Predicting High-Cost Maternity Episodes

A Claims-Based Strategy for Payer Cost Reduction

Commercial maternity claims analysis · ~2,000 episodes · $15.7M total spend analyzed

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High-Cost Maternity Episodes Are Predictable — and Preventable

Analysis of ~2,000 commercial maternity episodes using medical and pharmacy claims data

1. Maternity costs are highly concentrated

A small subset of pregnancies drives a disproportionate share of total maternity spend. The top 10% of episodes account for nearly one-third of total costs, creating a clear target for payer intervention.

2. Clinical complexity drives financial risk

C-section deliveries and gestational diabetes significantly increase total episode cost and likelihood of high-cost classification. Pregnancies with these factors show materially higher utilization and complication-driven spend.

3. Utilization patterns signal risk before delivery

Longer inpatient stays and comorbidity indicators emerge well before delivery, enabling early identification of **high-risk pregnancies** using claims data alone.

4. Predictive targeting enables cost reduction

Risk stratification models can identify high-cost pregnancies in advance, allowing payers to deploy targeted care management and reduce avoidable spend by an estimated 15%.

Estimated Financial Impact

High-risk pregnancy cost pool: **~$15.7M**

Potential annual savings: **$2M–$4M**

Primary drivers: **C-section rates, diabetes, LOS**

How Claims Data Reveals Preventable Maternity Costs

Key takeaway:
High-cost maternity episodes can be identified before delivery, enabling targeted intervention and meaningful payer savings.

The opportunity for payer-side maternity analytics

Most payer interventions occur after delivery, when the majority of maternity costs are already incurred. Longitudinal episode-level analytics can identify high-risk pregnancies before delivery and support targeted cost-management strategies.

Dataset and analytical scope

~2,000 commercial maternity episodes analyzed. **$15.7M** total spend across pregnancy, delivery, postpartum

Each episode integrated:
- Medical claims
- Pharmacy utilization
- Member eligibility & demographics
- Delivery & diagnosis coding

Episode-level aggregation enabled a longitudinal view of utilization and cost across the full maternity journey.

Predictive Risk Stratification & Financial Impact

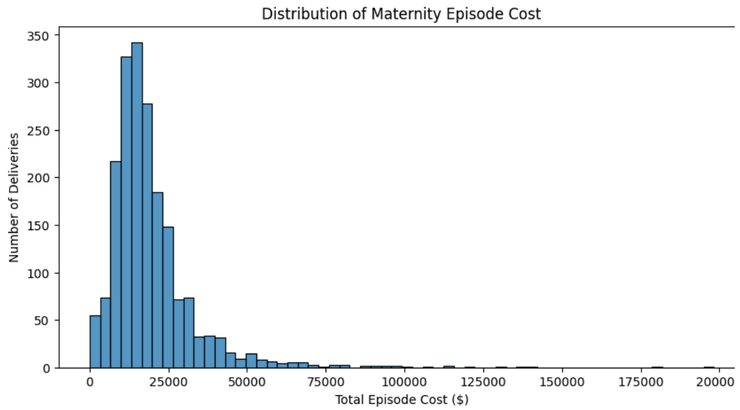
A structured modeling framework identified drivers of high-cost maternity episodes and stratified pregnancies into low-, medium-, and high-risk cohorts.

Key components included:
- Episode construction across a **280**-day pre-delivery window
- Driver analysis of delivery type, gestational diabetes, and LOS
- Logistic regression risk model to predict top-decile cost pregnancies
- Risk stratification into low, medium, and high-cost cohorts

Targeted intervention for high-risk pregnancies indicates potential payer savings of **10–15%** through proactive care management.

Spending is highly concentrated

Top 10% of pregnancies account for **~30–35%** of total maternity spend creating a clear opportunity for targeted payer intervention.



Top-decile pregnancies drive disproportionate maternity spend.

Strategic Implications for Payers & Digital Health

For Commercial Payers

Shift to proactive intervention

Identify high-cost pregnancies before delivery, intervene when costs are still preventable.

Target the cost-driving decile

Top **10%** of pregnancies drive **~30–35%** of spend. Precision targeting improves care management ROI.

Operationalize risk scoring

Embed predictive flags into case management workflows to prioritize outreach and escalation.

For Digital Health Platforms

Risk intelligence as infrastructure

Claims-based stratification enables targeted remote monitoring and maternal chronic care programs.

Essential for value-based maternity models

Predictive risk tools support bundled payment margin protection.

Operationalize risk scoring

Gestational diabetes, hypertension, and care coordination platforms directly address cost drivers.

Broader Insight:
Claims data is shifting from retrospective billing infrastructure to prospective risk intelligence.

Operationalizing Maternity Risk Intelligence

Within a payer organization, this enables:

- Real-time maternity risk dashboards embedded in care management workflows
- Automated case prioritization using predicted cost deciles
- Targeted outreach for high-risk pregnancies (GDM, high LOS, complications)
- ROI tracking tied directly to intervention programs

As a deployable digital health product:

- Claims ingestion + episode construction pipeline
- Predictive risk scoring API for payer integration
- Care manager interface for flagged pregnancies
- Outcomes + savings tracking dashboard

Healthcare cost containment increasingly depends on predictive intelligence embedded directly into operational workflows, not retrospective reporting.