

# State-level alcohol policy environment in adolescence and trajectories of alcohol use from age 12-30

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**As required by the Alcohol Policy 19 Conference,  
I/we have signed a disclosure statement and note the  
following conflict(s) of interest:**

none



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# Acknowledgment

Analyses were conducted with restricted access to Bureau of Labor Statistics data. The views expressed here do not necessarily reflect the views of the Bureau of Labor and Statistics.

# Alcohol use



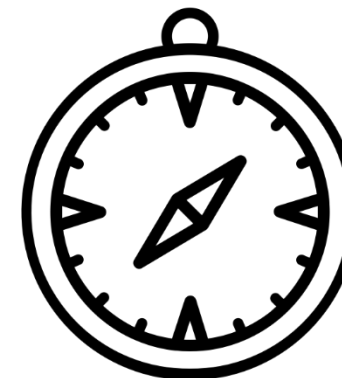
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from Noun Project

\$249 Billion



Created by Anastasia Latysheva  
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95,000 pre-mature  
deaths



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High risk:  
adolescence &  
emerging adulthood

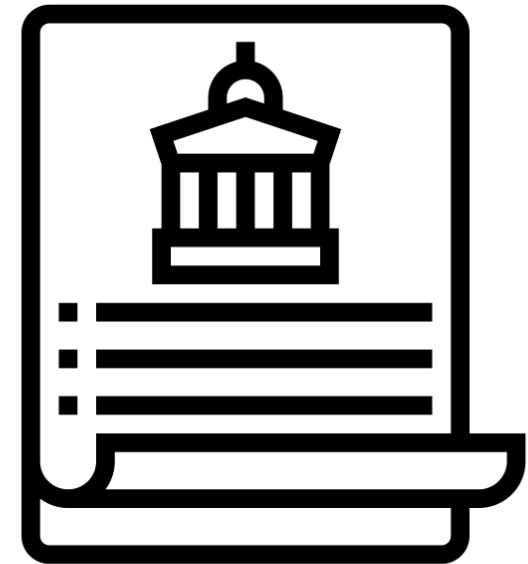
# Examining alcohol use trajectories

- Understanding longer term alcohol use patterns—or trajectories—may highlight periods for intervention
- Adolescence may be a critical time period:
  - Policy
  - Peer networks
  - Family influences
  - Marketing and advertising



# State-level policy environment

- Prior research: specific alcohol policies and alcohol-related outcomes
- Overall policy environment, less frequently acknowledged
- More stringent policy environments were associated with reduced alcohol and binge drinking in adolescents and adults
- Evidence-base on policy environment is largely cross-sectional, panel studies

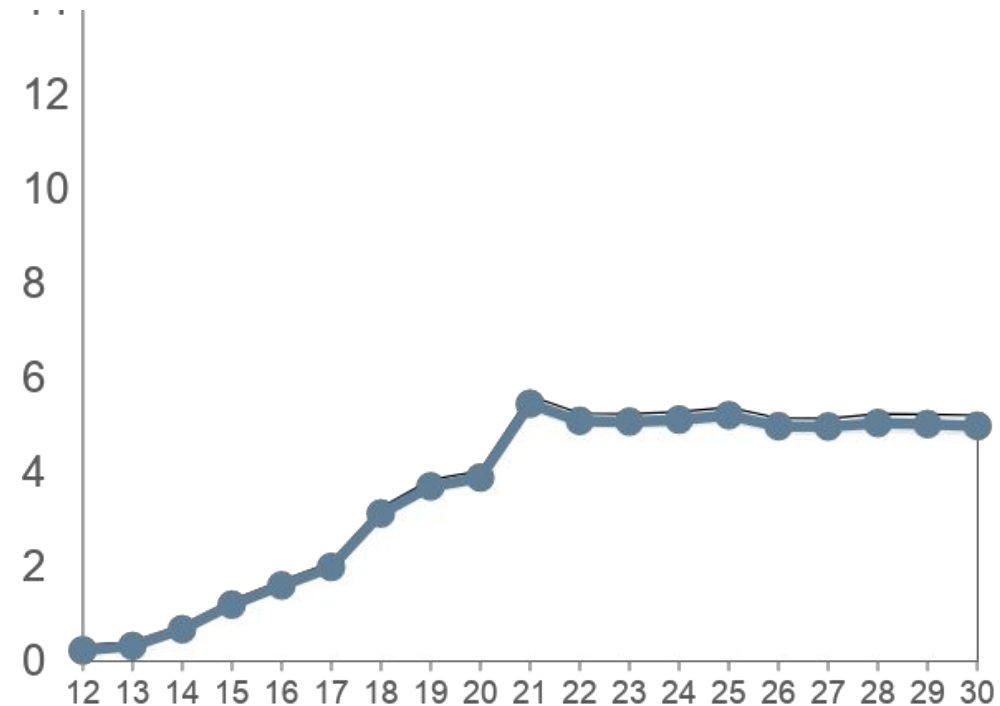


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# State-alcohol policies and alcohol use trajectories

- We often focus on the average trajectories
- Masks heterogeneity in drinking trajectories
- Few studies have explored the link between alcohol-related policies and drinking trajectories

Mean drinking days  
(NLSY97, n=8,860)



Age, years

# Study Aims

1. Identify overall trajectories for the frequency of drinking from mid-adolescence to early adulthood in a nationally representative U.S. population
2. Estimate the association between adolescent state-level policy environment and trajectory membership probability



# Analytic Sample

- NLSY97 cohort
  - Interview years 1997 – 2015
- Inclusion criteria
  1. Available data on baseline (1997) state-of-residence
  2. Drinking behavior reported at baseline + at least 1 additional interview
  3. Available baseline demographic and covariate information
  4. Age-cutoff for trajectories: 30 years old
- Sample: 8,860 out of 8,984 individuals (98.6% of the full cohort)

# Alcohol Policy Scale (APS)

- **Efficacy** ratings and **implementation** ratings combined in previously studied aggregation method

APS = Alcohol Policy Score for a given state and year

ER = efficacy rating for the given policy

IR = implementation rating for the policy in the given state and year

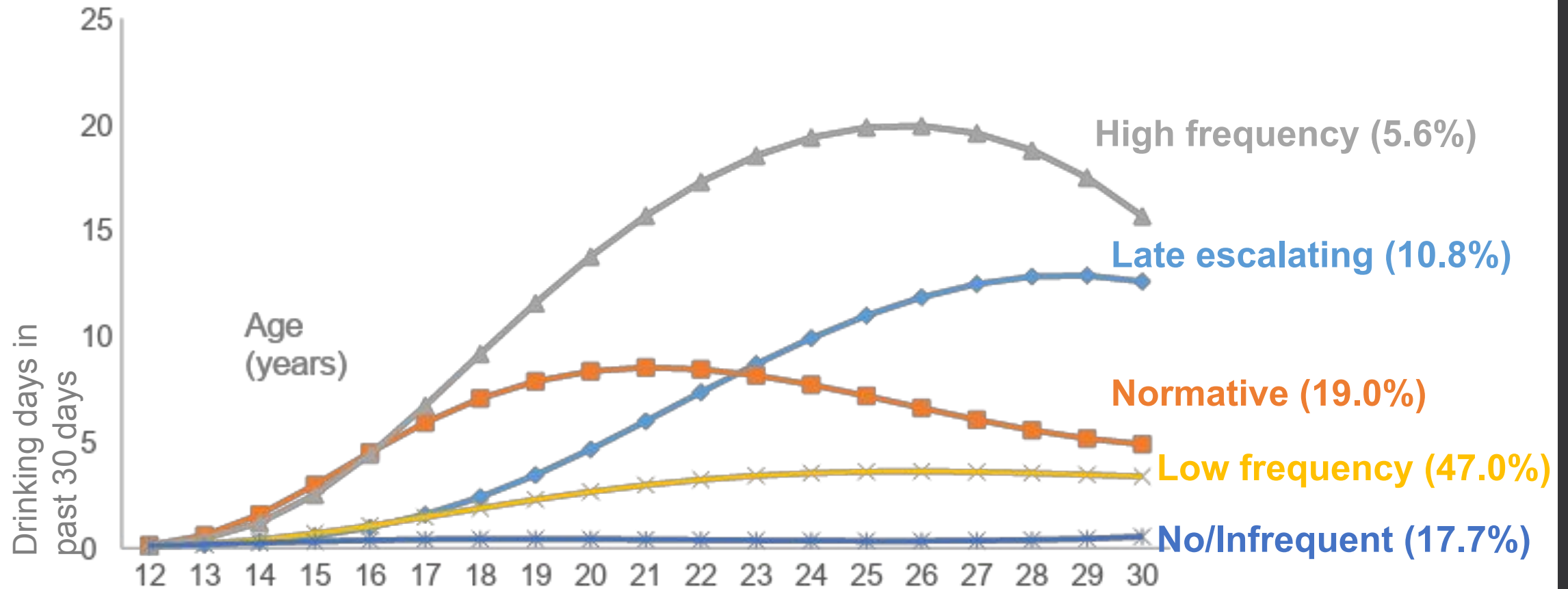
# Step 1: Group-based trajectory modeling

- Trajectory variables
  - Time-scale: Age at interview (12-30)
  - Alcohol consumption frequency (past 30-days):  
“During the past 30 days, on how many days did you have one or more drinks of an alcoholic beverage?”
- Describe the sociodemographic characteristics of trajectories

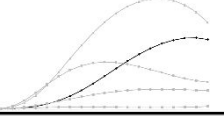
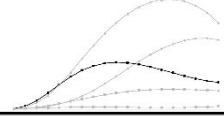
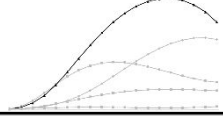
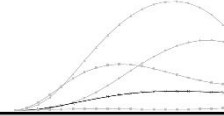
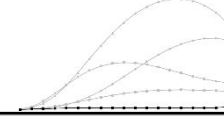
## Step 2: Association between APS score and trajectory membership

- Exposure: Youth domain APS score in 1999 (based on state of residence 1997)
- Outcome: Trajectory membership
- Covariates assessed for confounding
- Multinomial logistic regression

# Drinking days trajectories from age 12-30 in the NLSY97 cohort, n=8860



# Baseline demographics by drinking days trajectory group in the NLSY97 cohort, n=8,860

	<b>Total N=8,860</b>	<b>Late Escalating (n=894)</b>	<b>Normative (n=1,464)</b>	<b>High Frequency (n=428)</b>	<b>Low Frequency (n=4,212)</b>	<b>No/ Infrequent (n=1,862)</b>
						
Female, %	48.7	38.4	41.1	28.4	54.1	54.9
Age, mean	14.4 (0.02)	14.3 (0.05)	14.4 (0.03)	14.3 (0.08)	14.3 (0.02)	14.4 (0.04)
Race, %						
White	72.3	75.5	84.9	84.4	71.4	55.3
Black or African American	15.8	13.8	6.6	7.0	15.8	29.5
American Indian, Eskimo, or Aleut	0.8	0.5	0.3	0.7	0.9	1.4
Asian or Pacific Islander	2.4	3.4	1.4	1.1	2.4	3.5
Other, Don't know, or Refused	8.7	6.8	6.9	6.8	9.5	10.4
Hispanic, %	13.0	10.9	10.9	8.5	13.9	15.3

Note: means and percentages account for complex survey design and incorporate sampling weights

# Baseline demographics by drinking days trajectory group in the NLSY97 cohort, n=8,860

	Total N=8,860	Late Escalating (n=894)	Normative (n=1,464)	High Frequency (n=428)	Low Frequency (n=4,212)	No/ Infrequent (n=1,862)
Census Region, %						
Northeast	18.3	19.7	20.6	20.0	17.8	15.8
North central	26.4	26.0	28.7	25.5	27.3	21.8
South	34.2	31.7	27.9	32.9	34.1	43.2
West	21.1	22.6	22.8	21.5	20.8	19.1
Rural <sup>a</sup> , %	26.4	27.1	24.7	25.3	26.5	27.8
Household size, mean (SE)	4.5 (0.02)	4.3 (0.05)	4.3 (0.04)	4.3 (0.06)	4.4 (0.03)	4.8 (0.06)
Household income (\$), mean (SE) <sup>b</sup>	52,256 (1,023)	60,202 (2,154)	60,990 (2,075)	62,696 (2,444)	50,483 (1,088)	38,689 (1,656)
Parent/ guardian high school, %	81.8	87.2	89.4	90.5	80.5	70.8
Parent/guardian very religious, <sup>c</sup> %	22.4	21.6	17.8	16.5	22.2	30.1

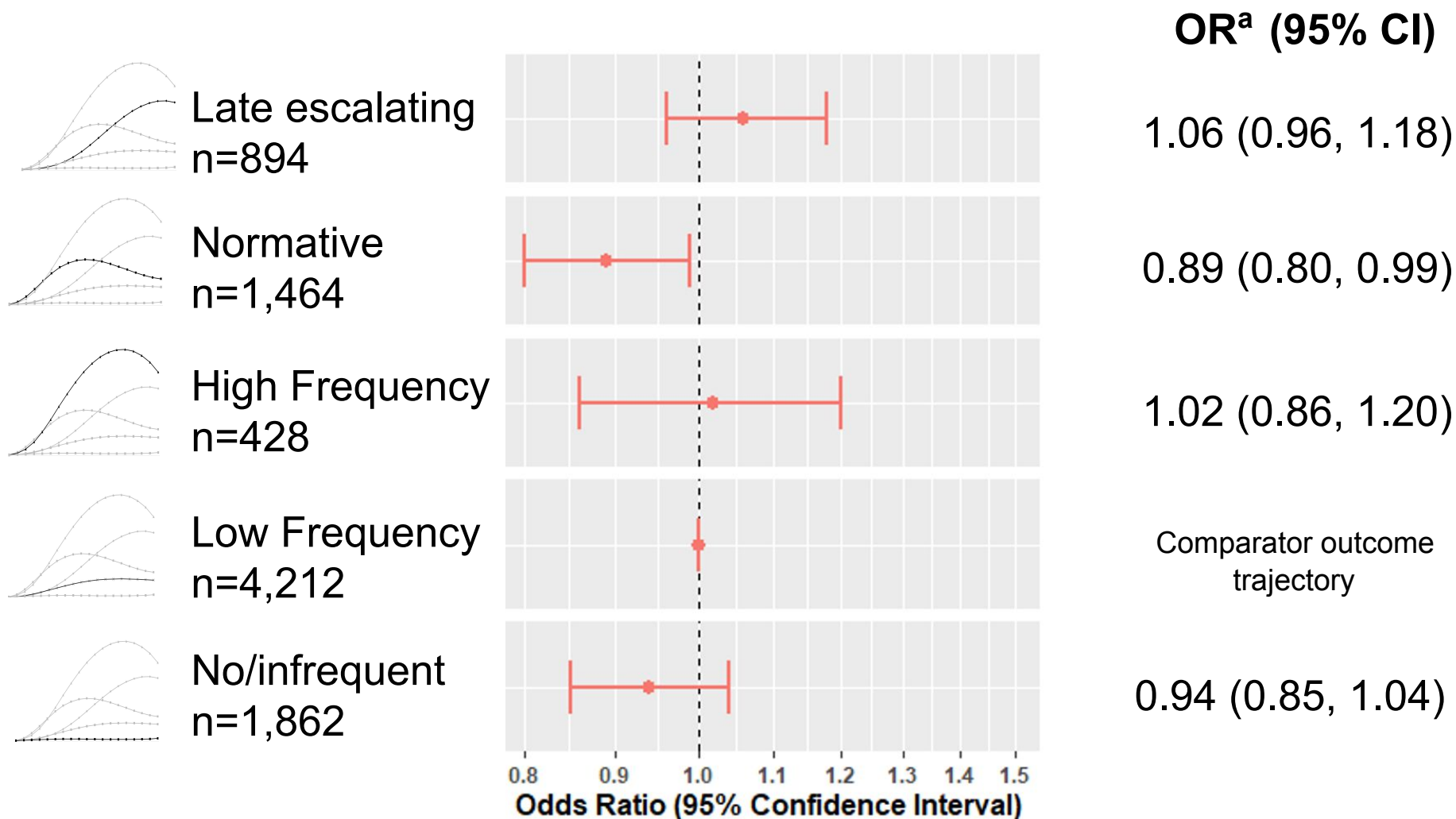
Note: means and percentages account for complex survey design and incorporate sampling weights

<sup>a</sup> Unknown are included under urban

<sup>b</sup> n=6,528

<sup>c</sup> religiosity index (0-600) based on response to questions related to religion asked of parent/guardian at baseline. Very religious = scores of 500+

# Odds ratio of trajectory membership per 10-unit higher APS (n=8,860 )



<sup>a</sup> Adjusted for gender, Baseline age, race, Hispanic ethnicity, urban status, parent high school completion status



# Limitations

- Limitations of the index score: consistency assumptions, cannot capture policy interactions
- Residual confounding
- Self-reported outcome, limited time window (past 30 days)
- Time difference between state of residence at analytic baseline (1997) and APS score assigned (1999)
- Generalizability across age cohorts

# Strengths

- Comprehensive view of alcohol policy environment
- Nationally representative US cohort
- Length of follow-up
- Data-driven method to identify trajectories
- Connecting policy to use patterns

# Conclusions

- Heterogeneous drinking trajectories in a cohort aging from 12-30
- Stricter state-level alcohol policy environment may reduce odds of “typical” normative trajectory
- This study adds to the evidence-base on the alcohol policy environment and drinking behaviors

# Thank you

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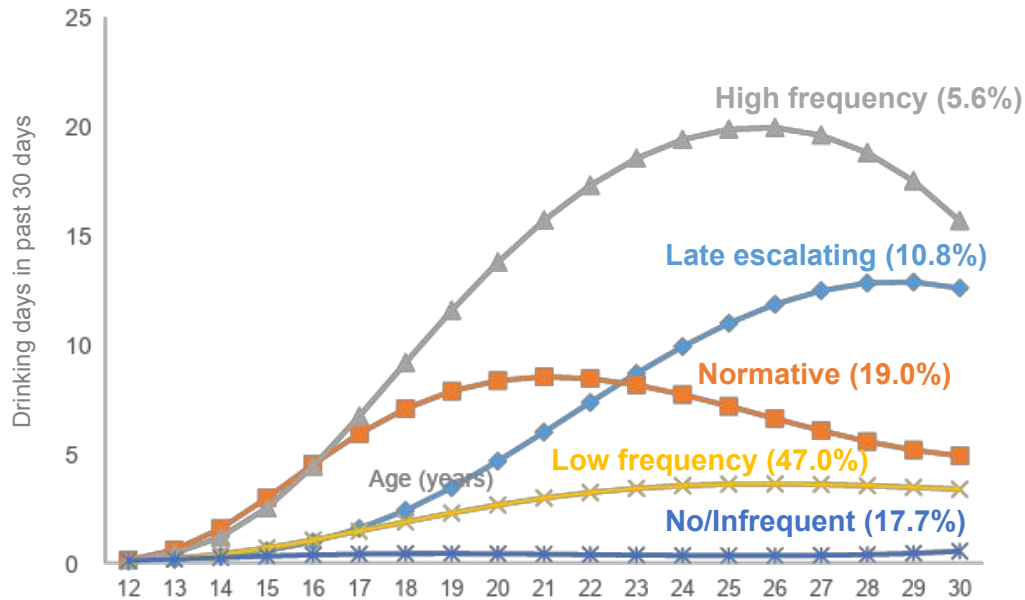
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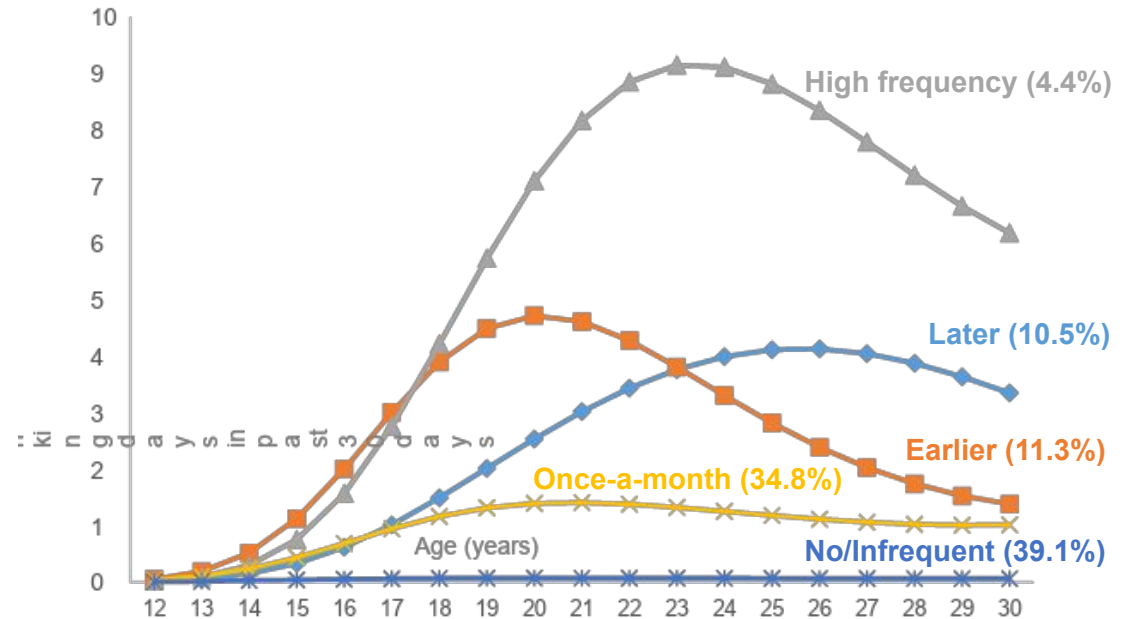
# Appendix

# Trajectory results

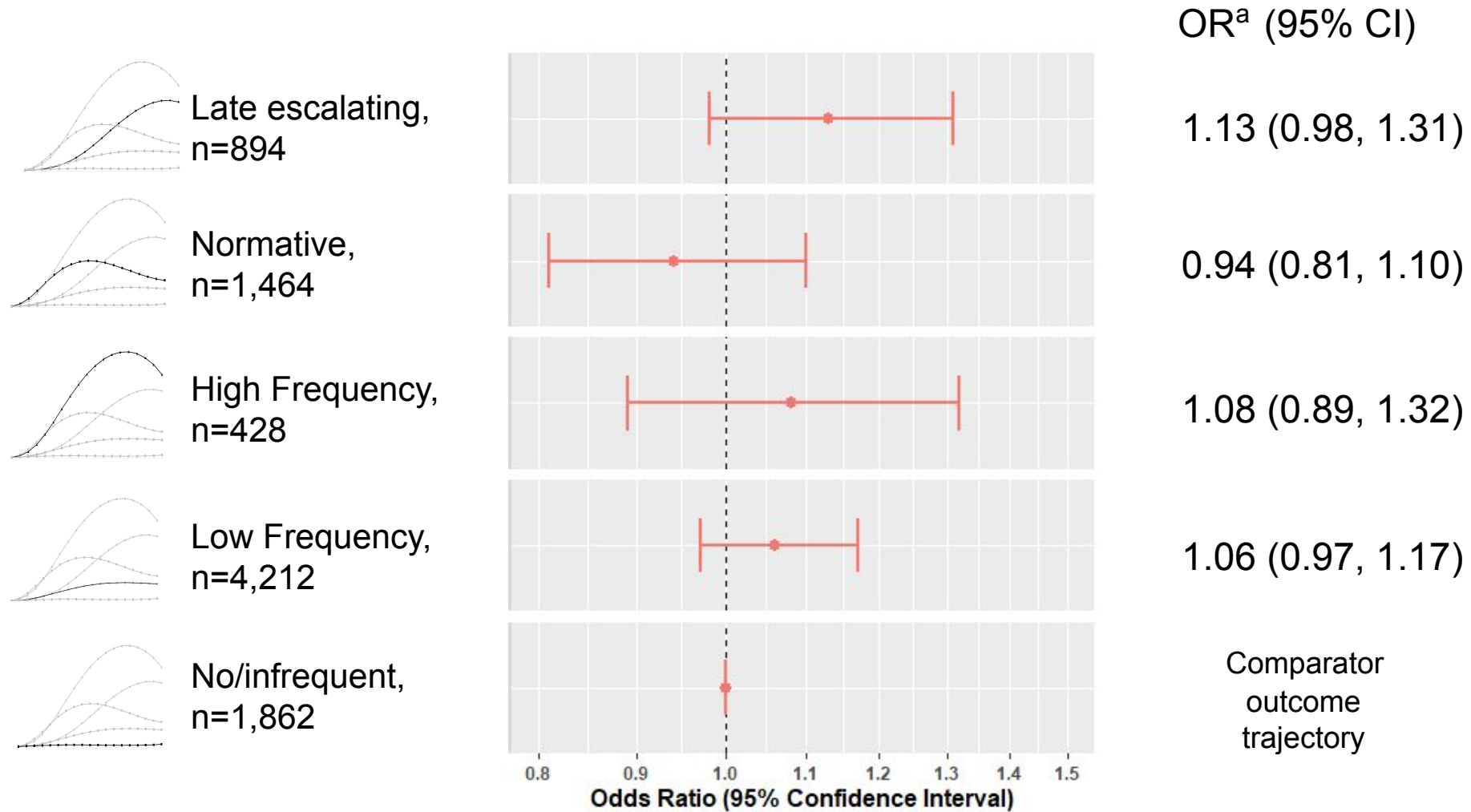
Drinking days trajectories from age 12-30 in the NLSY97 cohort, n=8860



Binge drinking days trajectories from age 12-30 in the NLSY97 cohort, n=8860



# Odds ratio of trajectory membership per 10-unit higher Alcohol Policy Score in the NLSY97 cohort, n=8,860



<sup>a</sup> Adjusted for gender, Baseline age, race, Hispanic ethnicity, urban status, parent high school completion status