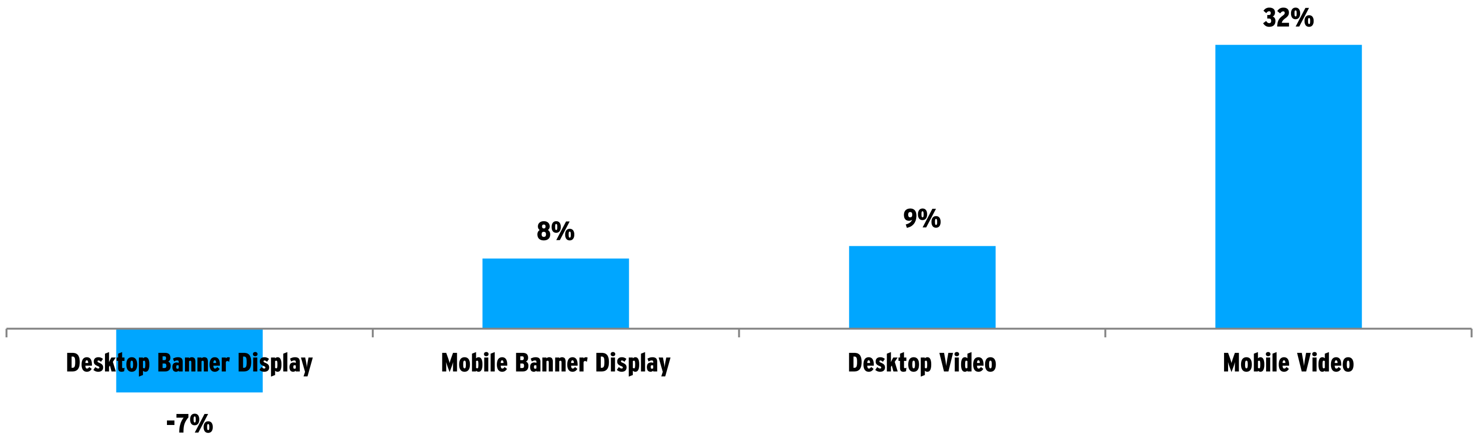
Mobile video, on the other hand, is expected to grow by an average of 32% per year through 2023.

By region, LATAM is expected to grow the fastest. It is the least developed overall region today, and relatively undeveloped programmatically. For this reason, big strides in the years to come have a much more significant impact on the total development and adoption of the programmatic landscape in LATAM.

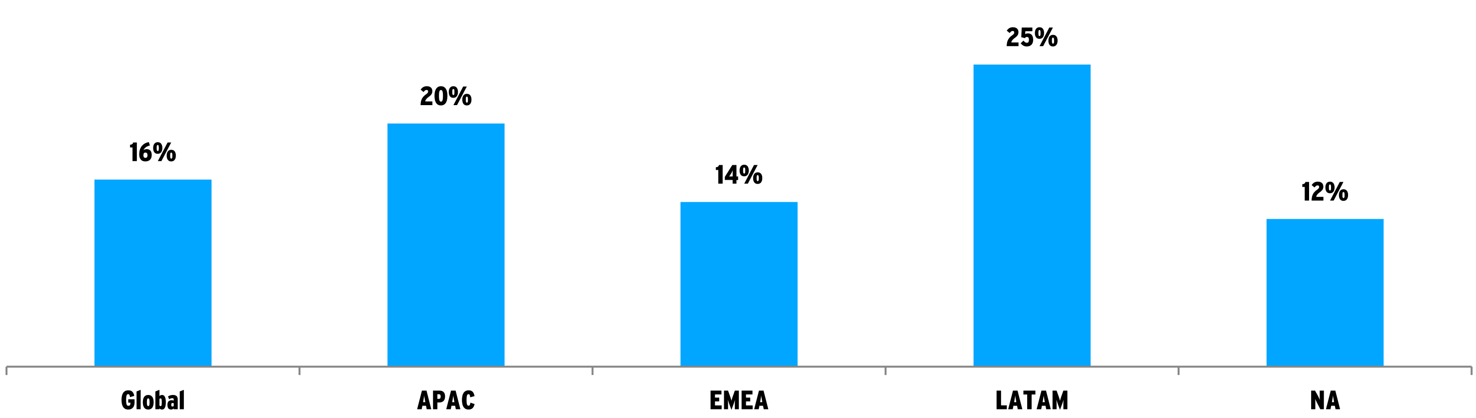
Growth will be the slowest in N. America through our forecast period. This is a reflection of the maturity in the US and the significant existing spending base. Many smaller markets will progressively catch up to the US over the next several years.

Appendix
LATAM
APAC
EMEA
N. America
Global
Definition
Key Findings

(1) Programmatic Spending 2018-2023 CAGR by Format / Device



(2) Programmatic Spending 2018-2023 CAGR by Region



Source: MAGNA 2019 Programmatic Forecast

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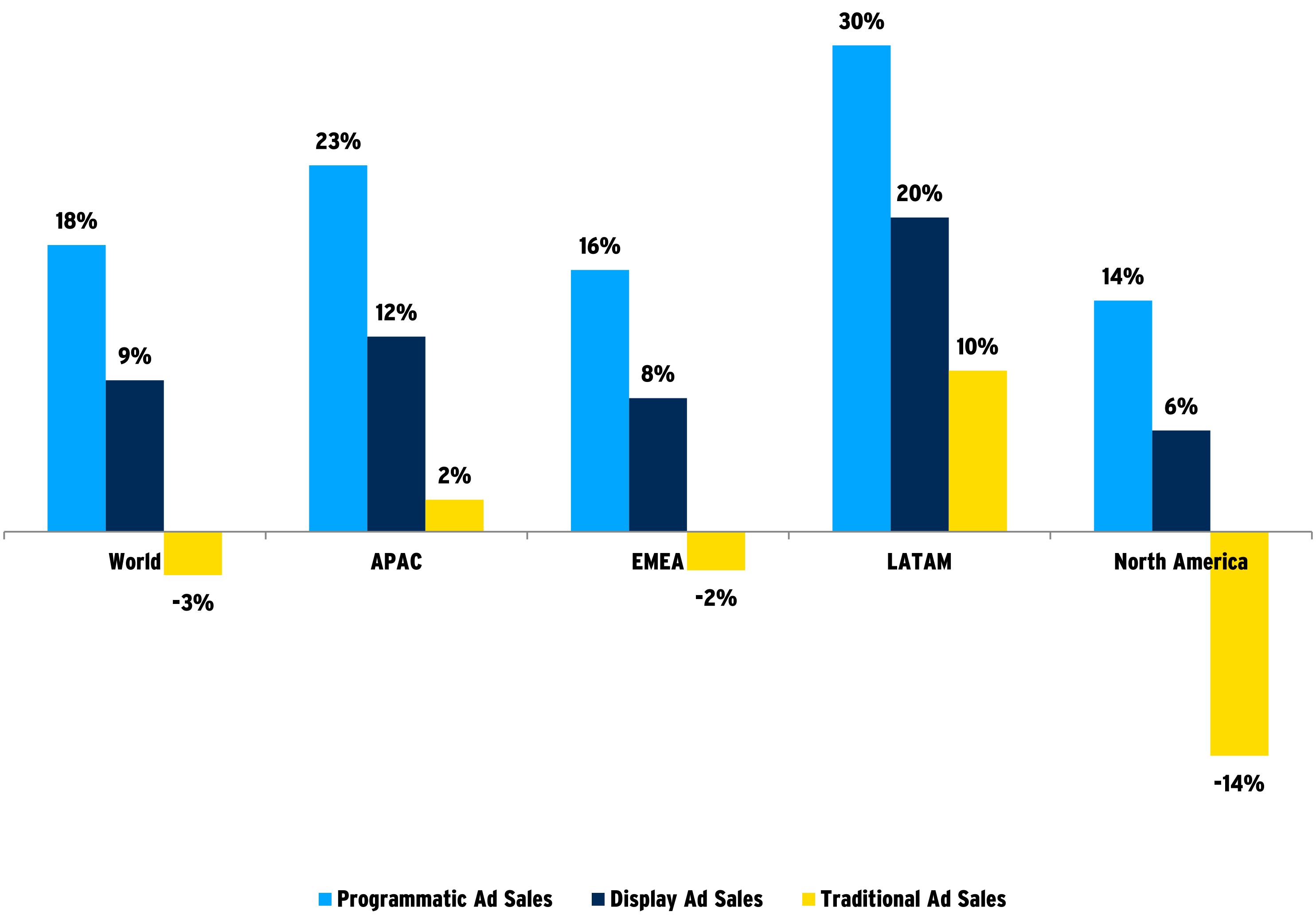
Programmatic Spend Outstrips Traditional

While it is not a surprise that programmatic is growing everywhere on a global basis, it is more interesting to compare programmatic growth to non-programmatic growth within global banners and video.

Programmatic growth is not a case of expansion in online advertising spend lifting all ships. Globally, non-programmatic ad sales within banner display and video is now expected to shrink through 2022 (-3% CAGR). This compares to programmatic growth averaging 18%. This dichotomy is the source of the 9% average growth for banner display and video through 2022.

This pattern holds true across most global regions, and is most pronounced in North America, where non-programmatic spend is not just stagnant, but rapidly shrinking. The situation is not quite as dire in Latin America and in Asia Pacific, however, where traditional spending is growing much more slowly than programmatic spending, but is not yet shrinking.

Programmatic vs. Traditional Growth by Region (CAGR 2018-2023)



Source: MAGNA 2019 Programmatic Forecast

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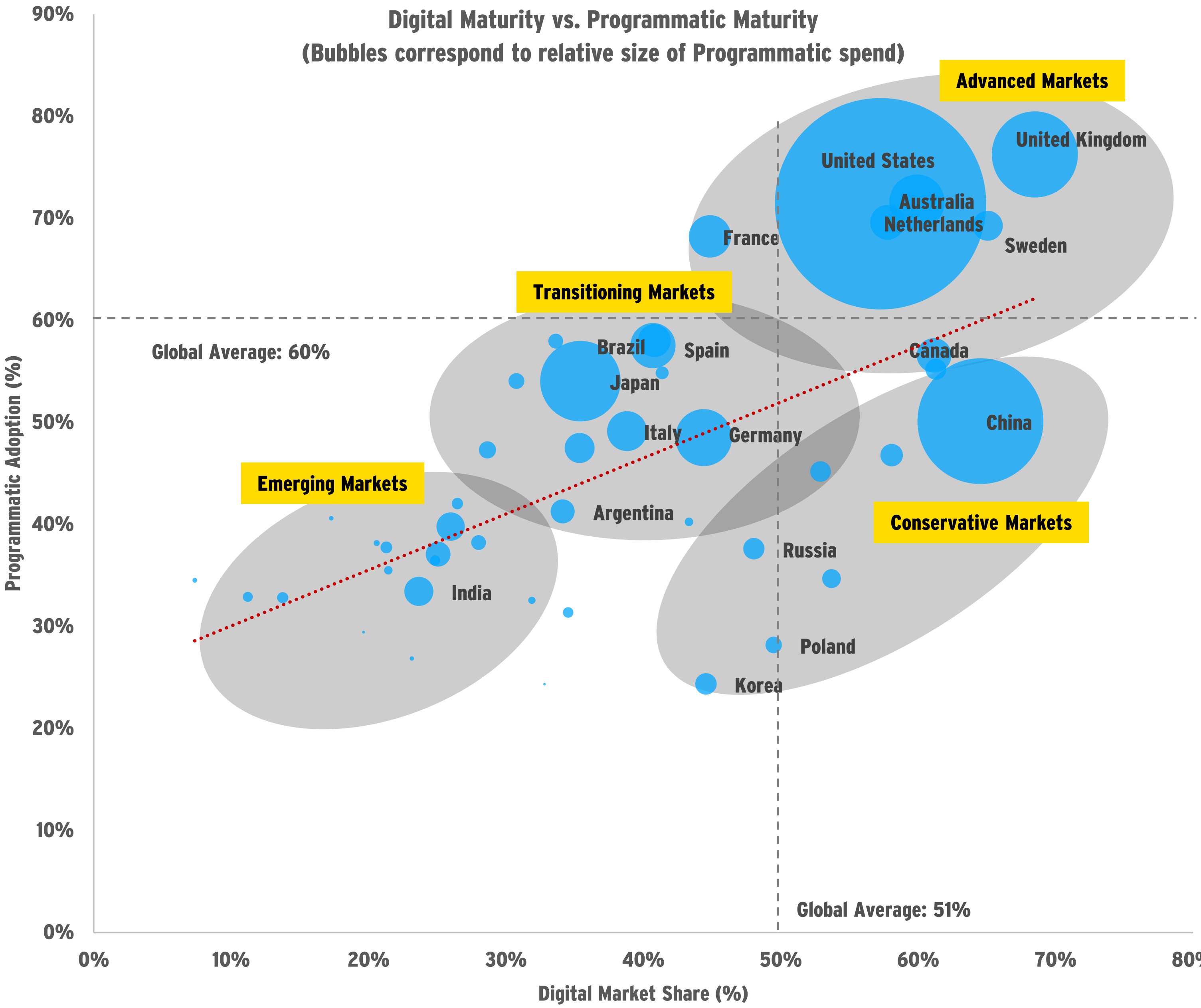
Mature Digital Economy = High Adoption

The United States dominates global programmatic spend, with nearly $20 billion of total spend expected this year in 2019. It represents nearly half of total global programmatic spend in 2018.

The US is followed by China, the UK, Japan, and Germany, to round out the top five programmatic markets. Together, these five markets represent approximately 78% of global programmatic spend.

There is a positive correlation between the digital maturity of a market, and the rate of programmatic adoption. This makes intuitive sense, because programmatic ad tech companies focus their efforts on markets with higher levels of overall online advertising development, and larger bases of spend. In addition, because brands are already spending more online in mature digital markets, there is more leeway for experimentation with programmatic.



Source: MAGNA 2019 Programmatic Forecast

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Ad Tech Developments

The global drivers of the programmatic advertising ecosystem represent a balance between excitement over the possibilities and potential efficiency gains that come with programmatic campaigns, and concern over the pitfalls that can come with reduced control and visibility into what inventory is being purchased.

Lately, the conversation has shifted from the best ways to get more out of valuable consumer data, to the best ways to ensure fees are fair, to ensure purchase processes and policies are streamlined, and to leverage existing troves of targeting data in other ways to improve campaign outcomes. This report is focused on banner display and video advertising, but brands are expanding the data landscape to OTT, linear TV, audio, OOH, and more.

Privacy

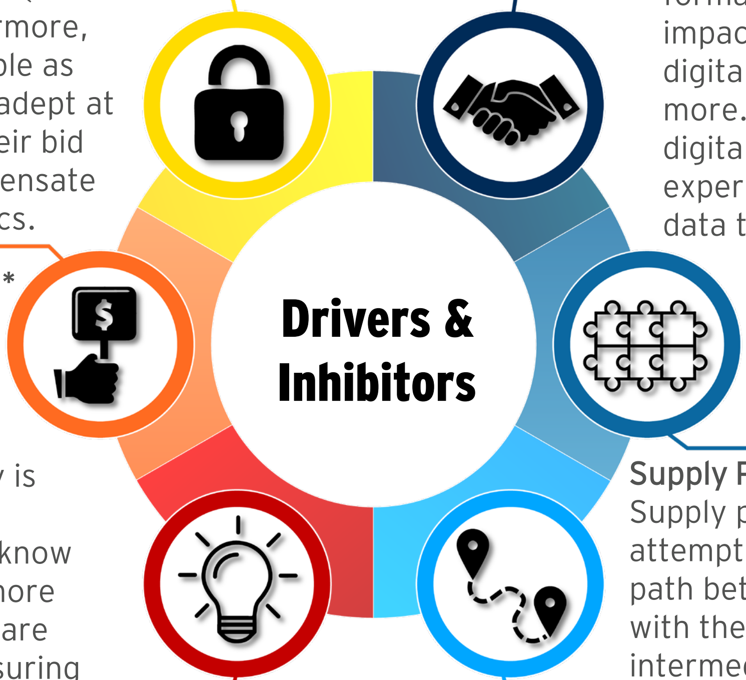
Programmatic becomes more valuable as impressions can better be differentiated from one another. Privacy concerns and data access represent a big swing factor for programmatic growth. GPDR put in place valuable consumer protections without too severely disrupting brand ability to find their target audience. The upcoming CCPA is expected to be much the same.

1st Price Auctions*

1st price auctions have now been implemented across the entire programmatic ecosystem (near 100% adoption). Furthermore, costs have remained stable as DSPs have become very adept at bid shaving (lowering their bid algorithmically) to compensate for new auction mechanics.

Creative Personalization*

Brands are hunting for Other ways to leverage consumer data to improve campaign outcomes. One such way is through creative personalization. Brands know that what you do is far more important than who you are (as a consumer), so ensuring that advertising creative is catered towards a consumer's interests and behavior is critical for having an impact.



Ads.cert*

Ads.cert is a tool (like its forebear ads.txt) to ensure that the format of an ad is correct and to prevent ad format spoofing. Inventory characteristics like domain, location, IP address, device, page position, and impression type, can be modified to make an impression look more valuable than it is. Ads.cert combats that fraud.

Expansion Beyond Digital

Programmatic techniques are moving beyond digital ad formats, and are making an impact on TV, as well as in digital audio, digital OOH, and more. Brands are leveraging digital programmatic experience and consumer data to improve targeting, reduce waste and increase relevance across all media formats.

Supply Path Optimization*

Supply path optimization is an attempt to find the most efficient path between buyer and seller, with the fewest number of intermediary fees. The goal is for brands to pay a reasonable price, while letting publishers maximize their revenue. Essentially, minimizing the 'tech tax.'

* See the MAGNA Spring 2019 Programmatic Intelligence Report for more details around many of these trends and drivers.

Prog. Adoption: Drivers and Inhibitors

As programmatic trading becomes more mature, programmatic drivers and inhibitors align more closely with overall digital drivers and inhibitors.

Programmatic advertising represents such a high share of the total display and video landscape, and technology is such an integral part of executing a digital ad campaign, that it's hard to distinguish between programmatic drivers and inhibitors, and those that impact the entire digital advertising landscape.

Fines imposed by European governments on social media networks, and lawsuits targeting search advertiser anticompetitive behavior, now all affect how consumers (and therefore regulators) feel towards ad tech and targeted advertising.

Furthermore, many of the core building blocks of the programmatic tech infrastructure are also the biggest players in other digital formats, or even significant advertisers themselves. For example, Amazon's tech suite has taken over a significant share of the programmatic landscape, and Amazon is also the 2nd largest global advertising brand themselves. When it comes to privacy, transparency, auction mechanics, and more, many of the biggest players have conflicting interests, balancing how they want to be treated as both advertisers and publishers (not to mention balancing the perception between being a beneficial actor to consumers, and offering the most compelling product to brands). This makes it increasingly challenging to anticipate how the landscape will evolve over the coming years.

Drivers & Inhibitors to Programmatic Advertising

	Drivers	Inhibitors
Advertisers	**Ads.cert:** Brands are reassured by the way ads.cert can combat fraud and ensure available inventory is as described. **Private Marketplaces:** Higher quality inventory, more control. **Personalized Creative:** Further leverage data to improve efficiency and outcomes.	**Public Blowback:** Brands are nervous about the PR implications of delivering intrusive ads. **Ad Fraud:** Fear of paying for no value. **Mobile Attribution:** Mobile attribution is still difficult due to the lack of tech solutions.
Publishers	**1st Price:** Publishers expect to see increased yield due to 1st price auctions compressing ad tech margins and lowering non-working dollars. **Header Bidding:** Increased yield for media owners potentially at the expense of some layers of ad tech.	**Privacy Concerns:** Regulatory limitations on data as well as consumer sentiment risk. **Ad Blocking:** Like viewability, risk of reducing inventory. **Frequency Capping:** Safari is blocking cookies. It's difficult to frequency cap on iOS, brands are avoiding that inventory.

MAGNA Forecast Revisions

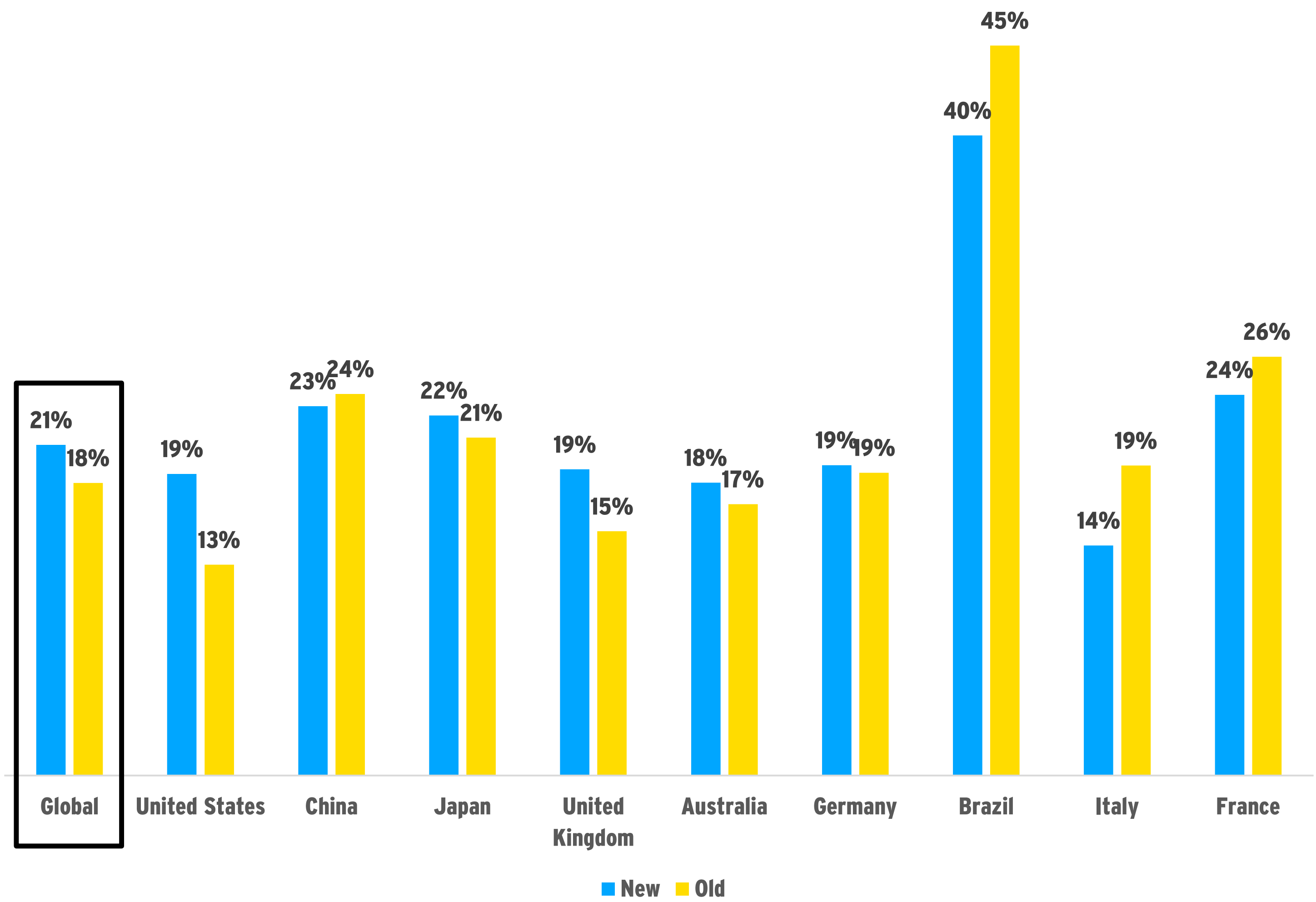
Global programmatic spend continues to be robust, and is slightly higher than previous expectations in spend terms ($44bn this year, compared to $40bn). Overall, adoption rate came in exactly where we anticipated it to be (59.9% compared to prior expectations for 60% adoption in 2019); the increases in the total programmatic spend were due to upward revisions in total banner and video spending in many markets in our global forecast model.

2018 also came in slightly stronger than expectations, growing by +24% (compared to prior expectations of +22% growth).

In mature programmatic markets, the pace of adoption and increases in brand spending are fairly predictable. In small markets, however, with low programmatic development, there can be significant swings in size from year to year, as a handful of brands can cause a dramatic shift in total spending.

Most of the significant programmatic growth revisions are reflective of revisions in the total growth of display and video spend in those countries, rather than a change in the trajectory of programmatic adoption.

Programmatic Market Growth Revisions 2019 (%)



 Source: MAGNA 2019 Programmatic Forecast

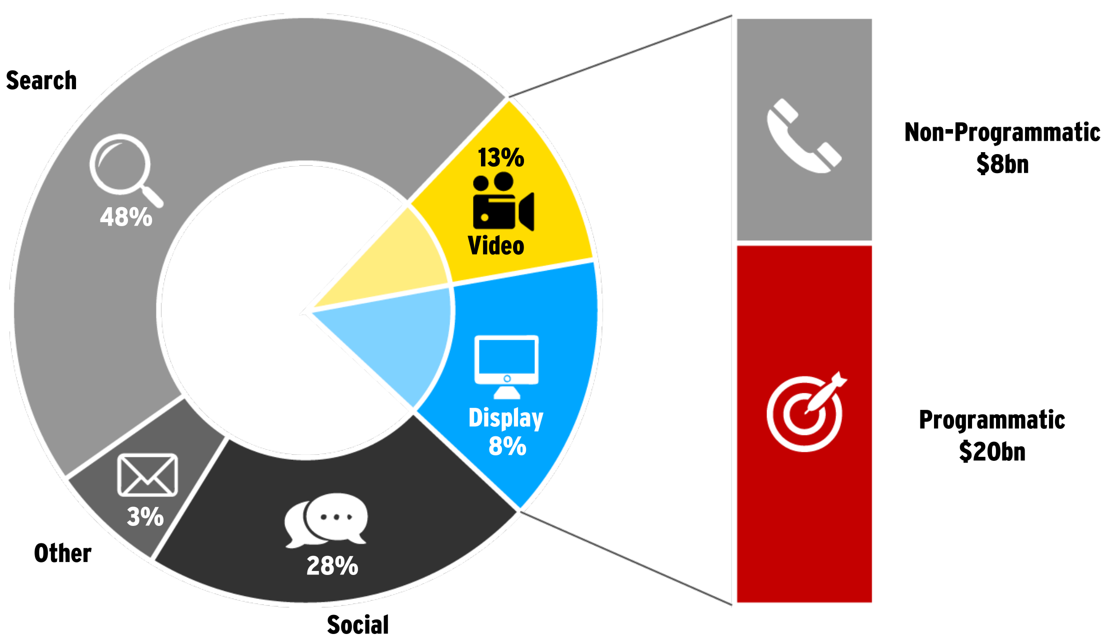
North America

North America is the largest programmatic region. Most of the largest ad tech players in the programmatic ecosystem come from North America, and because of the size of the digital market, most programmatic innovations are developed in the US first and exported globally (at least to EMEA and LATAM; APAC has its own ad tech ecosystem.

Despite many countries in the EMEA region being comparably developed, tech companies gravitate towards where the market opportunity is largest. Because of the current maturity, however, North America is expected to be the slowest growing global programmatic region through 2023.

Digital Spend 2019

Display Spend



Total: $134bn

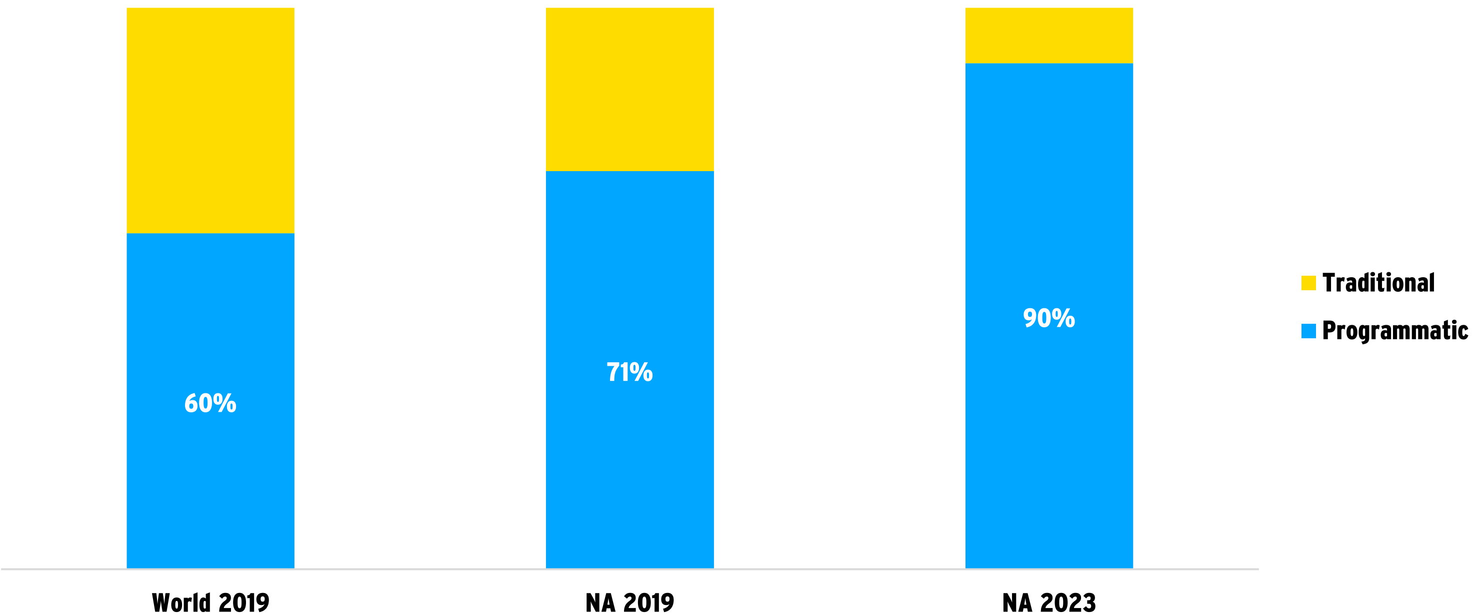
Total: $25bn

North American Programmatic Spend

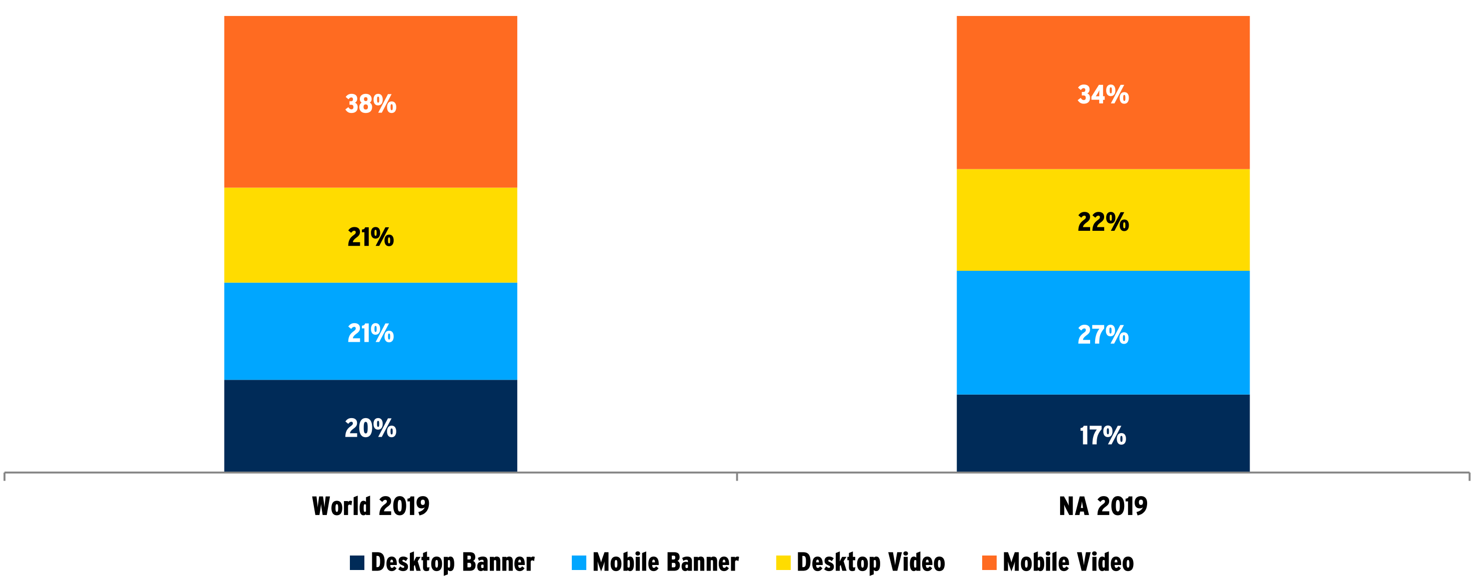
North American programmatic adoption is already 71% of total banners and video. This will expand to represent 9 out of 10 banner display and video dollars by 2023. The North American regional numbers are substantively the same as those of the United States, given that the US represents more than 90% of the North American programmatic total.

The split of programmatic spend by format in North America mirrors that of the global average very closely. This is partially due to the extremely high weighting that N. America has compared to global spend totals. There is a slight skew towards mobile banners compared to the global average.

(1) North America Programmatic Spend Adoption (%)



(2) North America Programmatic Spend by Format



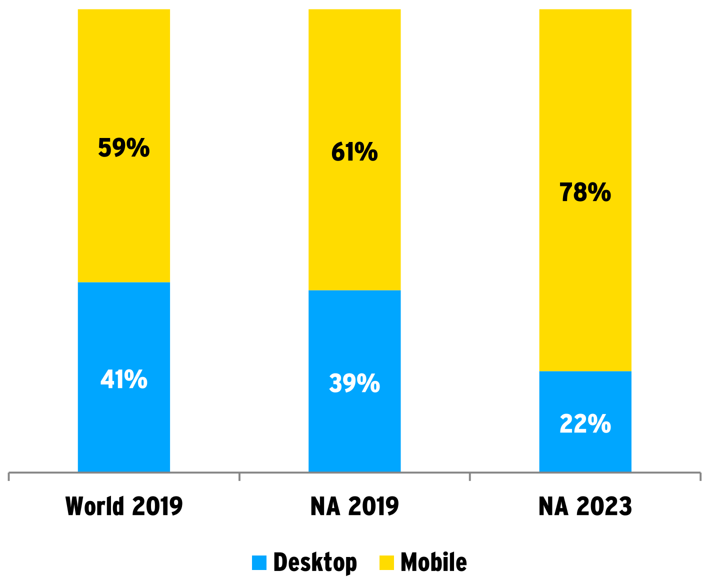
Source: MAGNA 2019 Programmatic Forecast

North American Spend Breakdown

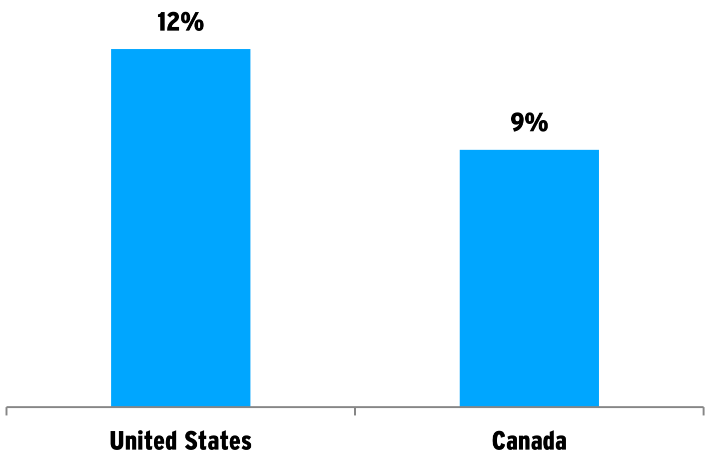
Mobile adoption in North America matches global adoption, and mobile represents more than 60% of total spending in N. America. This will expand to nearly 80% of total spend by 2023, as mobile formats (especially video) grow to represent a significant portion of total banners and video spend.

One area of growth in Canada is in programmatic TV. There is a beta program with Corus Entertainment undergoing testing. In addition, Rogers is expected to launch their programmatic TV tests in late 2020. Finally, ACR is coming to Canada through Samsung, with Roku's ACR to launch shortly. This is yet another route to leverage consumer data, which is all controlled by the PIPEDA consumer privacy regulation. Canada, like most developed markets, is exploring the tradeoffs between privacy and performance.

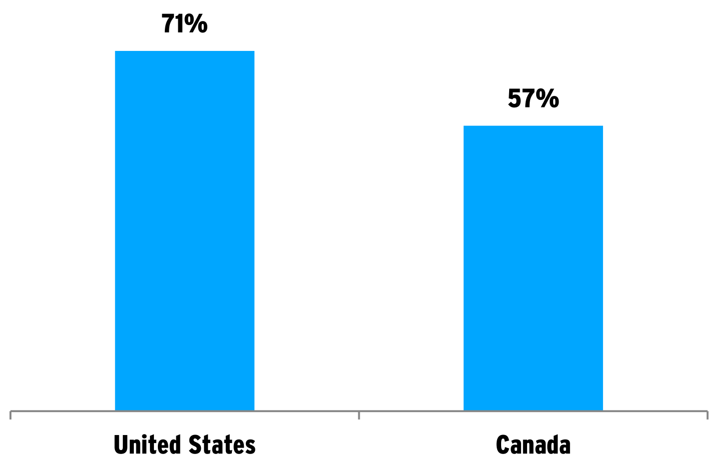
(1) North America Programmatic Spend by Device



(2) North America Programmatic Spend CAGR 2018-2023 by Country



(3) North America Programmatic Adoption by Country 2019



Regarding adoption and growth, not only does the US have a higher programmatic adoption as a share of banners and video than Canada, but it is also expected to grow faster throughout our forecast period.

Canada has many of the same tech players as are found in the US and the Canadian digital market is of a similar stage of development. Canada meets many conditions required for a robust programmatic market: concentration of powerful brands who want to leverage the power of programmatic at scale, willing publishers (the Canadian Premium Audience Exchange has been around since 2011 and is led by CBC, Rogers Media, and Corus Media) and an evolved ad tech ecosystem. Despite this, the development of the Canadian programmatic market continues to lag (at least compared to the US, one of the most developed global programmatic markets).

Source: MAGNA 2019 Programmatic Forecast

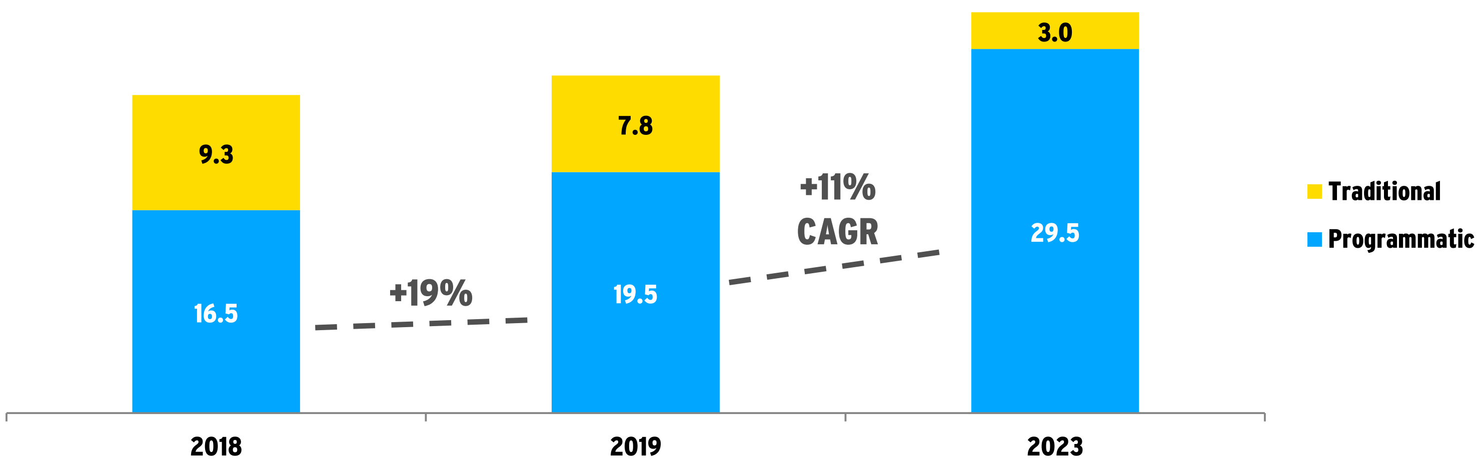
United States: Leading Innovation

Programmatic spend growth in the United States is expected to be 19% in 2019, down slightly from last year's growth rate but comparable in incremental dollar terms. While programmatic growth has slowed, that's due to the significant adoption of programmatic spend in the US advertising economy, as well as the expected declines in overall banner display spend. Even with programmatic trading representing an increasing share of banner display, growth is still low as the overall format declines.

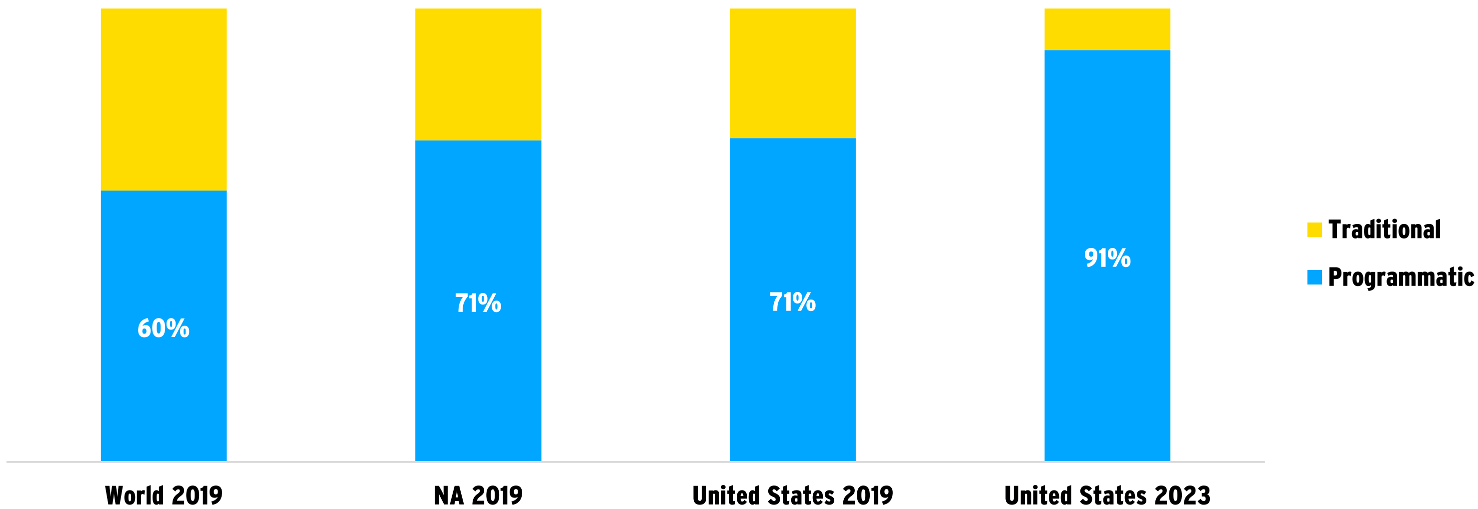
With nearly $20 billion in programmatic spend in 2019, the US is by far the largest programmatic market globally, ahead of China's $6.9 billion. That is due to a combination of high programmatic adoption in the US, as well as the massive lead it has overall in online ad spending.

The US showcases most global programmatic developments first due to its massive size, and the market opportunity seen by ad tech companies. Outside of APAC, most global programmatic innovations have come from the US. As the programmatic industry matures, however, the opportunity for the US to lead in innovation decreases, and global markets continue to catch up.

(1) United States Programmatic Spend ($bn)



(2) United States Programmatic Spend Adoption (%)



Source: MAGNA 2019 Programmatic Forecast

United States: Rapid Mobile Gains

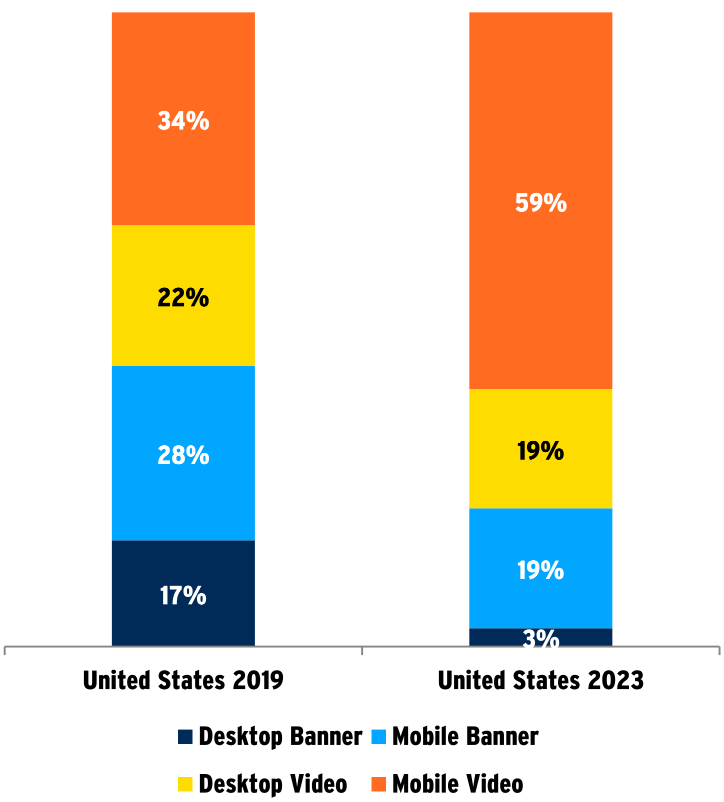
Mobile formats dominate the digital landscape, something that's just as true for programmatic spending as it is for overall digital budgets. In the United States, mobile banner and mobile video combine to represent more than 60% of total spending. By 2023, they will only have become even more dominant, and together mobile formats will represent nearly 80% of total dollars in programmatic budgets. While all markets are making the shift towards mobile and video and away from desktop banner display, the US will remain ahead of all but a few large markets in making this transition.

Furthermore, location is one of the most valuable pieces of consumer information to a brand, especially when the goal of programmatic advertising is not just to deliver the right ad, but to deliver the right ad in the right place at the right time.

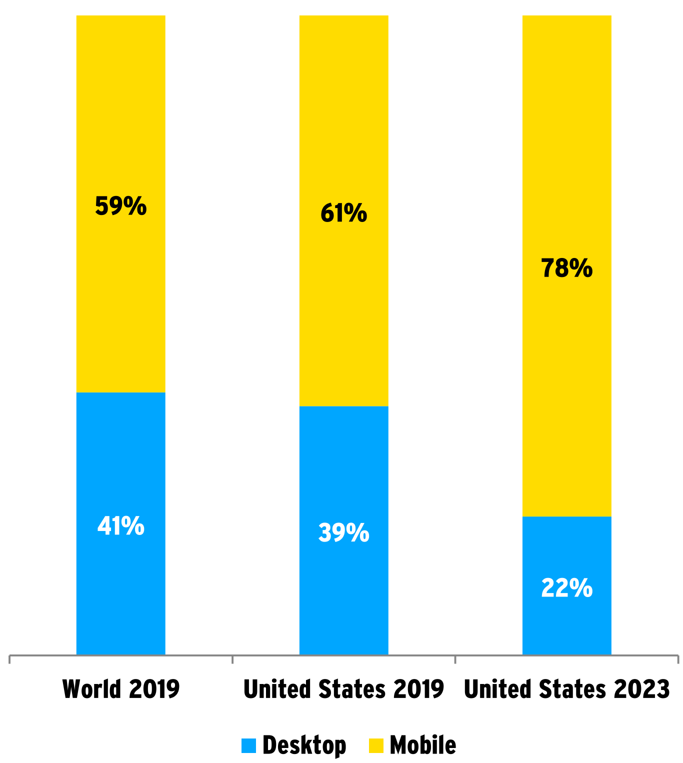
Because the programmatic ecosystem in the United States is so mature, brands have shifted their focus to cleaning up the programmatic environment, and ensuring they are not paying for extraneous tech middlemen. Whether embracing 1st price auction dynamics, ensuring proper supply path optimization, or combating fraud through new tech, programmatic brands and publishers in the US are squeezing the fees that tech middlemen can extract from programmatic campaigns.

In addition, because data access is still robust in the US, brands are taking the lessons they've learned through banner display and video campaigns, and applying those lessons to other aspects of their advertising businesses. This includes both other formats (television, audio, OOH), as well as leveraging data to improve creative. For more information, see the Spring Programmatic Report.

(1) United States Programmatic Spend by Format



(2) United States Programmatic Spend by Device



Source: MAGNA 2019 Programmatic Forecast

United States: Prog. By Industry & Brand

MAGNA has leveraged Pathmatics to gain more insight into programmatic activity in the US.

Programmatic advertising is now mainstream and mature, and most global brands are executing programmatic campaigns on some level. That being said, leveraging data through programmatic advertising becomes more valuable under certain circumstances. Namely, when there is a robust consumer data set, when the target audience is narrow, and when spillover has a relatively low value.

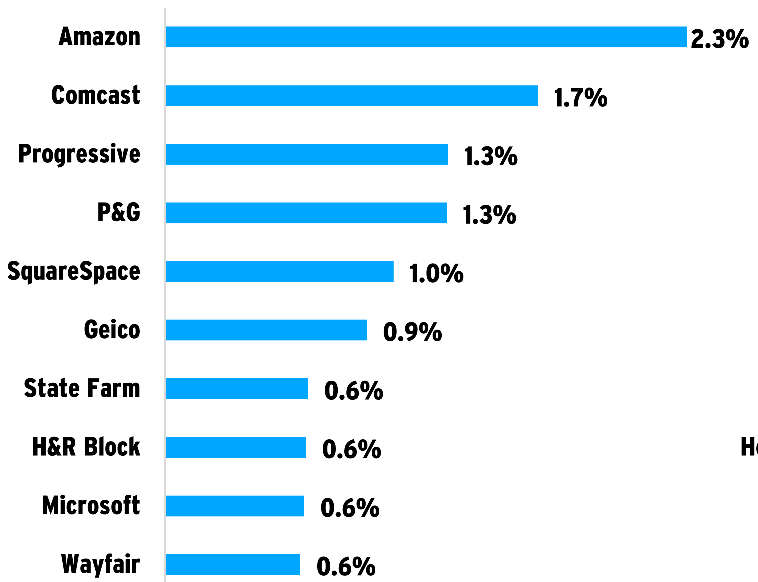
Across the entire advertising landscape, Amazon has vaulted into the conversation of top advertisers. They are the #2 global advertiser overall, and they are the #1 programmatic spending brand in almost every market in which they operate. Amazon's 2.3% share of the total programmatic spending landscape is extremely high, and compares to last year when they were the #6 programmatic advertiser with just a 1.0% spending share of the programmatic landscape.

Behind Amazon are other significant spending brands; programmatic advertising is no longer only a mainstay for brands with extremely narrow target audiences. Comcast, Progressive, and P&G are some of the largest advertisers across all media formats in the US (to go with the regular programmatic stalwarts – digital endemics and DTC companies).

By industry, the same trends are seen. Typically strong categories when considering overall budgets, such as retail and CPG, underperform when looking solely at programmatic spending. This is because they have a very broad target audience, and therefore the added expense of targeting specific users through programmatic campaigns is not worth the incremental efficiency.

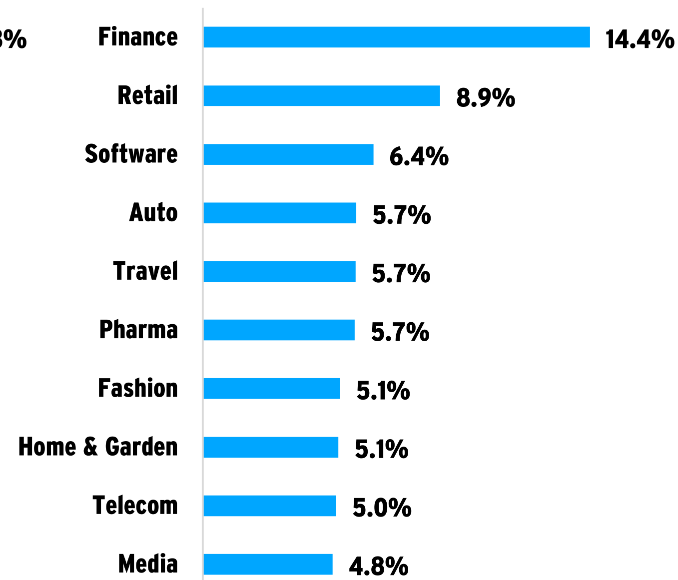
Finance and retail, industries with narrow target audiences (based on lifestyle characteristics or behavior), and robust data sets, are frequently the highest spending programmatic industries.

(1) US Top Programmatic Advertisers YTD 2019 (% Spend Share)



Top 10 = 11% of Total

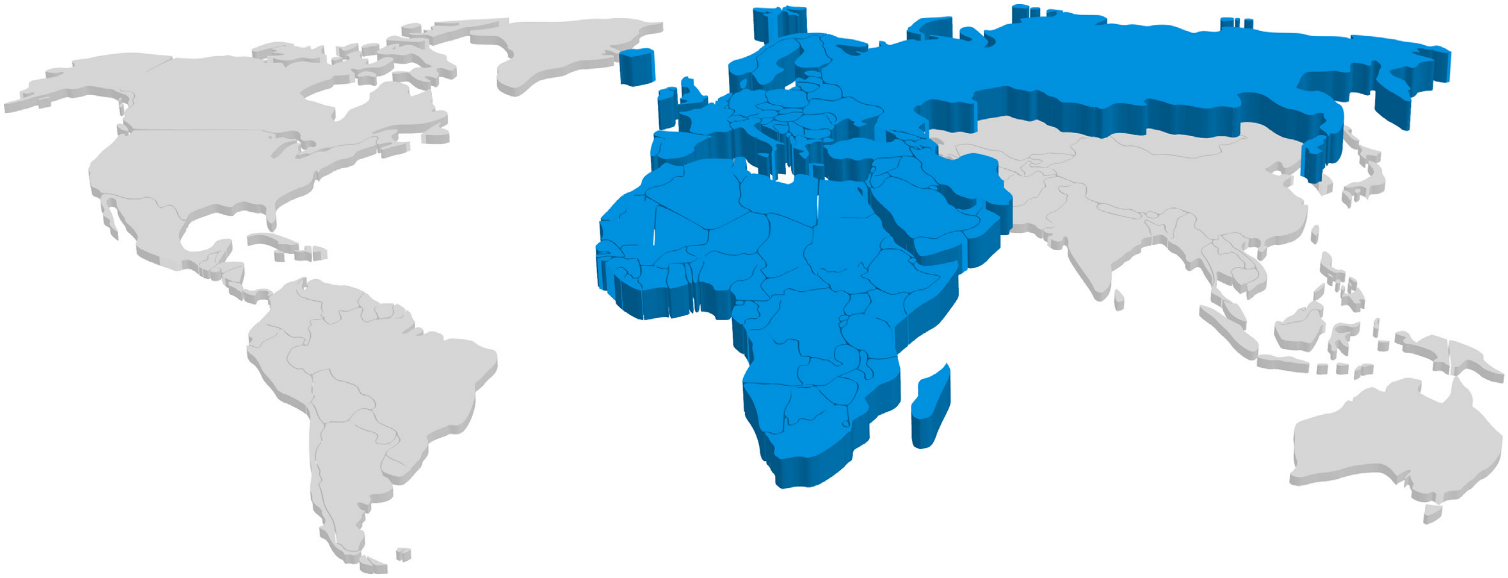
(2) US Top Programmatic Industries YTD 2019 (% Spend Share)



Top 10 = 67% of Total

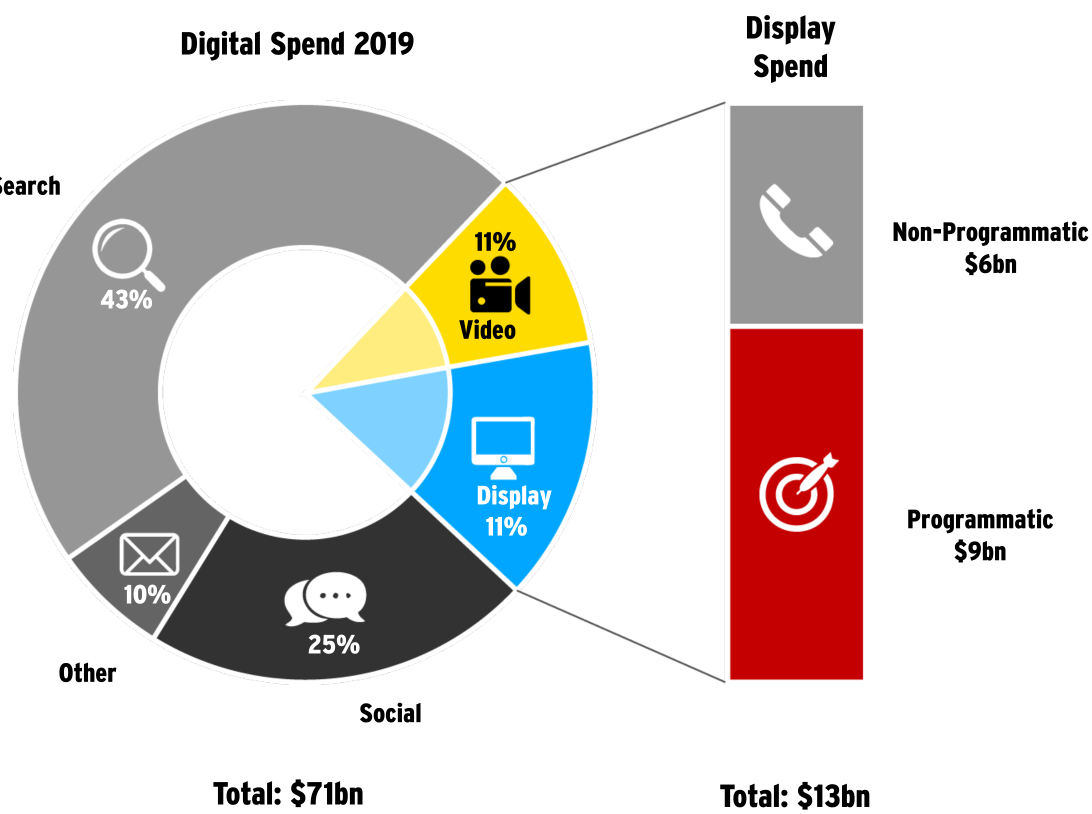
Source: Pathmatics, Inc. Advertising Intelligence Platform, September 2019

Europe, Middle East & Africa



The Europe, Middle East and Africa (EMEA) region is the third largest programmatic region behind North America and Asia Pacific. Total programmatic spend in 2019 is expected to be $9.0bn, representing 21% of global programmatic spend.

There is a huge variance in market development in EMEA, from the cutting edge markets such as the UK, the Netherlands, Sweden, and France, to the markets in the early stage of development such as Poland, Serbia, Portugal, and Romania.



Source: MAGNA 2019 Programmatic Forecast

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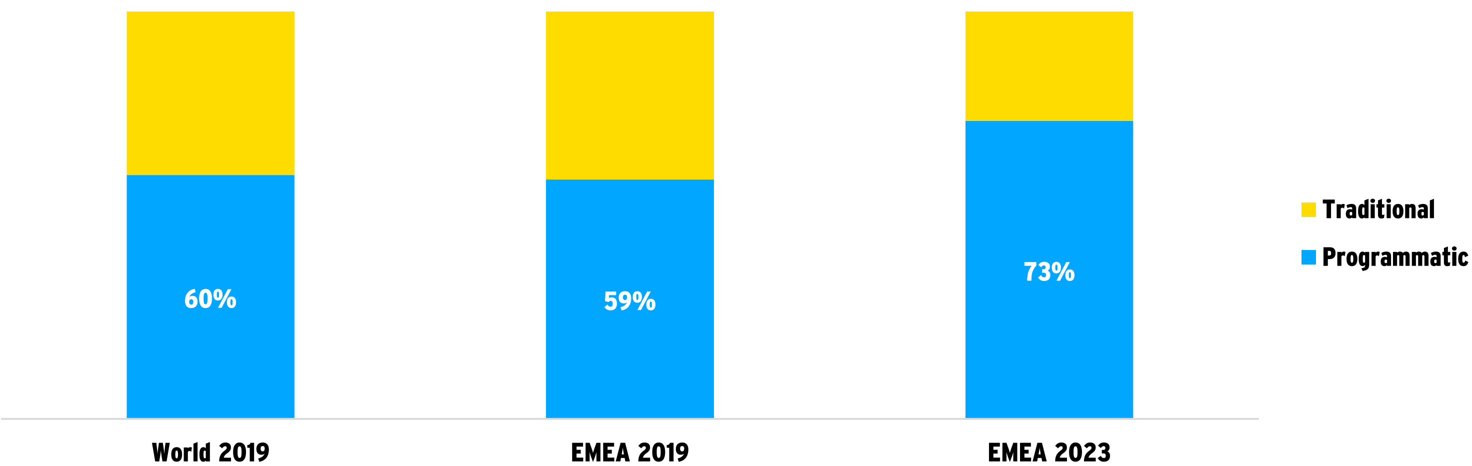
EMEA Programmatic Spend: 59% Adoption

Programmatic adoption in EMEA is very close to the global average. There are some extremely advanced markets, such as the United Kingdom, but those are offset by Eastern European markets that are lagging global programmatic development averages.

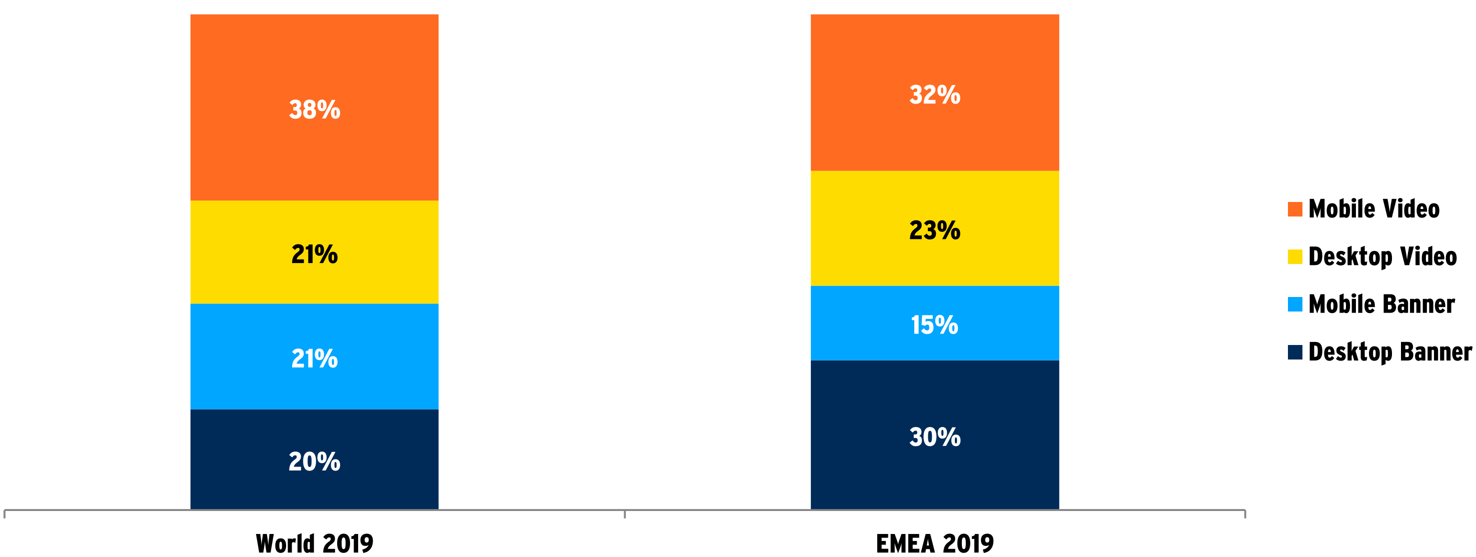
By format, EMEA programmatic spend is skewed significantly towards desktop banner display formats. This is less because of reduced programmatic sophistication around mobile technology, and more because EMEA has a relatively small mobile advertising ecosystem (programmatic and non-programmatic). Just 56% of total online spend in EMEA is coming from mobile devices, compared to 68% of spend globally in 2019. As a result, the programmatic spend split matches the lagging mobile ecosystem in EMEA.

While the European big five markets (UK, Germany, France, Italy, Spain) are explored in depth later, there are many diverse markets in EMEA. The northern European markets are especially strong, with both Sweden and the Netherlands in the top five in terms of overall programmatic adoption rates this year (and Denmark and Finland just outside).

(1) EMEA Programmatic Spend Adoption (%)



(2) EMEA Programmatic Spend by Format



Source: MAGNA 2019 Programmatic Forecast

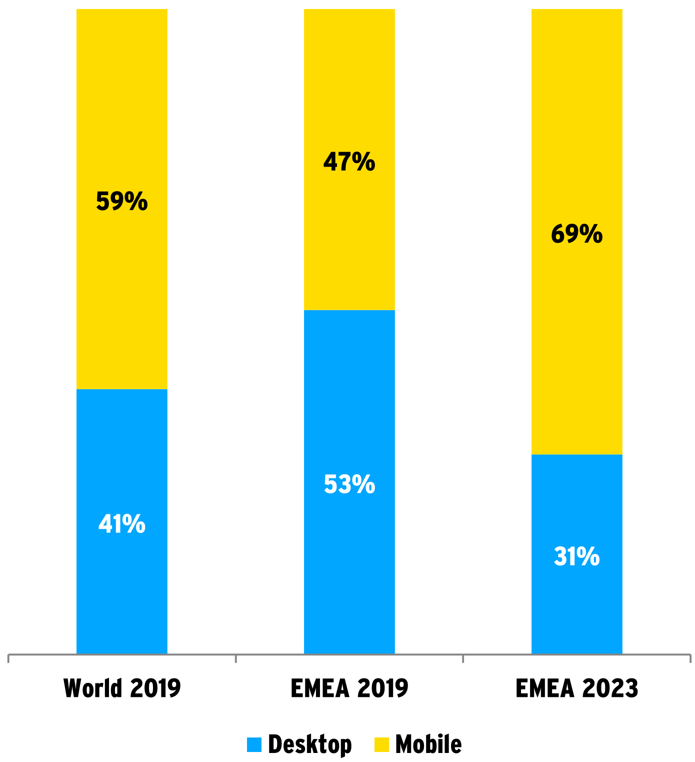
EMEA Spend Breakdown: $9bn Prog. Spend

The EMEA programmatic landscape is primarily dominated by a handful of large markets. The UK, Germany, France, Italy, and the Netherlands combine to represent three quarters of total programmatic spend in the region.

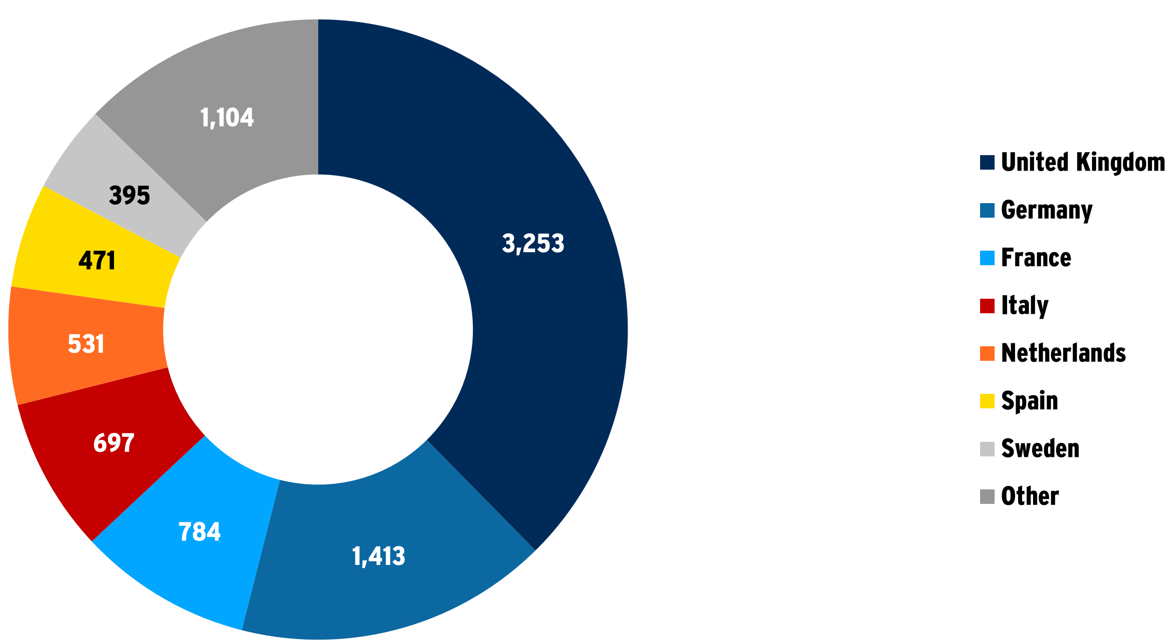
European markets in general are very highly developed, with the UK, Sweden, France, and Spain all in the global top ten in programmatic adoption rates. Because many European markets evolved before standardized programmatic approaches became global, however, they have individual quirks.

In addition, like other developed regions, programmatic technology is expanding beyond just digital ad formats in EMEA. Digital OOH is being sold programmatically in the Netherlands, for example. Of 60k+ OOH locations, nearly 6k are digital, and most of those are available programmatically.

(1) EMEA Programmatic Spend by Device



(2) EMEA Programmatic Spend by Country 2019 ($mm)



Source: MAGNA 2019 Programmatic Forecast

MAGNA

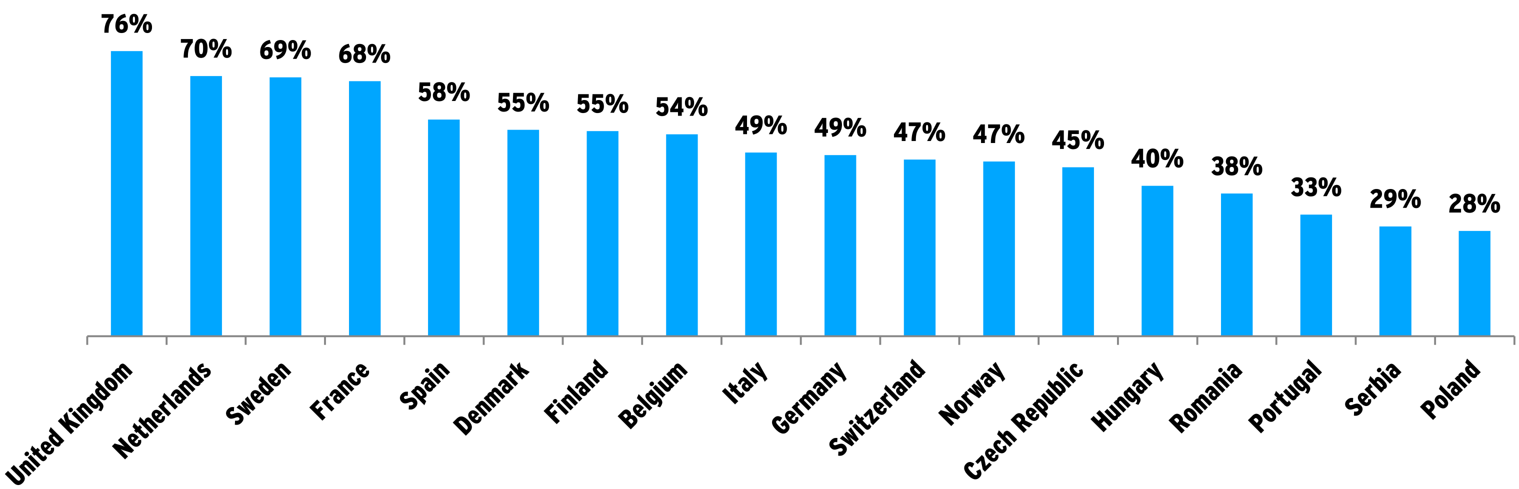
EMEA Adoption and Growth: UK Leads

Adoption by market in the EMEA region falls broadly into a Western & Northern Europe vs. Eastern Europe delineation in terms of development and growth trajectory. There are some exceptions, though, such as the Czech Republic and Hungary being more developed than Portugal. On the other end of the spectrum, Germany has a lower adoption than would be expected given the huge size and development of the digital advertising economy.

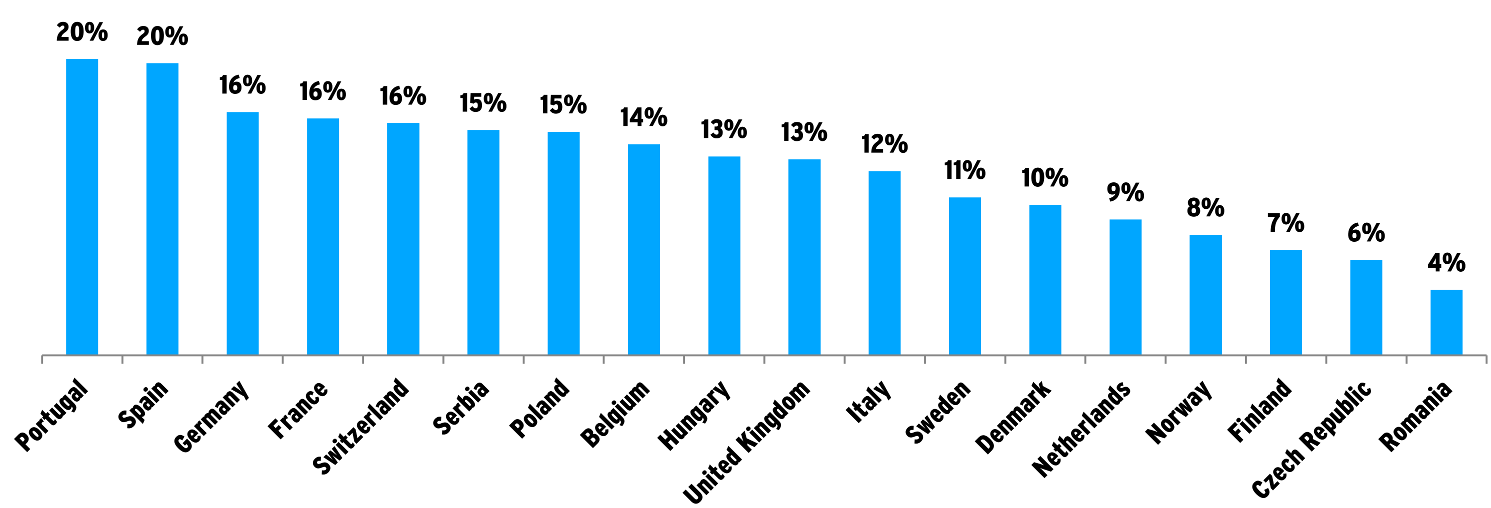
There are also some specific reasons for lagging shares. For instance, much of Portuguese programmatic spend is operated remotely through European hubs, and the lack of data available in Portugal is a limitation on growth.

The relationship between programmatic adoption and CAGR expectation is almost perfectly inverse, with smaller and less developed markets seeing much higher growth as they experience catch-up spend for the next few years of market development.

(1) EMEA Programmatic Adoption by Country 2019



(2) EMEA Programmatic CAGR 2018-2023 by Country



Source: MAGNA 2019 Programmatic Forecast

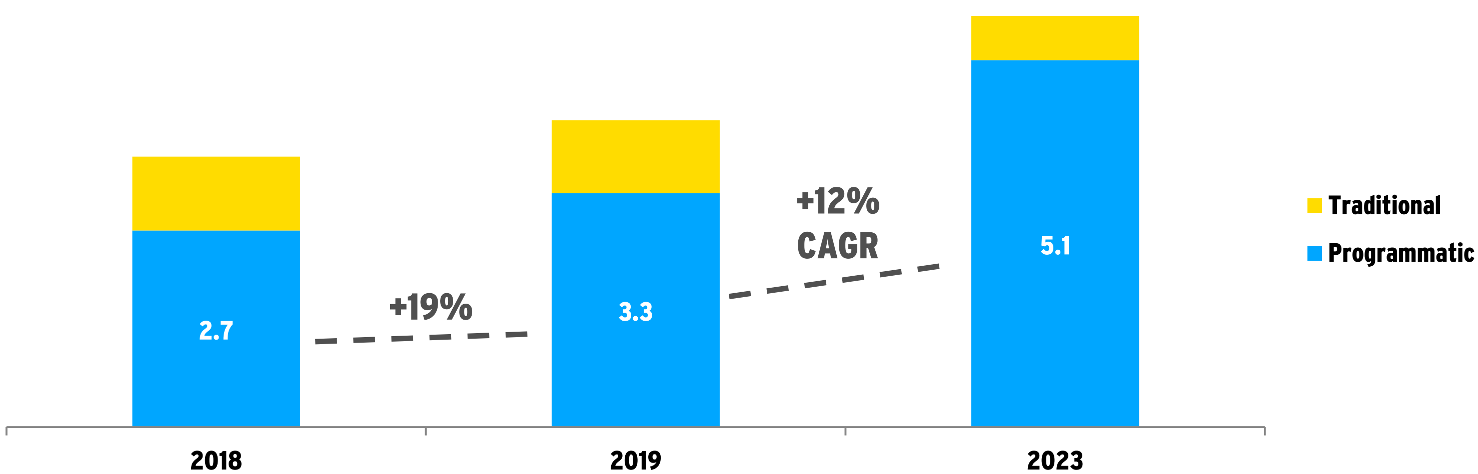
United Kingdom: Leading Adoption

The UK is the largest advertising market in the EMEA region, and the third most developed programmatic market in the world ($3.3 billion, or £2.4bn, in 2019). As a result, growth in the UK is expected to be a relatively paltry 19% this year (at least compared to less mature programmatic markets). This is because adoption is already an impressive 76%, growing to 89% of total banner display and video transactions by 2023.

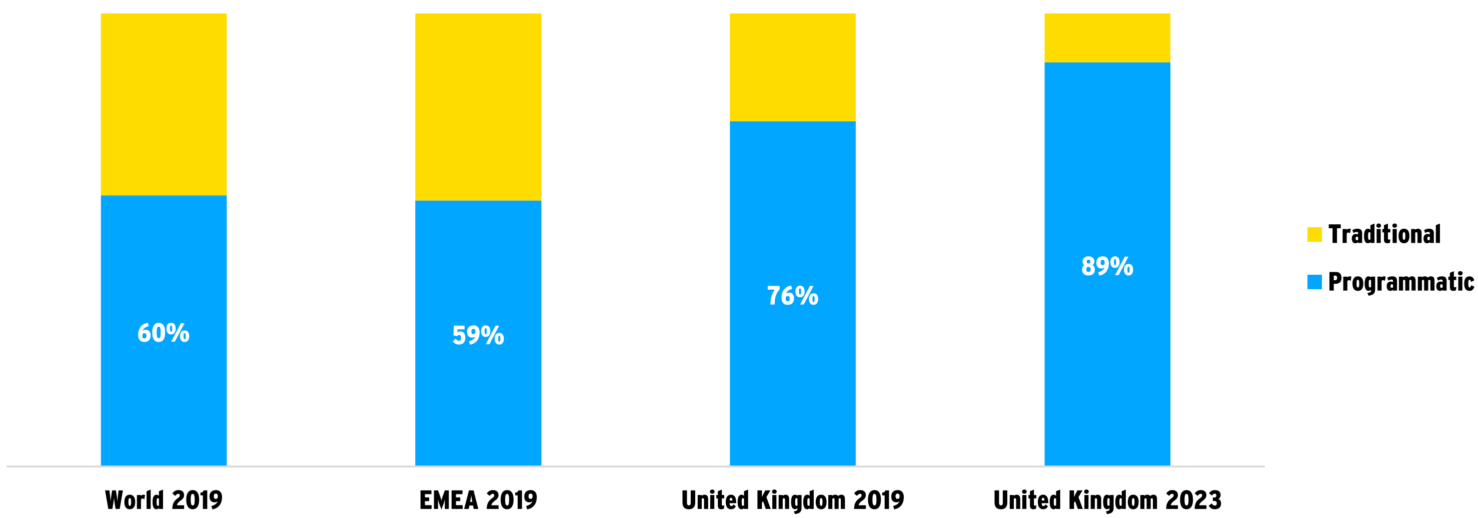
The UK displays the highest programmatic adoption globally, ahead of, Australia, the United States, and the Netherlands, for title of most mature programmatic market. Because of this level of development, the market is focused on many of the same things seen in the US, namely transparency, fraud, and squeezing fees.

Because the UK has been a mature programmatic market for a long time, UK publishers have significantly progressed in building digital business models and are well educated in programmatic methods. While the UK emerged as a buyer-dominated programmatic landscape, the supply vs. demand sophistication is now much more balanced.

(1) United Kingdom Programmatic Spend ($bn)



(2) United Kingdom Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

United Kingdom: Easy Data Access

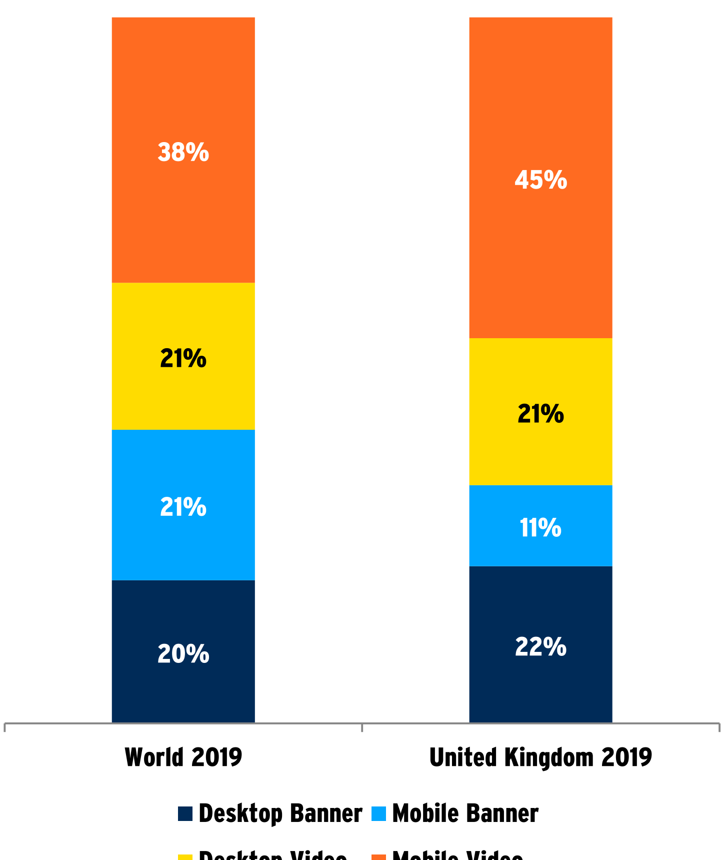
The UK is predisposed to being a highly developed programmatic market: digital is the largest media format overall and represents nearly 70% of total budgets across all formats. Furthermore, the close business relationship between the US and the UK makes for easy transitions across the Atlantic for ad tech players. In addition, there is more data availability and fewer restrictions compared to the rest of EMEA. While the focus on privacy is still greater in the UK than it is in the US, legislation is not as restrictive as that seen in the rest of Western Europe.

GDPR has been in effect in Europe for over a year, and while there has certainly been some impact in terms of difficulty in creating custom audiences, and difficulty in precision targeting, the programmatic ecosystem is closer to the pre-GDPR status quo than most expected before its implementation. MAGNA believes that the equilibrium state of privacy regulation is that even if some regulations only apply to certain regions or jurisdictions, publishers will voluntarily enforce similar global standards for safety and convenience.

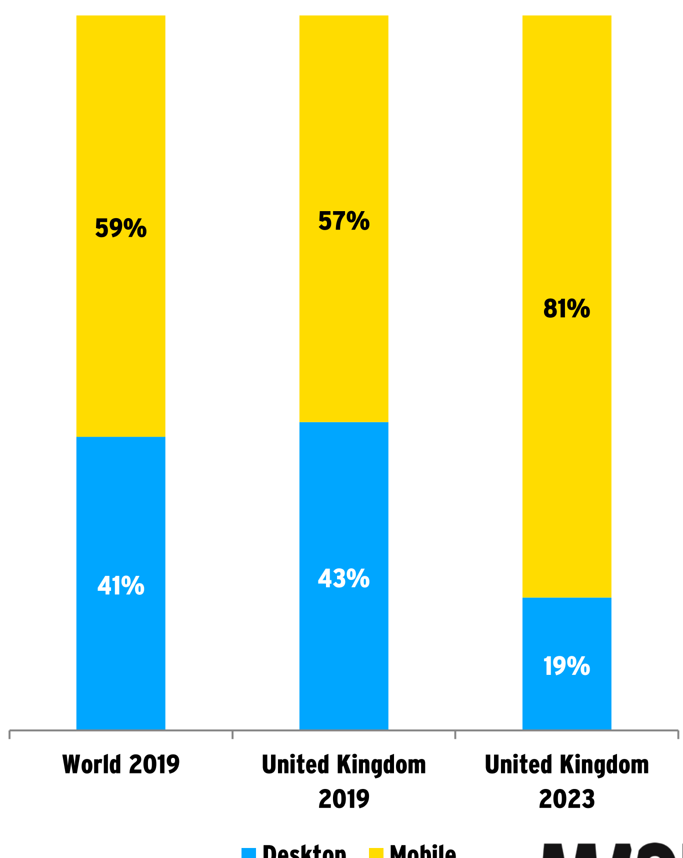
Despite the minimal impact of GDPR in the UK, it's likely that there will be some shift towards search and social advertising growth over banner display and video programmatic. That shift is baked into our programmatic estimates in the long term (assuming no further regulations).

The UK is also seeing some development in the digital audio space, with DAX, a programmatic digital audio platform incorporating inventory from SoundCloud, ITV, Sky, and TuneIn. It also has audiences available in the US and Canada.

(1) United Kingdom Programmatic Spend by Format



(2) United Kingdom Programmatic Spend by Device



Source: MAGNA 2019 Programmatic Forecast

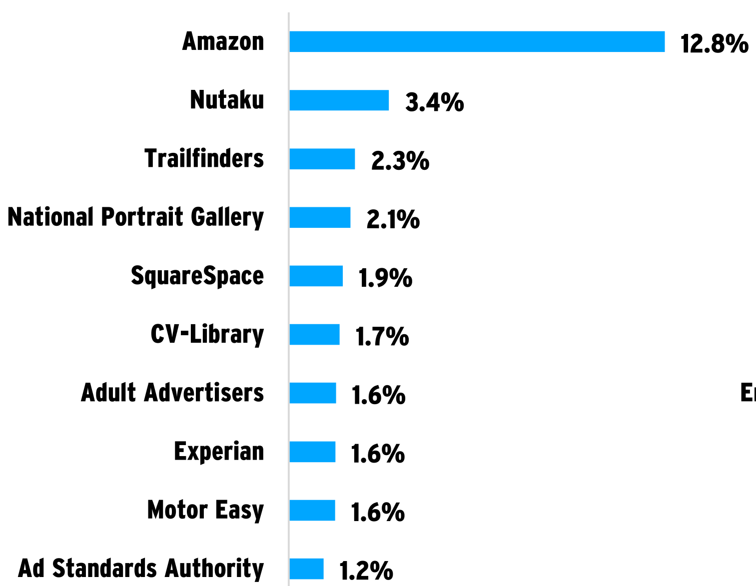
United Kingdom: Amazon In the Lead

The UK top advertiser breakdown is more heavily weighted towards specialty or digital brands leveraging programmatic advertising in a disproportionate way as a share of total budgets. The exception is the far and away market leader: Amazon. Like most global markets, Amazon has ramped up spending significantly, and represents more than 10% of total programmatic spending across the UK.

Outside of the juggernaut at the top, the UK's top spending programmatic brands are digital companies with very selective audiences and robust data sets, like Nutaku (gaming), Trailfinders (travel), or CV-Library (job listings). The top advertisers in the UK suggest a market that has embraced programmatic advertising with a tremendous depth and not necessarily tremendous breadth.
By industry, there are also some key differences compared to the US. Retail has always been a strong spending programmatic industry, but Amazon's tremendous rise has vaulted it to the #1 spot with nearly 20% of total programmatic spending (or which more than half if Amazon alone). Following retail are gaming, travel, and finance – industries with large quantities of data and narrow audiences.

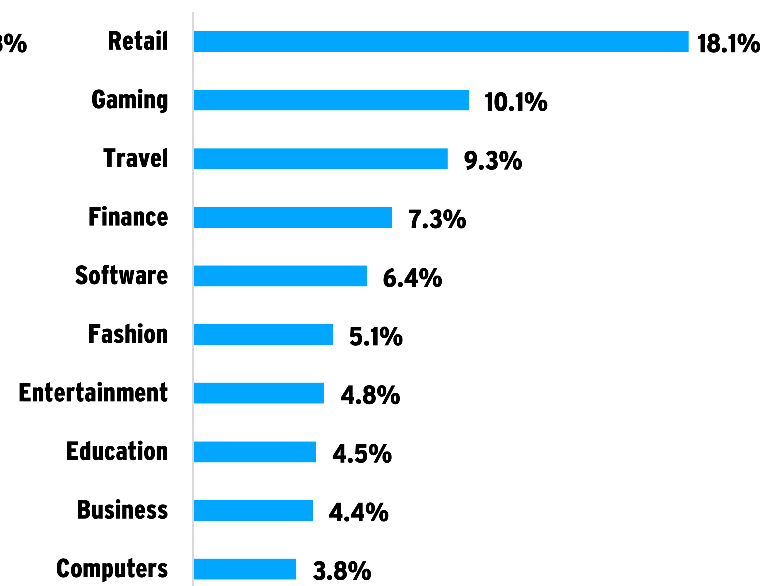
It is interesting that despite the UK's significant adoption of programmatic and overall spending share, the top 10 advertisers remain concentrated compared to a comparably mature market like the US. Furthermore, because of the lineup of ad tech companies that is substantially the same as in the US, brands have plenty of access to programmatic technologies. It's likely that in the coming year more advertisers will engage with programmatic campaigns, and the share of top 10 brands will represent a lower percent of total programmatic spending. In addition, the lineup of top advertisers will shift from being very digital and DTC company focused, to looking more like the overall top spenders in the UK.

(1) UK Top Programmatic Advertisers YTD 2019 (% Spend Share)



Top 10 = 30% of Total

(2) UK Top Programmatic Industries YTD 2019 (% Spend Share)



Top 10 = 74% of Total

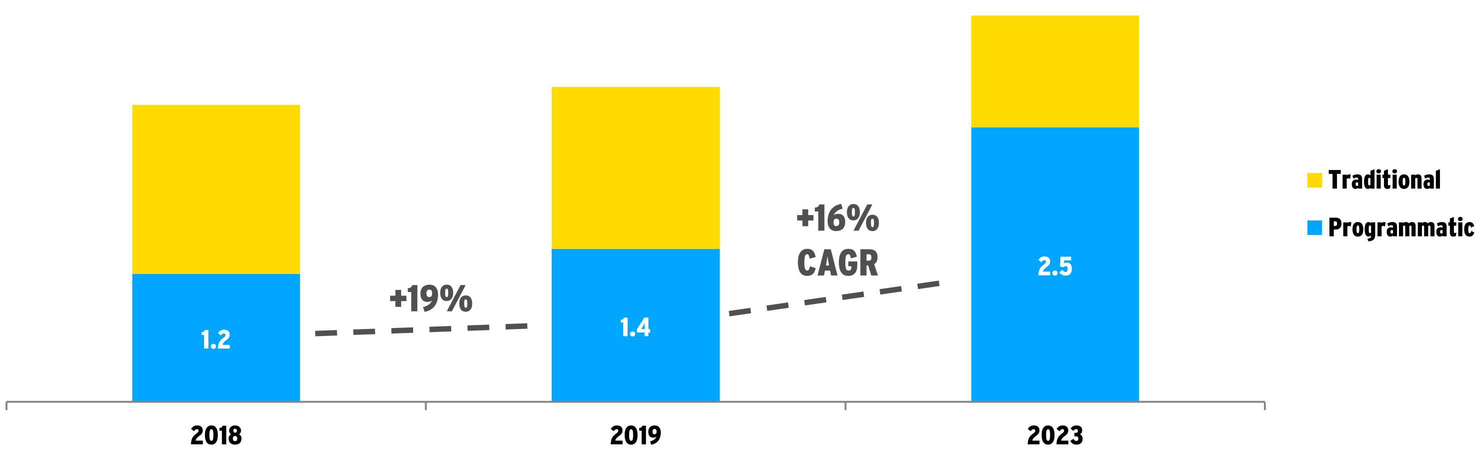
Source: Pathmatics, Inc. Advertising Intelligence Platform, September 2019

Germany: Lagging Behind ... For Now

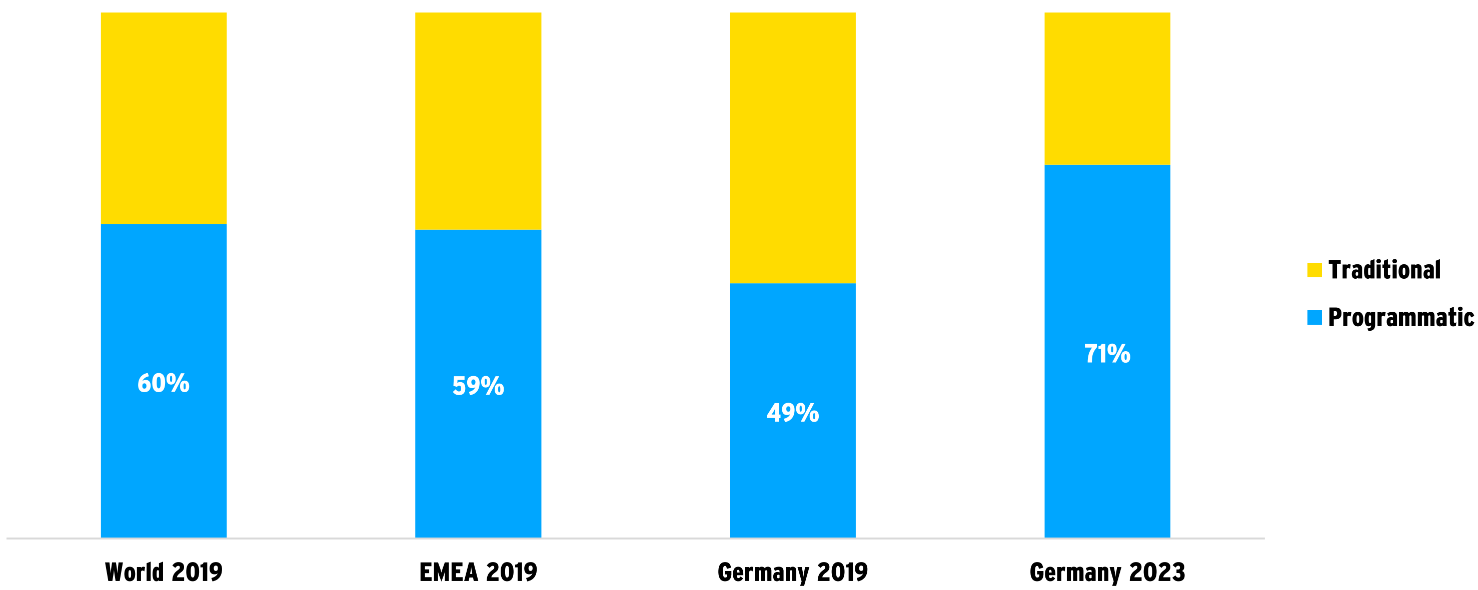
Germany is one of the largest programmatic markets in the EMEA region ($1.4bn, or €1.2bn). Considering the advertising economy overall rivals that of the UK for size, it is relatively undeveloped programmatically. This is due not only to the share of total budgets going to digital formats being quite a bit lower than those of brands in the UK (44% of total budgets in 2018 go to digital advertising formats in Germany compared to nearly 70% in the UK), and also because of the lagging rate of programmatic adoption.

Despite this current underdevelopment (adoption of programmatic is just a 49% share of total banner display and video in 2018 compared to the global average of 60%), the sheer scale and sophistication of the German digital market suggests it will see catch-up in programmatic spend. By 2023, MAGNA expects German programmatic adoption to surpass 71%.

(1) Germany Programmatic Spend ($bn)



(2) Germany Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

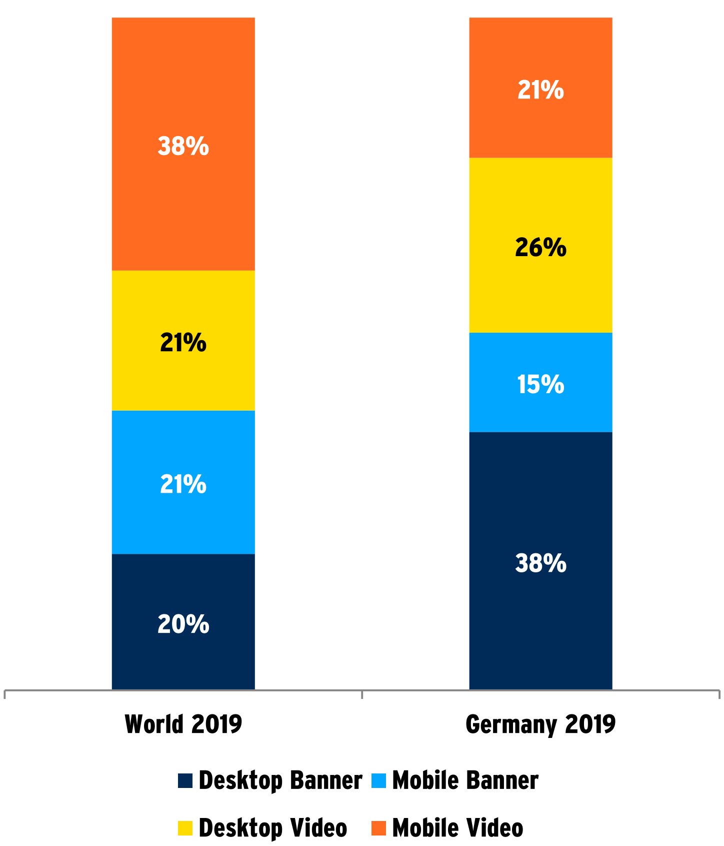
Germany: Desktop Heavy, but Mobile Growing

Hints of the growth potential of the German market are seen in the sophistication of programmatic offerings available in Germany, especially relative to the development of the overall market. Private exchange solutions have existed in Germany for some time. In addition, while SevenOneMedia and IP Deutschland have been reluctant to offer significant inventory programmatically in the past, the early stages of publisher cooperatives (similar to the French model) have been seen in Germany (Emetriq data-sharing cooperative, AdAudience, d-force – discussed later, etc.). These signs all point to a market that is finally moving towards programmatic acceptance, and MAGNA expects stronger growth to follow.

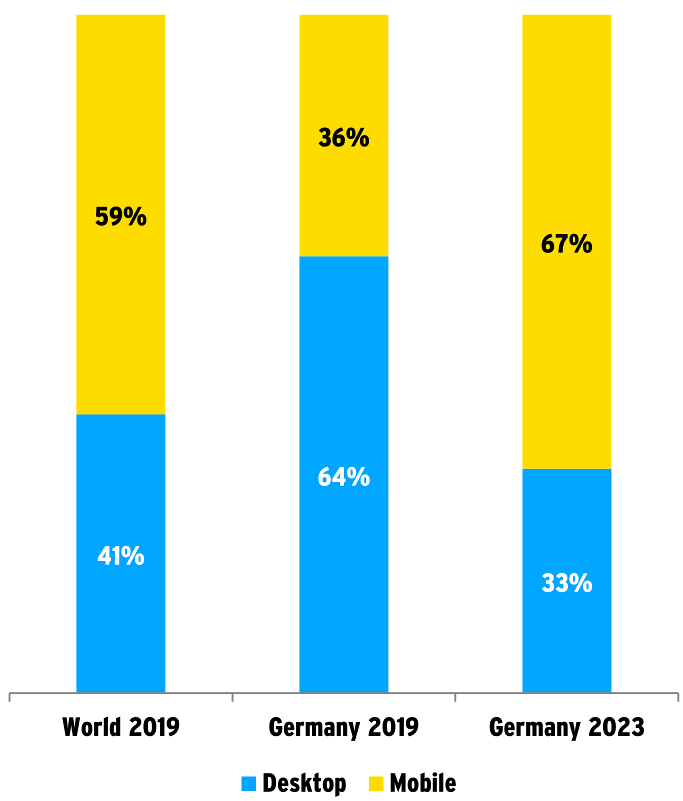
There are several reasons why adoption has been so low to this point. German media players, especially on the publishing side, prefer to wait rather than participate in the experimentation phase of programmatic development. Despite large digital budgets in Germany, not much experimentation has occurred. New tech products need to be refined before they can be widely implemented in the German markets. In addition, the German population is wary of targeted advertising. Together, these influences have maintained the status quo longer than it has held up elsewhere.

Furthermore, like many European countries, GDPR depressed growth slightly on a temporary basis in Germany, but the incremental long term impact is low. Many data providers had to refresh their cookie pool and replace the previous database with regulation-compliant data.

(1) Germany Programmatic Spend by Format



(2) Germany Programmatic Spend by Device



Source: MAGNA 2019 Programmatic Forecast

Germany: Deutsche Telekom Still Leads

MAGNA has leveraged Pathmatics to gain more insight into programmatic activity in Germany.

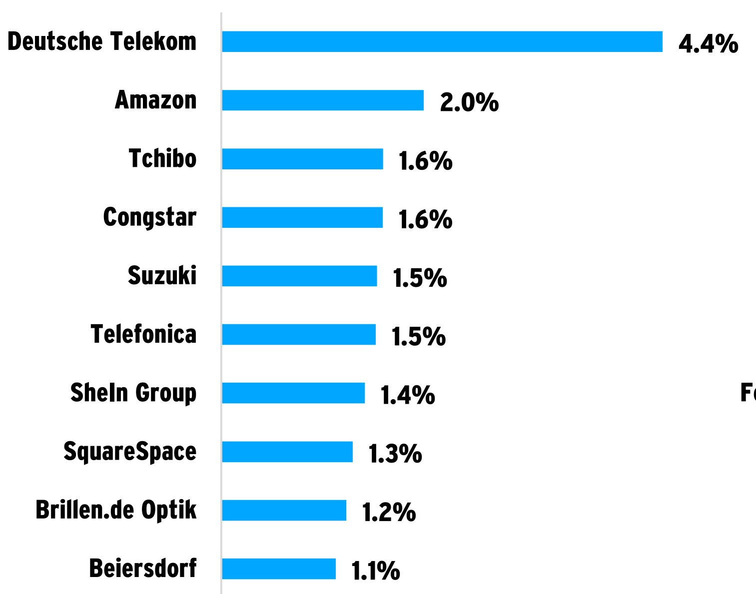
Germany is lagging a little relative to some European peers in terms of programmatic adoption. For this reason, it is still possible for some smaller advertisers to break into the top programmatic spending list. There are certainly large advertisers that dominate the German advertising economy such as Deutsche Telekom (and new programmatic king Amazon). There are also smaller more focused brands such as Tchibo (eCommerce). Many of the largest programmatic brands are not just focusing on programmatic advertising for their campaign budgets. Rather, they are completely endemic to the digital environment.

By industry, Germany is led by Telecom (because of Deutsche Telekom's massive 4.4% share of total programmatic spending), but also mainstays like Finance and Retail.

Automotive is also typically a category that is aggressive at engaging with efficiency-increasing tools in its advertising campaigns. This is because automotive brands have a very high ticket price product, a huge amount of data not just about consumer activity but also about sales, and a significant advertising budget per unit sold. This opens up a number of options that might not be available to brands with limited ability to spend on any individual sale.

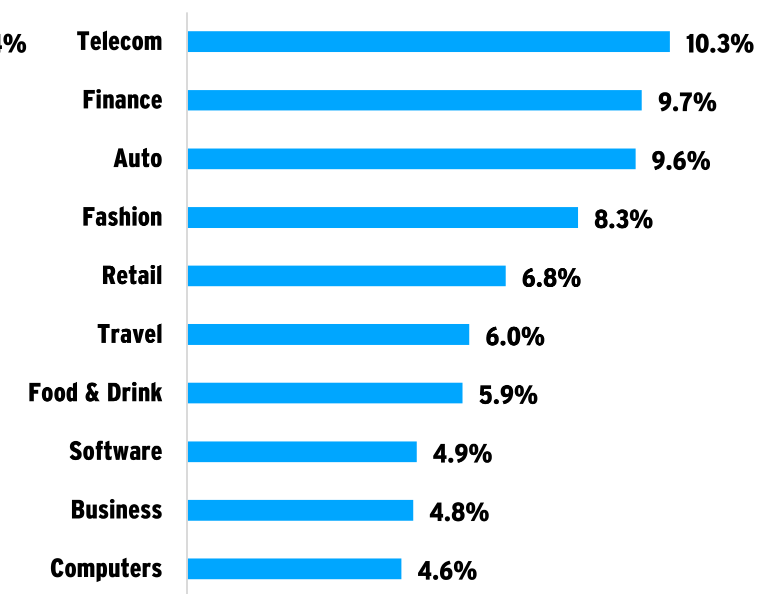
Future growth for big brands can happen when large private marketplaces come online. For example, SevenOne Media and IP Deutschland are joining forces to sell addressable TV and online video via their joint venture: d-force. For a market that is hesitant to delve into audience targeting, these are valuable first steps for the next wave of programmatic technology in Germany.

(1) German Top Programmatic Advertisers YTD 2019 (% Spend Share)



Top 10 = 18% of Total

(2) German Top Programmatic Industries YTD 2019 (% Spend Share)



Top 10 = 71% of Total

Source: Pathmatics, Inc. Advertising Intelligence Platform, September 2019

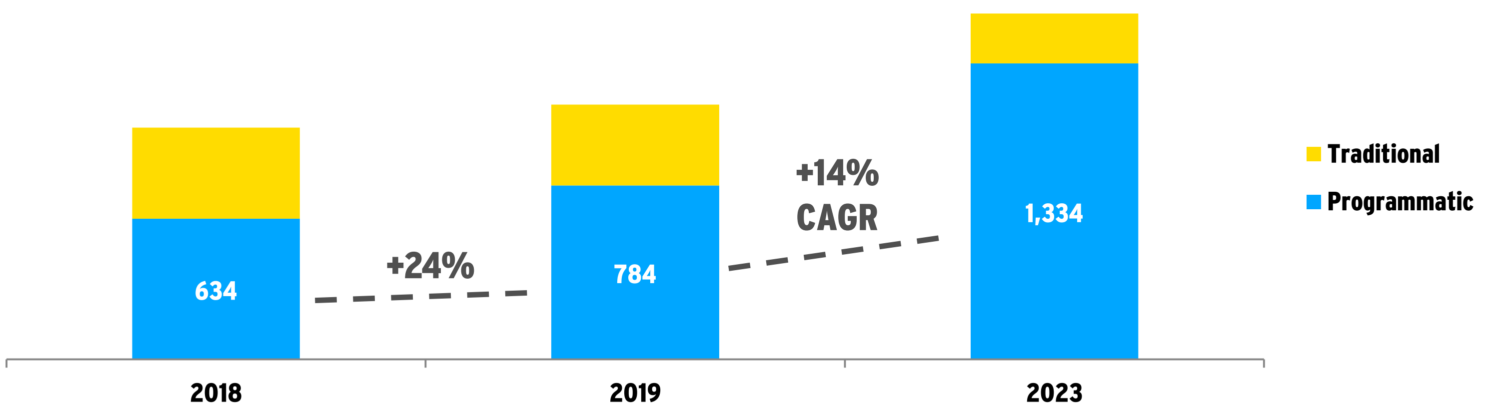
France: Privacy Conscious

The French programmatic market will reach just under $800 million in 2018 (€664mm), up 24% y/y. Outside of the US, France is one of the largest markets for programmatic experimentation. French publishers were far ahead of the global curve in adopting programmatic sales methods, and established multiple publisher cooperatives (detailed extensively in previous MAGNA Programmatic Intelligence Reports). This is part of the reason why French programmatic adoption is ahead of the EMEA, and global, average.

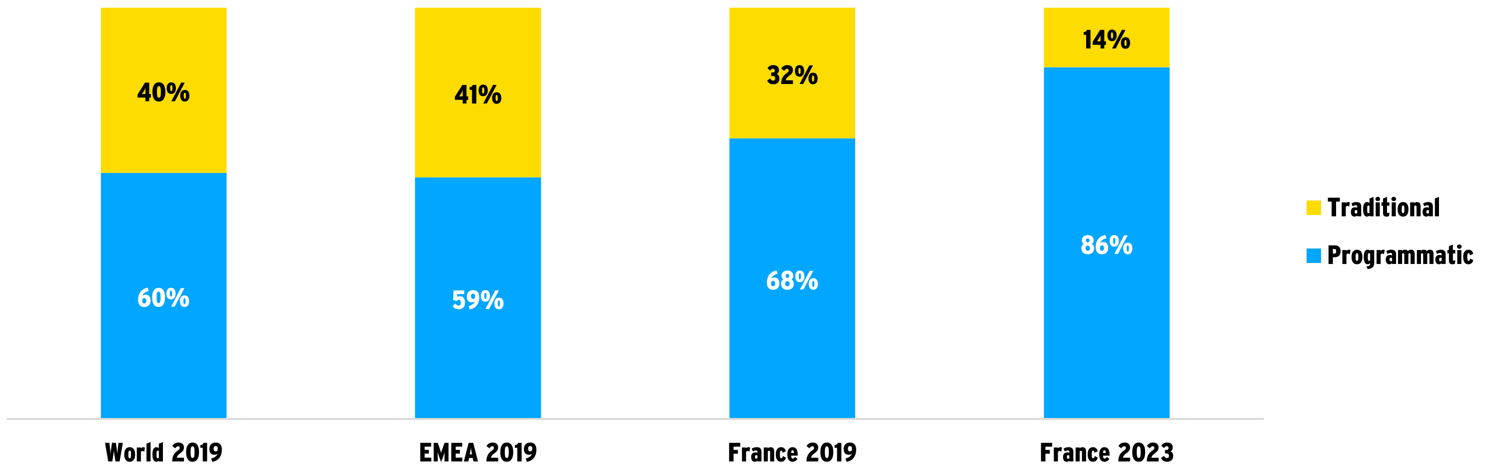
Early in programmatic development of a market, publisher willingness to make inventory available is a big stumbling block towards programmatic growth. France did not experience those headwinds. As a result, adoption will grow from an above average 68%, to 86% of total banners and video spend by 2023.

The French programmatic market is also quite privacy sensitive, however, and after GDPR the data pool available for campaigns is smaller. In addition, some brands are shifting budgets to keyword or contextual targeting, rather than remaining on the cutting edge of what's possible to do with the data on hand. This is reflective of MAGNA's expectation that keyword will continue to be one of the most valuable pieces of data going forward (which disadvantages static banners and video).

(1) France Programmatic Spend ($mm)



(2) France Programmatic Spend Adoption



Appendix LATAM APAC EMEA N. America Global Definition Key Findings

Source: MAGNA 2019 Programmatic Forecast

MAGNA

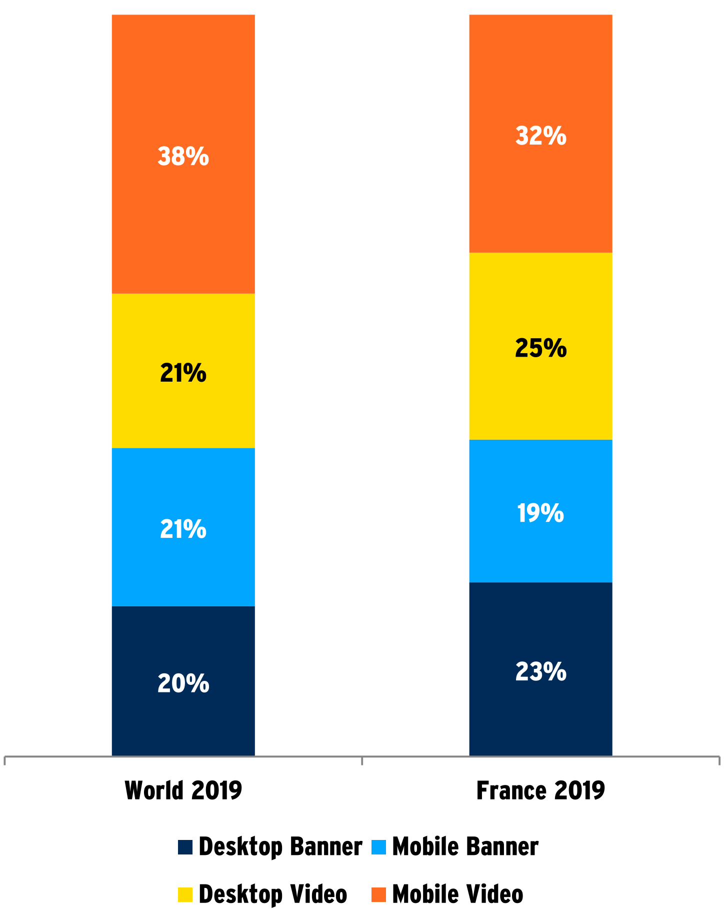
France: Publishers Embrace Programmatic

France's programmatic spend split by format and device diverges significantly from the global average. Desktop video makes up a much larger share of the total than it does globally. Video is expected to expand significantly, and by 2023 programmatic video will represent just over 80% of the total programmatic pie in France (the highest total globally). Banners, both on the desktop and mobile side, will grow more slowly or even shrink as not only are they less impactful for most brands, but also much of the inventory will be cannibalized by the expansion of video.

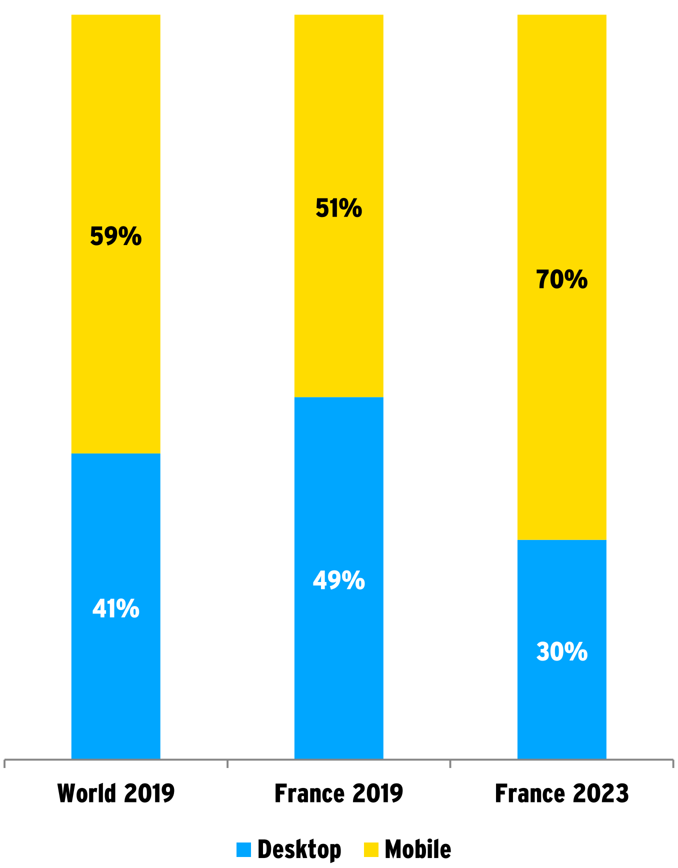
Because publishers are so willing to make inventory available to programmatic platforms, the inventory available to brands is higher both in quality and quantity than in much of Europe. Media Square, the combination of La Place Media and Audience Square, remains one of the biggest sources of programmatic inventory.

In France, brands have the capability to dedicate brand advertising dollars to programmatic campaigns as they can transact higher up on the inventory value pyramid. Finally, the tradeoff for French publishers in moving to programmatic methods was to disproportionately limit themselves to private exchanges. Auction-based private exchanges abound, but open exchange programmatic makes up a small share of the total programmatic pie in France. Because of this focus on privacy, DSPs are also a lot more strict about data and audience segments. It is more difficult than pre-GDPR to create custom audiences, and to target thin slices of the total population.

(1) France Programmatic Spend by Format



(2) France Programmatic Spend by Device



Appendix
LATAM
APAC
EMEA
N. America
Global
Definition
Key Findings

Source: MAGNA 2019 Programmatic Forecast

MAGNA

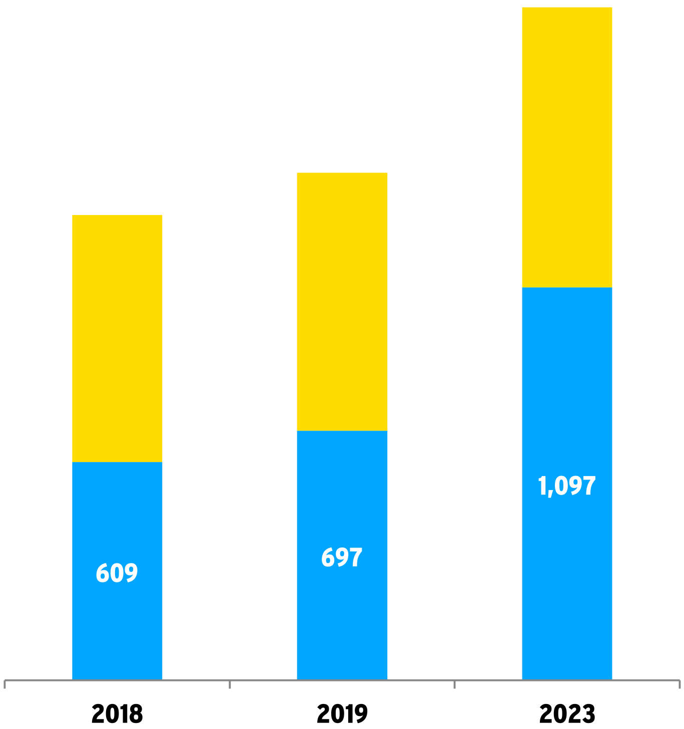
Italy: Inventory Coming Online

The Italian programmatic market is the fourth largest programmatic market in the EMEA region, behind the UK, Germany, and France. Italy's $697mm (€591mm) of programmatic spend in 2019 represents 14% growth y/y. The size of the Italian programmatic advertising market is large relative to some of the other big European markets because of the relative focus on banners and video formats in Italy. Banners and video represent 36% of the total digital advertising economy in Italy, compared to 18% in France, 21% in the UK, and 24% in Germany.

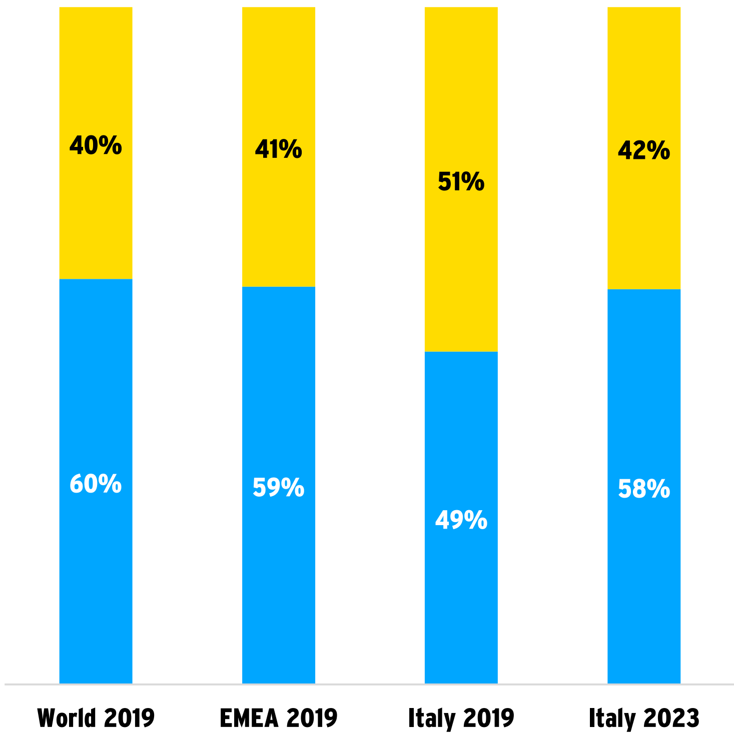
Italian brands and publishers are very focused on safety and transparency. Italian publishers operate primarily in private marketplaces and through invitation-only auctions. Brands are very focused on transparency in regard to media, data, platforms and fees. In addition, the conservative approach to the programmatic space has resulted in a focus on viewability and in-target audience metrics relative to the rest of Europe. Many campaigns include ComScore VCE, Nielsen OCR, Integral AdScience or comparable third party measurement service.

Italy has also experienced many of the same programmatic developments seen in the US over the past year. This includes 1st price auction mechanics, with AppNexus leading the charge, and Google eventually capitulating. In addition, like many markets, post-GDPR many data providers had to rebuild their audiences from verified data after deleting non-compliant cookie pools. Finally, the Italian market is seeing some inroads in programmatic audio, but programmatic transactions in the OOH space are still a long way from being mainstream.

(1) Italy Programmatic Spend ($mm)



(2) Italy Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

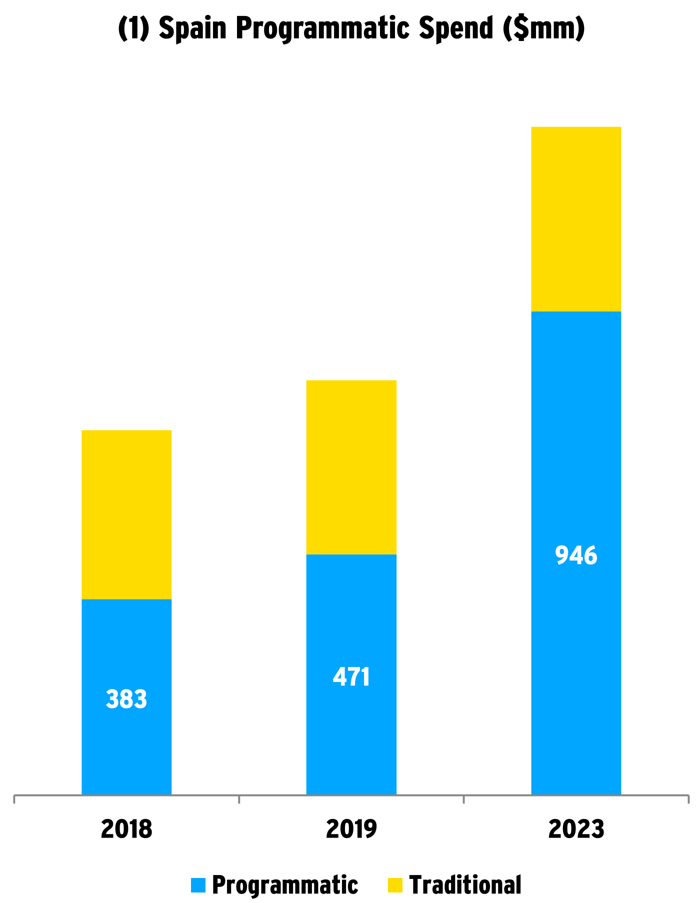
Spain: Beyond Experimentation

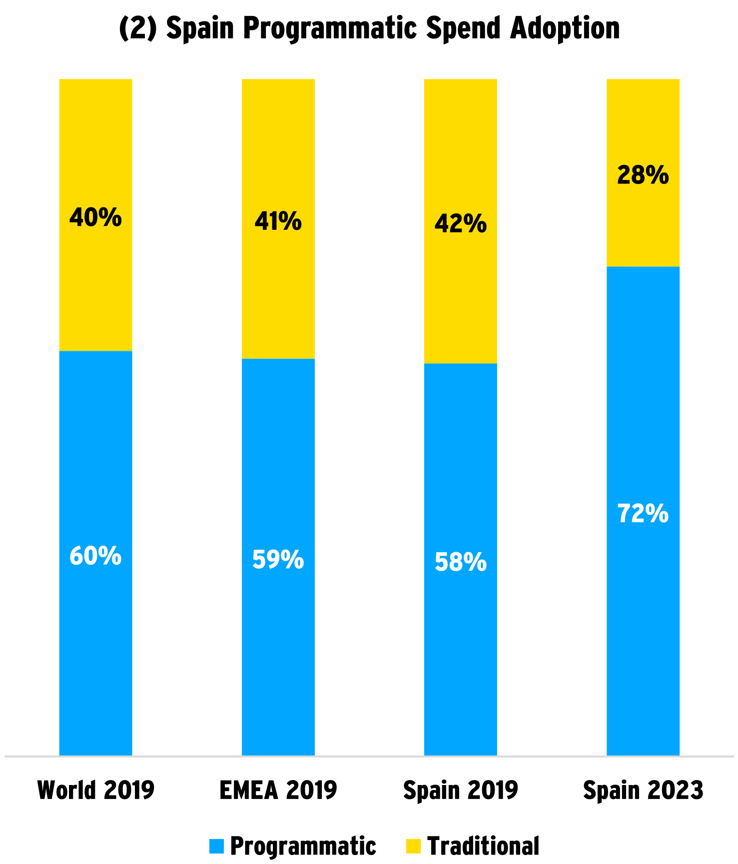
Spain's programmatic market will reach $471million (€399mm) in 2019, up by 23% from 2018's programmatic total. While Spain's digital market is much smaller than the rest of the European big 5 markets and ad spend per capita lags that of much of Western Europe, programmatic adoption is similar to that of the rest of EMEA and the global average, surpassing half of banner display and video dollars.

While privacy regulations in Spain, like much of Europe, mean that there is some difficulty accessing a huge amount of identification and targeting data, the programmatic market has still seen strong growth. Adoption is expected to continue to grow, and will reach 72% of total banners and video spend by 2023.

Spain's programmatic video ecosystem lags with the exception of YouTube, which has an extremely robust market share. Buying TrueView inventory via AdWords or a similar auction based platform is appealing to brands because they're paying only for completed views, and it's also streamlined for global brands operating in multiple European markets.

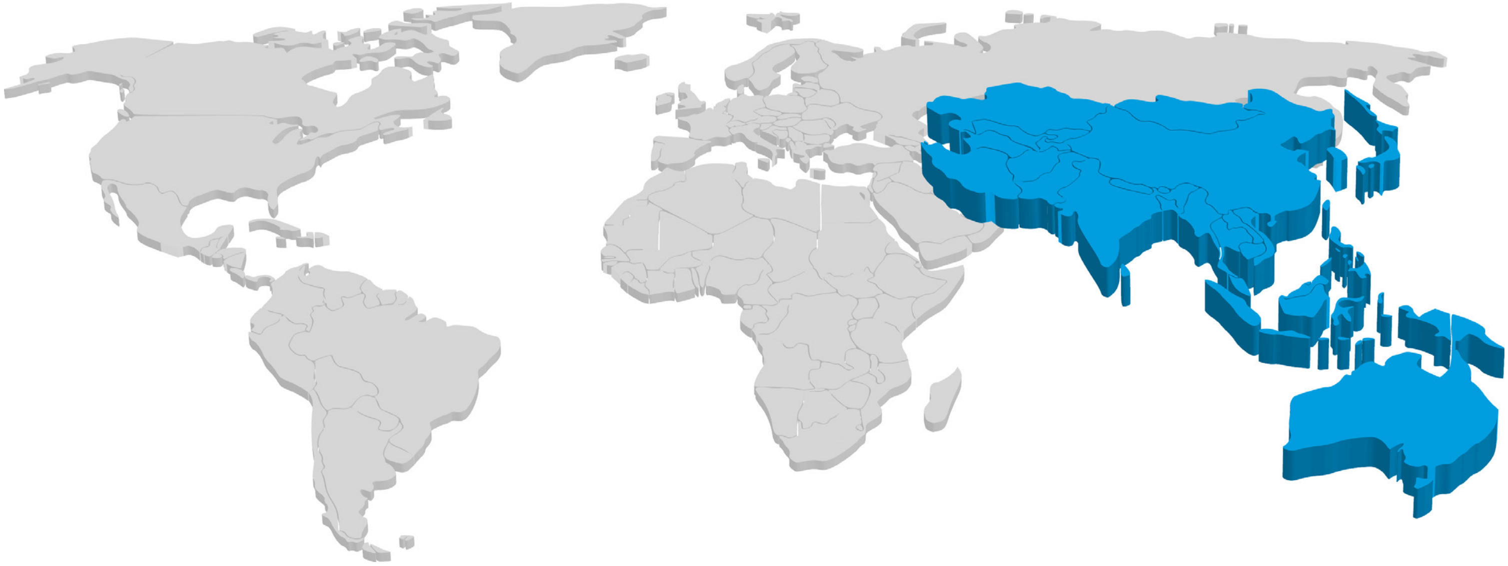
By device, Spain's programmatic market is currently 43% mobile, significantly below the global total of 59%. The relative underdevelopment of mobile advertising in programmatic spend can be seen in the strong share of desktop banner display, even now when the format overall is in decline in most mature advertising economies.





Source: MAGNA 2019 Programmatic Forecast

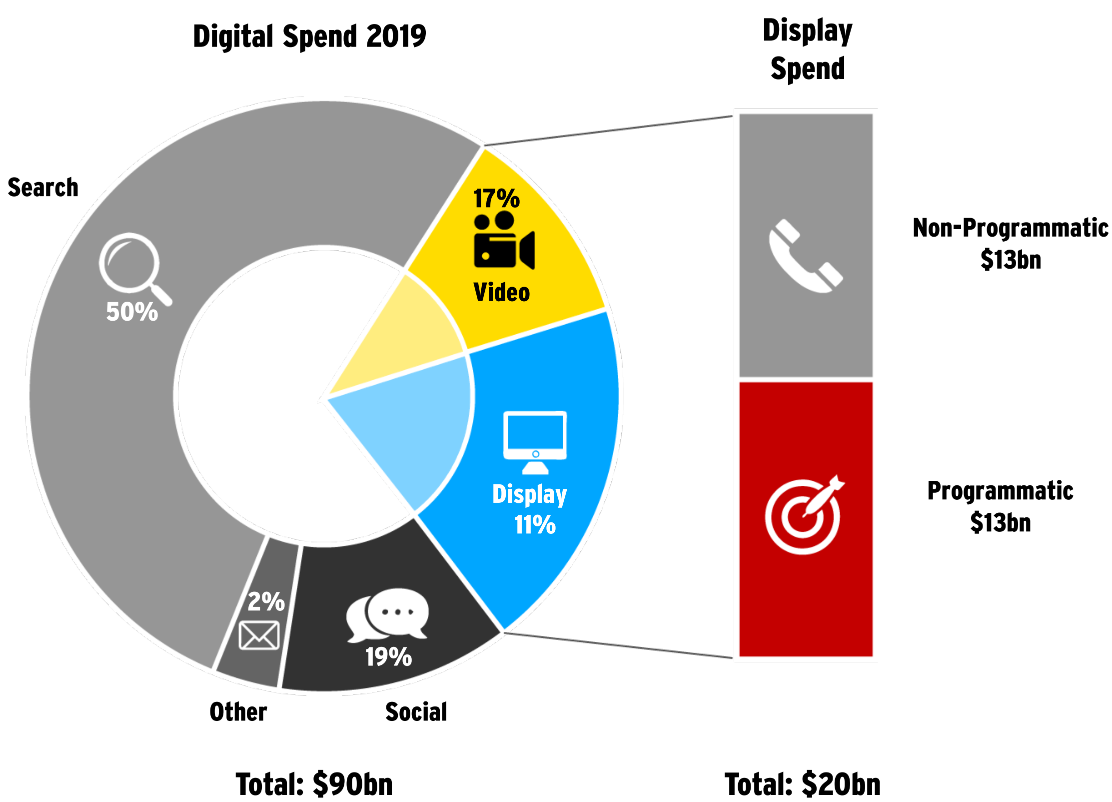
Asia Pacific



Asia Pacific is the second largest programmatic region, representing 29% of global programmatic spend ($13 billion). APAC is the second largest programmatic region, and due to the strong growth of China and Japan, the second and fourth largest global programmatic markets, it will maintain that position.

APAC is very diverse, and includes some of the largest and also smallest programmatic countries, as well as some of the most and least developed programmatic markets.

APAC has many factors that indicate strong growth potential, but also significant limitations, such as a fragmented ad tech landscape, issues with data access, and tendencies towards difficult-to-scale non-RTB transactions.



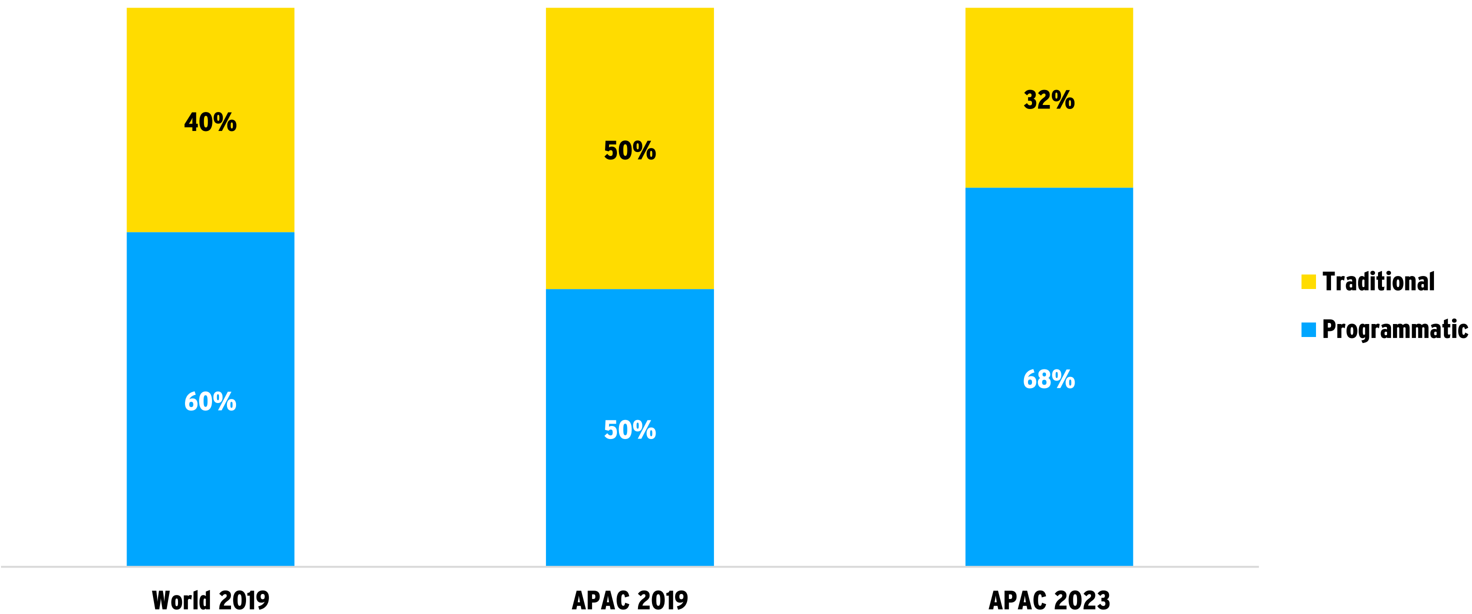
Source: MAGNA 2019 Programmatic Forecast

Asia Pacific Programmatic Spend

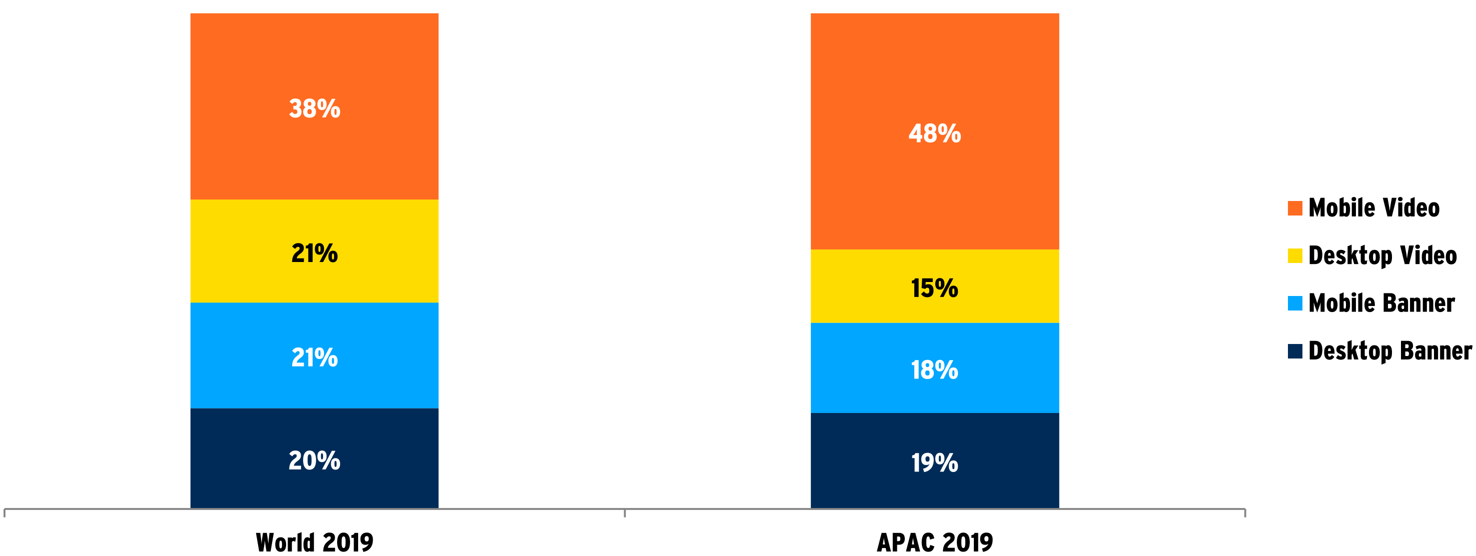
Asia Pacific programmatic adoption trails the global average, with 50% of display impressions are expected to be transacted programmatically in 2019. While this will increase significantly to 68% by 2023, it will still trail the global average of 76% at that point.

The programmatic landscape in many of the largest APAC markets is characterized by local ad tech platforms and entrenched incumbent transaction methods. Despite some structural headwinds, however, the programmatic market in China is thriving and will continue to show rapid growth and maintain its spot as the #2 programmatic market globally. Many other smaller APAC programmatic markets will also grow significantly from a small base throughout the next five years.

(1) APAC Programmatic Spend Adoption



(2) APAC Programmatic Spend by Format



Source: MAGNA 2019 Programmatic Forecast

MAGNA

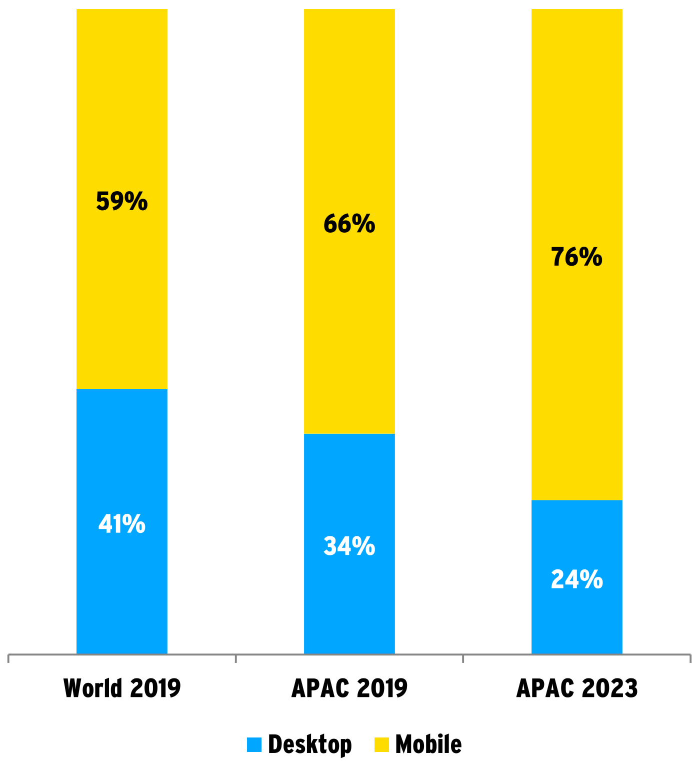
Asia Pacific Spend Breakdown

APAC is dominated by three large markets: China, Japan, and Australia. While these are explored in more detail later, there are many other fast-growing markets with unique dynamics.

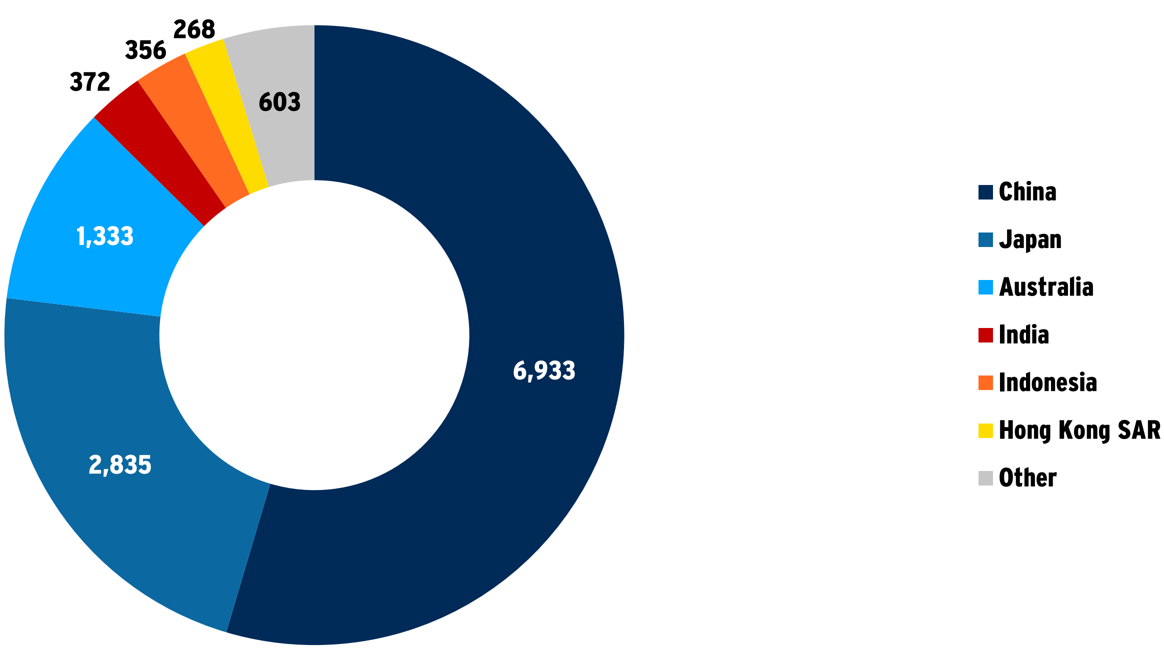
Even smaller markets in APAC are tackling new advertising technologies. In Hong Kong, OTT spending is ramping up with the market leader, MyTV Super. Viewers are averaging 129 minutes per day, around double the digital video viewing on YouTube. This new supply goes along with supply in Audio via Spotify, Joox, and Moov, and it's the first step towards further programmatic development outside of core digital formats.

APAC is also seeing OTT development in Singapore through Viu, Toggle, Yupp, TVBAnywhere, and more. Malaysia has seen growth in OTT via iFlix, Viu, Dimsum, Tonton, and Astro Go. This explosion in OTT availability and consumption reflects a maturing digital landscape, and is reflected by continued rapid programmatic growth.

(1) APAC Programmatic Spend by Device



(2) APAC Programmatic Spend by Country 2019 ($mm)



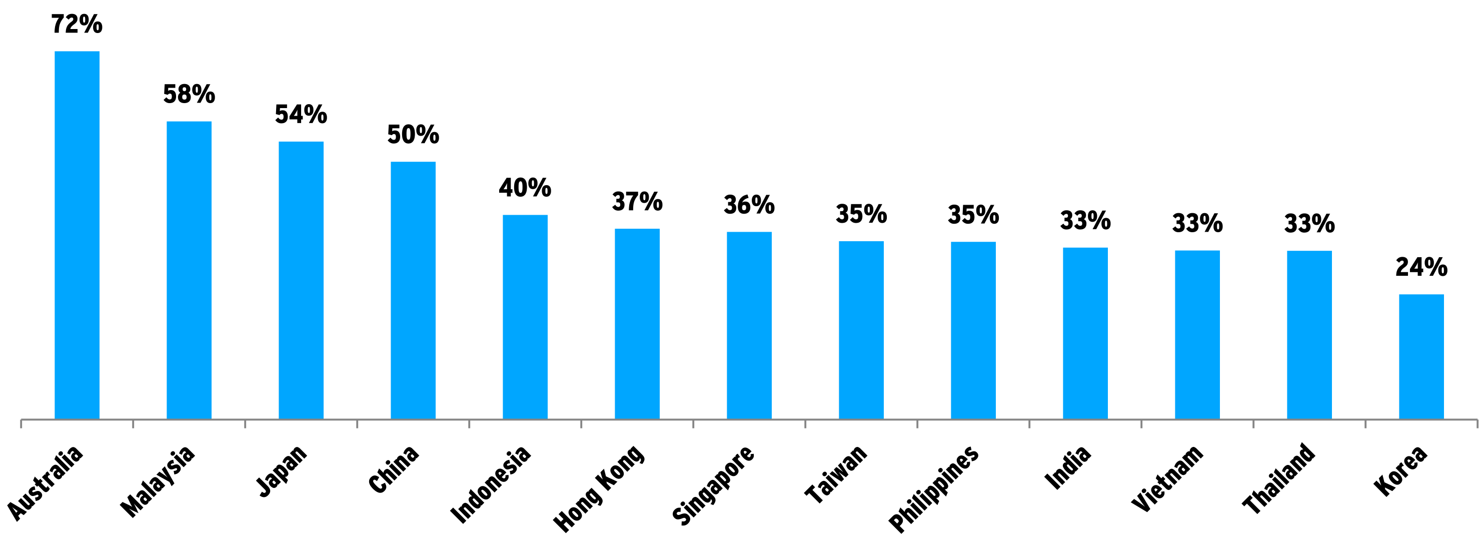
Source: MAGNA 2019 Programmatic Forecast

Asia Pacific Adoption and Growth

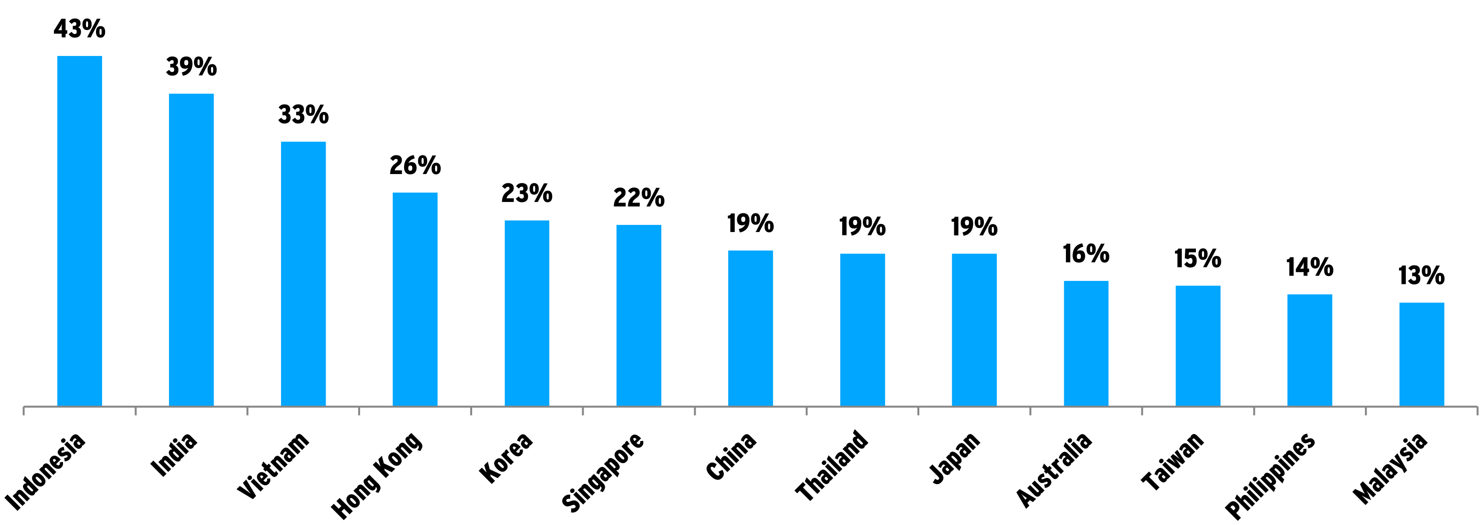
Australia is unique compared to most of APAC, with extremely high programmatic adoption and relatively low expected growth (it is already a mature programmatic market); only Malaysia, the Philippines, and Taiwan are expected to grow more slowly. This compares to some of the less developed markets, such Korea, Thailand, and Vietnam, whose growth will be more robust off a smaller base of spend. Even some more developed digital markets such as Indonesia are expected to see robust programmatic growth over the coming years.

As previously mentioned, the sheer scale of banners and video spend in China and Japan results in a huge programmatic market, despite lower adoption than Australia.

(1) APAC Programmatic Adoption by Country 2019



(2) APAC Programmatic CAGR 2018-2023 by Country



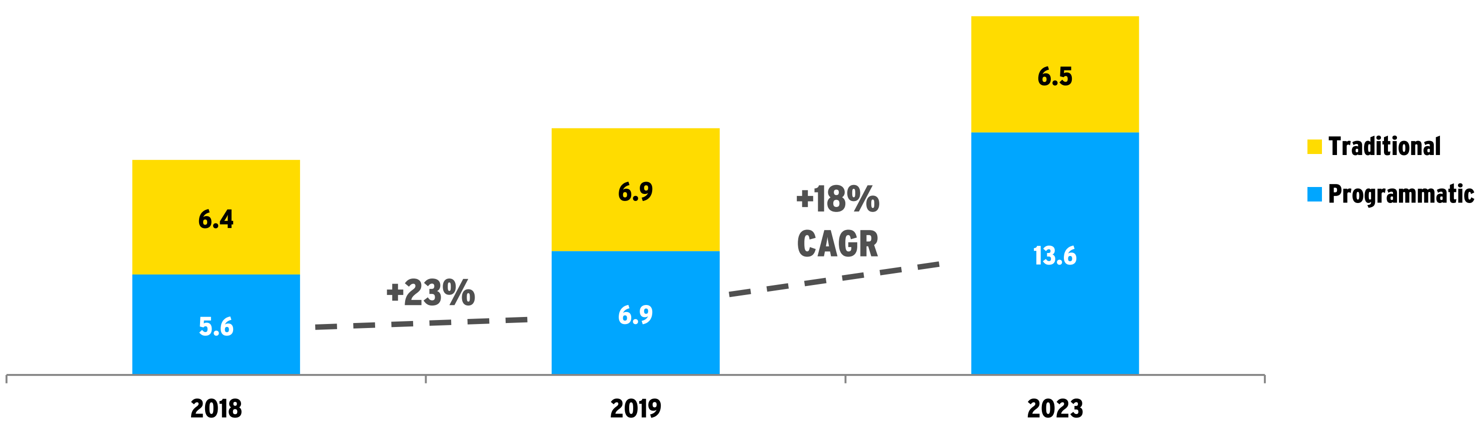
Source: MAGNA 2019 Programmatic Forecast

China: Home Grown Tech Ecosystem

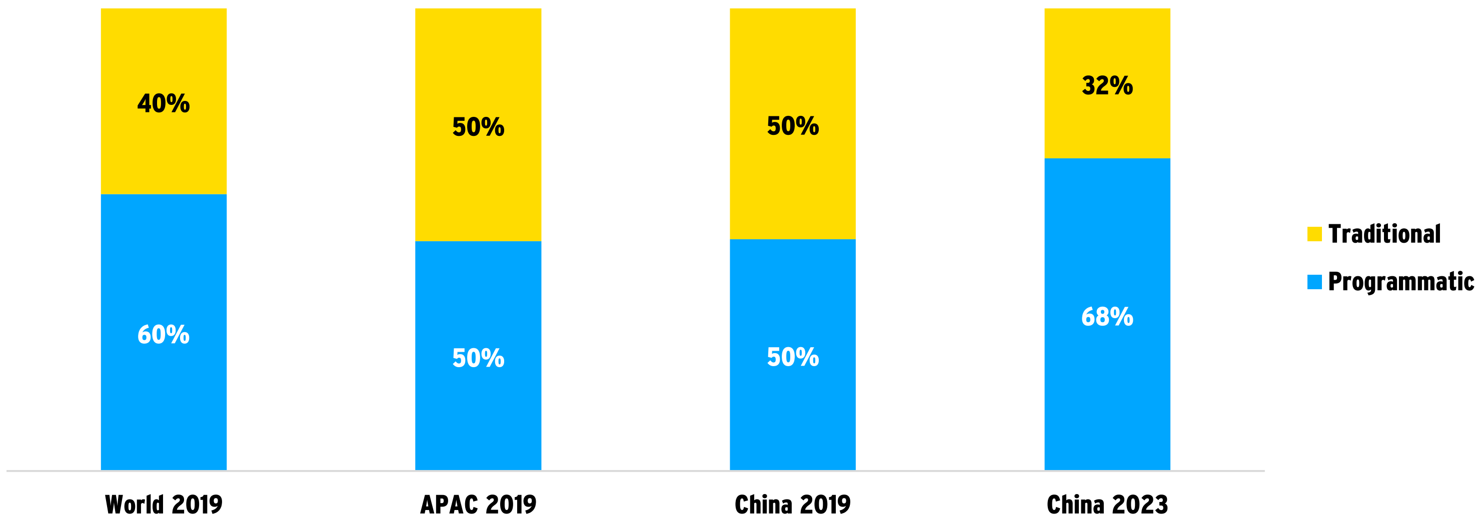
China is the second largest global programmatic market, representing almost $7 billion (RMB 46bn) of programmatic spend in 2019. While that still trails the US significantly, it is also ahead of the UK, the #3 market, by a comfortable margin. This will expand to nearly $14 billion by 2023, as China's strong growth will slowly close the gap with the United States.

By 2023, China's programmatic adoption will reach 68% of banners and video spend. Inventory quality concerns will continue to mean private exchanges and even non-RTB guaranteed price transactions remain a significant portion of the Chinese programmatic landscape. 37% of China's total programmatic spend comes from non-RTB methods, the highest total globally. MAGNA expects China to trend towards deal-ID style controls over the next several years rather than strictly automated guaranteed transactions, however. A greater focus on data privacy is already pushing programmatic brands increasingly towards private marketplaces.

(1) China Programmatic Spend ($bn)



(2) China Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

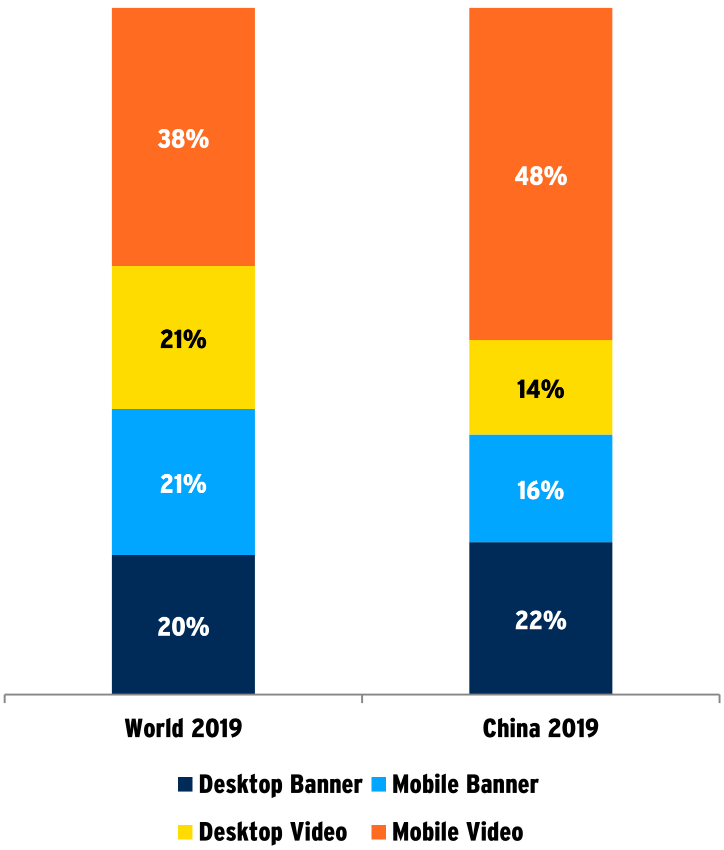
China: The Rise of OTT

Some of the largest internet players such as Baidu, Alibaba and Tencent have leveraged their data collections from search, e-commerce and social and created closed ecosystems similar to what has been done by Google and Facebook in the Western World. They operate their own exchanges, and therefore it is difficult for any other competition in the market because of a lack of external data.

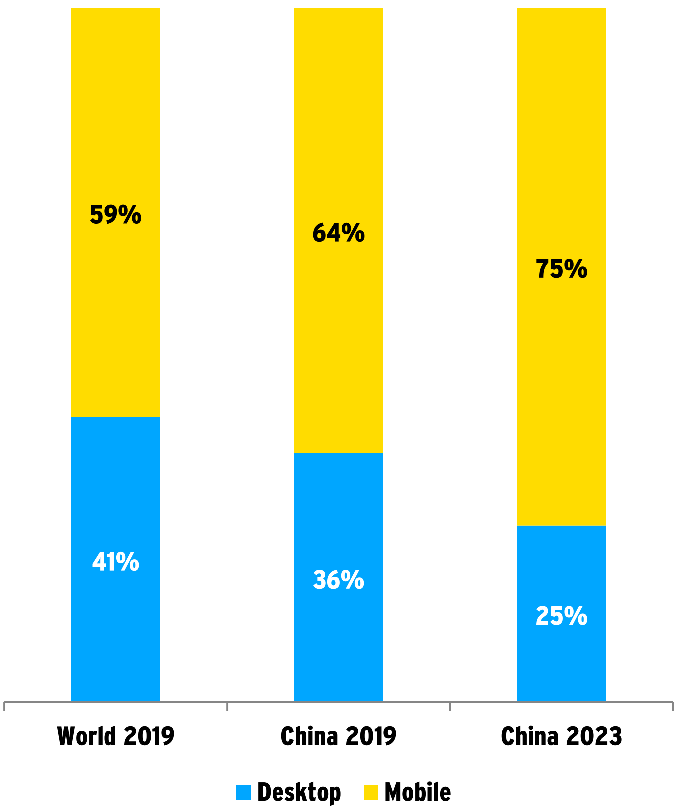
There are not, at present, significant restrictions on the collection of user data in China, but the lack of visibility into the regulatory process and future regulations are holding back DMPs from collecting or offering third party data sets. Most DSPs have developed their own data handling systems to use whatever they can find; what data is available is fragmented.

China's digital ecosystem is also moving towards the next stage of maturity and growth: OTT has become a significant part of the digital video ecosystem. Not only has the penetration of Smart TVs increased rapidly (they will exceed traditional TV penetration by 2022, up from today's 41% ownership rate), but they are also moving outside of big cities. Big provinces like Shanghai, Jiangsu, and Beijing have nearly 80% adoption of Smart TVs, but they are becoming more prevalent inland as well. Like most OTT marketplaces, the viewership is a younger, more affluent, and more educated demographic. Furthermore, something that is unique to the home-grown ad tech ecosystem in China is how receptive consumers are to diverse OTT ad formats. Time/weather warning advertising, shutdown advertising, and screensaver advertising, among others, are all welcomed formats by Chinese consumers.

(1) China Programmatic Spend by Format



(2) China Programmatic Spend by Device



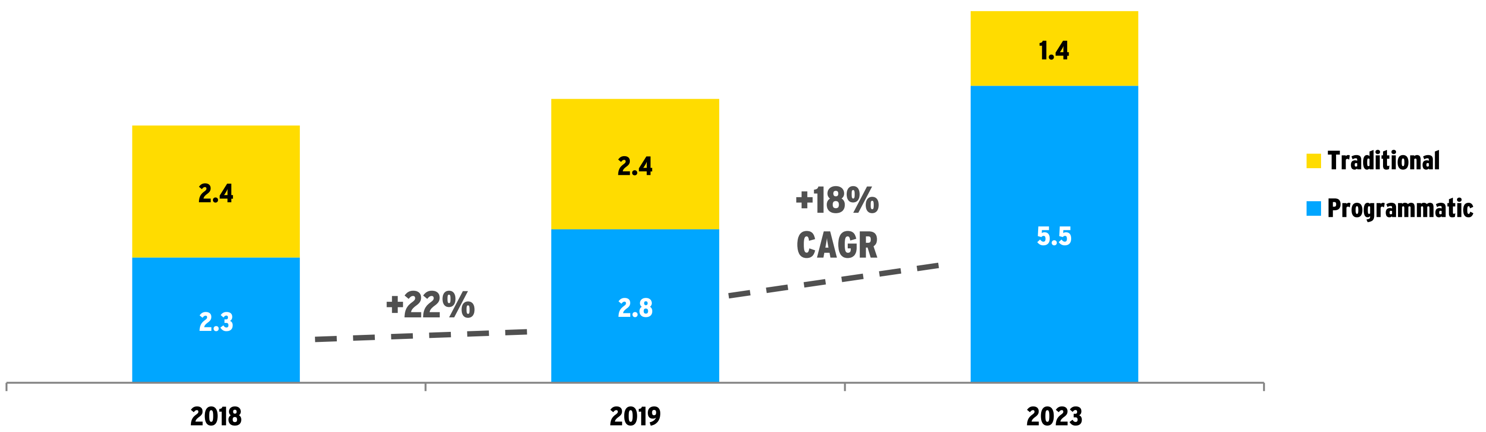
Source: MAGNA 2019 Programmatic Forecast

Japan: A Conservative Approach

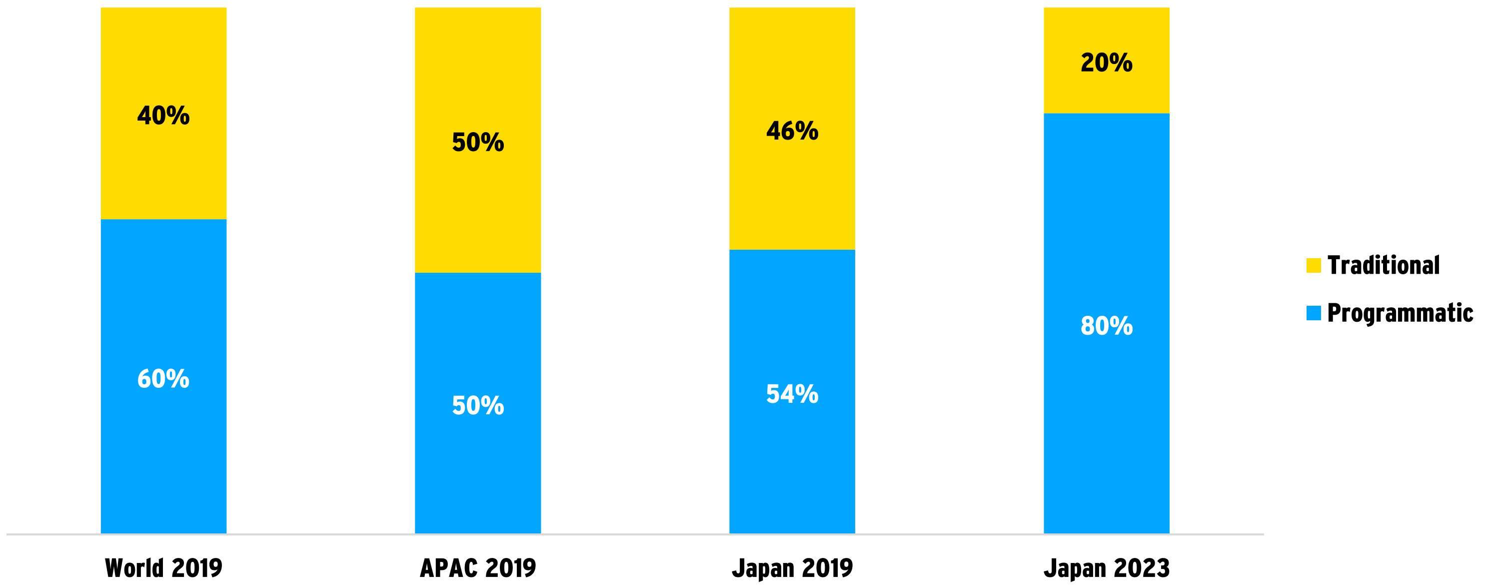
Japan is the fourth largest global programmatic market, behind the United States, China, and the UK. Total programmatic spend will reach $2.8 billion (¥313bn) this year, representing 22% growth y/y. This is an impressive growth rate especially given the scale of the Japanese market (for context, the US programmatic market is expected to grow by just 19% this year). Japan is the third largest digital advertising market in the world, and therefore even its slightly below average programmatic adoption rate globally (although in line with the APAC average) translates into significant spend; this lower adoption rate is the reason the UK's programmatic market is larger, however.

Japanese media owners have thus far had a conservative approach to programmatic. Despite the rise in private exchanges over the past several years, there is still concern about programmatic price pressures as well as safety and control.

(1) Japan Programmatic Spend ($bn)



(2) Japan Programmatic Spend Adoption



Appendix | LATAM | APAC | EMEA | N. America | Global | Definition | Key Findings

Source: MAGNA 2019 Programmatic Forecast

Japan: Mobile First

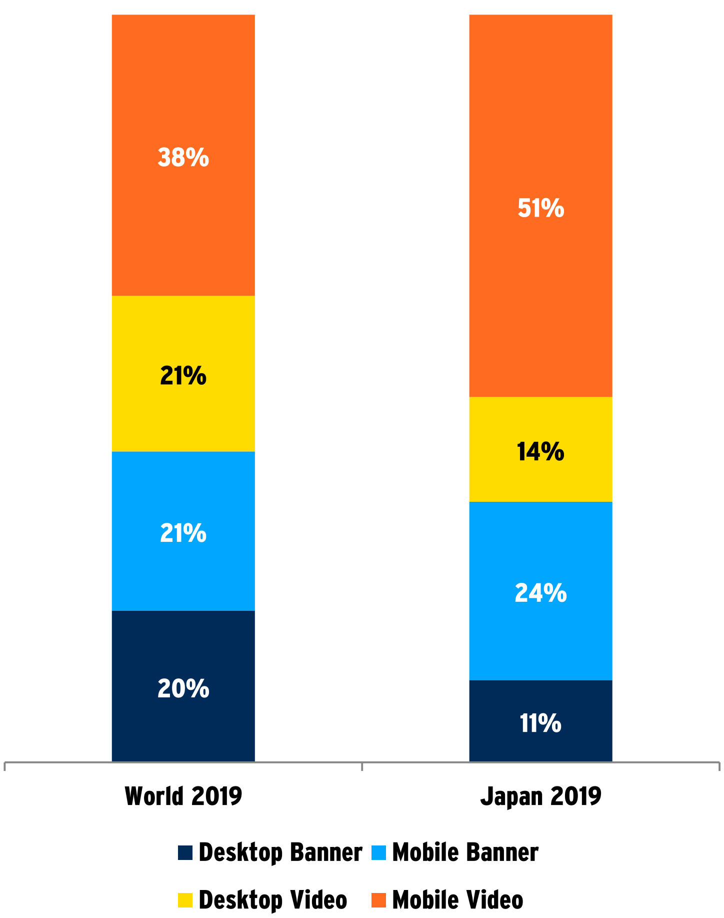
Furthermore, because of the relationship-based structure of much of the Japanese digital marketplace, there is high systemic inertia and highly visible programmatic success stories will be required to accelerate programmatic adoption further to be commensurate to the development of the overall digital economy.

One area in which Japan's market does not lag the rest of the globe is in mobile programmatic activity. Mobile banner and video already represent three quarters of total programmatic spend, a figure that continues to increase. The mobile video share of total programmatic spending is one of the highest globally.

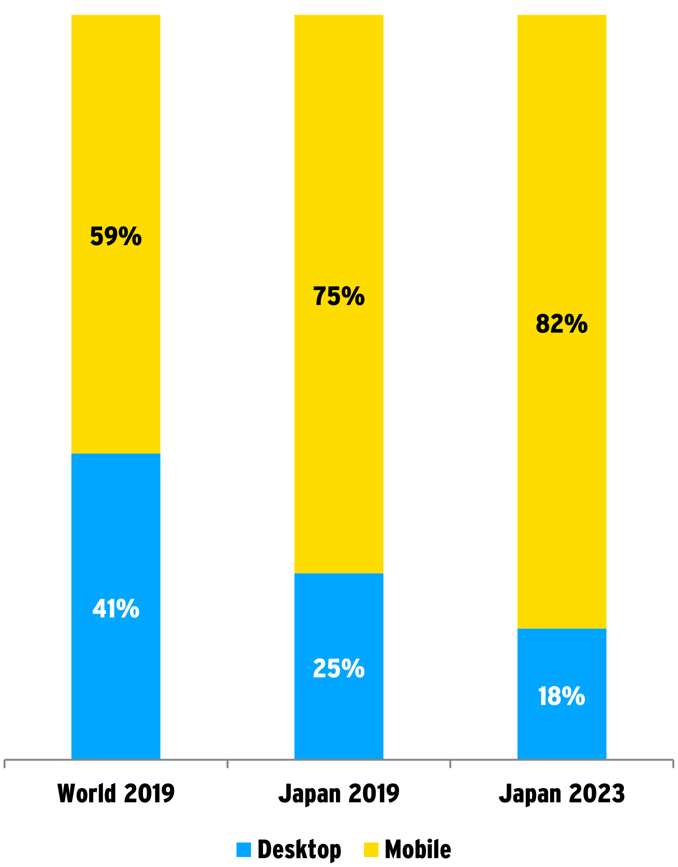
Global ad tech solutions have long had a difficult time in the Japanese market. Like China, there is a suite of separate local ad tech players that dominate the programmatic market (MarketOne, MicroAd Blade, ScaleOut, FreakOut, AdNear, Sizmek AdStrike, etc.). The service level required from clients is also higher than is seen elsewhere.

There has also been no change in the data availability in Japan post GDPR although there is increasing discussion about further privacy regulation (on top of the existing Act on Protection of Personal Information). Constantly under discussion by regulators is the potential to make ISPs enable user requests to suspend the sharing of personally identifiable information such as browsing behavior. While nothing has passed, it's just another in a long string of potential proposed privacy regulations.

(1) Japan Programmatic Spend by Format



(2) Japan Programmatic Spend by Device



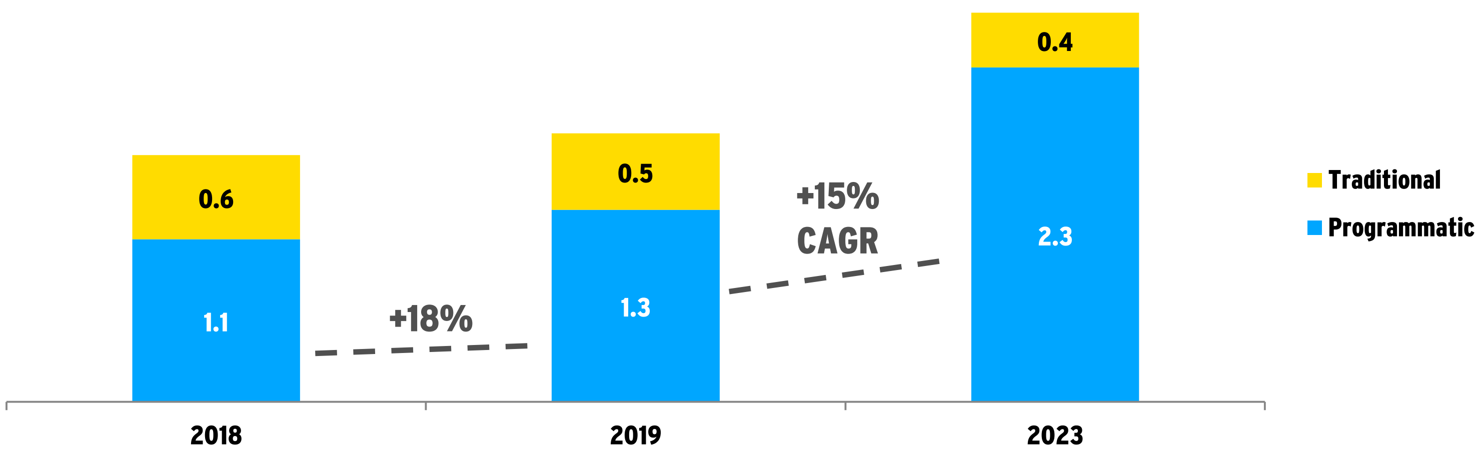
Source: MAGNA 2019 Programmatic Forecast

Australia: A Global Programmatic Leader

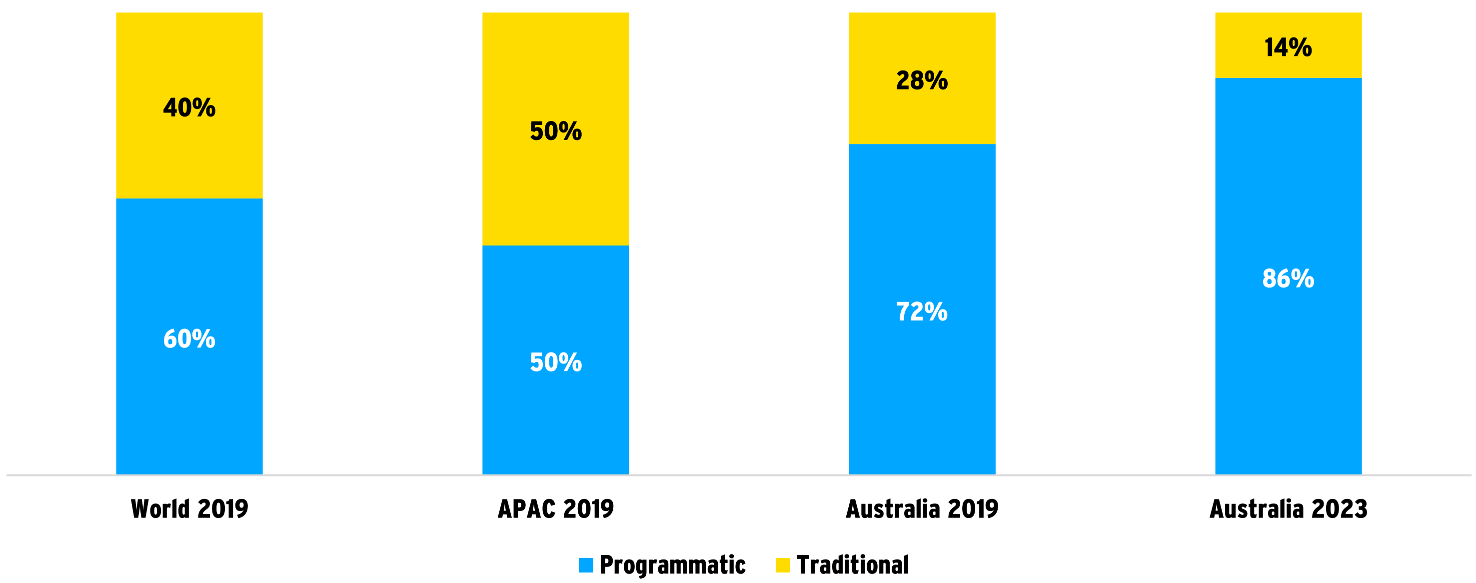
Australia is one of the most sophisticated programmatic markets, with a adoption that only trails the United Kingdom (and that is ahead of the United States). It is the sixth largest programmatic market worldwide, with $1.3bn of spend(AUD 1.8bn) this year, representing 18% growth y/y in 2019.

Adoption is expected to grow from an already-robust 72% this year, to 86% by 2023. In 2023, this will represent the third highest programmatic adoption, behind only the US and the UK.

(1) Australia Programmatic Spend ($bn)



(2) Australia Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

Australia: Media Owners Embracing Prog.

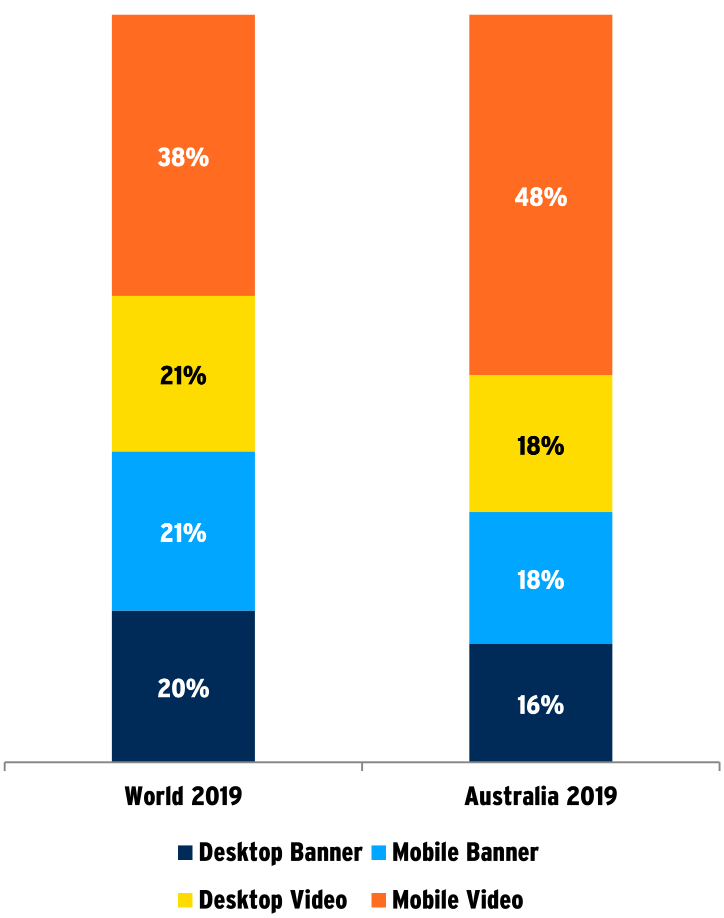
Australia's video content owners have been progressive about opening up their inventory to programmatic transactions. Along with the extremely high maturity of the ad market (~$500/capita in advertising spend annually), this has created a very favorable environment for programmatic spending growth.

Australia is a market in which many initiatives have been media owner driven. The publisher landscape is very concentrated, and much of the inventory is held in a few hands, so cooperatives and private exchanges have developed (APEX – Fairfax and Nine Entertainment, and MBX – MCN and News Corp., etc.)

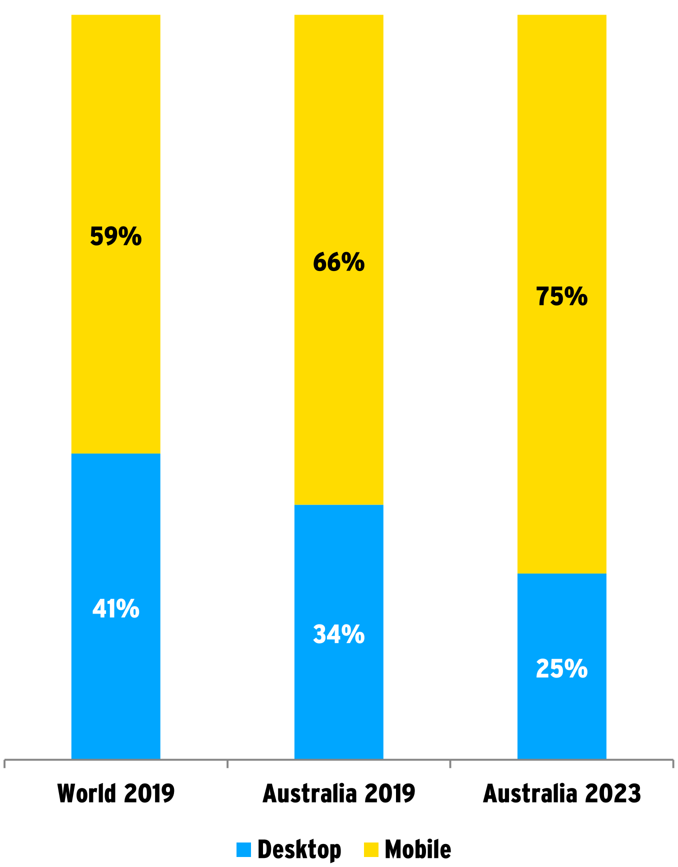
Australia also has a significant focus on brand safety. There remains some hesitation around YouTube regarding brand safety concerns, and many brands have period check-ins about safety management issues. This demand for periodic updates show that it's not quite as business-as-usual in Australia as the brand safety environment in most other developed markets.

In addition, while there are some early tests going on of programmatic TV and programmatic OOH, these are quite far from actually being fully automated on programmatic platforms, despite the branding.

(1) Australia Programmatic Spend by Format



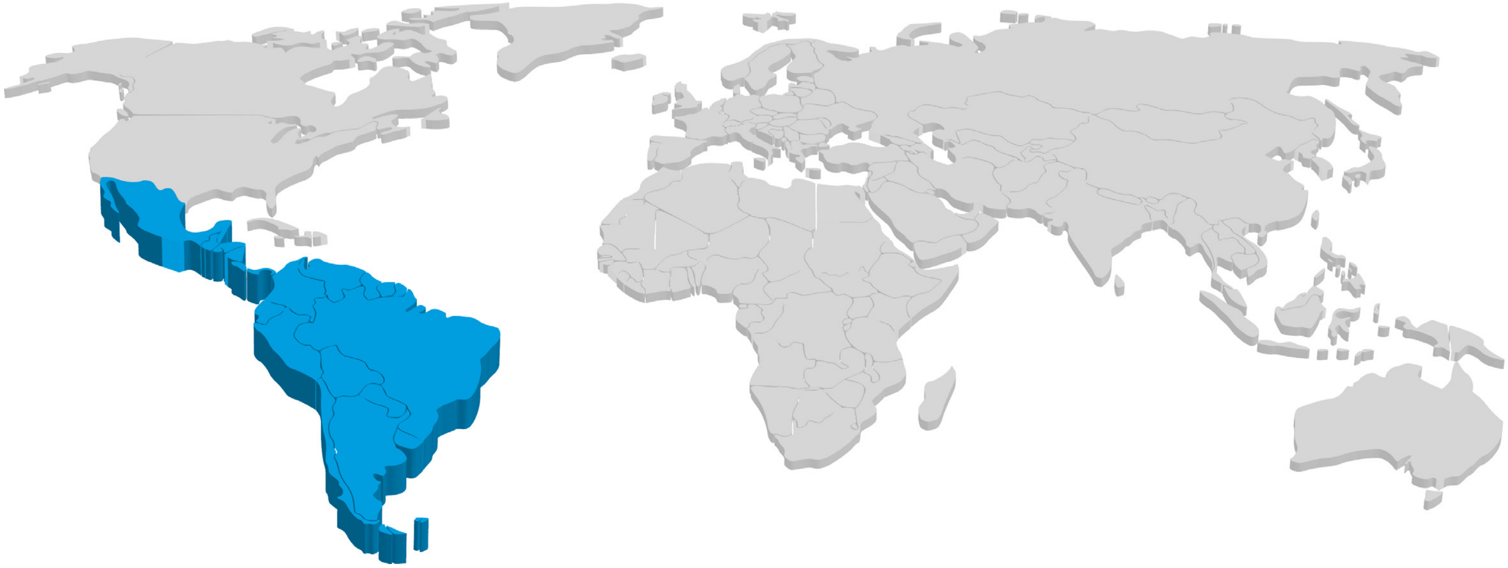
(2) Australia Programmatic Spend by Device



Source: MAGNA 2019 Programmatic Forecast

MAGNA

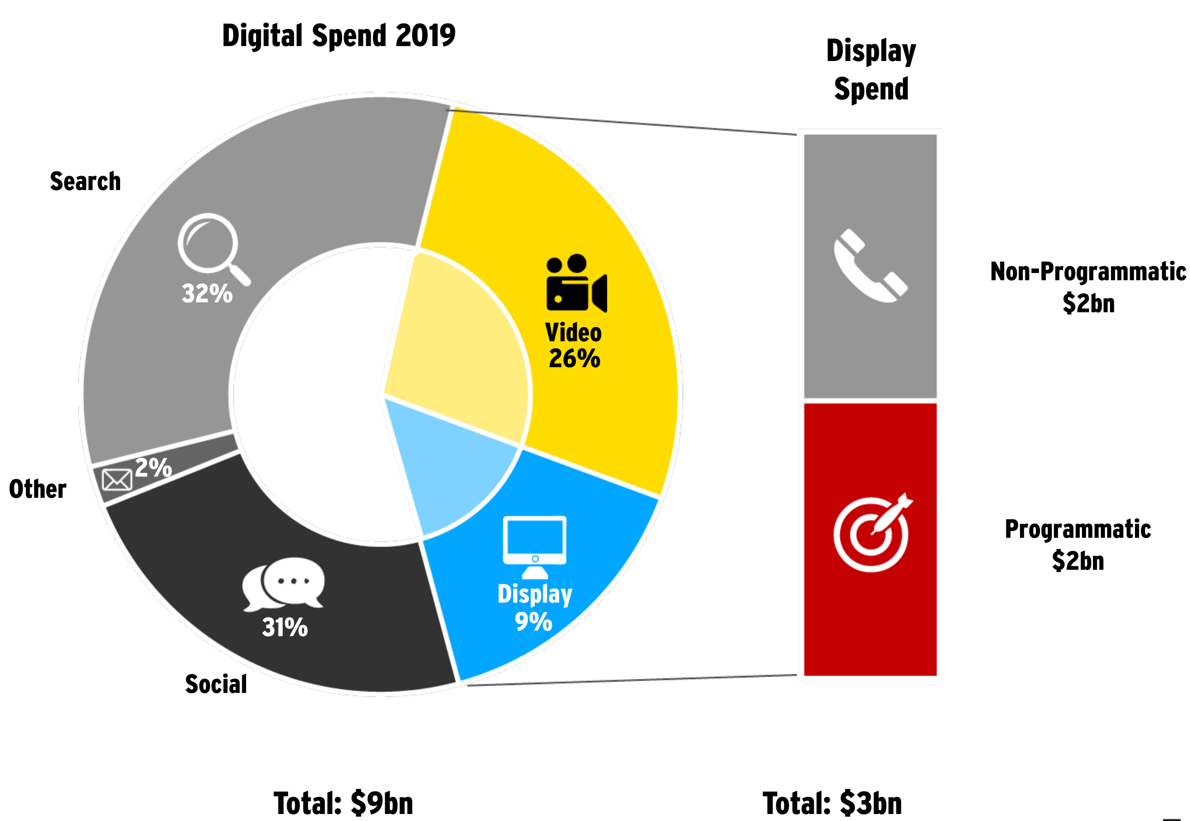
Latin America



Latin America is a relatively small global programmatic region, and only represents 5% of global programmatic spend. It is the most rapidly growing, however, and will be nearly 2.5x larger by 2023 compared to its size today.

The slow development of programmatic trading in Latin America until now was partially due to few tech solutions and scaling issues.

Furthermore, data availability is limited. Finally, while open exchange technology is easier to transplant, many brands are still interested in leveraging technology in a way that gives them more control over what they're buying. Acceptance is increasing, however, led by the large markets.



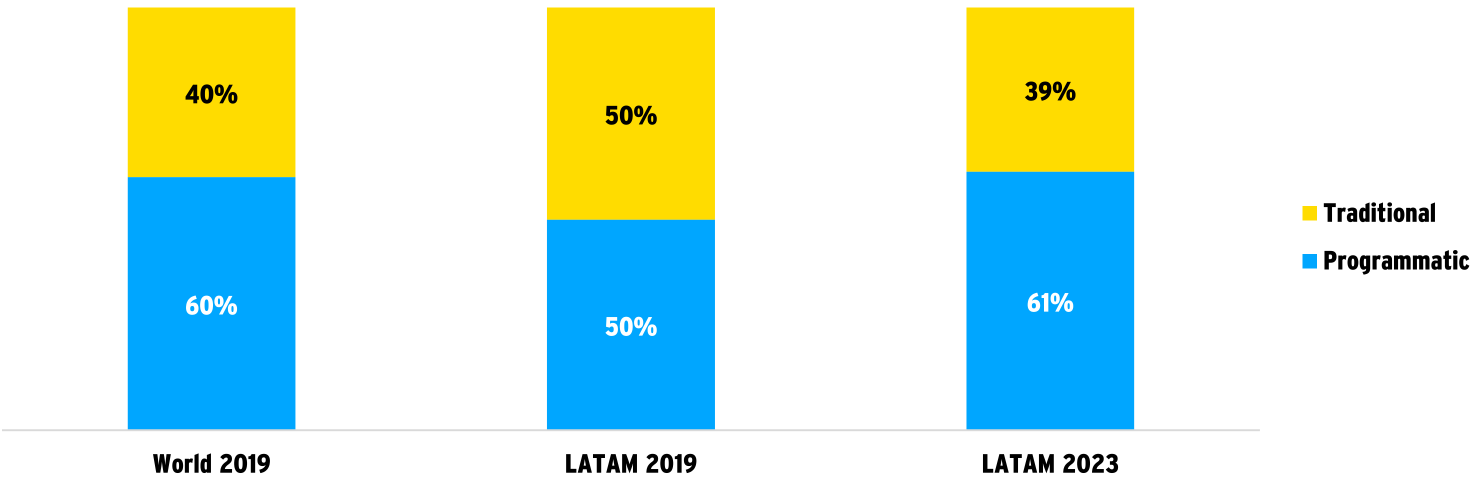
 Source: MAGNA 2019 Programmatic Forecast

Latin American Programmatic Spend

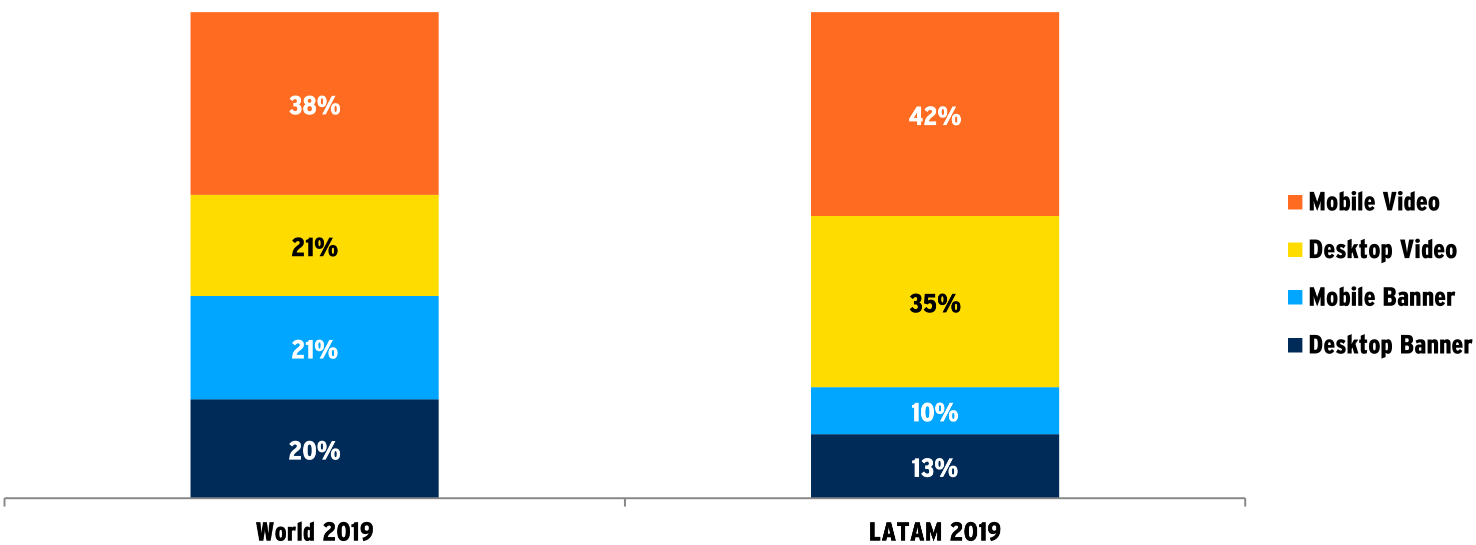
Latin America has an average programmatic adoption of 50% this year, in 2019. This will expand to 61% by 2023. Desktop video represents a significantly higher share of Latin American programmatic spend than it does on a global basis, largely due to the significant share of desktop video spend in the Brazilian market, by far the largest in Latin America. Video as a whole will expand to become the dominant format for programmatic transactions by 2023.

The programmatic ecosystem in Latin America primarily comprises Western companies that have expanded to the region, rather than the smaller local start-ups seen in Asia Pacific. Brands and publishers are receptive to programmatic transaction methods, but many Latin American brands are used to more transparency than is typically offered through programmatic platforms.

(1) LATAM Programmatic Spend Adoption



(2) LATAM Programmatic Spend by Format



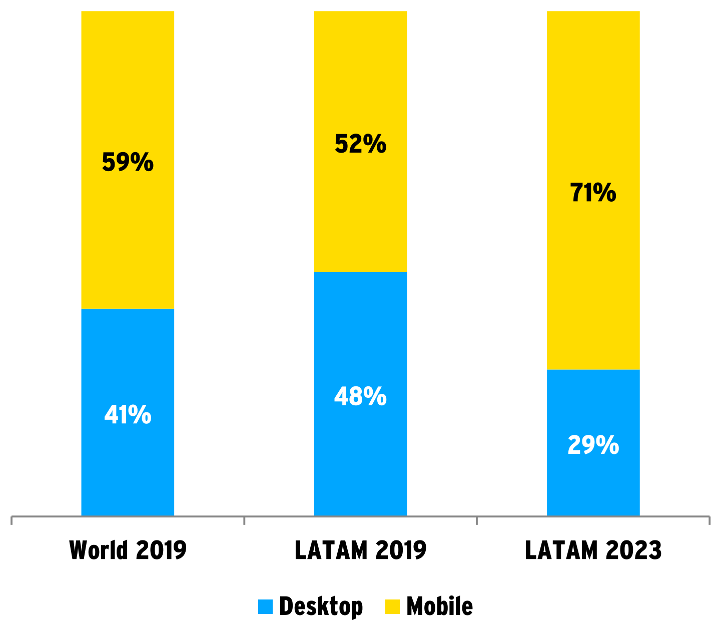
Source: MAGNA 2019 Programmatic Forecast

Latin American Spend Breakdown

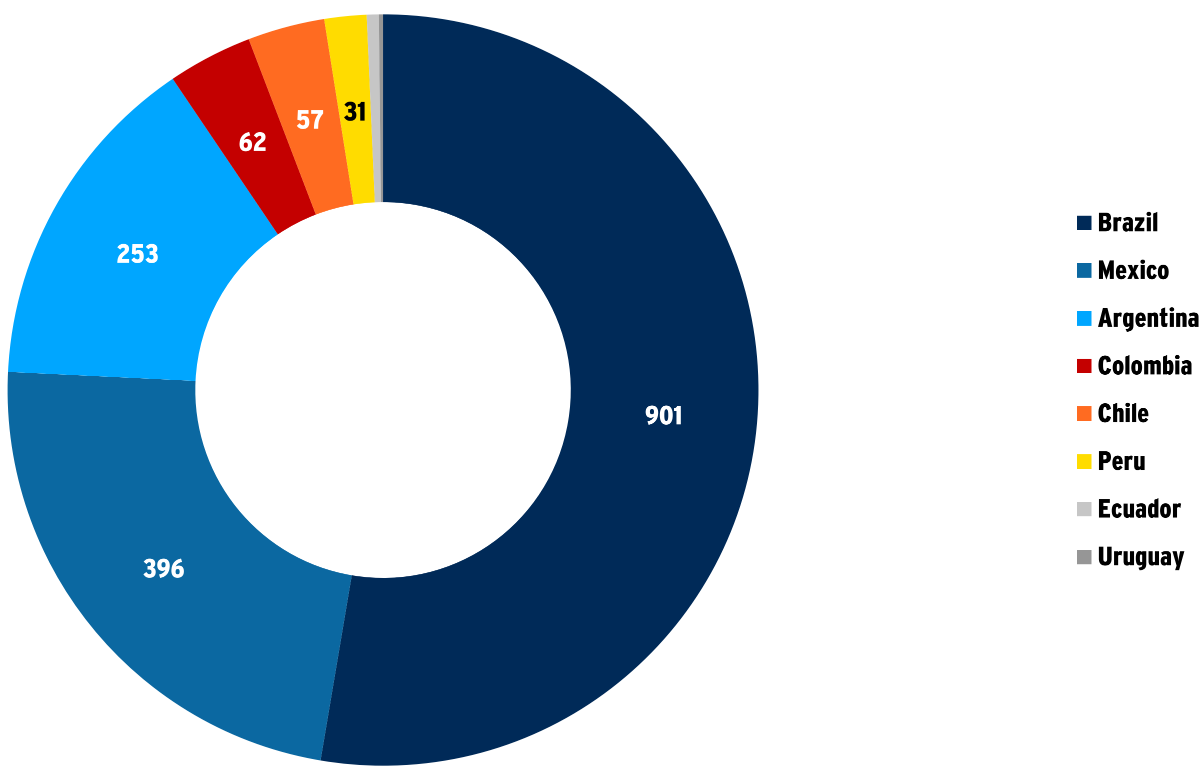
The lion's share of programmatic spend in Latin America comes from Brazil, Argentina and Mexico, which comprise more than 90% of total Latin American programmatic spend. This is a reflection of the size of total banners and video spend in those markets.

The availability of third party data is increasing across Latin America. While there is still slow integration and limited acceptance of programmatic transaction methods by publishers, brands are increasingly pushing to expand the pool of total inventory available.

(1) LATAM Programmatic Spend by Device



(2) LATAM Programmatic Spend by Country 2019



Source: MAGNA 2019 Programmatic Forecast

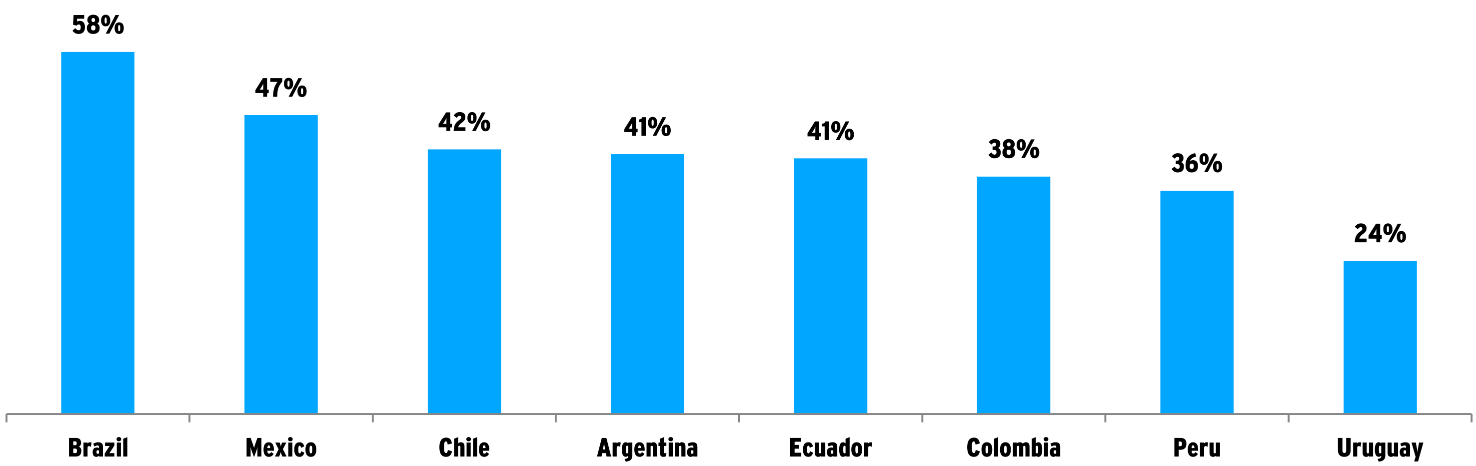
Latin American Adoption and Growth

After Brazil and Mexico, there are a number of Latin American markets with programmatic adoption in the ~40% range. Brazil is the leader in both size and market development, but there is significant growth in many Latin American markets.

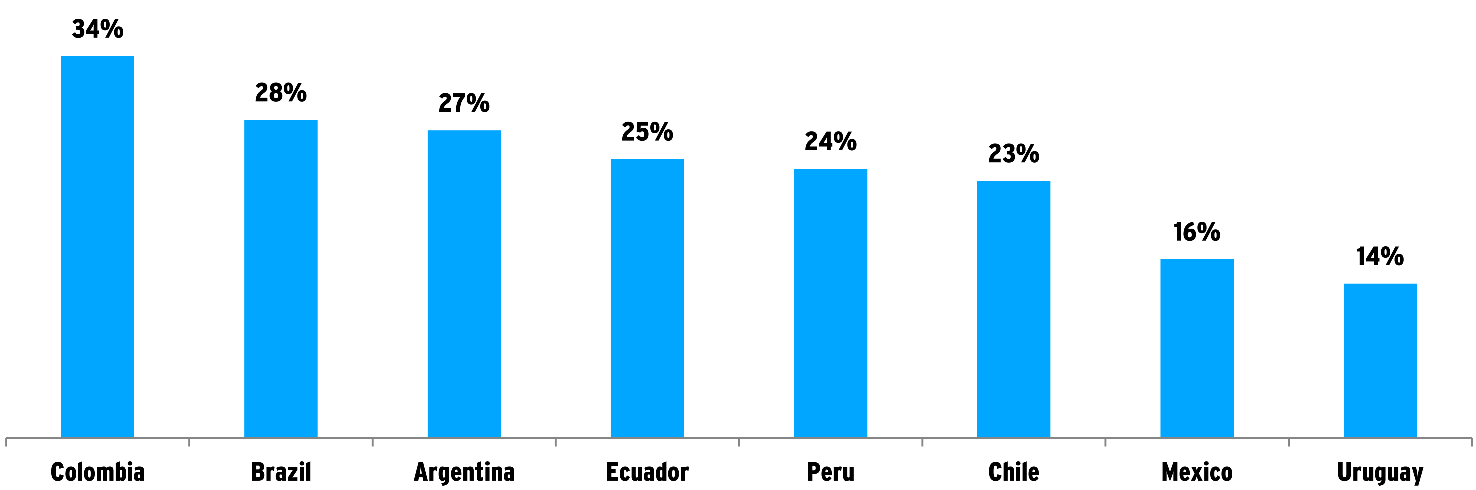
In terms of growth rates, there are many underdeveloped programmatic markets which are expected to see significant growth. Brazil is expected to see surprisingly strong growth given its large size, however, which is a combination of increases in programmatic development, as well as strong improvements in the underlying banner display and video spend in the market. Argentina's growth is largely inflation driven. There is also strong growth expected in Colombia, Ecuador, Peru, and Chile, however. These are all going to grow above the global average growth.

The concentration of media owners in many large Latin American markets (Universal in Mexico, Tiempo in Colombia, Clarin in Argentina, El Mercurio in Chile, Globo in Brazil, etc.) ties programmatic growth very closely to their willingness to offer inventory programmatically.

(1) LATAM Programmatic Adoption by Country 2019



(2) LATAM Programmatic CAGR 2018-2023 by Country



Source: MAGNA 2019 Programmatic Forecast

Brazil: Latin American Dominance

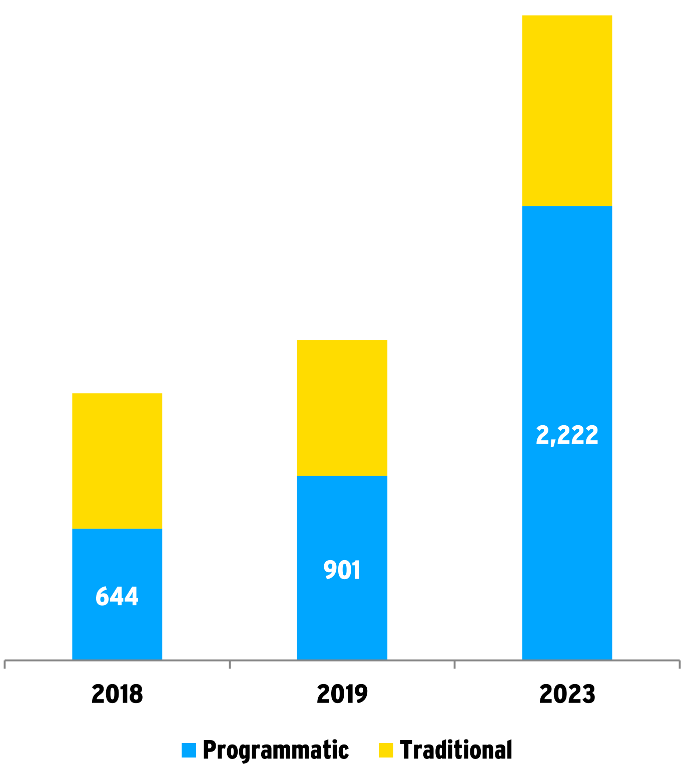
The Brazilian programmatic market is worth $900 million (BRL 3.3bn) in 2019, up by a robust 40% y/y. By 2023, the Brazilian programmatic market will represent $2.2bn of total spend, or 70% of total banners and video spend.

The scale and complexity of the Brazilian market is different from other Latin American countries. Brazil has diverse inventory pools, tech solutions, and audiences, since there is enough scale outside of the inventory of the huge media conglomerates that dominate the TV landscape.

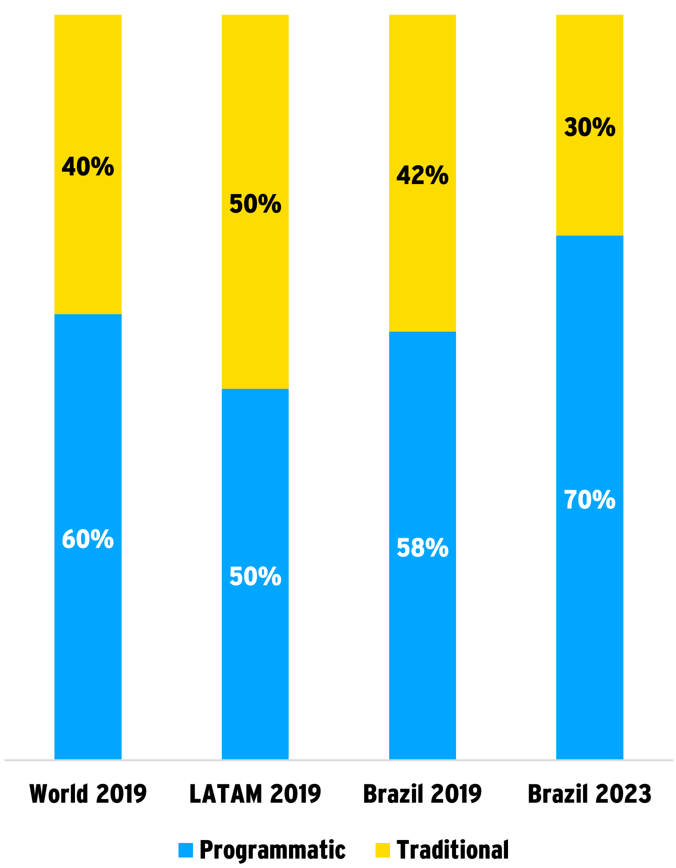
Desktop video represents a significant share of total programmatic spend in Brazil, with half of total programmatic spend happening on that format and device combination. By 2023, video will dominate with more than 90% of total programmatic spend, but it will have skewed towards mobile, which will take over from desktop video as the primary programmatic spending venue (nearly 70% total share of programmatic spend).

As Brazil evolves from an early stage to a mature programmatic market, brands and publishers have moved from focusing on programmatic education and experimentation, to tackling data ownership and attribution, and what the relationship with large tech providers will look like in the future.

(1) Brazil Programmatic Spend ($mm)



(2) Brazil Programmatic Spend Adoption



Source: MAGNA 2019 Programmatic Forecast

Glossary

Audience Buying (Programmatic TV): Method by which ads are served to networks / programs / dayparts with the highest propensity to reach target audience of a campaign. Uses technology and audience data to deliver incremental reach.

Automated Guaranteed: Transaction in which inventory is guaranteed and pricing is fixed, with negotiation happening directly between buyer and seller. Transaction processes are automated but otherwise match a traditional I/O transaction.

Automation: Using technology to facilitate media transactions in a way that mirrors traditional transactions in structure.

CRM: Customer relationship management – a system for managing a company's interactions with current and future customers.

Cross-Platform Targeting: Identifying and matching audiences across devices (desktop, tablet, smartphone, TV, OOH, etc.)

Deal ID: Unique identifier that associates a transaction with prearranged agreement details, typically used to increase information in a transaction or change auction outcome from strict price criteria.

Deterministic Identification: Using login details to associate devices with an individual user for the purpose of identifying a user across all devices through which they access content.

Display-Related: Digital media advertising formats, including banners, video and social, i.e. all digital advertising formats except Search. "Display-Related" is the addressable universe for programmatic development.

DMP: Data Management Platform, a user data store that is used for the centralization, management and deployment of a brand's audience data (Examples: Adobe Audience Manager, Lotame, Salesforce DMP, etc.).

DSP: Demand-Side Platform, tech solution to allow buyers to access inventory across multiple exchanges and from multiple media owners (Examples: Amazon, DoubleClick, Trade Desk, etc.).

Dynamic Insertion: The ability to show a specific user a specific ad, typically because of the characteristics of that user.

Exchange: Technology platform that facilitates the buying and selling of ad inventory using various methods of purchase other than traditional I/O (Example: DoubleClick, AppNexus, Rubicon Project, etc.).

First Look: An agreement in which a buyer has priority access to inventory in an auction environment.

Guaranteed Programmatic: Transaction in which inventory is guaranteed and pricing is fixed, with negotiation happening directly between buyer and seller. Transaction processes are automated but otherwise match a traditional I/O transaction. (Alternate term for Automated Guaranteed)

Hash Linking: Associating an identifying tag with a specific user through a cryptographic function that does not allow reversing that tag back into the identifying characteristics for that user. Current best tracking option for protecting Personally Identifiable Information.

Header Bidding: A unified auction conducted by publishers outside their primary ad server, which allows advertisers to sell inventory to the highest bids, regardless of source or priority in the ad serving waterfall.

Glossary (Cont.)

Household Addressable (Programmatic TV): Method by which ads are served directly to the households in which the target audience resides.

Invitation-Only Auction: Auction environment comparable to open exchange, except only a select collection of buyers that have been white-listed by the media owner(s) are allowed to participate.

I/O: Insertion Order in a direct buy (agency to publisher). Traditional method of buying media inventory.

Media Owner Cooperative: Partnership between media owners through which they offer premium inventory in controlled auction environments; typically affiliated with a supporting tech platform.

Open Auction: Transaction environment in which any brand can bid for offered inventory with few if any controls and little to no transparency.

PMP: Private Marketplace, where either one or a small handful of media owners offer inventory via programmatic methods but with either limited invites for specific brands or pre-arranged pricing.

Private Transaction: Transaction between one buyer and one seller where each is known to the other.

Probabilistic Identification: Using an algorithm that combines non-personally identifiable information to associate devices with an individual user for the purpose of identifying a user across all devices through which they access content.

Programmatic Buying: The buying and selling of ad inventory in an automated fashion. In the context of this report, it encompasses both RTB *and* non-RTB methods.

Programmatic Direct: A generic term for non-RTB programmatic transactions that is being replaced by more specific terms as non-RTB technology matures.

Programmatic Universe: Total banner display spend plus total video spend.

RTB: Real-Time Bidding, where an impression is offered through an auction where bid price is the most important (but not only) characteristic used to select a winning buyer.

SSP (Supply Side Platform): A tech platform used by web publishers to find the most appropriate available audience and optimize pricing of a publisher's inventory.

Statistical Identification: The process of identifying devices across sessions based on a series of non-personally identifiable data points and algorithms to narrow these characteristics to a single or small handful of users.

Traditional Transaction: Any transaction executed through non-programmatic means.

UDID: Universal Device ID, used to identify specific devices across sessions and apps.

Unreserved Fixed-Rate: A transaction in which price has been agreed upon in advance but no guarantees on exact inventory or impression delivery have been made.

Viewability: Whether or not an impression was on screen for long enough to count as being viewable. Viewable impressions are gradually becoming the currency for an increasing number of campaigns. For a standard banner in the US, the requirement is that 50% of the pixels be on screen for at least one second.

Methodology

- The conclusions in this report were derived from:
  - Anonymous surveys & interviews with companies representing programmatic Trading Desks, DSPs, Exchanges, and Publishers
  - Existing MAGNA research
  - Other publicly available information
  - Internal Cadreon Resources

- MAGNA's programmatic market size forecast model utilizes data from:
  - Aforementioned surveys & interviews
  - Existing MAGNA estimates
  - Past digital advertising growth rates
  - Regression modeling of various publicly available facts

MAGNA

About MAGNA

MAGNA is the centralized IPG Mediabrands resource that develops intelligence, investment and innovation strategies for agency teams and clients. We utilize our insights, forecasts and strategic relationships to provide clients with a competitive marketplace advantage.

MAGNA harnesses the aggregate power of all IPG media investments to create leverage in the market, negotiate preferred pricing and secure premium inventory to drive maximum value for our clients. The MAGNA Investment and Innovation teams architect go-to-market investment strategies across all channels including linear television, print, digital and programmatic on behalf of IPG clients. The team focuses on the use of emerging media opportunities, as well as data and technology-enabled solutions to drive optimal client performance and business results.

MAGNA Intelligence has set the industry standard for more than 60 years by predicting the future of media value. The MAGNA Intelligence team produces more than 40 annual reports on audience trends, media spend and market demand as well as ad effectiveness. To access full reports and databases or to learn more about our subscription-based research services, contact forecasting@magnaglobal.com.

IPG Employees can access and download MAGNA reports through the MAGNA Atlas: https://atlas.magnaglobal.com/

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Key Findings Definition Global N. America EMEA APAC LATAM Appendix

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