

Did raising the drinking age reduce veterans' later alcohol treatment episodes?

The U.S. military as a natural experiment

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Background

- Early alcohol exposure may lead to:
- Neuroanatomical changes
 - Decreased hippocampal volume
 - Neurocognitive impairment
 - Risky sexual behaviors, injury (e.g. by MVA) or premature death (accident, suicide)
 - **Increased vulnerability to later AUDs**

Based on what data?

Observational studies in human adolescents

- Possible confounders for adolescents who drink early include
 - genetic predisposition toward AUDs
 - adverse environmental factors

Randomized controlled trials

- Consistent with observational studies
- One problem (RATS!)

Adolescent rats

- Rats may not behave exactly like humans





GAPS

- What are the relative contributions of genetics and environment versus exposure per se?
- If early exposure per se is a risk factor, when is drinking safe?
 - Is a 13 year old like an 18 year old?

U.S. Military—natural experiment?

Pre-1982

- US soldiers could drink on base regardless of age
- Discounted alcohol was sold on base
- Alcohol was provided to troops in the field after stressful events




1982 and beyond...

1982-88

- Bases conformed to state drinking age laws

Post-1988

- Drinking age for soldiers on US bases was 21
- Zero tolerance policies established for underage and problem drinking
- Early detection and prevention programs created
- Alcohol was “deglamorized”



Was reducing alcohol exposure during late adolescence for soldiers associated with changes in later problem drinking?

Using treatment episodes as a proxy for later AUDs:

- Compare vets from age groups with different exposures across years spanning changes in drinking age
- Compare vets to same-age civilians

Methods:

- Treatment Episode Data Set (TEDS)*
Data were collected on all clients entering any addiction treatment at publicly funded programs. 67% of the total known admissions. Doesn't include VA.
- Years 1992-2003
- Four age groups:
25-29, 30-34, 35-39, 40-44

*United States Department of Health and Human Services.
Substance Abuse and Mental Health Services Administration.
Office of Applied Studies

Why these years?



Birth year ages 18-20 ages 25-29 ages 30-34 ages 35-39 ages 40-44

Civilians

1948	1966-68				1988-1992
1958	1976-78		1988-1992	1993-1997	1998-2002
1968	1986-88	1993-1997	1998-2002	2003-2007	
1978	1996-98	2003-2007			

Why these years?



Birth year ages 18-20 ages 25-29 ages 30-34 ages 35-39 ages 40-44

Birth year	ages 18-20	ages 25-29	ages 30-34	ages 35-39	ages 40-44
1948	Veterans 1966-68				1988-1992
1958	1976-78		1988-1992	1993-1997	1998-2002
1968	1986-88	1993-1997	1998-2002	2003-2007	
1978	1996-98	2003-2007			

Methods-cont'd

- All treatment episodes with alcohol “flag”
- Males and females analyzed separately
- Obtained veteran status from TEDS
- Denominators for rates
 - US Census age group and years
 - VetPop age group and years
- Veteran exposure proportion by state base population



Assumptions:

- Military recruitment at age 18 lasting through at least age 20 (three years potential exposure)
- Ages equally distributed within age group for treatment episodes and age group denominators
- Exposure to lower drinking age on non-US bases non-contributory
- US base populations by state used to model military population exposure

Results: (ages 25-44, years 1992-2003)

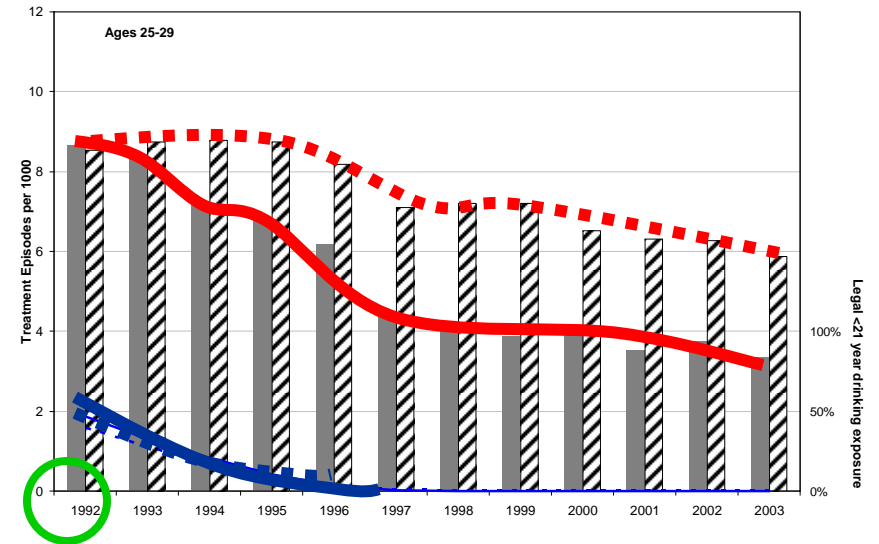
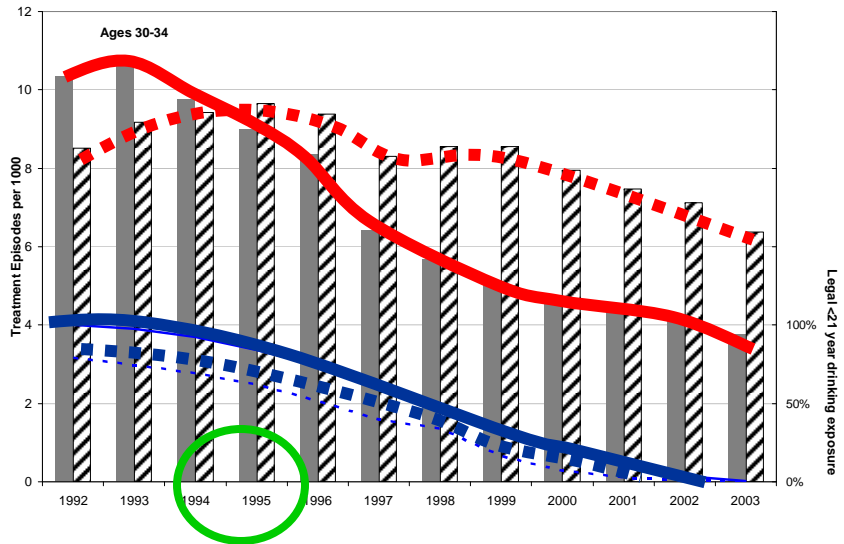
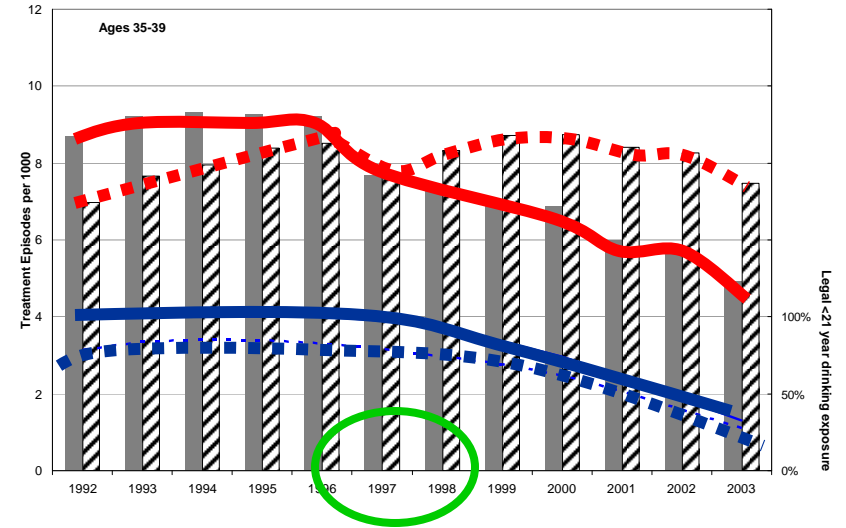
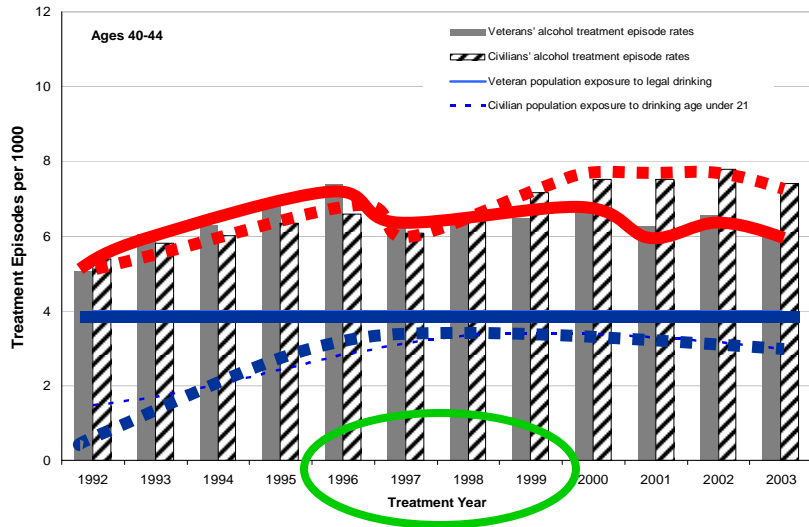
Males:

- 446,763 alcohol treatment episodes for 65 million male veterans
- 3.3 million alcohol treatment episodes for 434 million male civilians

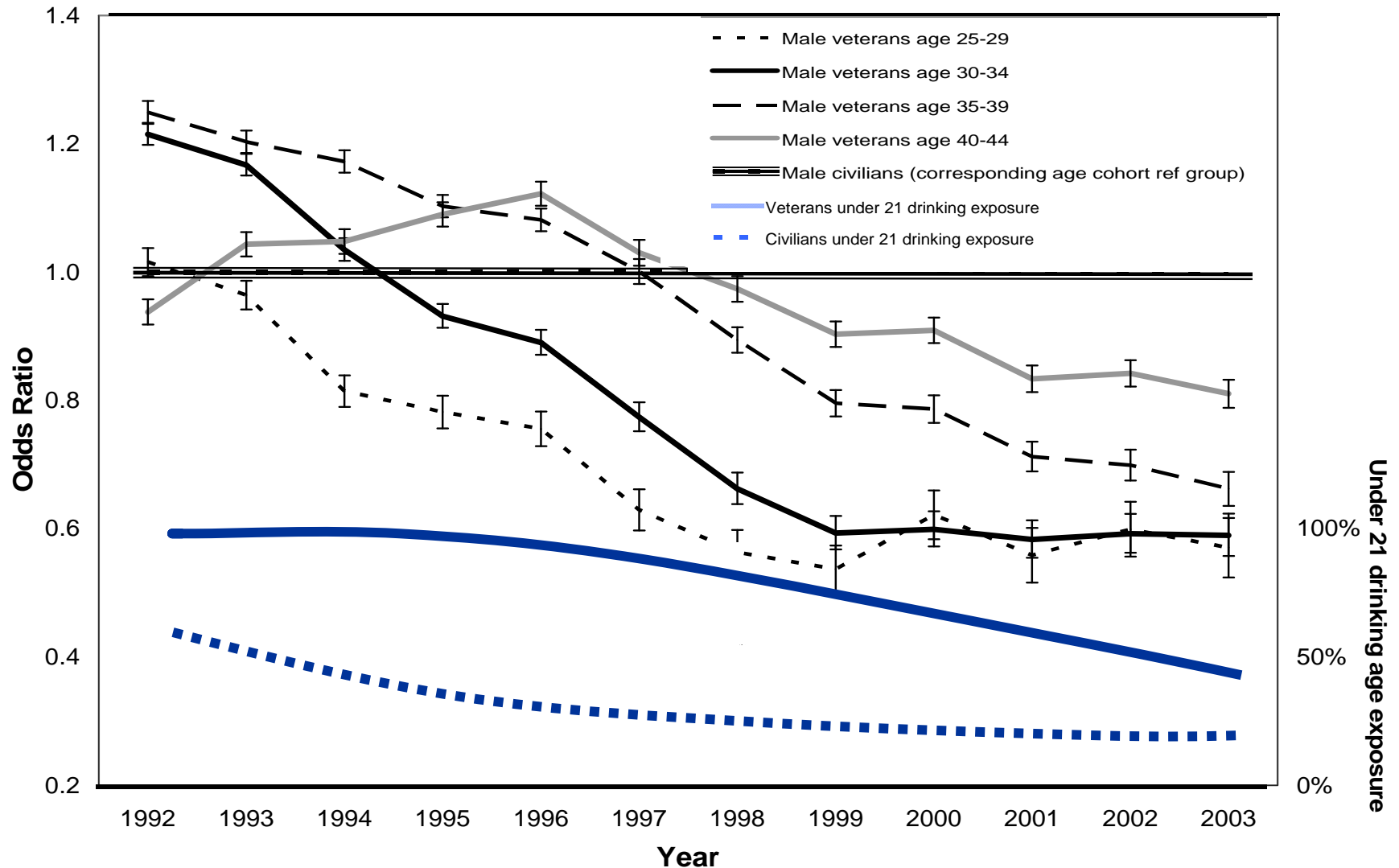
Females:

- 28,083 alcohol treatment episodes for 756,000 female veterans
- 1.5 million alcohol treatment episodes for 444 million female civilians

Males: Treatment episode rate per 1000 by year and age group



Odds ratios of alcohol treatment episodes and exposure to legal <21 year drinking for male veterans vs. civilians by age group



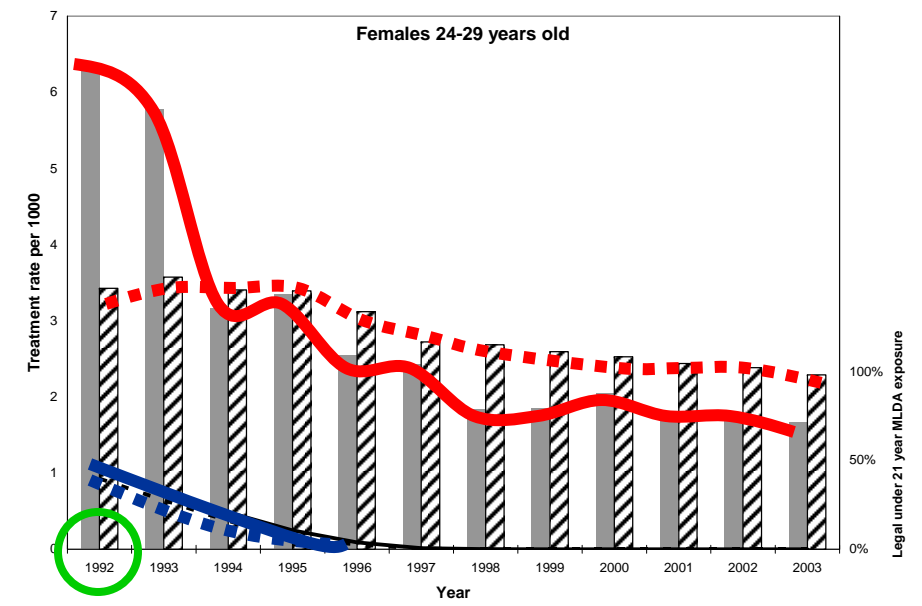
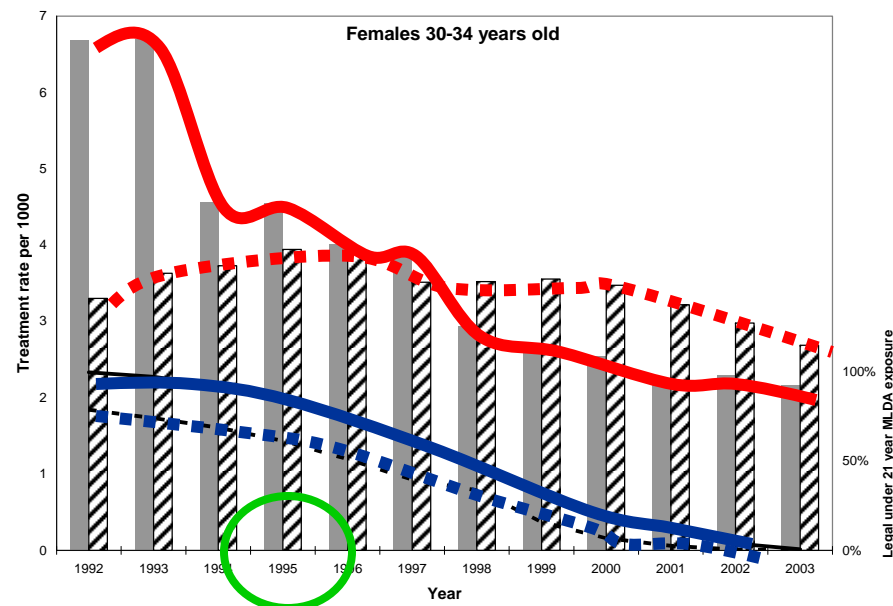
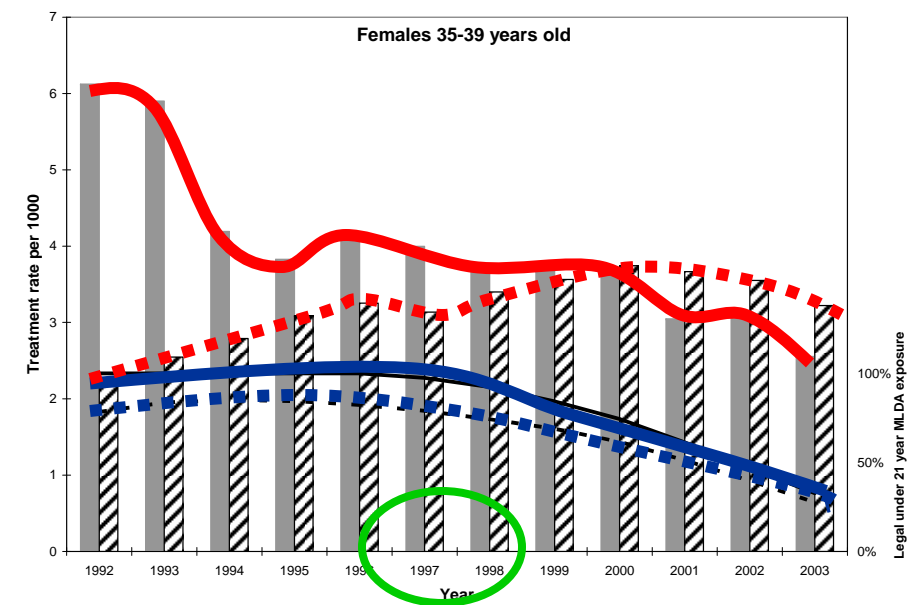
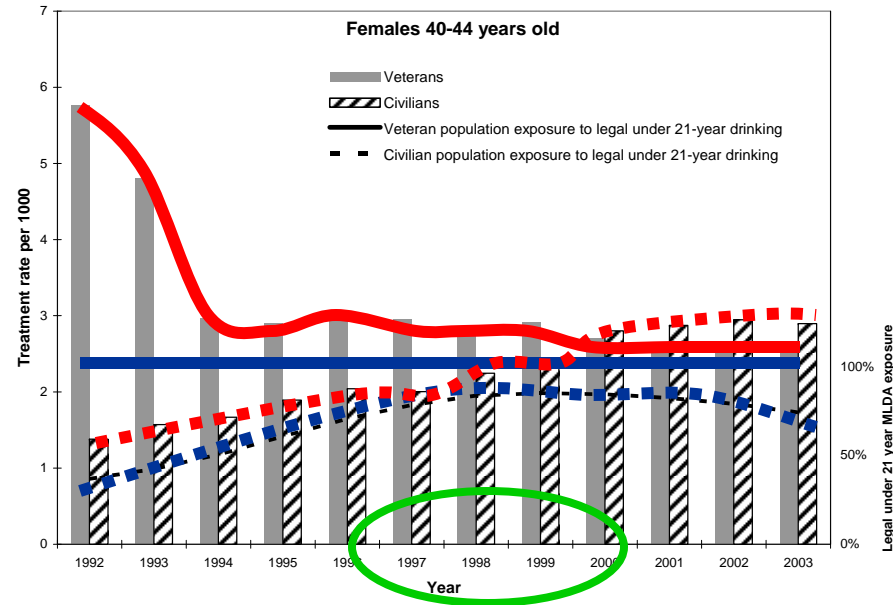
Females:

- Lower drinking rates than males
 - Abuse: 26/1000 vs. 69/1000 for men
 - Dependence: 23/1000 vs. 54/100 for men
- Genetic factors ~ 50%
- Environmental factors ~ 50%
 - Male-dominated work environments
 - Negative life events

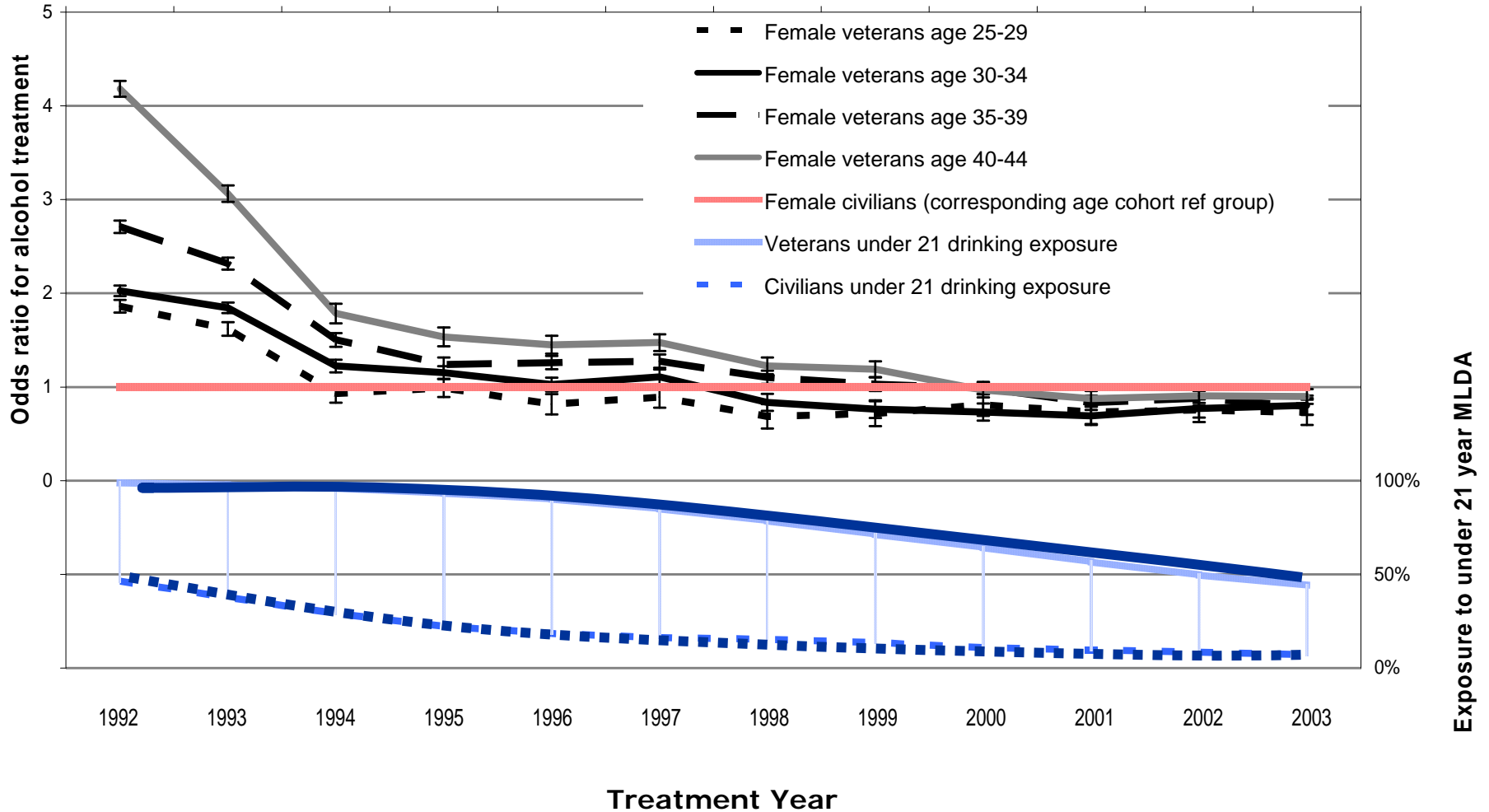
Female soldiers/veterans higher AUD risk



Females: Treatment episode rate per 1000 by year and age group



Odds ratios of alcohol treatment episodes and exposure to the legal <21 year drinking for female veterans vs. civilians by age group



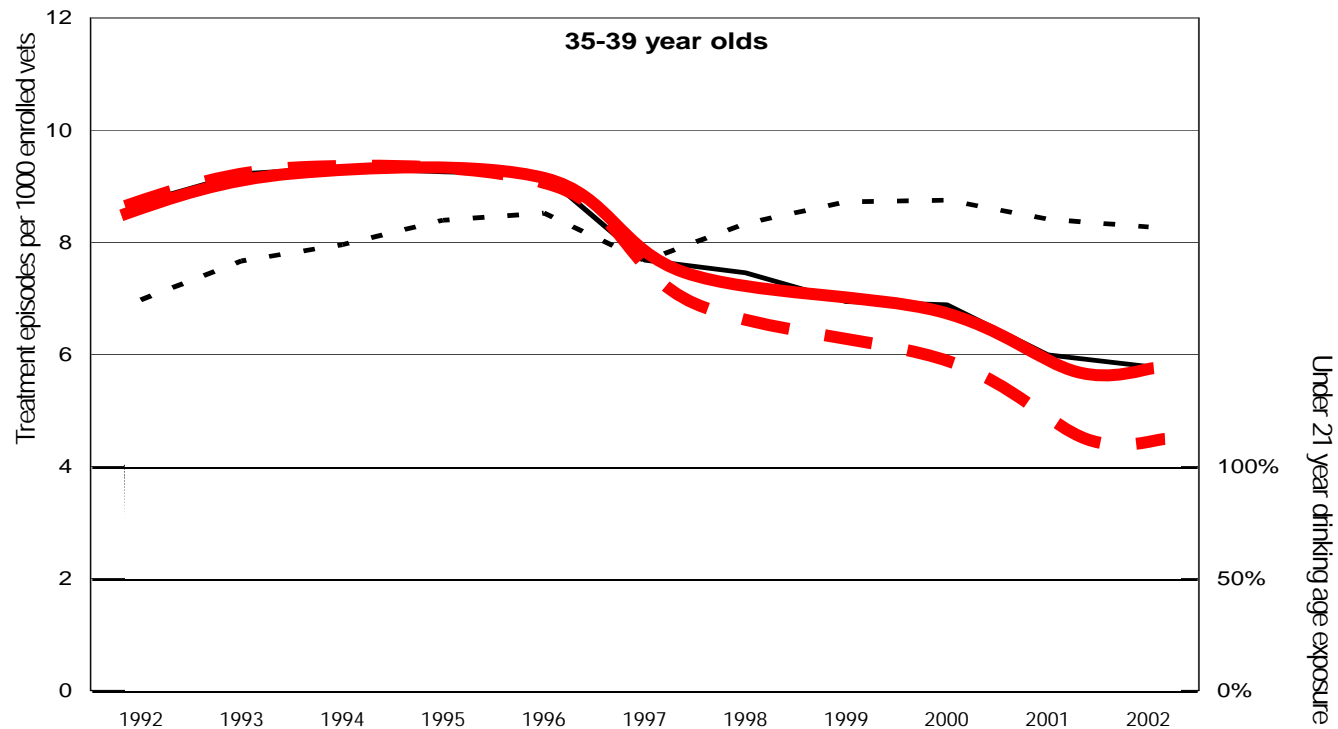
Conclusions:

- Changes in drinking age and military environment were associated with reduction in later alcohol treatment episodes for vets
- The greater the exposure to 21-year drinking age/enforcement, the greater the difference between:
 - Veterans compared to same-aged civilians
 - Veterans within age groups pre- and post- military drinking changes
- 1992 vet rates \geq civilian rates
- By 1998, all vet rates $<$ civilian rates (exposure to under 21 drinking age ~50%)

Limitations

○ VA treatment?

Cutbacks in late 1990s likely mean steeper curves





Limitations continued

- Reliance on observational data—
advantages over prior studies—
 - “Random” comparison groups (pre-post environment changes)
 - Large sample
- Assumptions may be erroneous
- Other environmental or military cohort factors may be responsible



Implications

- Legal drinking age should not be lowered
- Other supervised settings (college campuses) should consider following the military's example
- Find the happy medium....



*“Young man, go to your room and stay there
until your cerebral cortex matures.”*



Questions?

Acknowledgements

VAMC Outcomes Group REAP

HSRD Research Career Development Program

