# Dummy Healthcare Power BI Model - Design Considerations

## Data Generation Scope & Infrastructure

* Volume Scaling: Designed to simulate realistic volumes: 10,000 Encounters, 30,000 Charges, 25,000 Payments, etc.
* Buffered Tables: Use of Table.Buffer and List.Buffer to improve performance in row generation and joins.
* Dynamic Date Ranges: Controlled via parameters YearsBack and YearsForward.
* Time Context: System uses live date from an online timezone source (TimeZoneNow table).

## Healthcare Domain Logic

* Services Table: Contains 40+ service types across Visit, Imaging, Surgery, Therapy, Admin, etc.
* Includes flags like TelehealthEligible, SurgicalInd, ClinicalInd, HighRevenueInd, CommonEHRServiceFlag.
* Categorized into PrimarySpecialty, SpecialtyGroup, and ServiceGroup.
* ServiceItems Table: Derived from RVU file with CPT code categorization.
* Includes derived fields like CPTCategory, Modality, Department, ServiceItemWeight.
* Encounters Table: 10,000 rows with detailed logic.
* Includes PatientType logic (New vs Established).
* Assigns ReferrerID based on PatientType or ServiceTypeGrouping.
* Simulates EncounterType (In-Person vs Telehealth).
* Distributes dates using working days and seasonal weighting.
* Appointments Table: 40% more than Encounters.
* Simulates status (Scheduled, Cancelled, Rescheduled, etc.).
* Determines appointment types based on ServiceTypeGrouping.
* Includes time slots and duration logic based on AppointmentType.
* Calculates NewPatientInd, NewToProviderInd, NewToLocationInd.

## Entity Design Logic

* Providers Table: 45 rows with fictional provider names.
* Specialties span Ortho, Rehab, Pain Management, Primary Care, etc.
* Groups providers into logical teams (e.g., Surgical, Rehab, APP).
* Assigns ProviderGroup based on whether IsPhysician is true.
* Referrers Table: Mirrors Providers, adds ReferrerType (Internal/External).
* Locations Table: 30 rows, grouped into ASC, PT, MRI, Hospital.
* Subgrouped into Inpatient vs Outpatient.
* Patients Table: 1,000 rows with ZIP codes (Ohio realistic range).
* Payers Table: 15 payers including Commercial, Medicaid, Medicare, VA, Self-Pay.

## Transaction Tables

* Charges Table: Uses realistic CPT mapping from ServiceItems.
* Charges assigned based on Encounter ServiceID.
* Includes Status, ChargeDate, Quantity, Lag logic.
* Uses CHG00001 style for surrogate keys.
* Payments Table: Multiple per charge allowed.
* Simulated as percentage of ChargeAmt.
* Logic excludes Cancelled charges.
* Adjustments Table: Multiple types - Contractual, Prompt Pay, Bad Debt.
* Percent deducted based on type.
* Includes joining to Payer for context.
* Refunds Table: Random subset of charges.
* Includes RefundAmt and RefundDate.

## Date Intelligence

* Working Days: Integrated directly into Encounters via generated working-day list.
* Excludes weekends and U.S. bank holidays (from API).
* Seasonal Weighting: Encounters more frequent in spring/summer months.
* Month-level weights drive encounter date assignment.

## Metrics & Placeholder Measures

* KeyMeasures Table is a placeholder for central measure definitions.
* Derived AR logic is intended: Charges > Payments > Adjustments > Refunds.

## Design Considerations & Future Plans

* Inactive relationships used for ChargeDate and PaymentDate.
* Plans for claim-level tracking and denial reasons.
* Measures and definitions centralized for consistent naming (\_ prefixes, Dates table disconnected).