

The measurement imperative: A strategic framework for patient support program impact measurement

A practical approach to proving and improving the value of patient support programs

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Why measurement is the next frontier in PSP strategy

Patient support programs (PSPs) have become one of the most significant investments in pharmaceutical commercial operations. A typical specialty portfolio allocates \$50-\$100 million annually—20%-25% of commercial operating expenses—to hub services, co-pay assistance, nurse navigators and field reimbursement, according to ZS research. This is in addition to payer rebates (roughly 50% of gross sales) and other free products such as product samples.

Despite the scale of this investment, 30%-50% of patients abandon therapy within 12 months, and a significant share never fill their first prescription. Despite the magnitude of both the problem and the spend, most organizations still manage patient support the way they did a decade ago: budgeting by historical precedent, measuring by activity volume and treating the entire function as an unavoidable cost of doing business.

Today, that framing is shifting. Multiple developments now make rigorous PSP measurement both necessary and achievable:

- **Patient leakage is a measurable, addressable problem.** Most patients starting on therapy face complex access barriers, high out-of-pocket costs and demanding treatment regimens that erode adherence without structured support. PSPs exist precisely to address this, but without measurement, organizations cannot identify which services are moving the needle, for which patient segments and at what point in the journey.
- **Investment scale demands accountability.** PSP budgets rival commercial marketing spend at many organizations, yet most lack formal tools to distinguish high-performing services from those maintained by habit. Activity metrics—enrollment rates, call volumes, case closures—capture effort, not outcomes. When budget pressures mount, programs without demonstrable impact are the first to be cut and without a measurement foundation, organizations cannot know whether they are eliminating ineffective services or dismantling a service that was materially improving patient outcomes and brand performance. The cost of cutting an incorrect program is invisible until patient experience starts getting affected.
- **The data infrastructure now exists.** PSP teams have long understood directionally which services move the needle; nurse navigator engagement drives persistency, hub friction delays first fill. However, the missing piece has been the infrastructure to prove it. In recent years, tokenized linkage platforms have enabled privacy-compliant identity resolution across hub, pharmacy, claims and social drivers of health data at production scale.



Hub vendors have matured from flat file exports to structured, longitudinal data warehouses. Causal machine learning solutions have migrated from academia into applied analytics stacks, making it possible to move from directional intuition to defensible, quantified impact estimates without randomized trials or PHI compromise.

- **AI is compressing the cycle from data to decision.** PSP measurement was historically a periodic, resource-intensive exercise conducted quarterly, delivered months after the data was generated. AI now enables near-real-time measurement: continuously scoring patient risk, detecting shifts in service effectiveness and surfacing insights at a cadence that matches operational decision making. Measurement becomes a forward-looking intelligence capability, not a retrospective report.

Leading pharmaceutical companies that have built rigorous PSP measurement capabilities have demonstrated 4-8 percentage point improvements in patient outcomes, 5%-25% reductions in cost-to-serve, and 3-5 percentage point improvements in patient reach and program productivity. These aren't theoretical gains. They reflect the direct result of moving from activity tracking to outcome measurement and using those insights to reallocate resources and redesign services.

We present a practical framework for PSP impact measurement: what to measure, what challenges to anticipate and what makes them particularly acute in a patient support context. We also describe how to address them methodologically and what real-world implementation has taught us.

What to measure: Building a comprehensive PSP impact framework

The established foundation of PSP measurement tracks the patient's journey from access to adherence: fulfillment rate, days to fulfillment, first fill conversion, persistency, compliance. These metrics are the bedrock of PSP measurement and every competent team tracks them. But knowing the outcomes isn't the same as knowing how to change them. The key question in measuring value is not whether patients start and stay on therapy. Instead, it's which services cause them to, for which segments, at what efficiency and what happens when you reallocate. Service and program-level measurement is where oversight ends and optimization begins.

Service and program-level measurement

Modern PSPs orchestrate multiple services—hub support, field reimbursement managers, co-pay assistance, nurse navigators, digital engagement and specialty pharmacy coordination. Measurement must capture both individual service effectiveness and the synergistic value of service combinations, since optimal outcomes often emerge from coordinated interventions rather than isolated touch points. Given regulatory constraints, traditional ROI framing is inappropriate for PSPs. Organizations must anchor value communication around patient outcomes rather than revenue or prescriber lift.

The metrics below define the strategic purpose behind each program-level measurement dimension:

FIGURE 1:

The strategic purpose behind the metrics

Metric	Strategic purpose
Incremental patient impact	Additional patients achieving positive outcomes attributable to the PSP
Service effectiveness index	Relative performance scores across services, enabling prioritization
Cost-to-serve efficiency	Program cost per successfully supported patient
Service responsiveness curves	Optimal touch point frequency or cadence of PSP interaction
Needs-based/subnational segment performance	Differential impact by patient risk segment and geography for targeted allocation

Together, these metrics equip patient services leaders to pinpoint which services deliver value, for which patients and at what efficiency, replacing broad program justification with the precision required for continuous, compliant optimization.

Navigating the measurement minefield: Key challenges and solutions

PSP measurement is harder than commercial analytics in four specific dimensions: structurally biased data capture, regulatory constraints on operationalization, simultaneous service delivery and cross-functional governance.

FIGURE 2:

PSP challenges and solutions

	The PSP-specific challenge	What it takes to solve
Data quality	Patients not enrolling into PSPs are invisible by design	End-to-end patient journey through a unified data foundation and an externally constructed control group
Causal inference	Standard confounding adjustments don't survive biased enrollment data	Layered analytical toolkit matching method to counterfactual based on program design, market nuances, geo variations, etc.
Attribution	Single touch point models fail under concurrent, continuous services	Combination-level modeling of bundles and interactions to isolate direct and indirect impact of services on overall outcome
Insight action	The bottleneck is governance, not analysis	Compliance-first operating model designed up front

Data quality and availability

Unenrolled patients are invisible by design—and that breaks naïve comparisons.

Challenge: The richest data exists only for PSP-enrolled patients. Enrollees differ systematically from nonenrollees in motivation, insurance complexity and prescriber engagement. Therefore, direct comparisons may be misleading. Enrollment data is captured manually by hub agents and nurse navigators, adding inconsistent terminology and subjective categorization on top.

Solution: A unified data foundation aggregating hub, specialty pharmacy, co-pay, nurse and claims data via tokenized identifiers (PHI-compliant). This data considers:

- Hierarchical structure (patient, HCP, account, payer) with temporal standardization to ensure stakeholder interactions and interventions are captured in detail to inform outcomes
- External Rx and claims data as the control population serving as counterfactual

Causal inference

Without an external control group, standard adjustments can't fix biased enrollment data.

Challenge: Data is structurally biased toward opted-in, service-utilizing patients. Standard confounding adjustments can't fully resolve this, and pre/post comparisons can't isolate which simultaneous services drove outcomes.

Solution: A layered analytical toolkit, with method matched to the counterfactual being estimated:

FIGURE 3:

The analytical toolkit

Method	Use when	Controls for
Propensity score matching	Cross-sectional comparison with rich covariates for treated versus not-treated instances	Observed selection bias
Difference-in-Differences	Programs roll out incrementally across geography or time	Time-invariant unobserved confounders. Requires parallel pretrends; tested empirically before application.
Double machine learning	High-dimensional, nonlinear relationships	Complex confounding with flexible functional forms

Method selection is driven by the specific counterfactual question and data structure. Where method-specific conditions are not met, a fallback is applied and inferential limitation is noted. Across all methods, estimates are accompanied by bootstrap confidence intervals and sensitivity analyses; findings that do not hold under these checks are flagged as directional rather than actionable.

Service interdependencies and attribution

Single touch point attribution doesn't work when interventions are concurrent and continuous.

Challenge: Patients receive hub support, co-pay assistance, nurse education and field reimbursement manager engagement concurrently. Services are ongoing and overlapping and often produce only indirect effects. Single touch point models fail entirely.

Solution: Combination-level modeling of bundles and interactions:

- **Service combination mining:** which bundles drive outcomes for which segments
- **Marginal contribution analysis:** incremental impact of each service across baselines, exposing standalone value and interaction effects
- **Optimal service mix modeling:** combinations maximizing outcomes within budget

Translating insights to action

The bottleneck is governance, not analysis, and it must be designed before measurement begins.

Challenge: Regulatory constraints prevent linking outcomes to commercial targets or prescriber incentives, narrowing permissible actions. Cross-functional misalignment across patient services, analytics, compliance, IT and commercial stalls even well-evidenced recommendations.

Solution: An operating model designed up front:

- **Compliance-first SOPs** covering methods and permissible communication, owned jointly by analytics and compliance
- **Needs-based resource planning** via service responsiveness curves by patient risk segment and geography
- **Quarterly measurement-optimization cadence** that builds operational habit, not one-time analysis

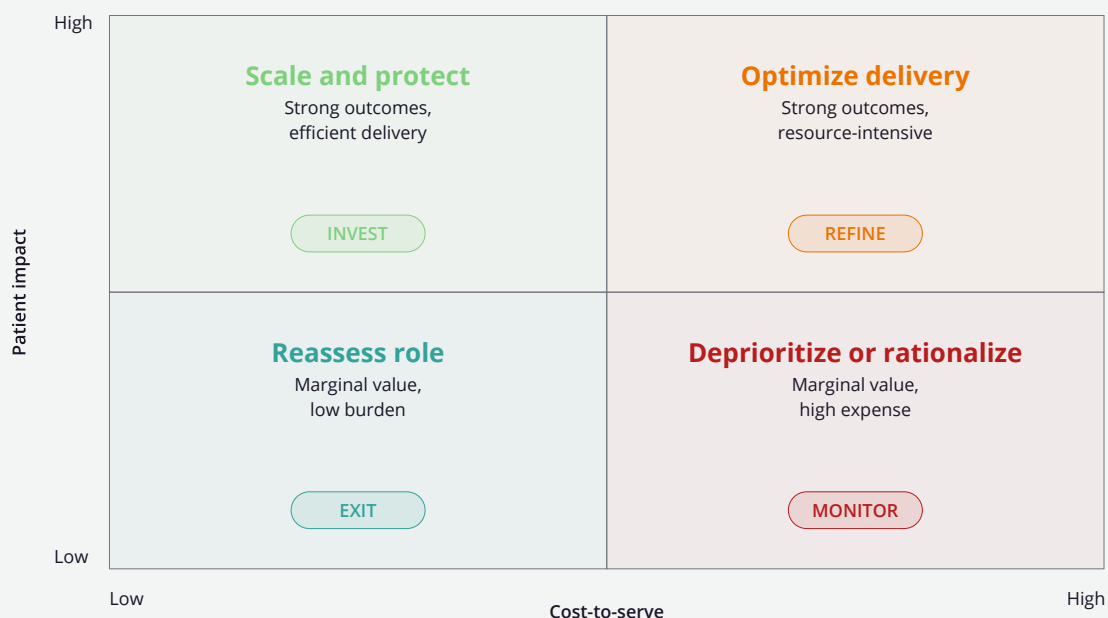
Case studies:

CASE STUDY 1: ARTICULATING PSP IMPACT AND INFORMING BUSINESS DECISIONS

Challenge: A specialty pharmaceutical company investing more than 30% of operating expenses annually across hub services, co-pay assistance, nurse navigators and field reimbursement managers had no credible framework to measure or defend that investment. Vendors reported activity metrics only—call volumes, enrollment rates, case closures—with no linkage to patient outcomes. Resource allocation was driven entirely by historical precedent. The patient services team could not defend its budget in competitive planning cycles, vendor negotiations lacked leverage due to the absence of incremental value data and traditional ROI reporting was noncompliant: PSPs are mandated to focus on patient outcomes, not revenue generation, leaving the organization without a permissible framework for communicating program value.

Approach: The team deployed a causal machine learning framework to isolate true PSP impact from factors such as patient demographics, provider engagement, geography, insurance coverage and disease severity. Double machine learning measured impact on fulfillment measurement while survival analysis assessed persistence over time. The results were translated into a cost-to-serve value matrix, allowing leaders to compare services by both patient impact and operational efficiency. Patient and geographic segmentation identified where each service had the greatest opportunity to improve outcomes and scenario modeling showed how changes in reach, design or support intensity could affect future performance.

FIGURE 4:

Patient impact vs. cost-to-serve matrix**Outcomes:**

- 15-20+ percentage point improvement in fulfillment rate per patient attributed to PSPs in high-value opportunistic segment, measured across more than seven brands, more than 50 PSP configurations, and three therapeutic areas. Measurement recommendations suggested adjustments in service reach, addition of hub resources to keep up with patient needs and experience and identification of barriers across prioritized patient risk segments to adjust service design and encourage enrollment in combination of services.
- Cost-to-serve segmentation identified services with high operational burden but minimal incremental patient benefit, enabling confident reallocation of resources.
- The framework became the organizational backbone for PSP strategy—anchoring compliant value communication, informing launch readiness decisions, assessing portfolio risk and elevating patient services from cost center to strategic function.

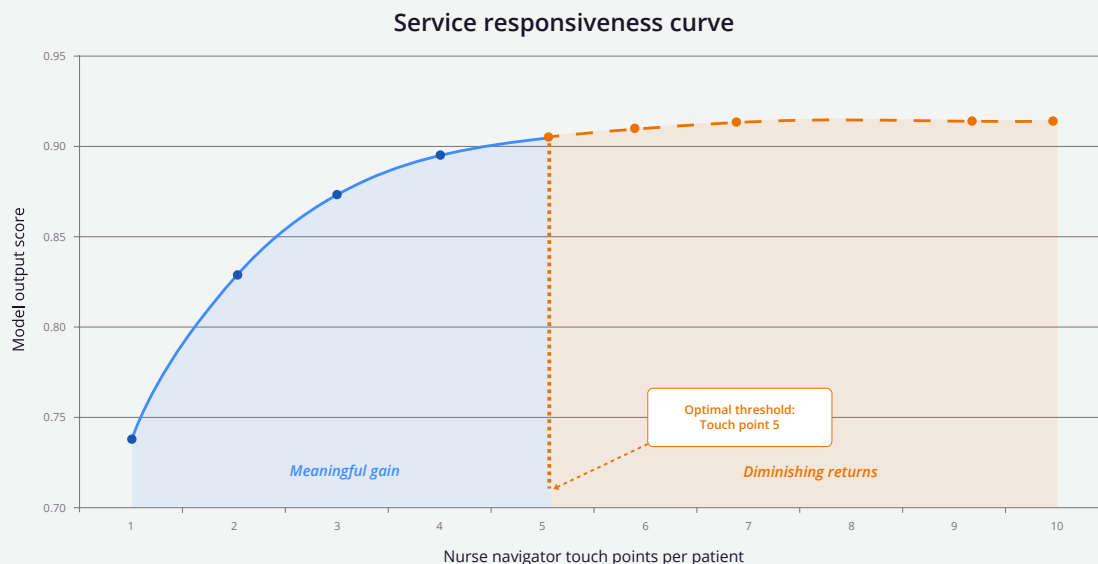
CASE STUDY 2: SCENARIO PLANNING AND CAPACITY UTILIZATION

Challenge: A specialty pharmaceutical company struggled to proactively plan PSP resource capacity against shifting program designs and patient volumes. Budget cycles were largely reactive, driven by prior-year spending rather than forward-looking models of patient need. With PSP budgets representing 20%-25% of commercial operating expenses, misaligned capacity-planning carried material cost: excess inventory, underutilized headcount and missed patient engagement windows. Organizations lacked forward-looking models linking program design changes to patient outcomes and resource demand, evidence-based headcount and inventory planning tied to scenario-specific patient volumes and a compliant framework to preevaluate trade-offs before committing to program restructuring.

Approach: The organization used causal modeling to separate the true impact of program design changes from factors such as patient mix, payer dynamics and enrollment patterns. Propensity score matching and double machine learning measured the incremental effect of four scenarios: touch point frequency, delivery mode, resource substitution and cohort targeting on fulfillment rate, time to fill, six- and 12-month persistency and proportion of days covered. The results were then translated into demand forecasts using time-series regression with leading indicators, including new patient starts, payer mix trends, enrollment velocity. Discrete event simulation modeled how likely patients were to move through the journey over time, generating staffing and inventory capacity ranges for one- to two-year planning horizons. Service responsiveness curves showed where additional touch points began to produce diminishing returns by service and cohort.

FIGURE 5:

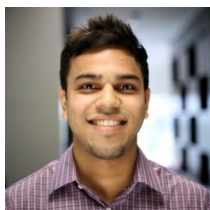
Service responsiveness curve



Outcomes:

- Nurse navigator contacts improved adherence up to the fifth touch point. After that, additional contacts did not produce a statistically significant improvement in 12-month persistency. The five touch point threshold held across sensitivity analyses different outcome windows (six, nine and 12-months) and two covariate sets, suggesting the finding is specification-dependent. Reducing from 10 to five contacts per patient projected a 15%-20% cost-to-serve reduction with no measurable outcome impact.
- For oral therapies not requiring injection training, virtual engagement matched in-person nurse adviser outcomes, freeing field resources for higher-complexity injectables where hands-on training demonstrably improves first-fill success.
- For certain payer segments, routing through the hub added processing time without improving benefits investigation outcomes; an automated triage rule engine routing patients to hub or direct-to-SP based on payer mandate and prior authorization complexity was implemented.
- Scenario-specific forecasts enabled right-sized nurse headcount on a rolling six-month horizon, reducing both staffing risk and inventory waste.
- Net result: \$5M-\$10M in annual PSP investment reallocated to higher-impact services.

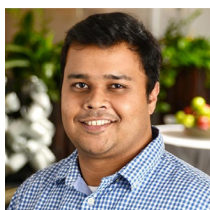
About the authors



Sumit Verma is a data science manager with more than 12 years of consulting experience helping life sciences organizations improve patient engagement through AI and advanced analytics. He specializes in designing AI- and machine learning-powered solutions that enhance patient services, personalize experiences, identify at-risk patients and optimize patient support programs. His expertise spans patient journey modeling, rare disease patient identification, predictive analytics and scalable AI solutions that help organizations deliver more proactive, patient-centered care.



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Mehul Singh is a principal at ZS who helps life sciences organizations improve patient access and engagement through AI, advanced analytics and data-driven decision-making. He specializes in developing AI-powered solutions that reduce barriers to therapy, optimize patient and commercial strategies and enhance healthcare experiences. With experience leading engagements across North America and Europe, Mehul has helped pioneer scalable AI solutions for both patients and healthcare professionals that are now used across the life sciences industry.



Victoria Summers is a leader in ZS's Digital Customer Experience and patient services practice, helping organizations create more connected, patient-centered experiences. With more than 18 years of experience, she specializes in patient support, direct-to-consumer engagement and using data and analytics to optimize patient programs and improve outcomes. Her expertise spans patient experience strategy, market access, launch planning and integrated digital and omnichannel engagement across pharmaceutical and managed care organizations.



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