

# RETAIL AVAILABILITY OF MARIJUANA IN OREGON COUNTIES AND CO-USE OF ALCOHOL AND MARIJUANA AND RELATED BELIEFS AMONG ADOLESCENTS



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## INTRODUCTION

- A growing number of states are legalizing recreational marijuana use and the sale of marijuana for recreational use.
- Recreational Marijuana Legalization (RML) raises concerns about increasing marijuana availability and use among young people and possible negative consequences, such as co-use with alcohol and other substances.
- Very few studies have investigated possible effects of local RML policies and retail availability of marijuana on alcohol and marijuana co-use and related beliefs among adolescents.

## OBJECTIVE

To investigate whether legalization of recreational marijuana sales in Oregon counties in 2015 is associated with subsequent changes in alcohol and marijuana co-use and beliefs supportive of alcohol and marijuana use among adolescents.

## METHODS

### SURVEY DATA

- Student Wellness Survey data collected in 2010, 2012, 2014, 2016, and 2018
- Cross-sectional samples of 6th, 8th and 11th graders

### STUDENT-LEVEL VARIABLES

- **Any Past 30-Day Alcohol And Marijuana Co-Use:** (no/yes).
- **Perceived Availability of Alcohol and Marijuana:**
  - "If you wanted to get some, how easy would it be for you to get some beer, wine, or hard liquor?"
  - "If you wanted to get some, how easy would it be for you to get marijuana?"
  - 4 point scale: 1- very hard – 4- very easy
- **Perceived Risk of Using Alcohol and Marijuana:**
  - "How much do you think people risk harming themselves (physically or in other ways) if they take one or two drinks of an alcoholic beverage nearly every day?"
  - "How much do you think people risk harming themselves (physically or in other ways) if they try marijuana once or twice?"
  - 4 point scale: 1- no risk – 4- great risk
- **Perceived Parent Approval of Alcohol and Marijuana Use:**
  - "How wrong do your parents feel it would be for you to drink beer, wine, or liquor regularly?"
  - "How wrong do your parents feel it would be for you to smoke marijuana?"
  - 4 point scale: 1- very wrong – 4 - not wrong at all

### COUNTY-LEVEL DATA

- **Marijuana Policy:** County allowed (n=20)/did not allow (n=16) sales of recreational marijuana beginning in 2015.
- **Retail Availability:** Number of licensed marijuana retail outlets per 10,000 county residents.

**Table 1: Sample Characteristics**

Variable	Total Sample	Allows Recreational Marijuana Sales	
Student level	N = 245,714	Yes (n = 201,453)	No (n = 44,261)
6 <sup>th</sup> grade (%)	32.9	32.9	33.2
8 <sup>th</sup> grade (%)	37.8	37.7	38.0
11 <sup>th</sup> grade (%)	29.3	29.4	28.9
Age	13.8 (2.0)	13.8 (2.0)	13.8 (2.0)
Female (%)	50.7	50.7	50.6
Hispanic (%)	21.1	19.0	30.5
White (%)	68.8	69.8	64.5
Past-30-day co-use (%)	7.7	7.9	6.9*

\*p < .05

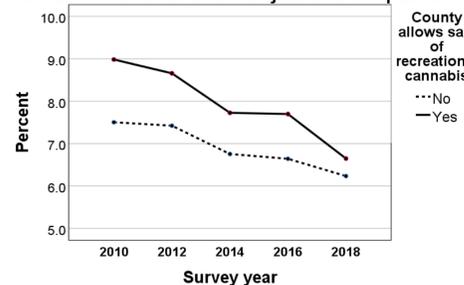
**Table 2: Results of Multi-Level Logistic Regression Analyses**

Variable	Any past-30-day co-use <sup>1</sup>
County level	
Allows recreational marijuana sales	1.24 (1.09, 1.41)**
Student level	
Age	1.55 (1.51, 1.58)**
Female	1.06 (1.02, 1.10)*
Hispanic	1.45 (1.32, 1.59)**
White	1.10 (0.96, 1.28)
Survey year	0.94 (0.89, 0.99)*
2016 vs. pre-legalization	1.02 (0.93, 1.13)
2018 vs. pre-legalization	0.94 (0.81, 1.10)

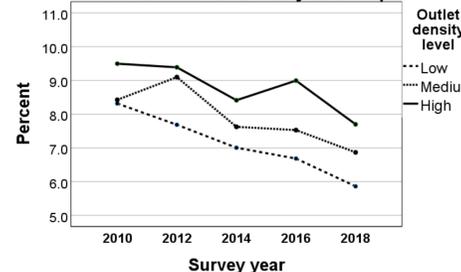
<sup>1</sup>Odds ratio (95% confidence interval)

\*p < .05, \*\*p < .01

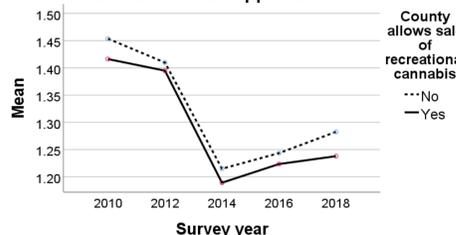
**Co-use of alcohol and marijuana in the past 30 days**



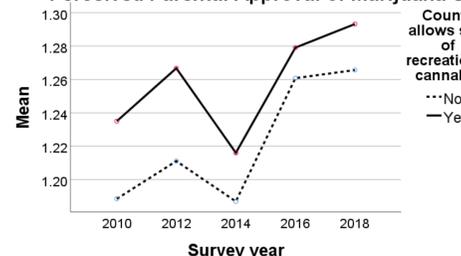
**Co-use of alcohol and marijuana in past 30 days**



**Perceived Parental Approval of Alcohol Use**



**Perceived Parental Approval of Marijuana Use**



## RESULTS

- Past-30-day co-use of alcohol and marijuana decreased from 2010 (9.3%) to 2018 (6.4%).
- Multi-level logistic regression analysis did not indicate a change in the prevalence of co-use after RML
- Significantly higher likelihood of co-use in counties that allow recreational marijuana sales in unincorporated areas (OR = 1.24, p < .01).
- Higher rate of alcohol and marijuana co-use in counties with higher density of licensed retail marijuana stores.
- Significant post-legalization increase in perceived parent approval of alcohol and marijuana use, and perceived risk of alcohol and marijuana use.
  - No post-legalization changes in perceived availability of alcohol and marijuana.

## DISCUSSION

### SUMMARY

- There was a decline in past-30-day alcohol and marijuana co-use among Oregon adolescents from 2010 to 2018, but no significant change after legalization of recreational marijuana sales in Oregon in 2015.
- Perceived risk and parental approval normative of alcohol and marijuana use increased after legalization of recreational marijuana sales
- Rates of co-use were higher in counties with greater retail availability of marijuana.

### LIMITATIONS

- The sample may not be representative of all adolescents in Oregon.
- Missing data may have biased our results, though we imputed missing data.
- Social desirability and recall error in the surveys.

### FURTHER RESEARCH

- Community-level or city level analyses could provide more information to understand how marijuana policies may influence alcohol use and beliefs among young people, and possible effects on substitution of marijuana for alcohol.

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