

BIOGRAPHICAL SKETCH

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NAME: Harlow, Alyssa Fitzpatrick

eRA COMMONS USER NAME (credential, e.g., agency login): Harlow.Alyssa

POSITION TITLE: Assistant Professor of Clinical

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Washington, Seattle, WA	BA	06/2011	Anthropology
Boston University School of Public Health, Boston, MA	MPH	05/2016	Epidemiology/ Social and Behavioral Sciences
Boston University School of Public Health, Boston, MA	PhD	07/2021	Epidemiology
University of Southern California, Los Angeles, CA	Postdoctoral	06/2023	Tobacco Regulatory Science/Addiction Science

A. Personal Statement

I am an epidemiologist and Assistant Professor of Clinical Population and Public Health Sciences at the University of Southern California Keck School of Medicine (USC). My research expertise is in causal inference and tobacco regulatory science. My work applies epidemiologic methods to better understand the determinants and health effects of tobacco-product and substance use behaviors and to inform policy. I have extensive experience conducting longitudinal analyses with large national cohort studies on tobacco product use. My current research primarily falls under three domains, including (a) documenting disparities and identifying fundamental causes of disparities in tobacco use among vulnerable populations; (b) identifying determinants of tobacco product transitions (e.g., initiation, progression, cessation), including the impact of product characteristics on substance use behaviors; and (c) examining the physical health effects of tobacco-product and cannabis use, including cardiopulmonary and reproductive health outcomes.

I have made substantial scientific contributions at a relatively early stage in my career. To date, I have authored 46 publications (including 20 as first-author). My work has been nationally recognized and featured in national news outlets (e.g., ABC Good Morning America and US News & World Report). Much of my research has focused on tobacco and e-cigarette use among adolescent and adult populations, including examining LGBTQ+ disparities in cigarette smoking initiation, and the role e-cigarettes and other alternative tobacco products in adolescent cigarette smoking initiation and adult smoking cessation. An important focus of my research is identifying regulatory targets to reduce tobacco-related harms, and my work has directly impacted federal tobacco policy. For example, the FDA recently issued a warning letter for the illicit marketing of flavored nicotine gummies, citing my recent publication as direct evidence.

I am currently PI of a NIDA K01 award that combines data from a large ongoing prospective cohort study of high school students in Southern California with data on e-cigarette and cannabis retailers and neighborhood disadvantage to prospectively examine how the tobacco and cannabis retailer environment and neighborhood socioeconomic disadvantage impact adolescent nicotine and cannabis vaping behavior.

Funding I would like to highlight includes:

K01DA058084, NIH/NIDA

Alyssa Harlow (MPI)

04/1/23-03/31/28

The Tobacco and Cannabis Retail Environment, Neighborhood Disadvantage, and Adolescent Vaping

This K01 award will use multiple existing data sources and new data from store observations to investigate the impact of the tobacco and cannabis retail environment and neighborhood disadvantage on adolescent nicotine and cannabis vaping. This work can inform regulations to prevent vaping and its harms for youth and will prepare me for independent R01 research that examines geospatial and regulatory determinants of youth nicotine and cannabis use.

Role: PI

Citations:

1. **Harlow AF**, Stokes AC, Brooks DR, Benjamin EJ, Barrington-Trimis JL, Ross CS. Prospective Association between E-Cigarette Use and Combustible Cigarette Smoking Initiation among United States Youth: Accounting for Time-Varying Exposure and Time-Dependent Confounding. *Epidemiology*. 2022. Online ahead of print. PMID: 35394965; PMCID: PMC9156560
2. **Harlow AF**, Lundberg DL, Raifman JR, Tan ASL, Streed CG, Benjamin EJ, Stokes A. Coming out as Lesbian, Gay, and Bisexual+ and risk of cigarette smoking in a nationally representative sample of youth and young adults. *JAMA Pediatrics*. 2020. 75(1): 56-63. PMID: 33104174; PMCID: PMC7589064
3. **Harlow AF**, Stokes A, Brooks D. Socio-economic and racial/ethnic differences in e-cigarette uptake among cigarette smokers: Longitudinal analysis of the Population Assessment of Tobacco and Health (PATH) study. *Nicotine and Tobacco Research*. 2018. 21(10):1385-93. PMID: 29986109; PMCID: PMC6751515
4. **Harlow AF**, Vogel EA, Tackett AP, Cho J, Han D, Wong M, Cockburn MG, Sussman SY, Unger JB, Leventhal AM, Barrington-Trimis JL. Adolescent Use of Tobacco-Free Oral Nicotine Products. *Pediatrics*. 2022. 150(30):1-10. PMID: 35934731 PMCID: PMC9994602

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2023-Present	Assistant Professor of Clinical, Department of Population and Public Health Sciences, University of Southern California, Los Angeles, CA
2021-2023	Postdoctoral Scholar, Department of Population and Public Health Sciences, University of Southern California, Los Angeles, CA
2021-2023	Member of Institute for Addiction Science, University of Southern California, Los Angeles, CA
2020-2021	Committee member, Tobacco Center for Regulatory Science (TCORS) cross-center national journal club
2019-2021	Tobacco Regulatory Science Fellow, American Heart Association Tobacco Center for Regulatory Science (A-TRAC 2.0)
2017-2021	Graduate Research Fellow, Department of Epidemiology, Boston University School of Public Health, Boston, MA
2017-2019	Affiliated Doctoral Student, Rothman Violence Prevention Research Lab, Boston University School of Public Health, Boston, MA
2016-2020	Research Specialist in Grant Writing and Development, Brigham and Women's Hospital, Harvard Medical School, Center for Surgery and Public Health, Boston, MA
2014-2018	Research Assistant, Brigham and Women's Hospital, Division of Internal Medicine, Boston, MA
2014-2014	Data Collector, Youth Tobacco Survey, ICF International, Minneapolis, MN
2012-2013	Research Assistant, James Cook University, Queensland, Australia

Honors

2022	National Institute on Drug Abuse Loan Repayment Award
2022	College on Problems of Drug Dependence Travel Award
2021	Delta Omega member (PhD)
2020	Society for Pediatric and Perinatal Epidemiology Research Student Prize Paper Award
2019	Prize abstract at the American Society for Reproductive Medicine congress
2019	Interdisciplinary Association for Population Health Science Travel Award
2018	Boston University School of Public Health Conference Travel Award
2016	Delta Omega member (MPH)

C. Contributions to Science

1. E-cigarette and Cigarette Disparities

Significant disparities exist in tobacco use and tobacco-related harms. There are disproportionate rates of use among LGBT and lower socioeconomic populations, and Black individuals are less likely to successfully quit smoking than White counterparts. I have made novel contributions to the tobacco disparities literature. The work I led on LGB cigarette smoking disparities identified that coming out as lesbian, gay, or bisexual is a critical developmental period contributing to smoking disparities for LGB young people. This work used novel approaches to measuring sexual identity changes over time, was published in *JAMA pediatrics*, and received media attention. Additionally, our work on racial/ethnic and socioeconomic differences in e-cigarette uptake was one of the first studies to demonstrate that Black and lower-income cigarette smokers were less likely to switch to exclusive e-cigarette use than White and higher-income smokers, with important implications for disparities in smoking cessation. This article was among the top-10 most cited articles in the journal *Nicotine & Tobacco Research* since 2019. I recently published updated work that demonstrates these disparities persist in the current market of high nicotine salt e-cigarettes and new e-cigarette policies (i.e., flavor bans). My research has also demonstrated the differential role of noncigarette tobacco products in subsequent cigarette smoking initiation among US youth, showing that while e-cigarettes are implicated in subsequent smoking initiation among White youth, cigars are more influential for subsequent smoking initiation among Black youth.

- a. **Harlow AF**, Lundberg DL, Raifman JR, Tan ASL, Streed CG, Benjamin EJ, Stokes A. Coming out as Lesbian, Gay, and Bisexual+ and risk of cigarette smoking in a nationally representative sample of youth and young adults. *JAMA Pediatrics*. 2020. 175(1): 56-63. PMID: 33104174; PMCID: PMC9156560
- b. **Harlow AF**, Stokes A, Brooks D. Socio-economic and racial/ethnic differences in e-cigarette uptake among cigarette smokers: Longitudinal analysis of the Population Assessment of Tobacco and Health (PATH) study. *Nicotine Tob Res*. 2018. 21(10):1385-93. PMID: 29986109; PMCID: PMC6751515
- c. **Harlow AF**, Xie W, Goghari AR, Lundberg DJ, Berlowitz JB, Stokes AC. Sociodemographic Differences in E-Cigarette Uptake and Perceptions of Harm. *American Journal of Preventive Medicine*. 2023. S0749-3797(23)00134-4. PMID: 36924804.
- d. Stokes A, Wilson AE, Lundberge DJ, Berry KM, Fetterman JL, **Harlow AF**, Cozier YC, Barrington-Trimis JL, Sterling KL, Benjamin EJ, Blaha MJ, Hamburg NM, Bhatnagar A, Robertson RM. Racial/Ethnic Differences in Associations of Noncigarette Tobacco Product Use with Subsequent Initiation of Cigarettes in US Youths. *Nicotine Tob Res*. 2020. 23(6):900-08. PMID: 32948872; PMCID: PMC8150136

2. Determinants of tobacco-product use transitions

Identifying determinants of tobacco-product transitions that can be intervened upon through policy or prevention programs is critical to preventing tobacco-related harms. I have published studies examining determinants of transitions between tobacco products, including vaping device characteristics and the role of e-cigarettes in cigarette smoking initiation among youth. I led work which provided critical data demonstrating that flavorings in e-cigarettes were associated with switching to exclusive e-cigarette use among adult cigarette smokers, but also contributed to longer-term vaping dependence. In another manuscript, I led a study which found a persistent association between e-cigarette use and subsequent cigarette smoking initiation among US youth, after accounting for numerous potential sources of bias, including time-dependent confounding and selection bias due to drop-out. Recently, I led a study that presents the first prevalence estimates for adolescent use of flavored tobacco-free oral nicotine products. We demonstrate that Hispanic and sexual and gender minority youth are at increased risk for use of oral nicotine products, and that tobacco-free oral nicotine product use is highly correlated with a history of combustible and noncombustible tobacco product use. My research has also demonstrated the importance of accounting for vaping frequency in studies on e-cigarette use and cigarette smoking

cessation. I have shown that daily vaping increases the probability of smoking cessation but nondaily vaping decreases the probability of smoking cessation.

- a. **Harlow AF**, Fetterman JL, Ross C, Robertson RM, Bhatnager A, Benjamin EJ, Stokes AC. Association of Device Type, Flavors, and Vaping Behavior with Tobacco Product Transitions among Adult Electronic Cigarette Users in the United States. *Tobacco Control*. 2020. Online ahead of print. PMID: 33479031; PMCID: PMC8292448
- b. **Harlow AF**, Stokes AC, Brooks DR, Benjamin EJ, Barrington-Trimis JL, Ross CS. Prospective Association between E-Cigarette Use and Combustible Cigarette Smoking Initiation among United States Youth: Accounting for Time-Varying Exposure and Time-Dependent Confounding. *Epidemiology*. 2022. Online ahead of print. PMID: 35394965; PMCID: PMC9156560
- c. **Harlow AF**, Vogel EA, Tackett AP, Cho J, Han D, Wong M, Cockburn MG, Sussman SY, Unger JB, Leventhal AM, Barrington-Trimis JL. Adolescent Use of Tobacco-Free Oral Nicotine Products. *Pediatrics*. 2022. *In Press*.
- d. **Harlow AF**, Stokes AC, Brooks DR, Benjamin EJ, Leventhal AM, McConnell R, Barrington-Trimis JL, Ross CS. Prospective Association between E-Cigarette Use Patterns and Smoking Abstinence among Adult Smokers in the United States. *Addiction*. 2022. 117(12):3129-3139. PMID: 35913015 PMCID: PMC9804676

3. Health Effects of E-cigarette and Cannabis Use

Given the rapidly changing product and policy landscape of cannabis and e-cigarette products, it is critically important to develop a body of evidence on the health effects of these substances. I have led epidemiologic investigations into the cardiovascular and reproductive health consequences of e-cigarette and cannabis use. Our American Journal of Epidemiology study on e-cigarettes and fecundability was one of the first investigations of the potential influence of vaping nicotine on time-to-pregnancy. This work was published with a commentary, in which the author Dr. David Savitz (a leading expert on reproductive epidemiology) said, *"The report by Harlow et al. on e-cigarettes and fecundity is in the vanguard of what is certain to become an important new line of epidemiologic research into the potential reproductive health effects of e-cigarettes."* Our work on male cannabis use and spontaneous abortion found that among couples attempting to get pregnant, those with male partners who frequently used cannabis were twice as likely to report subsequent miscarriages. This work received considerable media coverage and received two awards from national societies. I have also collaborated on work reporting an association between vaping nicotine and incident respiratory symptom development, and a study demonstrating the importance of smokers switching completely to e-cigarette use or preferably, quitting all tobacco products, to reduce their cardiovascular disease risk.

- a. **Harlow AF**, Hatch EE, Wesselink AK, Rothman KJ, Wise LA. E-cigarettes and Fecundability: Results from a prospective preconception cohort study. *Am J Epidemiol*. 2020.190(3):353-61. PMID: 32378702; PMCID: PMC9156560
- b. **Harlow AF**, Wesselink AK, Hatch EE, Rothman KJ, Wise LA. Male Preconception Marijuana Use and Spontaneous Abortion: A Prospective Cohort Study. *Epidemiology*. 2020. 32(2): 239-47. PMID: 33165011; PMCID: PMC7855868
- c. Berlowitz JB, Xie W, **Harlow AF**, Hamburg NM, Blaha MJ, Bhatnagar A, Benjamin EJ, Stokes AC. E-cigarette Use and Risk of Cardiovascular Disease: A Longitudinal Analysis of the PATH Study, 2013-2019. *Circulation*. 2022.145(20): 1557-1559. PMID: 35514292
- d. Xie X, Tackett AP, Berlowitz JB, **Harlow AF**, Kathuria H, Galiatsatos P, Fetterman JL, Cho J, Blaha MJ, Hamburg NM, Robertson RM, DeFilippis AP, Hall ME, Bhatnagar A, Benjamin EJ, Stokes AC. Association of Electronic Cigarette Use with Respiratory Symptom Development among US Young Adults. *American Journal of Respiratory and Critical Care Medicine*. 2022. 205(11):1320-1329. PMID: 35089853.

4. Mental Health Outcomes After Traumatic Injury

Traumatic injury is the leading cause of disability in the world, however the impact of trauma on long-term mental health outcomes is poorly understood. In another line of research, I worked closely on the FORTE study (Functional Outcomes after Traumatic Injury), one of the first prospective cohort studies to use trauma registry data to follow trauma patients forward through time after their injuries to evaluate patient-

centered functional outcomes. FORTE was one of the first large-scale prospective studies to demonstrate the significant long-term health burdens of traumatic injury, including post-traumatic stress and inability to return to work. We also showed that unresolved pain after traumatic injury increases the risk of post-traumatic stress disorder, that men and those with anxiety disorders are less likely to receive opioid prescriptions for pain after at discharge, and that the mechanism of injury is a critical factor influencing post-traumatic stress among trauma patients.

- a. Haider AH, Herrera-Escobar JP, Al Rafai SS, **Harlow, AF**, Apoj, M., Nehra, D., Kasotakis, G., Brasel, K., Kaafarani, H.M.A., Velmahos, G., Salim, A. Factors Associated With Long-Term Outcomes After Injury: Results of the Functional Outcomes and Recovery After Trauma Emergencies (FORTE) Multicenter Cohort Study. *Annals of Surgery*. 2018. 271(6): 1165-73. PMID: 30550382
- b. Herrera-Escobar JP, Apoj M, Weed C, **Harlow AF**, Al Rafai SS, Lilley E, Kasotakis G, Brasel K, Kaafarani H MA, Velmahos G, Salim A, Haider AH. Association of Pain after Trauma with Long-term Functional and Mental Health Outcomes. *Journal of Trauma and Acute Care Surgery*. 2018. 85(4):773-779. PMID: 30020227
- c. Chaudhary MA, Schoenfeld AJ, Ranjit A, Scully R, Chowdhury R., Sharma M, **Harlow AF**, Nitzschke S, Koehlmoos T, Haider AH. Incidence and Predictors of Opioid Prescription at Discharge after Traumatic Injury. *JAMA Surgery*. 2017. 152(10): 930-936. PMCID: PMC5831457
- d. Herrera-Escobar J, Al Rafai S, Seshadri A, Weed C, Apoj M, **Harlow AF**, Brasel K, Kasotakis G, Kaafarani H, Velmahos G, Salim A, Haider A, Nehra D. A multicenter study of post-traumatic stress disorder after injury: Mechanism matters more than injury severity. *Surgery*. 2018. 164(6):1246-1250. PMID: 30170820

Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/alyssa.harlow.1/bibliography/public/>