

PROJECTING THE NUMBER OF SUBSTANCE DEPENDENT INDIVIDUALS AND HEALTH CARE COSTS OF SUBSTANCE ABUSE

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Purpose of the Study

2

- Provide estimates of future numbers of young adults with substance abuse/dependence through 2015
- Provide estimates of health care/treatment costs due to abuse/dependence in 2015
- Inform current need for substance abuse prevention to lower these future costs

Broad Approach

3

- Project levels of substance abuse/dependence among young adults in the U.S. based on observed behaviors of the same cohort during past years
 - ▣ Ages: 20 and 24/25
 - ▣ Substances: Nicotine, Alcohol, Illicit Drugs

- Data Sources
 - ▣ National Survey on Drug Use and Health (NSDUH)
 - ▣ Census population projections

Analytic Procedure

Step 1

4

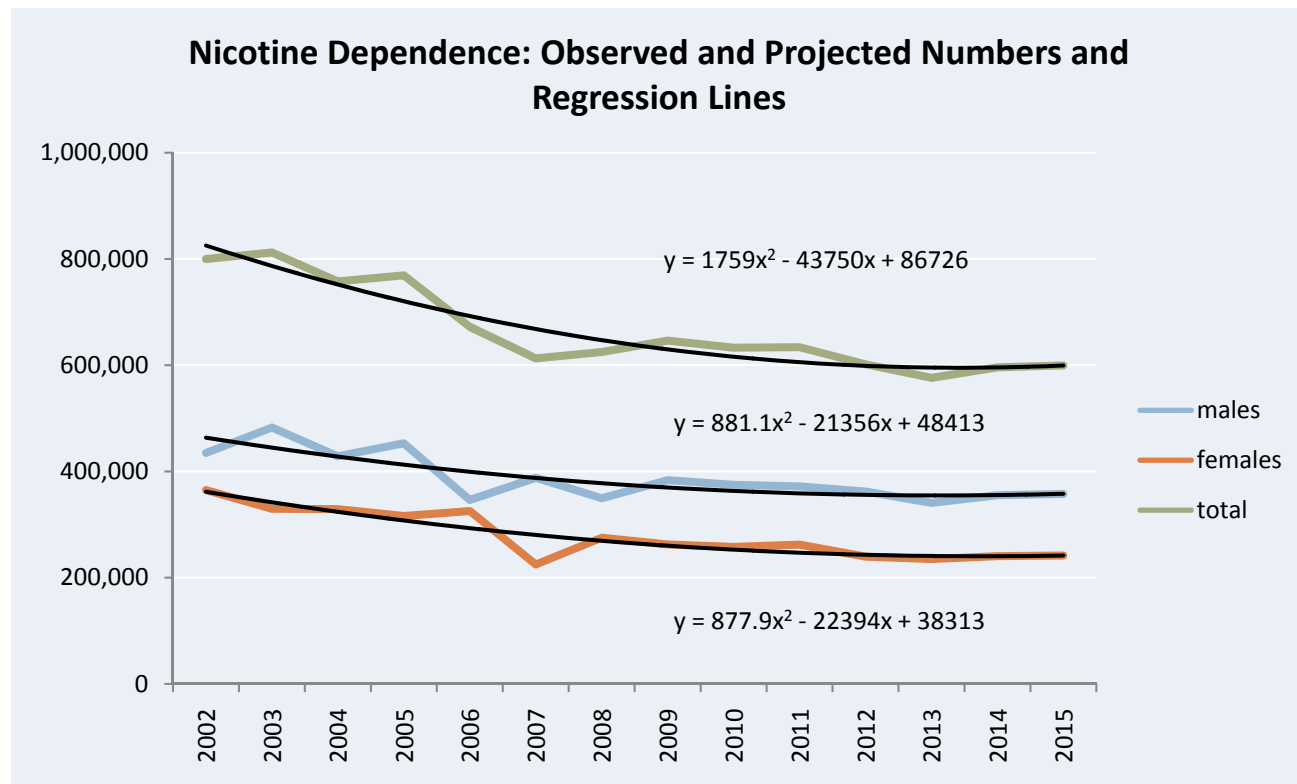
- Replication of the Minugh, Lomuto, and Janke Kansas study (in press) at national level
 - ▣ predicted substance abuse/dependence prevalence rates at age 20 based on problem behaviors before age 15
 - initiation of tobacco, alcohol, illicit drug use, contact with police
 - by gender
 - from 2009 to 2013
 - ▣ used prediction probabilities calculated from Minnesota Twin Family Study data (McGue and Iacono, 2005) adjusted for national sample (NSDUH) to project prevalence of dependence/abuse at age 20 based on levels of early initiation at age 15 five years earlier
 - ▣ computed projected numbers of 20-year-olds with abuse/dependence using U.S. Census population estimates

Analytic Procedure

Step 2

5

- Used regression technique to extrapolate to 2014 and 2015



Analytic Procedure

Step 3

6

- Calculated gender-specific transitional probabilities of dependence/abuse at ages 24/25 given the same cohort's levels of dependence/abuse at age 20
- Predicted substance abuse/dependence prevalence rates at ages 24/25 through 2015 using the cohort-based probabilities
- Applied projected prevalence rates to Census population projections to estimate numbers of 24/25-year-olds with substance abuse disorders

Results: Early Problem Behaviors

7

- Number of problem behaviors before age 15 predict substance abuse/dependence at age 20
 - ▣ 12% of males with no early problem behaviors are expected to develop alcohol abuse/dependence by age 20
 - ▣ 50% of males with all four behaviors before age 15 are expected to develop alcohol abuse/dependence by age 20
 - ▣ 4% of females with no early problem behaviors are expected to develop alcohol abuse/dependence by age 20
 - ▣ 34% of females with all four early behaviors before age 15 are expected to develop alcohol abuse/dependence by age 20

Results: Nicotine

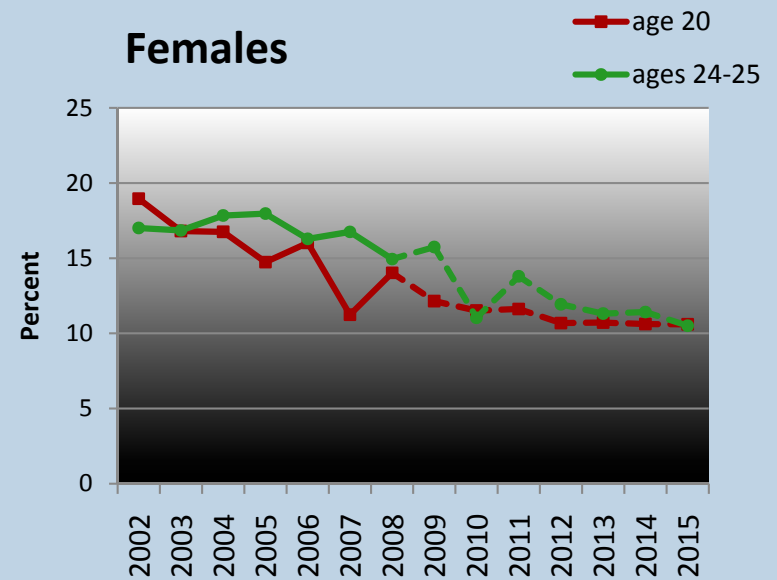
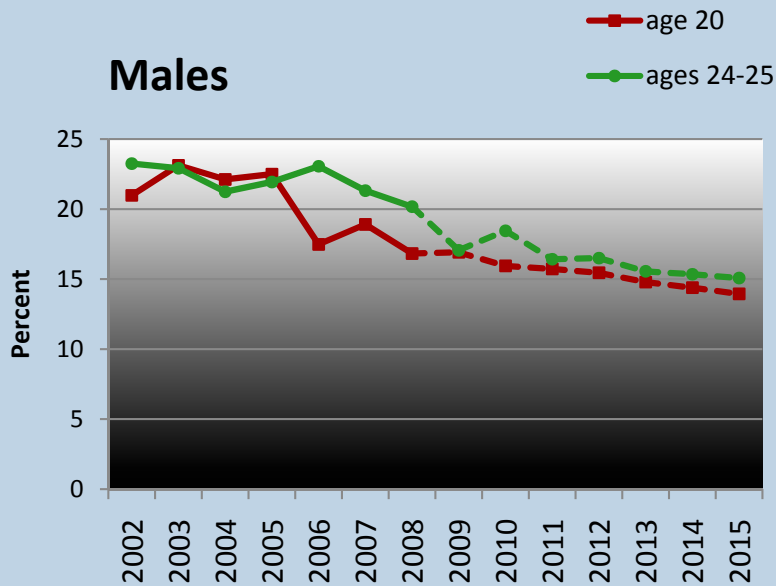
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- Declines in nicotine dependence
 - ▣ Observed between 2002 and 2008
 - ▣ Projected between 2009 and 2015
- Similar rates of decline for both genders and age groups
- Males more likely to develop nicotine dependence than females given comparable rates of problem behaviors at age 15

	2002	2008	2015
Age 20	20.0% (800,000)	15.5% (625,000)	11.6% (600,000)
Age 24/25	19.9% (1,361,000)	17.6% (1,354,000)	12.8% (1,108,000)

Results: Nicotine

Prevalence of Nicotine Dependence, Ages 20 and 24-25, by Gender



Note: Estimates from 2002 to 2008 are observed (solid lines). Estimates from 2009 to 2015 are projected (dotted lines).

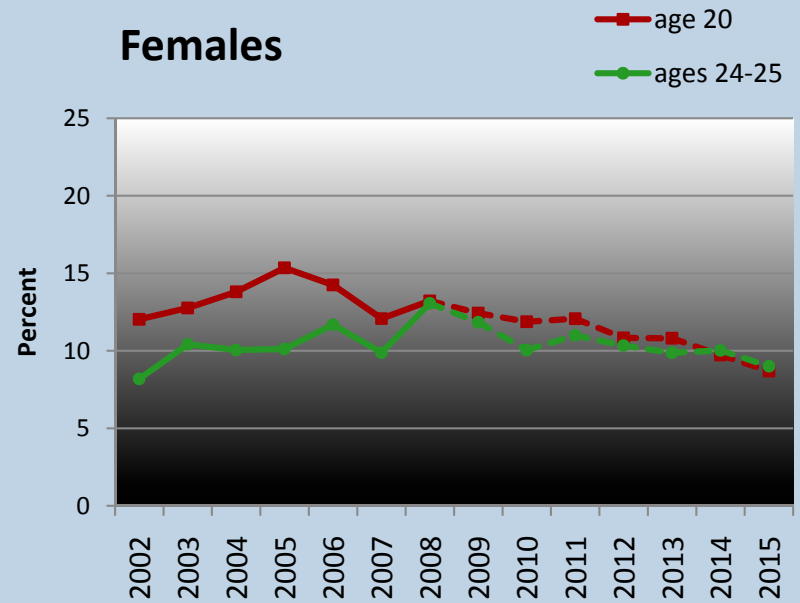
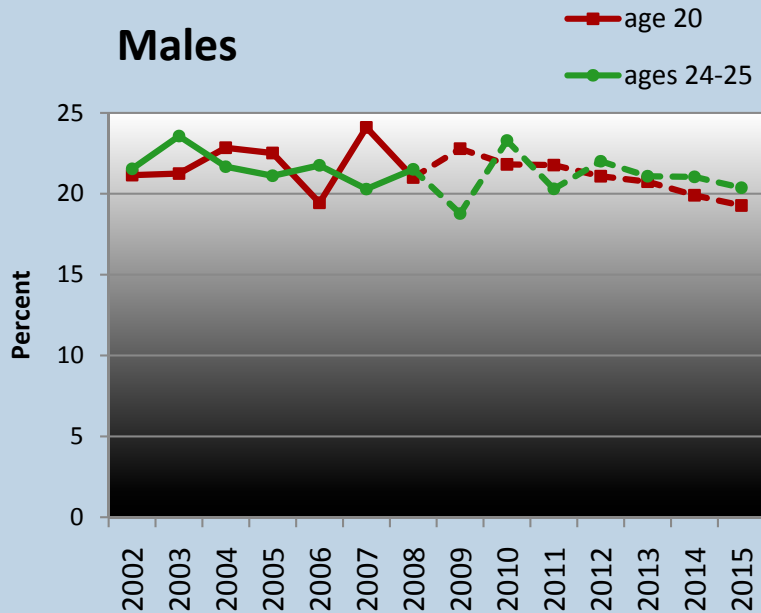
Results: Alcohol and Illicit Drugs

10

- Fairly stable alcohol and drug abuse/dependence rates
- Females age 20 appear to show slight declines in alcohol abuse/dependence rates between 2002 and 2015
- 20-year-olds are more likely to develop illicit drug abuse/dependence than 24/25-year-olds
- Males from both age groups more likely to develop alcohol and drug abuse/dependence than females from both age groups

Results: Alcohol

Prevalence of Alcohol Abuse/Dependence, Ages 20 and 24-25, by Gender

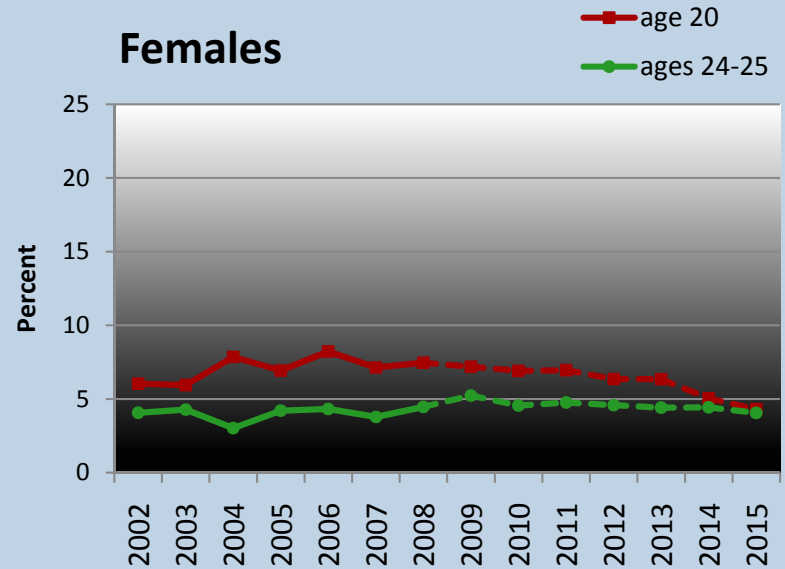
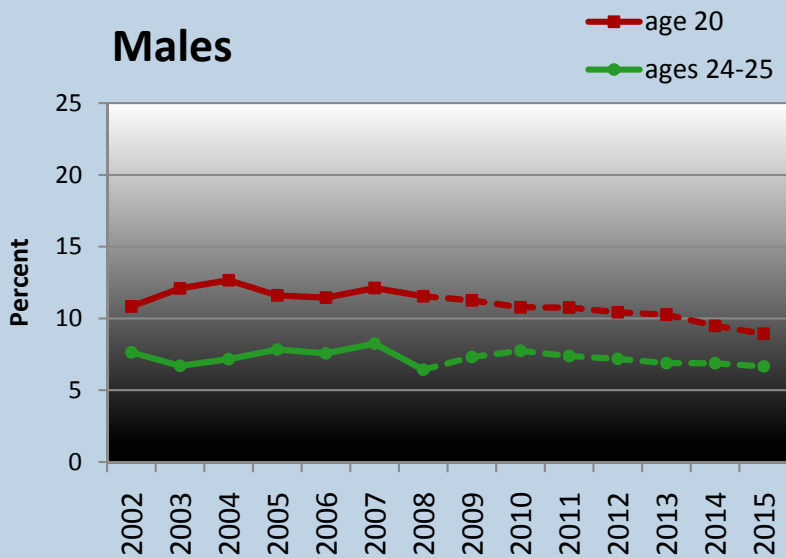


Note: Estimates from 2002 to 2008 are observed (solid lines). Estimates from 2009 to 2015 are projected (dotted lines).

Results: Illicit Drugs

12

Illicit Drug Abuse/Dependence, Males Ages 20 and 24 and 25, by Gender



Note: Estimates from 2002 to 2008 are observed (solid lines). Estimates from 2009 to 2015 are projected (dotted lines).

Discussion: Nicotine

13

- Declines in nicotine dependence supported/explained by:
 - ▣ increases in average age of first use of tobacco between 2002 and 2008
 - ▣ increases in adolescents' perceptions of risk of harm of smoking and disapproval of peer smoking between 2002 and 2008
 - ▣ decreases in perceived availability of cigarettes between 2002 and 2008
 - ▣ increased bans and restrictions on public smoking in all states
 - ▣ increased enforcement of the Synar Amendment
 - ▣ other prevention strategies funded by 1998 Master Settlement Agreement

Discussion: Alcohol and Illicit Drugs

14

- Lack of substantial change in alcohol and drug abuse/dependence suggests increased need for prevention
 - ▣ very small or no change in average age of initiation of first use of alcohol and illicit drugs between 2002 and 2008
 - ▣ very small increases in perceptions of risk of harm and disapproval of peer alcohol and drug use between 2002 and 2008
 - ▣ use Synar-like approach to prevent sales of alcohol to minors

Cost Estimates Based on Substance Abuse/Dependence Projections

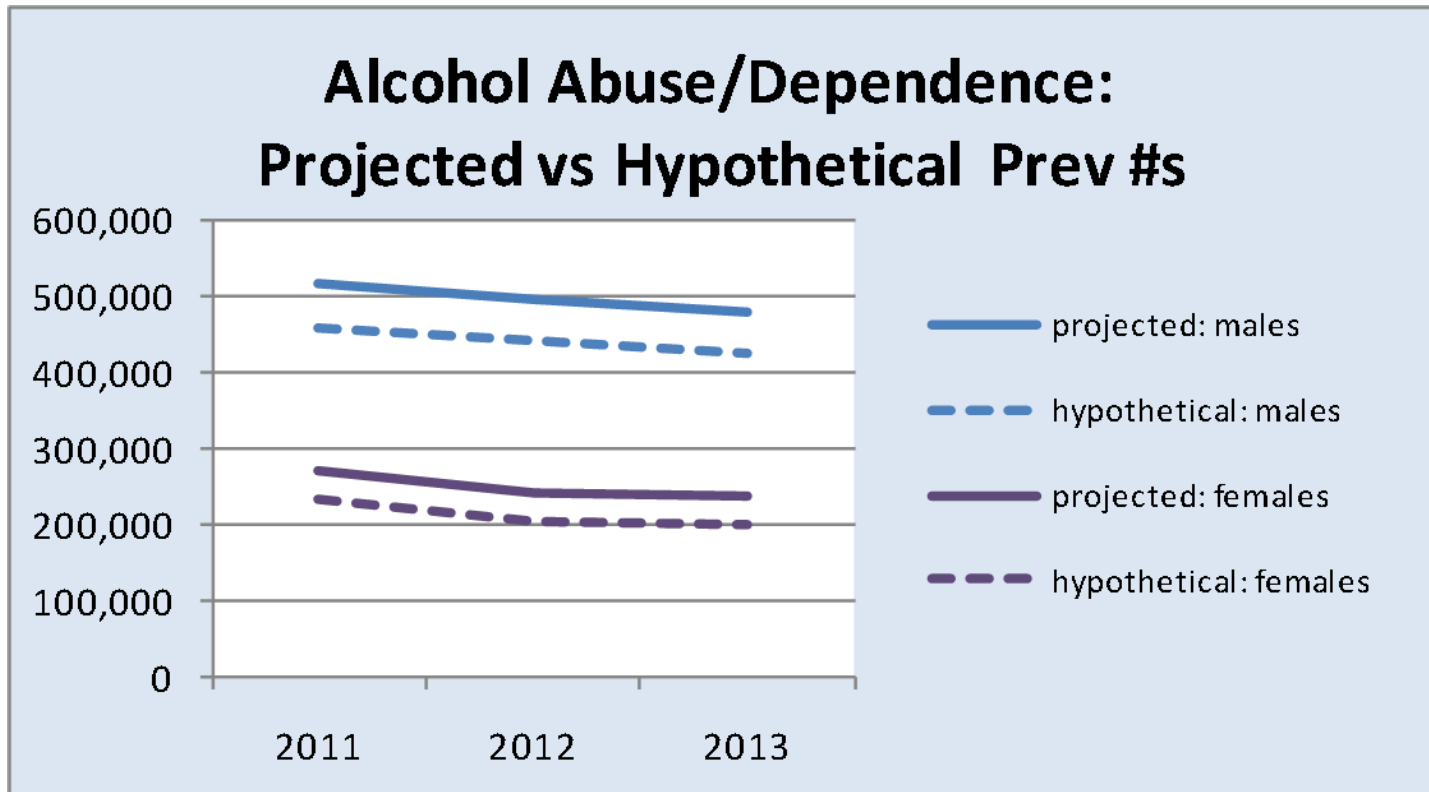
15

- **OUTLINE OF PROCEDURE: (1) use estimates of health care and treatment costs for tobacco (1998), alcohol (1998), and illicit drug abuse (2002)**
 - Tobacco: CDC (2002) Annual Smoking-Attributable Mortality, Years of Potential Life Lost, and Economic Costs - United States, 1995-1999 (MMWR v. 51 No. 14, 300-303)
 - Alcohol: Harwood, H. Updating Estimates of the Economic Costs of Alcohol Abuse in the U.S., Lewin Group, 2000.
 - Drugs: Harwood, Bouchery, et al. Office of National Drug Control Policy (2004). The Economic Costs of Drug Abuse in the United States, 1992-2002. Washington, DC: Executive Office of the President
- **(2) use these estimates to calculate cost per person in 2011 – 2015 (adjusted for price increases), multiply by projected prevalence numbers of 20-year-olds with abuse/dependence in these years**

Cost Savings Impact of Increased Prevention Efforts

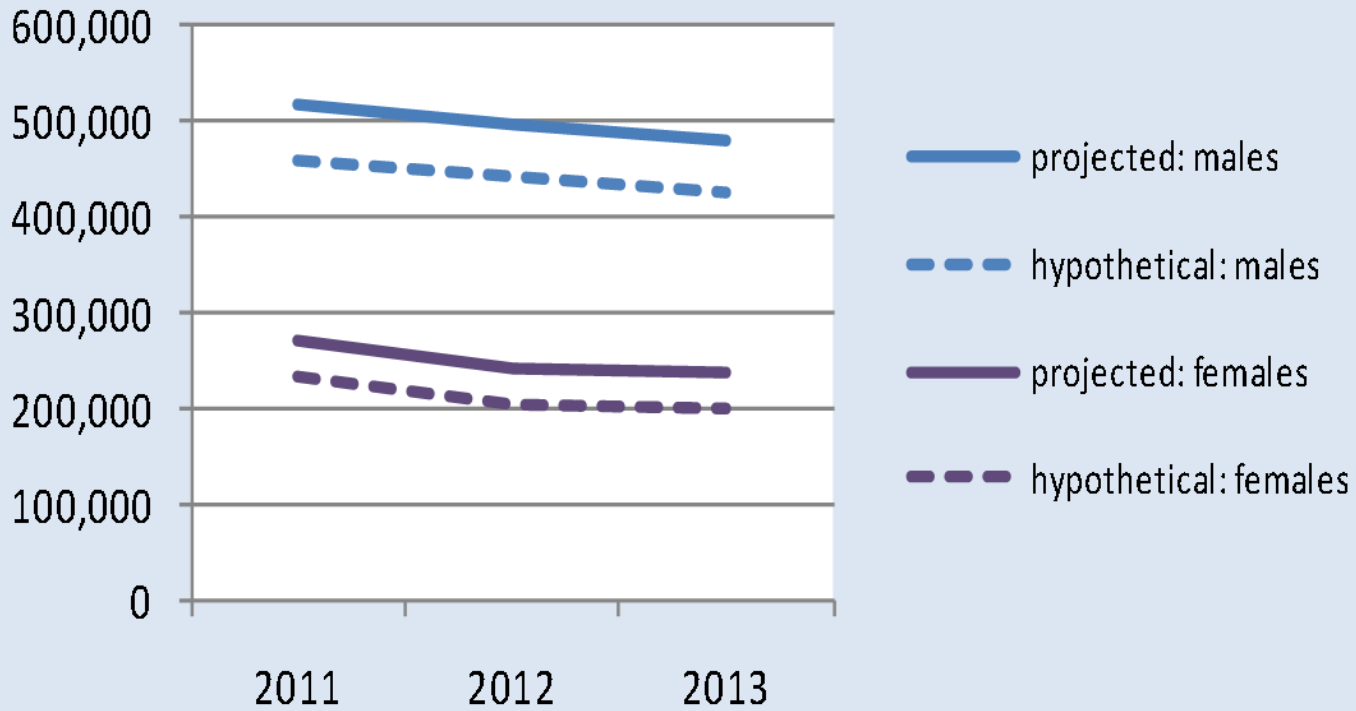
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- Hypothetical scenario: Suppose the number of 15-year-olds with no “red flag” behaviors were 10% higher in 2006-2008.
- How would projected numbers of 20-year-olds with SA disorders in 2011 to 2013 be affected?



NOTE: we will replace the prevalence numbers with estimated costs in the graph above

Alcohol Abuse/Dependence: Projected vs Hypothetical Prev #s



NOTE: we will replace the numbers with estimated costs in the graph above

Policy Implications

- Prevention of problem behaviors by age 15 is effective at reducing need for and costs of later treatment of substance abuse
- Use successful anti-smoking strategies (bans/restrictions on public use, Synar) to inform alcohol and drug prevention policy
- Train prevention specialists, school personnel, parents, others to recognize early signs of problem behaviors and respond effectively
- Utilize gender-specific problem-identification and prevention approaches to prevent onset of problem behaviors before age 15