Healthcare Claims Analytics Model – One Page Technical Summary

Objective

To design and implement a **healthcare claims analytics data model** using **Erwin Data Modeler**, demonstrating expertise in data modeling, relationship management, DDL automation, and metadata governance.

Model Summary

A **star schema** was designed for healthcare claims analytics to integrate patient, provider, diagnosis, and financial data. The model supports reporting on claims volume, payments, provider efficiency, and regulatory compliance.

Entities Created:

- **Fact_Claims:** Central transaction table containing claim amounts, status, and links to all dimensions.
- **Dim_Patient:** Stores patient demographics (PII) and HIPAA-compliant PHI attributes.
- **Dim_Provider:** Captures provider identifiers, specialties, and service details.
- **Dim_Diagnosis:** Stores standardized diagnosis codes and descriptions.
- **Dim_Location:** Represents hospital or clinic information.
- **Dim_Date:** A reusable calendar dimension (used twice for service and payment dates).

Key Relationships:

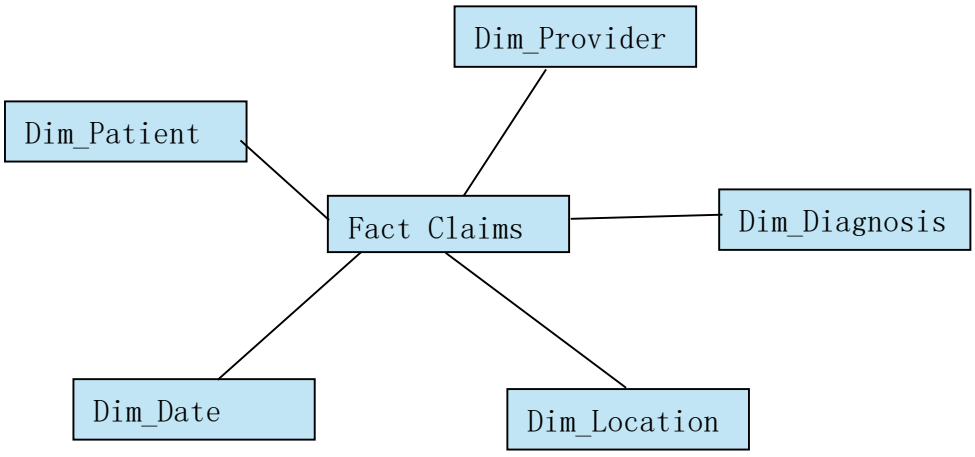
Tools and Outputs

Parent	Child	Key Used	Type	Cardinality
Dim_Patient	Fact_Claims	patient_key	Non-identifying	1-to-Many
Dim_Provider	Fact_Claims	provider_key	Non-identifying	1-to-Many
Dim_Diagnosis	Fact_Claims	diagnosis_key	Non-identifying	1-to-Many
Dim_Location	Fact_Claims	location_key	Non-identifying	1-to-Many

Parent	Child	Key Used	Type	Cardinality
Dim_Date	Fact_Claims	service_date_key / paid_date_key	Role-playing	1-to-Many

- **Tool:** Erwin Data Modeler (Academic Version – MySQL Target)
- **Process:** Logical → Physical Model → DDL Generation
- **Deliverables:**
  - Logical and physical models (ER diagrams)
  - DDL scripts auto-generated from Erwin
  - Relationships with referential integrity and role-playing dimensions
  - PII metadata tagging for patient-related attributes

Visual Representation



Outcome

- Successfully created a **healthcare claims data mart model** demonstrating full Erwin modeling workflow.
- Achieved **DDL automation**, **referential integrity**, and **role-based design** similar to production healthcare analytics systems.
- Proved adaptability in mastering new data modeling tools while applying enterprise-grade data engineering concepts.

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Tool: Erwin Data Modeler
Database Target: MySQL 8.x
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