MARYLAND MODEL ANALYTICS
Task 7
Outcomes and Costs Associated with Evidence-based
Treatment of First Episode Psychosis (FEP)

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Background

- Schizophrenia spectrum disorders include schizophrenia, schizophreniform disorder, unspecified psychotic disorder, schizoaffective disorder, and brief psychotic disorder

- Their central feature is psychotic symptoms (psychosis) which include hallucinations, delusions, disorganized thinking or behavior, and negative or catatonic symptoms

- Long-term effects can include cognitive deficits, physical health comorbidities, serious functional impairment, risk of suicide, and reduced life expectancy

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Background

- Longer duration of untreated illness results in worse outcomes, as well as greater health care and other societal costs

- Racial and ethnic differences in outcomes
  - Blacks tend to initiate treatment at a later stage of illness when their symptoms are more severe and there is greater functional impairment
  - They also are more likely to be prescribed "first generation" antipsychotic medications

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Background

- Early, comprehensive treatment of psychosis significantly improves patient outcomes

- Coordinated Specialty Care (CSC) reduces symptoms, improves functioning and quality of life, increases medication adherence, and reduces hospitalizations

CSC
- Pharmacotherapy
- Care management
- Medication management
- Individual and family psychoeducation and therapy
- Supported employment and education

- Maryland provides CSC programs in in Baltimore City, Baltimore County, and Montgomery County

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Study Aims

Examine use of CSC for First Episode Psychosis (FEP) in Maryland based on service utilization captured in administrative claims data

1) Estimate the proportion of individuals with FEP who received CSC services
2) Examine variation in use of CSC across geographic locations and population sub-groups
3) Examine associations between CSC and clinical outcomes

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Research Questions

- What is the prevalence of psychosis among the study population?

- What are the characteristics of enrollees with FEP?

- What percentage of individuals with FEP receive various types of behavioral healthcare ranging from less to more intensive services?

- How does behavioral health service use for FEP vary by age, sex, and geographic region of the state?

- What enrollee characteristics and patterns of behavioral health service use are associated with ED use and hospitalizations in the year following an FEP diagnosis?

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Methods

Data
- Private insurance enrollment, claims, and pharmacy data from 2016 through 2019 from Maryland's All Payer Claims Database

Sample
- Private insurance enrollees ages 15 to 30 with a psychosis diagnosis
  - Identified enrollees with psychosis using claims from January 1, 2017 through December 31, 2018 using the date of the first encounter to establish the beginning of an episode
  - To establish a *first episode*, i.e., FEP, subset the sample to enrollees who did not have a claim with a primary psychosis diagnosis code in the one-year period prior to the incident visit

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Methods

CSC Definition

- Produced claim counts of all procedures associated with a primary behavioral health diagnosis among enrollees with psychosis

- Classified the procedure codes as outpatient treatment, ED use, or hospitalization
  - Broke down outpatient treatment into office visits, psychotherapy, care coordination, intensive outpatient treatment, SUD treatment, alternative treatments, medication management, and residential treatment

- Used pharmacy claims to identify prescription fills for antipsychotic, antidepressant, and anxiolytic (anti-anxiety agents) medications

CSC
- Pharmacotherapy
- Care management
- Medication management
- Individual and family psychoeducation and therapy
- Supported employment and education

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Methods

- Unable to explicitly code CSC
  - Supported employment was not coded
  - Other key CSC components were coded too infrequently to justify a specific CSC category

- Created categories of outpatient service use that reflect typical patterns of care ranging in intensity

Service Use Categories

- Office-based care—office-based services in conjunction with pharmacotherapy
- Office-based care plus psychotherapy—office-based services in conjunction with pharmacotherapy and psychotherapy
- High intensity care—more intensive treatment, including care coordination, residential treatment, or intensive outpatient treatment

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Methods

Descriptive analyses to describe patterns of service use by enrollees with FEP and to examine clinical outcomes in relation to patterns of service use:

- Characterize the sample by demographic characteristics, behavioral health comorbidities, and Maryland region

- Report the number and percentage of enrollees with psychosis and with FEP who received treatment, per the defined treatment categories, overall and by age group, sex, and region

- Estimate the odds of ED use and hospitalization in the year following diagnosis by demographic characteristics, region, and behavioral health service type using multivariable logistic regression models

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Males were over-represented among enrollees with psychosis

Table 1. Sample Characteristics

Characteristic	Total Eligible Sample[*]		Total with Psychosis[**]	
	n	%	n	%
Total	931,617	100.0	3,209	100.0
Age on 12/31/2018				
15 to 18	171,485	18.4	524	16.3
19 to 25	419,557	45.0	1,769	55.1
26 to 30	340,575	36.6	916	28.5
Sex				
Male	455,676	48.9	1,763	54.9
Female	475,912	51.1	1,446	45.1
Maryland Region				
Capital	404,287	43.4	1,501	46.8
Central	393,515	42.2	1,353	42.2
Eastern	47,797	5.1	104	3.2
Southern	59,949	6.4	180	5.6
Western	26,069	2.8	71	2.2

*Enrollees ages 15 to 30 on 1/1/2017 plus anyone who turned 15 in 2017 or 2018
**One inpatient or two outpatient visits with a primary psychosis diagnosis code between 1/1/2017 and 12/31/2018

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Data on race and ethnicity was largely missing

Table 1. Sample Characteristics, continued

Characteristic	Total Eligible Sample[*]		Total with Psychosis[**]	
	n	**%**	**n**	**%**
Ethnicity				
Hispanic	22,034	2.4	53	1.7
Non-Hispanic	88,235	9.5	423	13.2
Missing or Unknown	821,348	88.2	2,733	85.2
Race				
Asian	16,595	1.8	46	1.4
Black	66,968	7.2	357	11.1
Hawaiian	194	0.0	-	0.0
Indian	518	0.1	-	0.0
White	96,771	10.4	404	12.6
Decline	111,598	12.0	458	14.3
Other/Unknown	190,568	20.5	402	12.5
Missing	449,693	48.3	1,545	48.1

*Enrollees ages 15 to 30 on 1/1/2017 plus anyone who turned 15 in 2017 or 2018.

**One inpatient or two outpatient visits with a primary psychosis diagnosis code between 1/1/2017 and 12/31/2018.

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Behavioral health comorbidities were common among enrollees with psychosis

Table 1. Sample Characteristics, continued

Characteristic	Total Eligible Sample [*]		Total with Psychosis [**]	
	n	%	n	%
Other Mental Health Disorder				
Yes	89,842	9.6	2,626	81.8
No	841,775	90.4	583	18.2
Substance Use Disorder				
Yes	13,406	1.4	1,099	34.2
No	918,211	98.6	2,110	65.8

[*]Enrollees ages 15 to 30 on 1/1/2017 plus anyone who turned 15 in 2017 or 2018

[**]One inpatient or two outpatient visits with a primary psychosis diagnosis code between 1/1/2017 and 12/31/2018

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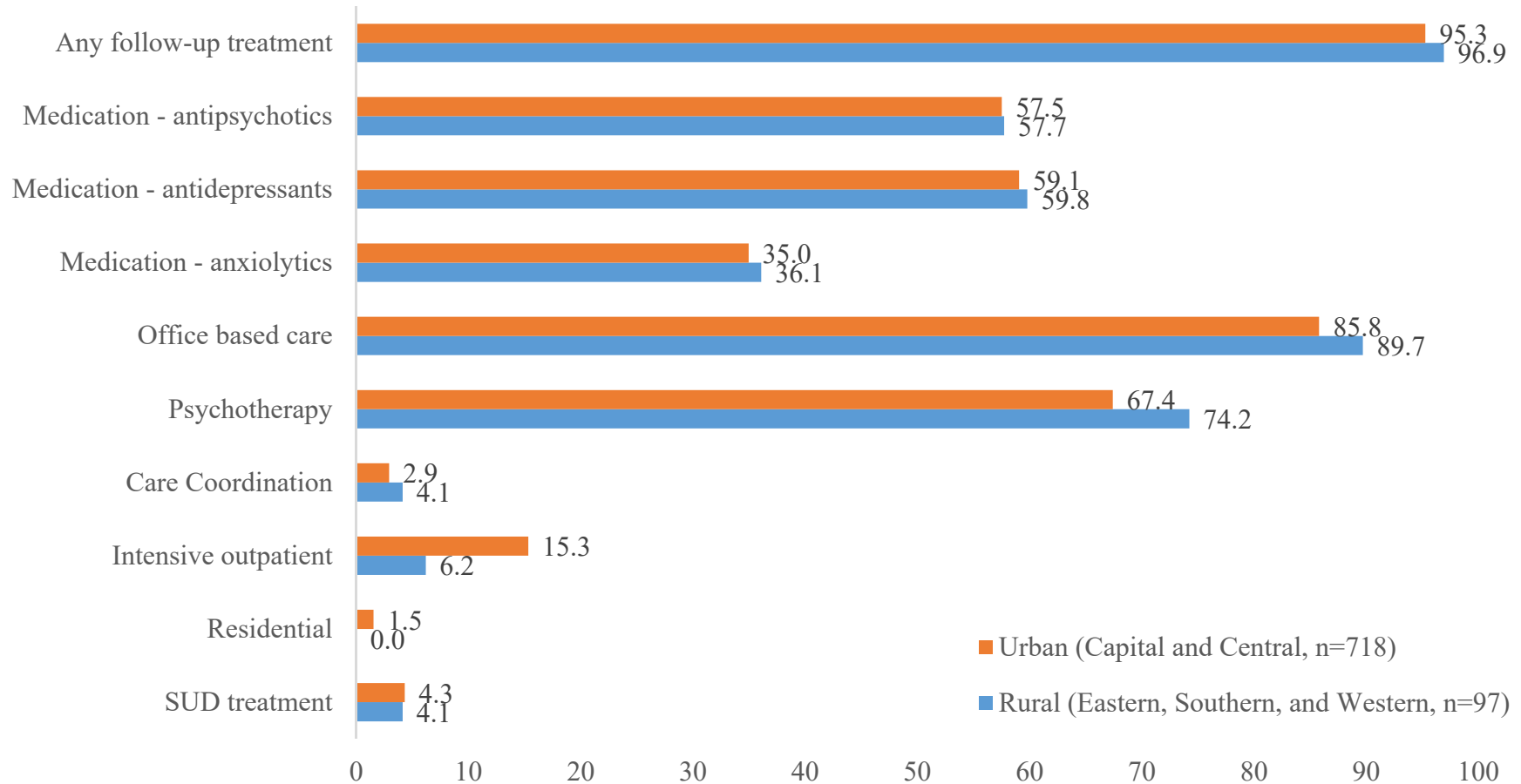# Intensive treatment was more common in urban regions of the state

Any follow-up treatment	95.3 / 96.9
Medication - antipsychotics	57.5 / 57.7
Medication - antidepressants	59.1 / 59.8
Medication - anxiolytics	35.0 / 36.1
Office based care	85.8 / 89.7
Psychotherapy	67.4 / 74.2
Care Coordination	2.9 / 4.1
Intensive outpatient	15.3 / 6.2
Residential	1.5 / 0.0
SUD treatment	4.3 / 4.1

■ Urban (Capital and Central, n=718)

■ Rural (Eastern, Southern, and Western, n=97)

Figure 1. The Percentage of Enrollees with FEP Receiving Different Types of Services in the Year Following Their Diagnosis by Region of the State

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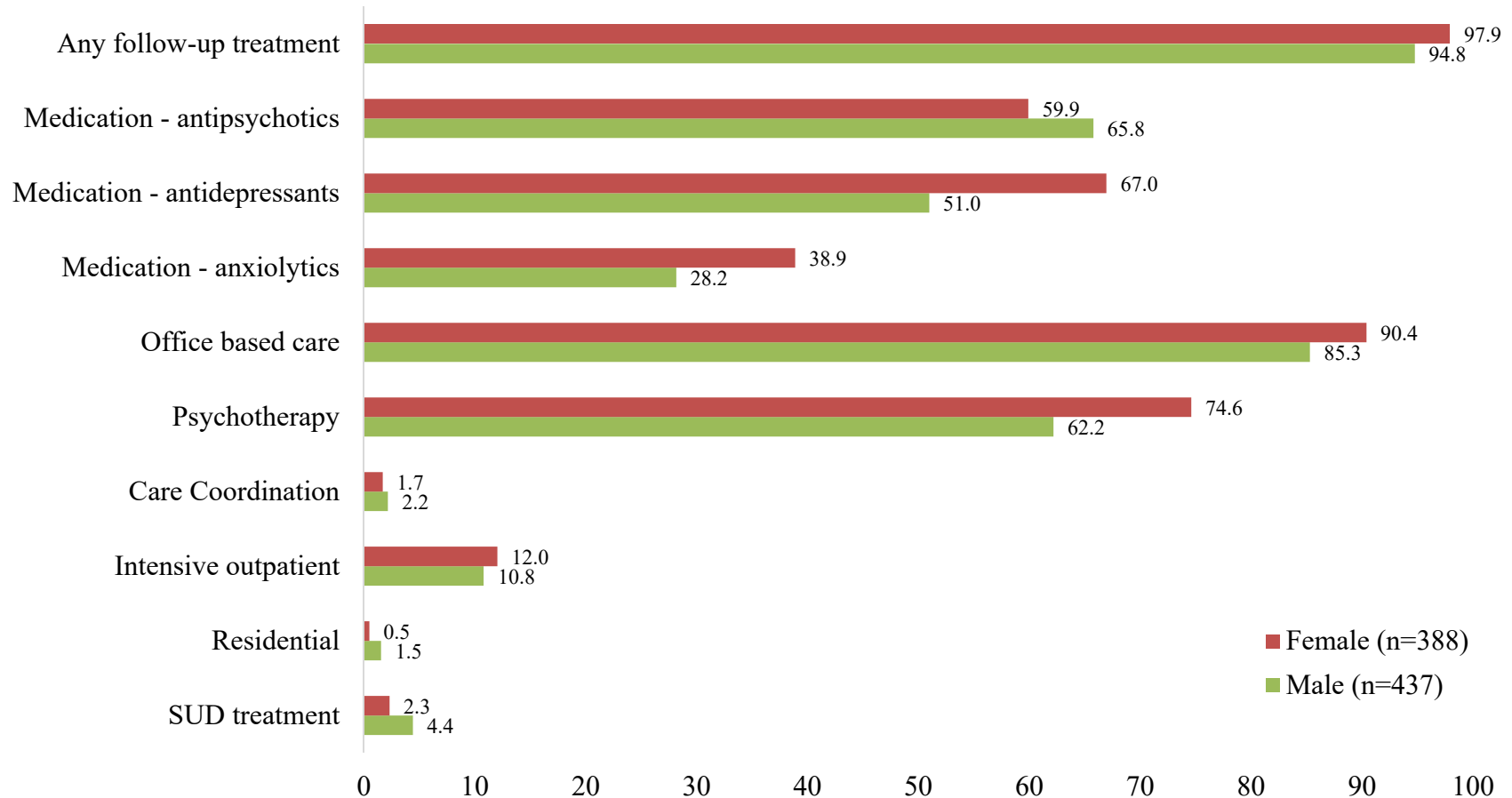# Females were more likely to receive most treatment types compared to males

Figure 2. The Percentage of Enrollees with FEP Receiving Different Types of Treatments by Sex

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Younger enrollees were least likely to receive antipsychotic medication and most likely to receive psychotherapy
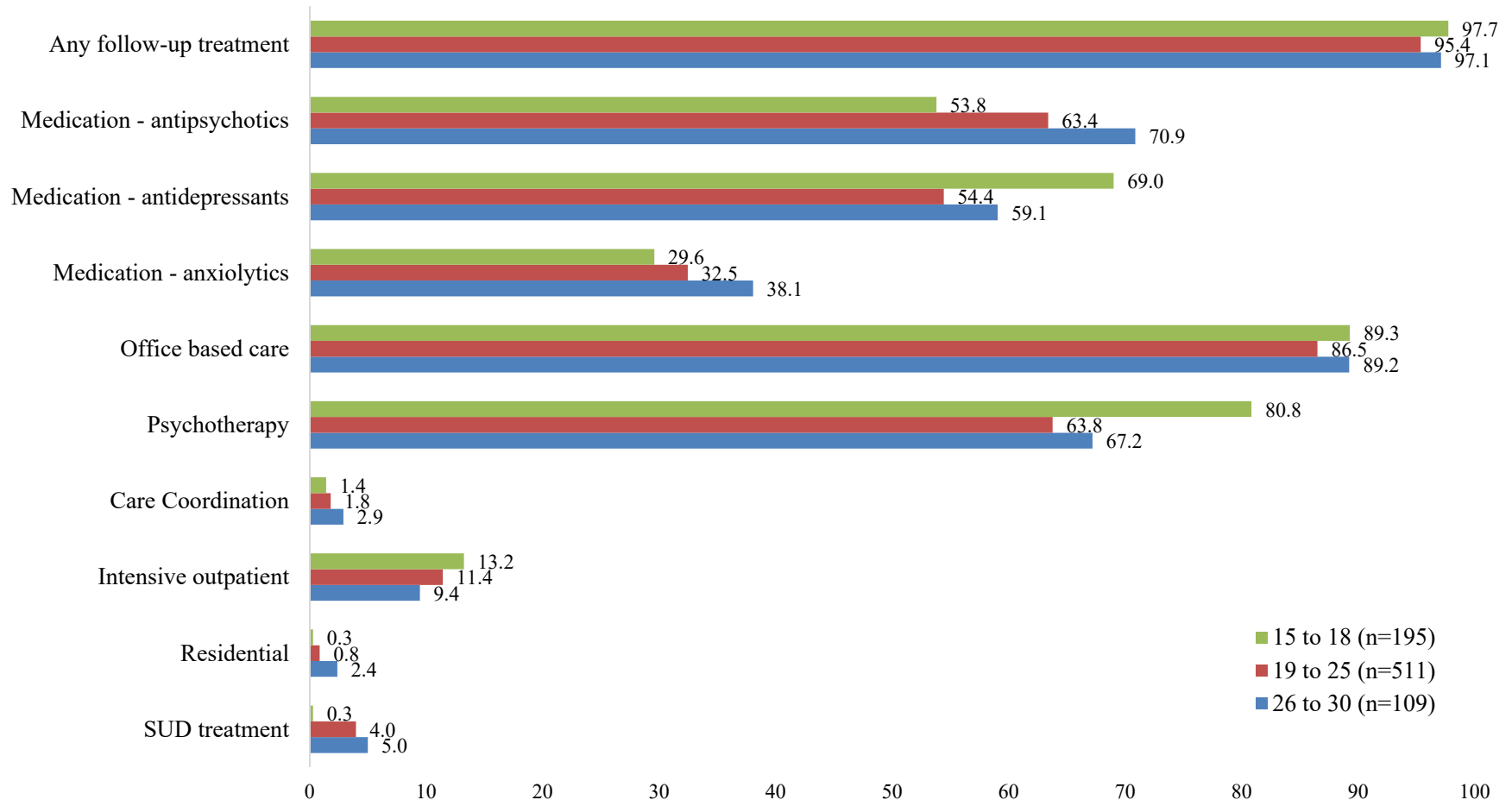

Figure 3. The Percentage of Enrollees with FEP Receiving Different Types of Treatment by Age Category

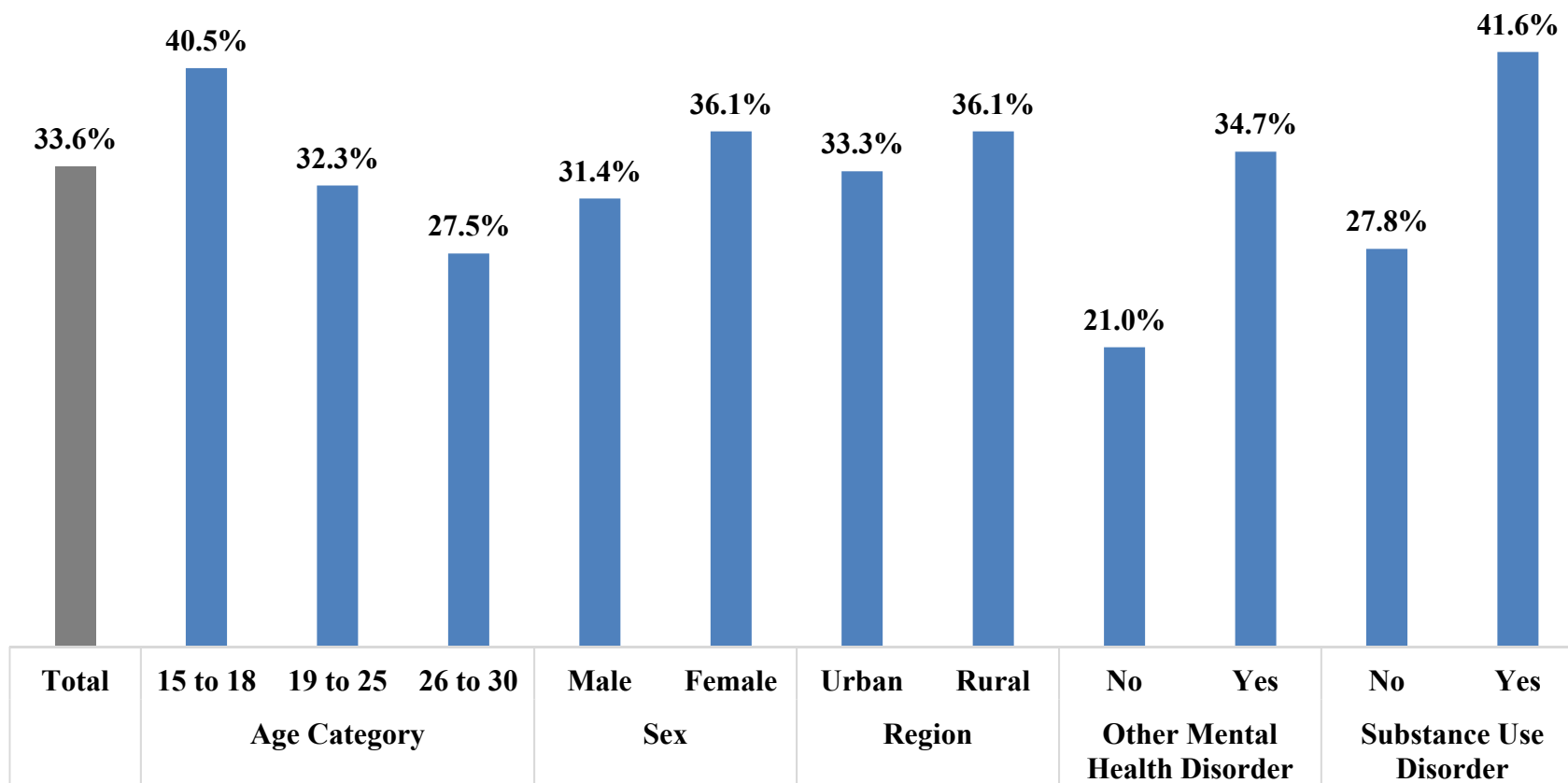# Having a comorbid mental health disorder or SUD was strongly associated with subsequent ED visits

	Total	15 to 18	19 to 25	26 to 30	Male	Female	Urban	Rural	No	Yes	No	Yes
	33.6%	40.5%	32.3%	27.5%	31.4%	36.1%	33.3%	36.1%	21.0%	34.7%	27.8%	41.6%

Total	Age Category	Sex	Region	Other Mental Health Disorder	Substance Use Disorder

Figure 4. The Percentage of Enrollees with FEP Who Had an ED Visit in the Year* Following Their Diagnosis, Overall and by Enrollee Characteristics

*Excludes ED visits in the 30-day period following the FEP diagnosis.

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Enrollees with intensive treatment were less likely to have a subsequent ED visit
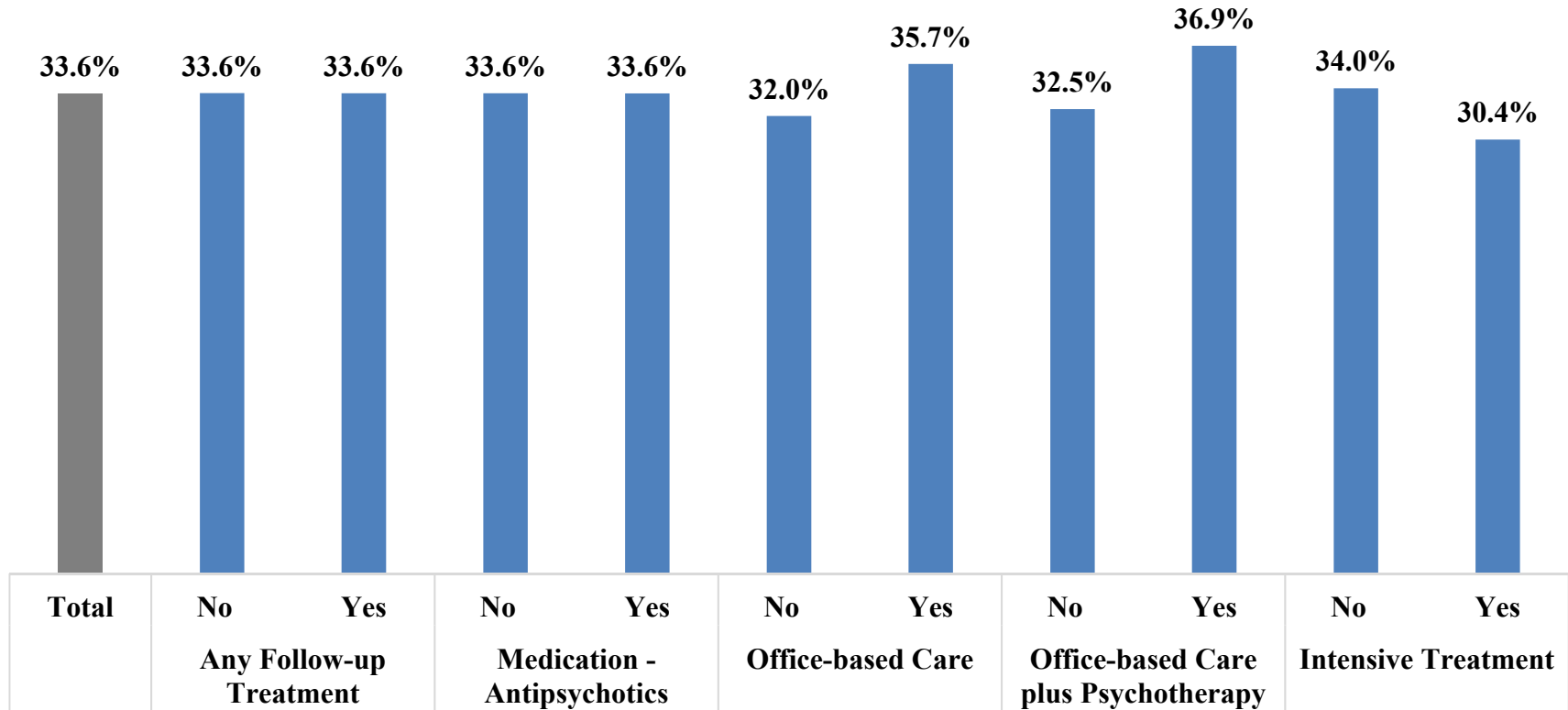

Figure 5. The Percentage of Enrollees with FEP Who Had an ED Visit in the Year* Following Their Diagnosis, Overall and by Type of Treatment Received in the 30-days Following Diagnosis

*Excludes ED visits in the 30-day period following the FEP diagnosis.

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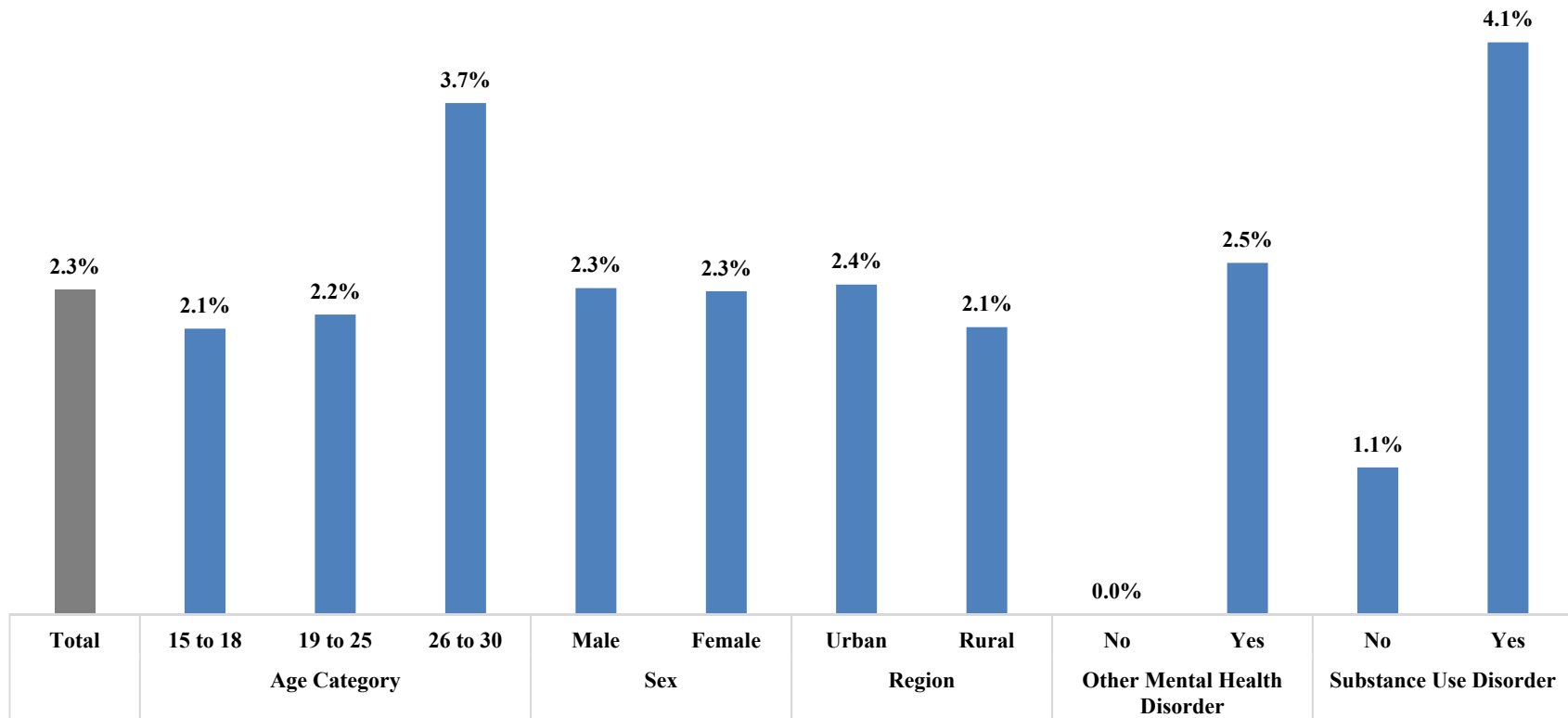# All inpatient admissions were among enrollees with comorbid MH disorder

Figure 6. The Percentage of Enrollees with FEP Who Had an Inpatient Hospital Admission in the Year* Following Their Diagnosis, Overall and by Enrollee Characteristics

*Excludes hospital admissions in the 30-day period following the FEP diagnosis.

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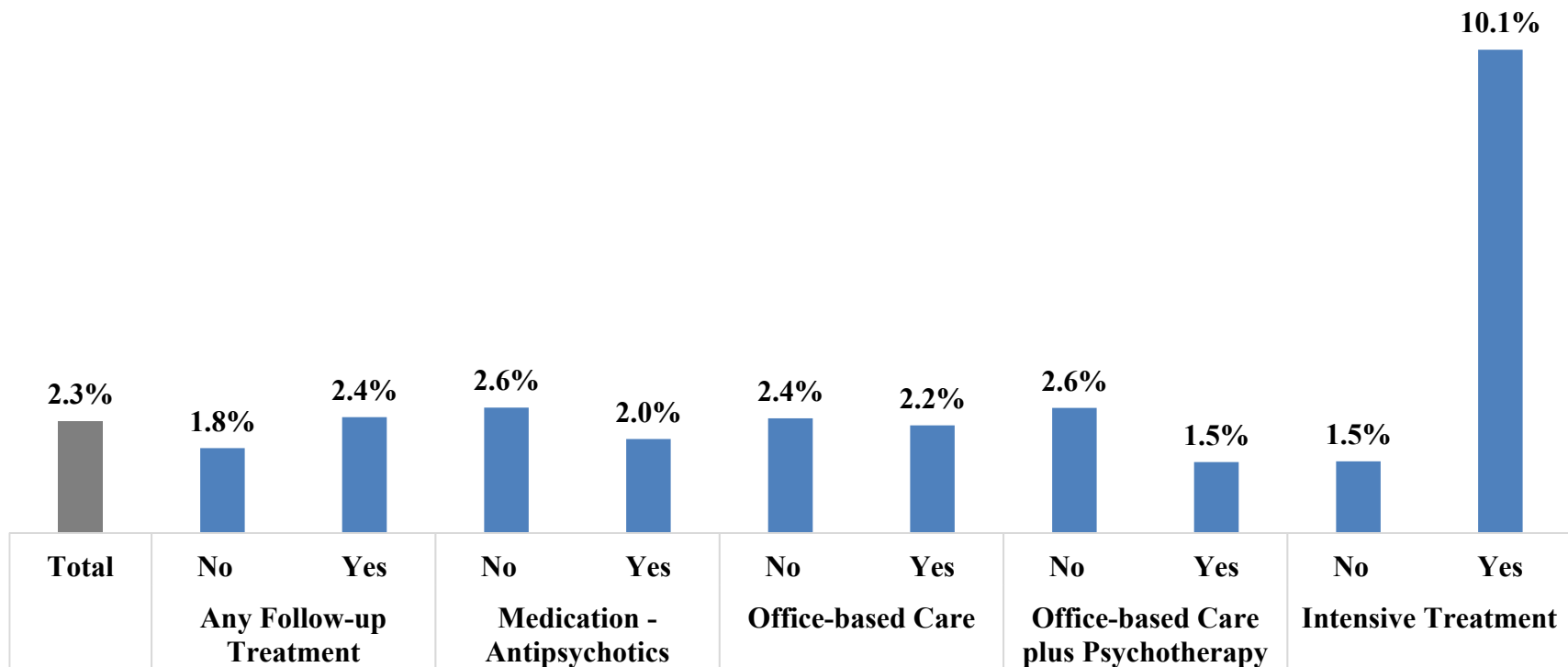# Enrollees with antipsychotic medications were less likely to have a subsequent hospitalization

Figure 7. The Percentage of Enrollees with FEP Who Had an Inpatient Hospital Admission in the Year* Following Their Diagnosis, Overall and by Type of Treatment Received in the 30 days Following Diagnosis

*Excludes hospital admissions in the 30-day period following the FEP diagnosis.

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Enrollees with comorbid SUD were more likely to have ED visits and hospitalizations

Table 2. Multivariable Logistic Regression Analyses of ED Visits and Inpatient Admissions in the Year following an FEP Diagnosis

	ED Visit*			Inpatient Admission*		
	Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value
Age category (reference: 15 to 18)						
19 to 25	0.64	(0.44 - 0.91)	0.01	0.82	(0.24 - 2.78)	0.75
26 to 30	0.49	(0.29 - 0.83)	0.01	1.56	(0.36 - 6.78)	0.55
Female sex	1.30	(0.95 - 1.77)	0.10	1.11	(0.42 - 2.97)	0.83
Rural region	1.10	(0.70 - 1.73)	0.69	1.38	(0.30 - 6.38)	0.68
Other mental health disorder	1.83	(0.95 - 3.51)	0.07	NA	NA	NA
Substance use disorder	2.21	(1.61 - 3.03)	<.001	3.63	(1.20 - 10.99)	0.02
Antipsychotic medication**	0.95	(0.69 - 1.30)	0.73	0.56	(0.20 - 1.58)	0.28
Office-based care plus psychotherapy**	1.13	(0.79 - 1.61)	0.50	0.45	(0.12 - 1.67)	0.23
Intensive treatment**	0.70	(0.41 - 1.18)	0.18	6.88	(2.51 - 18.92)	<.001

*Excludes ED visits and hospital admissions in the 30-day period following the FEP diagnosis.
**In 30-day period following FEP diagnosis.

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Summary

- Enrollees with psychosis had high rates of comorbid mental health disorders and SUD and they were more likely to be male and reside in the more urban areas of the state.

- Most enrollees with FEP received some type of treatment in the year following their diagnosis, however, more intensive treatments were less common, particularly in rural regions

- Despite the high rate of SUD comorbidity, specific SUD treatment was rare

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Summary

- Younger enrollees were treated more often with psychotherapy and less often with antipsychotic medication - inconsistent with current clinical recommendations
- More complex and higher need beneficiaries drive ED use and hospital admissions
  - ED use was more common among the youngest age group and among enrollees with comorbid mental health and SUD
  - Enrollees with SUD and those with intensive outpatient treatment in the month following their diagnosis were significantly more likely to have an inpatient admission

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Thank You

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Maryland Regions

Region	Counties in Region
Capital	Frederick, Montgomery, Prince George's
Central	Anne Arundel, Baltimore City, Baltimore, Carroll, Harford, Howard
Eastern Shore	Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, Worcester
Southern	Calvert, Charles, St. Mary's
Western	Allegany, Garrett, Washington