**Healthcare Analytics Dashboard - Assignment Report**

**Model Design**

* **Data Structure:**

1. **Primary Tables: Patients, Doctors, Appointments, Treatments**
2. **Supporting Tables: UserSecurity (RLS), Date table(time intelligence)**

* **Relationships:**

1. **Patients (1:\*) Appointments (\*:1) Doctors**
2. **Patients (1:\*) Treatments (\*:1) Doctors**
3. **Date table (1:\*) Appointments**
4. **UserSecurity (1:\*) Patients (for regional security)**

**Design Pattern: Star schema with fact tables (Appointments, Treatments) connected to dimension tables (Patients, Doctors) enabling efficient querying and cross-filtering.**

**Key DAX Measures**

* **Total Patients (active)**

Total Patients = DISTINCTCOUNT (Appointments[PatientID])

* **Total Appointments & Avg Fee per Appointment**

Total Appointments = COUNTROWS (Appointments)

Avg Fee per Appointment = DIVIDE ( SUM (Appointments[Fee]), [Total Appointments], 0 )

* **Treatment Cost per Patient**

Treatment Cost per Patient =

DIVIDE (

    SUM (Treatments[Cost]),

    [Total Patients],

    0

)

* **Successful Treatment Rate %**

Successful Treatment Rate % =

DIVIDE (

    CALCULATE (

        COUNTROWS (Treatments),

        FILTER (Treatments, Treatments[Outcome] = "Successful")

    ),

    COUNTROWS (Treatments),

    0

)

* **Avg Doctor Utilization = Appointments per Doctor**

Avg Doctor Utilization =

DIVIDE (

    [Total Appointments],

    DISTINCTCOUNT (Appointments[DoctorID]),

    0

)

* **Patient Retention Rate (patients with ≥2 appointments in a year)**

Patient Retention Rate =

VAR RetainedPatients =

    COUNTROWS (

        FILTER (

            SUMMARIZE (Appointments, Appointments[PatientID], "ApptCount", COUNTROWS (Appointments)),

            [ApptCount] >= 2

        )

    )

RETURN

DIVIDE (RetainedPatients, [Total Patients], 0)

* **Follow-up Appointment %**

Follow-up Appointment % =

VAR FollowUps =

    COUNTROWS (

        FILTER (

            ADDCOLUMNS (

                SUMMARIZE (Appointments, Appointments[PatientID], Appointments[AppointmentDate]),

                "ApptRank",

                RANKX (

                    FILTER (Appointments, Appointments[PatientID] = EARLIER (Appointments[PatientID])),

                    Appointments[AppointmentDate],

                    ,

                    ASC

                )

            ),

            [ApptRank] > 1

        )

    )

RETURN

DIVIDE (FollowUps, [Total Appointments], 0)

**Analysis Results**

**Executive KPIs:**

* **Total Patients: 200**
* **Total Appointments: 2,000**
* **Average Fee per Appointment: $108.50**
* **Successful Treatment Rate: 33%**

**Patient Demographics:**

* **Age Distribution: 60+ (33.5%), 45-59 (31%), 30-44 (20.5%), 18-29 (15%)**
* **Insurance: Private (37%), Public (32.5%), None (30.5%)**
* **Regional Balance: East (27%), North/South/West (25% each)**
* **Retention Rate: 100% across all insurance types**

**Doctor Performance:**

* **Highest Volume: General Medicine (411 appointments)**
* **Highest Revenue: Orthopaedics ($248 average fee)**
* **Best Success Rate: Neurology (38%)**
* **Appointment Range: 44-59 per doctor**

**Treatment Analysis:**

* **Follow-up Distribution: Diagnostics (33.4%), Surgery (25.85%), Therapy (25.69%), Medication (24.6%)**
* **Cost Range: $100-$500 per patient (normal distribution)**
* **Treatment Types: Equal 25% distribution across four categories**