Healthcare and Medicare Data

From Claims to Clarity: Visualizing Medicare Patterns & Provider Impact
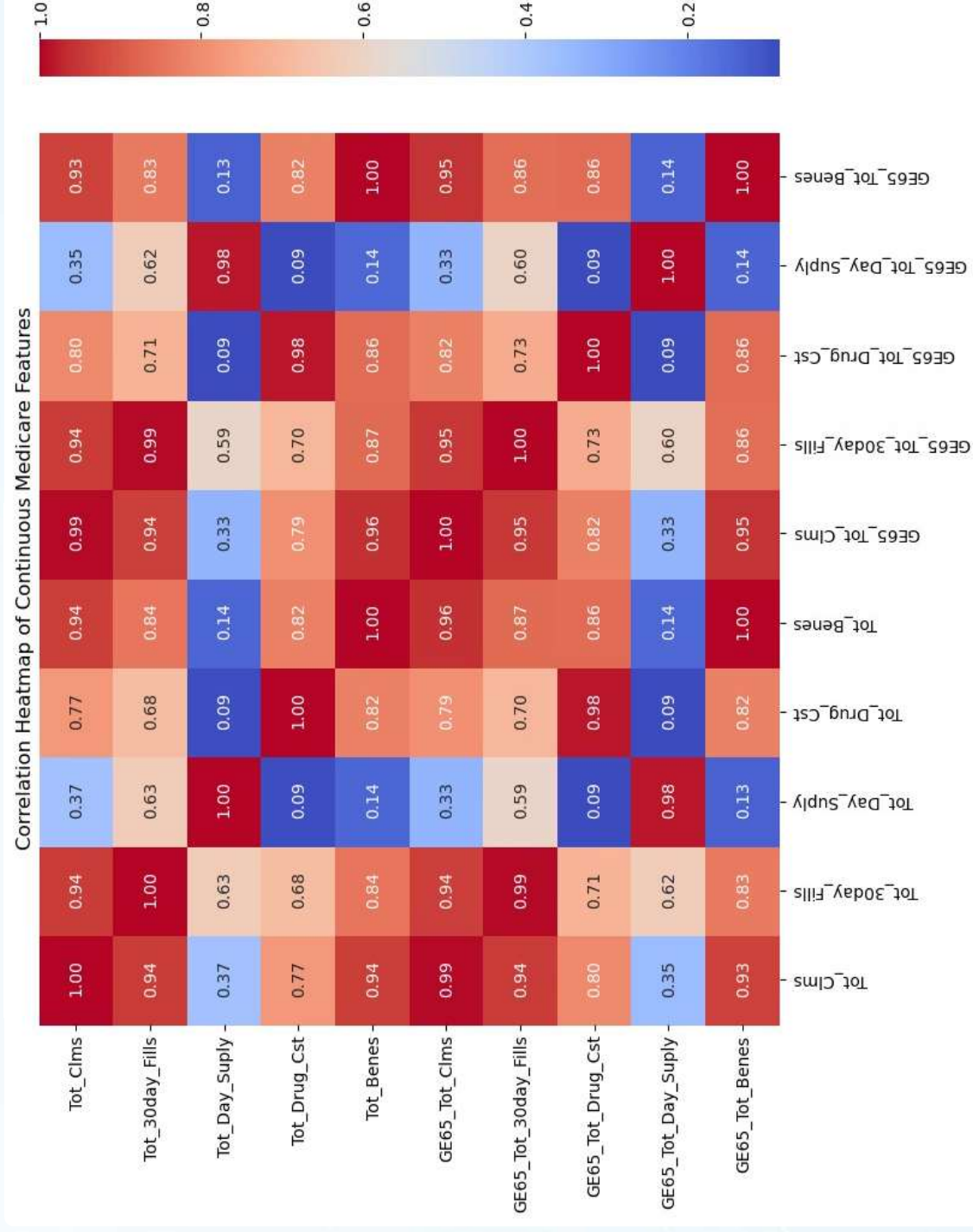
SS **by Susan Schnitzel**

Evaluation and cleaning the data

```
!pip install missingno import missingno as msno
msno.matrix(df[continuous_cols], figsize=(12, 6))
```


I will focus on the First Four Columns but will cleanup the "Total Benefits" to use for some visuals.

Patterns at a Glance: A Heatmap Exploration of Medicare Data

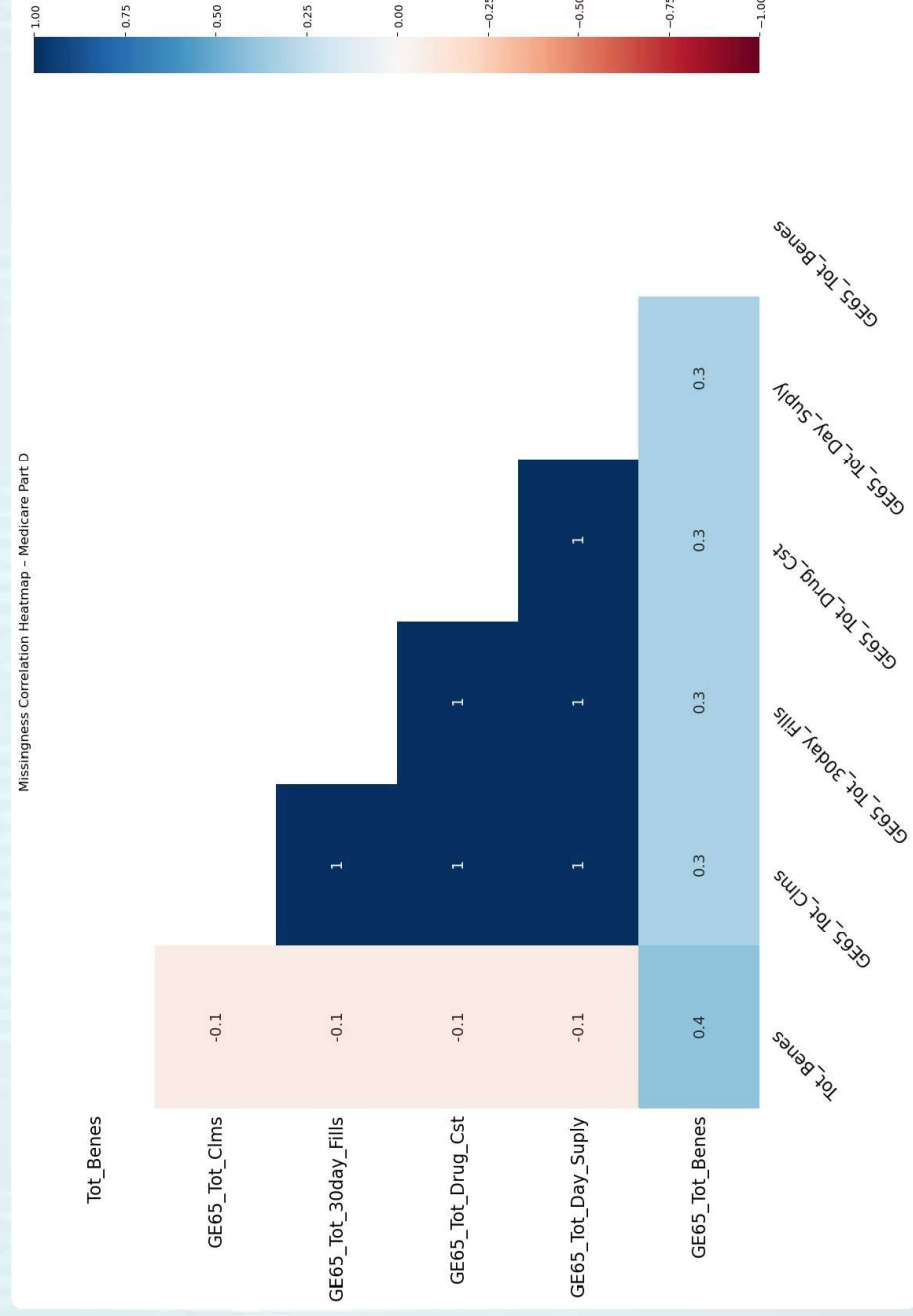
Correlation Heatmap of Continuous Medicare Features

Several trends emerged with some expected, others more revealing.
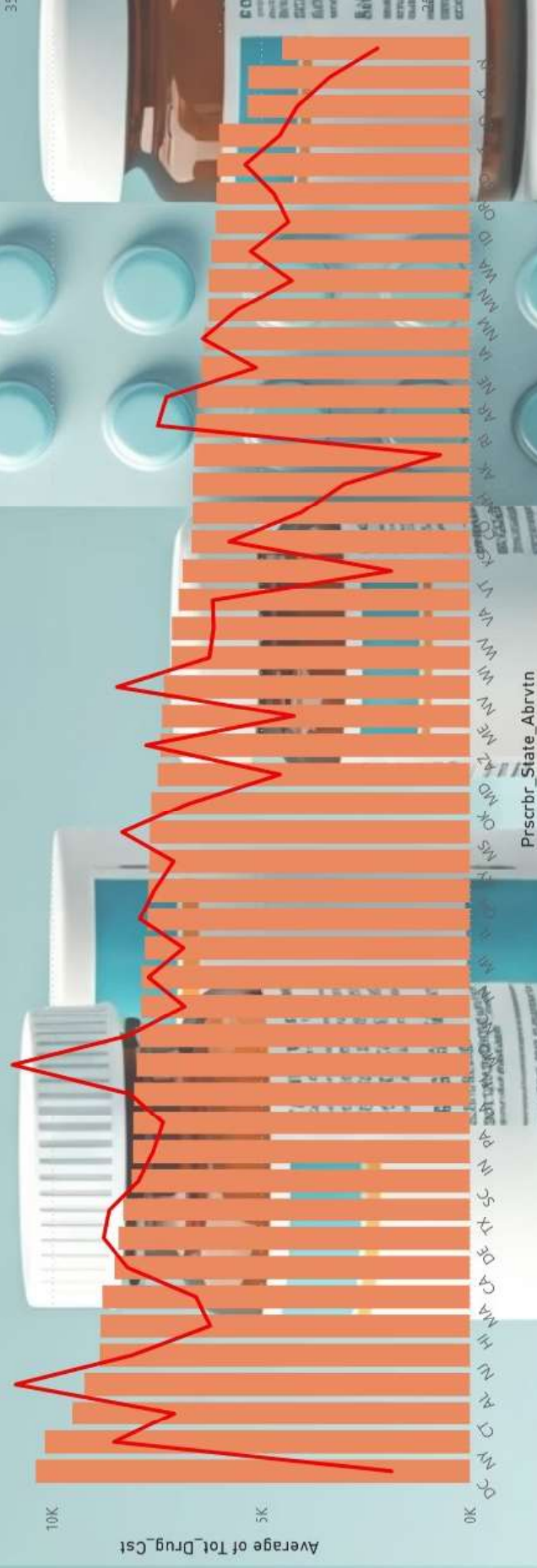
The GE65-titled columns show a strong correlation with the four key variables I initially planned to focus on. Across those four, the relationships are consistently strong, including with the Benefits column, which demonstrates notable alignment.

Visualizing Data Gaps: Heatmap of Medicare Part D Variables

GE65 variables show perfect alignment, and potentially redundant or policy-driven. GE65 Benefits diverges slightly, suggesting a distinct cost pattern.

Missingness Correlation Heatmap – Medicare Part D

Average Drug Cost and Benefits at US State

● Average of Tot_Drug_Cst ● Average of Tot_Benes

Quick Look of "Claims vs. Benefits" and Top Drugs

Type Drugs (Generic Names)

Gnrc_Name (bar chart, ordered top to bottom):
- Metformin Hcl
- Levothyroxine Sodium
- Atorvastatin Calcium
- Gabapentin
- Amlodipine Besylate
- Albuterol Sulfate
- Lisinopril
- Losartan Potassium
- Pantoprazole Sodium
- Prednisone

Count of Gnrc_Name: 0.0M — 0.2M — 0.4M

Claims vs Benefits

Tot_Clms: 0.0M, 0.1M, 0.2M, 0.3M
Tot_Benes: 0.0M, 0.2M

Claims vs. Beneficiaries (with Drug Type)

Gnrc_Name: ● Albuterol Sulf... ● Amlodipine ... ● Atorvastatin ... ● Gabapentin ● Levothyroxi... ● Lisinopril ● Losartan P... ● Metformi... ● Pantopraz... ● Prednisone

Tot_Clms: 0K, 5K, 10K
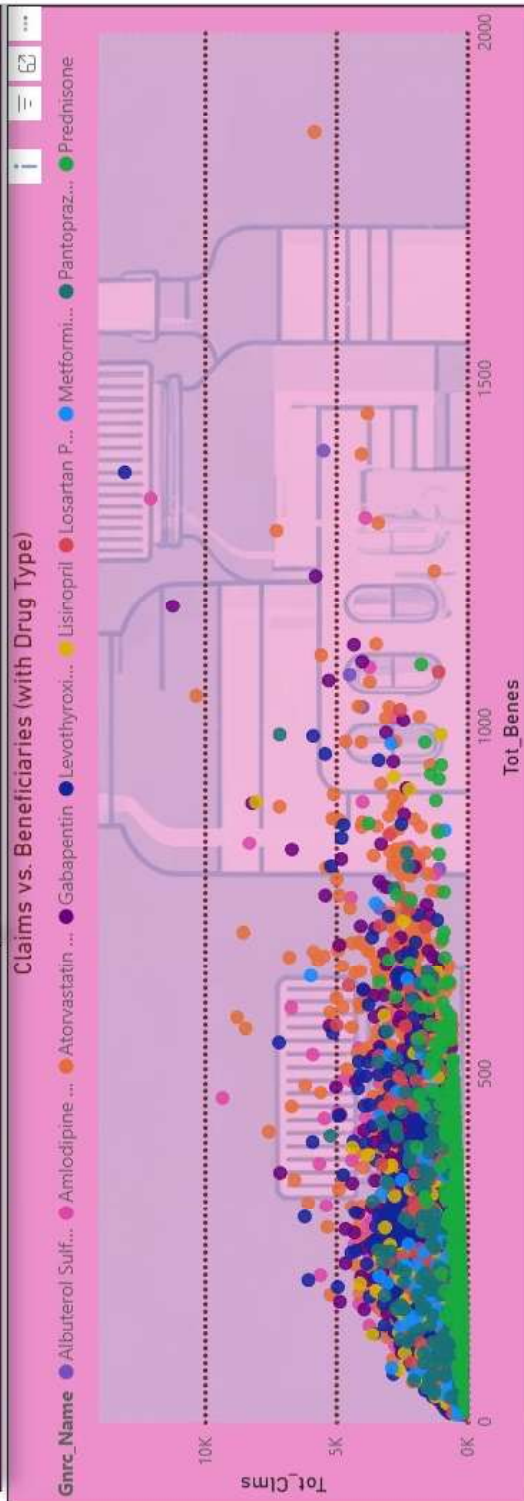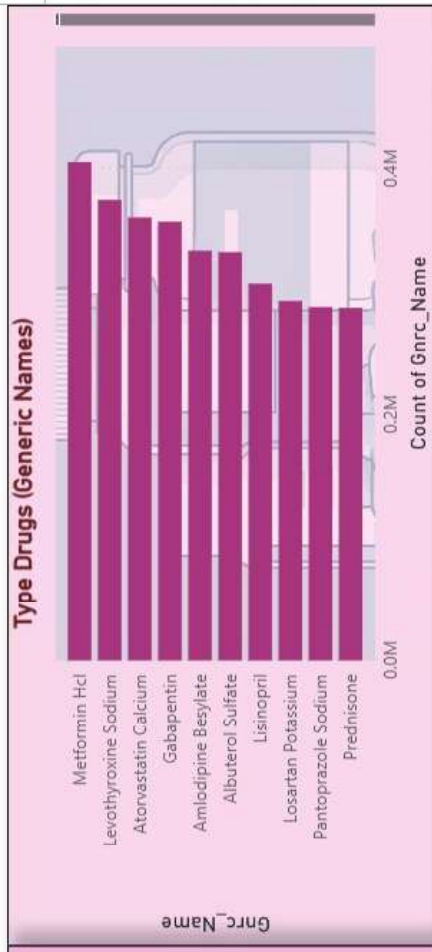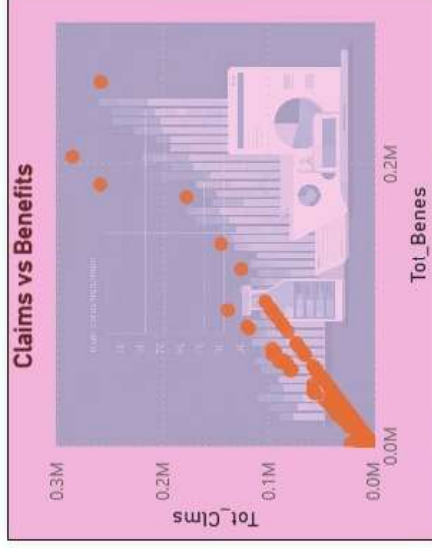Tot_Benes: 0, 500, 1000, 1500, 2000

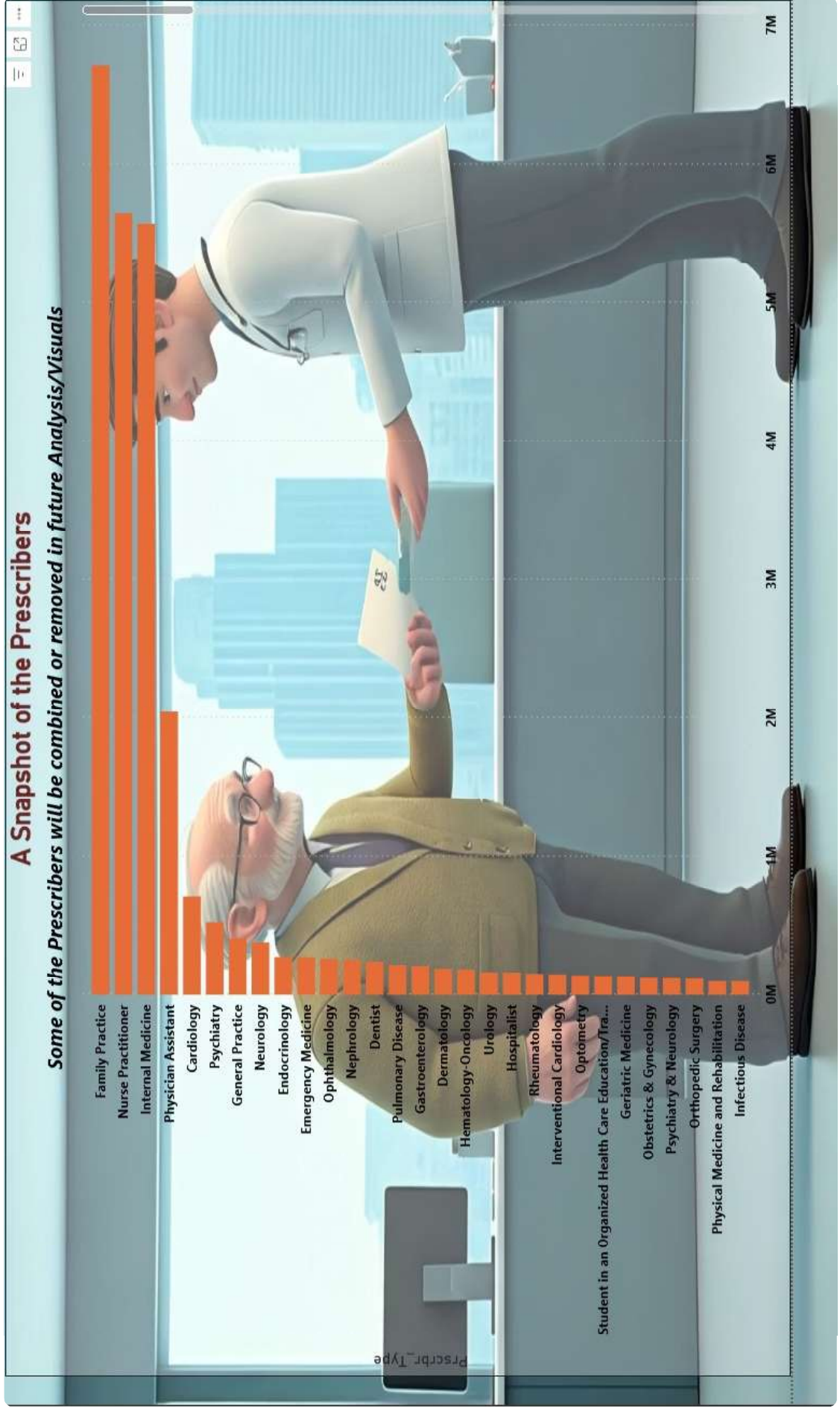**Initial findings show a strong, direct correlation between total benefits and total cost.**

To explore this further, I filtered out the top 10 drugs, see chart on top right right. After rerunning the correlation analysis, the relationship becomes more nuanced and slightly less linear. However, a meaningful correlation still persists, suggesting consistent cost dynamics even beyond high-volume prescriptions.

A Snapshot of the Prescribers

Some of the Prescribers will be combined or removed in future Analysis/Visuals

Prscrbr_Type

Family Practice	
Nurse Practitioner	
Internal Medicine	
Physician Assistant	
Cardiology	
Psychiatry	
General Practice	
Neurology	
Endocrinology	
Emergency Medicine	
Ophthalmology	
Nephrology	
Dentist	
Pulmonary Disease	
Gastroenterology	
Dermatology	
Hematology-Oncology	
Urology	
Hospitalist	
Rheumatology	
Interventional Cardiology	
Optometry	
Student in an Organized Health Care Education/Tra...	
Geriatric Medicine	
Obstetrics & Gynecology	
Psychiatry & Neurology	
Orthopedic Surgery	
Physical Medicine and Rehabilitation	
Infectious Disease	

0M 1M 2M 3M 4M 5M 6M 7M

MORE TO COME....................................