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Why do some Irish drink so much?

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1. INTRODUCTION

The Irish have always had the reputation as a drinking culture. But even in a culture where drinking is relatively common, there exists a great deal of variation in actual drinking behavior. Compared to other European countries, the Irish simultaneously have high rates of abstention (23% for adults in Ireland compared to around 10% in most of Western continental Europe) and almost twice as high alcohol consumption per drinker (Ramstedt and Hope, 2005).[1] Even in our sample of college students at a prominent Irish University, 5% of the students do not drink at all while a quarter of them consume more than ten drinks per week. Finally, binge drinking defined in the Ramstedt and Hope study as drinking a bottle of wine, 25 centiliters of sprits , or four pints of beer in one sitting (Ramstedt and Hope,2005) is far more common in Ireland compared to the rest of Europe. This study reports that 48% of Irish adult men engage in an episode of binge drinking at least once a week compared to 9% in Germany, 8% in France, and 11% in Italy (Ramstedt and Hope, 2005).

Our understanding of what influences the tremendous variation in drinking behavior even amongst a relatively homogenous sub-group of the Irish population such as university students is quite incomplete. For example, the extent to which parents, siblings, and other relevant dimensions of the environment in which people grow up formed their attitudes toward and actual behavior of drinking, as well as that of other risky behaviors is poorly understood.

Related to this, the drinking patterns of students' family, neighborhood, and secondary schools can not only affect the amount of drinking of these college students, but it may also alter their subjective assessments of what constitutes 'problem' drinking as well. We will test this possibility in this paper. Finally, in addition to any direct influence on the drinking behaviors of

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[1] Among EU countries, only Luxembourg has a higher per capita alcohol consumption (WHO, Health for all Database, 2001)

students, these same set of drinking patterns observed among the parents, siblings, schools, and neighborhoods of students could also affect other 'problem' behaviors of students. In this paper, we will examine these impacts on students' use of a wide variety of illegal drugs.

The importance of examining relative effects is clear. With limited resources to tackle alcohol problems, one would like to advise on the likely effectiveness of interventions at different times in the life-cycle and their potential spill-over effects onto others. If it is case that older siblings strongly influence the drinking behaviors of their younger siblings, which would be a strong rationale for family based interventions.

The data used in this paper come from a survey we designed of drinking behaviors among students at a major university in Ireland. Besides a standard set of demographic variables, this survey gathered data on the actual drinking behavior of these Irish college students along with vignette based assessments of their subjective attitudes toward drinking by themselves and by hypothetical other persons. We also obtained information about drinking of their parents, and siblings. By recording information about the town that they lived in at age ten and the secondary school they attended, we can also construct measures of drinking behaviors they observed as children and adolescents that extend beyond that in their immediate families.

The rest of this paper is divided into five sections. Section 2 explains the data utilized and measures employed in the study. Section 3 presents the models of student drinking behaviors that we test documenting the relative influence of parental and sibling alcohol consumption and of pre-college environments on drinking patterns of the students. Section 4 summarizes the estimates we obtained of the origins of the students subjective attitudes toward their own drinking. Section 5 summarizes the results obtained when we examine a subset of other problem

behaviors including cannabis use and other illicit drugs. The final section highlights the main conclusions of the study.

2. DATA

The sample for this research was recruited from a web-based survey of students attending a large Irish university, University College Dublin (UCD). In total, 4450 students started the web-based survey, from March to May 2006 and 3,500 completed the survey. The mean age of respondents is 21.5 years, and 90% of the sample is below age 25. The gender breakdown of the sample is 45% male and 55% female. The sample of 4,500 students represents approximately approximately 50% of those who use the college email system.

Respondents were asked several demographic, personal and family background questions. These include age; gender, nationality; accommodation during term; and year of study. Parental variables include maternal and paternal education, parental income and occupational status, current marital status, whether either parent is deceased, and if not their current ages. Demographic data on siblings include the number of siblings and their ages so that birth order of all siblings can be determined. Unfortunately in retrospect, students were not asked the gender of their siblings. Respondents were also asked the town in which they lived at age 10 and the secondary school that they attended.

Objective Measures of Drinking Behavior

The relevant objective drinking data for this study include: measures of the quantity and frequency of students drinking as well as similarly constructed measures of the drinking of the students' parents and of all their siblings who are over age 16.

All students were first asked the following startup question in relation to their own drinking: "When did you last have a drink (that is more than just a few sips)?" and given five response options; "I have never had a drink"; "Not in the past year"; "More than 30 days ago but less than a year ago"; "More than a week ago but less than 30 days ago"; "Within the last week".

The 93% of the sample who did consume some alcohol during the last year were then asked about the frequency of consumption and volume of consumption per occasion. In terms of frequency, 12% of respondents drink "less than once a month"; 25% drink "less than once a week"; 30% of respondents drink "once a week"; 33% of respondents drink "more than once a week"; and 0.66% of respondents drinks daily. The second objective measure concerns the volume of drinking per occasion.

"How many drinks containing alcohol do you have on a typical day when you are drinking?" with the permissible answers being less than 1, 1-2, 3-4, 5-6, 7-9, or 10 or more. In terms of volume consumed; 2% drink less than one drink; 10% drink "1 or 2"; 25% drink "3 or 4"; 32% drink "5 or 6"; 22% drink "7-9" and 9% drink "10 or more" drinks.[2] We used midpoints of these ranges and assigned the number 10 to 10 or more. Total volume of drinks per year was obtained by multiplying frequency of consumption by the number of drinks per occasion. Similar questions were asked about the drinking of mothers and fathers and for each sibling over age 16 so that we were able to construct annual drinking amounts of all these immediate family relatives.

Table 1 describes the drinking behavior of the students, their parents and siblings as gleaned from the survey. Heterogeneity in drinking behavior of students is enormous. Five per

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[2] Before this question, a random half of the students were told that a drink is ten grams of alcohol and were also given examples of types of drinks with a translation into grams. For example, a half pint of beer would be 9.8 grams and a pint would be 19.5 grams. There were no statistically significant differences between the sample of students given this information and those not given this information in terms of their description of their subjective and objective drinking behavior as well as their description of the people in the drinking vignettes.

cent of all these students actually do not drink at all and another 15% have one drink a week or less. On the other end of the spectrum, almost half of students consume five or more drinks per week, one in four more than ten drinks a week, and one in every seven more than fifteen per week. On average, Irish students who do drink consume about 351 drinks a year, or about one every day. Mirroring a well known drinking pattern that exists in almost all societies, male students drink considerably more than their female counterparts, a 50% higher level at the mean. These gender differences are even larger at very high levels of drinking.

Nor surprisingly, fathers of these students drink significantly more than their mothers do. The gender discrepancies are even higher among parents than students, a reflection of the secular increase in drinking among women. Both sets of parents drink less than their college attending sons and daughters. In part, this may be due to the well-established pattern of declines in drinking with age (Ramstedt and Hope, 2005). But it is also a consequence of the surge in drinking volume during the time period when Ireland deservedly earned the label "Celtic Tiger." In fact, this secular increase in drinking in Ireland is so large that these college attending female students actually drink a little more than their fathers do and 75% more than their mothers do.

There also exists considerable variation in the amount of drinking reported about the oldest and second oldest sibling (given that they are older than the student respondent). More than a fifth of the older siblings have more than ten drinks a week while approximately one in every nine does not drink at all during the year. There is almost no difference in the amount of drinks reported about these two siblings. While at first glance one might be puzzled by the lower drinking volume among older siblings compared to the students, we show below that even amongst our college students drinking declines with age. In addition, drinking is known to decrease with the end of the college experience.

Subjective Measures of Drinking

In addition to telling us about the quantity of drinks they consumed, student respondents were also asked to rate their own drinking on an ordered qualitative scale using the question:

(2) *"How would you describe your own drinking patterns over the course of the last year?"*

Mild, Moderate, Some Cause for Concern, Excessive, Extreme

26.9% describe their drinking as mild; 43.9% describe their drinking as moderate; 18.5% describe their drinking as some cause for concern. 9.6% describe their drinking as excessive; 1.5% describe their drinking as extreme.

Having subjective measures of drinking alongside the objective measures described above is important for several reasons. Some students who drink a lot may not perceive that they are drinking in excess or have a drinking problem. The drinking behaviors that they observed among their parents, siblings, and friends may not have only influenced the amount that they consumed, it may also have affected the translation of a particular amount of drinking into a subjective scale of whether or not that drinking constitutes a 'problem' behavior.

We will provide empirical tests of this hypothesis by using the subjective evaluation of a students own drinking along with some vignette questions that were given to students about the drinking behavior of hypothetical peers. The vignette drinking questions are of the form

(3) *[John/Mary] is out on a given night and has [1 or 2, 3 or 4, 5 or 6, 6 or 7, 10 or more] drinks containing alcohol. Is [John/Mary]'s drinking habit-*

Mild, Moderate, Some Cause for Concern, Excessive, Extreme

Vignettes in (3) clearly use the same scale as in (2) for respondents' own drinking. Because all students were evaluating the same hypothetical persons in the vignettes (whose drinking behavior is identical), we can test whether the scales that students use to characterize

the same drinking behavior is influenced by the drinking patterns of their relatives.[3] This analysis

rests on an assumption that the scales that the students use in evaluating the hypothetical person

in the vignettes are the same. This assumption is called response consistency. Van Soest et al

(2007) show that there is strong support for this assumption in this data.

Geographic and Secondary School Data

Data on the named town students lived in at age ten and the secondary school that they

attended before coming to college were used to describe the drinking and other relevant aspects

of the spatial environment in which the students grew up.

With this information on towns, we used the student survey to quantity drinking patterns

of other residents of these towns who were most likely the types of people that these students

would have observed the drinking behaviors of during their youth. We can match our student

survey to external data on the attributes of the town, particularly as they are related to the

drinking behaviors of the residents. The geographic based variables plausibly related to the

drinking of students are described in detail in the next section.

All towns, of which we have 305 distinct names, were also aggregated into their

administrative counties, of which there are 36 in Ireland. Administrative counties are areas

drawn up for the purposes of local government being responsible for road maintenance, public

land use, planning decisions, waste management. In Ireland, state data are usually compiled at

administrative county level.[4]

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[3] The use of the web-surveying format in our student survey allows for a complete experimental design to test the importance of various dimensions. In particular, we randomly assigned levels of severity according to frequency of drink, and the male or female names in the vignettes.

[4] In Ireland administrative counties are usually the same as traditional geographic regions termed counties. There are two exceptions – Dublin County is divided into four administrative counties (Dun Laoghaire-Rathdown, Fingal, South Dublin and Dublin City) and Tipperary has two discrete local authorities – North and South Tipperary. Administrative counties were chosen for two reasons. Firstly, administrative counties are smaller geographically and we can be more precise about location. Second, state data is usually compiled at administrative county level. For some administration, such as the public health service or strategic planning, counties are grouped at a regional level.

Similarly, data on secondary schools attended were matched to external data describing whether the school was single sex (and if so which gender), the religious denomination of the school (Catholic, Church of Ireland, interdenominational, Jewish, or Quaker), and whether the school was a boarding school or a partial boarding school. Finally we computed the average amount of drinking of all students at the college who had attended that secondary school (again subtracting the individual respondent when his or her drinking behavior is being predicted).[5]

3. MODELS TESTED

We begin by estimating a model of our best objective measure of student drinking - yearly volume of drinks of students in our sample. This drinking behavior is seen as a function of a few relatively straightforward demographic attributes of the students: their age, gender, religiosity[6], and whether they are an Irish citizen or not. In addition, the following set of family background variables were used to describe the mother and father of the student—years of schooling, age, whether deceased, parents' income, and whether parents were separated or divorced. We also included variables measuring number of siblings and the birth order of the respondent.

Most important, we model students' drinking as a function of a set of family drinking behaviors that preceded their own. These include our similarly constructed objective measure of drinking of their fathers, mothers, oldest sibling, and second oldest sibling Older siblings are use d since we want the drinking behavior of the siblings to be established prior to the drinking

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[5] According to information provided by the Department of Education and Science for the school year 2005-2006, there are 733 post-primary schools in Ireland. There are 146 girls' schools (20%), 109 boys' schools (15%) and 478 mixed schools (65%). There are 372 Catholic schools (51%), 25 Church of Ireland schools (3%), one Jewish school (.1%), one Quaker school (.1%), and 334 inter-denominational schools (46%).

[6] Respondents were asked to rate themselves on a five point scale ranging from 1. Devout 2. Practising 3. Formal Practising 4. Indifferent 5. Atheist. This was recoded to give a five point scale going in the direction of religiosity.

behavior of the students. This gives greater confidence that the relationship being picked up is a transmission mechanism rather than a common unobservable factor.

As described above, we include several measures of the geographic and secondary school environment of a student. For schools, variables are constructed that indicate whether the secondary school was single sex, the religious denomination of the school, and whether the school was a full or partial boarding school. Our geographic indicators are either defined at the town or county level as the availability of data dictate. In addition to these non-drinking dimensions of schools and places, we include in our models our derived measures of the amount of drinking of others mentioned in our survey who attended these schools or lived in these places.[7]

We also model other risky behaviors of the students besides their current drinking—such as smoking and drug use. We do so by only including the same variables in these models as are in the student drinking models. Combined, this set of models gives an indication among other things of the presence or non presence of negative externalities associated with parents and sibling drinking on other things. Details for the construction of all variables not directly explained in the text are available in Appendix Table 1. All models are estimated combining men and women and then estimated separately by gender. Robust standard errors are used.

3.1 The volume of drinking

Table 2 contains the estimated coefficients and associated robust standard errors that were obtained in our models of the yearly volume of drinking of students. We first briefly summarize our results for the non-drinking related background variables, then move in sequence to the family related, school and regional effects.

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[7]Missing value indicators were included in all models indicating that data were not available for a variable.

The age of a student is negatively related to the yearly volume of drinks, a not uncommon finding about student drinking. Not surprisingly, female students drink significantly less than male students do (controlling for other co-variates 108 fewer drinks per year). This is not that different than the unadjusted gender difference in Table 1, so that taken together variables included in this model explain little of the gender difference in drinking. This is not surprising as male and female students mostly share common family and neighborhood backgrounds. In contrast, Foreign students attending this university (who do not share a common background with the Irish students) also drink significantly less than Irish nationals do (92 drinks per year), an effect that is somewhat larger for boys than for girls. In this case, variables in the model explain about two-thirds of the drinking differentials by nationality. This is mainly due to the background drinking behavior of the family. These gender and nationality differences in drinking volume are large and robust to model specification. Finally, the more religious a student is the less they drink.

Putting aside for a moment any possible influence of parental drinking, we find relatively small effects of other parental background variables on how much their college attending children drink. To illustrate, neither fathers' years of schooling, parental income, the age of mothers, whether a parent is still married have any statistically significant effects on volume of drinking of these students. The yearly number of student drinks is positively associated with mothers' education and with being later in the birth order amongst his or her siblings. All in all, it is not an unfair summary that conventional measures of the family background of these students have modest explanatory power in explaining the amount that they drink.

While this collection of measures of family background of the students has little impact on student drinking, this is decidedly not so for the volume of drinks consumed by the parents

and older siblings. We find that the drinking behavior of mothers significantly impacts the volume of drinks consumed by both female and male students about equally. But drinking of fathers appears only to influence the drinking patterns of their college attending sons. One possibility is that fathers sometimes take their sons along to drink with them but would not do so with their daughters. If the mother drank socially, the whole family was there—sons and daughters alike. Mothers, who would have more of a joint supervisory role for all their children, would not go drinking only with their daughters.

The estimated effects of the oldest and second oldest sibling on the drinking behavior of students are large and statistically significant and affect both male and female students equally. Since parents affect the drinking behaviors of older siblings which in turn affects the students, the total impact of parents on drinking of these college students is even larger as we would have to add in the indirect impact of their influence on older siblings to the students.

There are several characteristics of type of secondary school attended included in this model. The secondary school attended does appear to matter for subsequent college age drinking, but only for boys. The strongest effect is from attending a full boarding school (mostly boy schools in Ireland) which is associated with significantly more drinking in college but only for boys. Similarly, boys who attend all boys schools also drink more in college than other male students. Statistically weaker effects are found for those attending Church of Ireland schools (the left out group are Roman Catholic schools). These estimated effects when taken together suggest that the culture of secondary schools does matter in the promotion of greater amounts of drinking of young men.

The family and school are not the only aspect of background that may influence drinking consumption of young people. There exists a great deal of geographic variation in drinking in

Ireland, rooted in Irish history, the origin of which is in dispute. To illustrate, Figure 1 plots the geographic diversity in drinking across Irish counties. The variation is enormous—often a factor of two to one across the counties. Drinking is heaviest in Dublin and the Munster counties in the South (Cork, Waterford, and Kilkenny) and lowest in counties in the center of the country and in Donegal and Monaghan towards the North. Putting aside the obvious point that Irish men drink far more than Irish women do, the geographic correspondence between the drinking of men and women is not high in Ireland. A lot of social drinking historically in Ireland especially when not the young was within gender. As an illustration, the correlation between male and female mean drinking by county is only .25.

We divide factors that may explain the historical roots of Irish drinking as revealed by this geographical pattern of drinking into four groups—religion, the role of the English, the brewing and distilling industry, and the weather.

Religion has historically played a very significant role in Irish life, but that role is far from uniform across time and place. A potential proximate cause of regional variation in Irish drinking may be the differential power and presence of the Catholic Church. The Catholic Church and related groups have played a strong role in attempting to suppress and contain alcohol consumption throughout Irish history. For example, during confirmation, many young catholic boys and girls took the 'pledge', a lifetime vow to abstain from alcohol. Many—but not all—adhered to that pledge. Sermons from the pulpit often would select as the theme the evils of the drink.

Like all historical forces in Irish life, it is difficult to select a single measure to index the influence of the church that is not without controversy. We proxy the influence of religion with two variables. First, we measure the number of Catholic masses per capita that take place in

each town during each week. We also rely on the results of an important referendum—the 1996

vote to permit divorce in Ireland. This controversial measure—strongly opposed by the Catholic

Church—split the country and only passed by the slimmest of margins.[8] Not surprisingly,

support was strongest in Dublin and its surrounding counties and weakest in the more traditional

counties of the West. Both variables behaved as expected. An increase in the number of masses

reduces drinking while a larger county vote in favor of the divorce law increases drinking. These

variables are jointly significant at the ten percent level with an F value of 2.38 .

The influence of the Catholic Church and the English is closely inter-twined and

influences the extent different regions of the country are differentially religious. With respect to

examining the regional differences in the historical influence of English culture, once again, we

have two measures. The first is whether the town has a cricket club, a distinctly British and not

Irish institution. Another hypothesis is that towns outside the boundaries of the Anglo Norman

"Pale" (the main stronghold of English rule in Ireland in the 15th and 16th century) would have

been more likely to come under full Catholic control. The Pale is that region of Ireland that was

the predominately British part for most of the 1400 and 1500's and would have been the main

repository for British culture and administration. By implication, importance of the "Pale" would

supply evidence that heavy drinking practices may have been imported from the UK and that

heavy Irish drinking patterns were partly imported through the influence with British culture.[9]

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[8] The final vote was 50.3% yes and 49.7% no. One provision of the referendum stated "at the date of the institution of the proceedings, the spouses have lived apart from one another for a period of, or periods amounting to, at least four years during the previous five years."

[9] The role of the English in Irish life did not end in the sixteenth century. In the sixteenth and seventeenth century, the plantation system was established whereby confiscated lands were given to English, Scottish, and Welsh settlers and many migrants from these countries settled in Ireland. While plantations were established throughout the country, the two large regional centers were in Munster and Ulster. The effects of subsequent Irish history were profound. With the exception of Ulster, Catholics were majority landowners in most of Ireland in 1641—sixty years later with the exception of the West 75% of Irish land was owned by Protestants (mostly English).

Table 2 shows that both having a cricket club and being inside the Pale are associated with increased drinking lending support to this hypothesis.

Variations in development of the Irish brewing and distilling industry may also be a historical factor in the regional development of Irish drinking. Historically the cost of transporting alcohol was highly dependent on distance from the local brewery. We proxy this potential influence with several measures- whether the settlement had its own brewery in 1902 (Brewery), and whether the settlement had its own distillery in 1902 (Distillery).[10] Neither of these variables are statistically related to current drinking volumes of the students.

As well as production of alcohol, distribution of alcohol in the form of public houses and off-licenses (the equivalent of liquor stores) is another potential source of regional variation and one that is vital in terms of policy debates about the role of alcohol supply in determining consumption. In Irish history, the licensing of the number of pubs has been severely regulated and restricted over time. Licensing laws in Ireland in the 20th century made entrance and exit from owning a public house in a given area rare as the number of licenses was fixed and transfer of license across regions was not permitted under legislation dating back to the late 1800's. The number of pubs in a given area can be thought of as fixed by previous conditions rather than responsive to current demand conditions. We measures current conditions by examining the number of people per pub in each of the counties. This index is highest in Meath, Kildare, Wicklow and Dublin with over 400 people per pub each and drops to less than 200 people per pub in Mayo and Roscommon. This is not indicative of current demand patterns as entry and exit

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[10] The data on whether the county was an alcohol producing county is taken from a 1902 official statistics publication "Ireland: Industrial and Agricultural". It contains data on extent of brewing and distilling broken down by county. We make a distinction between counties that have a history of alcohol production (as proxied by the presence of a brewery or a distillery in 1902) and counties that do not.

have strongly been constrained due to licensing restrictions. They arguably reflect inertia in the distribution of license resulting from this legislation. Similarly, off licence outlets are also restricted by Irish law requiring a vendor to attain a relatively scarce license to open one up. The results in Table 2 indicate that both of these supply restrictions have some bite. An increase in the number of allowable pubs and off licence establishments, both partly fixed by Irish law, increases the volume of drinks by students even though most of them are currently located in and around Dublin and not in their home towns.

Another geographically related factor concerns the influence of weather. Irish weather is notorious for not only the abundant rainfall but the dampness and cold, factors that may have been even more important historically when heating was a major problem in Irish homes. There are contrasting and largely untested viewpoints on the potential role of Irish weather on Irish drinking. One argument is that excessive Irish drinking was partly an escape from the harshness of its cold and damp climate. The other view is that warm weather and lack of rainfall may be factors that encourage people to leave their houses and engage in social drinking and that the rainfall and cold may actually discourage drinking.

Whatever its impact, Irish weather is far from uniform across the country. The variation in rain is quite pronounced with the heavier rainfall concentrated along the West Atlantic coast and in the more mountainous areas. In contrast, sunshine shows a rather marked increase as one moves from the North-West into the South-East direction. In spite of this common folklore, we find no affect of Irish weather on the drinking of the students.

It is important to recognize that our estimated effects of drinking by parents in particular on student drinking are not necessarily causal. It may instead reflect the influence of other factors associated with problems in the family that make parents, older siblings, and the students drink

more. We have argued in this paper that the historical factors outlined above had an important role in fixing geographical drinking patterns in Ireland. This argument suggests that these geographic determinants of the historical drinking patterns may serve as instruments for the drinking of mothers and fathers of these students.

To investigate this further, we estimated IV models where we instrumented fathers and mothers drinking as a function of all the exogenous geographic variables and their interactions. We find that fathers drinking when instrumented in this way remains a statistically significant determinant of the drinking of their college drinking but mothers drinking does not. This may suggest that there is a direct causal link between the drinking of the fathers and the sons, but that the drinking of the mothers may instead be capturing some dimensions of problems in the family life. We return to this interpretation when discussing the estimated drug use models below.

4. Subjective drinking status and vignette thresholds

In addition to telling us about the quantity of drinks they consumed, student respondents were also asked to rate their own drinking during the last year using an ordered qualitative scale with the following categories *Mild, Moderate, Some Cause for Concern, Excessive, Extreme.* Having subjective measures of drinking alongside the objective measures is important since some students who drink a lot may not perceive that they are drinking in excess or have a drinking problem. Moreover, the drinking behaviors that they observed among their parents, siblings, and friends may not have only influenced the amount that they consumed, it may also have affected the translation of a particular amount of drinking into their subjective rating of whether or not that drinking constitutes a 'problem' behavior.

This issue can be addressed with the use of anchoring vignettes (King et al 2004; Kapteyn, Smith and Van Soest 2007). These vignettes describe drinking behavior of hypothetical

students where we varied the amount of drinking the person described in the vignette engaged in. With each of these vignettes students were asked to rate the degree of problem drinking of the vignette person using the same scale on which they rated themselves.

To illustrate, Table 3.a lists distributions of responses to drinking vignettes that indicated the hypothetical student was drinking 7-10 drinks on that occasion. The first column lists the percent distribution of ratings of all students (independent of their own drinking behavior). Almost 39% of all students thought that 7-10 drinks was either excessive or extreme.

In the next two columns, the same distribution of responses are provided but this time limiting the sample to students who themselves reported that they drank 7-9 drinks per occasion. For these students, the distribution of ratings is listed not only for the vignette persons but also for students' own rating of their own drinking problems. Students who themselves drink 7-10 drinks per occasion are much less severe in their evaluation of the students described in the drinking vignettes. Instead of 39% rating the drinking in the vignette as excessive or extreme, only 19% of students who themselves engage in the same drinking behavior find it excessive or extreme. Moreover, this distribution of ratings of vignette persons is virtually identical to their subjective ratings about their own drinking suggesting that these students are using the same scale in rating the vignette person as they use on themselves.[11]

Table 3.b provides the distribution of ratings except that we now stratify not by the volume of drinking of students but by amount of drinking of mothers, fathers, and older siblings of the students. In particular, the distributions in these columns are now for fathers, then for mothers, and then for older siblings who themselves consumed 7-10 drinks per occasion. Once

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[11] Response consistency implies a similar distribution of responses whether the vignette or student respondent is being described. Van Soest et al (2007) formally tested response consistency in our data of Irish students and could not reject the assumption of response consistency.

again, students whose parents or older siblings drink in the same volume as the students described in the drinking vignette are much more tolerant of high amounts of drinking.

To test these ideas more formally, Table 4 lists the results obtained by simply modeling their subjective evaluation of their self-rated drinking problem on the mild, moderate, some cause of concern, excessive, and extreme scale. This model is estimated using OLS treating the outcome as a numerical scale of one to five so that increases in the scale correspond to a greater level of a drinking problem. Similarly, Table 5 models a subjective scale in the same way (from one to five) but now the scale refers to their evaluation of the quantity of drinks of the persons described in the vignettes and increases in the scale mean a greater drinking problem.[12]

If there were small or no effects of co-variates on the thresholds that students use in making their subjective evaluations, then in general we would expect that the signs of the effects of variables would be similar in Tables 2 and 4 (the objective and subjective drinking models). For example, women report less of a drinking problem in Table 4 and also consume fewer drinks in Table 2.[13] However, foreign students drink much less (Table 2) than native-Irish students drink but they do not report less of a drinking problem in Table 4. The reason can be obtained from the coefficients estimated in Table 5 which show that for the same drinking behavior described in the vignette foreign students are more likely to say that this constitutes a drinking problem. So even though foreign students drink much less than Irish national students, because they have tougher thresholds on what constitutes a drinking problem, they rate themselves the same on a subjective drinking problem scale as do the Irish national students.

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[12] We also estimated models in Tables 4 and 5 using ordered probits and the results were substantively identical.
[13] Table 5 shows that the use of a female name instead of a male name in the drinking vignette means that students will rate it as more of a drinking problem for the same quantity of drinks consumed. This is true for both male and female students. This may reflect in part cultural differences toward male and female student drinking or a biological accurate belief that given their smaller stature drinking capacity is less for women than for men.

Our primary interest lies in the impact of the family level drinking patterns. While drinking of parents is associated with a higher likelihood of self-rated drinking problems by students, these effects are not as dramatic as in the volume of drink model in Table 2. In fact father's drinking amounts in Table 4 have no statistically significant effect on the probability of problem drinking by the student. The reason is apparent from Table 5 as both fathers and mothers amounts of drinking makes students 'softer' about what constitutes a drinking problem, even after controlling for all other co-variates. The same is true about the drinking of the older siblings.

These data suggest that subjective attitudes toward drinking are influenced by drinking behaviors students observed in their home. Students whose parents drink more are less harsh in their evaluation of their own drinking than people who parents drink relatively little. Indeed, this lowering of thresholds of what constitutes problem drinking (which is influenced by the patterns of drinking observed in the family home) appears to be one reason why students feel less constrained in their own alcohol consumption. The data in Table 4 also imply that distributions of self-reported problem drinking understate the tails of the true distribution of drinking problems. For example, if the response thresholds of the median drinker were used to evaluate drinking behavior of the full population, there would be more people who would be seen as having no problem at all and many more who would be designated as problem drinkers.

4 Other Problem Behaviors

To this point, our analysis has focused on links between drinking behaviors of family and other aspects of the environment on student drinking. These background predictors of student drinking may have affected them in other domains of problem behavior as well. Excess drinking

by parents may be a marker for a relatively permissive home environment that made it easier to experiment in other ways such as with illegal drugs.

In our survey, students were asked whether they used cannabis and with what frequency. Cannabis use was coded into the following categories—never, tried once, use less than every three month, use every month, use every week, and daily. Besides cannabis, the usage of nine other types of drugs was assessed: poppers (a street term for anyl nitrates), tranquillisers, magic mushrooms (Psilocybin mushrooms), heroin, amphetamines, ecstasy, LSD, cocaine and crack.

Table 6 lists the frequency of reported use of these drugs by Irish students. Cannabis is the most frequently used illegal drug by some distance. Fifty-nine percent of the Irish students reports some use of cannabis, a third tried it at least once every three months and about 8% used it monthly. The remaining drugs on the list are used by many fewer students and with much less frequency. Still, poppers, magic mushrooms, ecstasy and cocaine have each been tried at least once by over 10 per cent of students. Use of the rest of the drugs is much less common.

With these outcomes, we estimated models that included the same right hand side variables as in the volume of drinking equations in Table 2 above. Separate models were estimated for cannabis and poppers due to their more common usage. Given their low individual frequency, the other drugs were combined into a single category.

Table 7 lists results obtained from an ordered probit equation of students cannabis use where the highest category represents daily use and the lowest category is never used. Tables 8 and 9 contain probit estimates for poppers and all other illegal drugs (estimated partial derivatives and robust standard errors).

Just like drinking, women are less likely to use cannabis and other drugs (but not foreign students) but in contrast to drinking students age into cannabis and all other illegal drug use.

Regarding secondary school attributes, attending Church of Ireland schools tend to raise the propensity to use drugs. Unlike for drinking behavior, some parental background variables now do matter at least for cannabis. Cannabis consumption is positively associated with parental education and parental separation raises the probability of cannabis and other drug consumption by both genders. By and large, our geographical indicators of historical drinking behaviors are not significant in the drug use equations suggesting that they may be good proxies for drinking specific forces.

Our principal interest rests however in the estimated effects of the background drinking variables. The strong transmission from fathers to sons in terms of their shared patterns of drink consumption apparently does not extend to drug use by sons (or daughters) but there is an association of mothers' drinking behavior and the propensity of both their daughters and sons to use all forms of illegal drugs. The amount of drinking by mothers and older siblings has statistically significant effects on greater cannabis, poppers, and other drug use by students.

The absence of any effect of fathers drinking alongside a strong association with mothers' drinking on the use of illegal drugs by students suggests to us that the transmission mechanism here is quite different than that for student drinking. The drug transmission, which is not direct from parents behavior in any case since we do not measure parental drug consumption, most likely captures unmeasured problems in the parental home, most of which appear to be best proxied by behavior patterns of the mothers and not the fathers.

6. CONCLUSION

In this paper, we attempt to account for patterns of drinking behavior observed among students in an Irish University that were obtained from an Internet survey that we designed.

There is a great deal of variation in the levels of drinking observed among these students. At a conventional level, we find that boys drink more than girls do and that Irish nationals drink more than foreign students. We also find that boys who go to either all boys schools, boarding schools or Church of Ireland schools drink substantially more than other male students.

Our data also collected drinking behaviors of the parents and siblings of these students. We find evidence that there are strong associations between the amounts of alcohol that students consume and the drinking behaviors of their mothers, fathers, and older siblings. In contrast, we find little evidence of any impact of other non-drinking aspects of family background on the students drinking. Parental and older sibling drinking also appears to affect subjective attitudes of students towards what constitutes problem drinking behavior. Students whose parents or older siblings drink appear to be softer on what constitutes a drinking problem when evaluating their own objective drinking behavior.

We also investigated the historical origins of drinking behavior among the Irish. Our exploration examined the role of the Church, the English, the importance of the brewery and distilling industry, and the influence of weather. Finally, we examined the association of family drinking on other problem behaviors in which these students may participate including the use of illegal drugs. Drinking of mothers but not fathers does appear to be associated with increase use of illicit drugs by these students.

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Table 1
Percent Distribution of Number of Drinks Per Year

	All Students	Male Students	Female Students	Fathers	Mothers	Oldest Sibling	Second Oldest Sibling
0	4.9	5.5	4.4	14.4	18.5	12.0	13.6
1-25	8.7	5.8	11.2	12.2	19.5	9.1	9.1
26 - 50	6.2	5.8	6.5	3.6	3.8	3.0	3.7
50-100	9.8	6.5	12.6	9.7	13.8	5.7	4.8
101-250	19.6	16.6	22.1	28.0	27.6	22.4	22.8
251-500	23.8	22.8	24.6	17.6	9.7	25.8	24.5
500-750	12.0	15.1	9.5	7.0	3.9	13.5	13.1
750+	14.9	21.9	9.1	7.4	3.2	8.4	8.3
N	3,983	1,797	2,185	3,334	3,371	2,981	1786
Mean	334.0	409.0	272.4	266.7	155.4	295.8	290.0
Mean (without 0)	351.2	432.9	284.9	313.9	191.2	337.4	336.8

Table 2
Volume of Alcohol Consumption

COEFFICIENT	All	Men	Women
Geography			
Cricket town	89.2***	101.5*	81.6**
	(32.4)	(53.8)	(41.1)
Pale	37.3*	55.5	23.2
	(22.6)	(38.4)	(27.6)
Pop per pub	-0.198***	-0.278**	-0.136*
	(0.07)	(0.12)	(0.08)
Off License	0.180**	0.281*	0.084
	(0.09)	(0.15)	(0.11)
Masses	-0.835**	-0.699	-0.981**
	(0.40)	(0.72)	(0.48)
Divorce law vote	192.9	93.3	237.1
	(144.1)	(268.9)	(159.9)
Brewery 1902	-6.03	-18.77	10.1
	(17.0)	(27.4)	(20.9)
Distillery 1902	52.5	54.5	47.4
	(32.1)	(56.4)	(37.4)
Annual rainfall	0.020	-0.037	0.090
	(0.06)	(0.09)	(0.06)
Annual sunshine	-0.050	0.010	-0.098
	(0.08)	(0.14)	(0.09)
Schools			
All boys school	34.2*	46.4**	NA
	(19.1)	(23.6)	
All girls school	8.6	NA	-10.0
	(16.8)		(20.3)
Church of Ireland school	4.26	50.7	-18.8
	(23.2)	(36.0)	(31.9)
Jewish/Quaker school	-9.6	11.0	-33.2
	(17.7)	(28.2)	(22.1)
Partial boarding	13.7	37.4	-4.5
	(19.9)	(27.5)	(29.3)
Full boarding	204.7***	219.5***	-49.1
	(55.4)	(58.8)	(30.8)
Student Attribute			
Female	-108.0***	NA	NA
	(11.6)		
Age	-10.8***	-10.4***	-10.5***
	(1.69)	(2.81)	(2.04)
Foreigner	-92.2***	-114.2***	-78.7***
	(20.8)	(35.8)	(23.6)
Religiosity	-22.3***	-25.8***	-21.0***
	(4.05)	(6.70)	(4.90)

Number of sibs	1.10	11.8	0.019
	(1.10)	(6.74)	(1.21)
Birth order	11.0*	4.4	15.1**
	(6.47)	(12.7)	(7.30)
Parental Background			
Mother's education	5.1**	6.4*	3.7
	(2.09)	(3.50)	(2.51)
Father's education	0.973	2.41	0.705
	(1.98)	(3.35)	(2.36)
Age of Father	-0.126*	-0.432*	-0.048
	(0.07)	(0.23)	(0.09)
Age of Mother	0.003	-0.040	-0.039
	(0.09)	(0.26)	(0.09)
Parents separated	3.67	15.3	-6.06
	(16.0)	(32.1)	(16.9)
Parents' Income	0.362	-0.690	1.04*
	(0.47)	(0.72)	(0.59)
Family Drinking			
Fathers drinking	0.062**	0.103**	0.025
	(0.025)	(0.041)	(0.030)
Mothers drinking	0.116***	0.101*	0.124***
	(0.032)	(0.057)	(0.036)
Oldest sib drinking	0.239***	0.236***	0.250***
	(0.021)	(0.034)	(0.026)
Second older sib drinking	0.216***	0.192***	0.240***
	(0.026)	(0.044)	(0.030)
Constant	406.1***	385.1***	290.6***
	(74.2)	(124.6)	(87.8)
Observations	3858	1740	2117
R-squared	0.22	0.18	0.20

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 3.a
Responses to Vignettes Compared to Responses on Own Drinking Behavior

For vignettes that describe 7-10 drinks

	All Respondents	Respondents drink 7-9 drinks	
	Vignettes	Vignettes	Self
Mild	0.8	1.0	6.6
Moderate	23.4	40.8	41.0
Cause for concern	37.1	39.0	32.9
Excessive	30.6	17.9	17.6
Extreme	8.1	1.3	2.0

Table 3.b
Responses to Vignettes Compared to Responses Based on Family Drinking Behavior

For vignettes that describe 7-10 drinks

	All Respondents	Fathers drink 7-9 drinks	Mothers drink 7-9 drinks	Older Siblings drink 7-9 drinks
	Vignettes	Vignettes	Vignettes	Vignettes
Mild	0.8	2.5	2.9	1.5
Moderate	23.4	36.4	35.3	39.2
Cause for concern	37.1	38.9	41.2	37.7
Excessive	30.6	20.7	14.7	19.5
Extreme	8.1	1.7	5.9	2.2

Table 4
Self-Rated Scale on Alcohol Problems

COEFFICIENT	(1) All	(2) Men	(3) Women
Geography			
Cricket town	0.327***	0.332**	0.321**
	(0.106)	(0.166)	(0.1391)
Pale	0.012	0.102	-0.074
	(0.078)	(0.126)	(0.102)
Pop per pub	-0.001***	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)
Off License	0.001**	0.001**	0.000
	(0.000)	(0.001)	(0.000)
Masses	-0.003**	-0.002	-0.004**
	(0.001)	(0.002)	(0.002)
Divorce law vote	0.836	0.116	1.378**
	(0.519)	(0.892)	(0.604)
Brewery 1902	-0.043	-0.115	0.045
	(0.053)	(0.079)	(0.071)
Distillery 1902	0.224**	0.261*	0.181
	(0.102)	(0.158)	(0.131)
Annual rainfall	0.000	-0.000	0.000*
	(0.000)	(0.000)	(0.000)
Annual sunshine	-0.000	0.000	-0.001**
	(0.000)	(0.001)	(0.000)
Schools			
All boys school	0.073	0.048	0.000
	(0.064)	(0.077)	(0.000)
All girls school	0.039	0.000	0.068
	(0.059)	(0.000)	(0.070)
Church of Ireland school	0.105	0.078	0.277**
	(0.082)	(0.120)	(0.121)
Jewish/Quaker school	-0.048	-0.062	-0.026
	(0.062)	(0.097)	(0.079)
Partial boarding	0.026	0.112	-0.203*
	(0.071)	(0.098)	(0.108)
Full boarding	0.461***	0.537***	-0.398***
	(0.158)	(0.164)	(0.093)
Student Attribute			
Female	-0.240***	NA	NA
	(0.041)		
Age	-0.048***	-0.050***	-0.045***
	(0.006)	(0.010)	(0.008)
Foreigner	-0.121	-0.161	-0.104
	(0.079)	(0.126)	(0.102)
Religiosity	-0.052***	-0.050**	-0.068***

	(0.015)	(0.024)	(0.020)
Number of sibs	-0.001	0.052*	-0.010***
	(0.005)	(0.027)	(0.004)
Birth order	0.001	-0.054	0.035
	(0.024)	(0.044)	(0.031)
Parental Background			
Mother's education	0.002	-0.002	0.005
	(0.008)	(0.013)	(0.010)
Father's education	0.010	0.013	0.009
	(0.007)	(0.011)	(0.009)
Age of Father	-0.001***	-0.001	-0.001**
	(0.000)	(0.001)	(0.000)
Age of Mother	-0.000	0.000	-0.000
	(0.000)	(0.001)	(0.000)
Parents separated	-0.003	-0.079	0.029
	(0.061)	(0.111)	(0.072)
Parents' Income	0.000	-0.003	0.002
	(0.001)	(0.003)	(0.002)
Family Drinking			
Fathers drinking	0.002	0.008	-0.001
	(0.008)	(0.013)	(0.011)
Mothers drinking	0.025**	0.015	0.035***
	(0.011)	(0.018)	(0.013)
Oldest sib drinking	0.051***	0.044***	0.058***
	(0.007)	(0.012)	(0.009)
Second older sib drinking	0.047***	0.033**	0.063***
	(0.008)	(0.013)	(0.010)
Constant	3.004***	51	2.594***
	(0.264)	(0.434)	(0.330)

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 5
Response Scale for Quantity Vignettes

COEFFICIENT	(1) All	(2) Men	(3) Women
Female name in vignette	0.127***	0.185***	0.078**
	(0.025)	(0.039)	(0.034)
Cut point 1	2.647***	2.593***	2.690***
	(0.042)	(0.064)	(0.057)
Cut point 2	0.562***	0.548***	0.573***
	(0.029)	(0.042)	(0.040)
Cut point 3	1.128***	1.101***	1.146***
	(0.031)	(0.045)	(0.043)
Cut point 4	1.462***	1.398***	1.519***
	(0.034)	(0.052)	(0.046)
Geography			
Cricket town	0.006	-0.019	-0.009
	(0.081)	(0.110)	(0.119)
Pale	0.011	0.087	-0.066
	(0.061)	(0.094)	(0.079)
Pop per pub	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)
Off license	-0.000	-0.001*	-0.000
	(0.000)	(0.000)	(0.000)
Masses	0.001	0.001	0.001
	(0.001)	(0.002)	(0.001)
Divorce law vote	-0.331	-0.509	-0.378
	(0.410)	(0.612)	(0.541)
Brewery 1902	-0.045	-0.093	-0.004
	(0.042)	(0.062)	(0.059)
Distillery 1902	0.012	0.057	-0.047
	(0.075)	(0.099)	(0.116)
Annual rainfall	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Annual sunshine	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Schools			
All boys school	0.061	0.059	NA
	(0.046)	(0.053)	
All girls school	0.009	NA	0.045
	(0.045)		(0.055)
Church of Ireland school	-0.035	-0.056	0.049
	(0.058)	(0.091)	(0.089)
Jewish/Quaker school	0.013	0.059	-0.006
	(0.045)	(0.066)	(0.064)
Partial boarding	0.016	0.047	-0.054
	(0.052)	(0.067)	(0.092)
Full boarding	-0.108	-0.130	-0.414***
	(0.100)	(0.108)	(0.113)

Student Attribute

Female	0.077**	NA	NA
	(0.037)		
Age	0.009	0.012*	0.009
	(0.006)	(0.009)	(0.008)
Foreigner	0.421***	0.482***	0.396***
	(0.080)	(0.121)	(0.105)
Religiosity	0.050***	0.043**	0.059***
	(0.012)	(0.018)	(0.016)
Number of sibs	0.014***	-0.008	0.016***
	(0.004)	(0.019)	(0.003)
Birth order	-0.006	0.005	-0.001
	(0.018)	(0.033)	(0.024)

Parental Background

Mother's education	-0.006	-0.001	-0.011
	(0.006)	(0.010)	(0.008)
Father's education	0.007	0.006	0.006
	(0.006)	(0.009)	(0.007)
Age of Father	0.000	0.001**	-0.000
	(0.000)	(0.000)	(0.000)
Age of Mother	0.000	-0.000	0.000
	(0.000)	(0.001)	(0.000)
Parents separated	0.062	0.019	0.114**
	(0.047)	(0.079)	(0.058)
Parents' income	-0.001	-0.001	-0.001
	(0.001)	(0.002)	(0.001)

Family Drinking

Fathers drinking	-0.008	-0.009	-0.006
	(0.006)	(0.010)	(0.008)
Mothers drinking	-0.017**	-0.020	-0.016
	(0.008)	(0.013)	(0.011)
Oldest sib drinking 1	-0.025***	-0.017**	-0.034***
	(0.005)	(0.008)	(0.007)
Second older sib drinking 1	-0.024***	-0.013	-0.034***
	(0.006)	(0.009)	(0.008)
Constant	0.752***	0.680*	0.796***
	(0.232)	(0.399)	(0.282)
Observations	3320	1505	1814
R-squared	0.62	0.61	0.64

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 6
Frequency of Drug-Use by Drug Type

	Cannabis	Poppers	Tranquillizers	Mushrooms	Heroin	Amphet	Ecstasy	LSD	Cocaine	Crack
Never had	40.59	87.34	95.97	86.01	99.53	94.95	88.96	95.85	89	98.97
Used once	24.25	10.3	3.01	9.53	0.29	2.86	5.23	2.84	5.56	0.76
Three months	22.27	1.95	0.76	3.99	0.06	1.9	4.15	1.02	4.45	0.12
Every month	7.72	0.26	0.09	0.32	0.03	0.2	1.37	0.15	0.79	0.03
Every week	3.72	0.03	0.09	0.06	0	0	0.2	0.03	0.12	0
Use daily	1.45	0.12	0.09	0.09	0.09	0	0.09	0.12	0.09	0.12
N	3444	3428	3422	3430	3423	3423	3425	3418	3,419	3,412

Table 7
Ordered Probit for Cannabis Use

COEFFICIENT	(1) All	(7) Men	(13) Women
Cricket town	0.002	0.014	-0.035
	(0.130)	(0.186)	(0.188)
Pale	-0.007	-0.015	-0.042
	(0.098)	(0.143)	(0.137)
Pop per pub	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Off license	-0.000	0.000	-0.000
	(0.000)	(0.001)	(0.001)
Masses	0.001	0.004	-0.002
	(0.002)	(0.003)	(0.002)
Divorce law vote	-0.362	-0.690	0.210
	(0.675)	(1.021)	(0.892)
Brewery 1902	0.071	0.103	0.103
	(0.070)	(0.107)	(0.094)
Distillery 1902	-0.141	-0.337*	0.015
	(0.126)	(0.194)	(0.175)
Annual rainfall	-0.000	-0.001**	0.000
	(0.000)	(0.000)	(0.000)
Annual sunshine	0.000	0.000	-0.000
	(0.000)	(0.001)	(0.000)
Schools			
All boys school	-0.059	-0.065	NA
	(0.077)	(0.086)	
All girls school	-0.003	NA	-0.016
	(0.075)		(0.101)
Church of Ireland	0.139	0.030	0.286*
	(0.097)	(0.133)	(0.158)
Jewish or Quaker	-0.095	-0.059	-0.134
	(0.075)	(0.103)	(0.112)
Partial boarding	-0.039	-0.009	-0.156
	(0.086)	(0.105)	(0.151)
Full boarding	0.127	0.180	-0.641
	(0.170)	(0.161)	(0.895)
Student Attribute			
Number of sibs	-0.000	-0.029	0.003
	(0.012)	(0.027)	(0.011)
Birth order	-0.005*	-0.030	0.044
	(0.031)	(0.047)	(0.041)
Female	-0.351***	NA	NA
	(0.056)		
Age	0.039***	0.019	0.062***
	(0.008)	(0.011)	(0.011)
Foreigner	-0.181	-0.282	-0.151

	(0.117)	(0.173)	(0.158)
Religiosity	-0.263***	-0.231***	-0.305***
	(0.019)	(0.026)	(0.027)
Parental Background			
Mother's education	0.034***	0.044***	0.023*
	(0.010)	(0.014)	(0.013)
Father's education	0.016*	-0.002	0.039***
	(0.009)	(0.013)	(0.012)
Age of father	0.000	0.001	-0.000
	(0.001)	(0.001)	(0.001)
Age of Mother	-0.001	-0.000	-0.001*
	(0.001)	(0.001)	(0.001)
Parents separated	0.222***	0.206**	0.236***
	(0.065)	(0.104)	(0.086)
Parents income	0.001	-0.003	0.004*
	(0.002)	(0.003)	(0.002)
Family Drinking			
Fathers Drinking	0.011	0.009	0.016
	(0.010)	(0.014)	(0.014)
Mothers Drinking	0.038***	0.034*	0.047***
	(0.011)	(0.018)	(0.015)
Oldest sib drinking	0.058**	0.043***	0.075***
	(0.008)	(0.011)	(0.011)
Second older sib	0.041***	0.038***	0.046***
	(0.009)	(0.013)	(0.012)
Constant			
Observations	3322	1505	1816
R-squared	.	.	.

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 8
Probit on the use of poppers
(Derivatives and robust standard errors)

COEFFICIENT	All	Men	Women
Geography			
Cricket town	0.064	0.089	0.057
	(0.0652)	(0.096)	(0.080)
Pale	0.008	0.019	-0.003
	(0.041)	(0.064)	(0.054)
Pop per pub	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Off license	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.0000
Masses	-0.001	-0.000	-0.001
	(0.001)	(0.001)	(0.001)
Divorce law vote	0.183	-0.009	0.504
	(0.263)	(0.425)	(0.333)
Brewery 1902	0.006	-0.031	0.030
	(0.030)	(0.047)	(0.036)
Distillery 1902	0.022	0.064	0.011
	(0.054)	(0.086)	(0.064)
Annual rainfall	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Annual sunshine	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Schools			
All boys school	-0.005	-0.013	NA
	(0.030)	(0.038)	
All girls school	-0.005		0.005
	(0.031)		(0.037)
Church of Ireland school	0.034	0.055	0.013
	(0.042)	(0.066)	(0.054)
Jewish/Quaker school	0.017	-0.010	0.045
	(0.030)	(0.044)	(0.044)
Partial boarding	-0.059**	-0.096**	-0.013
	(0.029)	(0.041)	(0.045)
Full boarding	0.041	0.042	
	(0.080)	(0.088)	
Student Attribute			
Female	-0.081***	NA	NA
	(0.021)		
Age	0.014***	0.015***	0.013***
	(0.003)	(0.005)	(0.004)
Foreigner	-0.120***	-0.140***	-0.105***
	(0.028)	(0.046)	(0.031)
Number of sibs	-0.001	0.003	-0.002

	(0.003)	(0.013)	(0.003)
Birth order	-0.003	-0.029	0.019
	(0.012)	(0.021)	(0.015)
Religiosity	-0.055***	-0.060***	-0.057***
	(0.008)	(0.012)	(0.010)
	(0.027)	(0.040)	(0.035)
Parental Background			
Mother's education	-0.000	0.003	-0.003
	(0.004)	(0.006)	(0.005)
Father's education	-0.009***	-0.013**	-0.006
	(0.004)	(0.005)	(0.005)
Age of Father	-0.000*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Age of Mother	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Parents separated	0.089***	0.025	0.127***
	(0.031)	(0.049)	(0.040)
Parents' Income	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)
Family Drinking			
Fathers drinking volume	0.008**	0.014**	0.001
	(0.004)	(0.006)	(0.005)
Mothers drinking volume	0.004	0.005	0.001
	(0.005)	(0.008)	(0.006)
Oldest sib drinking	0.008***	0.007	0.009**
	(0.003)	(0.005)	(0.004)
Second Older sib drinking	0.001	-0.005	0.009*
	(0.004)	(0.006)	(0.005)
Observations	3856	1740	2114
R-squared	.	.	.

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 9
Probit on Drug Use
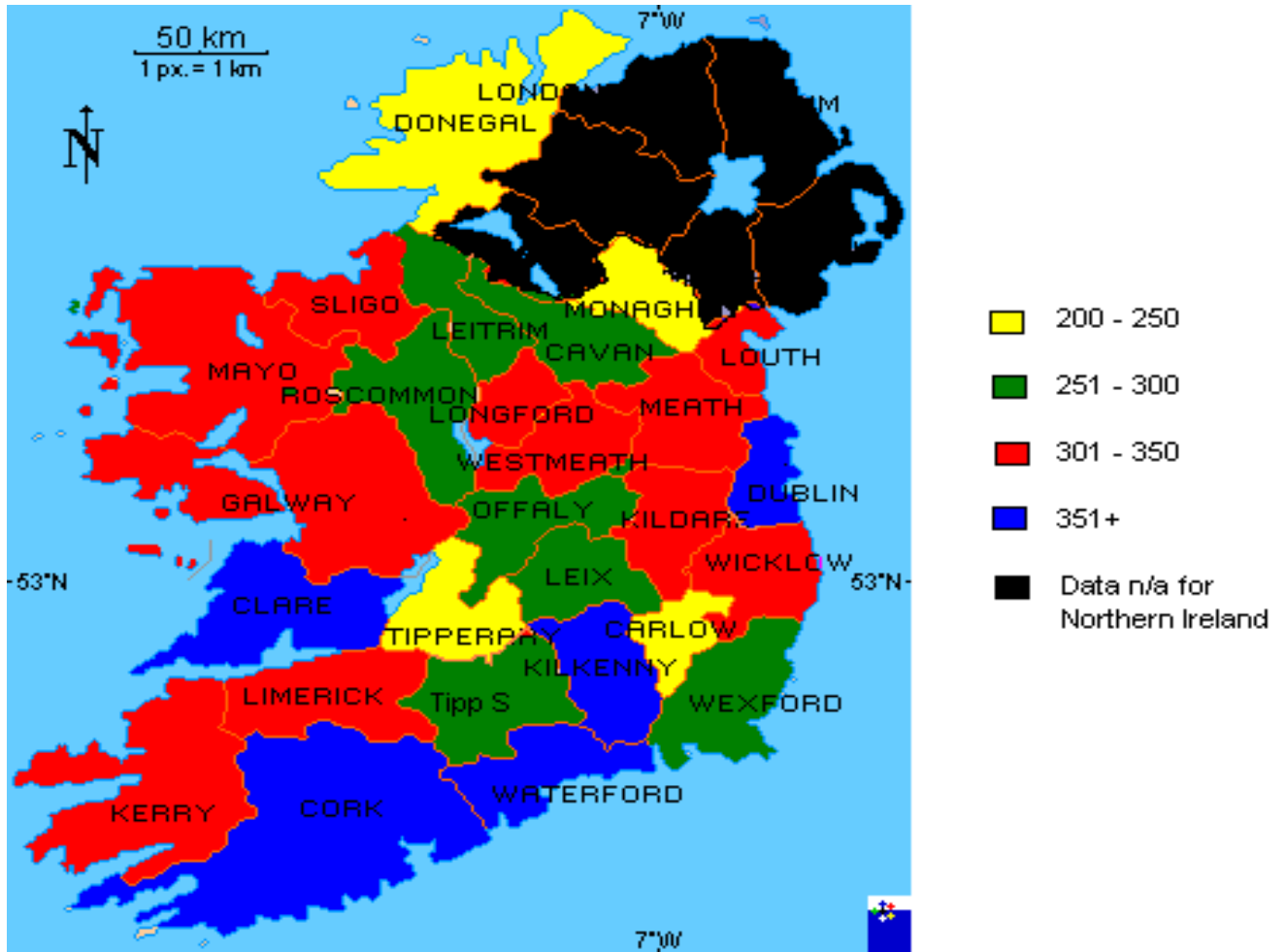(Derivatives and robust standard errors)

COEFFICIENT	(1) Drugs	(2) Drugs	(3) Drugs
Geography			
Cricket Town	0.025	0.070	0.003
	(0.053)	(0.093)	(0.059)
Pale	-0.003	0.074	-0.063*
	(0.034)	(0.057)	(0.036)
Pop per pub	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)
Off license	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)
Masses	-0.000	0.000	-0.001
	(0.001)	(0.001)	(0.001)
Divorce law vote	-0.100	-0.514	0.070
	(0.227)	(0.433)	(0.232)
Brewery 1902	-0.031	-0.078*	-0.007
	(0.027)	(0.045)	(0.031)
Distillery 1902	0.055	0.071	0.058
	(0.048)	(0.083)	(0.054)
Annual rainfall	-0.000*	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)
Annual sunshine	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Schools			
All boys school	0.031	0.028	NA
	(0.027)	(0.035)	
All girls school	0.019	NA	0.039
	(0.027)		(0.026)
Church of Ireland school	0.067*	0.067	0.108
	(0.039)	(0.059)	(0.068)
Jewish/Quaker school	0.027	0.039	0.038
	(0.027)	(0.045)	(0.034)
Partial boarding	-0.021	-0.036	-0.040
	(0.027)	(0.039)	(0.036)
Full boarding	0.029	0.086	
	(0.067)	(0.089)	
Student Attribute			
Female	-0.081***	NA	NA
	(0.020)		
Age	0.025***	0.023***	0.024***
	(0.003)	(0.005)	(0.003)
Religiosity	-0.069***	-0.071***	-0.068***
	(0.007)	(0.011)	(0.008)

Number of sibs	0.005	0.011	0.004*
	(0.004)	(0.013)	(0.002)
Birth order	-0.007	-0.021	0.004
	(0.010)	(0.019)	(0.012)
Foreigner	-0.080***	-0.139***	-0.0468*
	(0.028)	(0.045)	(0.028)
Parental Background			
Mother's education	0.007**	0.011**	0.003
	(0.003)	(0.005)	(0.004)
Father's education	0.002	-0.008	0.010***
	(0.003)	(0.005)	(0.004)
Age of Father	0.000	0.001	-0.000
	(0.000)	(0.001)	(0.000)
Age of Mother	-0.001*	-0.001	-0.000*
	(0.000)	(0.001)	(0.000)
Parents separated	0.083***	0.019	0.114***
	(0.028)	(0.045)	(0.034)
Parents' income	0.000	-0.001	0.001
	(0.001)	(0.001)	(0.001)
Family Drinking			
Fathers drinking volume	0.002	0.007	-0.002
	(0.003)	(0.006)	(0.004)
Mothers drinking volume	0.008*	0.006	0.009**
	(0.004)	(0.007)	(0.004)
Oldest sib drinking	0.010***	0.009**	0.011***
	(0.003)	(0.004)	(0.003)
Second Older sib drinking	0.011***	0.011*	0.011***
	(0.003)	(0.005)	(0.003)
Observations	3223	1455	1766
R-squared	.	.	.

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Figure 1. Annual Volume of Drinking by County

Appendix A

Description of Covariates

Name	Covariate	Description
Age	Age	**Integer Age.** "What is your age?"
Female	Gender	"What is your gender?"**1=Female, 0 = Male.**
Fathers Education	Fathers Education	"What is the highest level of education your father attained?"**1=Primary, 2=Lower Secondary, 3=Upper Secondary, 4=Higher Education/University. These variables are recoded to represent average years of education.**
Mothers Education	Mothers Education	"What is the highest level of education your mother attained?"**1=Primary, 2=Lower Secondary, 3=Upper Secondary, 4=Higher Education/University. These variables are recoded to represent average years of education.**
Foreigner	Nationality	"Which of the following best describes your situation?"**1=Irish national, 2=Foreign national studying for a full qualification in Ireland, 3=Foreign national studying as part of an exchange programme.** Condensed to "Non-National" (=1 if Foreign national, 0 if Irish National)
Father 's Drinking	Fathers Annual Alcohol Volume	**Combined from two questions:** Does your father consume alcohol? 1= **Abstainer, 2 = Consumes Alcohol Less than Once a Month, 3 = Consumes Alcohol Less than once a week, 4 = Consumes Alcohol Once a Week, 5 = Consumes Alcohol More Than Once A Week, 6 = Consumes Alcohol Daily. Roughly how many drinks does your mother consume each time she is drinking"** – Integer Amount
Mother's Drinking	Mothers Annual Alcohol Volume	**Combined from two questions**: Does your mother consume alcohol? 1= **Abstainer, 2 = Consumes Alcohol Less than Once a Month, 3 = Consumes Alcohol Less than once a week, 4 = Consumes Alcohol Once a Week, 5 = Consumes Alcohol More Than Once A Week, 6 = Consumes Alcohol Daily. "Roughly how many drinks does your father consume each time he is drinking"** – Integer Amount
Foreigner	Nationality	"Which of the following best describes your situation?"**1=Irish national, 2=Foreign national studying for a full qualification in Ireland, 3=Foreign national studying as part of an exchange programme.** Condensed to "Non-National" (=1 if Foreign national, 0 if Irish National)
Parents' Income	Parental Income	"Please try to rate the overall income situation of your parents/guardians. The gross family-income per year is about…" **1= up to €10,200, 2= €10,201 - 20,400, 3= €20,400 -€30,600, 4= €30,601 - 40,800, 5= €40,801 - €51,000, 6= €51,001 - 61,200, 7= €61,201 - €71,400, 8= €71,400 or more**
Parents Separated	Parental Marital Status	"Are your parents separated?" **1=Yes, 0=No.**