KYTHERA
DECIPHERING HEALTHCARE

Beyond Volume: Rethinking Coverage Through the Lens of Real Patient Activity

Part of Kythera Labs' Series on Coverage, Fidelity, and Trust in Healthcare Data

Executive Summary

Healthcare business and strategy leaders depend on accurate data to understand their markets and patient populations. Yet even large, seemingly comprehensive datasets often distort reality, double-counting encounters, fragmenting patient journeys, or misrepresenting care across systems. These distortions can lead to misplaced priorities and missed opportunities for growth.

Confidence in data comes from fidelity, the degree to which it reflects actual patient activity across encounters, payers, and systems. Volume alone cannot guarantee reliability if the underlying information is inconsistent or incomplete.

Kythera Labs approaches coverage with transparency, helping organizations understand not only what is visible in the data but also where information may be incomplete or biased. This clarity builds confidence in the answers drawn from the data and lays the foundation for decisions grounded in truth rather than assumption.

This paper redefines coverage as a measure of truth rather than size. It introduces the concept of data fidelity as a more meaningful indicator of quality and shows how Kythera's approach to data mastering and patient-level visibility helps healthcare organizations distinguish what is real, reliable, and ready for decision-making.

KYTHERA

Does More Data Really Mean Better Coverage?

When healthcare leaders begin to ask "How true?" instead of "How much?" it becomes clear that more data does not always lead to better understanding. The size of a dataset matters only if what it contains accurately represents aspects of real patient journeys and provider behavior relevant to the specific use case in consideration.

Large datasets can amplify noise as easily as they capture signal. A single encounter may generate multiple claims across facilities, creating the illusion of more care than actually occurred. At the same time, missing payers, delayed adjudication, or unsubmitted claims can distort visibility into market share or patient flow.

Distortion does not come only from missing information. It can also stem from how data is created and transmitted. Provider bias occurs when some organizations use specific clearinghouses or submission pathways, while payer bias emerges when certain insurers require their own submission portals. These variations create uneven visibility across populations—overrepresenting some groups and underrepresenting others.

Recognizing where and why gaps exist is as important as the data itself. When analysts understand what is missing, they can adjust expectations and interpret results with greater confidence. When they do not, a false sense of completeness can lead to poor decisions and misplaced priorities.

Kythera takes this view seriously. Coverage, in our perspective, is not a measure of how much data we and our customers have, but how well we understand and can communicate what that data represents—and what it does not.

This disciplined approach provides healthcare organizations with data they can trust for planning, forecasting, and analysis. It replaces confidence based on size with confidence based on accuracy, creating a dataset that reflects real activity and supports more reliable decisions.

What Is Data Fidelity?

Data Fidelity: A measure of how accurately a dataset reflects true patient activity across encounters, payers, and systems. Fidelity captures representativeness, completeness, and coherence—not just scale.

KYTHERA

Will More Data Actually Distort the Truth?

Adding more data can expand what you see and create the impression of broader coverage, but it can also add errors or gaps that make the picture less reliable. In practice, adding more sources often magnifies distortion by exposing inconsistencies and compounding duplication or bias already present in the data.

Every new data source brings its own structure, identifiers, and submission behavior. When these differences are not reconciled, they can create multiple kinds of distortion. Duplicate claims can inflate patient counts or procedure volumes. Missing encounters or payer populations can understate demand. And inconsistent coding or attribution can make the same patient appear to have received care in multiple places at once. The result is an inflated sense of visibility that hides significant uncertainty.
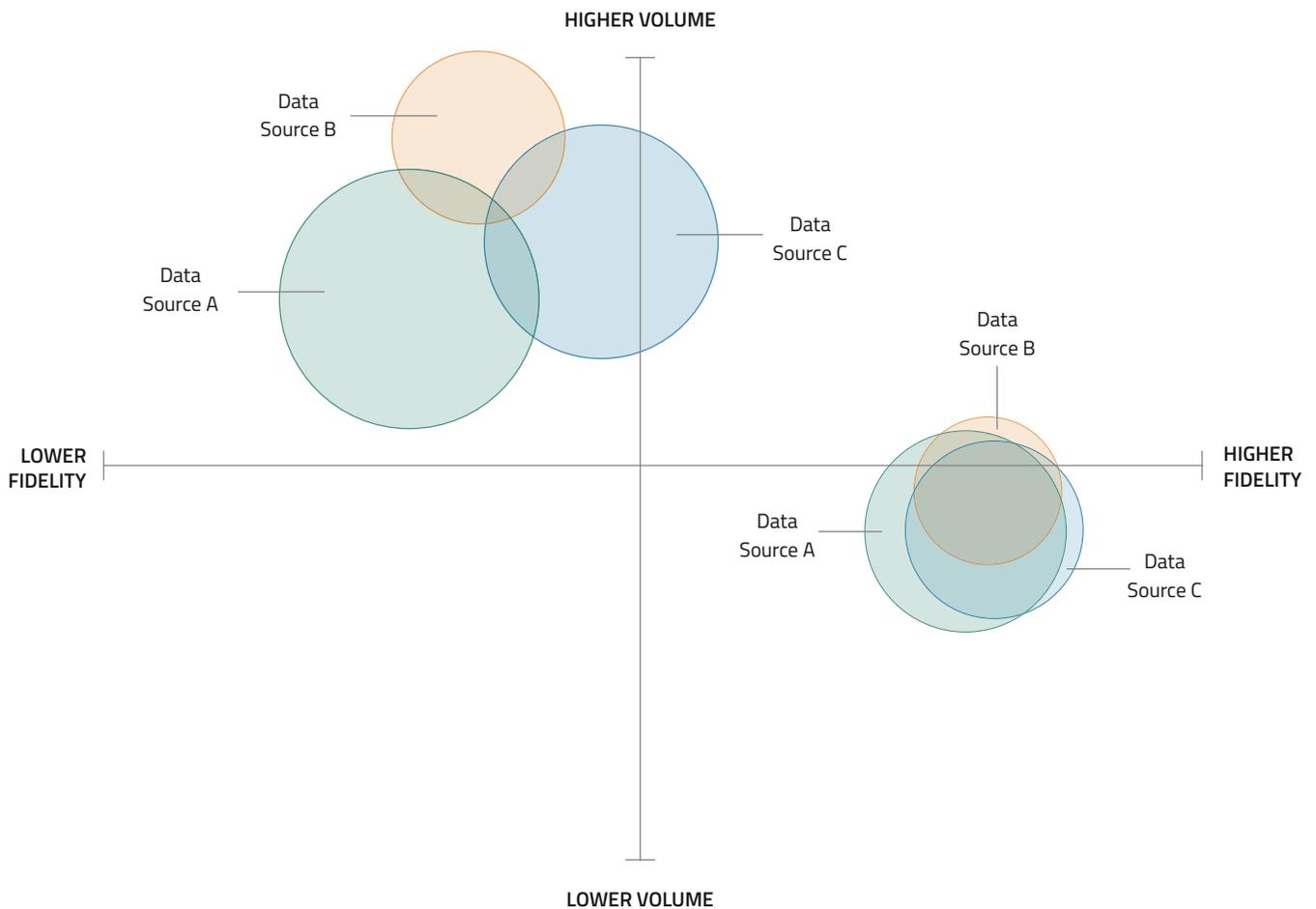
Large datasets may appear to capture more patients, but much of that volume lies outside verified overlap where duplication and inconsistent identifiers inflate counts. Applying structured reconciliation and de-duplication methods reveals the smaller fidelity-verified population that reflects a truer view of the market

Distortion also varies by dimension. At the patient level, incomplete or fragmented journeys make it impossible to follow care across systems. At the provider level, data may favor organizations that use certain clearinghouses, leaving others underrepresented. At the payer level, major insurers that require their own submission portals can create large blind spots in commercial or Medicaid populations. And at the market level, these inconsistencies compound, giving decision-makers a skewed view of true service demand, referral patterns, and competitive position.

The danger is not simply that data is missing, it is that gaps and overlaps are invisible. Analysts may assume completeness where none exists, drawing conclusions from a dataset that appears comprehensive but reflects only part of the market. This creates a false sense of confidence, where every metric feels precise, but few are fully true.

A Data Scientist's View

"We can distinguish which patients have complete, reliable information and which do not. When we limit analyses to the high-fidelity group, the utilization metrics become accurate and meaningful."

— *Russ Sacks, EVP, Innovation & Data Science, Kythera Labs*

When scale becomes the goal, truth becomes harder to find. Broader data alone cannot correct its own inconsistencies; it can compound them. Understanding where and why distortion occurs is the first step toward measuring what is real.

KYTHERA

From Traditional Coverage Metrics to Fidelity Measurement

Traditional Data Lens	Higher-Fidelity Data Lens
Covers approximately 80% of national claims.	Quantifies the proportion of encounters with verified patient-level completeness.
Contains 300 million-plus patients.	Shows which patients have full longitudinal journeys and which have partial journeys.
Partners with all payers to achieve completeness.	Measures real-world representativeness across payer types, regions, and encounters.
Updates monthly to ensure timeliness.	Assesses latency and stability over time to understand how data timeliness impacts realiability.
Includes all provider types across specialties.	Evaluates whether representation aligns with real-world provider activity and reported behavior.
De-identifies and tokenizes for linkage.	Verifies linkage accuracy and continuity to confirm that records truly represent the same patient across systems.
Normalizes data model nationally for consistency.	Validates that normalization preserves the original meaning and relationships within the data.

Traditional coverage metrics emphasize scale and reach. Fidelity metrics measure accuracy, consistency, and truthfulness across multiple and variable dimensions.

Measuring What Is Real: Kythera's Dimensional Approach

If broader inclusion can distort the truth, the logical question becomes: how do we measure what is real? Fidelity provides a structured way to evaluate whether data accurately represents the healthcare activity it claims to describe. It focuses less on the number of records and more on their integrity—how closely they align with actual events across patients, providers, payers, and markets.

KYTHERA

High-fidelity data maintains consistent relationships across these dimensions. It allows patient journeys to be reconstructed without gaps, provider activity to be attributed correctly, payer mix to reflect the true distribution of coverage, and market dynamics to mirror the realities of local care delivery. When any of these dimensions break down, the result is distortion that can mislead analysis and weaken strategic decisions.

Kythera approaches coverage as a multidimensional measurement problem. Rather than presenting a single percentage of completeness, Kythera evaluates fidelity within and across dimensions. This includes assessing where duplication or bias occurs, quantifying the degree of missingness within payer or specialty categories, and identifying how those gaps may influence specific types of analysis. Fidelity, in this view, is not static—it is a continuous assessment of how faithfully data mirrors the real world.

At its core, Dimensional Fidelity examines:

- **Market Level:** Expected procedure and diagnosis volumes are modeled using incidence, prevalence, and utilization data. Comparing modeled expectations to observed claims shows how accurately the data reflects demand and where gaps remain.

Market Fidelity
Context and Boundaries
for Expected Activity

- **Practitioner and Practice Level:** Rendering patterns, panel sizes, and payer combinations are analyzed to identify underrepresented providers or missing payer activity. This helps detect bias or imbalance introduced by inclusion without integrity.

Practitioner & Practice Fidelity
Validation of Provider
and Payer Behavior

- **Patient Level:** Encounters are linked, verified, and sequenced to ensure each represents a real healthcare event. Records are reconciled to remove duplication and quantify missingness, providing a clear picture of longitudinal patient activity.

Patient Fidelity
Verification of Real
Healthcare Events

KYTHERA

By treating fidelity as measurable, Kythera helps organizations understand not just the boundaries of their data, but the reliability of the insights it can support. This perspective transforms data preparation from a technical exercise into a truth-testing process—one that makes uncertainty visible and therefore manageable.

Measuring fidelity provides the foundation; turning that measurement into reliable data requires discipline. In practice, Kythera applies this same framework to the process of transforming raw data into analysis-ready assets that can be analyzed with confidence. The goal is not only to understand where uncertainty exists, but to minimize it so that every analysis begins from a truer representation of the healthcare system itself.

Key Takeaway – Dimensional Fidelity

True coverage isn't built by adding more data—it's achieved by measuring how well each layer of information reflects reality.

Kythera's Dimensional Fidelity Framework measures how consistently data reflects reality across markets, providers, and patients, revealing where confidence in the data is earned and where it is not.

From Raw Data to Confident Answers

The path from raw data to confident answers begins with structure. Data that has not been standardized, validated, or reconciled cannot be trusted to represent the realities of care delivery. Kythera's approach brings the principles of fidelity into every stage of data preparation, ensuring that what remains after cleaning and mastering is not simply organized but truthful.

The outcome is more than a refined dataset; it is a higher-fidelity data asset that represents true healthcare activity across encounters, payers, and systems. This allows healthcare organizations to explore questions of demand, leakage, referral behavior, and service-line growth with assurance that their findings reflect what truly occurred in the market.

KYTHERA

This process includes:

- **Remastering and Normalization:** Standardizing payer, provider, and patient identifiers to ensure continuity across systems and sources.

- **Deduplication and Verification:** Removing redundant claims and validating that each remaining record corresponds to a verified healthcare event.

- **Event Alignment:** Sequencing encounters over time to reconstruct longitudinal patient journeys and measure completeness.

- **Quality Assessment:** Quantifying uncertainty, identifying potential missingness, and documenting the level of fidelity within each dataset.
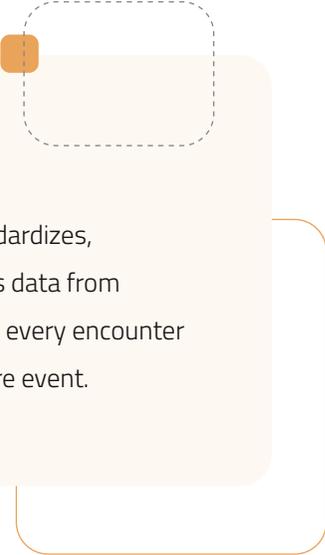
Built for Precision

Kythera's technology standardizes, deduplicates, and validates data from multiple sources to ensure every encounter represents a real healthcare event.

By combining methodological precision with advanced technology, Kythera turns data preparation into a process of verification rather than assumption. The result is information that represents the healthcare system faithfully, allowing leaders to move from raw data to confident answers built on evidence, not estimation.

Kythera's methodology also demonstrates discipline in forecasting. We model what can be known with confidence such as patient behavior, utilization rates, and market trends, without extending into speculative predictions about payer changes or policy shifts. This restraint ensures that forecasts are realistic, explainable, and defensible.

KYTHERA

Conclusion

True coverage is not determined by how much data is collected, but by how accurately that data represents real healthcare activity. Large datasets can create the illusion of completeness, yet still miss the truth that decision-makers depend on. Fidelity replaces that illusion with measurable integrity, allowing organizations to see where confidence is warranted and where uncertainty remains.

By examining coverage across market, practitioner, and patient dimensions, Kythera helps organizations distinguish what is visible from what is real. This disciplined approach moves data work beyond aggregation, transforming it into a process of verification that yields clarity, reliability, and purpose.

When fidelity becomes the standard for coverage, leaders gain a more honest view of their markets and patient populations. With that clarity, strategic decisions are grounded not in assumptions about scale, but in evidence that reflects the healthcare system as it truly operates.

Final Thought

When healthcare organizations measure fidelity, they move beyond assumptions about coverage and toward a clearer view of the truth behind every encounter, provider, and market.

Connect with Kythera. Kythera is a data technology company that brings unprecedented clarity and structure to complex real-world healthcare data. Kythera's Wayfinder Technology Platform, supported by pre-configured pipelines, processing libraries, analysis tools and remastered datasets, helps Healthcare and Life Sciences organizations work with greater speed, scale and confidence. Learn more at www.kytheralabs.com.

KYTHERA™
DECIPHERING HEALTHCARE

346 Main Street
Franklin, TN 37064
www.kytheralabs.com