Marketing ROI and Location Data

A look at current and emerging practices in leveraging Mobile Location Data for marketing attribution and ROI

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This document has been developed by the IAB's Mobile Location Data Working Group, part of the IAB's Mobile Marketing Center of Excellence.

About the IAB's Mobile Location Data Working Group: The Mobile Location Data Working Group was formed to discuss best practices, standards, data, innovation, reporting and all issues related to utilizing location data for Mobile and Cross-Platform advertising. Representing members from all parts of the Mobile advertising ecosystem, the mission of the Working Group is to promote the adoption and use of location data for superior advertising solutions. A full list of committee member companies can be found at www.iab.net/Mobile_Location_Data_Working_Group

About the IAB's Mobile Marketing Center of Excellence: The IAB Mobile Marketing Center of Excellence, an independently funded and staffed unit inside the IAB, is charged with driving the growth of the mobile marketing, advertising and media marketplace. The Mobile Center devotes resources to market and consumer research, mobile advertising case studies, executive training and education, supply chain standardization, creative showcases and best practice identification in the burgeoning field of mobile media and marketing. Our agenda focuses on building profitable revenue growth for companies engaged in mobile marketing, communications and advertising, and helping publishers, marketers and agency professionals understand and leverage interactive tools and technologies in order to reach and influence the consumer. More information can be found at: www.iab.net/mobile

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Overview

Are you interested in ways to understand the effects of your digital advertising campaigns and marketing efforts? Are you interested in learning more about using mobile data to analyze actions and media exposure across platforms? This paper was written as a primer to answer these types of questions. This goal of this primer is to educate digital buyers, sellers, and other interested parties on how mobile location data can be used to show campaign effectiveness and cross-platform campaign attribution. This paper will look at currently available approaches and methodologies which depend on mobile location data for marketing insights.

For the purposes of this paper advertising effectiveness solutions are defined as the ability to connect and quantify consumer actions in regards to discrete advertising campaigns – and are inclusive of attribution and ROI services and methodologies. While this is still a nascent industry, its projected growth and increasing marketer interest makes a primer outlining current approaches useful to the industry as a whole.

Intended Audience

This primer is written for anyone with a general understanding of, and interest in, the different types of digital campaign effectiveness solutions available and how they may be used tactically for specific campaign goals. Additionally this primer is also useful for those interested in mobile advertising measurement or looking for innovative solutions to help understand mobile and cross-platform advertising campaign effectiveness.

Table of Contents

Introduction

Mobile advertising has continued to grow by leaps and bounds, experiencing a 123% CAGR in revenue from 2010-2013 (PwC, 2014). As mobile advertising grows, so does marketer interest in refined measurement solutions which can help them better understand and optimize their mobile advertising spend. Namely, many seek the ability to measure campaign performance beyond the click-through. Mobile location data creates possibilities for campaign measurement far beyond what can be gleaned in the desktop environment using the cookie. Solutions today can provide a highly accurate view of real-world foot traffic, lift in product sales, and other key measurements of marketing success.

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This paper will explore methods of using mobile location data to understand campaign effectiveness and attribution. This is meant to be a high-level primer on the topic to help users become generally familiar with current practices and capabilities in the market. Here we will specifically focus on mobile location data represented as lat/long coordinates, passing over other forms of data used to infer location such as IP – used in the desktop environment. It must also be understood that the quality of data will impact the quality of insights delivered by that data and will inevitably vary across vendors.

The usefulness of location data is nothing new to mobile publishers and advertisers. Using mobile location data for more precise campaign targeting has been a popular tactic since at least 2012. In fact, mobile advertising campaigns which use mobile location data for targeting have grown from $1.2B in 2012 to an estimated $3.9B in 2014 (BIA/Kelsey, 2013). In response to increasing demand, the supply of available mobile location data has also increased. In 2012 approximately 10% of programmatic ad requests provided lat/long data with a minimum of 3 digits; a percentage which grew to a stunning 68% in 2014 (Thinknear, 2014).[1]

In addition to its usefulness for mobile campaign targeting, location data can be used for better measurement and also to evaluate cross-platform campaigns—including out of home, connected TV and other media. As will be explored throughout this primer, location data has been critical in helping marketers understand people, places, and users' digital and physical interactions.

BIA/Kelsey. (2013). *From National to Local: Mobile Advertising Zeros In.* New York: BIA/Kelsey.

PwC. (2014). *IAB internet advertising revenue report 2013 full year results.* New York: Interactive Advertising Bureau.

Thinknear. (2014). *Location Score Index.* New York: Thinknear by Telenav.

LOCATION DATA AND PRIVACY

The resulting increase in the use of location data appropriately gives rise to concerns over privacy. In just the last year, location data has been the subject of federal legislation, Federal Trade Commission (FTC) action, state law, and state attorney general review – a trend likely to continue into the foreseeable future.

Buyers and sellers using location data should take care to ensure that location data is used in a consumer privacy-friendly way. They should also be cognizant of existing laws and guidance documents impacting the use of location data – COPPA and CalOPPA notably among them.

Those using location data should also utilize and comply with the robust consumer choice mechanism the Digital Advertising Alliance (DAA) has built as part of its self-regulatory program. As of the beginning of 2015, compliance with the self-regulatory principles the DAA has created for the mobile environment, which include first and third party obligations on the use of precise location data, will be enforced by the Better Business Bureau (BBB) compliance program. The DAA will also offer an app to facilitate consumer choice.

A NOTE ON STATISTICAL RESEARCH AND MEASUREMENT

In the digital world, one can directly measure clicks, e.g. CTR, secondary actions, and post-click landing page loads. In the offline world, marketers must adjust for the nuances of physical world behavior. In particular, not all physical world actions will generate a measurable digital signal. As a result, attribution of physical world events back to digital media campaigns requires the application of data science and statistical analysis. As such, marketers should consider historical baselines to adjust for seasonality or other known trends. In addition, physical world measurement methods should account for the fact that not every store visit or spend transaction is the result of digital advertising just as established online analytics approaches do not attribute every visit to a website back to a digital campaign.

For a meaningful look at offline campaign attribution, marketers should be ready to evaluate statistical results which include average measures (e.g. x% increase in visits or spend). As with all statistical analysis, research vendors should be required to provide a margin of error estimate (e.g. ±x%) and a confidence interval showing the percentage level of confidence that the average measure is within that margin of error (e.g. 85%).

Working with Location Data

The first steps in leveraging location data are the ability to accurately report a device's location and as well as the ability to understand which places reside at physical locations on a map. Once these have been established many marketers are able to expose richer insights by combining location data with other data sets relative to campaign performance or attribution.

I. Locating the Device

As discussed in the IAB's 2012 Mobile Local Buyer's Guide, lat/long signals can be obtained from mobile devices and shared with those in the ad serving chain. There are two main approaches to obtaining lat/long signals to locate the device. The first approach is to obtain lat/long signals from ad impression data. This approach can provide signals for a large set of devices, but - depending on the scale of each vendor - may be limited to a smaller count of signals per unique device.

Another approach obtains these signals directly from an app a user installs on their mobile device (e.g. a panel app or other app that collects location in the background), which allows for continuous collection of lat/long data from within the app. While this method is limited to the number of users who choose to download the app, opt-in to, and activate, location sharing; this approach can provide a high frequency of signals per device and other sensor measurements to determine the device's precise location.

Similarly, users can also download branded apps that leverage indoor location technologies such as near-field communication (NFC), low-energy Bluetooth (BLE) and other beacon technologies. Indoor location provides hyper-precise and high-frequency lat/long signals, though these technologies are also limited to user app installation and opt-in, the device having location-sharing technologies enabled, such as BLE, and the hardware infrastructure of a physical place/store.

No matter what method is used, once the device is located there are many ways to combine the device's location data with additional information to provide a richer set of data from which to make consumer insights. For example, some approaches combine location data with mobile phone sensor information (such as the compass, gyroscope, altimeter and accelerometer) to produce a clearer picture of the device's location and orientation.

II. Locating the Place

There are generally three approaches used when locating a place: a tile or geofence methodology, leveraging place data (also referred to as point-of-interest or POI data) to determine where discrete places are located, and user-verification surveys. These methods are not mutually exclusive, i.e. some vendors will use a combination of these methods.

Within the different approaches used to locate a place, geographic boundaries can vary based on the methodology chosen. Some take the central lat/long coordinates of a store and draw a circle with a radius that encompasses the store. Others use polygons that outline the building's geometry to greater detail. Additionally, some break the earth into similarly sized tiles that represent any place within that tile. With each method there is some shape that represents a geographic area to which a visit occurs. The objective is to combine location data with place data (e.g. locations of a large brick and mortar store) to offer context to the eventual question of where a device is located.

Employing user verification of a location can provide additional accuracy and help providers maintain updates. This can be achieved through user-generated geotagged social actions such as place check-ins and user-tagged photos, posts, etc. Companies can also employ a survey approach via a dedicated panel app or as a component of their consumer app. These companies trigger a survey to a consumer asking them to confirm their actual location or past location(s). These approaches can be effective in improving the quality of POI datasets.

III. Indoor Location Data

Among several near-field communication (NFC) technologies currently available for retailers, beacons have captured the most interest and attention from retailers, marketers and the general public. Beacons are small devices that use low-energy Bluetooth (BLE) signals to send data to a specific app on a smartphone. Early adopters in the retail sector have been experimenting with beacons as a push marketing tool – offering promotions, product reminders and other sales-related information to consumers in and around their stores. However, the precision with which beacon technology can pinpoint device location makes it a potentially very powerful attribution tool as marketers seek to understand more about the consumer path to purchase.

Integrations with compatible media platforms provide marketers with precise device location data sourced from beacons which can then be used to link ad exposure and engagement metrics to behaviors in the physical world. For example, a marketer can directly correlate in-store behaviors – e.g., whether and for how long the consumer dwelled in the aisle where the product was located – to a specific ad creative to exposure.

As with any nascent technology, indoor location– specifically the beacon technology discussed above – comes with special considerations marketers should be aware of. In addition to the user opt-in and sharing stipulations notated in the "Locating the Device" section of this paper, scale and interoperability can also be challenges in this early market as competing technologies and hardware require an understanding of end-to-end platform compatibility for successful campaign measurement. Separately in some locales, signage is required notifying users of any monitoring or measuring of consumer behavior using in-store devices. Thus it is important for marketers to partner with companies who have a firm understanding on these unique nuances and considerations.

IV. Using Transaction Data with Location

Mobile location data can also be combined with transaction data for deeper insights into campaign ROI. Transactional data is generally mapped to either a unique device or to a geographic area (e.g. census block/household) by leveraging device location history.

Third party transaction data

In the case of marketers who do not own the physical retail store or point-of-sale (POS) data, media vendors may partner with third parties who can help them obtain product level sales data for campaign effectiveness research. In order to do this, marketers and/or their media partners leverage third party data partnerships with providers who anonymize transactional data from sources like credit cards and loyalty cards in order to map mobile devices exposed to a campaign to an overall lift in sales.

Addressable sales data

An increasing number of retail marketers are willing to provide some transparency about offline sales to their agencies and technology partners for the purpose of calculating campaign ROI. There are many entry points for collecting addressable sales data such as custom POS integrations, traceable mobile coupons and mobile wallet functionality to name a few.

Integrations with POS systems are one of the richest sources of sales data. Modern POS systems store detailed transaction-level data for items purchased. Many of these systems also have built-in loyalty programs where an email address or home address can be stored – allowing the marketer to link purchases back to a specific user or device.

The mobile wallet is a fast-growing payment solution which has the ability to provide transaction data across offline and online purchases for a specific device. When combined with a device's location data, marketers can learn even more about consumer purchase behaviors.

Panel and app-based survey data

Opt-in mobile panels and other consumer installed apps, can also be used to gain additional purchase-related behaviors. Surveys are particularly adept at capturing consumer mood, affinity and spend behaviors, and provide marketers with a way to obtain direct feedback about interactions in the store. This approach also has benefit of understanding when a consumer visited a store but did not complete a purchase.

Location Data and Cross-Platform Attribution

As we move through the physical world, the smartphones in our pockets are emitting valuable location signals that provide insight into our journey throughout the day and how we interact with different types of media. Mobile is more than a media platform; it is a connective thread that links online and offline actions.

Just as cookies became the online currency for tracking exposure to ads encountered across desktop channels (Display, Search, Social), so too can location data from mobile devices enable advertisers to better understand exposure to media in the physical world.

I. Location data and Out-of-Home

The measurement of out-of-home media is improving with new methodologies for attributing exposure, made possible through mobile location data. To date, the industry has by and large relied on consumer-reported exposures (defined as the consumer having an "opportunity to see" a placement) to verify exposure to out-of-home media. Now, by utilizing the above discussed methods of locating a device in context to a physical place, advertisers can better understand out-of-home exposures measured by proximity to an out-of-home screen at the time an ad runs.

This method of using mobile location data to show exposures to out-of-home media allows marketers to then connect out-of-home media exposure to metrics such as store visits or product sales at the device or household level. Additionally, by triggering real-time survey questions to consumers who have been in proximity of out-of-home screens, advertisers can better understand the impact of out-of-home on upper funnel metrics like awareness and consideration. As the industry continues develop, advertisers will also be able to understand how engagement with out-of-home is uniquely impacted by the context of location.

II. Location data and TV

Addressable TV represents connected TV experiences where advertising is targeted at the set-top-box level, to a specific household identified by a home address. The use of mobile location data allows vendors to understand a mobile device's home address by analyzing its location history; in particular its dwell time at a residential address. Using location data tied to a home address as a link, mobile and TV providers are able to collaborate on providing campaign attribution, effectiveness and insights back to the marketer.

Once this link has been established, location analytics companies can create audience segments targeting those set-top-boxes by monitoring the location patterns of the mobile devices attributed to the home address. For example, a vendor can identify households that visit a particular physical location and then target those households on their TV set-top-box. Due to the varying scale and availability of addressable TV homes, it's common for vendors to use look-alike modeling to achieve the desired scale for a campaign.

In these types of integrations concerning addressable data, it is common for a third party to serve as a privacy-compliant safe haven. This third party can then be used to send information between parties to further ensure no PII is transmitted and also to help ensure all parties abide by the industry's self-regulatory privacy guidelines.

While addressable TV experiences allow for more precise attribution and effectiveness studies location data can also be used to provide average lift or performance metrics for geo-targeted TV campaigns corresponding back to mobile actions in the same geographical area.

Location Data Studies for Campaign Effectiveness

There are several approaches for using mobile location data to provide online to offline measurement. Attribution platforms can have varying implementation of these approaches and therefore different precision capabilities for showing campaign effectiveness. As is the case with almost all advertising effectiveness studies, there is always a level of uncertainty which is accounted for in statistical results. For this reason many of these measures are frequently shown as a percentage lift attributed to a media investment relative to some predetermined baseline.

I. Foot Traffic

Perhaps the most common use case for leveraging location data to determine campaign effectiveness is to measure the effect of a campaign on foot traffic to a specific place or purchase location. Generally, foot traffic lift studies correlate exposure to an advertising campaign to physical world "foot traffic" behavior; e.g., did the exposed device later visit the desired location(s).

Below are some of the most common methodologies and use cases for location data studies used to show a correlation between a specific campaign and foot traffic.

Establishing foot traffic

Using mobile location data to establish the baseline foot traffic of the place in question can serve as a useful analytics tool for brick and mortar businesses, as well as a benchmark when determining lift in foot traffic attributable to media.

Foot traffic can be established by analysis of device location data derived from the methods described earlier combined with information specific to the place of interest, including seasonality and other trends. By using mobile location data to establish a measure of foot traffic marketers are able to generate and optimize against key metrics like store visits, store conversion rate and cost per store visit for many of their marketing efforts – including those beyond digital advertising campaigns.

Showing foot traffic lift

Once a baseline has been provided or established, marketers can understand the lift provided by specific marketing efforts. The panel and brand apps discussed earlier, that passively collect location data can be used to segment groups exposed to mobile media (via mobile ad tracking) and measure their subsequent visits to a location (via lat/long and other data discussed earlier). The impact to foot traffic on account of a mobile campaign can then be measured in relation to a control group of users who have not been exposed to the advertising. For panel approaches foot traffic lift studies should make sure important factors such as audience demographics, behavior, historical purchase data and other campaign targeting tactics are controlled to ensure control and exposed samples represent like audiences.

Alternatively, device location data obtained by publishers sharing lat/long signals in the ad impression opportunity – usually through a network or exchange can be used to analyze foot traffic lift. The many types of lat/long data obtained from a device can be used to show the likelihood of the exposed audience to visit a location, compared to some benchmark of the general population's or target audience's likelihood to visit that location. In this scenario, it is important to consider the consumer's prior history of visits, the business's typical demographics (as compared to the exposed audience), store hours, etc. as these factors can be valuable inputs to the model.

These types of lift studies can also be used to provide more granular reporting and insights such as: the frequency of traffic lift (number of times a device has visited the physical location as a result of advertising), lift performance segmented by targeting tactic or ad creative, and even ROI metrics such as "cost per visit" looking at the overall ad spend in relation to the lift in traffic.

As alluded to earlier, foot traffic can also be attributed to out-of-home media exposure and TV ad exposure based on the types of data available and methodologies used. For out-of-home foot traffic studies vendors analyze the locations a device was located leading up to a store visit. This location information can then be used to understand foot traffic in the context of out-of-home ad exposure. Lift in foot traffic attributable to, or associated with exposure to, outdoor media can then be measured in relation to the baseline for foot traffic to a place.

II. Sales Lift Studies

Another way to use location data to assess campaign effectiveness is to show a lift in sales attributed to an advertising campaign. These types of studies range from overall product lift to assigning addressable sales to a particular campaign based on the methodologies and technology implementations used.

Applying transaction data

For wholesalers or other brands with multiple retail partnerships, understanding how location translates to sales lift can be a challenge. A campaign may drive consumers to locations who offer a variety of products in addition to the brand's product. When product-specific sales learnings are the goal, advertisers often provide sales or transaction data to their media partners, or leverage third party data sources discussed earlier, to understand how foot traffic driven by a campaign translates to sales. Panel-based surveys can also be used to obtain detailed consumer purchase behavior relative to ad exposure.

As described above, POS and addressable sales data provide a wealth of information useful in combining with location data or foot traffic insights to understand a campaign's impact on sales. In addition to showing sales generated, data from addressable sources can be used to show specific product lift by retailer or purchase location and uncover other insights and purchasing patterns.

Lastly, panels can also be employed to provide more nuanced transaction-level data useful in understanding campaign performance. Here, purchase related surveys are delivered directly to the consumer's mobile device within 24 hours of the store visit. Consumers are asked a number of questions, which may include things like purchase total, product(s) purchased, and overall experience. These figures can then be verified against standard store basket size for accuracy. As a result purchase amounts can be more precisely attributed to media spend, providing key metrics which are valuable to marketers such as Cost per Order, Average Order Value and Return on Ad Spend.

Measurement's Promising Outlook

The technologies, uses and implementations described throughout this paper represent the very beginning of a fast improving mobile measurement landscape. Companies will continue to iterate on and refine these methods as we get ever-closer in understanding a consumer's full journey and delivering on marketing's main goal of getting the right message to the right place at the right time.

Appendix A - Types of Data

I. 1st party device location (lat/long) data

First party location data refers to device lat/long data captured by a publisher's owned and operated mobile website or app.

II. 1st party place location data

Place Data (also known as point of interest or POI data) refers to data about where places (e.g. businesses or points of interest) are. A Place record typically contains the name, address, phone number, category, and latitude/longitude coordinates (also known as geocode) of the place. First party place data is data that is owned and maintained by the company making use of it.

III. 1st party panel data

First party panel data is collected through a direct, opt-in relationship with a user and device – typically in exchange for some form of compensation or value. Mobile panel data collection usually takes the form of an installed mobile app which is able to survey the user. In addition to providing more robust survey data, many of these applications run in the background on a user's device and, as such, are able to collect a high-number of lat/long data points directly from the device.

IV. 1st party data: brand/vendor integrations

First party data from brands or vendors represent transaction data owned by the brand or vendor which can be used to measure the efficacy of ad campaigns. To do this, the first party must work with a media or research provider to associate their data to mobile devices, enabling them to attribute transactions to devices. This requires some common piece of information between the transaction and the device such as a household address or email address.

V. 2nd party device location (lat/long) data

Second party location data refers to device lat/long data captured by a mobile app SDK belonging to someone other than the publisher who owns and operates the app.

VI. 3rd party device location (lat/long) data

Third party location data refers to device lat/long data captured by a third party (e.g. an exchange, DSP, SSP, ad network or data provider). Much of the third party mobile location data used for advertising and attribution comes from information provided in ad calls.

VII. 3rd party place location data

Third party place location data refers to Place Data that is licensed from an external data provider. In this scenario it is the data provider who maintains updates to the data for the third party.

VIII. 3rd party transaction data

Third party transaction data comes from an independent data provider/collector as opposed to data from the brand or vendor who owns the data and direct relationship with the consumer.

There are a number of data providers that with access to transaction data – often from store loyalty programs tied to household or email addresses.

IX. Indoor location technologies (e.g. beacons, NFC)

Indoor location is a field with growing interest and adoption within the mobile location data landscape. For the purpose of this paper, indoor location is used to refer to technologies currently being adopted by brick and mortar establishments such as low-energy Bluetooth (BLE) and other "beacon" technologies, indoor positioning systems, and other emerging near-field communication (NFC) technologies. Generally indoor location offers a greater precision of location data received (e.g. ability to identify which aisle in a store a device is located) but is limited to a shorter range of functionality (i.e. dependent upon size and desired precision, one store could house hundreds of beacons).

Appendix B - Additional resources

1. The 2012 IAB Local Committee's Mobile Local Buyer's Guide (www.iab.net/mobilelocal) offers definitions on location technologies, and overview of the marketplace as well as case studies on for using location data.
2. The 2013 DAA Application of Self-Regulatory Principles to the Mobile Environment (www.aboutads.info/DAA_Mobile_Guidance.pdf) includes guidance and implementation for current self-regulation as it applies to Mobile OBA, precise location data and other privacy-centric topics.
3. The 2014 IAB Mobile Location Data Working Group's Location Data Buyer's Guide (www.iab.net/locationdataguide) gives buyers a set of focused questions and issues to consider when considering a Mobile Location Data vendor or partner.
4. More information on the Federal Trade Commission Children's Online Privacy Protection Act (COPPA) can be found at www.coppa.org.
5. More information on the California Online Privacy Protection Act (CalOPPA) can be found at http://consumercal.org/about-cfc/cfc-education-foundation/what-should-i-know-about-privacy-policies/california-online-privacy-protection-act-caloppa.