Insurance Coverage and Psychiatric Drug Exposure

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ABSTRACT
This study examines the relationship between insurance coverage and psychiatric drug exposure using data from the 2022 Medical Expenditure Panel Survey (MEPS). Given the increasing reliance on psychotropic medication for mental health treatment, understanding how insurance coverage influences access to these medications is crucial. We hypothesized that individuals with better insurance coverage would have higher psychiatric drug exposure. The primary findings from chi-square tests show that individuals with private or public insurance (Medicare or other) are almost twice as likely to be exposed to psychiatric drug prescriptions compared to their uninsured counterparts. This relationship remains significant across all income levels, except for the 'Near Poor' category, likely due to limitations in sample size rather than an actual lack of statistical significance. Logistic regression results reinforce these findings, showing that regardless of age or Medicare eligibility, insured individuals have approximately twice the odds of being prescribed psychiatric medication compared to those without insurance. These findings emphasize the critical role of insurance coverage in mitigating disparities in mental health treatment and highlight the need for policy interventions to improve psychiatric medication access for economically vulnerable populations.

KEYWORDS
MEPS, Medical Expenditure Panel Survey, Mental Health, Poverty, Prescribed Medicine, Psychiatric Drug, Drug Expenditure

1 Introduction

Mental health disorders pose a significant global challenge, with more than half of individuals suffering from mental illnesses lacking access to proper care (PATEL et al. 2010). This treatment gap is widespread across nations but disproportionately affects individuals in lower-income brackets. The relationship between poverty, mental health, and social risks including stress, stigma, and unemployment has been extensively studied, revealing a cyclical interaction in which mental illness can lead to financial hardship while economic instability exacerbates psychiatric conditions (Knifton and Inglis n.d.). Marbin et al. (2022) has shown that income inequality also has been linked to heightened mental disorder problems in developed countries. Despite the heightened risk of psychiatric disorders among socioeconomically disadvantaged populations, significant barriers including financial constraints, lack of insurance, and limited healthcare access impede treatment utilization (Dong et al. 2021).

The treatment of mental disorders have increasingly geared toward reliance on psychotropic drugs, given its easier accessibility compared to in-patient care or regular office visits(Donohue and Frank 2007). One of the primary obstacles to mental healthcare access is the cost of psychiatric medications, which constitute a substantial portion of healthcare expenditures (Dong et al. 2021). The rising cost of psychotropic drugs has placed an increasing financial burden on low-income families, leading to a higher prevalence of unmet healthcare needs (Sarma, Basu, and Gupta 2007). Insurance coverage plays

a crucial role in mitigating these disparities, as research has shown that expanding coverage improves access to prescription medications. For example, a 2018 study in Oregon found that Medicaid coverage reduced the prevalence of untreated depression by over 60%, while increasing the use of antidepressants and other psychiatric medications (Baicker et al. 2018). Similarly, studies have found that cost-sharing declines psychotropic drug usage, even in cases where usage is necessary for patients(Fung et al. 2013). These findings underscore the importance of financial barriers in psychiatric medication adherence, highlighting the role of insurance policies in reducing disparities in mental healthcare access.

Given the critical role of insurance coverage in determining psychiatric drug access, this study examines the following research question: **What is the relationship between insurance coverage and exposure to psychiatric drugs?** Based on prior research, the study hypothesizes that individuals with comprehensive insurance coverage will have greater exposure to psychiatric medications compared to those with limited or no insurance.

This study utilizes data from the Medical Expenditure Panel Survey (MEPS) to investigate the association between insurance coverage and psychiatric drug exposure, obtained from the Prescribed Medicine File. The primary outcome variable, psychiatric drug exposure, is defined as a binary indicator of whether an individual was prescribed psychiatric medication, as reported by the household and confirmed by a pharmacy with individual consent. The key predictor variable, insurance coverage, is categorized into private insurance, public insurance (Medicaid, Medicare), and uninsured status. Several covariates that may influence psychiatric drug exposure are also considered, including:

Number of psychiatric diagnoses **Demographic characteristics**: Age, race/ethnicity, and sex **Socioeconomic status**: Poverty/income level.

2 Methods

2.1 Data Source

This study utilizes data from the **Medical Expenditure Panel Survey (MEPS)**, a nationally representative survey that collects information on healthcare utilization, expenditures, and insurance coverage in the United States. Specifically, the **2022 MEPS Full-Year Consolidated File (HC 243), Medical Conditions File (HC 241), and Prescribed Medicine File (HC 239a)** were used. The **household component** of MEPS provides person-level data, while the **medical conditions and prescribed medicine files** include condition- and prescription-level data, respectively. The **2022 dataset** included **21,747 individuals** [1]. Participants included in this study were individuals aged **18 years and older**.

2.2 Data Preparation

2.2.1 Variable Construction

- **Psychiatric Drug Exposure:** A binary outcome variable indicating whether an individual was prescribed and purchased a psychiatric drug. This was derived from the **HC 239a prescribed medicine file**, where only medications classified under psychiatric therapeutic classes were retained.
- **Psychiatric Diagnoses:** Conditions were filtered using **ICD codes** from the **HC 241 medical conditions file**, and only psychiatric conditions were retained.
- **Insurance Coverage:** The original MEPS insurance categories were **recoded** as follows:
  - **<65 Any Private and <65 Public Only → <65 Any Private/Public**
    - **65+ Medicare and Private, 65+ Medicare and Other Public Only → 65+ Medicare and Any Private/Public**
      - **65+ No Medicare and Any Public/Private → 65+ No Medicare and Any Private/Public** Age was both left as a continuous variable and categorized as **<65 years** and **65+ years** to align with Medicare eligibility thresholds.

2.3 Key Variables

- **Outcome Variable:** Psychiatric drug exposure (Yes/No)
- **Independent Variable:** Insurance coverage status, categorized as:
  - <65 Uninsured
  - <65 Any Private/Public
  - 65+ without Medicare
  - 65+ with Medicare
- **Covariates:**
  - Age
  - Sex
  - Race/Ethnicity
  - Income Level

2.4 Statistical Analysis

2.4.1 Descriptive Analysis

Descriptive statistics were computed for demographic and socioeconomic characteristics, stratified by psychiatric drug exposure status. **Chi-square tests** examined bivariate relationships between psychiatric drug exposure and key variables.

2.4.2 Logistic Regression Analysis

Separate **logistic regression models** were performed for each age group to assess the association between **insurance coverage and psychiatric drug exposure**. Odds ratios (OR) with **95% confidence intervals (CIs)** were estimated. The reference groups were: - **<65 Uninsured** for the <65 model - **65+ without Medicare** for the 65+ model

All analyses were conducted using **R version 2024.12.0+467** with the `tidyverse`, `gtsummary`, `knitr`, `kable`, `papaja`, `broom`, and `flextable` packages.

3 Results

3.1 Descriptive Statistics

Table 1: Descriptive statistics by exposure to psychiatric drugs

Variable	No Exposure (%)	Exposed (%)
Age		
Age (Mean ± SD)	50.73 (±23.29)	51.74 (±20.56)
Sex		
Male (%)	45.84%	35.44%
Female (%)	54.16%	64.56%
Race/Ethnicity		
Hispanic (%)	17.49%	11%
Non-Hispanic White (%)	58.31%	74.56%
Non-Hispanic Black (%)	15.38%	9.51%
Non-Hispanic Asian (%)	5.3%	1.92%
Non-Hispanic Other/Multiple (%)	0%	0%
Income Level		
Poor/Negative (%)	15.52%	17.35%
Near Poor (%)	4.43%	5.55%
Low Income (%)	12.93%	14.44%
Middle Income (%)	27.15%	26.03%
High Income (%)	39.97%	36.64%

Table 1 presents descriptive statistics for the study population by psychiatric drug exposure status. Individuals exposed to psychiatric drugs were more likely to be **older**, **female**, and from **higher-income** groups.

3.2 Chi-Square Test Results

Table 2: Relationship between Insurance Level and Exposure to Psychiatric Drugs based on Covariates

Variable	X.	df	p_value
Sex	123.864	1	*< .001*

Variable	X.	df	p_value
Race/Ethnicity	342.069	4	*< .001*
Age Group	110.210	4	*< .001*
Poverty Level	27.338	4	*< .001*

Chi-square tests indicated significant differences in **psychiatric drug exposure** across **Sex**, **Race/Ethnicity**, **Age Group**, and **Poverty Level** (Table 2).

The chi-square test for **Sex** was $\mathbf{X^2}(1) = 123.864$, p = < .001. This suggests a significant relationship between sex and psychiatric drug exposure. For **Race/Ethnicity**, was $\mathbf{X^2}(4) = 342.069$, p = < .001, indicating a significant association between racial identity and exposure to psychiatric drugs. For **Age Group** was $\mathbf{X^2}(4) = 110.21$, p = < .001. This suggests that psychiatric drug exposure significantly varies by age group. For **Poverty Level** was $\mathbf{X^2}(4) = 27.338$, p = < .001. This indicates a significant association between socioeconomic status and psychiatric drug exposure.

3.3 Subgroup Chi-Square Analysis

Table 3: Relationship between Insurance Level and Exposure to Psychiatric Drugs based on Income Level

Income Level	Chi-Square / Fisher's p-value	n (Exposed to Psych Drugs)
Poor/Negative	0.041	697
Near Poor	0.527	223
Low Income	0.008	580
Middle Income	0.010	1,046
High Income	0.004	1,472

Note. Some subgroups didn't have enough representation due to the nature of MEPS data.

Subgroup analyses stratified by income level showed that the association between insurance coverage and psychiatric drug exposure remained statistically significant in all income groups except for the Near Poor category (Table 3).

For example, among individuals in the **Poor/Negative** category, the chi-square test indicated a significant association $p = 0.041$, suggesting that psychiatric drug exposure differs by insurance coverage in this income level. Similarly, in the **Near Poor** category, the relationship between insurance level and psychiatric drug exposure remained significant $p = 0.008$, reinforcing the role of insurance coverage in determining psychiatric medication access. For the **Low Income** group, a statistically significant association was observed $p = 0.010$, indicating that psychiatric drug exposure varied across different insurance statuses. Likewise, in the **Middle Income** category, the chi-square test remained statistically significant $p = 0.004$, further supporting the notion that individuals with different insurance statuses experience varying levels of access to psychiatric medication. In contrast, the **High Income**

category did not show a statistically significant association $p = 0.527$, implying that insurance coverage might not play a decisive role in psychiatric drug exposure within this income level.

3.4 Logistic Regression Results

3.4.1 <65 Population

Table 4: Logistic Regression between Insurance Level and Exposure to Psych Drugs with under 65

Insurance Level	OR	95% CI (Lower)	95% CI (Upper)	p-value
<65 Uninsured	1.00	—	—	—
<65 Any Private/Public	2.10	1.607	2.796	*< .001*

Note. Reference group is <65 Uninsured (OR = 1.00).

Table 4 presents logistic regression results for the **under 65 population**. The odds of psychiatric drug exposure for individuals with **<65 Any Private/Public** are **2.10** times that of the reference group, with a **95% CI** of (1.61, 2.80) and $p = < .001$.

3.4.2 65+ Population

Table 5: Logistic Regression Results for Medicare Presence on Psychiatric Drug Exposure for 65+

Insurance Level	OR	95% CI (Lower)	95% CI (Upper)	p-value
65+ without Medicare	1.00	—	—	—
65+ with Medicare	1.972	1.119	3.757	*0.027*

Note. Reference group is 65+ Uninsured (OR = 1.00).

Table 5 presents logistic regression results for the **65 over population**. The odds of psychiatric drug exposure for individuals with **65+ with Medicare** are **1.97** times that of the reference group, with a **95% CI** of (1.12, 3.76) and $p = .027$.

3.5 Psychiatric Drug Exposure by Insurance Level

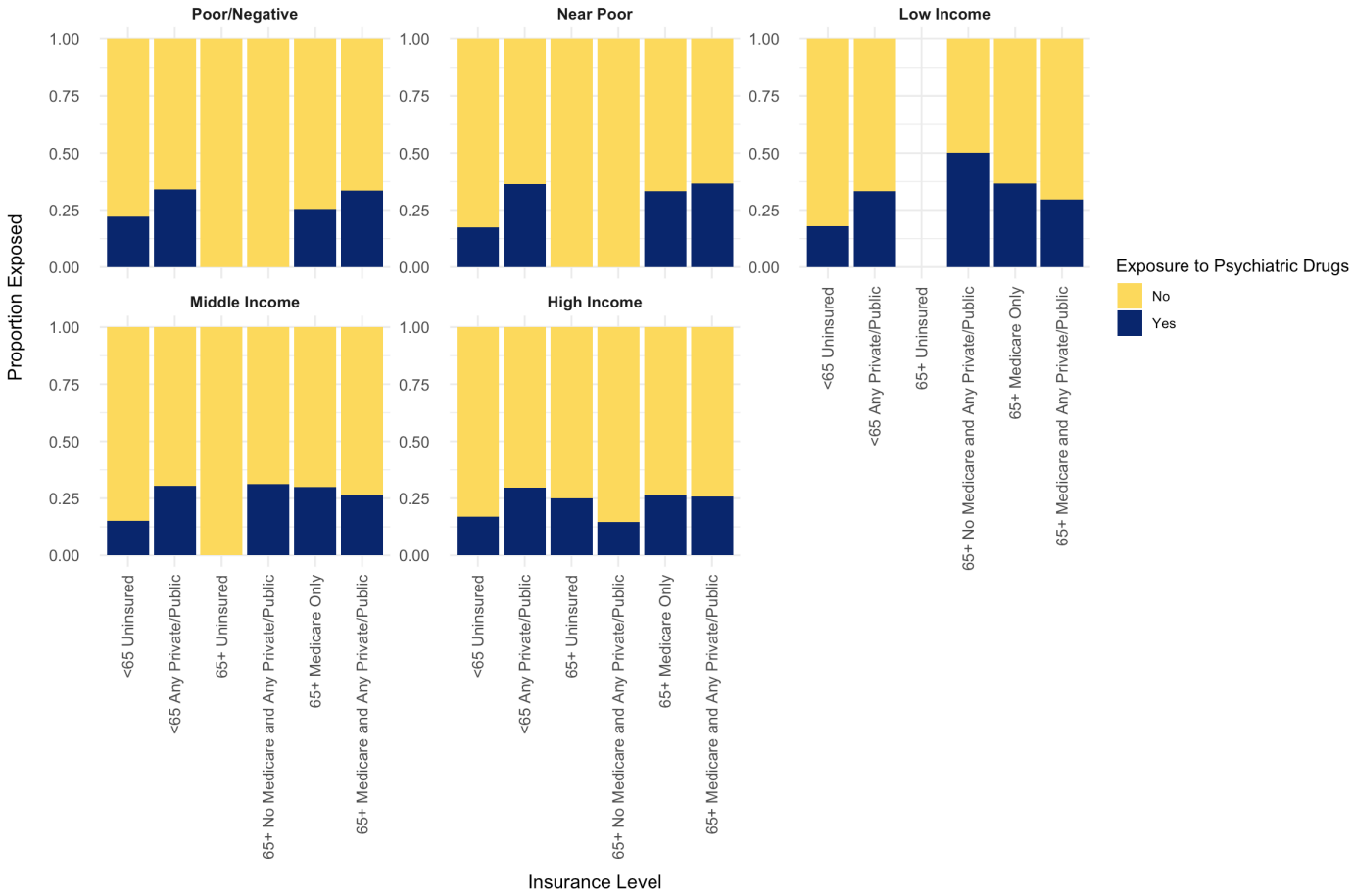
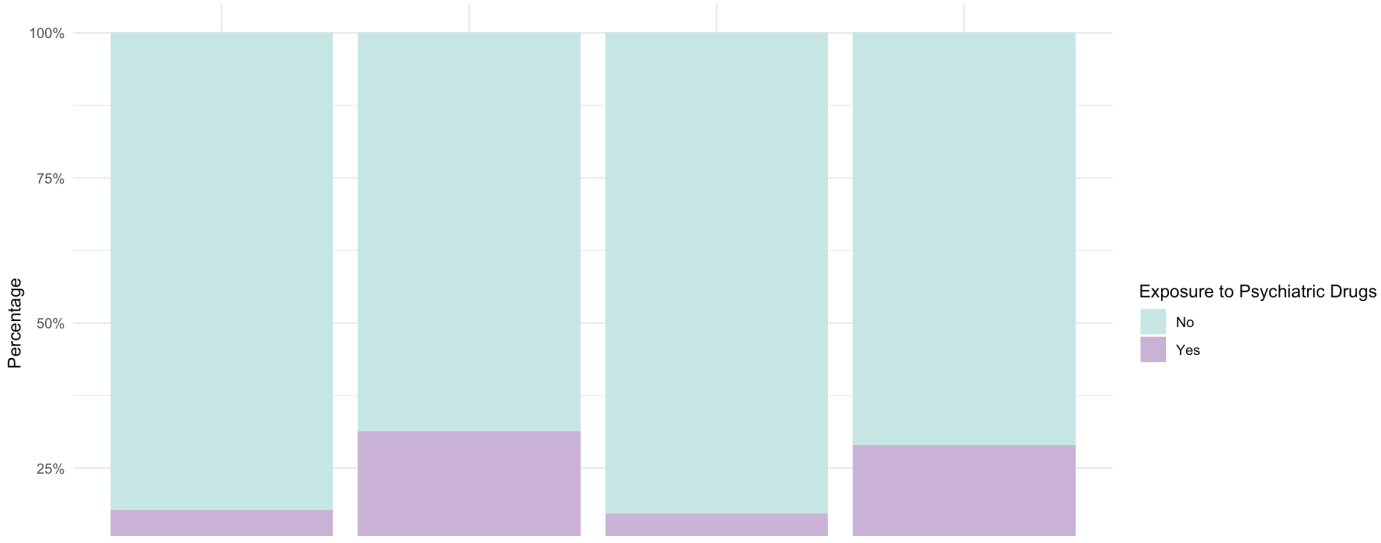


Figure 1: Exposure to psychiatric drugs by income level and insurance level

Figure 1 visualizes psychiatric drug exposure proportions by **insurance level** and **income group**.

Individuals with private/public insurance consistently had higher psychiatric drug exposure across all income levels except for the Near Poor group. Notably, psychiatric drug exposure was lowest among the uninsured, supporting the hypothesis that lack of insurance acts as a barrier to accessing psychiatric treatment.

3.6 Psychiatric Drug Exposure by Age Group



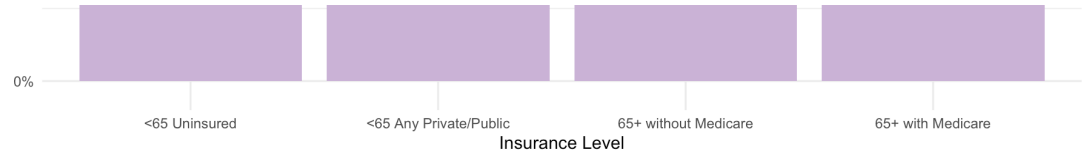


Figure 2: Psychiatric Drug Exposure by Insurance Coverage

Figure 2 is a stacked bar plot that visualizes psychiatric drug exposure proportions by **insurance level** using three Insurance Level groups.

In both age groups **(<65 and 65+)**, the proportion of individuals who have insurance have higher exposure to psychiatric drugs than those who are uninsured.

3.7 Psychiatric Drug Prescription by Age and Sex

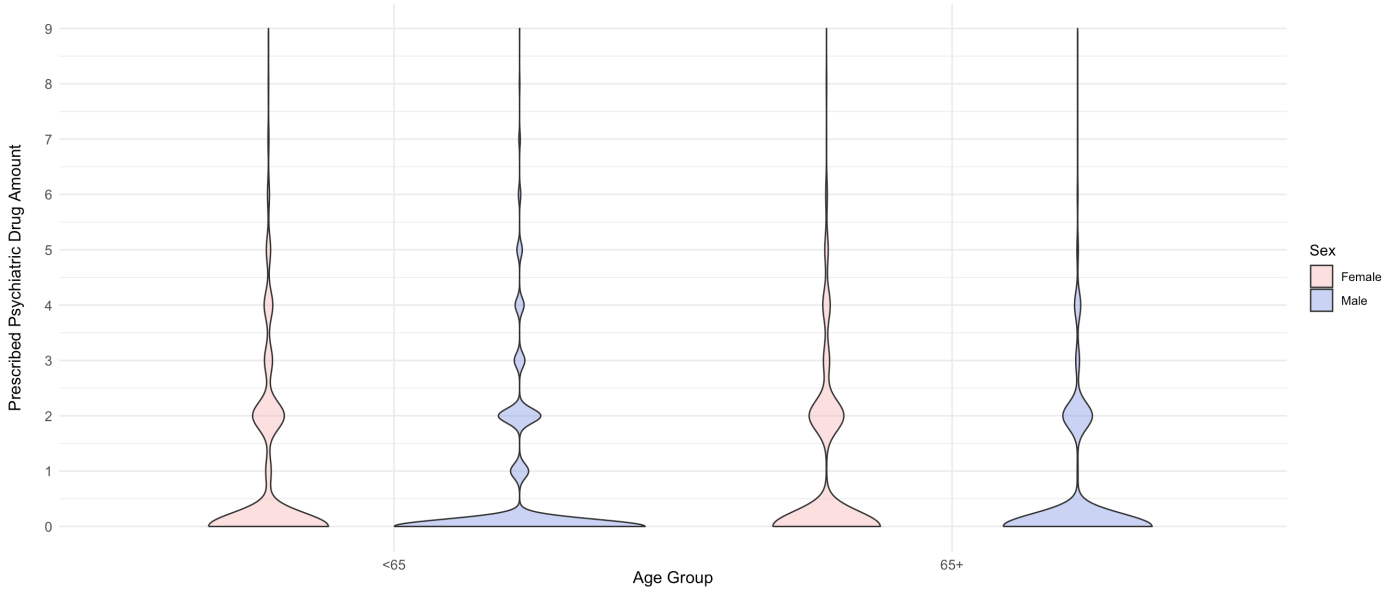
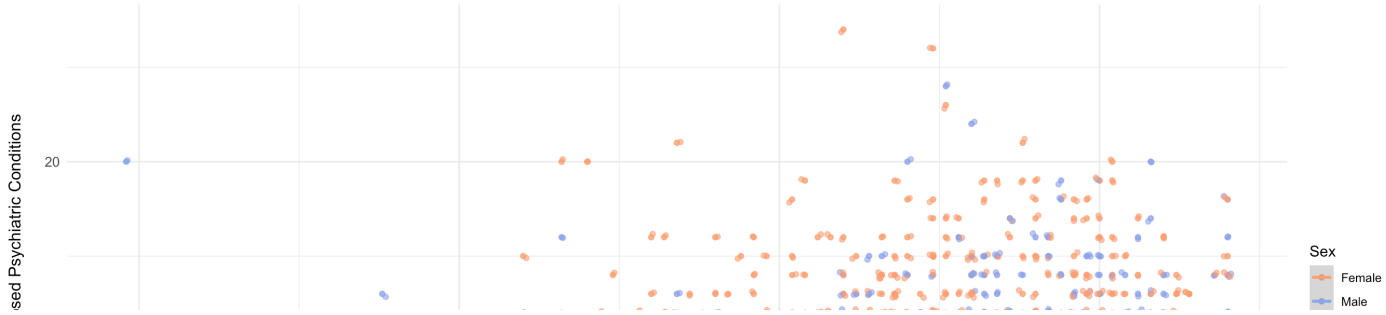


Figure 3: Psychiatric Drug Exposure by Age and Sex

Figure 3 illustrates the distribution of **psychiatric drug prescriptions** by **age group** and **sex**.

Consistent with previous findings, **females** appear slightly more likely than males to receive psychiatric medications, although the distribution between age and sex groups seem approximately similar. While most individuals receive **0–2 psychiatric drugs**, a small subset receives a significantly higher number.

3.8 Age and Number of Psychiatric Diagnosis



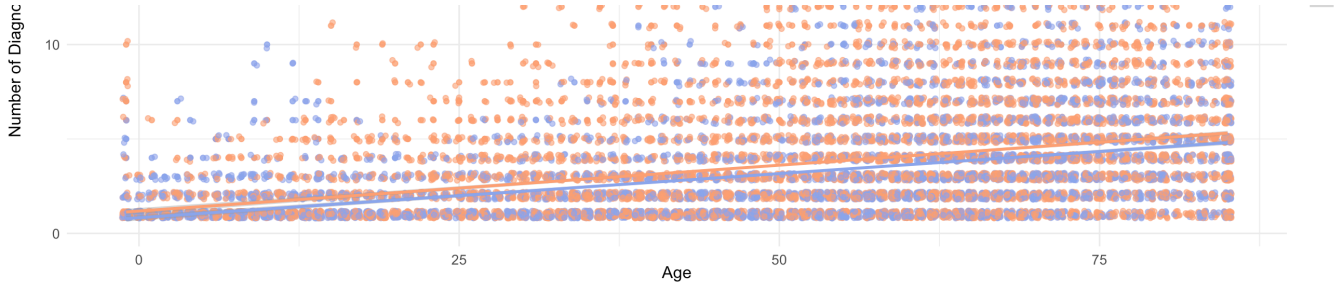


Figure 4: Number of Psychiatric Conditions by Age

Figure 4 displays the relationship between both **age** and **sex** and the **number of psychiatric diagnoses**.

Across all ages, psychiatric diagnoses were most frequently **0 or 1**, suggesting that multiple diagnoses were uncommon in this population. The nearly flat regression line suggests that neither sex or age strongly predicts the number of psychiatric conditions.

4 Discussion

The findings of this study highlight a strong association between insurance coverage and psychiatric drug exposure, reinforcing the idea that insurance plays a crucial role in mental health treatment access. Table 2 confirm that all covariates—age, sex, race/ethnicity, poverty level, and insurance status—are significantly related to psychiatric drug exposure, while logistic regression results in Table 4 and Table 5 show that insured individuals, regardless of age or Medicare eligibility, are nearly twice as likely to receive psychiatric prescriptions as their uninsured counterparts. Notably, the “Near Poor” subgroup in Table 3 did not reach statistical significance, likely due to small sample size limitations rather than a true absence of association, a limitation that is also evident in Figure 1, where data sparsity affects certain groups. Figure 2 visually confirms the logistic regression findings, showing that insured individuals consistently have higher psychiatric drug exposure. Further, Figure 3 suggests that while age and sex predict psychiatric drug exposure, they do not strongly influence the number of psychiatric prescriptions a person receives, while Figure 4 indicates that age and sex do not predict the number of psychiatric conditions a person has. These findings suggest that the association between age and psychiatric drug exposure is likely driven by treatment access rather than a higher prevalence of psychiatric conditions in older individuals. Despite these insights, this study is limited by sample size constraints and the cross-sectional nature of MEPS, which prevents causal inference. Future research should examine longitudinal trends in psychiatric drug access and explore how policy interventions, such as Medicaid expansion and cost-sharing reductions, can further mitigate disparities in psychiatric medication use.

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Footnotes

1. ("Medical Expenditure Panel Survey Household Component Sample Sizes" n.d.) ↩