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## 21st birthday drinking: A dangerous phenomenon

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# 21<sup>st</sup> Birthday Drinking: A Dangerous Phenomenon

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## Introduction

- Recent media reports have focused on the ubiquity of practices such as **21 for 21** (drinking 21 drinks on the 21<sup>st</sup> birthday) and the **power hour** (drinking as much as possible in the first hour of being 21) and on the tragic deaths that have resulted from these risky practices.
- There is, however, a dearth of empirical information about all aspects of 21st-birthday drinking.
- Extant studies (2 published and 1 unpublished, see below) suggest that heavy drinking on the 21<sup>st</sup> birthday is prevalent among college students. Due to the poor participation rates in these studies, however, their findings should be regarded with caution.

Study	Sample	Drank on 21 <sup>st</sup> Birthday	Average Number Drinks Consumed
Neighbors, Spieker, Oster-Aaland, Lewis, & Bergstrom (2005)	n=164 (32% of n=509)	90%	10 drinks (men) 8 drinks (women)
Neighbors, Oster-Aaland, Bergstrom, & Lewis (2006)	n=119 (11% of n=1059)	79%	7 ½ drinks (across sex)
Unpublished study Student Affairs Research and Assessment Office of Pennsylvania State University (2001)	n=636 (38% of n=1672)	82%	9 shots (men) 5 ½ shots (women) Pertains to shot-drinkers only (70% of those who drank, did shots)

## Present Study

- We assessed 21<sup>st</sup> birthday drinking practices in a large sample of individuals (primarily college students) who recently had turned 21.
- Our research questions were:
  - What percent drank on their 21<sup>st</sup> birthday and how many drinks did they consume and at what rate?
  - How does drinking on the 21<sup>st</sup> birthday compare with drinking at age 20?
- This study represents an improvement over previous studies due to its better response rate (58%) and its prospective assessment of age-20 drinking.

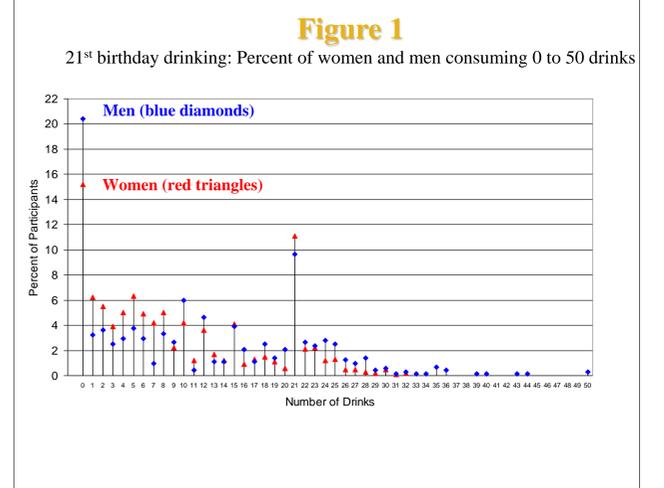
## Methods

- Data were drawn from a study of n=3,720 (53.6% female; 90.4% white) first-time college students whose substance use and other health behaviors were assessed prior to college (wave 0) and across the next eight semesters (waves 1 to 8).
- Actual participants were n=1,763 (58.1% female; 91.9% white) individuals who completed the wave-6 assessment (when 21st birthday drinking was assessed) and who turned 21 before or during wave 6. This sample constitutes 58% of the n=3,052 (51.4% female; 92.1% white) participants who turned 21 prior to the end of the wave-6 assessment).
- 21<sup>st</sup> birthday drinking.** At the wave-6 assessment, participants indicated whether they drank alcohol to celebrate their 21<sup>st</sup> birthday and, if so, how many drinks they had and how many hours they spent consuming those drinks.
- Age-20 drinking.** At waves 1 through 6, participants indicated their lifetime drinking maximum and how many hours they spent consuming that maximum. For this study, we used the lifetime maximum and consumption time for the last wave at which the participant was 20 years old.

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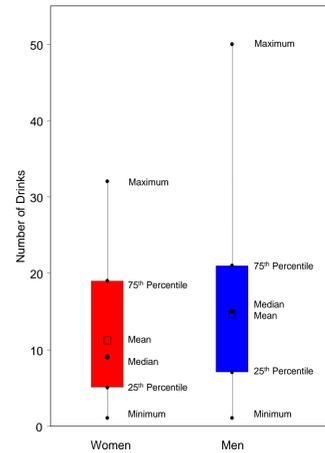
## Results (research question 1)

- Figure 1** shows the number of drinks consumed by women and men to celebrate the 21<sup>st</sup> birthday:
  - About 85% of women and 80% of men were “Cele-Drinkers” (i.e., drank to celebrate their 21<sup>st</sup> birthday)
  - Men who were Cele-Drinkers drank more drinks than women who were Cele-Drinkers
  - The consumption of 21 drinks was a noticeable occurrence for both women and men.
- Figure 2** provides summary information regarding the number of drinks consumed by “Cele-Drinkers” (those who were NOT Cele-Drinkers are excluded from this figure):
  - Female Cele-Drinkers drank about 10 drinks on average; male Cele-Drinkers drank about 15 drinks on average
  - The middle 50% of female Cele-Drinkers drank 5-19 drinks; the middle 50% of male Cele-Drinkers drank 7-21 drinks
- Figure 3** provides summary information regarding Cele-Drinkers’ rates of drinking (drinks per hour):
  - Female Cele-Drinkers drank an average of 2 drinks per hr (BAC of .08 in the average 120 lb woman); male Cele-Drinkers drank an average of 3 drinks per hr (BAC of .08 in the average 140 lb man)
  - The middle 50% of female Cele-Drinkers drank 1 to 3 drinks per hr (BAC of .04 to .11 in the average 120 lb woman); the middle 50% of male Cele-Drinkers drank 1½ to 4 drinks per hr (BAC of .04 to .11 in the average 140 lb man)



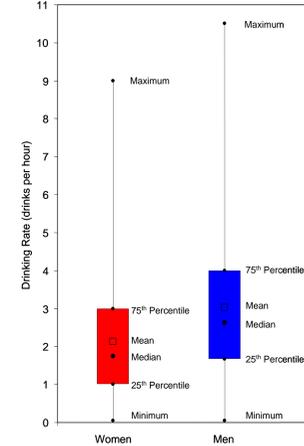
## Figure 2

Number of drinks consumed by Cele-Drinkers



## Figure 3

Rate of drinking by Cele-Drinkers



## Discussion

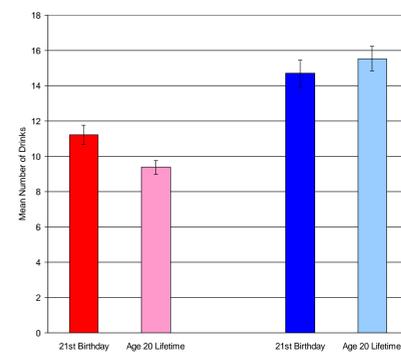
- The present data provide evidence that many college students are celebrating their 21<sup>st</sup> birthdays with dangerously high levels of alcohol consumption.
- Celebrating the 21<sup>st</sup> birthday by drinking was a highly prevalent practice (perhaps somewhat more so for women than for men). The prevalence rates of 85% (women) and 80% (men) in the present study are consistent with extant data.
- On average Cele-Drinkers in the present study consumed large amounts of alcohol, drinking at levels that would result in a BAC of around .08 for the average 120 lb women or 140 lb man. Given that college students tend to underestimate the amount of alcohol in a given drink, it is likely that the Cele-Drinkers actually consumed more alcohol than they realized and achieved higher BAC than we have estimated here.
- Consuming 21 drinks on the 21<sup>st</sup> birthday is a relatively common practice for both men and women. Furthermore, large number of women and men in the present study consumed even MORE than 21 drinks (25% of the men consumed 21+ drinks; over 20% of the women consumed 21+ drinks).
- Women drank significantly more drinks on their 21<sup>st</sup> birthday than they reported at age 20 as their lifetime maximum; however, they drank this greater number of birthday drinks at the same rate as their age-20 maximum. Men in this sample tended to drink at the same level on their 21<sup>st</sup> birthday as they had at their age-20 lifetime maximum.

## Results (research question 2)

- Figure 4** shows the number of 21<sup>st</sup>-birthday drinks and the age-20 lifetime maximum number of drinks consumed by female and male Cele-Drinkers:
  - Female Cele-Drinkers drank significantly more drinks on their 21<sup>st</sup> birthday than for their age-20 life time maximum
  - Male Cele-Drinkers drank an equally large amount on both occasions
- Figure 5** shows the drinking rate (drinks per hour) for female and male Cele-Drinkers for the 21<sup>st</sup> birthday and for the age-20 lifetime maximum:
  - Female and male Cele-Drinkers did NOT drink at a significantly higher or lower rate on their 21<sup>st</sup> birthday than on the occasion of their age-20 lifetime maximum

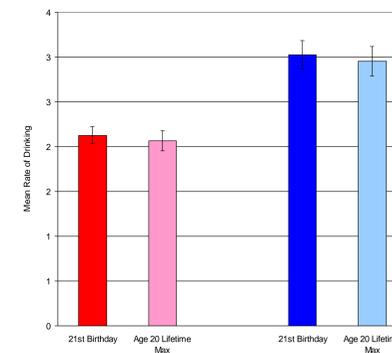
## Figure 4

Number of drinks Cele-Drinkers consumed on the 21<sup>st</sup> birthday and at the age-20 lifetime maximum



## Figure 5

Cele-Drinkers’ rate of drinking on the 21<sup>st</sup> birthday and at the age-20 lifetime maximum



## Limitations

- Because the participants all matriculated at a single college and most were college students at the time of assessment, the findings may not generalize to non-students or to students at other institutions.
- Baseline (wave 0) participants who were heavier drinkers were less likely than lighter drinkers/abstainers to participate at later waves. Because of this, the data obtained for 21<sup>st</sup> birthday drinking and age-20 drinking may not reflect the behavior of the many of the more extreme drinkers in the sample.
- The data were obtained from participants’ self reports of their drinking behavior.
- Despite these limitations, however, this study provides valuable information regarding the extent of dangerous 21<sup>st</sup> birthday drinking practices on the threshold of adulthood.