

1. Problem Statement

A health insurance company wants to understand what is driving healthcare costs in its member population. Using claims data, I will analyze total cost by diagnosis group, provider type, place of service, and state to identify high-cost segments and potential opportunities for cost optimization.

2. Dataset & Fields

The project uses a claims dataset containing fields such as `claim_id`, `member_id`, `claim_date`, `provider_type`, `diagnosis_group`, `procedure_category`, `place_of_service`, `paid_amount`, `copay_amount`, `state`, `age_group`, and `gender`.

3. Key Questions

1. Which diagnosis groups contribute the most to total paid amount?
 2. Which provider types have the highest average cost per claim?
 3. How does place of service (Inpatient vs Outpatient vs ER) impact costs?
 4. Are there any cost trends by state or age group?
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4. Findings & Story

1. Total Healthcare Cost

The total paid amount across all 10 sample claims was \$19,395, with a total patient copay of \$335. The average cost per claim was \$1,939.

2. Cost by Diagnosis Group

- Cancer was the largest cost driver, accounting for the highest total paid amount due to expensive inpatient surgeries and ER consultations.

- Hypertension and Diabetes made up moderate portions of the total cost, reflecting common chronic conditions.
- General visits (lab tests, consultations) contributed minimal costs.

Insight: High-cost claims are strongly associated with serious diagnoses (e.g., Cancer), while chronic conditions contribute to ongoing moderate costs.

3. Cost by Provider Type

- Hospital services contributed the highest total cost across all claims — mainly due to inpatient procedures.
- ER visits were the second-largest contributor, indicating expensive acute care.
- Clinics, pharmacies, and labs had significantly lower costs.

Insight: Inpatient hospital care and ER visits are the primary cost drivers for the health plan.

4. Cost by Place of Service

- Inpatient care had the highest cost overall.
- ER visits were more expensive than outpatient visits.
- Outpatient care had the lowest cost per claim.

Insight: Shifting members from ER to Outpatient settings could significantly reduce healthcare costs.