

WHITE PAPER

The Role of POS and Panel Data - and the Danger of Forced Alignment



About the Authors

This white paper has been written by Sue Brady, Principal, OmniPanel Go-To-Market and Dennis Moore, President, Panel Solutions at Numerator. Sue and Dennis have been career collaborators with a combined 40+ years at Nielsen bringing perspective to the disruptive technology of Numerator.

Sue is an established market research principal, bringing broad experience in both consumer insights and shopper insights. At Numerator, Sue helps demystify the Numerator OmniPanel, building a bridge from conventional thinking on consumer panels to the disruptive panel capabilities of Numerator. Prior to joining Numerator, Sue spent over 30 years immersed in consumer and shopper insights at Nielsen. Sue studied Mathematics at Cornell, with an MBA from the University of Iowa.

With deep and varied experience in the industry, Dennis has been integral in shaping how brands utilize market research, data and analytics to improve marketing ROI and drive growth. A career researcher and business leader, Dennis is deeply involved in all aspects of Numerator's panel capabilities to drive deeper understanding of consumer behavior. Prior to his time at Numerator, Dennis worked for more than a decade in leadership roles for Nielsen. Dennis studied Statistics at the University of Michigan.

CONTENTS

- I. Introduction
- II. Point of Sale Data: A Tool for Counting Sales
- III. Panel Data: Understanding Consumer Behavior
- IV. The Evolution of Panel Data: Modern Tools for Modern Consumers
- V. Why Collection Methodology Matters: Attracting People or Panelists
- VI. POS and Panel Data as Complements
- VII. What to Keep in Mind When Working With POS and Panel Data
- VIII. Summary

I. INTRODUCTION

Those savvy in the world of chasing the consumer know that it takes insights from two primary data sources, Point-of-Sale (POS) data and Panel data (assuming you have designed the panel in the right way), to reveal the consumer insights that lead to the best actions. Using each of these data sources for the right purpose is critical to growing your brand. In this white paper, we clarify the best roles for POS data vs. Panel data, especially as they relate to understanding the behavior of today's consumer.

POS data is fundamentally about measuring sales.
Panel data is about understanding people.

II. POINT-OF-SALE DATA

A TOOL FOR COUNTING SALES

POS data is collected directly from retailers by store, by week, by UPC. It's best used to track performance from a volumetric, distribution and pricing perspective (figure 1). POS providers also deploy auditors to collect in-store causal conditions (presence of features or displays, display locations, point-of-sale materials, etc.)

Because of its method of collection (store scanners record the sale of every unit scanned from every shopper and every shopping trip), POS data provides the most accurate and granular data for what it is intended to measure, namely, sales. It is the best source of data to answer questions such as:

- What are sales at each retailer?
- What factors are driving sales performance (price, distribution, velocity, etc.)?
- What is my share within a given area and how does that compare to that of my competition?
- Where does my product have an opportunity gap?
- What are my top selling SKUs at a given retailer?
- What is my average price (and what is my price gap to private label)?

Figure 1: POS Metric Examples

Volumetric Data on Sales		
Dollar, Unit, Volume Sales	Product	Pricing
	Distribution & Velocity	Merchandising & In-Store Causal Data

The most fundamental use of POS Data is to measure store sales—but misses a deeper understanding of the why, how, and what that drive the consumer behavior.

As the use of POS data grew, it became evident that it couldn't answer all the questions about what was driving consumer behavior. Sales and share level changes could be seen in the marketplace (and we could infer some of the reasons due to pricing and promotional changes), but a deeper understanding of the whys, hows and whats that drive consumer behavior was missing. In other words, POS data measures item performance at the store level but tells you nothing about who is buying the product or why they are doing so—cue the advent of Panel data.

III. PANEL DATA

UNDERSTANDING CONSUMER BEHAVIOR

True consumer understanding involves people. Brands win when they understand who their consumers are and what they want. As such, Panel data has been designed to create a better understanding of consumer household behavior via data collected from panelists. It is a diagnostic tool for understanding reasons behind sales levels and trends (what consumers buy, how they buy, and why they choose to buy). It contextualizes product movement in terms of who the shopper/consumer is by providing additional household attributes (figure 2).



Figure 2: Common Metrics for Panel Data

Penetration (what % of households buy)	Repeat (do households come back and buy again, showing acceptance of the brand)
Purchase Frequency (how often do they buy)	Buy Rate (how much they buy when they buy)

These metrics provide the diagnostics that help brands understand what is happening with consumers to drive the overall behavior reported in POS data. That is, they can help decode whether our drop in sales is due to fewer households buying the brand or due to our existing buyers purchasing less than they did previously. They can reveal a potential product problem (buyers are not returning to make a repeat purchase) or an opportunity (competitors are getting their buyers to purchase more on each occasion, so a larger size or a stock-up promotion may be something to look into). And they can look across and outside outlets and channels POS data may not cover to provide a more complete picture of consumer behavior (figure 3).

Panel data helps brands understand consumer behavior supporting POS sales. If POS helps measure sales, Panel data unlocks how to make sales grow.

Additionally, Panel data is a very rich data source that has been designed to provide other important attributes and deeper diagnostics of buyer behavior.

Figure 3: Buyer Behavior Diagnostics

Basket Attributes	<ul style="list-style-type: none"> • How much do they spend on average on the total trip when a brand is in the shopping basket • What time of day do they typically shop • What payment method is used • How important are different delivery methods (Click & Collect, home delivery, etc.)
Demographic Attributes	<ul style="list-style-type: none"> • Who are the households that tend to buy the brand more heavily (age, income, ethnicity, household size, education, employment, presence of children)
Attitudinal and Psychographic Attributes	<ul style="list-style-type: none"> • What are the interests, attitudes and lifestyles of your buyers (found via linking survey responses from the panelists who are actually buying the brand to truly understand the why behind their buy)
Volume and Buyer Shifting Behavior	<ul style="list-style-type: none"> • How buyers and volume are shifting across brands (new, lost, retained, etc.) • How buyer behavior is shifting across stores (e.g., leakage)
Brand Interactions	<ul style="list-style-type: none"> • What other brands do your buyers shift more or less to and/or consider in their preference set



With all of its rich content, Panel data is a powerful complement to POS data to help us answer questions such as:

- Who is buying my product and what is their profile (both in terms of demographics and buying behavior)?
- What is driving sales for my product (penetration, buying rate, etc.)?
- What else is in the basket when my product is being bought?
- What percent of my buyers are loyal to my brand?
- What products are my buyers switching to?
- With whom am I gaining or losing share? And to which competitors?
- Where are they buying (Brick & Mortar, Online, Specialty outlets)?
- Why are they buying (what attitudes, beliefs, interests drive them)?



Simply put, POS data provides you with a “count” of sales, whereas Panel data lets you decompose how those sales break down over time. To wit, if your sales are down, you need to know among who (which buyers) you are down the most and to which competitors your buyers are shifting.

IV. THE EVOLUTION OF PANEL DATA

MODERN TOOLS FOR MODERN CONSUMERS

When Panel data first came on the scene, several different approaches were deployed over time as the industry balanced the technology available versus the shopping and purchasing landscape of the consumer. As shown in figure 4, starting from paper diaries (where the, typically female, homemaker would painstakingly write down everything she purchased for a specific category in a paper booklet) to ID card panels that were heavily food store oriented, to the more traditional legacy panels using hand-held scanners to (again painstakingly) scan each item purchased. It was clear that consumers were willing to help provide information to the industry to influence the product choices available to them (and for some compensation), but balancing their workload and the time required to participate was critical.

As technology evolved and as the proliferation of shopping options continued to grow, it became evident that consumers (panelists) were unhappy with the burden being placed on them to help collect the data. (This dissatisfaction could be measured by a drop in the number of households willing to participate over time (referred to as “static households”)).

It’s not a revolutionary or radical statement to say that, in order to properly understand consumers, you need to measure consumers properly. The modern consumer has evolved, and if brands don’t evolve with them they will lose them.

At Numerator, we saw an opportunity to revolutionize consumer panels through modern technology, a modern



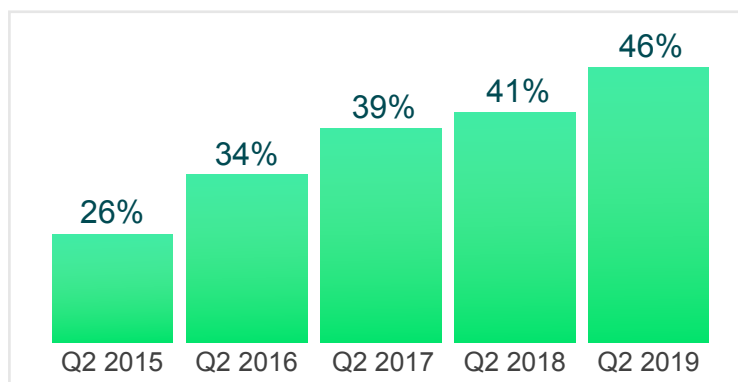
data exchange contract, modern channel coverage and a modern forum for input.

- **Modern Technology:** We take the burden off the consumer and leverage the technology they already have at their fingertips (their Smartphone). It just takes a few seconds to snap a picture of their receipts to send to us, using a gamified app that's similar to app interfaces they already know and use. Because of this, they easily can (and most do) record all of their trips across all outlets, channels and trip types.

- **Modern Data Exchange Contract:** We talk to consumers like we think of them: as people. So we're upfront about data access and usage. We have an upfront opt-in permission for panelists to share receipts and participate in a clear exchange of value.
- **Modern Channel Coverage:** Years ago, when scan panels were created, the vast majority of consumer shopping took place at Brick & Mortar stores. Numerator data collection was specifically designed to capture omnichannel buying, irrespective of buying location. As such, we automate collection of Amazon purchase data and other online retail sales so that it seamlessly integrates into our panel while providing a true omnichannel view of each consumer.
- **Modern Forum for Input:** The modern consumer wants to be heard. We leverage in-app surveys to ask our panelists their attitudes, impressions and reasons surrounding purchase behavior—while easily accessing respondents with validated purchase behavior instead of claimed behavior. In essence, Numerator enables the frictionless and holistic collection of behavioral and attitudinal panel metrics from the single device that's always with us.

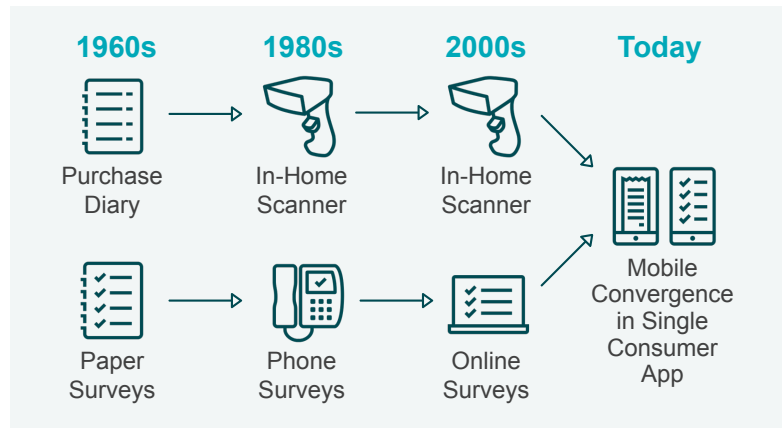
Additionally, consumer behavior has continued to change dramatically in the last several years. The advent of additional distribution channels (i.e., click and collect), the rise of private labels and small format stores as well as the growth and popularity of online options like Amazon have all contributed to these changes (figure 5).

Figure 5: % of Dollar Sales Outside Traditional Channels (Grocery, Drug, Mass)



Source: Numerator Insights

Figure 4: Panel Evolution Over Time



Traditional panel collection, using handheld scans (even on mobile apps) covers traditional brick & mortar retail outlets. At the same time, online consumer buying behavior—still overlooked by scan panels—is increasing in volume and complexity. The introduction of omnichannel buying (Click & Collect) and the proliferation of a subscription economy hinders POS coverage.

V. WHY COLLECTION METHODOLOGY MATTERS

ATTRACTING PEOPLE OR PANELISTS

The advantages of having the right collection methodology and thus having a better dataset are evident in even the basic panel metrics, particularly the number of trips reported. Simply put, Numerator's panel covers many more trips compared to legacy panels. And, when you cover more trips, a lot of other good things start happening, including:

- You have a higher likelihood of observing people buying a brand (than what a legacy panel might find), leading to higher (and more accurate) penetration levels
- On some of those trips, you observe someone buying a brand at a retailer that a legacy panel had not seen, hence estimates of retailer conversion and leakage patterns are more realistic and more actionable
- Switching behavior that had previously been missed via legacy panels are now revealed, thus your ability to truly assess loyalty, heavy/medium/light buyers and even brand interactions are vastly improved

Modern collection methods inspire higher engagement which translates to an exponential increase in trip coverage—and real understanding of consumer behavior.



If the Panel data you are using as a diagnostic tool is not designed in a way that captures consumer behavior for today's consumer, the incomplete picture provided leads to the wrong conclusions and the wrong actions. That is, an incomplete picture provides inaccurate panel metrics that can lead to improper investment decisions and wrong strategic assessments of a brand's situation. This is why it is important to evaluate the Panel in terms of the overall number of trips and buyers being captured across all relevant channels for your business.

Easy collection > more panelists > organic alignment to U.S. census

One of the many advantages of an easy, modern collection experience is *users want to participate*. This allows for participation by hundreds of thousands of consumers (over 450,000)—which in turn allows Numerator to “gate” inclusion in our premium static panel. Our static panel features 100,000 people—who qualify based on two criteria:

1. High engagement: To qualify for our static panel, a panelist must submit trips each month for a year. 85% of our static panelists have been participating monthly for over two years!
2. Census alignment: While everyone is welcome to participate in our modern apps, we manage inclusion in the static panel to organically mirror the U.S. census.

And because we collect more granular data about our panelists, we can even ensure alignment to things like Spanish-speaking households and gender identity.



VI. USING POS VS PANEL DATA AS COMPLEMENTS

We know that there are different purposes for POS data versus Panel data, but looking at some best practices around how they can be used together helps to clarify the right role for each of these important data sources.

As mentioned, POS data is good at measuring sales for the stores in which POS is available. So, in many cases, (if POS data is available) you want to start with POS data to gain a solid understanding of the marketplace and sales trends for your brand, the category and competitive brands. Scorecards are typically used to identify sales and share “health” for the brand and to look for opportunities in terms of brand growth (or where to defend if sales are declining). In short, POS data can provide important clues on why sales and share levels could be changing (due to distribution changes, promotional activities, competitive pricing activity, new competitors entering the marketplace, etc.)

Panel data then provides complementary diagnostics and insights around how consumers are reacting to those changes and activities. It helps you drill down into the consumer behavior responses and reasons for the POS-observed change. For example, are they switching to different brands or to different outlets, are they stocking up on your competitor’s brands to take advantage of promotions, have their attitudes changed toward your brand, etc.

In many cases, people are surprised to learn about the natural “churn” revealed through Panel data. Even when sales levels appear to be stable, underneath the sales we observe a high percentage of consumers “leaving” the brand (or not purchasing in one year) being replaced by other consumers (“new” buyers). This is an area where it is particularly important to capture all trips by the panelists. What may look like consumers “leaving” your franchise could actually be a shift to non-traditional channels (e-Retailers, specialty outlets, etc.) that legacy panels can miss (and where Numerator’s OmniPanel has a clear advantage in finding these consumer behavior changes).

VII. WHAT TO KEEP IN MIND WHEN WORKING WITH POS AND PANEL DATA

It is essential when working with both POS and Panel data to keep in mind how these two data sources have been designed and why they are different. If POS data could have provided the consumer diagnostics needed to understand the observed sales changes, Panel data would not have been created. However, to follow the consumer and understand that behavior you need to have a longitudinal data source that follows the same people over time—and one that follows them wherever they shop (not just within POS cooperators).

Because POS and Panel data are two different data sources, they will not match. Panel data will have more fluctuation to it given its sample variability (Panel data represents the purchasing behavior of, in some cases, hundreds of thousands of households whereas POS data picks up purchases from virtually all households from the retailers and outlets where it is collected). POS data will have “blindspots” that Panel covers (such as ecommerce, specialty outlets, and other non-cooperating POS retailers), as such the “Total Outlet” universe actually being included or measured is different.



It is becoming more common to see adjustments being made to Panel data so that it better aligns to POS data. There is a natural and understandable desire to do this: it eliminates the need to explain differences in the data. However, the researcher must ask themselves “at what cost or risk?” Researchers should let the reason for the data creation be their guide. Panel data was created to provide deep understanding of consumer behavior—to unlock growth. This is the first requirement. To negate this understanding for the sake of matched data is to risk your business and abdicate the responsibility of the researcher.

To be of value, Panel data must reflect the consumer behavior you are trying to understand—so this needs to be evaluated first, irrespective of POS alignment. *For example, if you are missing trips from key outlets or certain types of consumers (like Millennials, Ethnic consumers, etc.), no amount of adjustment to the Panel data can “bake in” the insights you are losing. In fact, researchers can be lulled into a false sense of security that they are making the right decisions from the Panel data simply because it is “matching” the POS data.*

This means that it is important to evaluate any Panel data you are using against basic metrics around what the data source is designed to collect: people (buyers) and trips across all outlet types. Looking at raw metrics for buyers and trips across outlets, channels and retailers and across key demographics before any adjustments are applied provides you with the right knowledge on the overall health of the panel.

One final caution on the use of POS vs. Panel data. Given the current POS “blindspot” for ecommerce and online sales, it is tempting to try to use Panel data to fill this void. While Panel data (especially when designed for omnichannel coverage and high consumer engagement) can provide insight around consumer behavior in this area, using it as a diagnostic tool is still the best option. (Panel data is not designed to provide the precision for tracking sales and share like POS data.)

Alignment between Panel and POS data always reflects adjustments in data performance at the expense of insight. In essence, the alignment prioritizes convenience in reporting consistency over insight and business growth. What serves your business best?

VIII. SUMMARY

To review, using POS and Panel data as complementary data sources provides the best use of both and leads to the best consumer insights to drive brand performance.

- Use POS data for sales, share, distribution and pricing tracking
- Use Panel data to reveal consumer behavior responses and changes (who your consumers are and what they want)
- Use modern Panel data to organically observe consumer behavior across the entire buying spectrum

Understand the strengths and weaknesses of each data source. For example, POS helps us understand everything at a store, but does not provide line of sight to individual household consumer behavior over time and across channels. POS has “blindspots” in providing a true Omnichannel picture. These blindspots are shared by traditional consumer panels—so reconciling these two blind sources can never reveal insights about non-traditional consumer buying behavior (which is rapidly becoming the majority). Modern Panel data (especially if designed to appropriately capture all trips across all outlets) can provide insight and action around those blindspots, but is not designed as a tracking tool for sales and share.





Numerator Headquarters
233 S. Wacker Drive, 21st Floor
Chicago, IL 60606

hello@numerator.com

www.numerator.com

