

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



Grisel M. García-Ramírez^{1,2} PhD, Mallie J. Paschall, PhD², Sharon Lipperman-Kreda, PhD², & Joel Grube, PhD²
University of California, Berkeley¹

Pacific Institute for Research and Evaluation, Prevention Research Center², Berkeley, CA 94704



INTRODUCTION

- Research has suggested that medical marijuana legalization produces a substitution or complementary effect.
- Substitution effect implies that marijuana is replacing alcohol use, indicating a reduction in alcohol use and an increase in marijuana use¹
- A possible reason for substitution effect is that intoxication effects of both substances are similar, and the legalization and decriminalization of marijuana could lead to the increase of marijuana use.¹
- Marijuana use is more prevalent in teens after legalization, implying a substitution effect for alcohol use.²

OBJECTIVE

To investigate whether legalization of recreational marijuana sales in Oregon counties in 2015 is associated with subsequent changes in alcohol use and beliefs related to alcohol 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
- 244,236 students in 36 Oregon Counties

STUDENT-LEVEL VARIABLES

- **Any Past 30-Day Alcohol Use:** (no/yes).
- **Perceived Availability of Alcohol:** "If you wanted to get some, how easy would it be for you to get some beer, wine, or hard liquor (for example, vodka, whiskey, or gin)?"
 - 4 point scale: very hard–very easy
- **Perceived Risk of Using Alcohol:** "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?"
 - 4 point scale: no risk–great risk
- **Perceived Parent Approval of Alcohol Use:** "How wrong do your parents feel it would be for you to drink beer, wine, or liquor regularly?"
 - 4 point scale: very wrong–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.

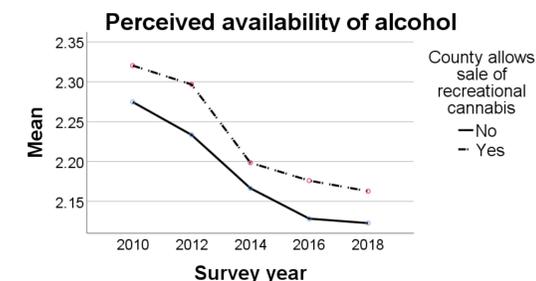
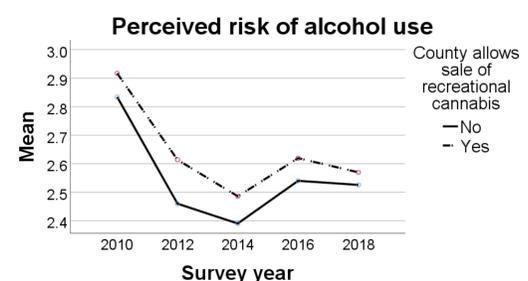
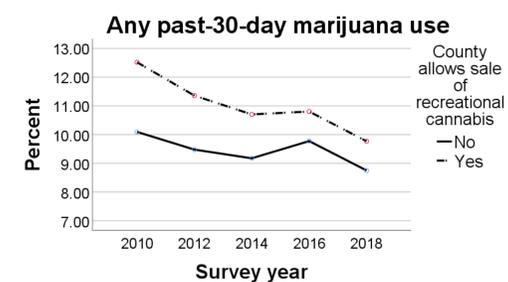
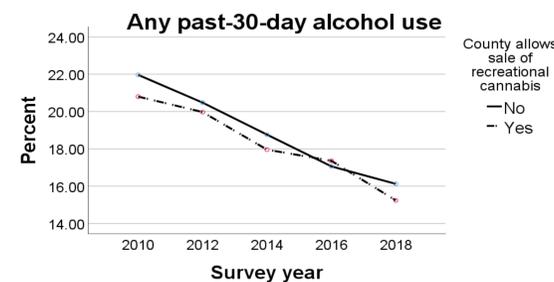
Table 1: Sample Characteristics

Variable	Total Sample	Allows Recreational Marijuana Sales	
	N = 244,236	Yes (n = 200,655)	No (n = 43,580)
Student level			
6 th grade (%)	32.9	32.9	33.2
8 th grade (%)	37.8	37.7	38.0
11 th grade (%)	28.9	29.4	29.3
Age	13.8 (2.1)	13.8 (2.0)	13.8 (2.1)
Female (%)	50.7	50.7	50.6
Hispanic (%)	21.1	19.0	30.5
White (%)	68.9	69.8	64.5
Any past-30-day alcohol use (%)	18.3	18.2	18.7

Table 2: Results of multi-level logistic regression analyses to assess county differences and changes in past-30-day alcohol use from 2010 to 2018

Variable	Any past-30-day alcohol use ¹
County level	
Allows recreational marijuana sales	0.97 (0.5, 1.09)
Student level	
Age	1.44 (1.43, 1.45)*
Female	1.16 (1.13, 1.19)*
Hispanic	1.29 (1.24, 1.34)*
White	1.10 (1.07, 1.14)
Survey year	0.90 (0.88, 0.91)*
Pre-post legalization	1.03 (0.98, 1.08)

¹Odds ratio (95% confidence interval)
*p < .001



RESULTS

- Any past-30-day alcohol use decreased from 2010 (21.8%) to 2018 (17.2%).
- Multi-level logistic regression analysis indicated a significant overall decline in use of alcohol from 2010 to 2018 (OR = 0.90, CI 95% [.88-.91], p<.001).
- There was not a significant change in past-30-day alcohol use after legalization of recreational marijuana sales in 2015.
- There was not a significant difference in past-30-day alcohol use between counties that allow recreational marijuana sales in unincorporated areas and those that do not allow it.
- Analyses with post-legalization dummy variable indicated:
 - a significant increase in perceived risk and parent approval of alcohol use
 - no changes for the perceived availability of alcohol

DISCUSSION

SUMMARY

- There was a decline in past-30-day use of alcohol among Oregon adolescents from 2010 to 2018, but no significant change after legalization of recreational marijuana sales in Oregon in 2015.
- In addition, perceived risk and normative beliefs changed after legalization of recreational marijuana sales with increases in both perceived risk and perceived parental approval of alcohol use.

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.

REFERENCES:

1. Guttmanova, K., Lee, C. M., Kilmer, J. R., Fleming, C. B., Rhew, I. C., Kosterman, R., & Larimer, M. E. (2016). Impacts of changing marijuana policies on alcohol use in the United States. *Alcoholism: Clinical and Experimental Research*, 40(1), 33-46.
2. Mason, W. A., Fleming, C. B., Ringle, J. L., Hanson, K., Gross, T. J., & Haggerty, K. P. (2016). Prevalence of marijuana and other substance use before and after Washington State's change from legal medical marijuana to legal medical and nonmedical marijuana: Cohort comparisons in a sample of adolescents. *Substance abuse*, 37(2), 330-335.

ACKNOWLEDGEMENT: This research and preparation of this poster were supported by grants T32AA014125, R01AA021726, and P60AA006282 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) of the National Institutes of Health (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or NIH.