



## BACKGROUND

- In 2014 Oregon approved a measure to legalize recreational marijuana use. Currently there are over 650 active Marijuana Retail Licenses in the State (Oregon.gov).
- Literature review shows that there is an association between marijuana use and depression (Horwood 2012), anxiety (Volkow 2014), and schizophrenia (Fortia 2014).
- There is also evidence that demographics, such as age (Patton 2002), affect marijuana use and mental health.

## OBJECTIVES

- How strong is the association between marijuana use and mental health (anxiety, depression, and schizophrenia) in our community, where marijuana is legal and readily available?
- Are there differences in associations between marijuana use and mental health across patients age 15-25 vs 26-65?
- Are there differences in associations between marijuana use and sex?

## METHODS

- Samaritan Health Services patients currently active on a primary care physician's panel were included. Data was collected from the electronic medical record from March 2013 to December 2019.
- Patients with anxiety, depression, and/or schizophrenia diagnosed during any encounter or ever listed on their problem list were categorized as having a mental health diagnosis.
- Patients with a positive THC result on a lab test, marijuana related diagnoses, or marijuana use recorded in their social history were categorized as marijuana users.
- Both crude and age adjusted relative risks were calculated. Age adjusted relative risks were calculated by direct standardization with the total study population as the standard population, categorized into 5-year age groups from ages 0 to 90+.

## RESULTS

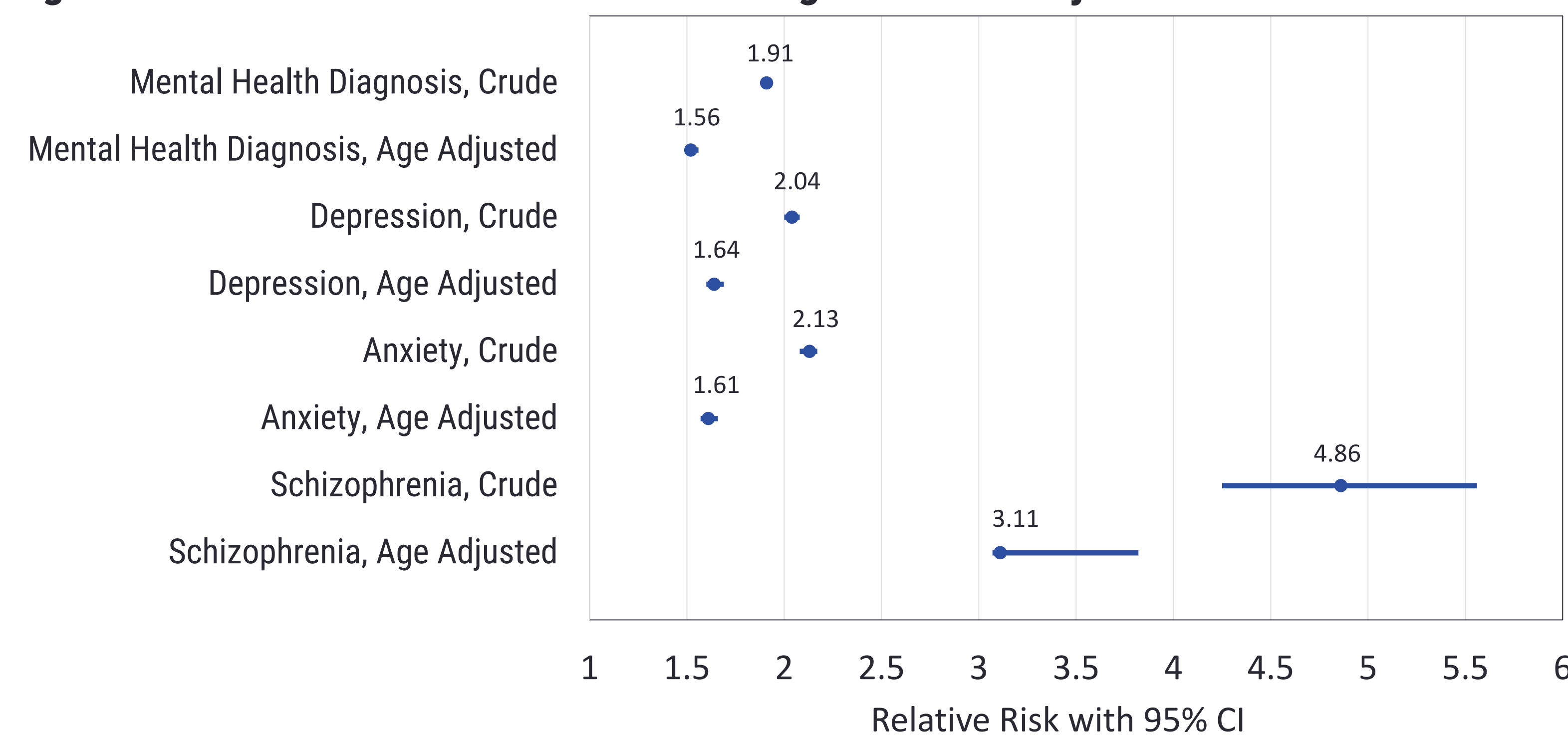
- Of the 131,402 patients included in the study, 20,410 (15.5%) were identified as marijuana users and 43,449 (33.1%) were diagnosed with anxiety, depression, and/or schizophrenia.

**Table 1. Demographics and Marijuana Use for Study Population**

\* Patients with anxiety, depression, and/or schizophrenia

	% of Study Population (N=131,402)	% Using Marijuana (N=20,410)
<b>Mental Health</b>		
No Mental Health Diagnosis	66.9%	10.4%
Any Mental Health Diagnosis*	33.1%	26.0%
Anxiety	22.8%	28.1%
Depression	22.7%	27.3%
Schizophrenia	0.6%	47.2%
<b>Sex</b>		
Male	45.8%	17.0%
Female	54.2%	14.3%
<b>Age</b>		
Less than 15 years old	22.0%	2.6%
15-25 years old	11.6%	21.3%
26-65 years old	43.6%	23.9%
Over 65 years old	22.8%	9.1%

**Figure 1. Relative Risk of Mental Health Diagnosis for Marijuana Users vs Non-Users**



**Table 2. Relative Risk of Mental Health Diagnosis for Marijuana Users Age 15-25 vs 26-65 and for Males vs Females**

Mental Health Outcome	Ages 15 to 25 (N=15,271)		Ages 26 to 65 (N=57,247)		Males (N=60,123)		Females (N=71,269)	
	Crude RR	95% CI	Crude RR	95% CI	Age Adjusted RR	95% CI	Age Adjusted RR	95% CI
Mental Health Diagnosis	2.05	1.97, 2.13	1.43	1.41, 1.46	1.66	1.61, 1.74	1.52	1.47, 1.57
Depression	2.44	2.31, 2.58	1.49	1.45, 1.52	1.82	1.75, 1.93	1.65	1.59, 1.72
Anxiety	2.05	1.95, 2.15	1.56	1.53, 1.60	1.70	1.64, 1.80	1.65	1.60, 1.71
Schizophrenia	5.13	3.01, 8.76	3.49	3.00, 4.06	3.17	3.17, 4.72	2.77	2.63, 4.63

## CONCLUSIONS

- There is a significant association between mental health and marijuana use, with the strongest association being for patients with schizophrenia.
- Both marijuana use and mental health diagnoses were rare among children, making it important to consider the age adjusted Relative Risk.
- Marijuana use was more common among males than females.
- Causation cannot be implied from these results. The data analyzed does not include temporality, duration, or intensity of marijuana use or mental health diagnoses. There could be misclassification in both categories due to incomplete or outdated information in the electronic medical record.

## RECOMMENDATIONS

- Further research is needed to explore causation and financial implications.
- We strongly recommend more robust screening and quantification of marijuana use, potentially using the already effective SBIRT model.
- Given the lack of peer reviewed evidence and the large volume of direct to consumer advertising in the marijuana industry, physician education is necessary to prevent harm to patients and financial harm to the healthcare system.

## REFERENCES & ACKNOWLEDGEMENTS

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