

VALIDITY OF INDICES OF ALCOHOLISM A COMMENT FROM IRISH EXPERIENCE

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The incidence of 'alcoholism' is difficult to determine. This difficulty reflects the absence of a universally accepted definition of the disease. Various attempts have been made to base international comparisons upon such indices as alcohol consumption per person, death rates from 'alcohol-related' diseases, hospital admission rates for 'alcoholism', and even conviction rates for 'drunkenness'. No problem would arise if all of these yardsticks displayed a high and consistent inter-correlation, between regions and over time. In fact the widely used Jellinek formula assumes this to be the case and, although this method of comparing the incidence of alcoholism internationally has been criticized (Sundby, 1967), its use has influenced numerous discussions of national levels of alcoholism.

The present paper has been prompted by the authors' knowledge of the Irish scene. In view of the prominence of the emigrant Irish in several studies of alcoholism, the case of the Irish in Ireland deserves more attention than it has received, especially since (as is argued in the course of the present paper) it calls into question the feasibility of developing any consistent indices of the incidence of alcoholism. Some aspects of this topic have already been discussed among research workers in Ireland (Lynn and Hampson, 1970; Walsh, 1970).

Literary and historical sources provide abundant evidence that the Irish have long been regarded as exceptional in their abuse of alcohol. Commentators have been virtually unanimous in applying the stereotype of the drunken Irishman. A systematic discussion of the literary and anthropological evidence, together with an attempt to provide a theory of Irish alcoholism, have been provided by Bales (1962).

This paper attempts to compare the Irish case with as large a number of other countries as is feasible, using quantifiable indices that have been proposed by various authors as possible yardsticks of the prevalence or incidence of alcoholism. In this way it is hoped not only to place the Irish case in perspective but also to evaluate the reliability

of these yardsticks in international comparisons of alcoholism. The measures that will be considered are:

1. First admission rates to hospitals for alcoholism
2. Death rates from cirrhosis of the liver and alcoholism
3. Consumption of alcohol per person
4. Expenditure on alcohol in relation to income
5. Convictions for drunkenness.

HOSPITAL ADMISSION DATA

First admission rates to psychiatric hospitals have been widely used as measures of the incidence of psychiatric illness, and their use for this purpose has been defended (Oedegaard, 1962). These rates are more likely to be accurate and sensitive indices of the incidence of serious illnesses, such as schizophrenia, than of milder disorders such as the neuroses. Alcoholism probably occupies an intermediate position in terms of the gravity with which it is viewed in most communities, and serious cases of alcoholism or alcoholic psychosis might be expected to be hospitalized, whereas milder manifestations of the disease would remain untreated. Obviously, changing attitudes to psychiatric hospitalization and improvement in the treatment facilities available, as well as cross-cultural variations in community tolerance of alcohol-related deviance, could cause wide fluctuations in first admission rates which are not a reflection of any variation in the true incidence of alcoholism.

In Table I first admission rates for alcoholism and alcoholic psychosis are set out for all the countries for which data could be obtained. This Table was compiled with the assistance of experts in the individual countries, whose names are listed in the Table. In addition to the rates per 100,000 population, the proportion of total first admissions accounted for by these diagnoses is, where possible, presented. It may be seen that the Irish rate is the highest in the Table. The lowest first admission rate

TABLE I

FIRST ADMISSION RATES FOR ALCOHOLISM AND ALCOHOLIC PSYCHOSIS PER 100,000 POPULATION AGED 15 AND OVER

Country	Year	Male	Female	Both Sexes	As % of All First Admissions
England and Wales*	1969	19.7	5.3	12.2	4.0
Finland	1968	89.9	5.3	45.3	n.a.
France..	1969	76.8	13.2	43.7	23.9
Ireland	1969	90.6	17.5	59.7	15.5
Norway	1970	14.1	1.9	7.9	7.6
Scotland	1969	n.a.	n.a.	29.8	n.a.
Sweden	1966	n.a.	n.a.	51.8	n.a.

*including 'other additions'.
n.a. = not available.

Sources: England and Wales: Department of Health and Social Security (1971).
Finland: Dr. K. Druum, Finnish Foundation for Alcohol Studies, Helsinki
France: Dr. R. Sadoun, Institut National de la Santé et de la Recherche Médicale, Paris
Ireland: Medico-social Research Board, Dublin
Norway: Dr. G. Lettenstrøm, Statistisk Sentralbyrå, Oslo
Scotland: Dr. J. P. Donnelly, Scottish Home and Health Department, Edinburgh
Sweden: Dr. U. Takman, Socialstyrelsen, Stockholm

is that of Norway, only 13% of the Irish rate. It may also be seen that the proportion of all first admissions accounted for by alcoholism and alcoholic psychosis is high in Ireland compared with some of the countries in the Table.

The ratio of admissions for alcoholism to all admissions might be interpreted as controlling, at least in part, for the impact of such factors as the availability of hospital facilities and the general willingness or otherwise to resort to hospitalization for mental disorders. If the high Irish admission rate for alcoholism were merely a reflection of a generally elevated admission rate among the Irish there would be no reason to expect the proportion of admissions accounted for by the diagnosis alcoholism to be high.

A community study in Dublin (Kearney, Lawler, and Walsh, 1969) established that a great deal of excessive drinking never came under hospital treatment. In an earlier study (Walsh, 1968) it was shown that a preponderance of the Irish first admissions for alcoholism was drawn from the middle and upper socio-economic groups. The Irish data reveal a marked upward trend over the last seven years for which returns are available, as may be seen from Table II. The rate for males has doubled over this period, and the rate for both sexes combined rose by 82%. The proportion of total first admissions accounted for by alcoholism rose from 11% in 1964 to 16% in 1970. In view of the fact that 'milder' complaints generally are now more frequently referred for treatment, the rise in the admission rate may be due to an increase in the

TABLE II

FIRST ADMISSIONS FOR ALCOHOLISM AND ALCOHOLIC PSYCHOSIS—IRISH PSYCHIATRIC HOSPITALS

Year	Rate per 100,000 Population	As % of All First Admissions
1964	23.9	10.7
1965	24.0	11.3
1966	28.0	11.9
1967	30.0	12.5
1968	37.0	14.8
1969	41.0	15.5
1970	43.4	16.3

Source: Medico-social Research Board, Dublin

proportion of heavy drinkers who receive treatment rather than to a sharp rise in the incidence of alcoholism. Improved services, decreased stigma, and changing community attitudes have possibly considerably reduced the threshold of hospitalization for this disorder in the last decade in Ireland. The fact that most of the increase has been to Local Authority (as distinct from private) hospitals (and hence probably from the lower socio-economic groups) supports this interpretation of the trends.

At best it may be concluded that the hospital data provide a lower limit to the incidence of the disease, whose full incidence cannot be judged in the absence of very detailed international comparisons of treatment facilities, diagnostic practice, and community attitudes towards hospitalization. However, in so far as relating the admissions for alcoholism to total admissions controls for differences between countries in these intervening variables, the Irish admissions data suggest that Ireland is among the countries with a high incidence of alcoholism.

Evidence about the Irish outside Ireland is more conclusive. Admission rates for various ethnic groups in the United States or Britain may be regarded as more directly comparable evidence on the variations in the incidence of alcoholism between nationalities, since the hospital facilities available to one group may be presumed to be available to all. (However, different ethnic communities in a host country may reproduce the 'old country's' tolerance or otherwise of alcohol-related deviancy and this factor is not controlled.) The Irish in America were the ethnic group with the highest rejection rate for alcoholism from army services during the second world war (Hyde and Chisholm, 1944). First admission rates to New York mental hospitals showed the rate for alcoholism among those of Irish parentage to be far in excess of that among any other ethnic group (Malzberg, 1940). The American Drinking Practices Survey found the highest incidence of heavy drinking and of alcohol-related problems among Americans of Irish background (Department of Health, Education, and Welfare,

1971). Recent evidence from the Camberwell Psychiatric Case Register shows a very high rate of alcoholism among the Irish in London (Bagley and Binitie, 1970). Data for 1970 made available by Dr. J. Brothwood of the Department of Health and Social Security (England and Wales) show a first admission rate among the Irish-born resident in England and Wales of 49 per 100,000 for 'all other non-psychotic disorders'. This diagnostic group includes alcoholism, drug dependence, and some relatively rare disorders but excludes alcoholic psychosis. The first admission rate for 'alcoholism and other addictions' among the native-born residents of England and Wales was 8.9 per 100,000 in 1970. Thus, although exactly comparable statistics are not available, the admission rate for alcohol-related psychiatric disorders among the Irish in England is clearly greatly in excess of the corresponding rate among the native-born English population.

Evidence about the Irish outside Ireland is not conclusive as far as the Irish in Ireland are concerned. However, the comparisons mentioned above compare the Irish immigrants' rates with those of immigrants from other nations (as well as with that of the native-born population). To dismiss this evidence as inconclusive in regard to the Irish in Ireland it would be necessary to maintain that Irish emigrants are selected from the non-migrant population in some way not true of emigrants from other countries. On this point no evidence is available.

The evidence from hospital admission rates, therefore, suggests that, as far as this index is valid, the incidence of alcoholism is high among the Irish, both in Ireland and elsewhere.

DEATH RATES FROM ALCOHOLISM AND CIRRHOSIS OF THE LIVER

In Table III the death rate per 100,000 population for the combined diagnoses of cirrhosis of the liver and alcoholism are set out. The Irish rate is very low by international standards, being less than 10% of the French rate. The comparability of these rates may be affected by varying practices in regard to certification and registration. The Irish data have been explored by examining 7,631 necropsies performed between 1947 and 1969, and a rate of 7.6 deaths from cirrhosis per 1,000 necropsies was established, from which a 'true' incidence of cirrhosis of 3.8 per 100,000 population was derived (Duffy and Dean, 1971). Thus even if the Irish rate is adjusted to allow for under-reporting, it remains very low in comparison with the unadjusted rates in other countries.

TABLE III

INTERNATIONAL DATA ON ALCOHOL CONSUMPTION AND DEATH RATE FROM CIRRHOSIS OF THE LIVER AND ALCOHOLISM

Country	Litres of Alcohol per Person Aged 14 and Over per Year			Cirrhosis and Alcoholism Death Rate per 100,000 Total Population
	Spirits and Wine	Beer	Total	
France ..	21.6	3.1	24.7	46.1
Italy ..	14.6	0.6	15.2	23.6
West Germany ..	4.9	7.5	12.3	23.6
Australia ..	2.8	8.1	10.9	7.0
Belgium ..	2.9	7.9	10.9	12.3
U.S.A. ...	5.5	4.4	9.9	14.2
Canada ..	3.5	4.8	8.3	7.4
England and Wales ..	1.8	5.4	7.2	3.0
Sweden ..	4.1	2.5	6.6	7.2
Japan ..	4.4	1.4	5.8	10.6
Netherlands ..	3.2	2.6	5.8	3.7
Ireland ..	1.9	3.8	5.6	3.4
Norway ..	2.3	1.9	4.2	4.3
Finland ..	2.6	1.3	3.9	3.6
Israel ..	2.4	0.7	3.1	5.4

Source: Table III in Department of Health, Education, and Welfare (1971)

The question whether or not this death rate is a meaningful index of 'alcoholism' will be discussed below. In as much as this index is significant, it is evident that it assigns Ireland to a very different international rank than that suggested by the hospital admission data.

CONSUMPTION OF ALCOHOL PER PERSON

National consumption of alcohol, expressed per head of total population, is frequently invoked as a measure of alcoholism. From the data in Table III it may be seen that Ireland has one of the lowest average alcohol consumption levels in the world.

Consumption per person is a national average and may conceal great variations between countries in regard both to the proportion of the total population that drinks and the drinking habits of drinkers. It would be desirable to consider evidence relating to the time-pattern of consumption in Ireland because even if average intake per drinker is low, Irish drinking may tend to be concentrated in certain short and intense 'sessions'. The result may be that drinkers are less able to maintain normal social functioning than would be the case if the same consumption were more evenly spread over time (and more usually accompanied by food intake). Since evidence on all these points is missing, it can only be concluded that consumption is on average very low in Ireland, and, as far as this index of alcoholism is valid, it is at variance with the indications from the hospital admissions data but in agreement with the mortality data for cirrhosis and alcoholism.

TABLE IV
CONSUMPTION OF ALCOHOL AND DEATH RATE FROM CIRRHOSIS AND ALCOHOLISM IN IRELAND

Year	Litres of Pure Alcohol per Person per Year					Cirrhosis and Alcoholism Death Rate per 100,000
	Spirits and Wine			Beer	Total	
	Spirits	Wine	S and W			
1948	0.765	0.116	0.881	2.312	3.193	1.8
1949	0.789	0.117	0.906	2.312	3.218	1.7
1950	0.854	0.121	0.975	2.312	3.287	2.2
1951	0.864	0.128	0.992	2.532	3.524	2.0
1952	0.677	0.113	0.790	2.367	3.157	2.4
1953	0.695	0.120	0.815	2.336	3.151	1.6
1954	0.752	0.134	0.886	2.336	3.222	1.7
1955	0.770	0.134	0.904	2.407	3.311	2.5
1956	0.737	0.139	0.876	2.438	3.314	2.5
1957	0.692	0.131	0.823	2.359	3.182	2.2
1958	0.718	0.137	0.855	2.304	3.159	2.6
1959	0.750	0.146	0.896	2.383	3.279	2.2
1960	0.791	0.153	0.944	2.462	3.406	2.1
1961	0.893	0.175	1.068	2.556	3.624	2.6
1962	0.960	0.170	1.130	2.580	3.710	3.0
1963	0.989	0.190	1.179	2.642	3.821	2.6
1964	1.020	0.217	1.237	2.745	3.982	2.8
1965	1.093	0.223	1.316	2.745	4.061	3.3
1966	1.067	0.233	1.300	2.737	4.037	2.1
1967	1.088	0.257	1.345	2.839	4.184	2.8
1968	1.236	0.276	1.512	3.051	4.563	3.4
1969	1.333	0.288	1.621	3.075	4.696	3.8
1970	1.496	0.300	1.796	3.264	5.055	3.6

Sources: Consumption data from Revenue Commissioners (1949-71)
Mortality data from Central Statistics Office (1949-71)

ASSOCIATION BETWEEN ALCOHOL CONSUMPTION AND DEATH RATES FROM CIRRHOSIS OF THE LIVER

One reason frequently advanced for the use of per capita alcohol consumption as an index of alcoholism is the high correlation said to exist between this variable and the death rate from cirrhosis and alcoholism. A recent study has provided some evidence of this correlation by examining time series data for the United States, Paris, and Britain (Terris, 1967). It was concluded on the basis of this very limited sample of countries that international variation in the death rate was more closely related to the per capita consumption of wine and spirits than of beer. The death rate from cirrhosis and alcoholism, and the consumption of alcohol from wine, spirits, and beer in Ireland since 1948 are presented in Table IV. Regression analysis has been applied to discover whether there is a significant relationship between these variables, and the results are summarized in Table V. There is a high correlation of the death rate from cirrhosis of the liver and alcoholism with the consumption both of spirits and wine (equation 1) and of beer (equation 2) and also with the total alcohol consumption (equation 3). This outcome is all the more impressive as only the current year's consumption is used to explain the same year's death rate, and no experimentation has been tried that would allow for lagged or cumulative effects by the consumption variables on the dependent variable. It is impossible to decide which of the

three consumption variables gives the 'best explanation' of the death rate: all perform almost equally well, and the attempt to include both 'spirits and wine' and 'beer' in the same equation (equation 4) is unsuccessful due to the very high intercorrelation between these two independent variables. These time series data also suffer from the defect that all the variables used have moved steadily upward

TABLE V
REGRESSION COEFFICIENTS OF ANNUAL DEATH RATES FROM CIRRHOSIS OF THE LIVER AND ALCOHOLISM (PER 100,000) ON ALCOHOL CONSUMPTION (LITRES PER PERSON PER YEAR) WITH *t* RATIOS IN PARENTHESES—IRELAND, 1948-70

Equation Number	Spirits and Wine	Beer	Total	\bar{r}^2	Durbin-Watson Statistic
1	1.783 (6.46)*			0.65	1.89
2		1.838 (6.90)*		0.68	2.22
3			0.915 (6.78)*	0.67	2.06
4	-0.054 (0.04)	1.891 (1.37)		0.66	2.22

*P (t) < 0.01

Correlation between 'Spirits and Wine' and 'Beer' = +0.98

\bar{r}^2 is the square of the multiple correlation coefficient corrected for degrees of freedom. It may be regarded as showing the proportion of the variance in the dependent variable that is 'explained' by the equation (after correcting for the tendency of the mere insertion of independent variables to improve the fit).

Durbin-Watson statistic: This is a test for the independence of successive residuals from the estimated regression line. A significant value of this statistic would suggest that some important variable had not been included in the time series equation.

TABLE VI

REGRESSION COEFFICIENTS OF DEATH RATES FROM CIRRHOSIS OF THE LIVER AND ALCOHOLISM IN 15 COUNTRIES ON ALCOHOL CONSUMPTION (LITRES PER PERSON PER YEAR) WITH *t* RATIOS IN PARENTHESES

Equation Number	Spirits and Wine	Beer	Total	\bar{R}^2
1	1.961 (8.74)*			0.84
2		0.210 (0.17)		0.00
3			1.977 (9.80)*	0.87
4	2.082 (11.65)*	1.182 (3.08)*		0.91

* $P(t) < 0.01$

Correlation between 'Spirits and Wine' and 'Beer' = -0.22

during the period (except for some brief interruptions), and it is therefore possible that all of them are influenced by a common external factor. Rising standards of living, for example, have been shown to exert a strong influence on Irish alcohol consumption (Walsh and Walsh, 1970). From this point of view the international results presented below are more interesting and allow a more satisfactory testing of the hypotheses advanced by Terris.

It may be seen (Table VI) that in the international sample the correlation between 'spirits and wine' and 'beer' is low and negative—wine-drinking countries tend to have low levels of beer consumption. This removes the problem that arose in connection with the time-series Irish data due to the high intercorrelation between these two variables. The regression results for the international data (Table VI) show the same high correlation between the cirrhosis death rate and the intake of alcohol that was found in the Irish data (equation 3). However, when the alcohol consumed from beer on its own is used as an independent variable it does not account for any of the international variation in the death rate (equation 2). On the other hand, either 'total alcohol' on its own (equation 3) or 'spirits and wine' and 'beer' as separate variables (equation 4) result in a higher \bar{R}^2 than does 'spirits and wine' on its own (equation 1). Thus, alcohol intake from beer does help to explain some of the variation unaccounted for by the 'spirits and wine' variable. It is most interesting to note that when the two sources of alcohol are included together in a regression, both variables are highly significant statistically (as is clear from the *t* ratios in the Table), and their regression coefficients also differ very significantly*: the coefficient of the 'spirits and wine' variable

suggests that every additional litre of pure alcohol imbibed from this source raises the death rate from cirrhosis and alcoholism by 2.1 per 100,000, whereas the coefficient of the 'beer' variable suggests that an extra litre of pure alcohol from this source increases the death rate by only 1.2 per 100,000. Thus the international results show strong evidence of an association between alcohol intake per person and the death rate from cirrhosis and alcoholism, and suggest that although alcohol imbibed from either 'spirits and wine' or 'beer' tends to raise the death rate, the same quantity of pure alcohol appears to have a much greater impact on the death rate when imbibed as wine or spirits as opposed to beer.

This high and consistent correlation between per capita measures of alcohol consumption and the death rate from cirrhosis raises the question whether these two indices should be regarded as separate measures of alcoholism. It is arguable that the only relevance the death rate from cirrhosis has to the measurement of alcoholism derives from its link with average alcohol consumption, and hence the latter index may be used as a more direct measure of drinking habits which subsumes the mortality data. In any event, whether these two indices constitute two separate measures of alcoholism or are merely two facets of the same measure, it is clear that Ireland has a very low international rank by reference to either. This finding is at variance with the evidence on the Irish in America, where it has been found that 'for both alcoholism and liver disease, the Irish rate is by far the highest' (Room, 1968). However, this study of American mortality statistics was confined to nineteenth century census data, and no more recent material is available.

EXPENDITURE ON ALCOHOL IN RELATION TO INCOME

As 'alcoholism' is a psychiatric concept, the frame of reference used to measure and describe it must be social and familial as well as physiological. The same consumption pattern of alcohol could have very different effects on an individual's mental health, depending on his economic and familial circumstances. This is especially relevant in a relatively low-income country such as Ireland, where alcohol has been the object of very high excise taxation. The contrast that prevails between Ireland and some of her European neighbours in this respect may be illustrated by considering that in 1967 one year's average income would have purchased 1,625 litres of beer in Ireland, compared with 6,033 in the Netherlands (Walsh and Walsh,

* The *t* ratio for the test of the difference between the coefficients is 2.33, compared with a critical value, at 0.05 level, of 2.18. For this test see Johnston (1963).

TABLE VII

INTERNATIONAL DATA ON EXPENDITURE ON ALCOHOL AS A PERCENTAGE OF TOTAL PERSONAL EXPENDITURE

Country	Expenditure as a Proportion of Total Personal Expenditure on Goods and Services							
	Beverages				Alcoholic Beverages			
	1953	1966	1967	1968	1953	1968	1969	1970
Australia	—	—	—	—	7.0	6.6	—	—
Austria	7.5	7.7	7.7	—	—	—	—	—
Belgium	5.7	4.9	5.0	4.9	—	—	—	—
Canada	5.4	5.1	5.2	5.1	—	—	—	—
Ceylon	3.1	4.4	4.4	4.5	—	—	—	—
Ecuador (1959) ..	—	7.0	—	—	—	—	—	—
Finland	4.9	4.9	5.0	5.1	—	—	—	—
France	7.8	6.3	6.0	5.9	—	—	—	—
Greece	3.9	3.1	3.2	3.1	—	—	—	—
Iceland (1961) ..	—	4.7	—	—	—	—	—	—
Ireland (Republic) ..	9.0	10.5	10.8	11.2	8.1	10.1	10.9	11.5
Israel	2.2	2.1	2.1	2.0	—	—	—	—
Italy	5.7	5.1	4.8	4.8	—	—	—	—
Malta	—	3.1	3.7	4.1	—	—	—	—
Netherlands	3.1	3.9	3.8	3.7	—	—	—	—
Norway	5.0	5.0	5.0	5.1	—	—	—	—
Puerto Rico	6.0	5.6	5.6	5.7	—	—	—	—
South Africa	4.0	4.6	4.7	4.8	—	—	—	—
Spain	—	3.0	3.1	—	—	—	—	—
Sweden	5.7	6.5	6.5	6.7	—	—	—	—
Taiwan	1.7	3.0	3.6	—	—	—	—	—
U.K.	—	—	—	—	6.9	6.0	6.0	—
U.S.A.	—	—	—	—	3.9	2.9	—	—

— = not available

Sources: United Nations (1969) and Central Statistics Office (1971). 'Total personal expenditure on goods and services' is personal income less income tax and saving. Ratios were calculated using magnitudes measured at current market prices. Data in U.N. Yearbook for Poland and other Eastern European nations are not comparable with above figures. 'Beverages' = 'alcoholic beverages' plus certain soft drinks (e.g., lemonade, etc.)

1970). (This contrast would be even more pronounced for spirits or if the United States were taken as a basis for comparison.) This study also showed that Irish alcohol consumption (and spirits consumption, in particular) is very responsive to increases in income. Hence the low per capita intake of alcohol in Ireland is due (at least in part) to low income and high alcohol prices. This aspect of the problem could provide an explanation for the apparent contrast between the Irish in Ireland and Irish emigrants: Irish emigrants have generally been placed in an environment (in the United States or Britain) where alcohol was far cheaper (in relation to income) than was the case in Ireland. This would have occurred at a time when the emigrant was exposed to new pressures and uncertainties which might have predisposed him to seek refuge in alcohol.

The sociological importance of the economic factors have been well expressed, in reference to Irish drinking habits, by Bales (1962):

'... the drunkard in Ireland is not condemned, unless he is married and his drinking threatens the family's cash resources, or tenure on the land, when he is said to "go to town and drink the money" or "drink the land up" leaving nothing for his parents, siblings, or children. Where drunkenness begins to interfere with the primary family system and its economic base, rather than facilitate its preservation, it is condemned. Short of that, drunkenness, as Arensberg says, is "laughable,

pleasurable, somewhat exciting, a punctuation of a dull routine to be watched and applauded, and drunken men are handled with care and affection"' (Bales, 1962, p. 170).

Although the frame of reference of this quotation is nineteenth century rural Ireland, the hypothesis that heavy drinking has its most serious repercussions when it is associated with poverty, and when it represents a squandering of a limited income on which there are already urgent claims, remains equally plausible in an urban context.

In order to assess the importance of expenditure on alcohol in relation to the income available, the proportion of total personal expenditure devoted to alcohol is set out in Table VII for those countries for which data are obtainable. It must be stressed that this percentage does not represent the proportion of resources allocated to the production or distribution of alcohol as the expenditure is valued at market prices (including taxes). In 1970 over 40% of the Irish expenditure on alcohol was accounted for by excise taxation (and these tax receipts were used to finance general government expenditure). However, from the viewpoint of the individual consumer it is market prices that matter, as paying the excise tax is an unavoidable* implication of consuming alcohol, and the amount of money one has available to spend on other goods and

* Illicit distilling has been reduced to a minor, and very localized, problem in contemporary Ireland.

services is reduced by the total amount spent on alcohol. The exceptional position of Ireland in Table VII is very striking: the Irish not only devote by far the largest proportion of total expenditure to alcohol, but also this proportion is rising in Ireland, whereas it is falling in almost all other countries in the Table. The Irish position in this Table reflects the expensiveness of alcohol in the country, and the fact that making alcohol expensive has not been a deterrent to its consumption. The responsiveness of beer and spirits to rising prices has been explored by Walsh and Walsh (1970) and the conclusion was reached that beer consumption in particular does not decline as its relative price rises. It is important to point out that in post-war Ireland the price of beer, which is the most popular drink among the poorer sections of the population, has risen even more rapidly than the price of spirits. Apart from raising questions about the wisdom of Irish excise taxation policy, this finding suggests that a high incidence of alcoholism (if this is measured by the effect of drinking on the economic and social welfare of families) may be consistent with low average consumption.

In as far as the expenditure data are relevant to the measurement of alcoholism, the evidence suggests that the Irish incidence is among the highest of all countries for which data are available.

CONVICTIONS FOR DRUNKENNESS

The usefulness of international comparisons based on convictions for drunkenness is obviously very limited. The quotation from Bales (1962) stressed the tolerance of Irish society towards heavy drinking in certain circumstances. Other cultures may well be far less indulgent in these matters. In any event, only a very limited comparison of conviction rates is possible, due to data limitations. Table VIII presents rates for some countries, among which Ireland's is the lowest. The difficulty of using

TABLE VIII
PROSECUTIONS FOR DRUNKENNESS AND DRUNKEN
DRIVING PER 100,000 POPULATION

Country	Prosecutions for Drunkenness per 100,000 Population	Prosecutions for Drunken Driving per 100,000 Population
	1965	1968
Canada ..	740.68	
France ..		40.0
Ireland ..	105.36	15.7
United Kingdom ..	154.32	
U.S.A. ..	1,144.7	180.1 (1965)
West Germany ..		4.0*

*Cases in which a drunken driver was involved in an accident
Sources: Data from individual country statistical year books

this measure in an international comparison is illustrated by the fact that a majority of the small number of prosecutions for drunken driving in Ireland was against bicyclists! In as much as this index has any cross-cultural validity, it suggests that Ireland has a low incidence of alcoholism.

COMMENTARY

A number of alternative indices of alcoholism have been discussed in this paper, using international comparisons in an attempt to assess the Irish situation. The most important finding of this survey is that the various indices yield conflicting, even contradictory, estimates of Ireland's position in the 'international league table' for the incidence of alcoholism. The measures used, and Ireland's ranking on each, may be summarized:

<i>Measures of 'Alcoholism'</i>	<i>Irish Rank</i>
Literary and impressionistic records ..	Very high
Evidence for the Irish in America:	
Hospital admissions ..	Highest of any ethnic group
American Drinking Practices Survey	Highest of any ethnic group
Rejection for military induction due to alcoholism	Highest of any ethnic group
Death rate from alcoholism and cirrhosis of liver	Highest of any ethnic group
Evidence for the Irish in Britain:	
Camberwell Psychiatric Register ..	Very high
National admissions data ..	Very high
Evidence for the Irish in Ireland:	
Death rates from cirrhosis, alcoholism ..	Very low
Average consumption of alcohol ..	Very low
First admission rates to hospitals for alcoholism and alcoholic psychosis ..	Very high
Proportion of total first admissions to psychiatric hospitals accounted for by alcoholism and alcoholic psychosis ..	High
Expenditure on alcohol in relation to total expenditure ..	Extremely high
Prosecution rate for drunkenness, etc. ..	Very low

It will be clear from this presentation that the two important* indices that are out of line with all the others are the Irish (in Ireland) death rates from cirrhosis and alcoholism, and average consumption of alcohol. All the other evidence suggests that the Irish incidence of alcoholism is very high by international standards, but these two indices show Ireland as having a very low incidence. It has been

* This ignores the data on prosecutions for drunkenness as not worth serious attention.

argued above that, in view of the close correlation between the death rate from cirrhosis and average alcohol consumption, these two indices could be treated as facets of the same phenomenon. More precisely, the relevance of the death rate to the problem of measuring alcoholism arises only in as far as it is an index of the incidence of the sequelae of drinking that is 'excessive' in a manner and to an extent that is physiologically incapacitating. There are a number of reasons why alcoholism could be widespread without resulting in these symptoms. First, alcohol intake in the form of beer has been shown above to have a significantly lower impact on the death rate from cirrhosis than alcohol imbibed as wine or spirits. In recent years, only one-third of Ireland's alcohol intake has come from wine and spirits compared with, for example, 87% of French intake. Secondly, the social and economic repercussions of excessive drinking will be felt much earlier among groups, or in countries, where alcohol is very expensive in relation to income. To support a dependence even on relatively modest quantities of alcohol in Ireland is far more likely to disrupt family life than is generally the case in Europe, due to the high cost of alcohol in relation to income in Ireland. This second point is especially relevant to the contrast between the data on the Irish in Ireland and the emigrant Irish: emigrants from Ireland face a situation in which alcohol (and especially spirits) is relatively cheap, and income high, compared with their experience in Ireland.

It is important to remember that, with increasing urbanization and rising incomes in Ireland in recent years, the consumption of alcohol has been rising very rapidly. Between 1948 and 1970, consumption of alcohol per person in Ireland rose from 3.2 to 5.2 litres, or by 59% (Table V). It has been estimated that a rise of 10% in real income per person results in an increase of 15 to 20% in spirits consumption (Walsh and Walsh, 1970). If this relationship continues to hold as Ireland becomes more affluent, alcohol consumption will continue to increase rapidly in the future.

The objective of this survey has not been to establish that Ireland has a uniquely severe problem of alcoholism. Each country has its own priorities in this matter, and it is futile to try to assess whether the Irish or the French or the Americans face the greatest challenge. However, international epidemiological studies have in the past relied heavily on such indices of alcoholism as the death rate from cirrhosis or average consumption of alcohol. The evidence presented in this paper suggests that, in the case of the Irish in Ireland, an apparently severe problem of alcoholism can exist even when

the average consumption of alcohol and the death rate from cirrhosis are very low. There is, therefore, a need to avoid the notion that alcoholism is always or even usually associated with high average consumption or the physiological sequelae of excessive drinking. This need has been acknowledged in the context of American studies of ethnic differences in drinking, where it has been stated: '... no correlation necessarily exists between widespread drinking and a high incidence of alcohol-related problems' (Department of Health, Education and Welfare, 1971). This admission has not received its due prominence in the literature on international comparisons of alcoholism. It is hoped that the present paper will serve to underline the need for caution in making such comparisons.

SUMMARY

The difficulties of establishing the incidence of alcoholism on an internationally comparable basis have been examined. The most frequently used measures of alcoholism have been applied to the Irish in Ireland and the emigrant Irish. It was found that these measures gave inconsistent assessments of the incidence of alcoholism among the Irish in Ireland, although all the evidence suggested that the emigrant Irish have an exceptionally high incidence. The Irish in Ireland have a very high admission rate to hospital for 'alcoholism and alcoholic psychosis' and devote an exceptionally high proportion of total expenditure to the purchase of alcoholic beverages, but their death rate from cirrhosis and alcoholism is low, and the amount of alcohol consumed per head of the population is among the lowest in the world. The implications of these facts for the comparative study of alcoholism are discussed.

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REFERENCES

- BAGLEY, C., and BINITIE, A. (1970). Alcoholism and schizophrenia in Irishmen in London. *Brit. J. Addict.*, **65**, 3.
- BALES, R. F. (1962). Attitudes towards drinking in the Irish culture. In: *Society, Culture, and Drinking Patterns*, edited by D. J. Pittman and C. R. Snyder, pp. 157-187, Wiley, New York.
- CENTRAL STATISTICS OFFICE (1949-71). *Annual Reports on Vital Statistics*. The Stationery Office, Dublin.
- (1971). *National Income and Expenditure*. The Stationery Office, Dublin.
- DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (1971). *First Special Report to the U.S. Congress on Alcohol and Health*. Health Services and Mental Health Authority, Washington, D.C.

- DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1971). *Psychiatric Hospitals and Units in England and Wales. Inpatient Statistics from the Mental Health Inquiry for the Year 1969*. H.M.S.O., London.
- DUFFY, G. J., and DEAN, G. (1971). The reliability of death certification of cirrhosis. *J. Irish med. Ass.*, **64**, 393.
- HYDE, R. W., and CHISHOLM, R. M. (1944). The relation of mental disorder to race and nationality. *New Engl. J. Med.*, **231**, 612.
- JOHNSTON, J. (1963). *Econometric Methods*, p. 132. McGraw-Hill, New York.
- KEARNEY, N., LAWLER, M. P., and WALSH, D. (1969). Alcoholic drinking in a Dublin Corporation housing estate. *J. Irish med. Ass.*, **62**, 140.
- LYNN, R., and HAMPSON, S. (1970). Alcoholism and alcoholic consumption in Ireland. *J. Irish med. Ass.*, **63**, 39.
- MALZBERG, B. (1940). *Social and Biological Aspects of Mental Disease*. State Hospitals Press, Utica, New York.
- OEDEGAARD, O. (1962). Psychiatric epidemiology. *Proc. roy. Soc. Med.*, **55**, 831.
- REVENUE COMMISSIONERS (1949-71). *Annual Reports*. The Stationery Office, Dublin.
- ROOM, R. (1968). Cultural contingencies of alcoholism: variations between and within nineteenth century urban ethnic groups in alcohol-related death rates. *J. Hlth soc. Behav.*, **9**, 99.
- SUNDBY, P. (1967). *Alcoholism and Mortality*. Universitets-forlaget, Oslo.
- TERRIS, M. (1967). Epidemiology of cirrhosis of the liver: national mortality data. *Amer. J. publ. Hlth*, **57**, 2076.
- UNITED NATIONS (1969). *Yearbook of National Account Statistics*. United Nations Secretariat, New York.
- WALSH, B. M., and WALSH, D. (1970). Economic aspects of alcohol consumption in the Republic of Ireland. *Econ. soc. Rev.*, **2**, 115.
- WALSH, D. (1968). Alcoholism in Dublin. *J. Irish med. Ass.*, **61**, 153.
- (1970). Alcohol consumption in Ireland. (Letter to the Editor). *J. Irish med. Ass.*, **63**, 205.