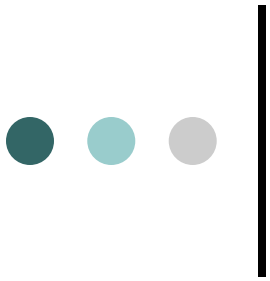


Understanding the Course of Alcohol Involvement during Emerging Adulthood

Kristina M. Jackson
Brown University



Supported by grants AA07231, AA11998, AA12383, AA13938, AA1398



“If you are young and you drink a great deal,
it will spoil your health,
slow your mind, make you fat –
in other words, turn you into an adult.”

-- *P.J. O'Rourke*



Emerging Adulthood

- Period from the end of secondary school through the attainment of “adult” status (age 18-25)
- Bridges adolescence and adulthood
- Marked by frequent change and exploration
- Assumption of adult roles and responsibilities



Why This New Developmental Stage?

- Delay in marriage, parenthood
 - Increases in education
 - Changes in women's roles
 - Birth control pill, standards of sexual morality
- Increased desire for independence, freedom



Many Developmental Tasks Occur During this Stage

- Identity exploration & formation
- Freedom to choose new behaviors & lifestyles
- New social networks
- Separation from families & friends
- Education, intellectual growth



Drinking Can be Maladaptive

- Failure to master tasks → frustration and stress → alcohol use
- Alcohol use → failure to master tasks → frustration and stress
- Long-term effects on physical & psychological well-being; implications for attainment of traditional adult roles



Overview

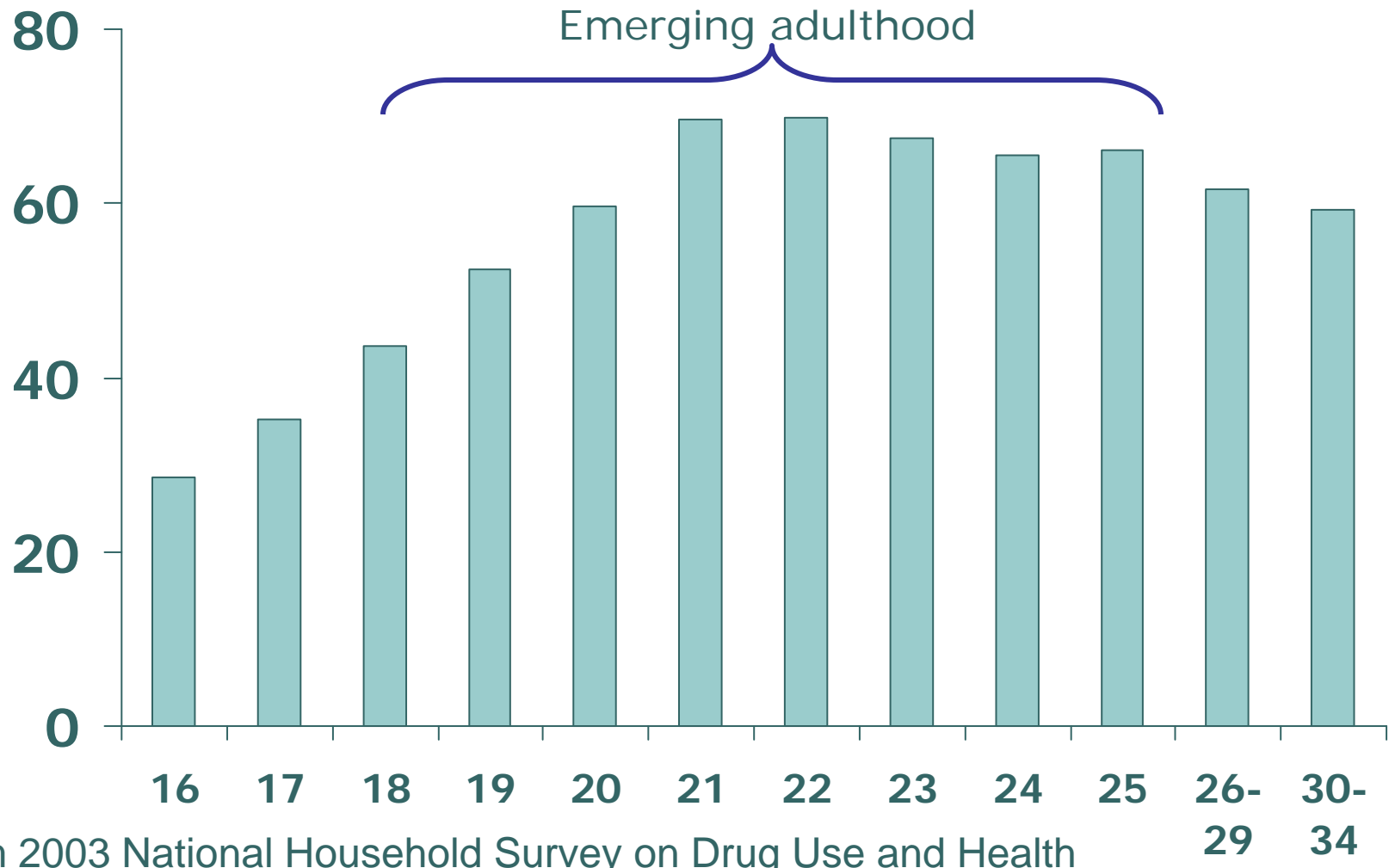
- Describe normative trend in drinking
- Describe factors that explain normative trend
- Account for unexplained variability in change



Overview

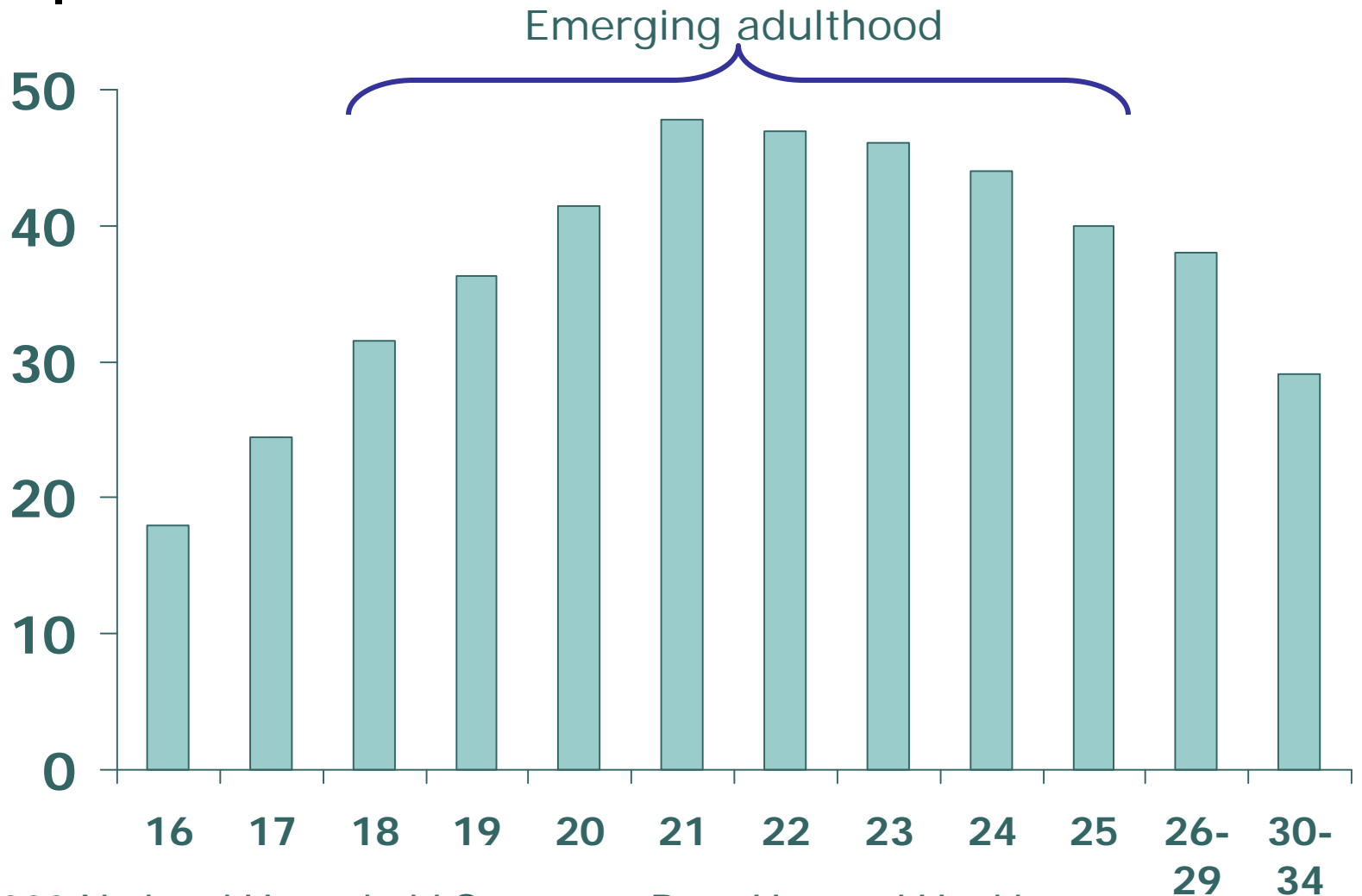
- Describe normative trend in drinking
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Age trends for past-month drinking



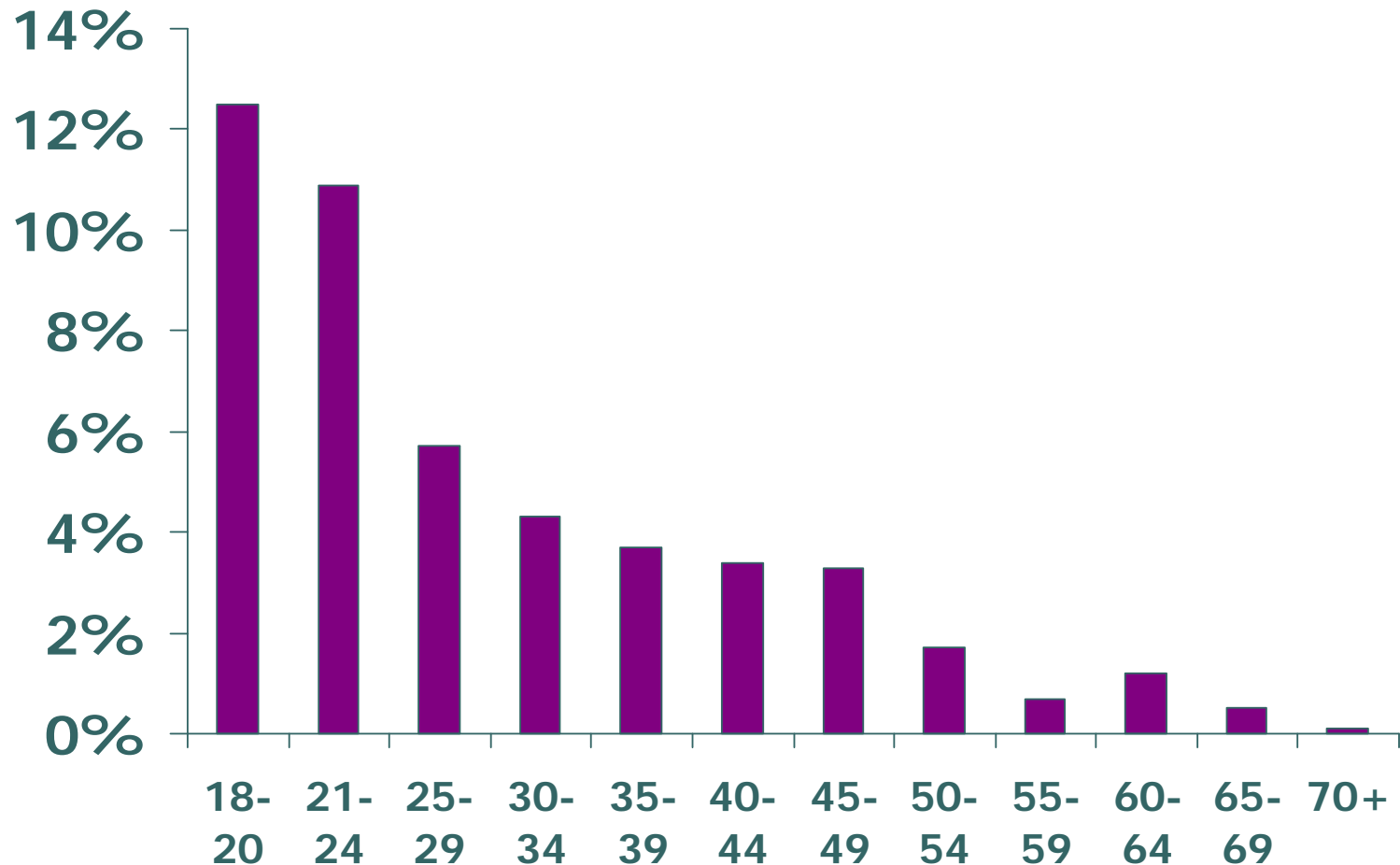
From 2003 National Household Survey on Drug Use and Health

Age trends for past-month heavy drinking



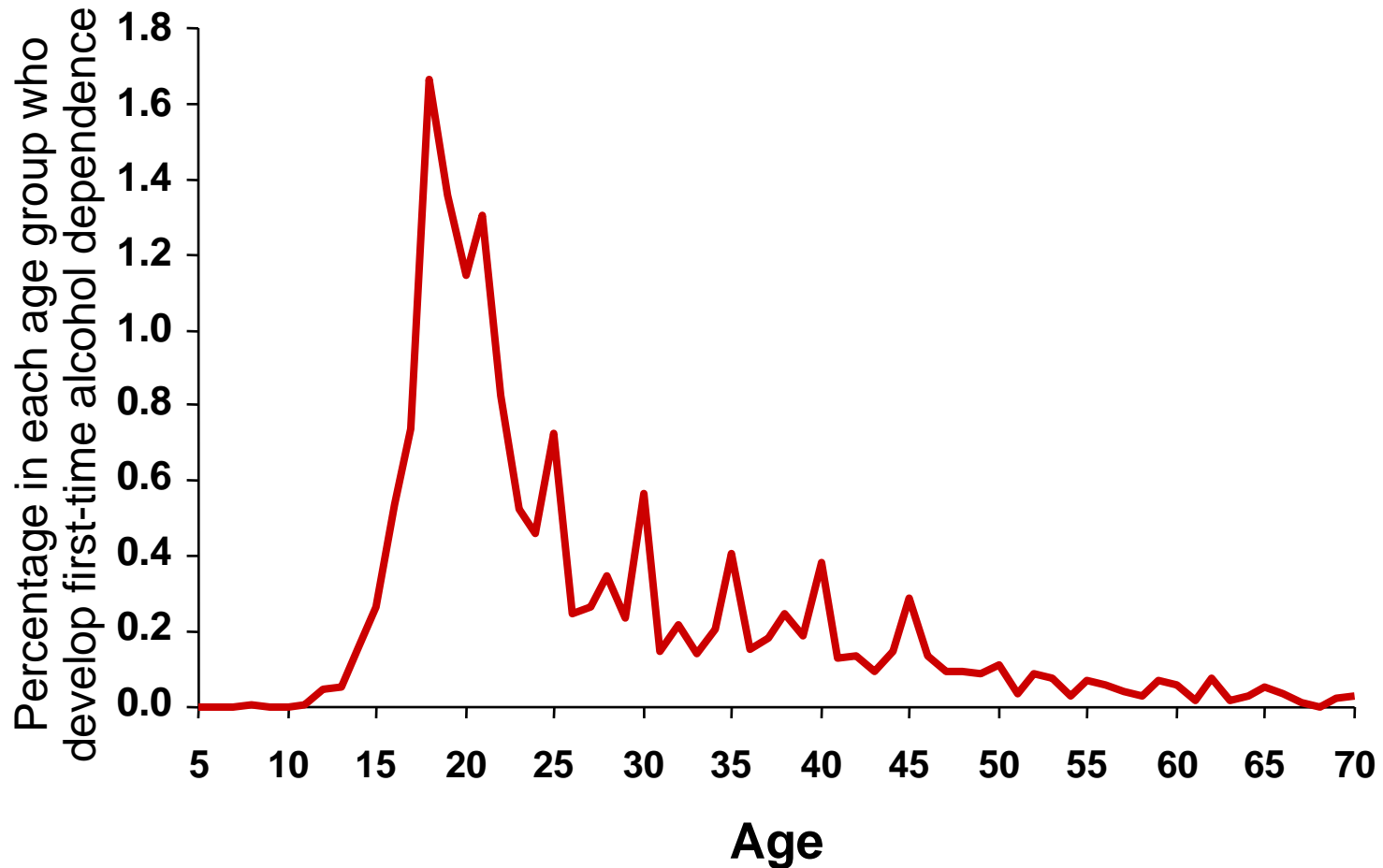
From 2003 National Household Survey on Drug Use and Health

Prevalence of DSM IV Alcohol Dependence



From 2003 National Epidemiologic Survey on Alcohol and Related Conditions (Grant et al., 2004)

Age of Onset of DSM IV Alcohol Dependence



From 2003 National Epidemiologic Survey on Alcohol and Related Conditions (Li et al., 2004)

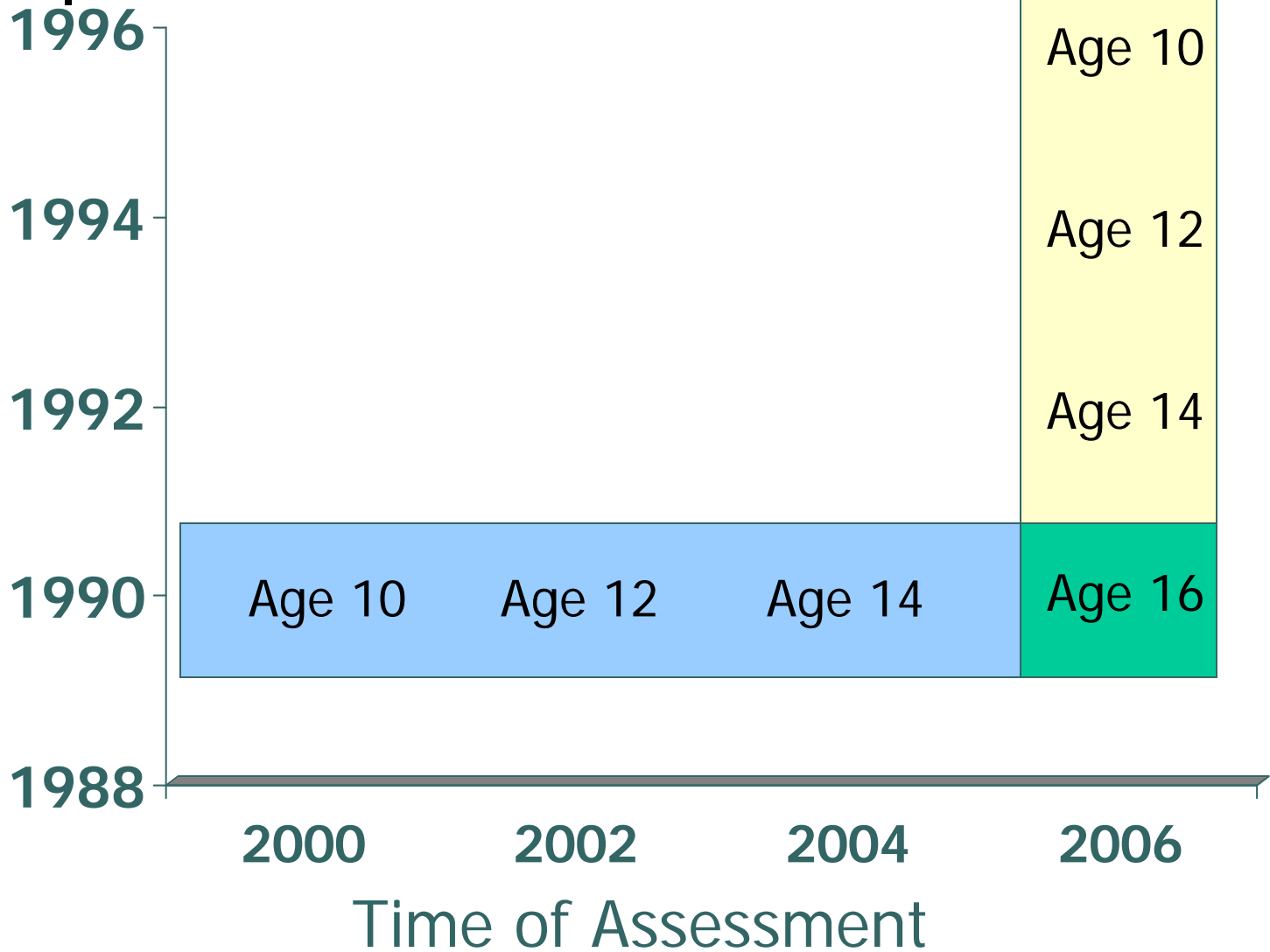


Limitations of Cross-Sectional Designs

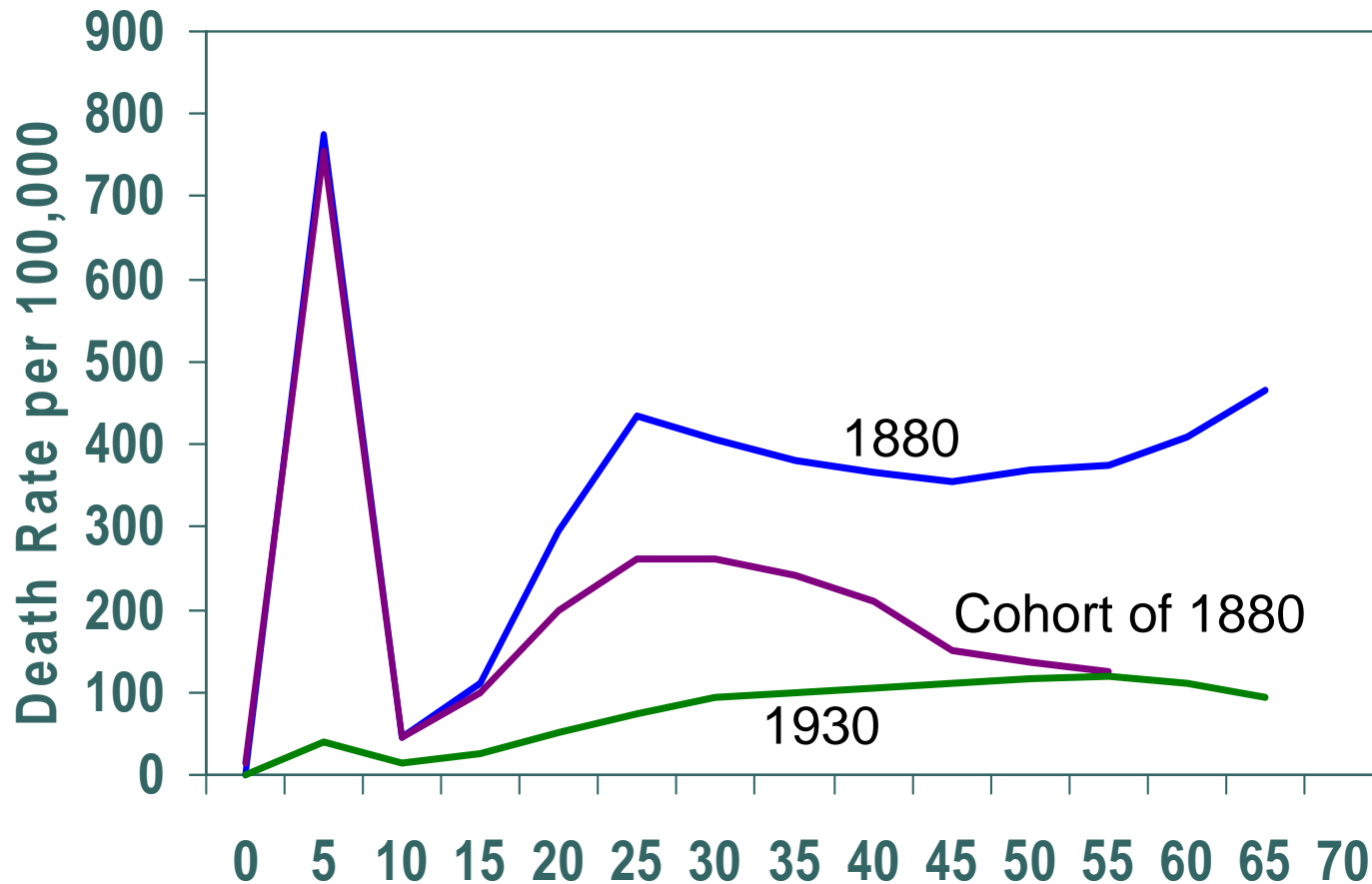
- Cross-sectional designs
 - Observe different cohorts at same point in time
 - Confounds age with birth cohort
 - Can't estimate variability in change
- Prospective designs
 - Observe a single cohort over time
 - Unconfounds cohort and age

Cross-sectional vs. Prospective

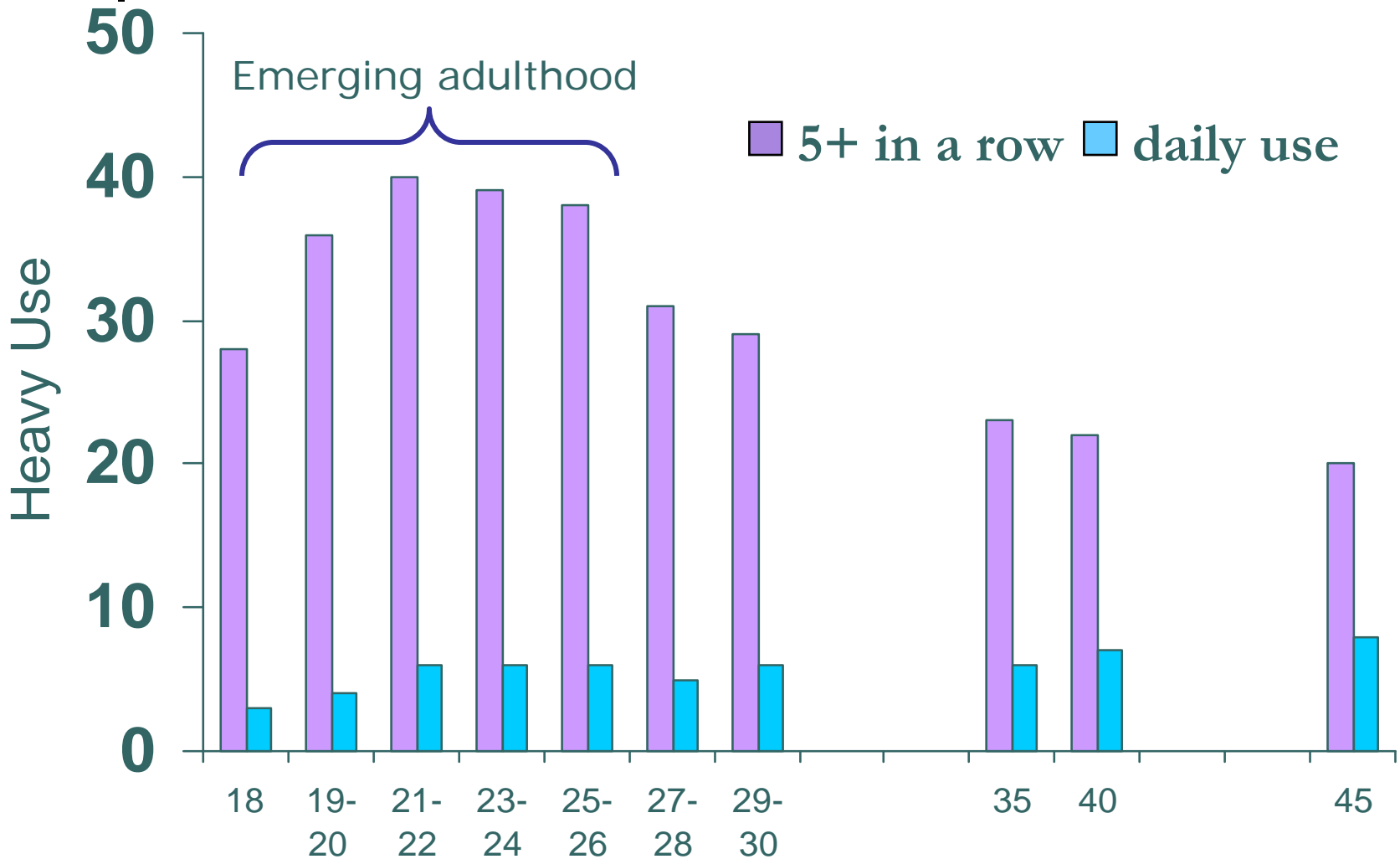
Birth Cohort



Age-Specific Deaths from Tuberculosis

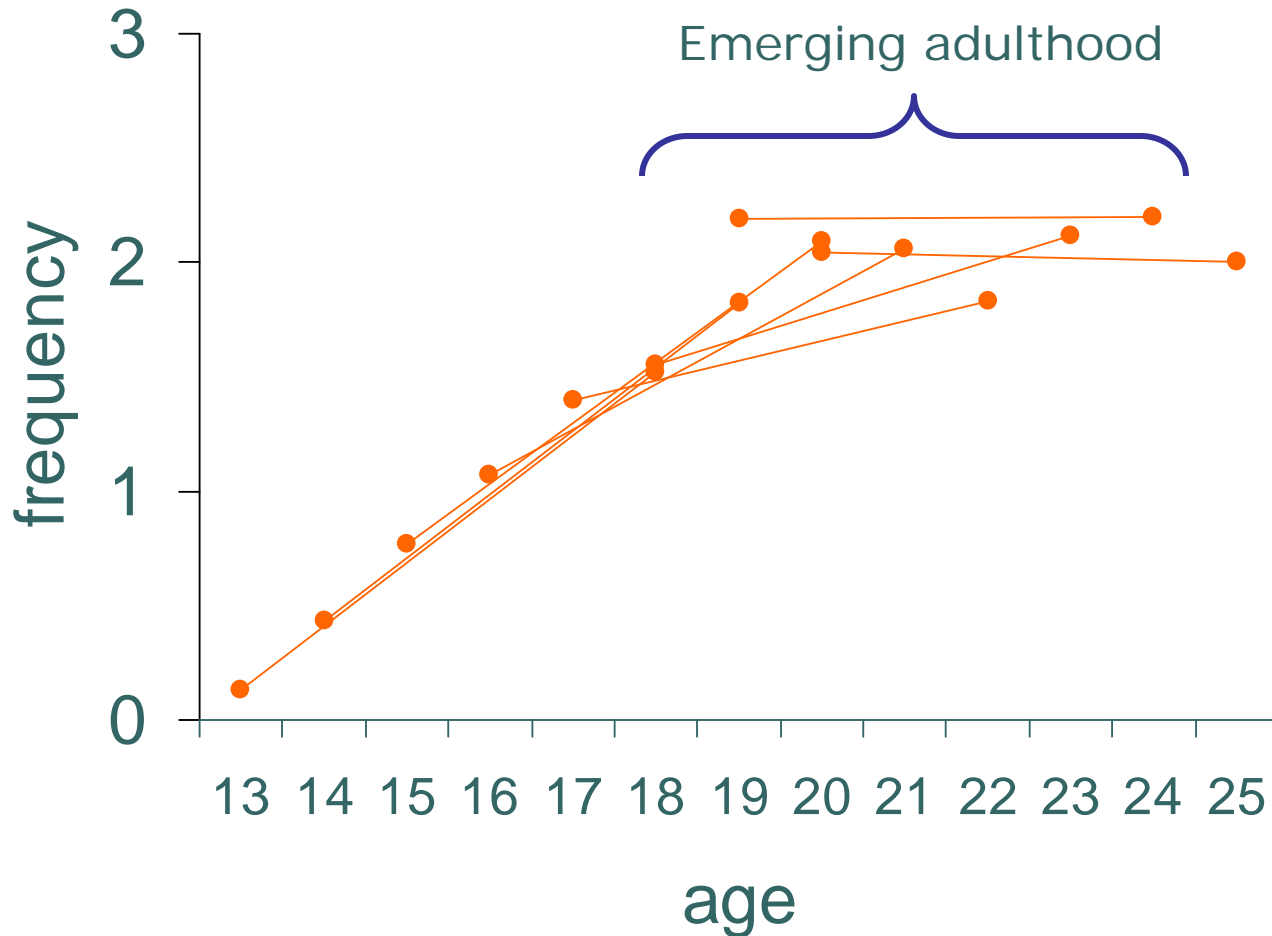


Heavy drinking peaks at age 20-21 and then declines



From 2005 Monitoring the Future data (Johnston et al., 2005)

Trends in Past 6-month Heavy Drinking



From Jackson, Sher, Cooper, & Wood, 2002. Adjusted for sex and ethnicity.



Overview

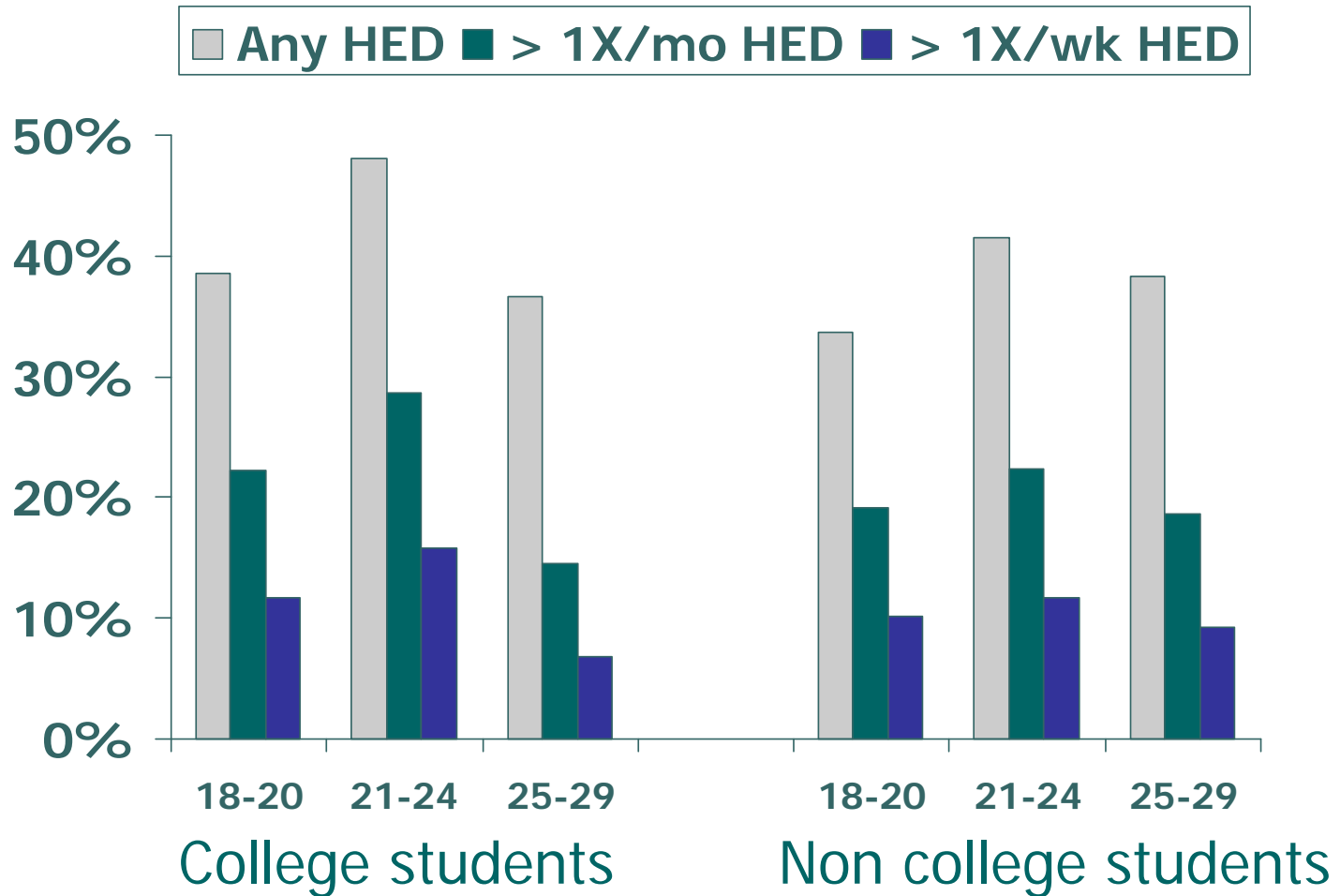
- Describe normative trend in drinking
- Describe factors that explain normative trend
- Account for unexplained variability in change

Factors that Predict Increase in Normative Drinking

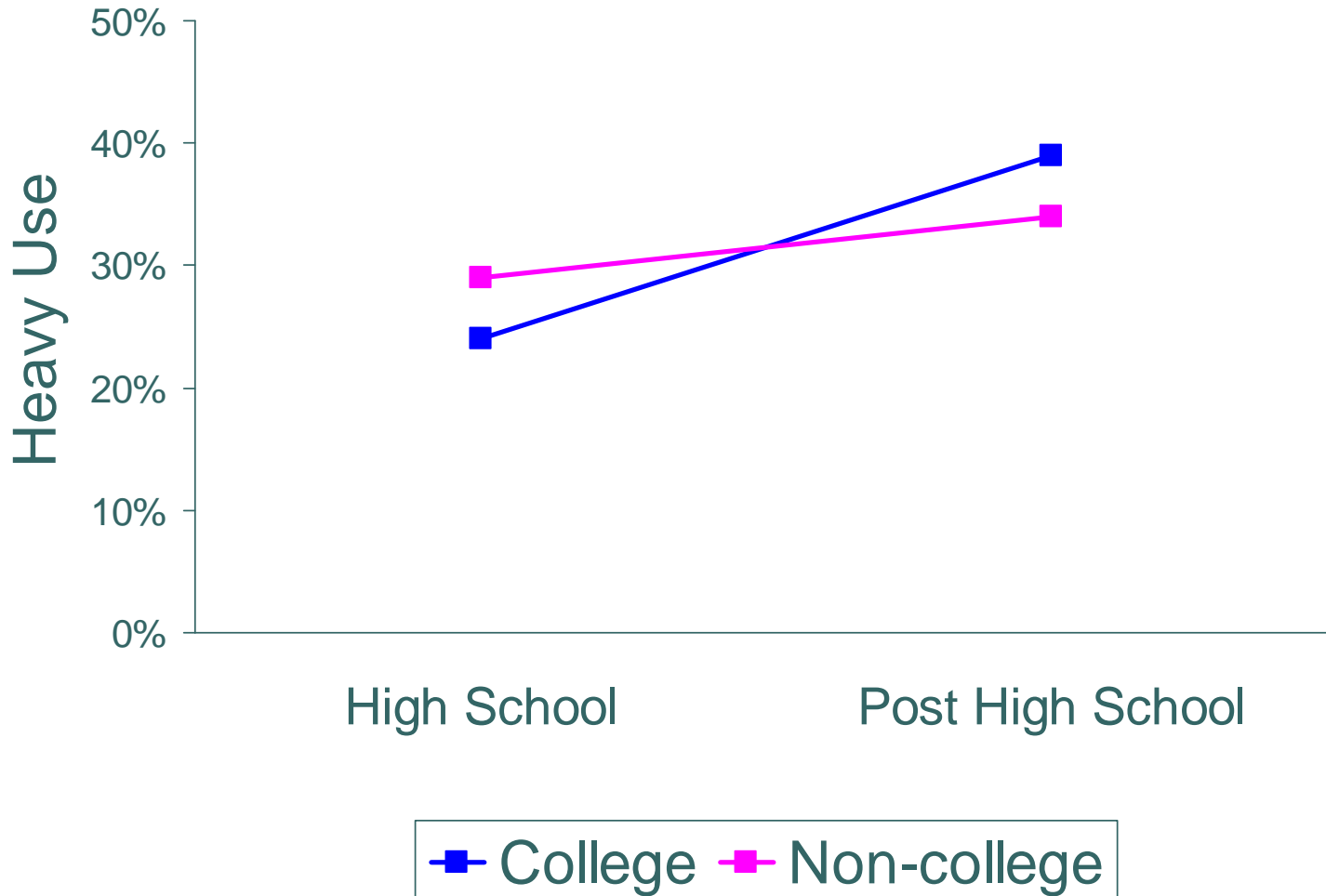
- Leaving home
 - Independence from parental restrictions
 - New social environment
- Attainment of legal drinking age
- Stage-specific developmental correlates



Leaving Home Transition Depends on Where You Go

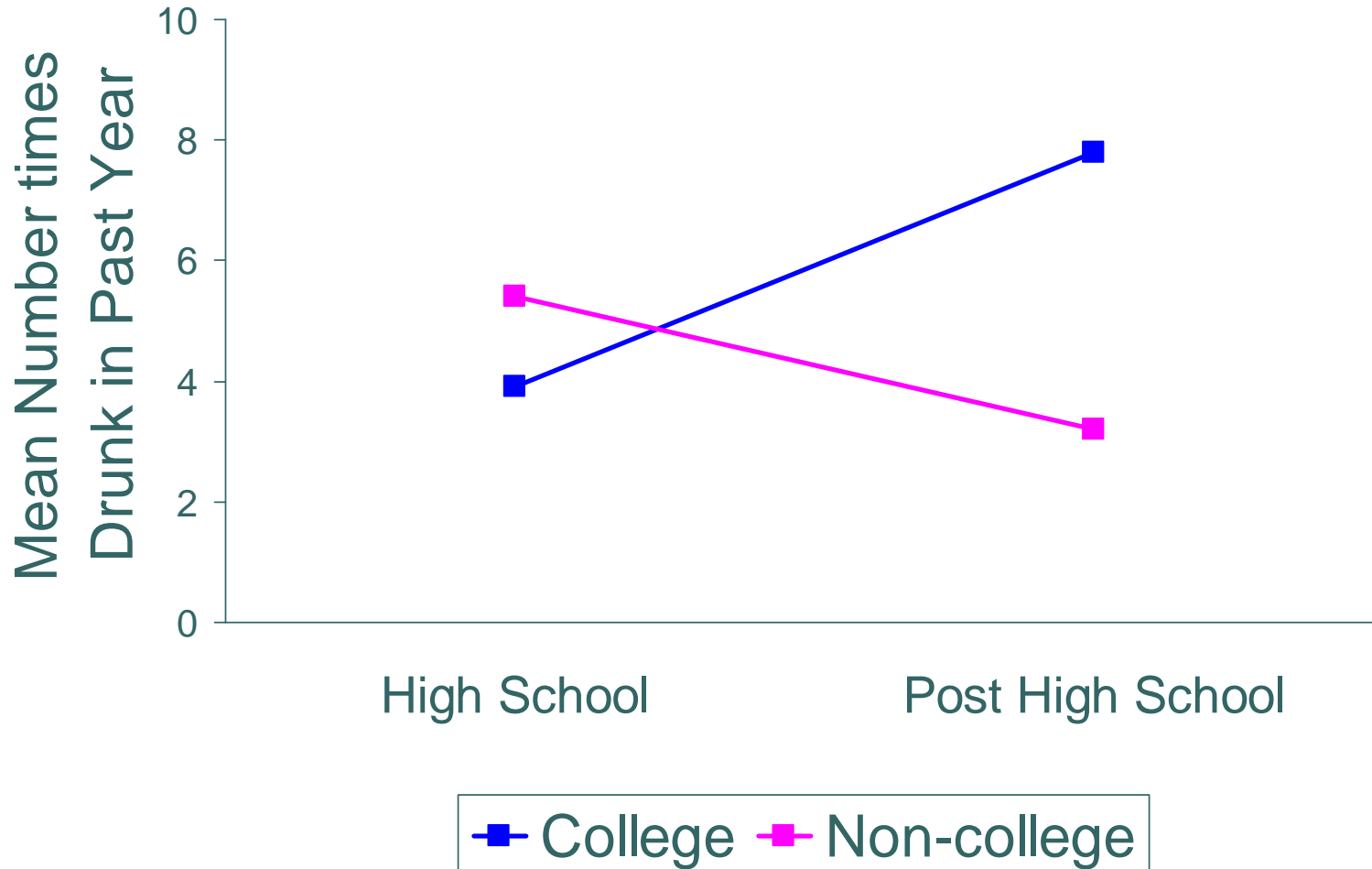


College Students Show Greater Increase in Drinking



From 1997-1999 Monitoring the Future (O'Malley & Johnston, 2002)

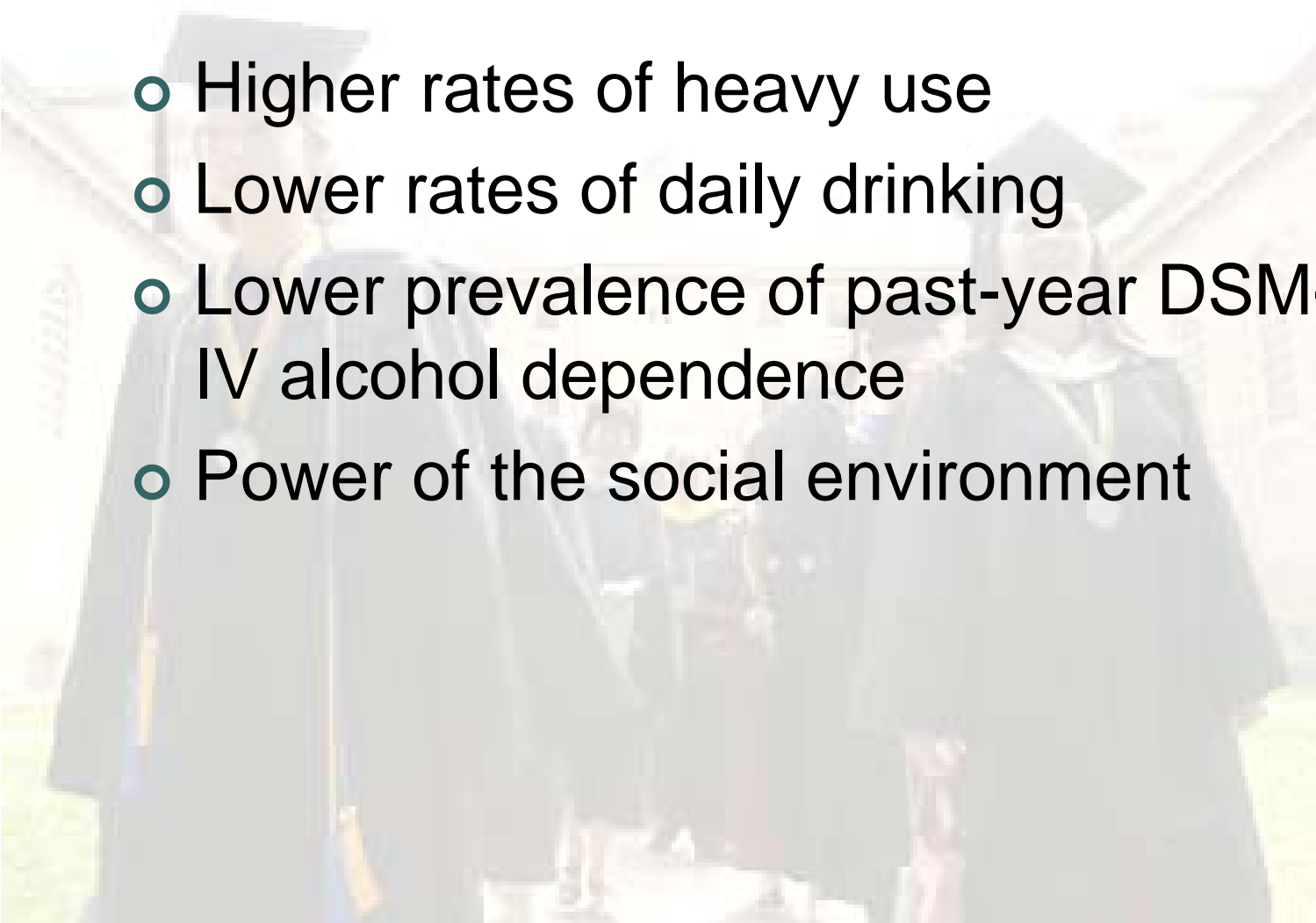
College Students Show Greater Increase in Intoxication



From Missouri Adolescent Female Twin Study (Slutske et al., 2004)



College Students Don't Look Like their Non-College Peers

- Higher rates of heavy use
 - Lower rates of daily drinking
 - Lower prevalence of past-year DSM-IV alcohol dependence
 - Power of the social environment
- 



Theories Behind the Drinking Increase in College

- Influence (socialization)
- Selection
- Differential socialization hypothesis



Transition to Adult Roles is Associated with the Decline

- End formal education
- Employment
- Marriage
- Parenthood

“Get up and dance, get up and smile,
get up and drink to the days
that are gone in the shortest while.”

-- *Simon Fowler*




Role compatibility theory (Kandel)

- Role socialization
 - Individuals change substance use to be compatible with expectations from the social roles
- Role selection
 - Individuals with pre-existing traits (including low substance use) select into certain roles



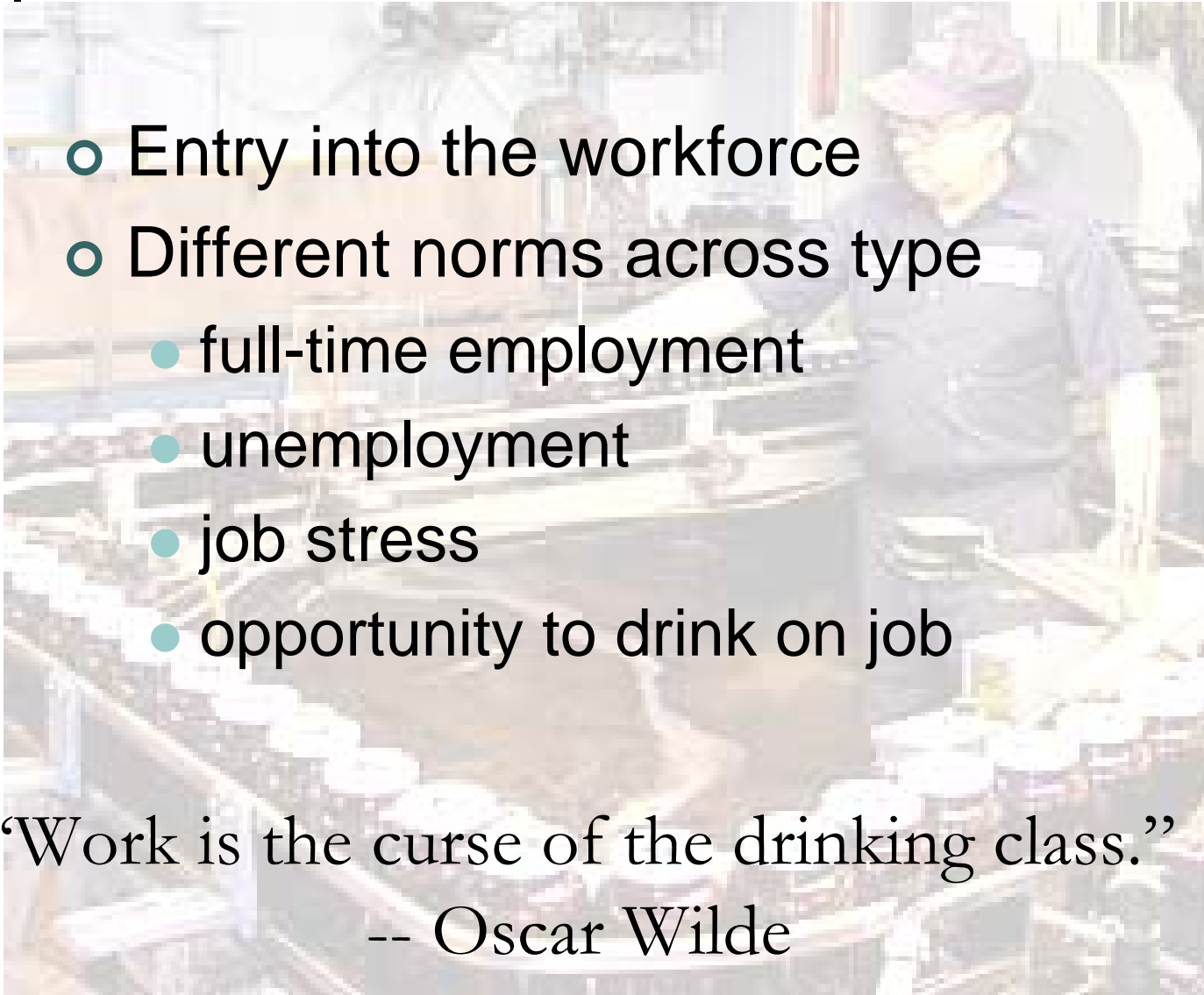
End Formal Education

- 
- Leave social environment of college
 - Enter environments with different standards and reward structures
 - End of formal higher education
“signals” a period of maturing out of one role into a role with greater responsibility and less freedom

● ● ● | Employment

- Entry into the workforce
- Different norms across type
 - full-time employment
 - unemployment
 - job stress
 - opportunity to drink on job

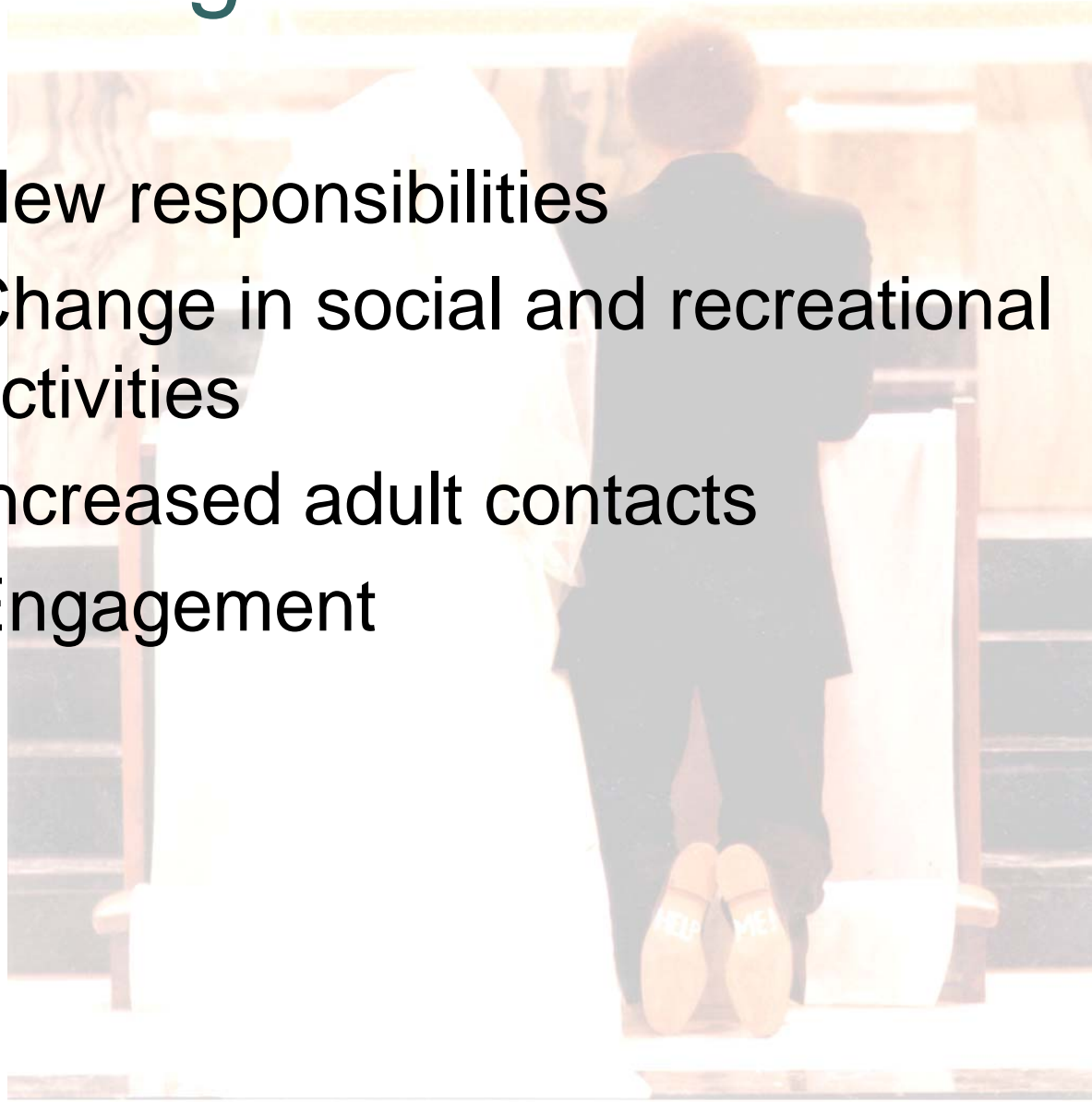
“Work is the curse of the drinking class.”
-- Oscar Wilde



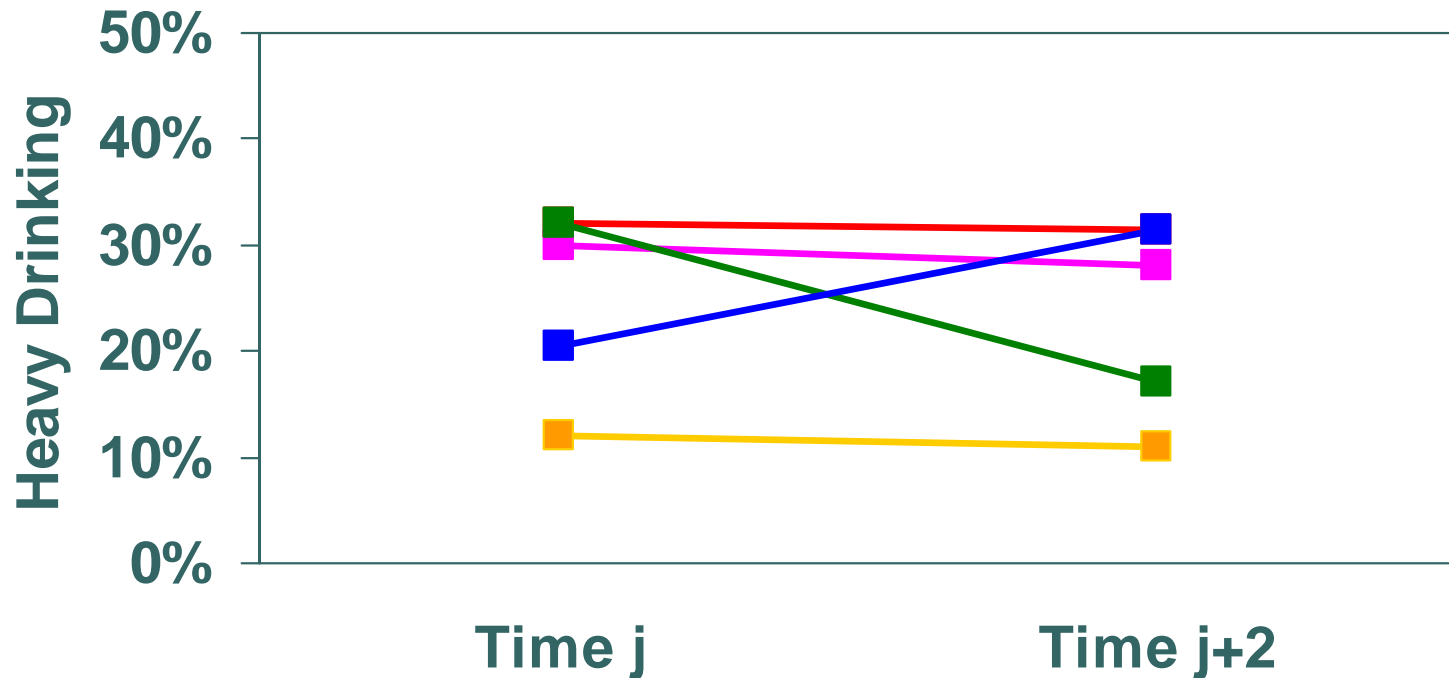


Marriage

- New responsibilities
- Change in social and recreational activities
- Increased adult contacts
- Engagement



Relationship Transitions and Heavy Drinking – Women



Single

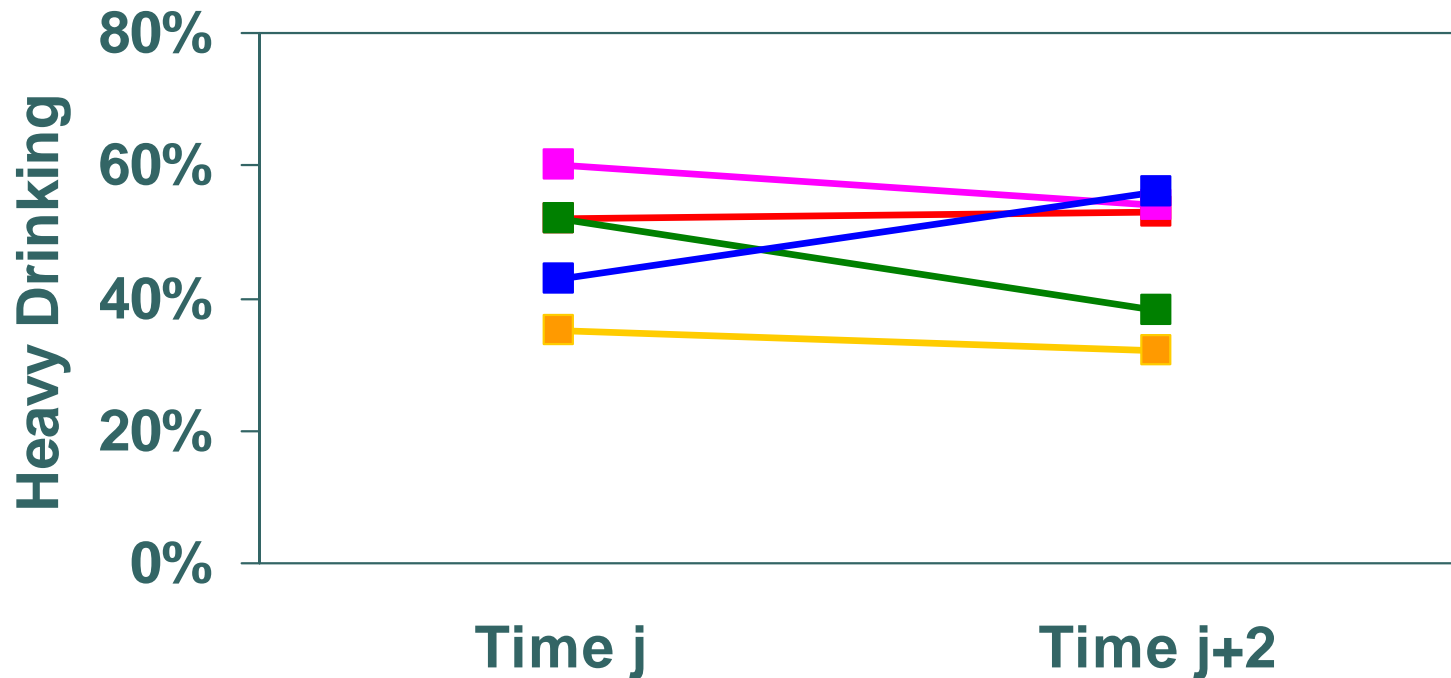
Married

Divorced

Single->Married

Married->Divorced

Relationship Transitions and Heavy Drinking – Men



Single

Married

Divorced

Single->Married

Married->Divorced



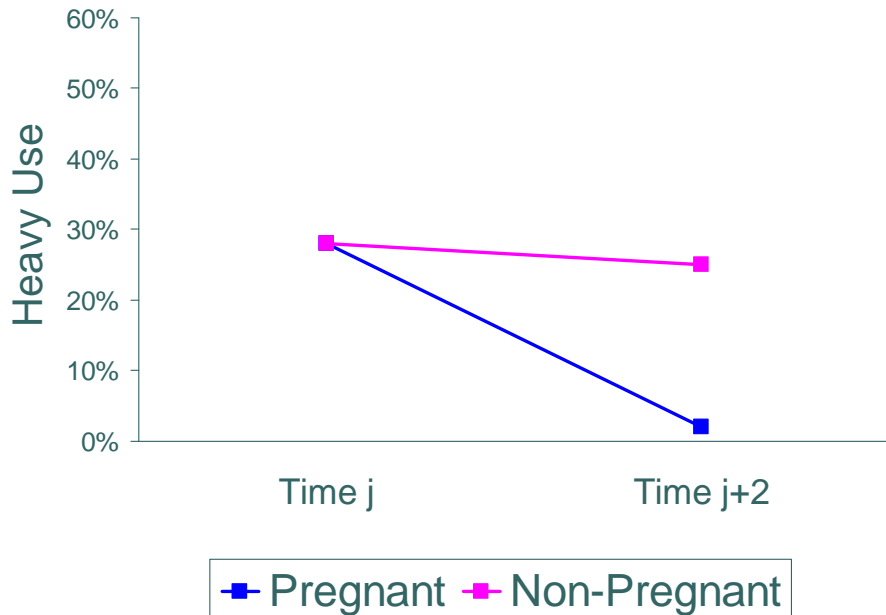
Parenthood



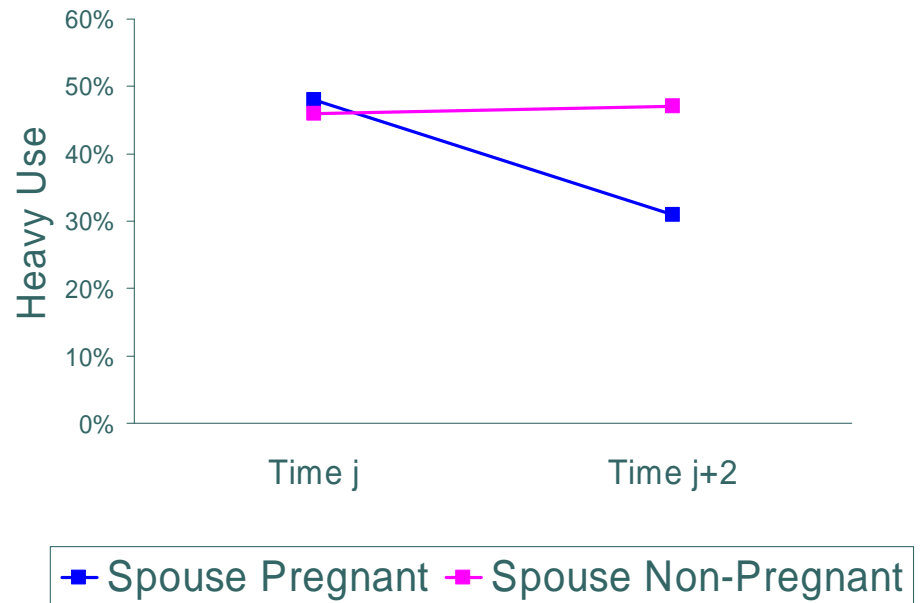
- Pregnancy
- Impacts social life even more than marriage
 - Child care responsibilities
 - Change in social and recreational activities
- Prompts men to reduce drinking

Pregnancy and Heavy Drinking

Women



Men





Overview

- Describe normative trend in drinking
- Describe factors that explain normative trend
- Account for unexplained variability in change



A Prospective Approach to Studying Development

- Individuals change over time (intra-individual variability)
- There is inter-individual variability in intra-individual change
 - Stability versus instability
 - What predicts change?



History of Taking a Developmental Perspective

- Consider longitudinal course of a disorder when making a diagnosis
- Recent research in trajectory of change



Modeling Individual Change

- Not all individuals stay on same track
- Describe individual patterns of stability and change
 - stability
 - progression (worsen)
 - regression (recover)
- Are there individual differences?



Illustrative Example 1: Alcohol Consumption

- Young adult sample (N=489; 46% male)
- Prospectively assessed at Years 1, 2, 3, 4, 7, & 11 (~ ages 18 – 28)
- Past 30 day consumption
 - Drank alcohol
 - Felt high from alcohol
 - Felt drunk from alcohol
 - Had five or more drinks on a single occasion

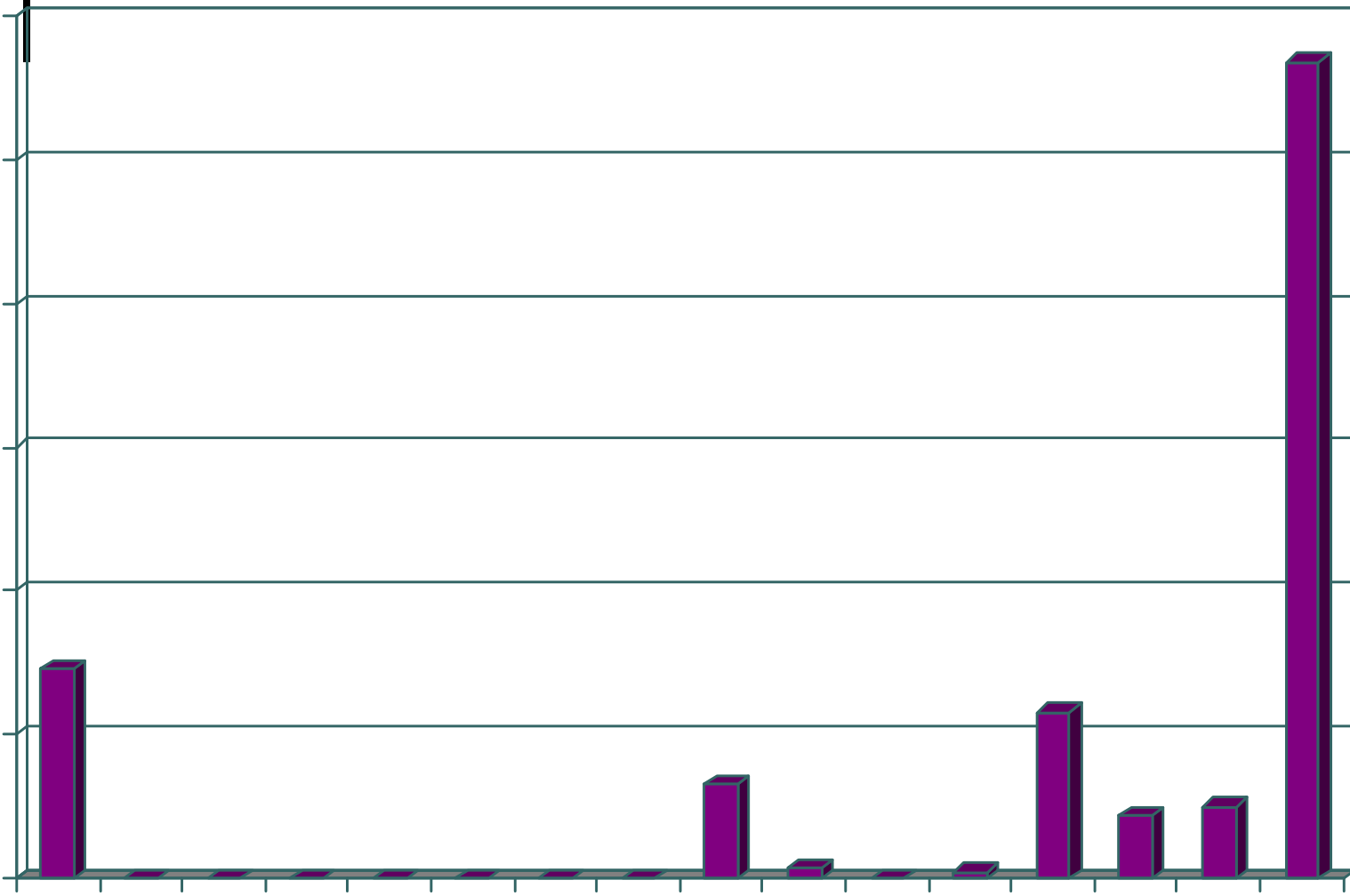
Drink | High | Drunk | 5+



Frequency (AGE 18)

60
50
40
30
20
10
0

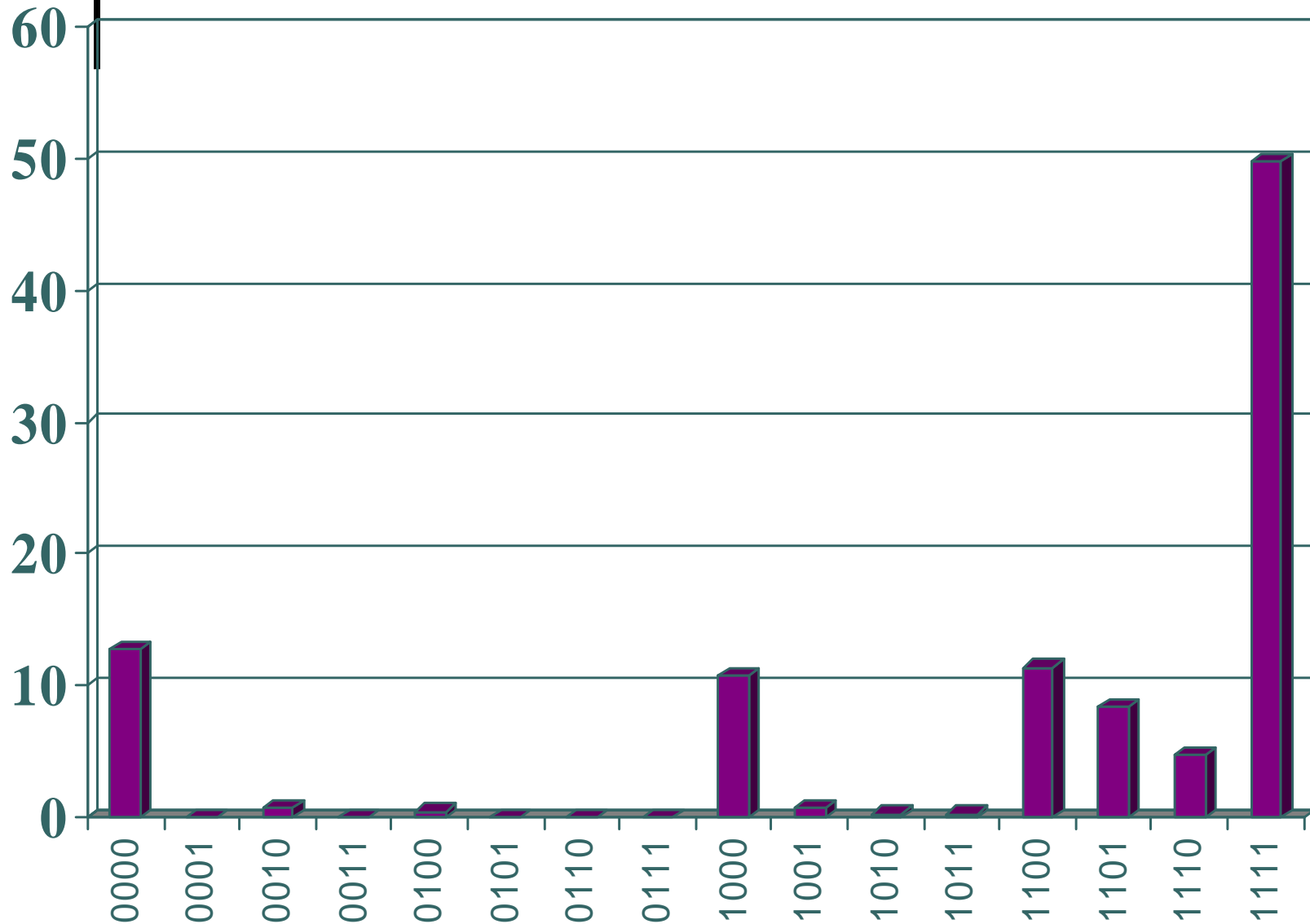
0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111



Drink | High | Drunk | 5+



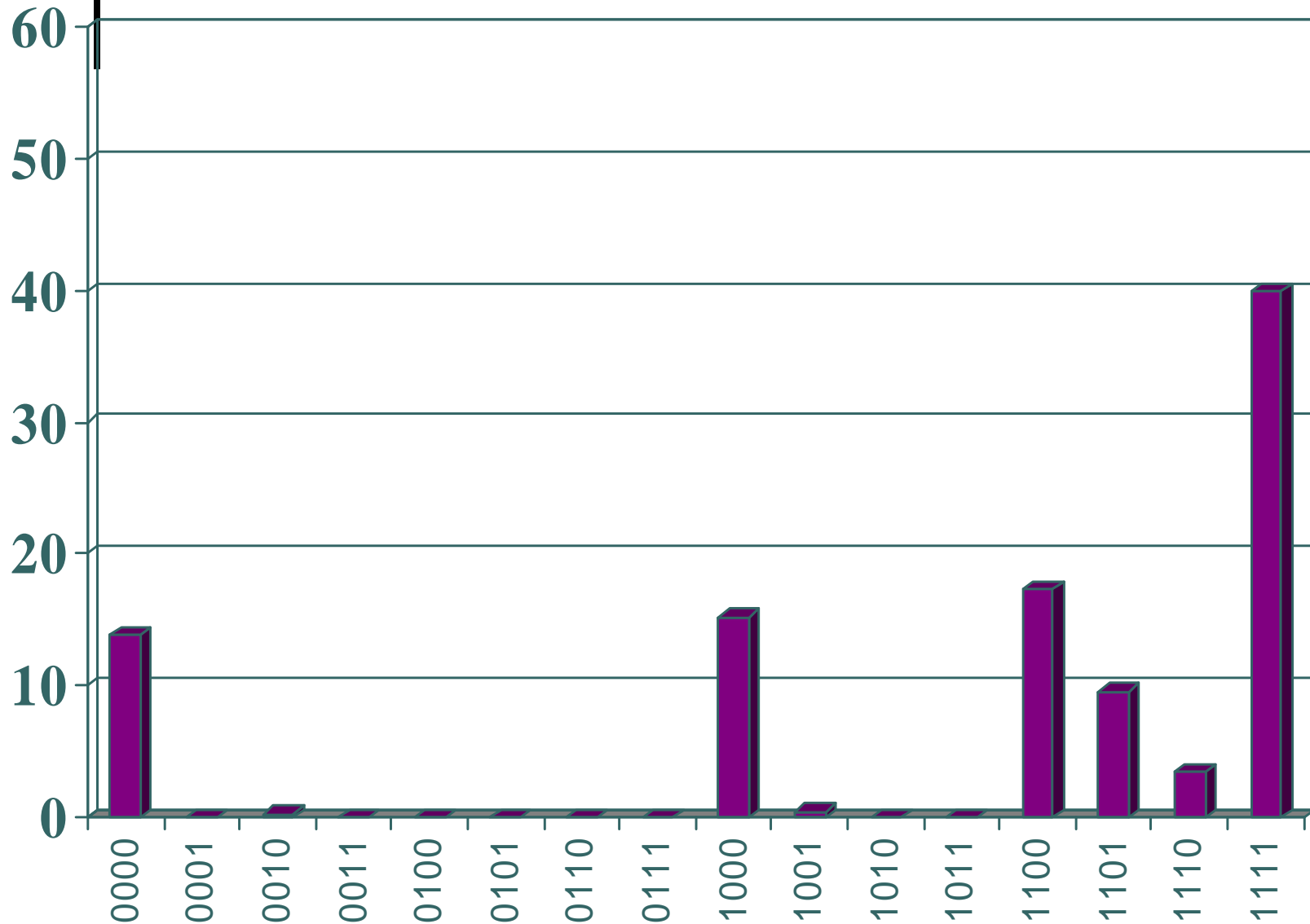
Frequency (AGE 21)



Drink | High | Drunk | 5+



Frequency (AGE 24)



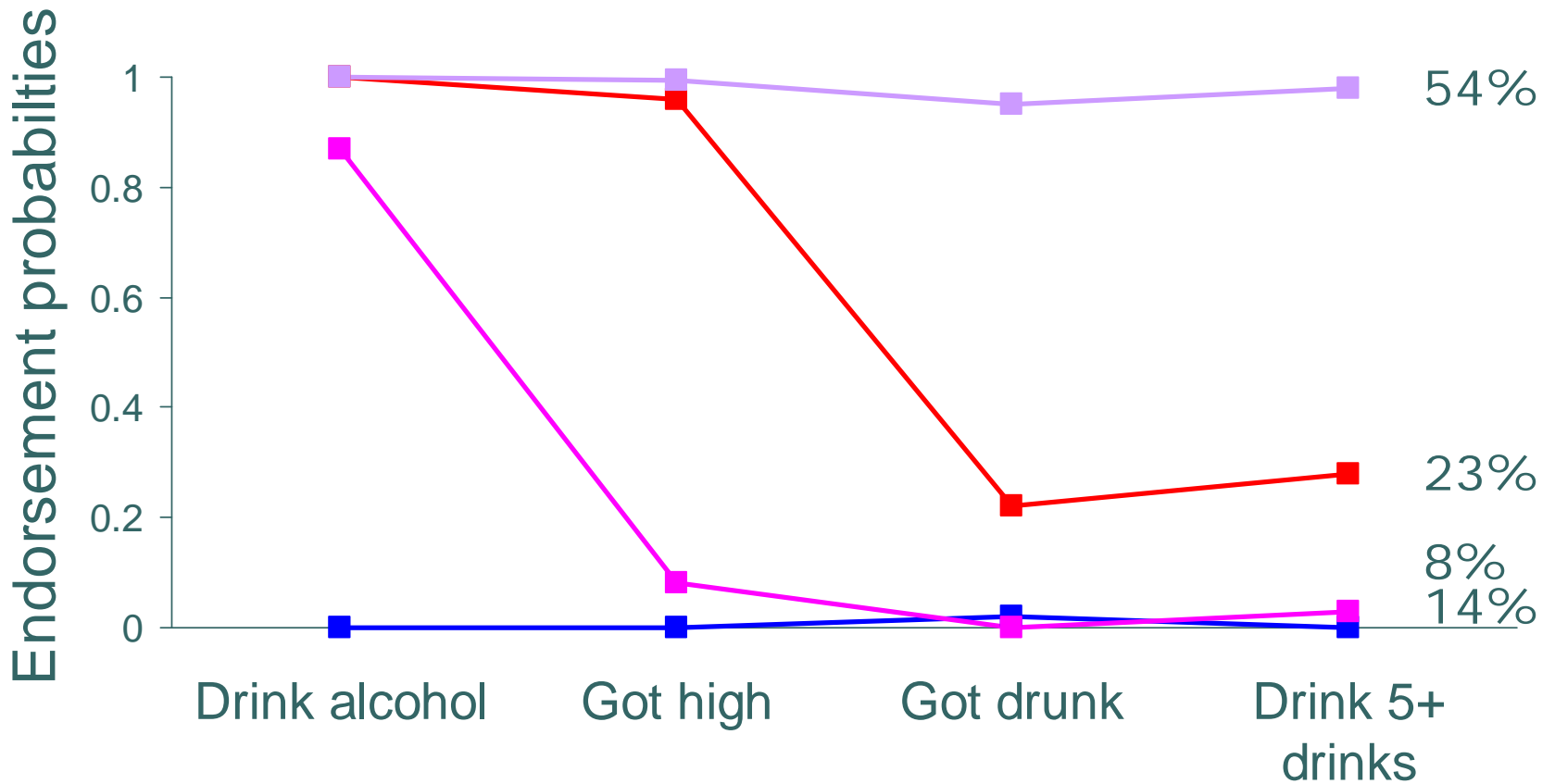


Latent Transition Analysis

- How many groups (classes)?
- What do the classes look like?
- How many in each class?
- Do individuals change classes over time?

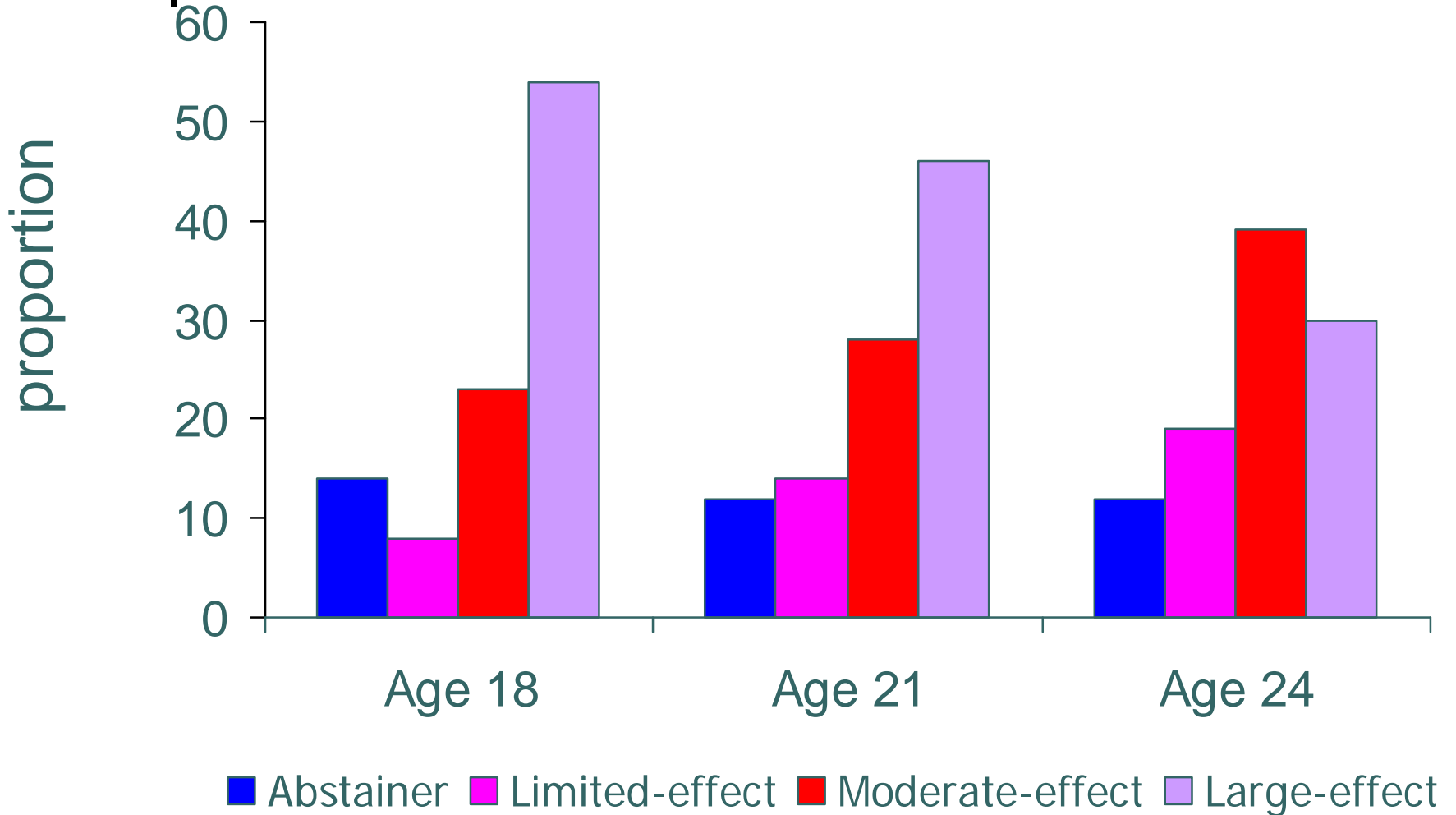
How many classes?

What do the classes look like?



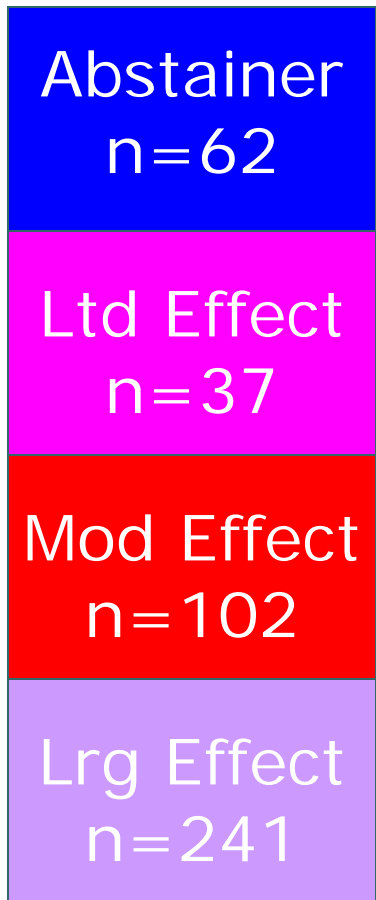
From Jackson, Sher, Gotham, & Wood (2001)

How many in each class?

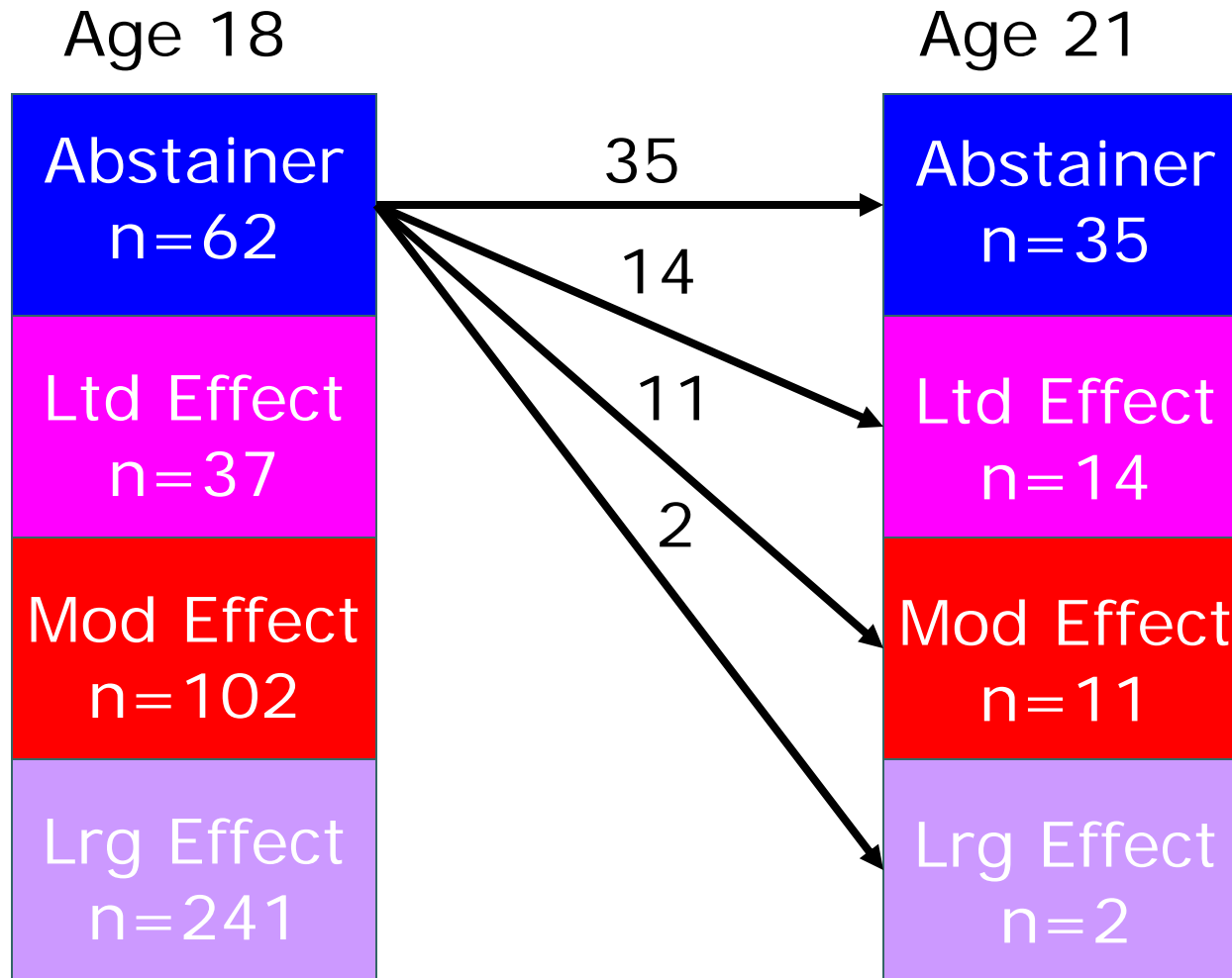


From Jackson, Sher, Gotham, & Wood (2001)

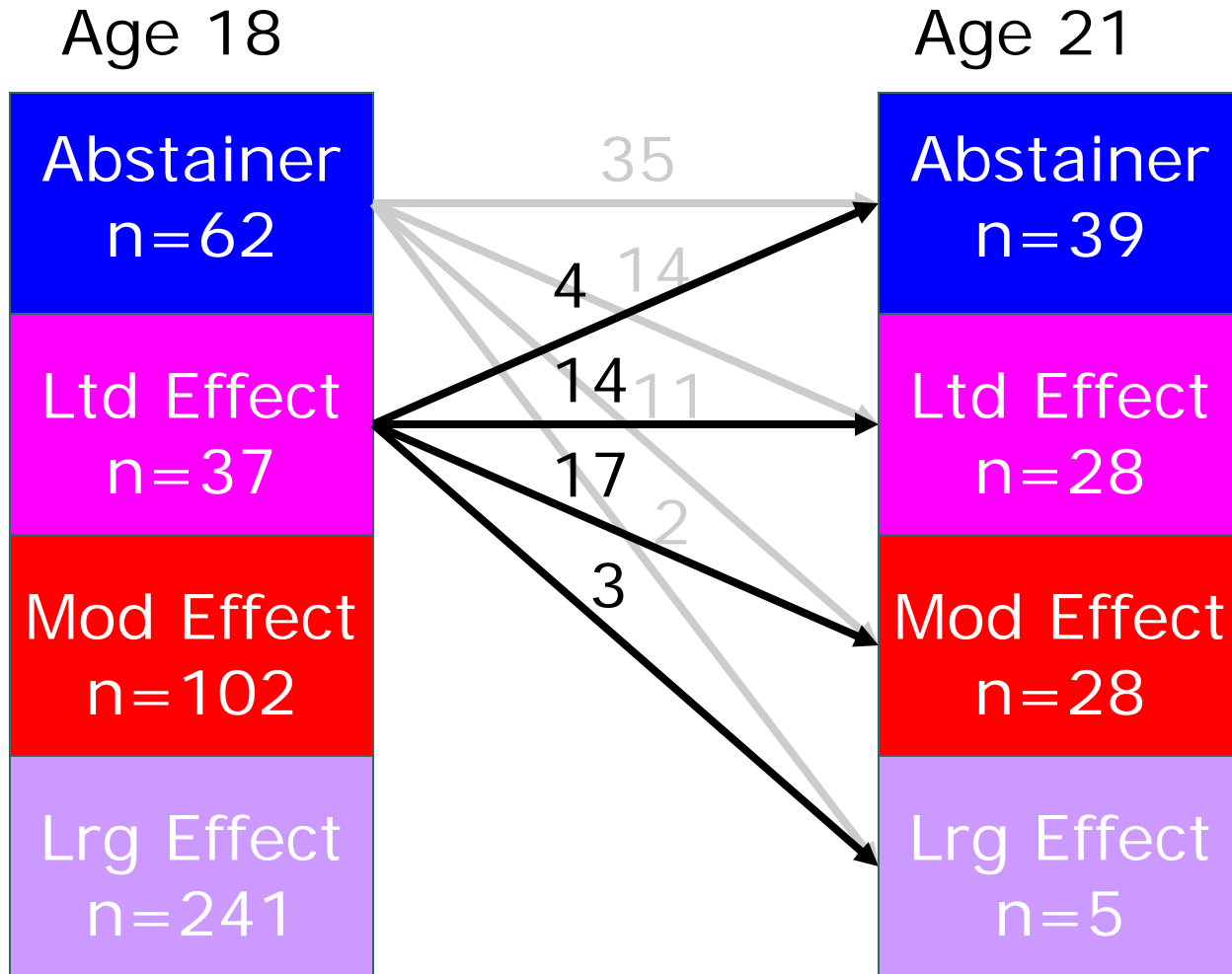
Where Do People Go?



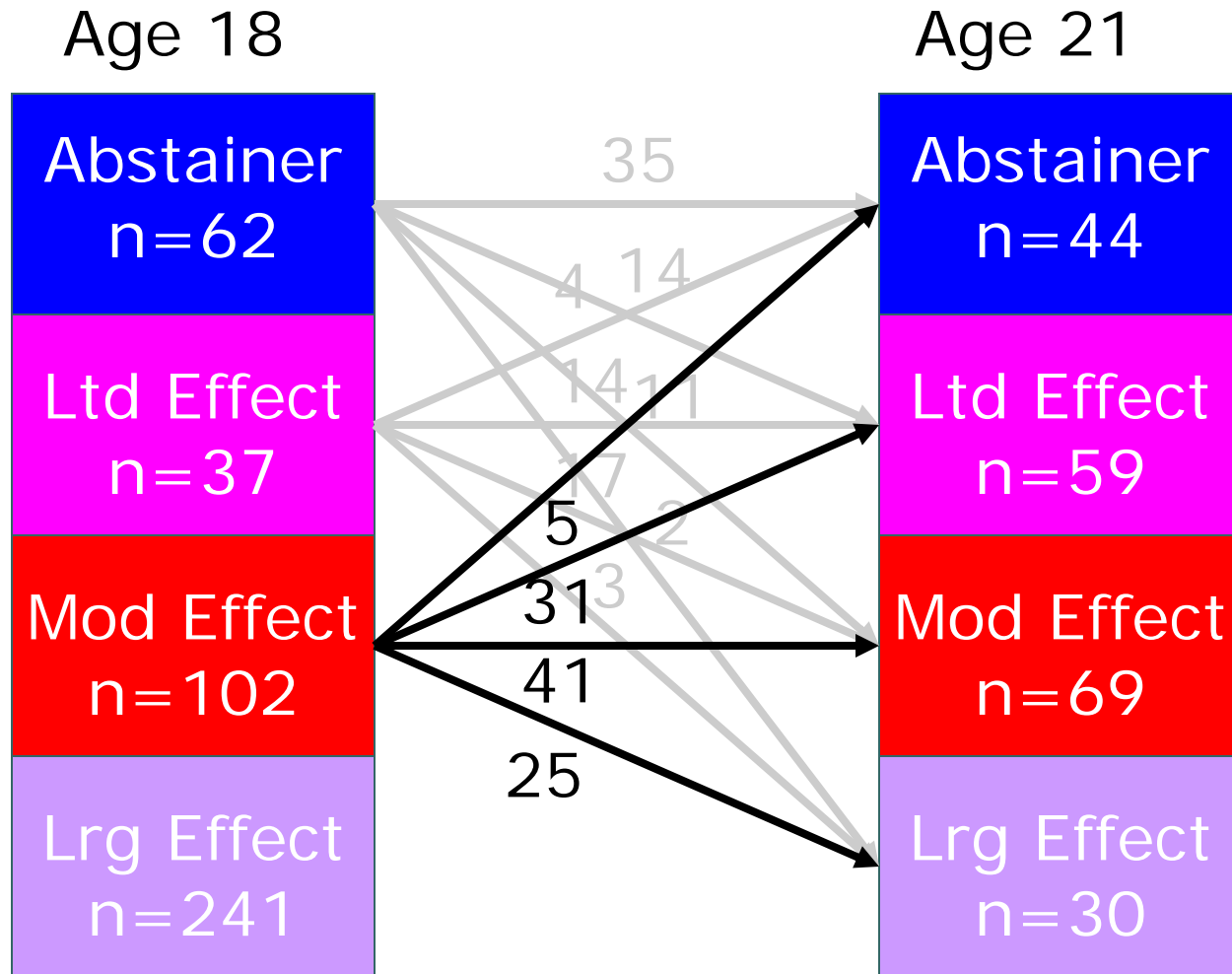
Where Do People Go?



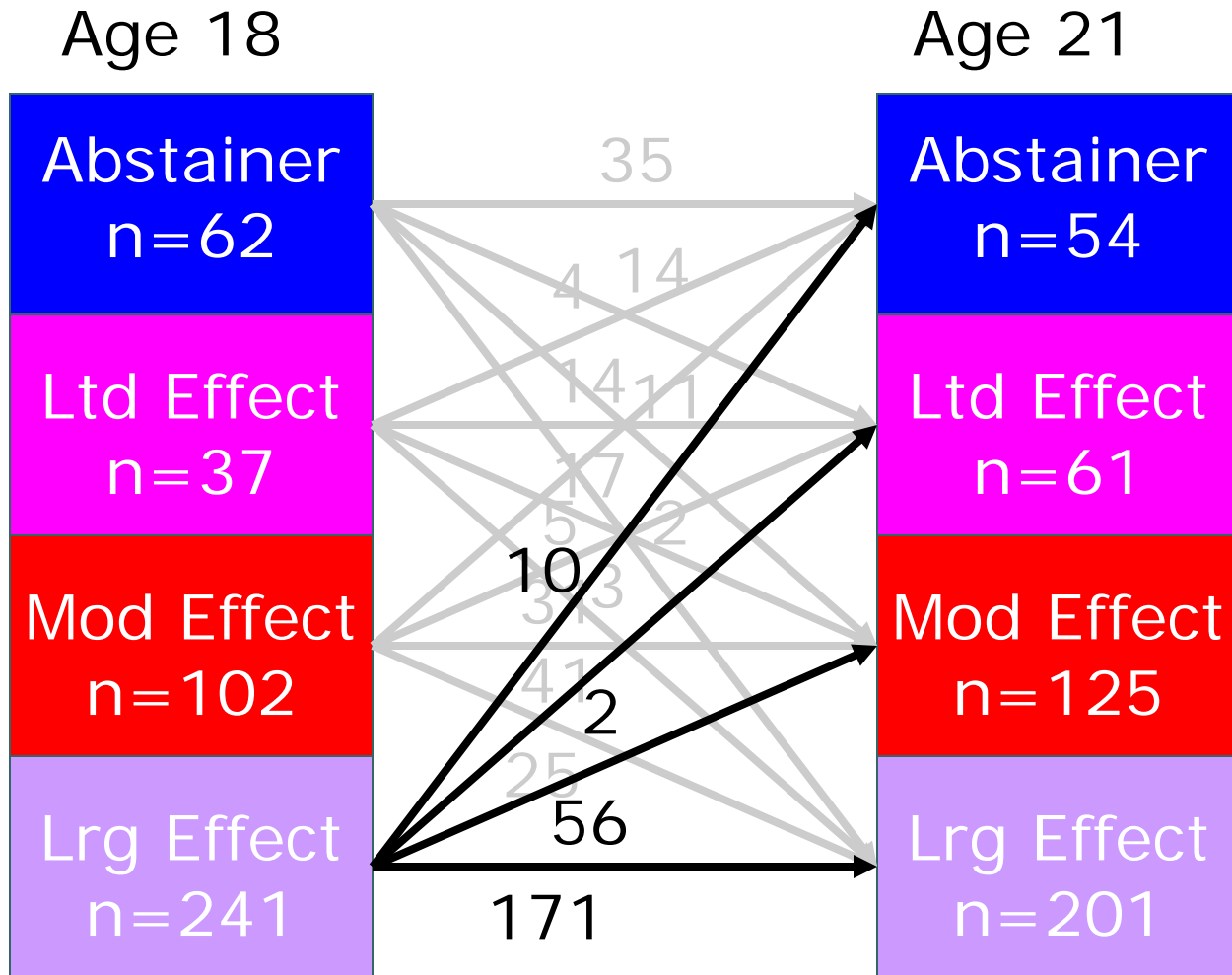
Where Do People Go?



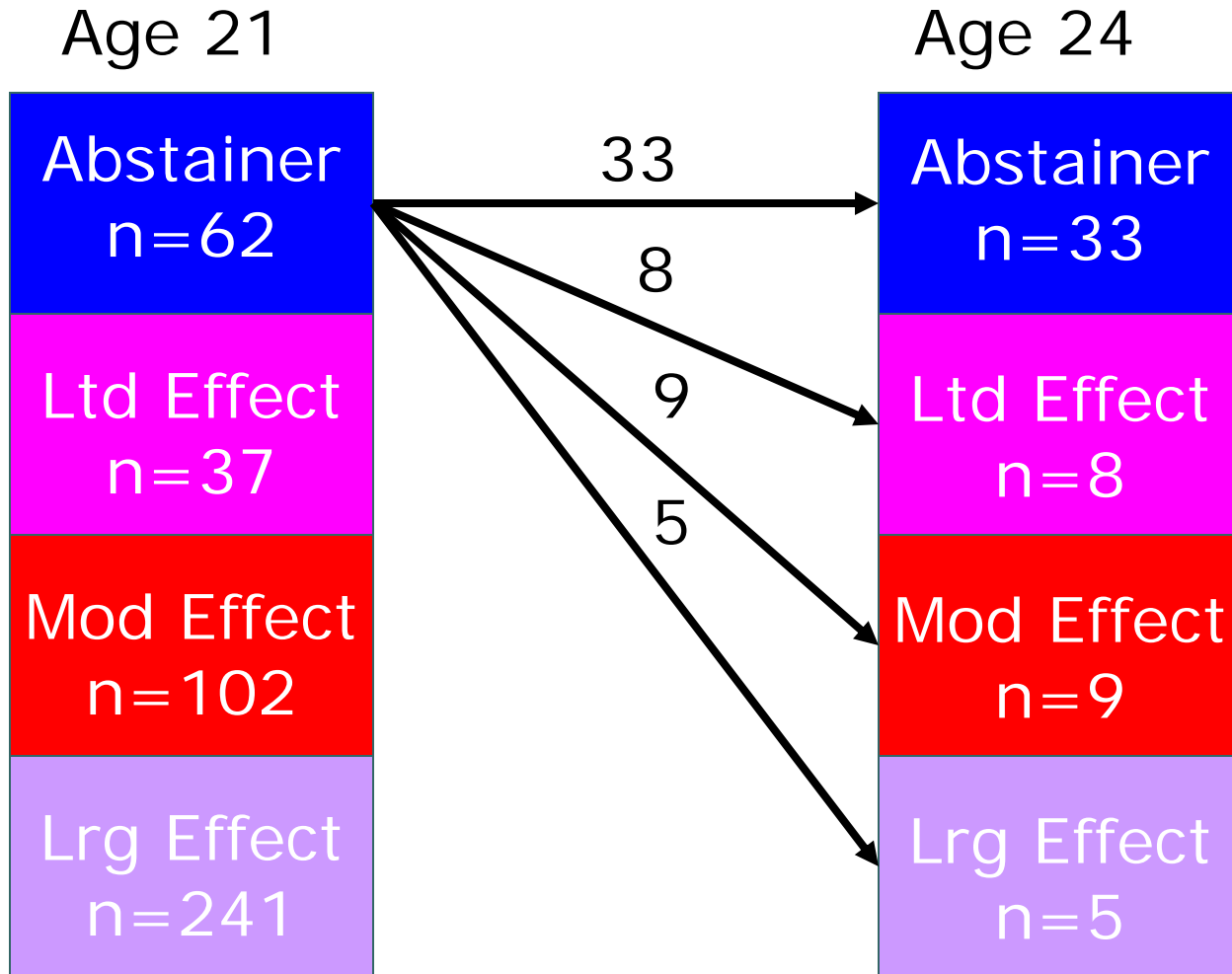
Where Do People Go?



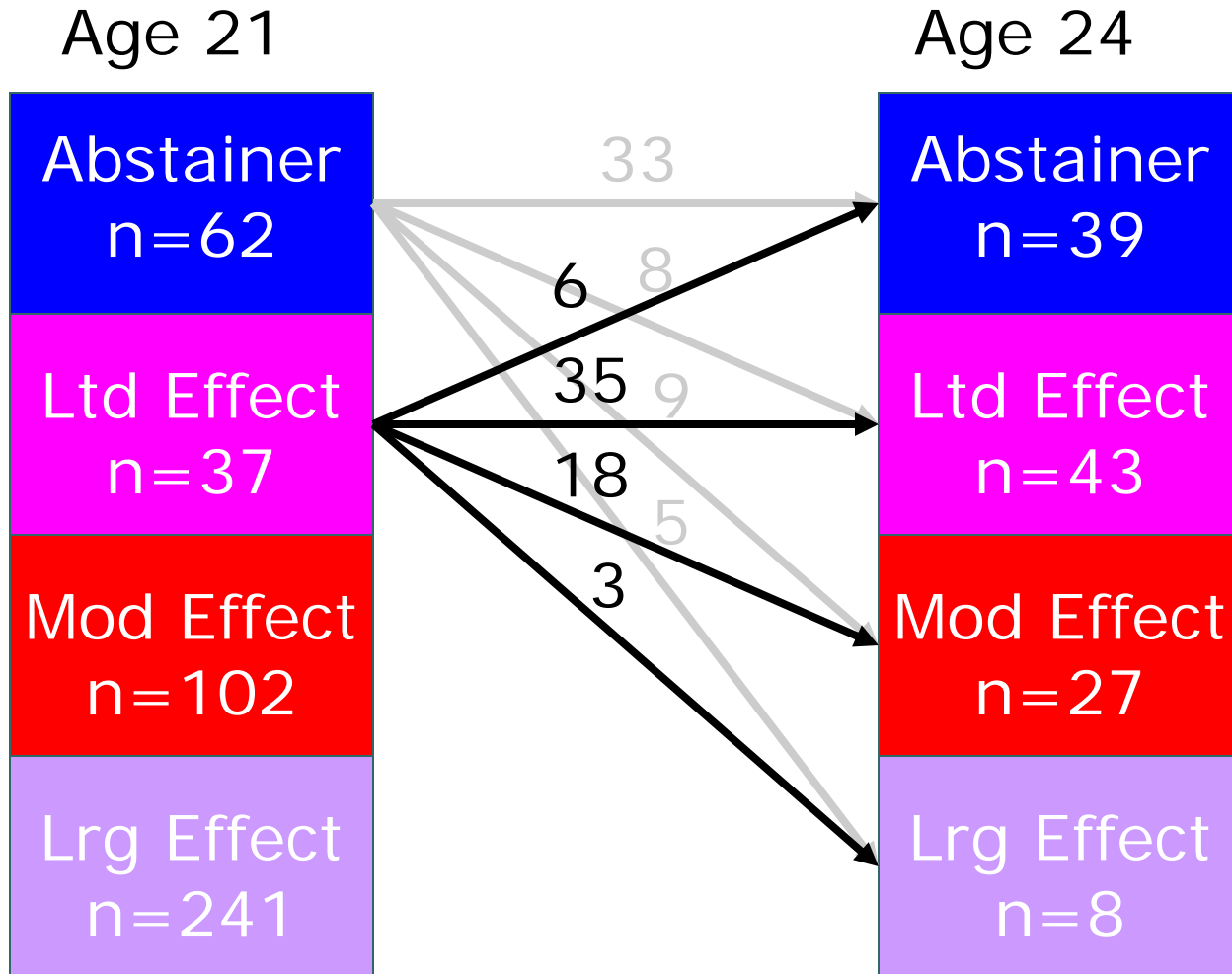
Where Do People Go?



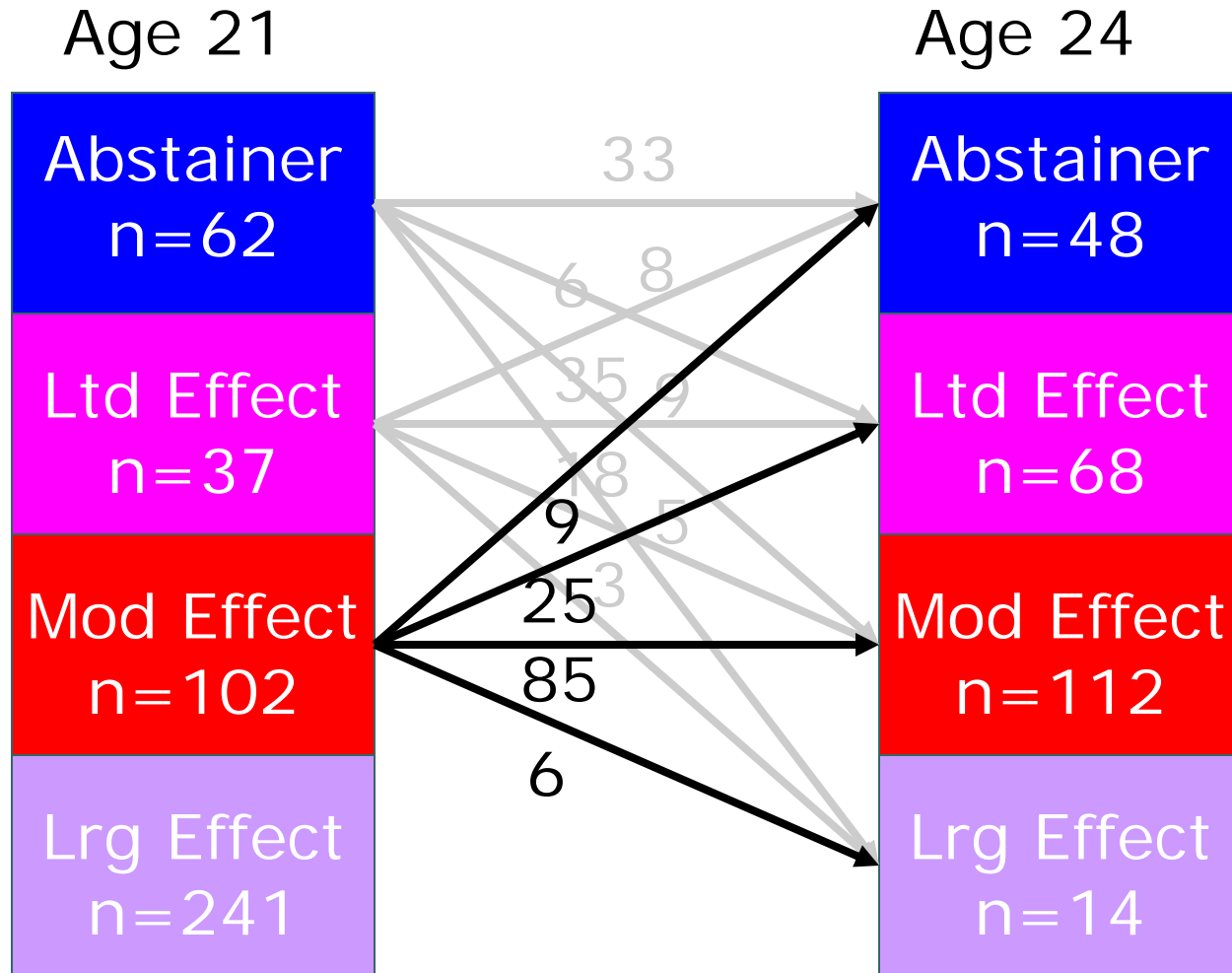
Where Do People Go?



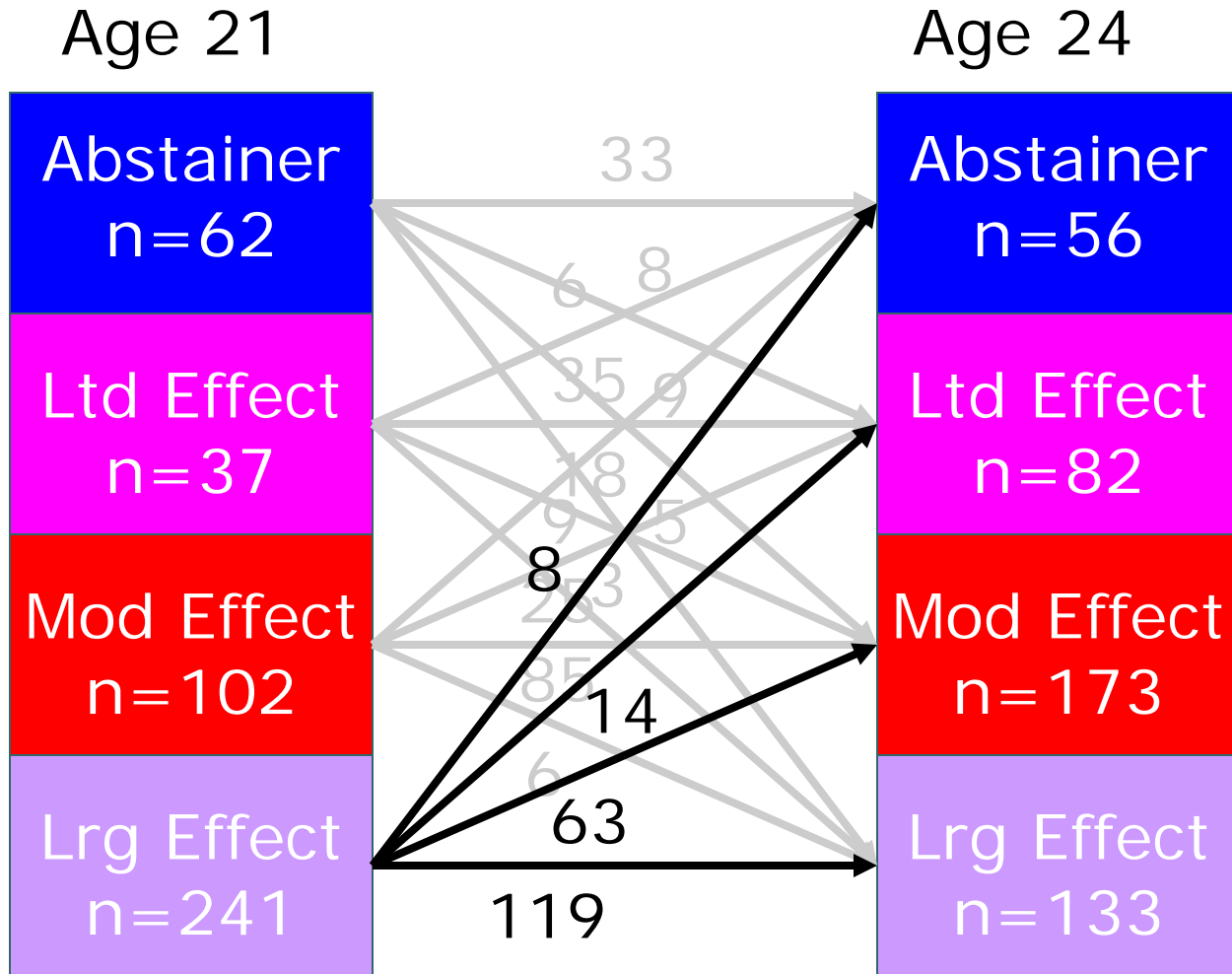
Where Do People Go?



Where Do People Go?



Where Do People Go?





What Patterns Do We See?

- Age 18 → Age 21
 - 261 remained stable
 - 72 progressed to more severe use
 - 108 regressed to less severe use
- Age 21 → Age 24
 - 272 remained stable
 - 49 progressed to more severe use
 - 128 regressed to less severe use



Group Differences

- **INITIAL STATUS:** Influence likelihood of heavy drinking initially (at Year 1)

First you take a drink, then the drink takes a drink, then the drink takes you.

-- F. Scott Fitzgerald

- **TRANSITION:** Shape persistence of, progression, or regression from heavy drinking throughout young adulthood



Group Differences in INITIAL STATUS

- Women less likely to be large-effect drinkers at Year 1
- No effect for family history (FH) of alcoholism



Group Differences in TRANSITION

- Women more likely to mature out of large-effect drinking over time
- Having FH delayed transition from large-effect drinking status to a less severe status



Illustrative Example 2: Alcohol Dependence

- Alcohol dependence typically perceived as progressive and chronic
- National Longitudinal Sample of Youth
 - Drinkers only (N=4,003; 60% male)
 - Two waves (1989; 1994), corresponded to ages 24-32 / 29-37

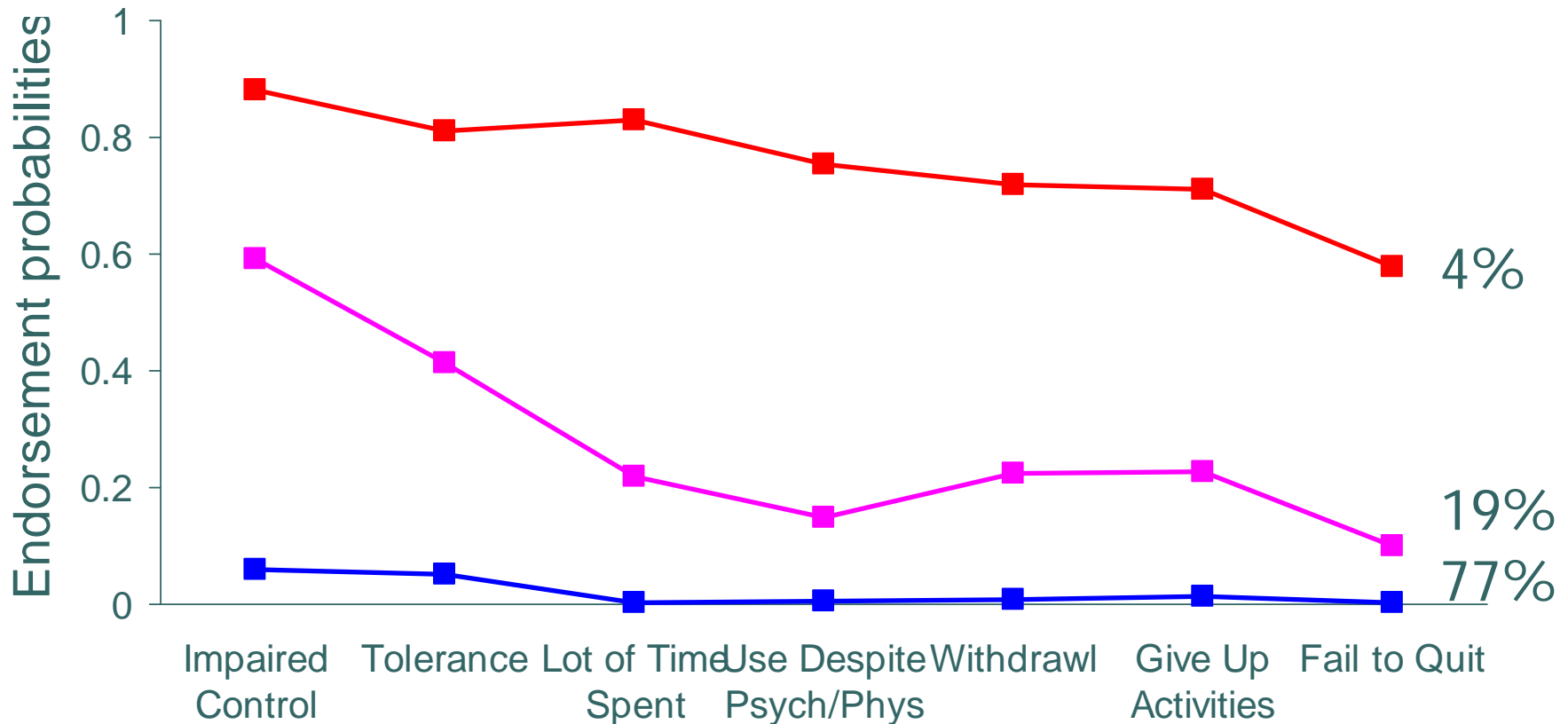


Alcohol Dependence Symptoms (past-year)

- Tolerance
- Withdrawal
- Using More or for Longer than Intended
- Desire to Quit/Failed Attempts to Cut Down or Quit
- Reduced Activities
- Continued Use Despite Consequences
- Great Deal of Time Spent Drinking or Getting Over Effects

How many classes?

What do the classes look like?



From Jackson, O'Neill, & Sher (2006)



Do individuals change classes over time?

	Stable	Progress	Recover
No dependence (77%)	89%	11%	--
Mild dependence (20%)	50%	10%	40%
Severe dependence (4%)	45%	--	55%



Group Differences in INITIAL STATUS

- Older participants more likely to be in non-dependent class
- Men more likely to be in affected classes
- No effect for race
- FH+ more likely to be in the mild or severe dependence groups



Group Differences in TRANSITION

- No effect for age
- Men more likely to progress from non-dependence to mild dependence
- Non-dependent Whites were more likely to remain so & less likely to progress to mild dependence than Blacks
- No effect for FH



Multiple Trajectory Approach

- Alcohol use can take multiple dynamic trajectories
- Trajectories reflect individual differences in development
- GOAL: Identify distinct, homogeneous subgroups

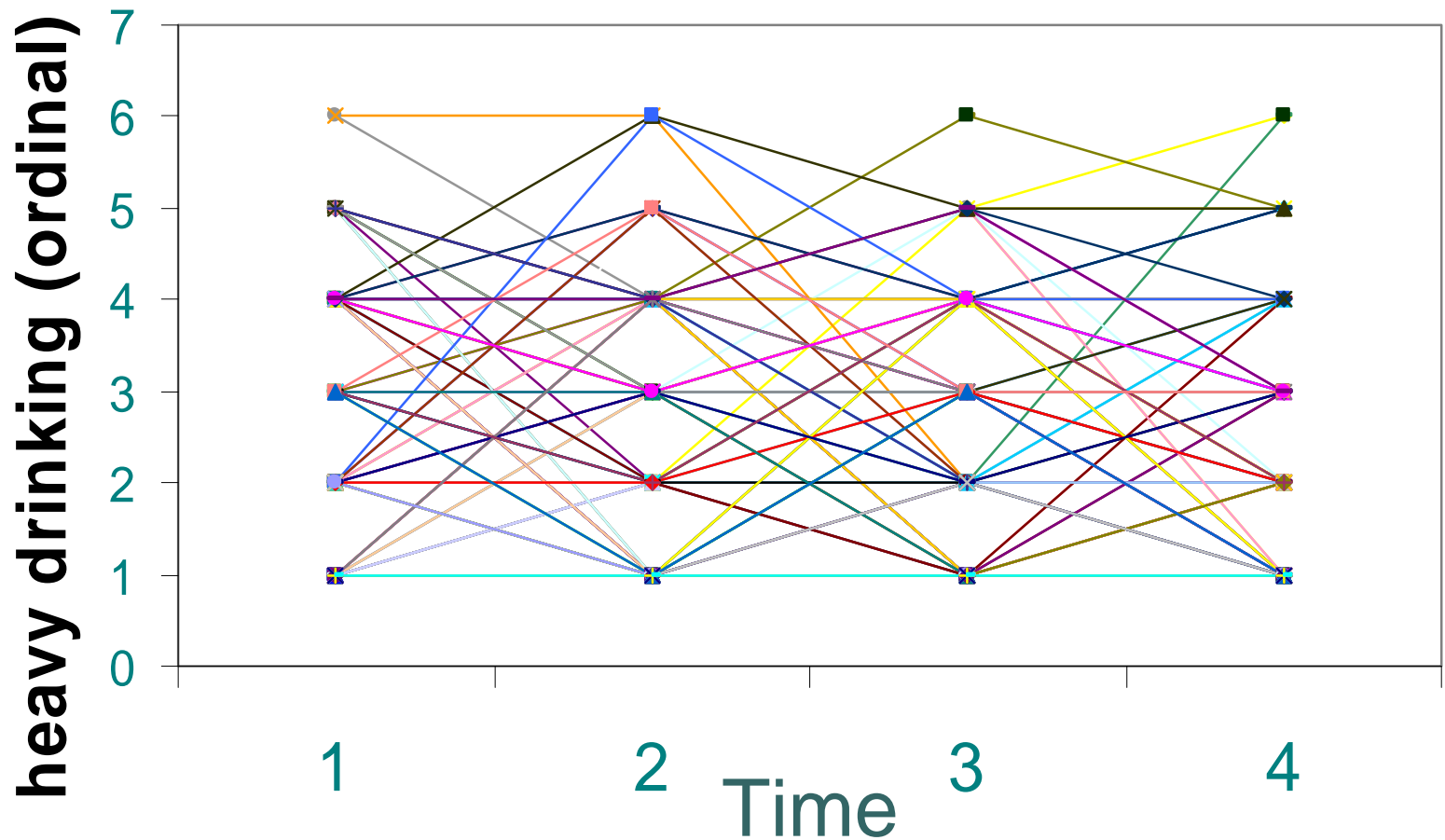
“There are two types of alcoholism researchers: Those who believe in two types of alcoholism and those who don’t.”



Illustrative Example 1: Heavy Alcohol Consumption

- Monitoring the Future (MTF) panel data
- Cohorts of high-school seniors
- Data taken from Waves 2-5 (Times 1-4)
 - Ages 18-20; 20-22; 22-24; 24-26
- Current study N=32,087 at Wave 1 (44% male; 82% White)

What if We Look at Everybody's Trajectory?



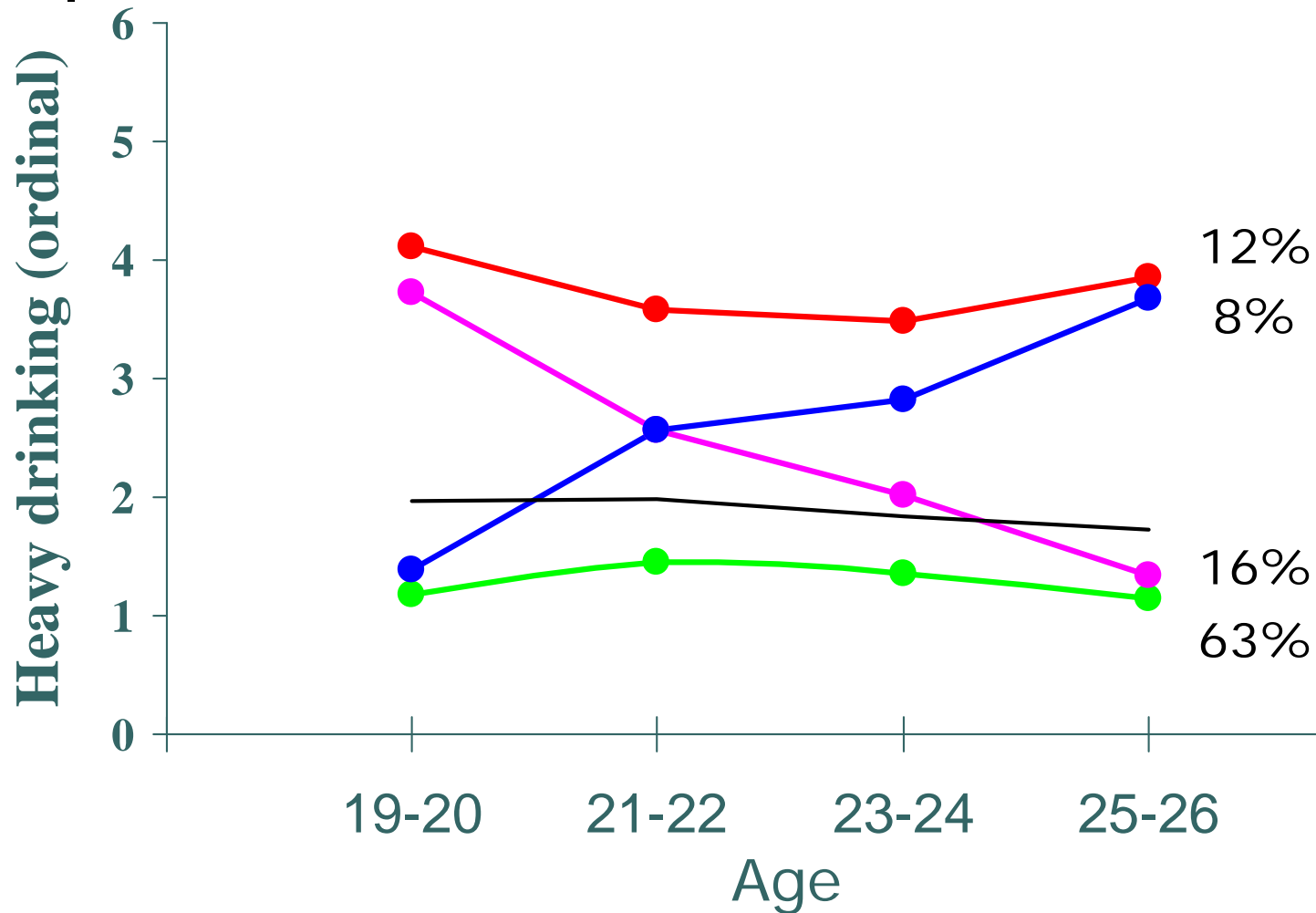
From Jackson, Sher, & Schulenberg (under review)



Latent Growth Mixture Modeling

- How many classes?
- What do the classes look like?
- How many individuals in each class?

Classify into 4 Heavy Drinking Courses (5+ drinks/2 weeks)



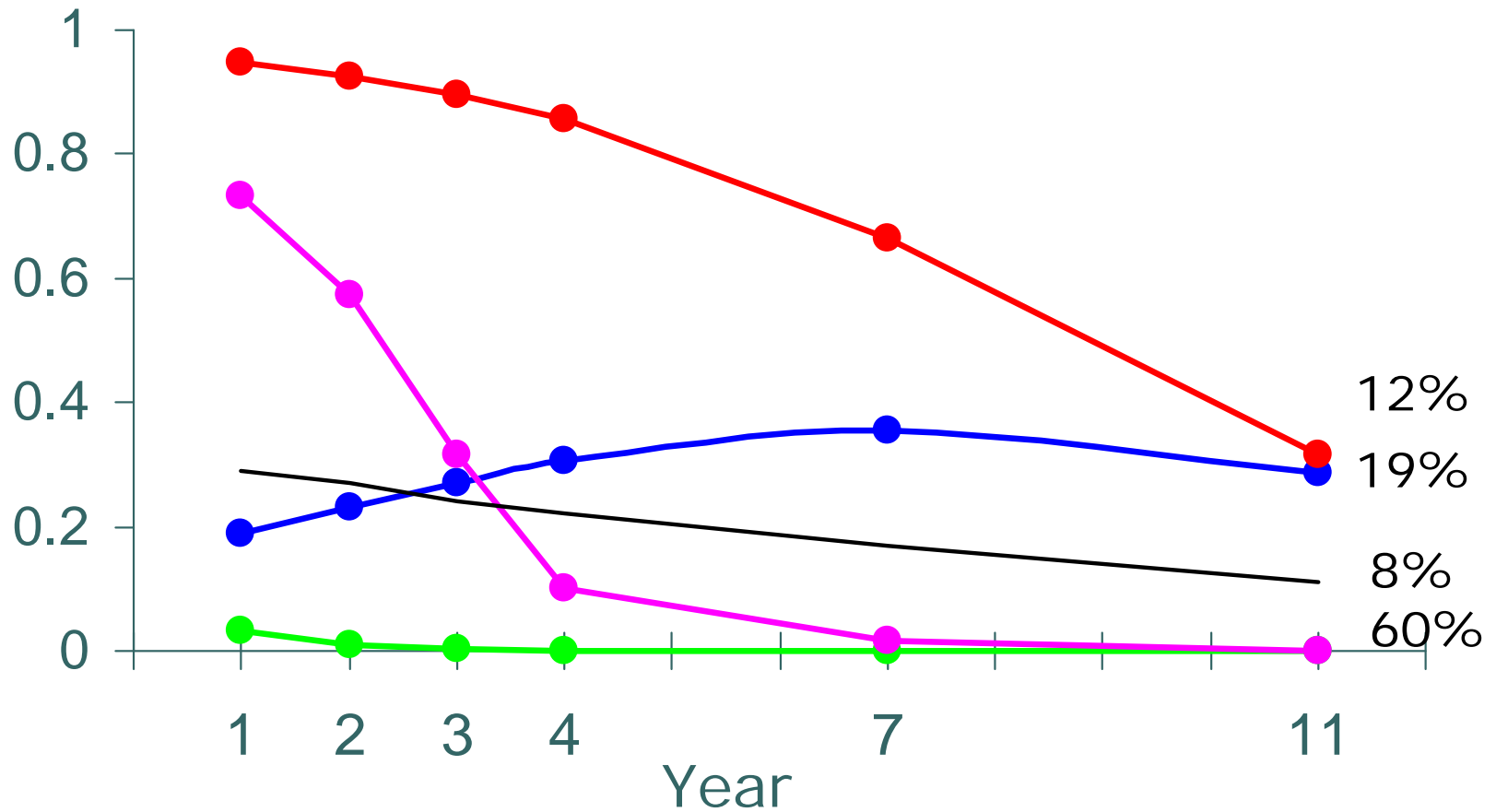
From Jackson, Sher, & Schulenberg (under review)



Illustrative Example 2: Alcohol Use Disorder

- Young adult sample (N=489; 46% male)
- Prospectively assessed at Years 1, 2, 3, 4, 7, & 11 (~ ages 18 – 28)
- DSM III Alcohol use disorder (AUD)

Latent Trajectories of AUD Diagnosis



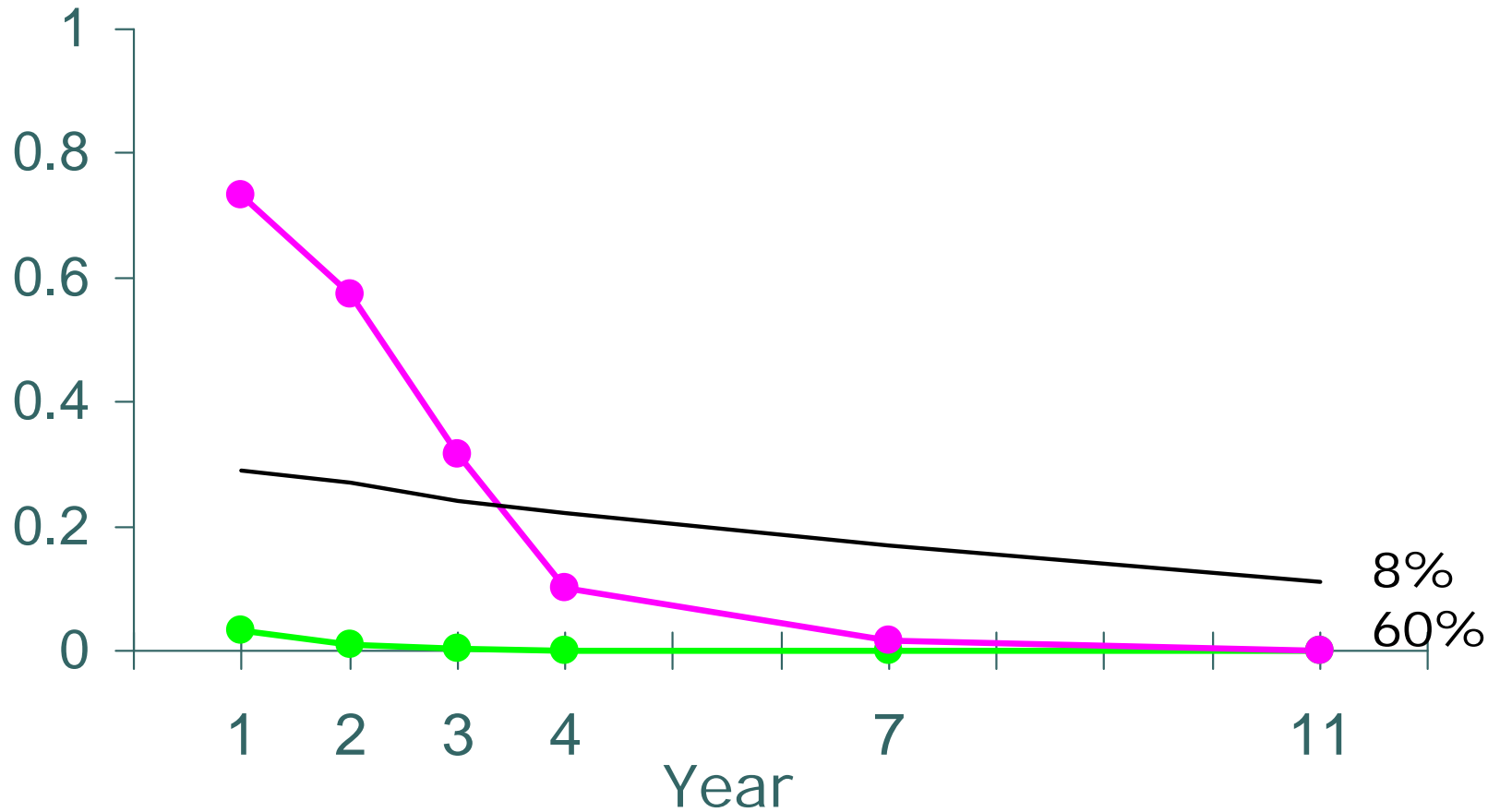
From Jackson & Sher (2005)



What Differentiates Courses?

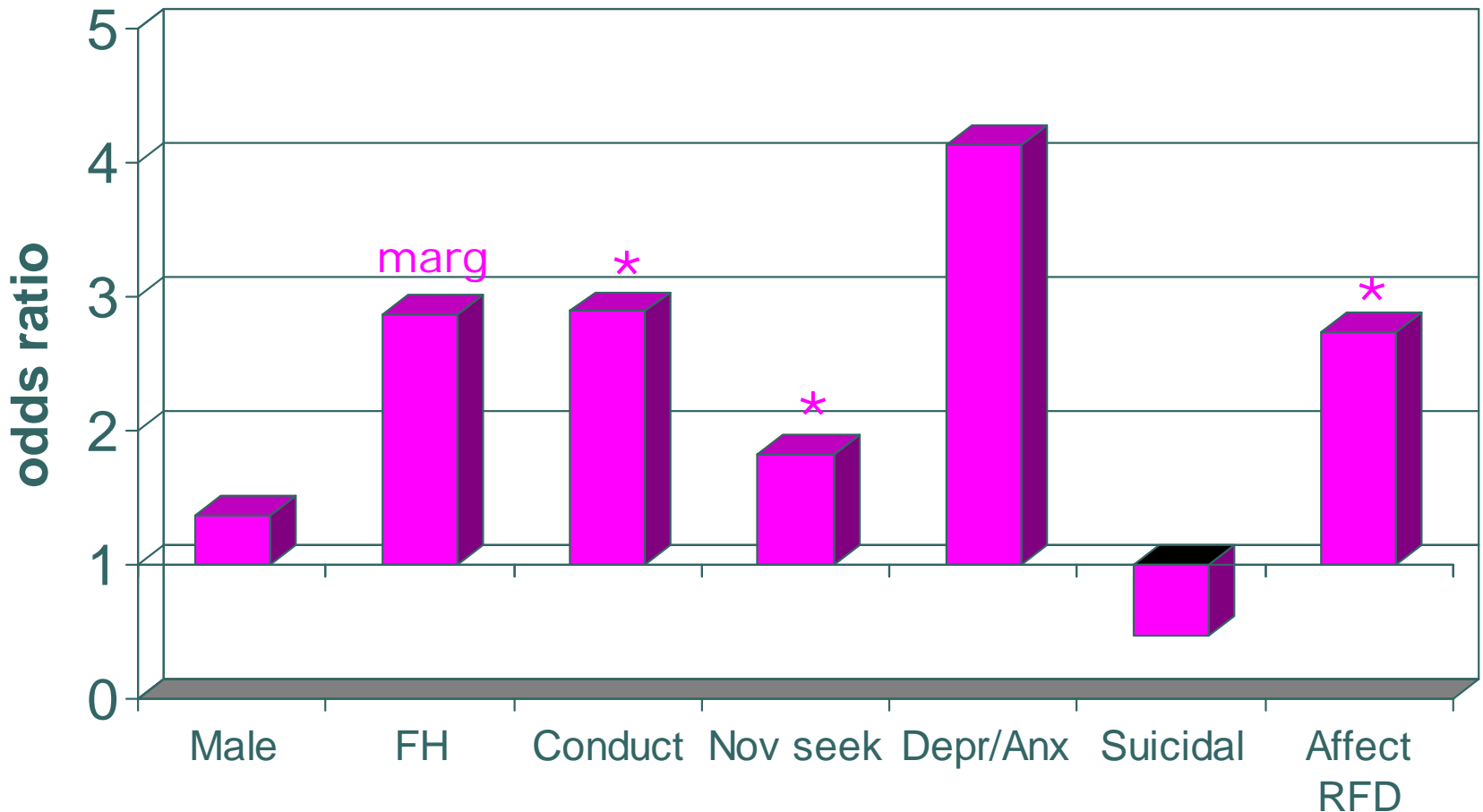
- Sex
- Family history of alcoholism
- Conduct disorder symptom count
- Novelty seeking
- Lifetime diagnosis with DSM-III depression or anxiety disorder
- Presence of suicidal thoughts in lifetime
- Affect-regulation reasons for drinking

Developmentally Limited vs. Non-diagnose



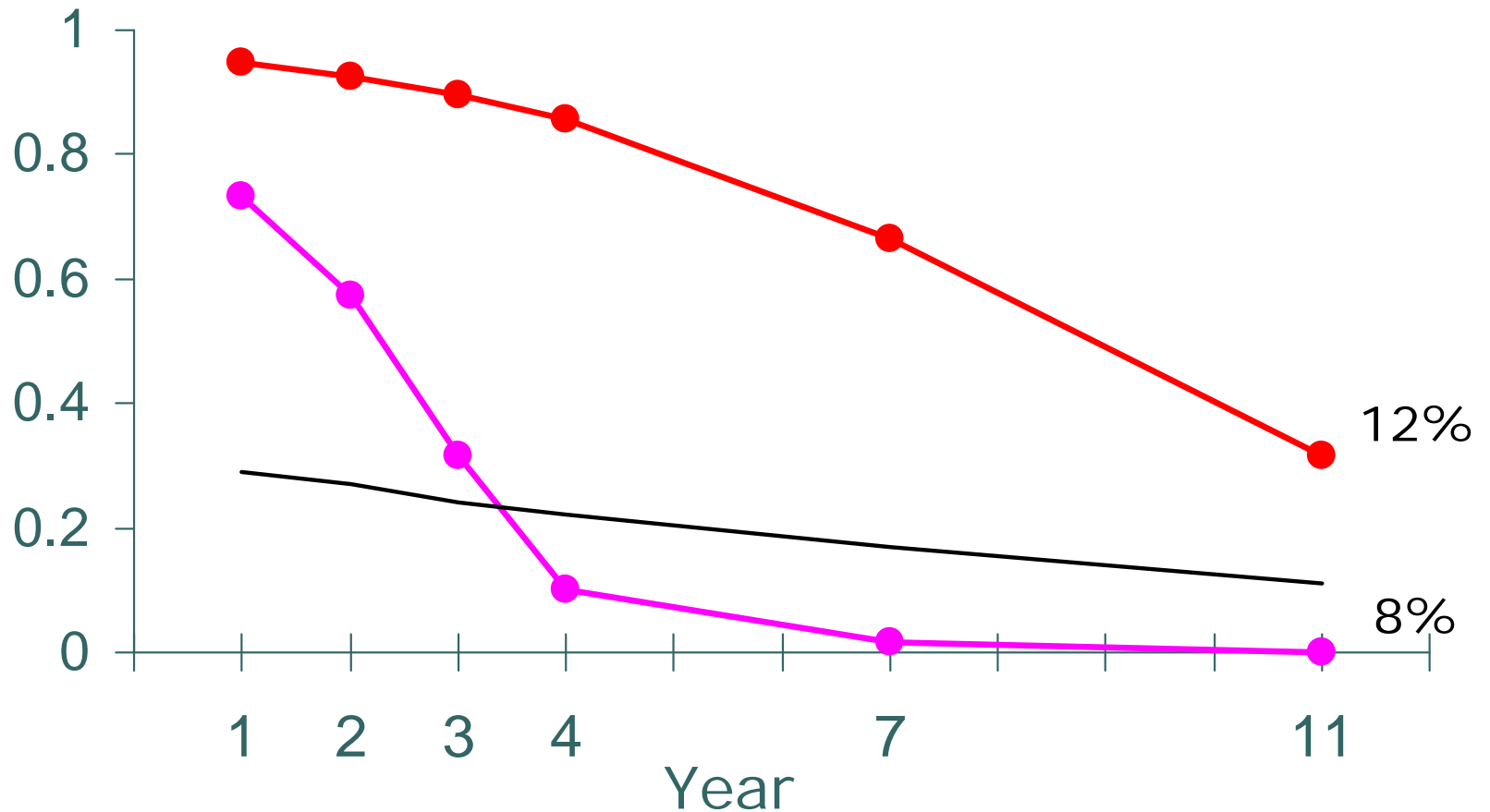
From Jackson & Sher (2005)

Prediction by Risk Factors



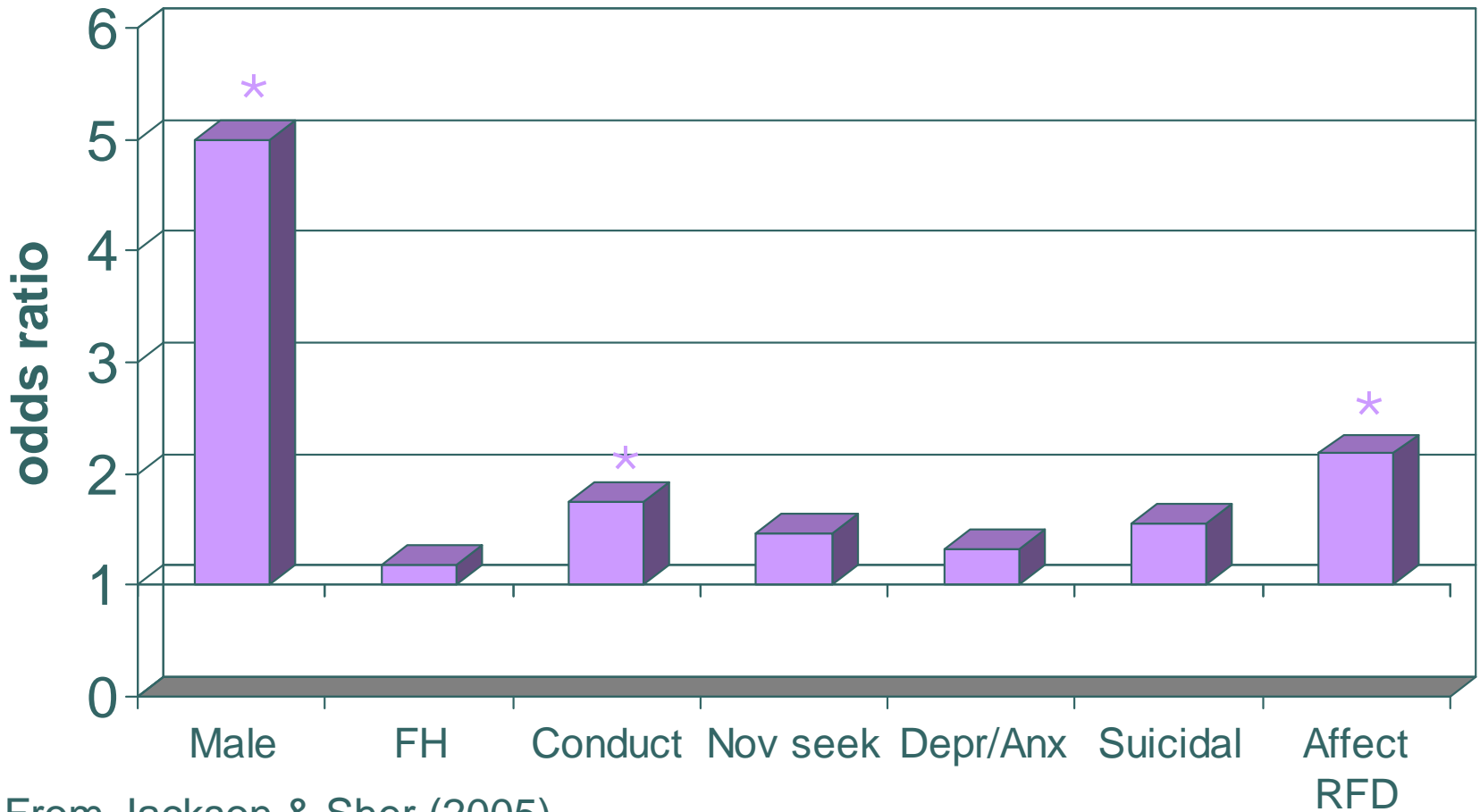
From Jackson & Sher (2005)

Chronic vs. Developmentally Limited



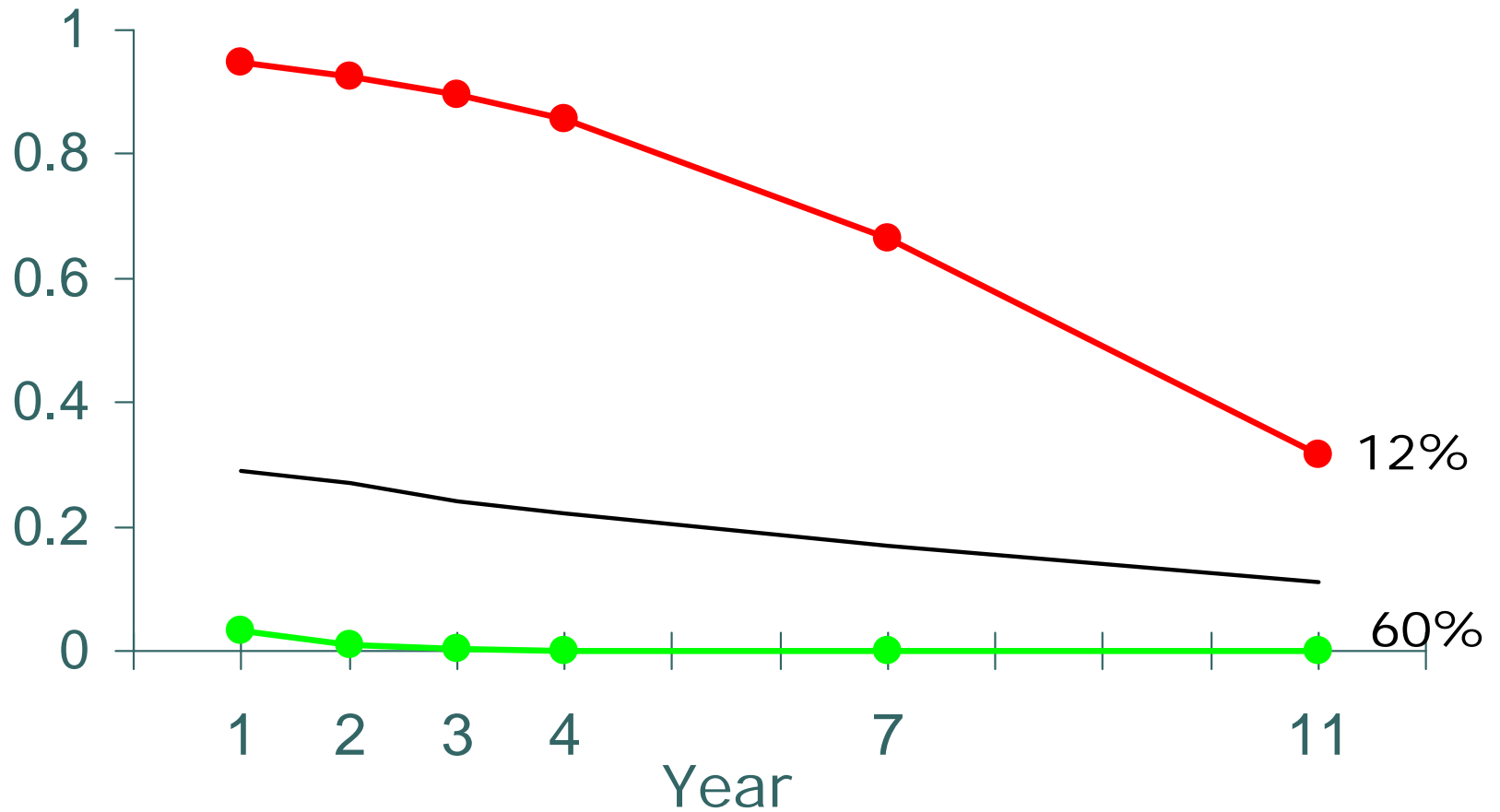
From Jackson & Sher (2005)

Prediction by Risk Factors



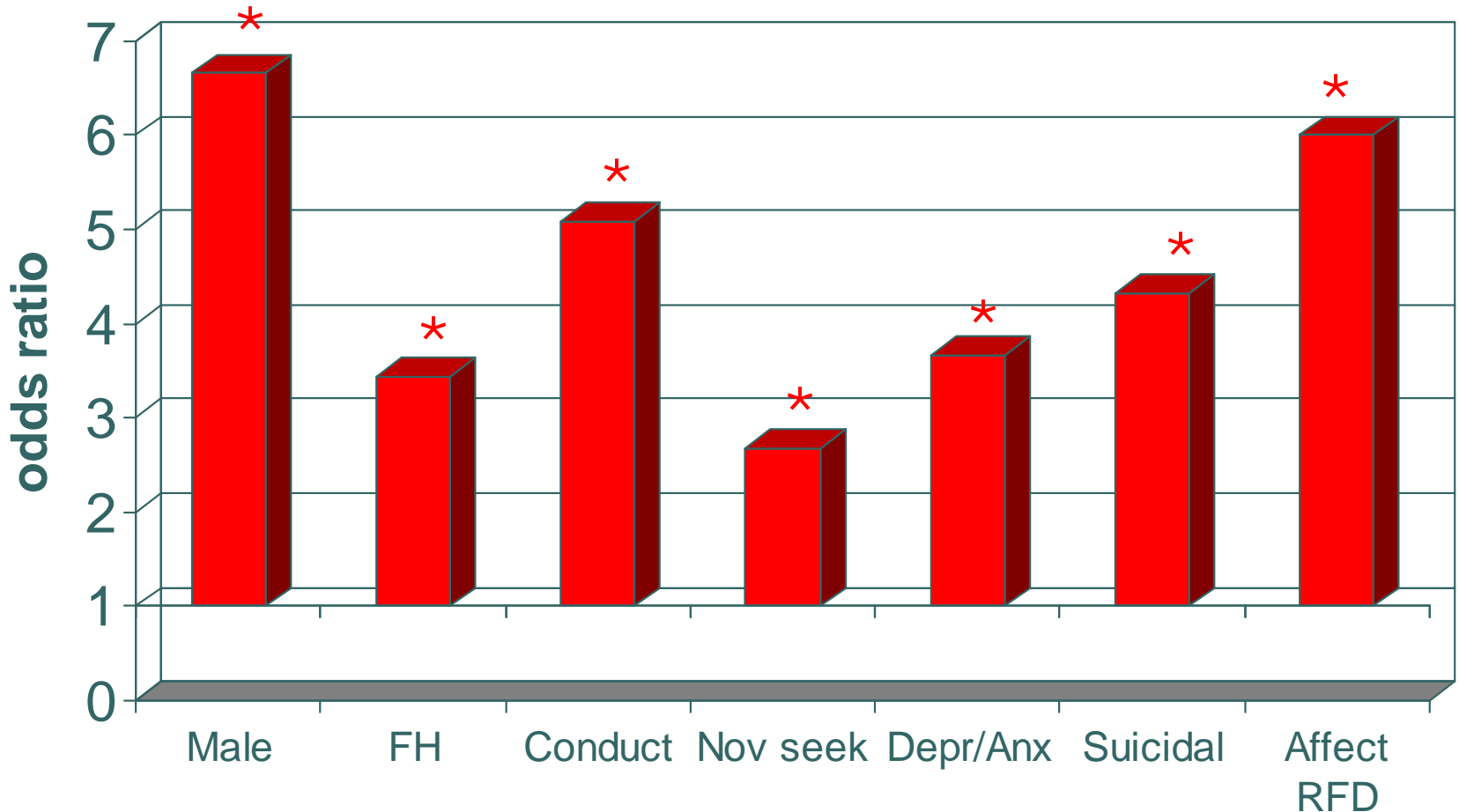
From Jackson & Sher (2005)

Chronic High vs. Non-diagnose



From Jackson & Sher (2005)

Prediction by Risk Factors



From Jackson & Sher (2005)



Considerations

- Take care not to over-reify these trajectories
 - What if different measures?
 - What if different developmental phase?
 - What if different timespan (interval, number of waves)?
- Critical to use theory to guide research



Do trajectories based upon different measures...

- Look the same?
- Have the same prevalences?
- Identify the same people?
- Have the same correlates?



Indices of Alcohol Involvement

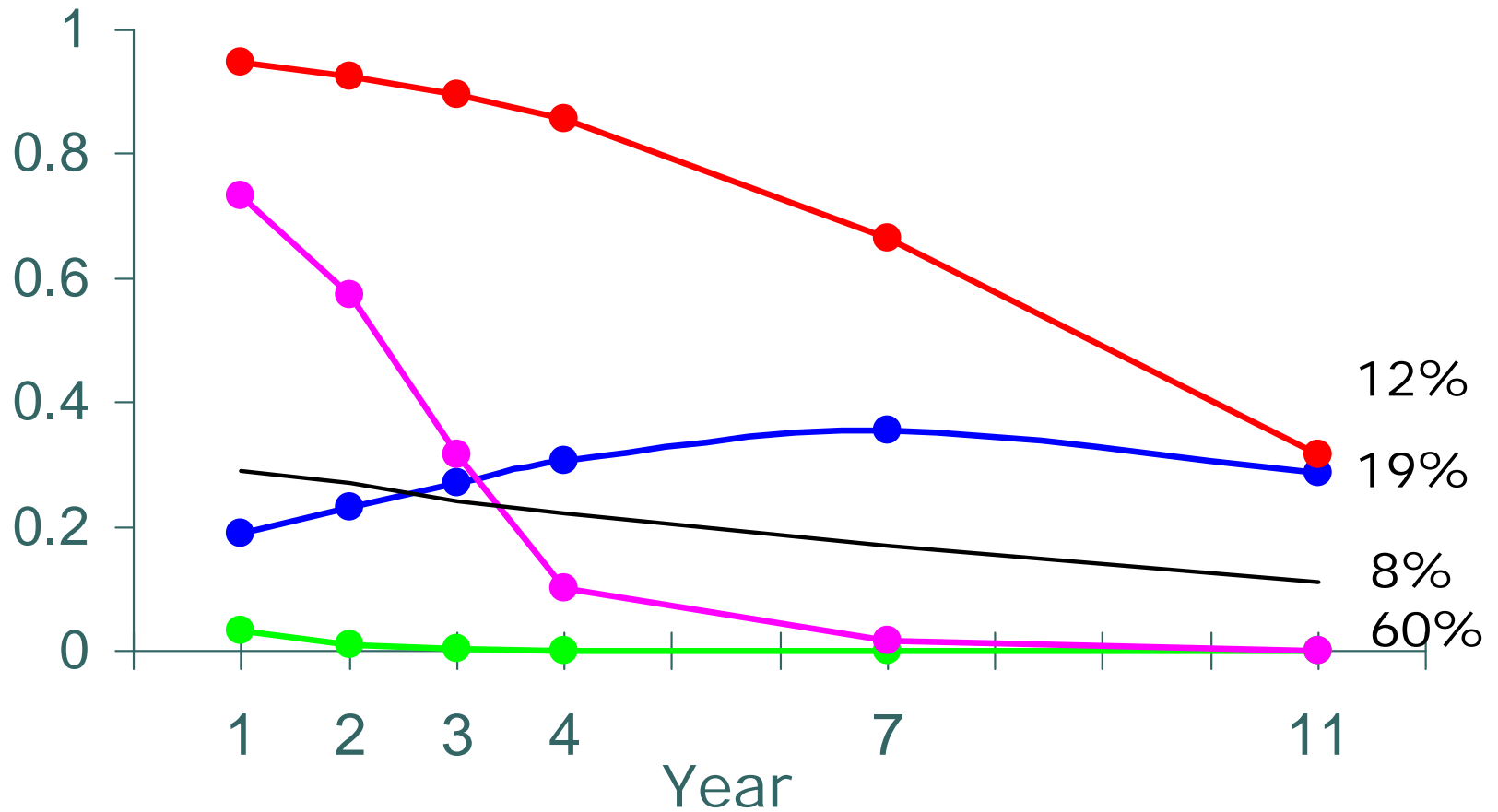
- Alcohol use disorder (AUD)
- AUD symptom count

Interview-
based

- Alcohol consequences
- Alcohol dependence
- Alcohol quantity-frequency
- Heavy drinking

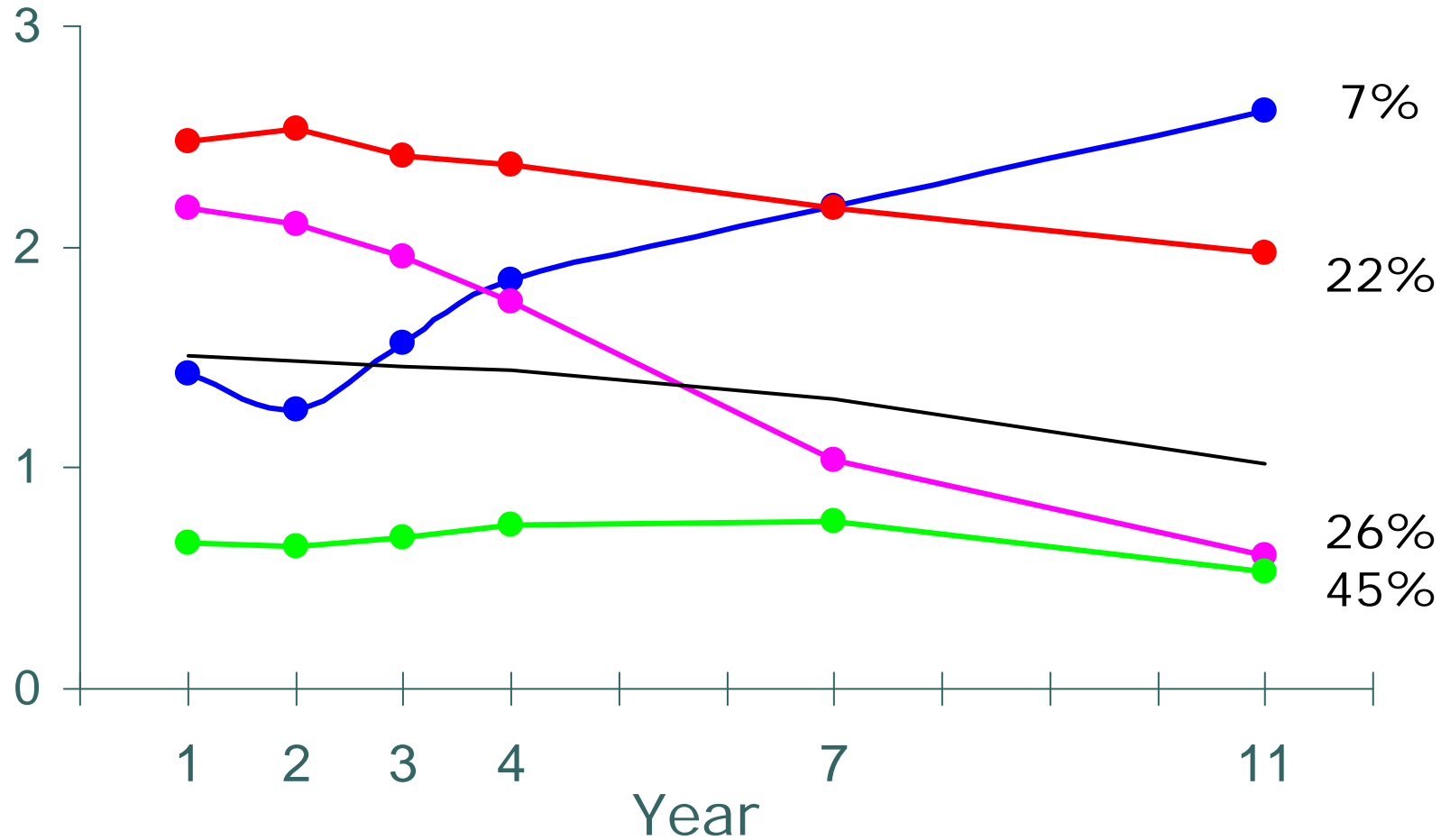
Questionnaire-
based

AUD Diagnosis



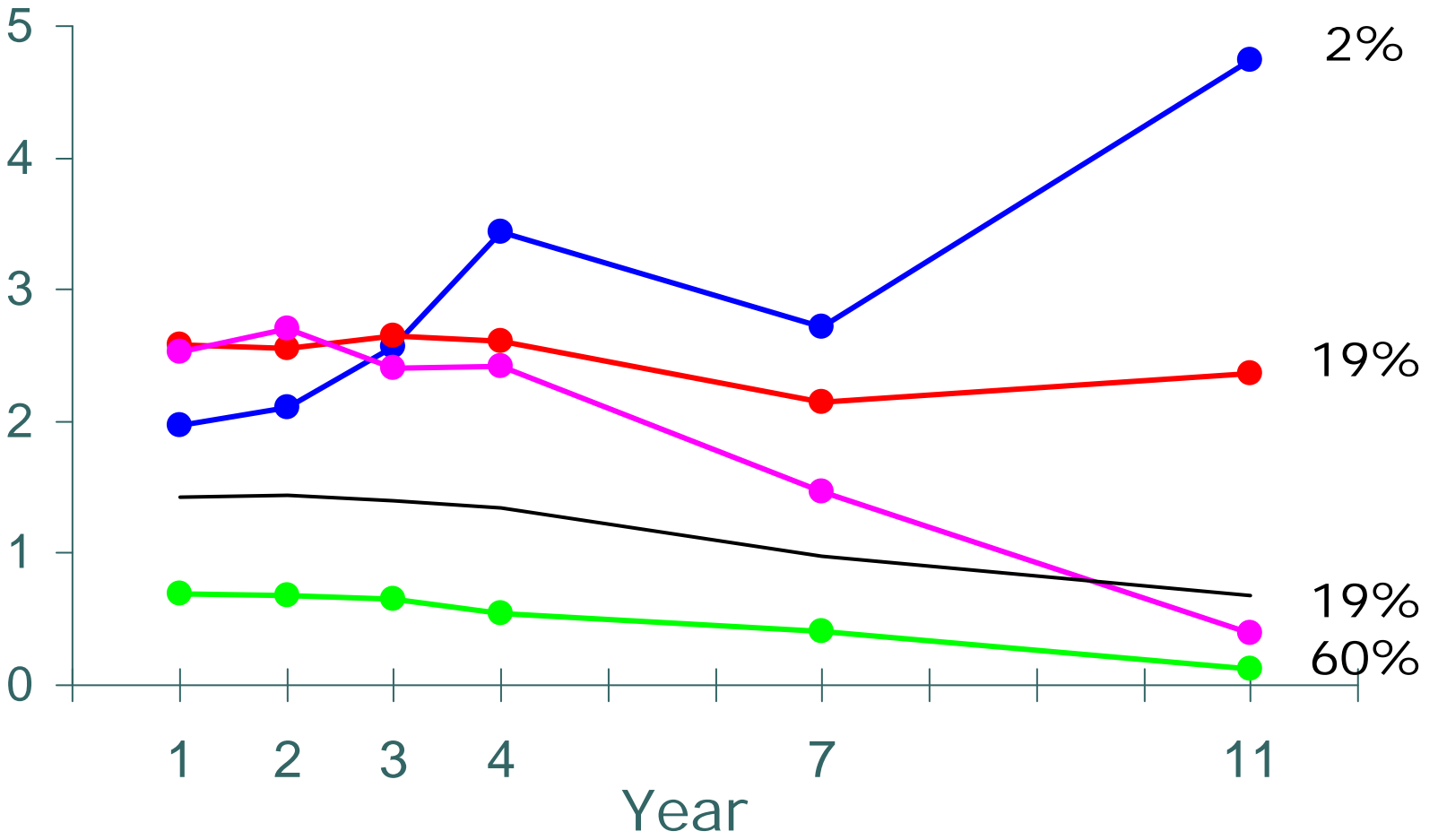
From Jackson & Sher (2005)

Alcohol Quantity-Frequency



From Jackson & Sher (2005)

Heavy Drinking



From Jackson & Sher (2005)



Comparison of Trajectories (Cohen's κ)

	AUD	Alc depnd	Alc conseq	Alc qf	Heavy drink
--	-----	--------------	---------------	--------	----------------

AUD

Alc depend

.26

Alc conseq

.30

.54

Alc quant-freq

.32

.31

.32

Heavy drinking

.28

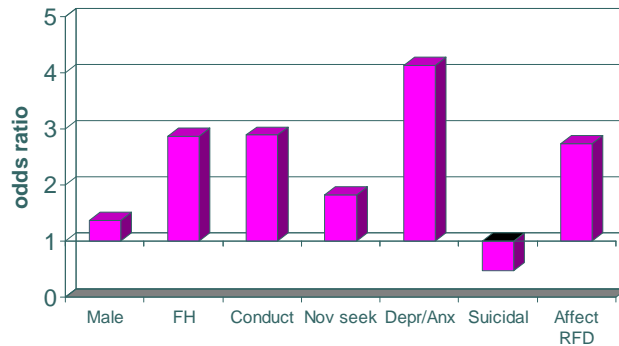
.38

.38

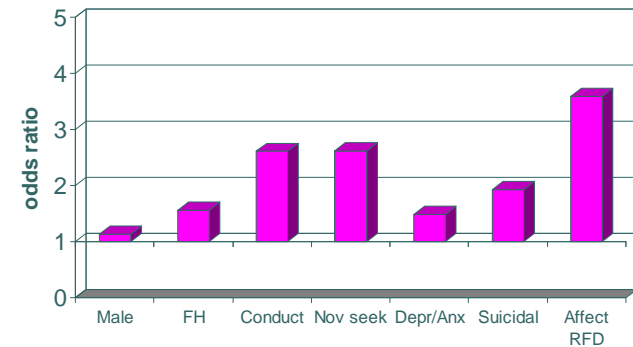
.50

Developmentally Limited vs. Non-Diagnose

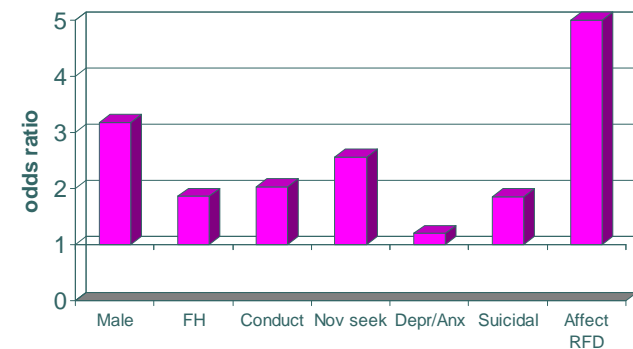
Alcohol Use Disorder



Alcohol Quantity-Frequency

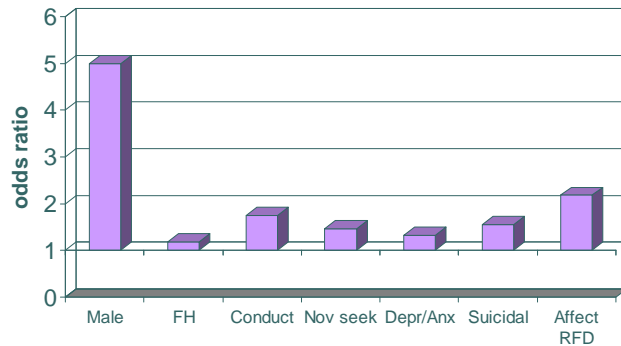


Heavy Drinking

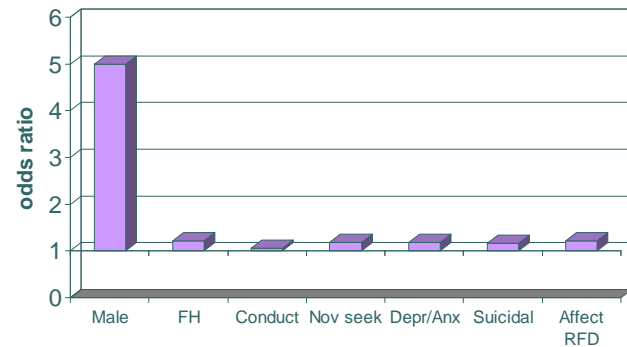


Chronic vs. Developmentally Limited

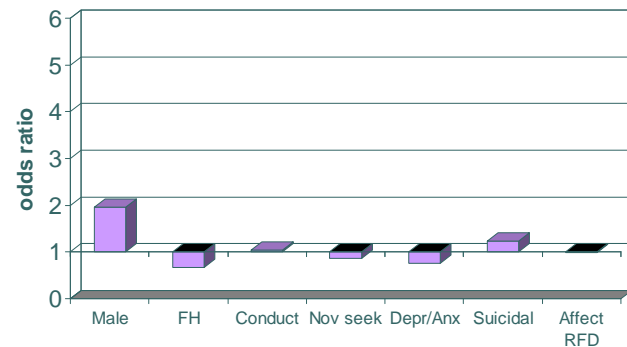
Alcohol Use Disorder



Alcohol Quantity-Frequency

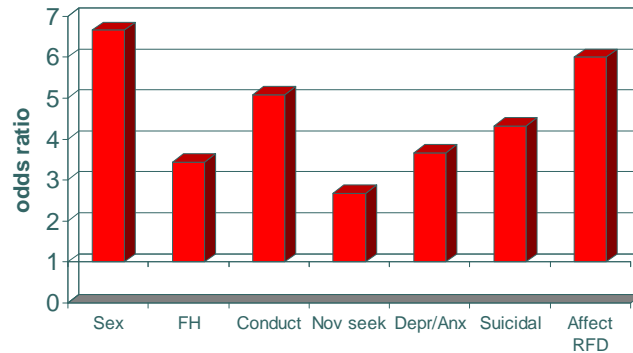


Heavy Drinking

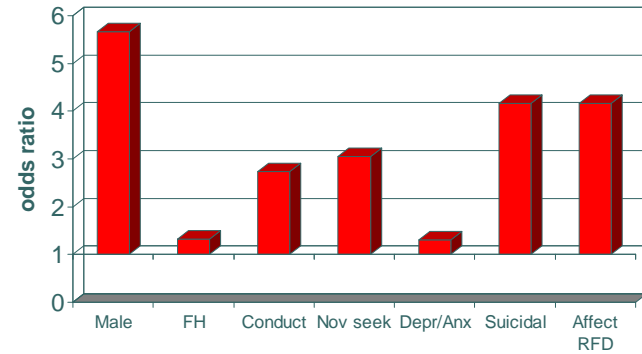


Chronic vs. Non-Diagnose

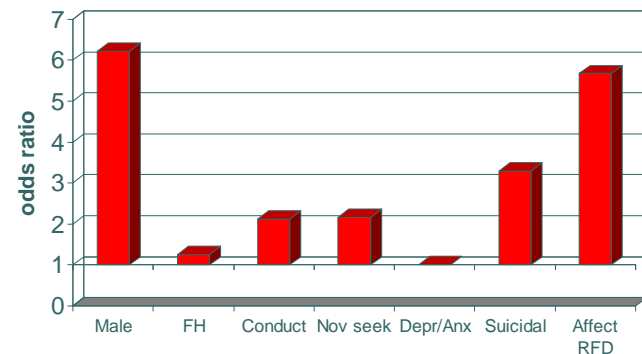
Alcohol Use Disorder



Alcohol Quantity-Frequency



Heavy Drinking





Should We Be Concerned?

- Similar courses were observed
- Predicted prevalences varied considerably
- Small to moderate agreement among trajectories based upon different indices
- BUT, roughly similar patterns of prediction across trajectories



Conclusion

- Individuals show dramatic change in alcohol involvement over emerging adulthood
- Factors such marriage, parenthood, school departure explain change
- We can account for unexplained variability in change by modeling inter-individual differences in intra-individual change



Thank you to my collaborators:

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Phil Wood

As well as:

Courtney Bagge

Bruce Bartholow

Amee Epler

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