These normative trends do not capture the underlying Substance use increases throughout adolescence, and declines in use after the mid-twenties. These normative trends do not capture the underlying heterogeneity. There is a high co-occurrence of alcohol use with tobacco use; it is important to identify trajectories of comorbidity to understand these behaviors.

### BACKGROUND
- Substance use increases throughout adolescence, peaks in use in emerging adulthood, and declines in use after the mid-twenties.
- These normative trends do not capture the underlying heterogeneity.
- There is a high co-occurrence of alcohol use with tobacco use; it is important to identify trajectories of comorbidity to understand these behaviors.

### METHOD
- **Sample**
  - Stratified Random Sample of 60 Geopolitical Units (GPUs) in Minnesota (from 129 GPUs in state)
  - Randomly sampled 12-16 year olds in each GPU
  - N=3636 (~60 kids per GPU)
  - Longitudinally surveyed every 6 months
  - Current analyses use data from N= 2703 who were 16-19 years of age at wave 1 and were followed for 7 years
- **Measure of Alcohol Use**
  - Responses to a series of questions were used to create a 5-point index of alcohol use
  - 1 = Non-drinker, 2 = Non-binger, 3 = Binged 1-2 times in the last 30 days, 4 = Binged 3 times in the last 30 days, 5 = Binged ≥4 times in the last 30 days
- **Theory-based Measure of Smoking Stage**
  - Responses to a series of questions were used to create a 6-point index of tobacco use
  - 1 = Never smoker, 2 = Trier, 3 = Less than a monthly smoker, 4 = Experimental smoker, 5 = Regular smoker, 6 = Established smoker
- **Analytic Model**
  - General growth mixture modeling was used to identify trajectories of alcohol and tobacco use individually.
  - A dual trajectory model was used to examine alcohol-tobacco comorbidity.
  - Although alcohol use and smoking measures are ordinal in nature, they were approximated as continuous variables.
  - 7 waves of data.
  - Number of groups were specified, and AIC and BIC used to compare models – model with lowest AIC and BIC was retained as the final model.
  - Multivariate logistic models were used to assess the association between risk factors and trajectory group membership.
  - All models were estimated using Mplus v 7.3 (Muthen & Muthen, 2014), and SAS v 9.3 (Cary, NC,2012)

### RESULTS
- **Alcohol use 5-class Model**
- **Smoking 4-class Model**

### ACKNOWLEDGMENT
This research was supported by grant CA86191 (Jean L. Forster, PI) from the National Cancer Institute, National Institutes of Health.

### CONCLUSIONS
Findings from the current study:
- 4 distinct conjoint trajectories of alcohol use and smoking.
  - Although most predictors were associated with both drinking and smoking, most predictors were differentially related to the use of alcohol versus tobacco.
  - College type, gender, and SES were significant predictors of conjoint trajectory group membership.
  - Revealing the extent to which these factors contribute to divergent developmental courses.
  - Overall, results support positive comorbidity between alcohol and tobacco trajectories through young adulthood. Additionally, identification of common drinking and smoking clusters might provide information for targeted prevention or treatment initiatives.