



# Understanding Digital Audience Measurement

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# MEASURE

## Introduction

Audience measurement is the basis for half a trillion dollars of ad spending. It addresses two basic questions about audiences of media properties: How large are they, and who are they? These seemingly simple questions have become increasingly more difficult to answer as advertisers look to reach specific targeted audiences, requiring media sellers to measure ever-more-granular audiences. This short paper reviews current digital-audience measurement methods and how they meet the demands of the modern media environment.

## MEASURE

### THE EVOLUTION OF AUDIENCE MEASUREMENT



**Audience measurement was first used in the 1920s to measure radio listenership. Panel participants kept diaries of their listening for a measurement company, which used the collected data to estimate a program's total audience.**

# ADVERTISE

## THE EVOLUTION OF AUDIENCE MEASUREMENT

The 1920s estimation was primarily done via extrapolation. While data-collection techniques changed, the same basic method—extrapolating from a sample—was applied to television in the '50s, then to online media in the '00s.

Only in the last decade, with lower data costs and more computing power, has direct measurement become feasible. As the name implies, direct measurement measures the media property directly via a digital beacon.

The publisher incorporates the beacon into their content, and it's activated by content consumption. The beacon can provide data about every directly measurable attribute, such as visits, geography and platform.

While digital-traffic measurement has largely transitioned to direct measurement, many measurement services still rely on panel-based extrapolation for audience attributes, such as demographics.

## MEASURE

CHALLENGES  
WITH PANEL-  
BASED  
MEASUREMENT



**Today, most digital publishers sell advertising with some form of targeting.**

# MEASURE

## CHALLENGES WITH PANEL- BASED MEASUREMENT

Advertisers typically want their campaigns to appear on specific sections of a page or site, or before specific audiences. Accurately representing these granular audiences with panel-based measurement can be difficult, because a panel may comprise only 1% of the population being measured. On the next few pages, we'll review some of the challenges of panel-based measurement.

# MEASURE

## CHALLENGES WITH PANEL- BASED MEASUREMENT

### 1. Sample Bias

Panel-based methodologies rely on the sample being representative of the population. If tennis fans comprise 5% of the population, for example, the panel also should have 5% tennis fans. When a panel isn't representative of the population being measured, we call this "sample bias."

One significant challenge of panel-based measurement is recruiting panels without sample bias. For example, by using free NASCAR® tickets to recruit a panel, you'll over-represent the population's enthusiasm for racing and likely under-represent its interest in tennis.

# MEASURE

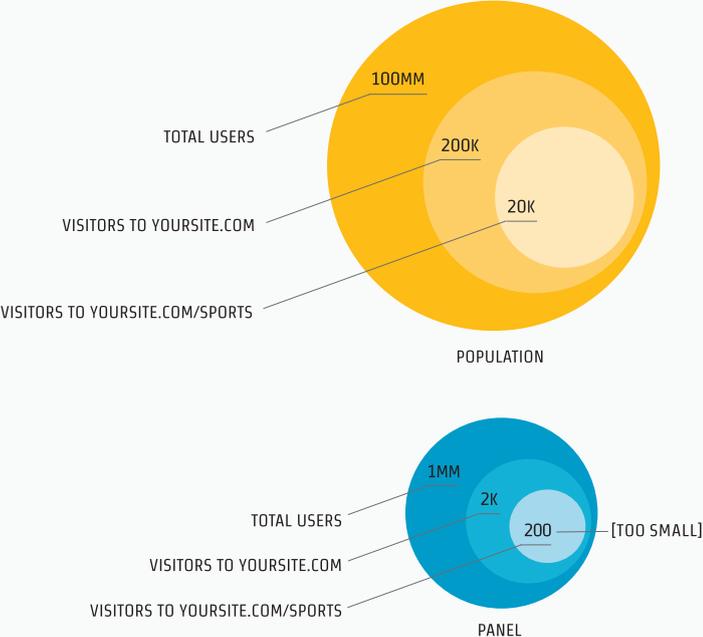
## CHALLENGES WITH PANEL-BASED MEASUREMENT

### 2. Measuring Smaller Audiences: Sections And Audience Segments

As advertisers and agencies demand more targeted media buys, publishers want to measure audiences for specific sections, such as sports pages, or for audience segments, such as high-income moms or in-app purchasers. By their nature, panel-based measurement solutions lose accuracy when measuring smaller audiences, because it's hard to ensure correct representation.

Example (Figure 1): From an Internet population of 100 million, yoursite.com typically receives 200,000 users, with 20,000 of these visiting the sports section. With a panel representing 1% of the population, only 200 members of the panel are likely to visit the sports section. Even if you know the gender of all 200, it would be challenging to accurately infer gender for the whole section, and inferring age or income would be even less accurate.

Figure 1. Panels Can Struggle to Accurately Measure Sections of a Property



# MEASURE

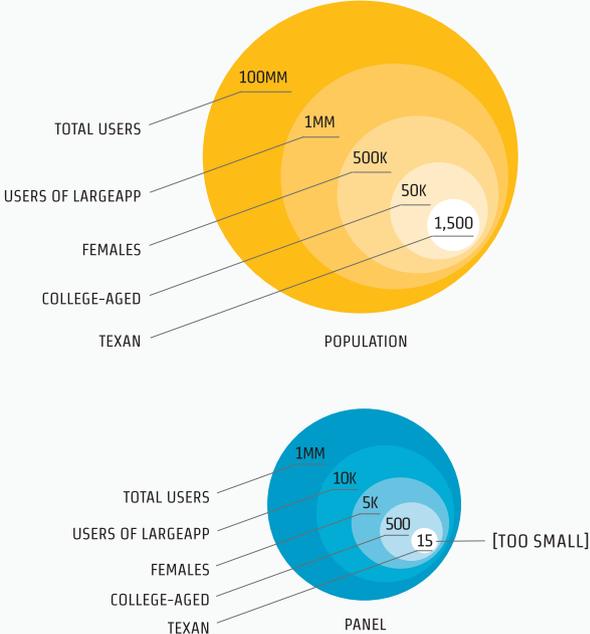
## CHALLENGES WITH PANEL-BASED MEASUREMENT

### 3. Measuring Audiences With Multiple Attributes

When they want to reach college-aged females from Texas, advertisers aren't interested in reaching females, Texans and college-aged people separately—they want to reach an audience having all three attributes. Panel-based measurement quickly loses accuracy as you add attributes, because the representation of the desired audience on the panel is small. The panel will include females, but fewer who are college-aged, and fewer still who are from Texas. Extrapolating from this small sample likely will produce a poor result.

Example (Figure 2): LargeApp typically has 1 million users, but only 1,500 are college-aged female Texans. With a panel representing 1% of the population, only 15 panel members meet these criteria, which doesn't allow reasonably accurate extrapolation.

Figure 2. Panels Can Struggle to Accurately Represent Targeted Audiences



# MEASURE

## CHALLENGES WITH PANEL- BASED MEASUREMENT

### 4. Audience De-Duplication

The goal of audience measurement is to measure people, not cookies or other identifiers. The challenge for audience-measurement services is that people typically use multiple devices and browsers, which generate multiple cookies and identifiers. The measurement service must “de-duplicate” those cookies and identifiers to achieve an accurate count of actual people.

Panel-based, audience-measurement services manage de-duplication by examining the usage characteristics of panel members who visit a property. For instance, if panel members tend to clear cookies more often than the general population, or own more mobile devices than average, this will inflate the de-duplication factor and result in an undercount of people visiting the property.

## ADVERTISE

QUANTCAST'S  
UNIQUE  
METHODOLOGY



**Quantcast employs direct measurement to capture traffic and other directly measurable attributes. We then determine other audience characteristics, such as demographics, through a technique called statistical modeling.**

quantcast.

# MEASURE

## QUANTCAST'S UNIQUE METHODOLOGY

### **The Consumer's Path to Conversion**

Starting with a set of users with a known gender, for example, Quantcast infers the gender of new users based on their similarity to the known users, scored against hundreds of data points. We can employ this technique because we see each U.S. online user, on average, 600 times a month. These additional data points, while not providing direct demographic data, provide a strong signal about user similarity.

# MEASURE

## QUANTCAST'S UNIQUE METHODOLOGY

### How Does Quantcast Statistical Modeling Work?

1. Start with reference data from registrations and surveys
2. Examine characteristics of reference and measured users (which can include sites visited, apps used, app-usage frequency, content categories, device type and many more)
3. Infer attributes for each user, based on similarity to reference users
4. Validate inferences against reference data and external census data

FACTORS						
	VISITED SITE X	VISITED SITE Y	USED APP Z	VISITED CATEGORY K	DEVICE TYPE M	KNOWN MALE
MALE ATTRIBUTES	●		●	●	●	X
VISITOR 1		●		●		
VISITOR 2	●		●	●	●	X

	VISITED SITE X	VISITED SITE Y	USED APP Z	VISITED CATEGORY K	DEVICE TYPE M	KNOWN COLLEGE GRAD
COLLEGE GRAD ATTRIBUTES	●	●		●		X
VISITOR 1			●	●		
VISITOR 2	●	●		●		X

[REPEAT PROCESS FOR EACH ATTRIBUTE]

Note: This example for illustration only; actual models include hundreds of factors

# MEASURE

## QUANTCAST'S UNIQUE METHODOLOGY

### Overcoming Challenges Faced By Panel-Based Measurement

By taking a different approach, Quantcast's methodology overcomes many of the challenges encountered by panel-based measurement.

Panel-based measurement is sensitive to sample bias because it assumes the panel represents the audience being measured.

We base our methodology on the assumption that users who share an attribute, such as gender, behave similarly in a detectable fashion.

Limited by their size, panels can't accurately represent the smaller, targeted audiences that advertisers demand. Compared to a panel, the Quantcast statistical modeling can accurately infer attributes for a relatively larger group of people, enabling accurate measurement of even the smallest audiences.

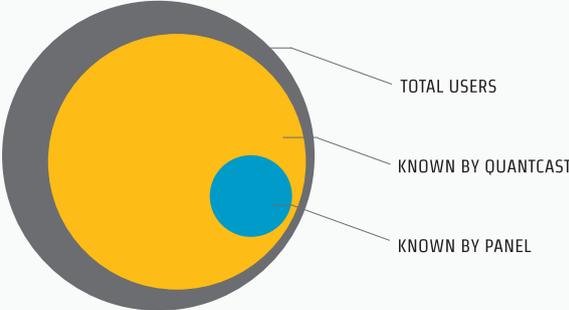
# MEASURE

## QUANTCAST'S UNIQUE METHODOLOGY

### Overcoming Challenges Faced By Panel-Based Measurement

Panel-based measurement services de-duplicate users based on the attributes of their panel, which is subject to sample bias. At Quantcast, we de-duplicate users by examining multiple data points across all sites and apps, such as time period, observed-visit frequency, visit source and property type. That's why we're less subject to potential sample bias.

Quantcast Knows About a Significantly Larger Audience Than a Typical Panel



# MEASURE

## Conclusion

### The Migration To Direct Measurement

Until recently, direct measurement was cost-prohibitive at scale. Panel-based measurement has been a cost-effective means of measuring a large population, but uses a small set of sample data. Today, lower computing and data costs have changed the equation. Direct measurement now is not only possible, but necessary, given publishers' increasing adoption of segment-based audience sales and new media platforms.

Quantcast has provided direct measurement coupled with statistical modeling since 2007. During that time, we've refined our collection and modeling techniques to provide consistent, accurate traffic and audience-profile data—across any digital-media platform, and for free.







## **About Quantcast**

Quantcast processes real-time data at the intersection of commerce and culture, providing useful, actionable insights for brands and publishers. Through Quantcast Measure, we have unlocked the data generated by millions of digital destinations, helping publishers and creators understand and grow their businesses in ways never before possible. With Quantcast Advertise, adaptive modeling and intelligent machines are utilized to help thousands of marketers around the world find and interact with customers anywhere they connect to the digital world. Our more than 600 employees are driven by the potential for big data to radically improve everyone's connected experiences and transform the way we all make sense of the world.

**To learn more about Quantcast's  
audience measurement solutions,  
contact [measuresales@quantcast.com](mailto:measuresales@quantcast.com)**