

NAME OF PRESENTING AUTHOR: Stephanie Zellers

EMAIL ADDRESS OF PRESENTING AUTHOR: zelle063@umn.edu

## Impacts of Recreational Cannabis Legalization on Cannabis Use and Other Drug Outcomes: A Longitudinal Discordant Twin Study

Stephanie M. Zellers<sup>1</sup>, J. Megan Ross<sup>2</sup>, Jarrod M. Ellingson<sup>2,3</sup>, Robin P. Corley<sup>3</sup>, John K. Hewitt<sup>3,4</sup>, Christian J. Hopfer<sup>2,3</sup>, William Iacono<sup>1</sup>, Matt K. McGue<sup>1</sup>, and Scott I. Vrieze<sup>1</sup>

<sup>1</sup> Department of Psychology, University of Minnesota, Minneapolis, Minnesota, USA

<sup>2</sup> Department of Psychiatry, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA

<sup>3</sup> Institute for Behavioral Genetics, University of Colorado Boulder, Boulder, Colorado, USA

<sup>4</sup> Department of Psychology and Neuroscience, University of Colorado Boulder, Boulder, Colorado, USA

KEYWORDS: cannabis legalization, discordant twin, cannabis frequency, longitudinal

### ABSTRACT:

Seventeen states and Washington D.C. have legalized recreational cannabis use (“legalization”), despite limited understanding of its consequences. As laws change rapidly and dramatically, it is necessary to research the impacts of legalization on rates of use, disordered use, and psychosocial outcomes. Adult residents in such states report higher use after legalization but this work is largely cross-sectional and ignores relevant confounding factors, including cultural and secular trends in states that legalize versus those that do not. Longitudinal work using improved study designs is required to accurately estimate the environmental effect of the legalization event on individuals living in that state. We leveraged two adult twin studies, one from Colorado (legal cannabis) and one from Minnesota (recreational cannabis still illegal), both with harmonized longitudinal assessments before and after the legalization events (total N= 3,420). We combined a discontinuity design with a discordant twin analysis to produce robust estimates of the environmentally mediated effect of legalization, largely free of confounding from other trends in cannabis use and attitudes. Residents of legal states use cannabis at higher rates than non-legal states (unstandardized B = .21,  $p = 7.7 \times 10^{-5}$ ); this effect corresponds to a ~24% increase in cannabis use frequency attributable to legalization and it is robust to the inclusion of earlier use. Discordant twin analyses found no evidence of genetic or shared environmental confounding (MZ unstandardized B = .18,  $p = .01$ ), supporting a causal pathway between legalization and increased use. We also plan to present yet-unfinished work on other substance use outcomes.

GRANT SUPPORT: This work was supported by grants from the National Institute of Drug Abuse (DA042755 CJH/JKH/MKM/SIV)