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# Growing Programmatic DOOH: Opportunities and Challenges

U.S. and Canada  
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# Executive summary

This IAB study, conducted by PwC UK, interviewed senior industry executives across media companies, ad tech companies, and agencies. All expressed their enthusiasm about the potential of programmatic digital out of home (pDOOH) campaigns to drive innovation and growth by delivering real value for advertisers.

However, for pDOOH to realize its full potential, there was a consensus that three key challenges must be overcome: more education, reduced fragmentation, and more standardization.

Education was seen as particularly critical to the adoption of pDOOH to convey the benefits of programmatic trading including audience targeting, dynamic content, and in-flight campaign optimization and to ensure that programmatic traders understand that OOH is a one-to-many medium so some digital programmatic techniques will need to be adapted for pDOOH.

The executives interviewed shared a desire for reduced fragmentation through consistency of OOH ad formats and regulations and standardization focused on audience measurement, audience segments, and cross-channel activation (across OOH and mobile, for example).

This report examines the current state of the pDOOH market in the U.S. and Canada and explores the challenges that must be overcome to allow pDOOH to realize its potential.

**Three key themes emerged** across the U.S. and Canada as challenges and opportunities to the growth of pDOOH:

## 1 EDUCATION

**95%** of participants identified education as a key driver for future growth

- Education of clients, agency planners, and buyers (both in programmatic trading teams and traditional OOH buyers) was identified as being key to accelerating the growth of pDOOH
- Understanding the benefits of DOOH, the ways in which programmatic trading can bring value to clients, and how you can trade DOOH programmatically, were identified as three areas of focus
- Buy-side places the onus on the sell-side to educate and promote the offerings, processes, and benefits of pDOOH

## 2 FRAGMENTATION

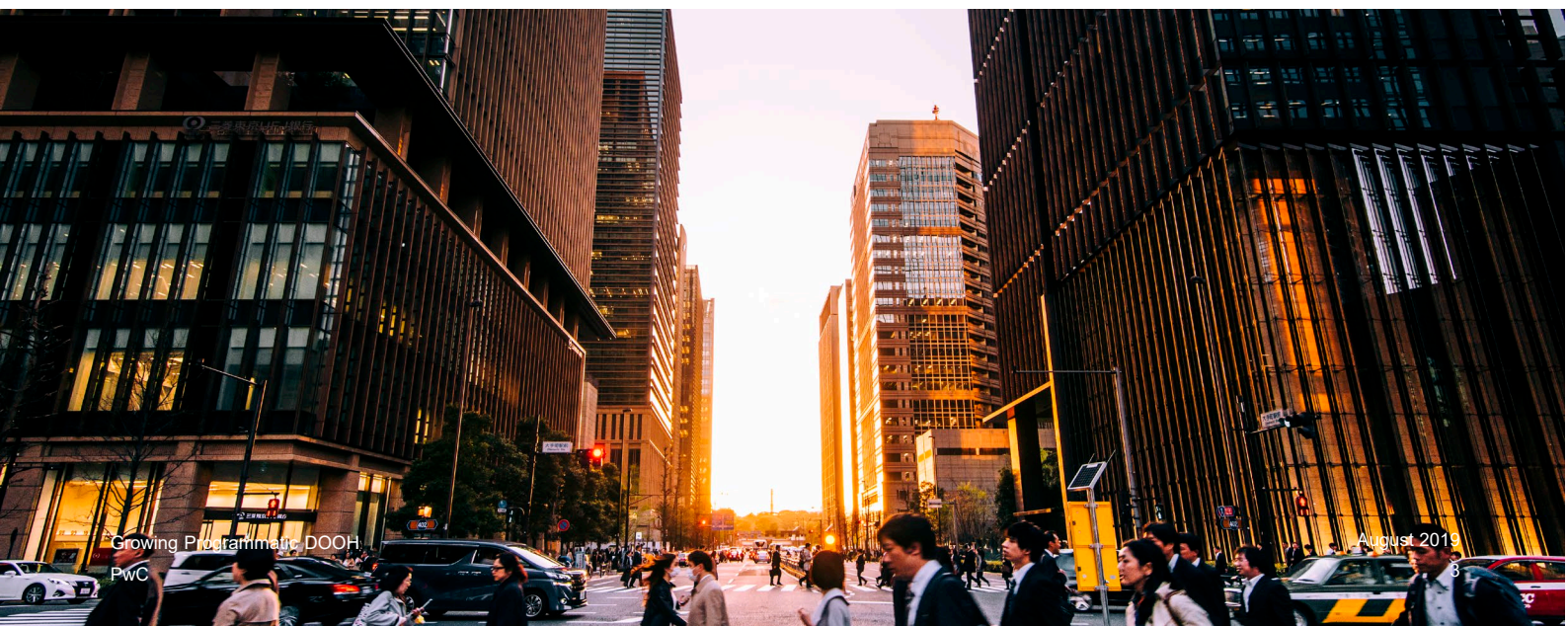
**60%** highlighted fragmentation as a reason for restricting media spend in pDOOH

- The DOOH market in the U.S. and Canada is fragmented with many companies of varying size across both the buy-side and sell-side
- Stakeholders identified the fragmentation of markets and inventory as challenges; as the pDOOH industry grows, fragmentation is likely to become an inhibiting factor

## 3 STANDARDIZATION

**43%** identified the lack of data standardization as a key inhibitor to pDOOH

- Standardization of the following areas was identified as key for facilitating growth:
  - Defining audience segments in a consistent way across all media types for cross-channel activation
  - Standardizing the methodology behind the measurement and transaction currency for DOOH, such as the impression multiplier



# 1

## Introduction



# Introduction

## Background, objectives, and methodology

### Background

The OOH industry has undergone a significant digital transformation as media owners are embracing the transition from traditional static billboards to digital boards, with 100% of those interviewed now offering both digital and traditional static inventory. Ad buyers, media agencies, media owners, and ad technology vendors are also embracing the advancement brought about by digitization—the automation of media buying by programmatic trading.

### Objectives

IAB and PwC UK have partnered together, with the support of BroadSign, to conduct a qualitative market research study to understand the state of audience data<sup>1</sup> and programmatic trading in the digital out of home (DOOH) industry across five markets: Australia, Canada, the Netherlands, the UK, and the U.S.

The goal of the research is to understand the opportunities and challenges associated with the adoption of pDOOH, and to answer the question:

- What are the challenges in making pDOOH a mainstream media buy?

### Methodology

Our methodology is as follows:

- PwC UK conducted 48 interviews across the five markets, with 21 of those in the U.S. and Canada
- A range of senior industry stakeholders participated in the study including leading media agencies, specialist agencies, programmatic trading desks, ad tech vendors, and media owners
- The interviews lasted 45-60 minutes and were recorded and transcribed to ensure all details were captured
- Key trends and themes from each of the interviews were extracted and collated to form both a single market overview and to answer the key question

This report was produced by PwC in partnership with IAB; the final report, findings, and recommendations were not influenced by sponsors.

Phase 1 of this report covers the U.S. and Canadian markets. Phase 2 will cover Australia, the Netherlands, and the UK.

<sup>1</sup> Audience data, for the purposes of this research, means data used in the media buying process for planning, buying, measurement, and attribution.



# Programmatic trading in DOOH

## Programmatic in DOOH

Programmatic advertising is defined as the use of automation in the buying, selling, or fulfilment of digital display advertising.

Programmatic DOOH enables digital media buyers to set what audience they want to reach, the environments in which their ads should play, and other conditions that matter to a campaign, such as time of day, weather conditions, etc. When the circumstances are right, the transaction automatically takes place and the ad displays on screen.

## Impression multiplier

A common solution that has formed in the DOOH ecosystem to address the one-to-many nature of its ad-serving environment, as opposed to previous one-to-one digital advertising channels, is the impression multiplier. This multiplier is used to bring the DOOH measurement currency further in line with other digital channels in which media is bought and sold on an impression basis. The multiplier is used to give an estimated audience size that the DOOH ad has been delivered to in the one-to-many environment on a DOOH screen.

A simplified illustration of the programmatic supply chain is included in figure 1 below.

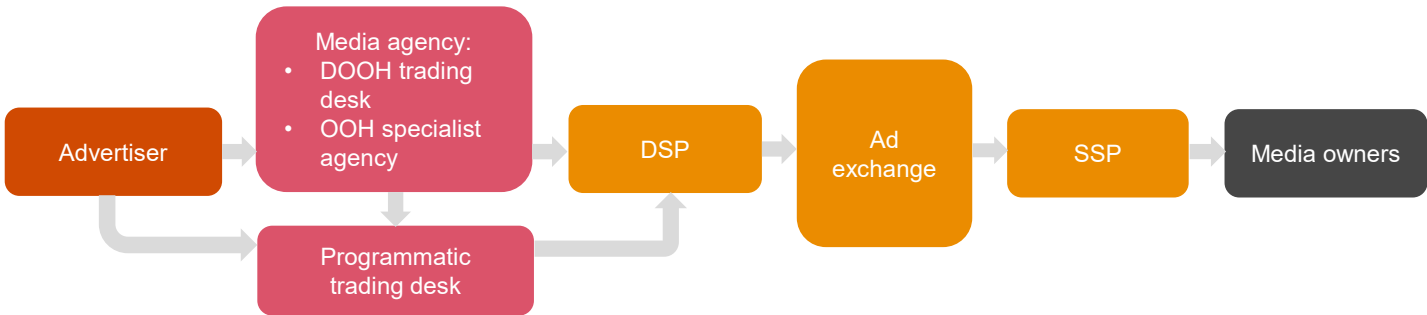
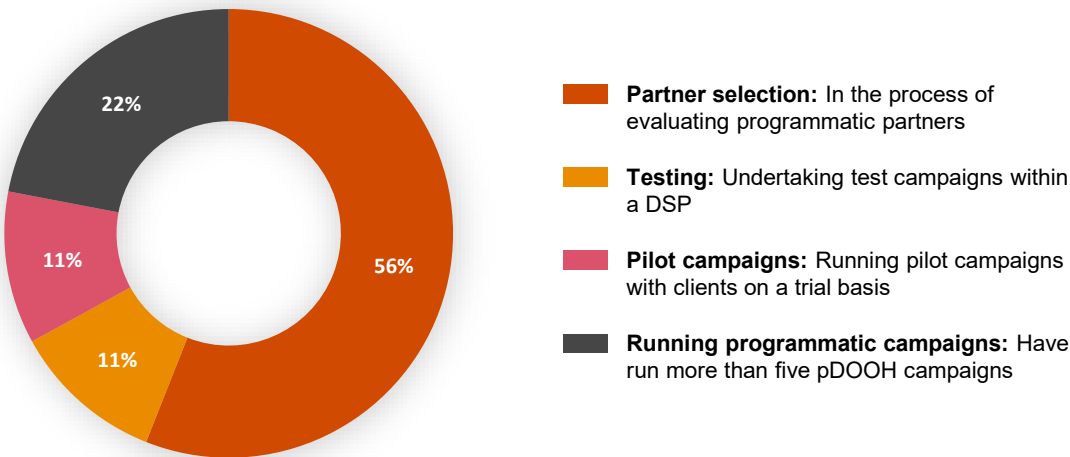


Fig 1: Illustrative programmatic supply chain

## 56% of those interviewed on the buy-side stated they are currently evaluating their potential programmatic partners

Adoption of pDOOH across the U.S. and Canada on the buy-side have been grouped into four stages. These are described below.

### Buy-side (media agencies and agency specialists)



# 2

## Key insights

# “ What are the challenges in making pDOOH a mainstream media buy?

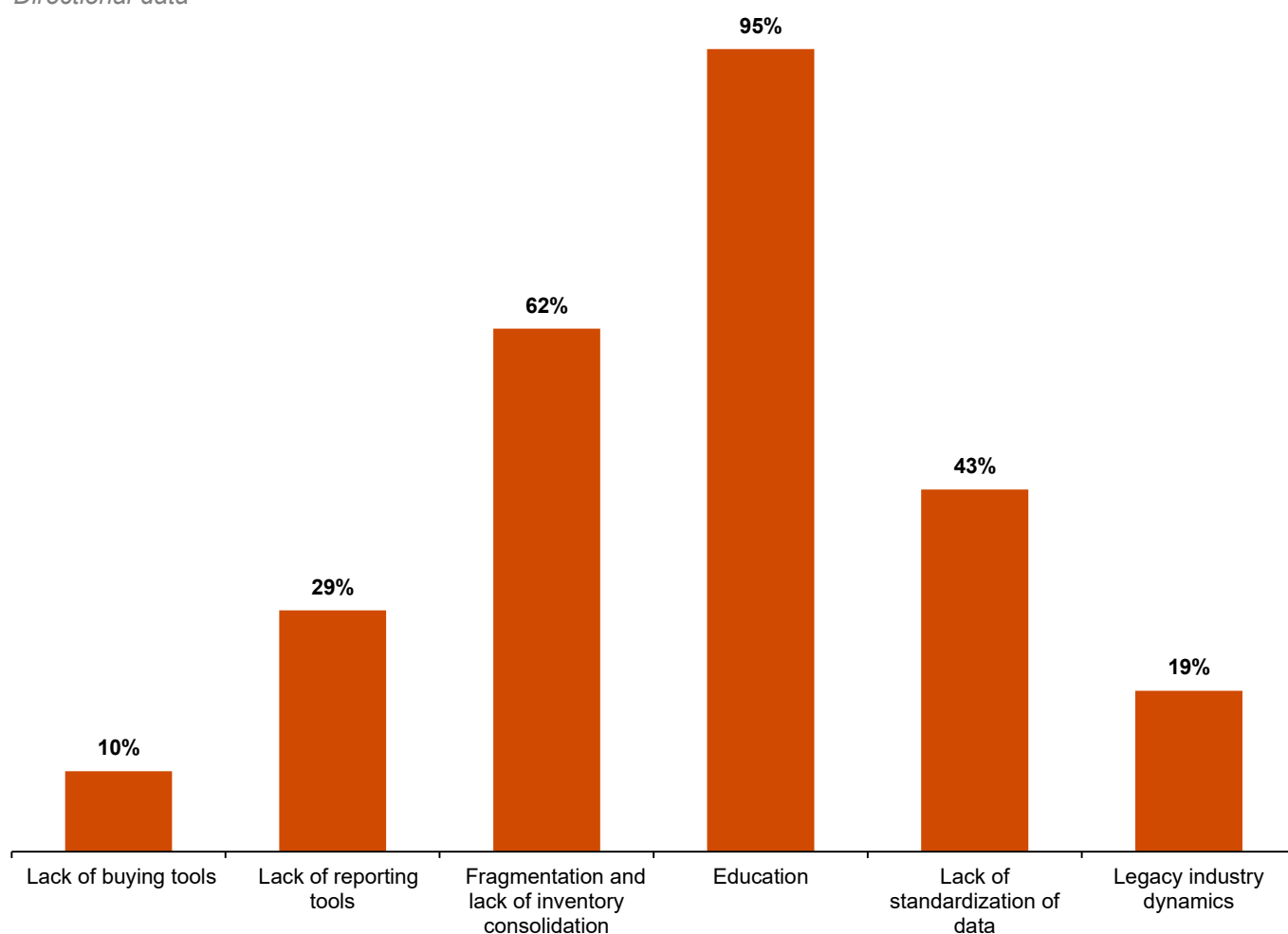
## Three key themes emerged

In the interviews, three key themes emerged when looking at the challenges holding back the market.

### 1 EDUCATION 2 FRAGMENTATION 3 STANDARDIZATION

Responses from the U.S. and Canada

*Directional data*





# What are the challenges in making pDOOH a mainstream media buy?

## 95% Education

Of the participants interviewed, **95% indicated that greater education is required in order to accelerate the adoption of pDOOH**, in particular for the following three sets of stakeholders: clients, agency planners, and buyers (both in programmatic trading teams and traditional OOH buyers).

**Education is required on both the buy-side and the sell-side to explain:**

- The benefits of DOOH as a medium to media planners including comparisons to other digital mediums, taking into consideration brand safety, viewability, and ad fraud
- The capabilities and benefits of an audience buying approach and the ways in which programmatic trading can bring value to clients
- How to transact programmatically, including what a one-to-many buy looks like in comparison to a one-to-one targeted buy

General consensus from the buy-side places the onus on the sell-side to educate and promote the current offerings, processes, and benefits of pDOOH.

### Education on the client side is also linked to attribution

If success against a client's campaign objectives and KPIs can be demonstrated through attribution, the volume of programmatic transactions is likely to increase at a faster rate than through organic growth of the industry.

Currently DOOH is sold on a broad definition of impressions and reach, for example the number of people passing by the billboard or using basic demographics or event based targeting. When adopting an audience buying approach, impressions may be lower, but the effective reach will be higher as a result of an increase in the precision of targeting parameters.

## 62% Fragmentation

### Lack of inventory consolidation

There is a lack of inventory consolidation across the commercially available pDOOH solutions. As a result, the number of platforms available in each market and the fragmentation of inventory across these platforms is increasing.

Furthermore, not all media owners are programmatically enabled. On the buy-side, not being able to access multiple media owners through a single DSP is inefficient. On the media owner side, media owners must meet different requirements for each SSP to enable multi-platform integrations.

### Forecasting and planning tools

As a result of the fragmentation of inventory and media owners, along with the number of technology solutions in-market, the buying approach for DOOH is also fragmented. An accurate forecasting and planning tool including planned impressions from DOOH inventory is missing on the buy-side.

Currently, planning is performed on the buy-side using the first-party or third-party audiences defined by their chosen data provider, either through contextual, demographic, or behavioral targeting. This is done outside of the DSP, often using an agency's own data model.





# What are the challenges in making pDOOH a mainstream media buy?

## 43% Lack of standardization of data

**OOH is a 'one-to-many' medium.** In order for DOOH inventory to be traded programmatically, new inputs into the RTB environment must be included and defined.

To define the number of impressions of a given DOOH screen—based on the target audience defined in the RTB—a multiplier is applied to the total foot traffic passing the board. This multiplier is not industry standard, with multiple partners using different methodologies and source data to determine this, which can lead to conflicting buying decisions.

OpenRTB 3.0 includes DOOH support in its new AdCOM object model, and the impression multiplier is in the process of being added.

For pDOOH buying to increase, a standardized methodology for data definition and collection needs to be implemented and adopted by all players in the market.

The view of the industry is that the Digital Place Based Advertising Association (DPAA), the Out of Home Advertising Association of America (OAAA), IAB, and the IAB Tech Lab should take the lead in standardizing data collection and methodology. This is being done through:

- **IAB** – Standards and guidelines
- **IAB Tech Lab** – OpenRTB, VAST, Data Label, and Open Measurement specifications
- **OAAA / DPAA** – Data standards and data collection methodologies
- **OAAA / DPAA and IAB** – Defining the methodology to calculate the impression multiplier

## 29% Lack of reporting tools

If success against a client's specific campaign objective(s) can be demonstrated through attribution, the volume of programmatic transactions are likely to increase at a faster rate than through organic growth, expected to be 8.0% (CAGR)<sup>1</sup> (U.S.) and 6.2% (CAGR)<sup>1</sup> (Canada) over the next five years.

## 19% Legacy industry dynamics

On the buy-side, the place of DOOH and pDOOH within the agency is still being determined.

The responsibility of who plans and buys pDOOH in an agency is also open, with digital, OOH, programmatic trading desks, and mobile buying teams jostling over the ownership of the budgets.

As agencies determine ownership of budget, the sell-side struggles to identify pDOOH responsibility.

The majority market view is that **pDOOH will become the responsibility of the programmatic specialists in the U.S. and Canada.**

To help foster change, the roles of digital and OOH need to be more closely aligned to share knowledge and understanding around audiences and datasets.

## 10% Lack of buying tools

The ability to see both spend and audience delivery metrics in a single omnichannel platform was highlighted as being currently unavailable in the market.

Source:

<sup>1</sup> PwC Global Entertainment & Media Outlook 2018-2022



# 3

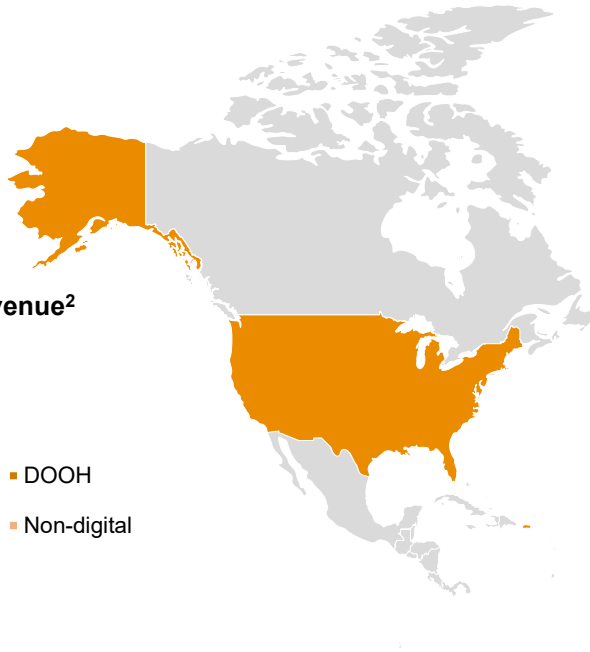
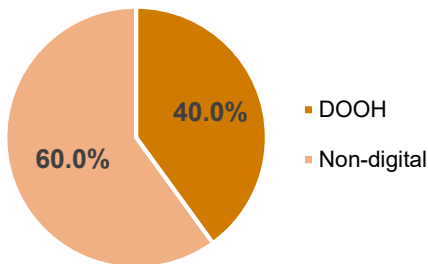
## Overview by market



# DOOH market U.S.

\$10b

2018 OOH advertising revenue<sup>2</sup>



~3,300,000

OOH displays 2018<sup>3</sup>

## Fragmentation

- **The DOOH market in the U.S. is highly fragmented** with a high number of companies of varying size across both the buy-side and the sell-side. The industry is fragmented in terms of:
  - **Media owners:** The U.S. market is dominated by a few large media owners, with a high number of smaller and local media owners
  - **Inventory:** There is a lack of consolidation of inventory through the current programmatic platforms
  - **SSPs and DSPs:** There are a number of different SSPs and DSPs available in the market
  - **DOOH currency:** There is no single currency methodology for trading DOOH programmatically when buying on impressions and reach. In addition, each media owner and SSP defines the impression multiplier in a different way leading to further fragmentation
- Many players in the U.S. are developing their own technology solutions in the form of SSPs, contributing further to market fragmentation.
- The lack of standardization of data and inventory in the SSPs available in the market means that a multi-platform buying approach is standard at present. There is a fragmented approach to buying, with the platforms used typically based on the inventory available through the platform and unique selling proposition (USP) of a particular technology solution.
- Agencies and media vendors use different datasets in the processes of campaign planning and evaluation. For campaigns in which multiple media types are used, for example DOOH and mobile, standardized data sets and methodologies are required in order to effectively validate campaign learnings and attribution.

## Transparency

- **Transparency of spend across the supply chain** including transparency over data collection methodologies and fees has been highlighted as a key area of focus as pDOOH develops.

## Regulation and privacy

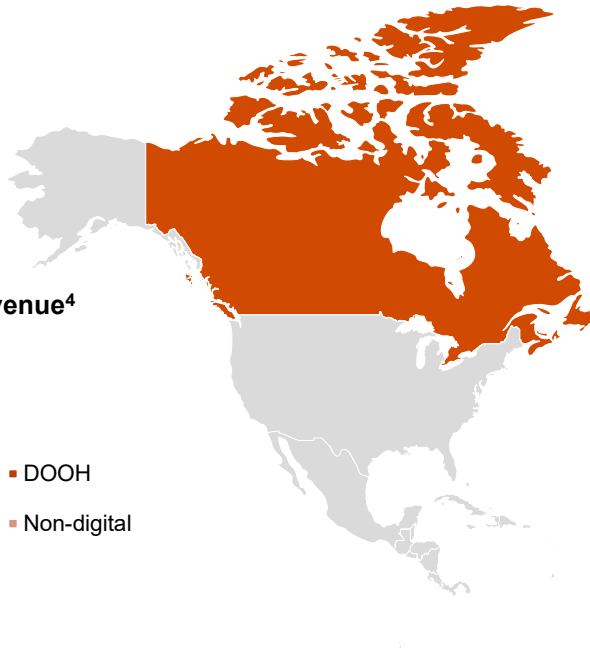
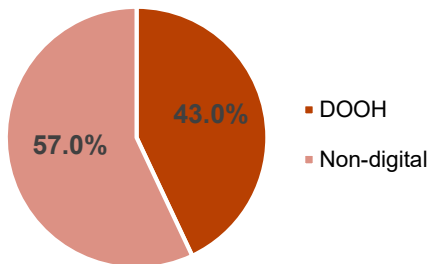
- In the transition to an audience buying approach for pDOOH, data privacy regulations such as GDPR in Europe and the California Consumer Privacy Act (CCPA) in the U.S. were identified by all of those interviewed as a key risk in the market. The introduction of new regulations has the potential to inhibit the availability and use of data for audience targeting and measurement.
- Although all participants are aware of data privacy and regulation as being a risk, **the responsibility for ensuring compliance with these regulations is seen as being the responsibility of the data provider/seller.**
- There is significant trust on the buy-side that the data provider has taken all the steps necessary to ensure the data is compliant with all necessary regulations. If data sets were subject to third-party verification, this would be a key selling point for buyers.
- California has the second highest ad spend (behind New York) for OOH advertising in the U.S. The passing of the CCPA (coming into effect January 2020) also puts significant focus on data privacy and use in advertising, including pDOOH.
- State legislatures across the U.S. are imposing physical regulations on the construction of DOOH assets across the states, limiting the available inventory across the market. A key example of this is California. This serves to increase the fragmentation of the market and is an additional consideration for creative and buying agencies.

# DOOH market

## Canada

\$661m

2018 OOH advertising revenue<sup>4</sup>



~968,000

OOH displays 2018<sup>5</sup>

### pDOOH platforms

- There are four primary pDOOH media trading platforms active in the Canadian market which are used to buy and sell DOOH inventory programmatically and leverage data analytic solutions.
- 80% of agencies interviewed are testing at least one of these four platforms to transact programmatically. Integration with omnichannel DSPs to combine DOOH as part of a wider media buy, such as with mobile and digital display, means that synergies in buying and reporting with other media would be possible. Combined reporting from pDOOH and other media would enhance the attribution offering within the market further.
- There are conflicting views on the state and quantity of inventory available for pDOOH, but the volume and quality of inventory available through a platform creates a competitive advantage.

### Data sources and verification

- Data used for pDOOH is split into four components in this study. Data is used in planning, buying, measurement, and attribution. There are multiple data sources available in the market to address these areas, all of which use different data collection methodologies, sample sizes, and levels of third-party verification.
- The lack of standardization of data means that a multi-platform buying approach is standard at present, with multiple data sets and platforms used on the buy-side.
- Each agency interviewed uses different types of audience data in DOOH. The number of distinct data sources varies.

- All acknowledge that there is a lot of available data, but the industry has not yet found a use for it.
- The agencies with the highest adoption of pDOOH use audience data tactically and appear to have a greater understanding and education of its use in the solution.

### Standardization of data and data collection methodologies

- The DOOH market in Canada has a lack of standardized audience data across the industry. This is particularly notable for mobile data.
- Each mobile partner has different data pools and their own method of audience data collection. Each dataset represents only a sub-set of the market. If the data from different mobile providers were to be consolidated, the view of the audience would still remain fragmented. This means there are varying levels of accuracy, reliability, and verification of mobile data across the industry.
- Agencies and media vendors use different datasets in the processes of campaign planning and evaluation. For campaigns in which multiple media types are used, for example DOOH and mobile, standardized data sets and methodologies are required in order to effectively validate campaign learnings and attribution.

# 4

## Audience and attribution



# State of audience data

## App-based mobile data is the preferred deterministic data source

In the U.S. there are a number of third-party data providers, agencies, and media owners used to define audience segments.

In the **Canadian** market, mobile application data is used as a proxy for audience definition and targeting. SDK level data bought from media companies is considered 'industry standard' for accuracy and reliability.

## In both markets, the buy-side favors first-party data or verified third-party data over data provided by media owners

Data the buy-side is generally looking to accept from media owners is limited to location data and screen specifications, which the buy-side can then overlay with their first- or third-party data.

In the U.S., numerous demographic, behavioral, and mobile data sources are commonly used on the buy-side. However, the industry appears reticent to adopt additional data at scale for several reasons:

- **Compliance:** Data privacy regulations and their evolution and implementation have spurred an ongoing debate with, potentially, varying state-by-state and country-by-country implications.
- **Cost:** To move from probabilistic to deterministic data requires more expensive 1:1 data collection, such as the use of anonymous camera tracking, Wi-Fi sniffers, or other infrared solutions.
- **Technical constraints:** The application or ingestion of bid stream (including location) data raises technological constraints within certain DSPs.

## Concern over quality and collection methods of audience data is impeding pDOOH buying

Most parties interviewed noted that there is not a lack of data within the market—but rather, there is an excess of data points which are not currently being leveraged. The quality and collection methods of data are problematic for many digital media teams.

Buyers want to do their own audience targeting with their own data. However, it is the measurement and attribution of audiences using verified and reliable data that buyers want to see more of.

## DOOH measurement currency

In the **U.S.**, there is an accepted provider in market as the **DOOH audience measurement currency across the ecosystem** which is third-party verified. Despite this, its geographic limitations are noted, providing information only for street-side, street furniture, transit digital advertising, and place-based locations.

Limitations around lack of granularity and real-time data was also highlighted as being a constraint with dependency on one provider.

Other data providers were also named as being used—though not as widely adopted as the standardized measurement currency—for venue-based DOOH networks.

In **Canada**, there is no standardized DOOH measurement currency, although one provider is responsible for developing and verifying audience measurement methodologies across the ecosystem.

One particular media company is used throughout the Canadian market on the buy-side for audience targeting and attribution analysis as a result of the accuracy of the data and the high market coverage.

There are a number of OOH industry bodies across the U.S. and Canada which work to develop standards for audience measurement across all OOH ad formats.





# State of attribution data

## Lack of independent, verified attribution data highlighted across both markets

Standardized and industry recognized attribution is currently lacking across DOOH and pDOOH. This is a significant tool missing from the industry.

There is industry consensus that independent and verified measurement and attribution data is needed.

Four areas of concern around attribution were highlighted:

**1. Visibility:** There is minimal visibility on the buy-side over the tools used to verify conversions from exposure to DOOH ads, and a lack of tools to understand a consumer's path to purchase.

**2. Verification:** There are a number of pDOOH trading platforms active in the U.S. and Canadian markets which offer attribution solutions through brand lift studies, verified walk-ins, and mobile re-targeting. This attribution is not third-party verified which was highlighted as a limitation.

**3. Cost:** Third-party attribution partners are typically used on the buy side, but the willingness of clients to perform attribution often depends on media budgets as a specific volume of data—and associated media spend—is required.

**4. Multi-touch:** In defining multi-touch attribution models, the contribution of DOOH is still being determined.

## Utilizing mobile data to build attribution models

Mobile device IDs and transaction data have been highlighted as key for attribution models in pDOOH and key to advanced attribution capabilities.

Tracking mobile device IDs exposed to a DOOH ad to client data collected through loyalty card or transaction data collected from retailers and credit card companies (as allowed by laws and regulations) is seen as way of closing the attribution loop within the industry if the campaign objective is to increase sales.

If a consumer's path to purchase can be mapped from mobile location data to transactional data at a point of sale, the attribution loop could be closed.

**Attribution is required to facilitate the growth of DOOH as a medium, similar to the growth of mobile advertising.**





# Key terminology

- **OOH (out of home)** – Visual advertising media found outside of the home including billboards, street furniture, transit, and place-based advertising (excluding cinema)
- **DOOH (digital out of home)** – Digital media inventory found outside of the home such as screens and billboards
- **pDOOH (programmatic digital out of home)** – Programmatic advertising applied to DOOH
- **Programmatic advertising** – Automation of media buying including real-time buying (RTB) and programmatic guaranteed
- **Buy-side** – Media agencies, agency specialists, and DSPs
- **Sell-side** – Media owners and SSPs
- **DSP** – Demand side platform
- **SSP** – Supply side platform
- **Impression** – Digital advertising currency where one impression is one digital ad served to one person
- **Impression multiplier** – A multiplier to give an estimated audience size a DOOH ad has been served to in the one-to-many environment





# About us



The Interactive Advertising Bureau (IAB) empowers the media and marketing industries to thrive in the digital economy. Its membership is comprised of more than 650 leading media companies, brands, and the technology firms responsible for selling, delivering, and optimizing digital ad marketing campaigns. The trade group fields critical research on interactive advertising, while also educating brands, agencies, and the wider business community on the importance of digital marketing. In affiliation with the IAB Tech Lab, IAB develops technical standards and solutions. IAB is committed to professional development and elevating the knowledge, skills, expertise, and diversity of the workforce across the industry. Through the work of its public policy office in Washington, D.C., the trade association advocates for its members and promotes the value of the interactive advertising industry to legislators and policymakers. Founded in 1996, IAB is headquartered in New York City.

For more information, please visit [iab.com](http://iab.com)



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For more information on how to get involved, please contact [data@iab.com](mailto:data@iab.com)



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