Recent Demographic Developments in Ireland

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1. INTRODUCTION

The history of population movements in Ireland presents many unusual features in comparison with other countries of the Western world. The effect on natural population increase of a high average age at marriage, together with a high proportion of men and women who never marry at all, was offset by a large family size in married couples; the natural population increase in turn was offset by a high emigration rate, resulting, until quite recently, in a steady decline in population size.

There have been some indications in recent years to the effect that these tendencies, if not reversed, are at least being modified. The appearance of the 1961 Population Census volumes, together with the Reports on Vital Statistics up to 1962, permit an analysis of demographic characteristics for a time not too far removed from the current date. Comparisons may be effected with the position at previous dates, though no attempt will be made here to go back further than 1926, the year of the first Population Census in the Free State.

The analysis presented here does not claim to be exhaustive. The improved collection of vital statistics introduced in the 1950s now yields a good deal of material which awaits a more detailed analysis. Some of this work may be done officially, other parts may be left to this investigator and others working in the field of population. Interrelationships between population and economic factors are only touched upon

here, and no projection beyond the near future has yet been made.

All that is attempted is to study some of the salient features in the fields of deaths, marriages, births, labour force and migration. The method of indirect standardisation, in which actual figures are compared with those expected on the basis of some assumption, has been extensively applied.

2. MORTALITY

The crude death rate, representing the number of deaths in relation to population size, was in the region of 14 per thousand from the 1920s until after the war, when it fell to a lower level of about 12 per 1,000; since the early 1950s there has been no noticeable further change. However, the crude death rate is not a fully satisfactory measure of mortality, and it should not be concluded that mortality conditions have remained static in the last decade.

The best way of measuring mortality is by means of the life table, showing the number of persons out of an initial total which, at existing mortality conditions, may be expected to reach various ages. Official life tables have been published for the average of three years around each Population Census, the most recent one referring to the years 1950-52, though no doubt, a life table for 1960-62 will be published in due course.

Whilst the construction of a full life table is laborious, there is no difficulty in computing an abridged life table, giving the number of survivors at age 1, 5 and at subsequent 5-year intervals up to about 85. This has therefore been done both for males and females with regard to 1960-62. In addition, similar life tables have been constructed for 1955-57, but these,

being based not on an exact population count but merely on an estimated age distribution of the population, are more tentative and have only been used to estimate the life expectation at birth.

Table 1 gives the abridged life tables for 1960-62, shown together with extracts from the full life tables for 1950-52 (rounded for comparison).

Table 1. Survivors to each age, 1950-52 and 1960-62

Age	Males		Females	
	1950-52 Officially Published	1960-62 Unofficial Estimate	1950-52 Officially Published	1960-62 Unofficial Estimate
0	10,000	10,000	10,000	10,000
1	9,509	9,668	9,610	9,741
5	9,409	9,617	9,526	9,697
10	9,368	9,592	9,492	9,676
15	9,337	9,573	9,460	9,662
20	9,282	9,539	9,399	9,645
25	9,192	9,490	9,306	9,613
30	9,088	9,432	9,198	9,576
35	8,966	9,360	9,078	9,513
40	8,818	9,256	8,926	9,423
45	8,620	9,108	8,743	9,304
50	8,324	8,872	8,498	9,115
55	7,882	8,464	8,148	8,793
60	7,250	7,849	7,636	8,385
65	6,386	6,946	6,911	7,748
70	5,227	5,717	5,892	6,805
75	3,776	4,267	4,469	5,435
80	2,170	2,644	2,782	3,684
85	907	1,129	1,328	1,859

The table shows, for example, that more than one-half of all boys born may, with existing mortality conditions, be expected to survive to the age of 70, and over one-half of all girls born, to the age of 75. There has been an appreciable increase in the length of life during the 1950s, and the differential in favour of women appears to have become more marked.

From the life table, the expectation of life at birth may be derived, showing the arithmetic mean of the number of years which a new-born boy or girl will live under present conditions. In comparison with previous

periods, the picture presented by Table 2 is obtained.

Table 2. Expectation of
life at birth 1925-27 to 1960-62

Period	Males years	Females years
1925-27	57.4	57.9
1935-37	58.2	59.6
1940-42	59.0	61.0
1945-47	60.5	62.4
1950-52	64.5	67.1
1955-57	67.0	70.1
1960-62	68.0	71.7

It is clearly seen that the trend towards a
longer life, evident at all times and particularly so
immediately after the last war, has continued. More-
over, women's life expectation which was hardly different
from that of men in the 1920s has increased faster and is
now almost four years greater.

The expectation of life at birth is a useful
summary measure but conceals some interesting features.
The improvement in mortality conditions has not invariably
been evenly distributed over the various age groups of the
population. A broad picture of these variations is
presented in Table 3.

Infant mortality remained practically constant
between the 1920s and 1940s but fell then, and the fall
has continued. In this age group, the sex differential
in mortality has, if anything, become narrower.

Among children, young adults and middle-aged
women, on the other hand, the reduction in mortality has
been steady and substantial. Seen in one way, the
improvement is most spectacular in the case of children;
6 out of every 100 children aged one were expected to die
before reaching the age of fifteen in the 1920s, but only

Table 3.   Survivor ratios between selected
ages(%)1925-27 to 1960-62

Ages	1925 -27	1935 -37	1940 -42	1945 -47	1950 -52	1960 -62
0 to 1:						
Males	92.3	92.0	91.9	92.5	95.1	96.7
Females	93.7	93.7	93.6	93.9	96.1	97.4
1 to 15:						
Males	94.3	95.1	96.1	97.0	98.2	99.0
Females	94.0	95.2	96.5	97.2	98.4	99.2
15 to 45:						
Males	85.2	87.0	87.7	89.3	92.3	95.1
Females	83.9	86.1	86.7	88.5	92.4	96.3
45 to 65:						
Males	70.2	69.8	71.2	72.1	74.1	76.3
Females	70.3	71.9	73.8	75.6	79.3	83.3
65 to 80:						
Males	37.6	36.5	34.6	32.6	34.0	38.1
Females	40.8	39.8	38.8	38.4	40.3	47.5

1 out of 100 children is now so liable.. There was and
is practically no difference between boys and girls in
this respect.   Chances of survival used to be somewhat
more favourable for young men than for young women, but
the position has now been reversed.

    The differences between the mortality
experience of the sexes becomes more marked in middle and
advanced age.   The improvement for middle-aged men has
been much less than that for middle-aged women, and at
the upper end of the scale there was actually a decline
in survivor ratios between 1925-27 and 1945-47,
indicating that a large number of the deaths postponed
from the ages under 65 now took place between the ages
of 65 and 80.   More recently, the chances of old people
to become octogenarians have improved, much more so for
women than for men.

    The existing records permit, for recent years,
an analysis of mortality not only by age but also by
conjugal condition.   Since people pass on from one civil
status group to another, this is conveniently done not

by means of life tables but by standardisation. For
the years 1960-62, the expected number of deaths among
single, married and widowed males has been computed on
the assumption that the death rate of each single year
of age was the same for each conjugal condition group,
and the age structure of the three groups alone
determined the number of deaths; the same has been
done with females. Table 4 gives the comparison with
actual deaths.

Table 4. Expected and Actual Deaths for each
conjugal condition, 1960-62

Conjugal condition	Expected Number	Actual	
		Number	Expected=100
Males:			
Single	17,735	20,239	113.8
Married	25,551	22,615	88.5
Widowed	11,253	11,735	104.3
Total	54,589	54,589	100.0
Females:			
Single	13,553	14,806	109.2
Married	12,539	11,131	88.8
Widowed	20,580	20,735	100.8
Total	46,672	46,672	100.0

The number of deaths is higher for single and
lower for married men and women than expected on the
basis of their age structure. This fact is generally
explained in terms of selection, as the men and women
who get married represent, on the whole, the healthier
strata of the community which have better chances of
survival.

If this explanation is accepted then, from
Table 4, the effect of selection upon the death rates
of single and married persons appears to be stronger for
men than for women. A woman's chances of survival thus
would either be less predictable from her state of health
than a man's, or else the state of her health has less

influence upon the chances of marriage than in the case of men.

Alternatively, it is possible that marriage itself has a beneficial effect in reducing mortality. There is some support for this view in the fact that mortality is higher for widowed than for married men and women, a fact which is not easily explained otherwise.

Incidentally, one effect of the sex differences in mortality is that almost one-half of the women who die are expected to, and do, die as widows; the same applies to little more than one-fifth of all men.

3. NUPTIALITY

For the last few decades, the number of marriages has kept fairly stable near the 15,000 mark, and the marriage rate at about 5 marriages per thousand population. The marriage rate reached a peak of about 6 per thousand during the period 1942-46, after which time it settled down at a somewhat lower level, around 5.5.

One might be tempted to conclude that the increasing inclination to marry evidenced by the marriage boom of the 1940s is a merely temporary phenomenon. This overlooks the fact that the number of marriages in one period affects the number of marriageable persons, i.e. single and widowed adolescents and adults, in the population and thus the number of marriages likely to result in subsequent periods with given marriage habits.

Better measures of nuptiality are the ratios of marriages to the number of males or females eligible for marriage. These ratios, together with the crude

marriage rate, are shown in Table 5 for the average of three years around each Census data.

Table 5. Measures of Nuptiality, 1925-27 to 1960-62

| Period | Marriages per thousand of | | |
| | Population | single and widowed, aged 15 and over | |
		Men	Women
1925-27	4.58	20.7	21.9
1935-37	4.93	21.3	23.6
1940-42	5.31	23.2	24.7
1945-47	5.69	25.8	28.2
1950-52	5.39	25.7	27.9
1955-57	5.50	27.9	29.5
1960-62	5.49	30.1	30.6

It is seen that in relation to the number of marriageable men and women, the number of marriages has shown no sign of decline, but on the contrary the ratio is still increasing. The ratio of marriages per marriageable men has grown faster than the ratio per marriageable women recently, on account of the fact that the surplus of single and widowed men over women has been reduced from 50,000 in 1951 to fewer than 10,000 in 1961. It was said that single women used to emigrate to Britain to increase their chances of finding a husband; if so, it seems that with growing readiness of young men to enter the married state this is no longer an important consideration.

The marriage rate varies considerably from area to area. To some extent this is due to the celebration and registration of marriages outside the area of the groom's residence; the statistical information available now permits correction for this factor.

Regional differences in sex, age and conjugal

status structure may also be taken into consideration.
In 1960-62, 41,579 marriages took place for which the
groom's residence was in Ireland (26 counties). From
the grooms' age distribution and the number of single
and widowed males in each county or borough in 1961, an
expected number of marriages in each area has been
computed, on the hypothesis that marriages of men in
each age group were distributed over the various areas
in proportion to the single and widowed men. In
Table 6, the actual number of marriages is compared with
the expected total for the area.

When due allowance has been made for the
various factors, the regional differences in the
incidence of marriage remain enormous. The number of
marriages is relatively highest in the County Boroughs
and Dun Laoghaire, and also high in the remainder of
Dublin County, the adjacent County Wicklow and the very
urbanised County Louth with its two sizeable towns,
Drogheda and Dundalk. The Leinster counties of Carlow,
Kildare, Meath, Westmeath and Wicklow are also fairly
high up the scale in this respect.

Relatively few marriages took place in the
Connaught and Ulster counties, in Clare and Kerry, as
well as in Kilkenny, Laois and Longford. Offaly and
most of the Munster counties, excluding their County
Boroughs, occupy an intermediate position.

The effect of the higher marriage rates has
been to reduce the proportion of single persons and
conversely to raise the proportion of married persons
in the population. Table 7 shows the proportions of
ever married (married and widowed) among total males
for various age groups at each Census date.

Table 6. Expected and actual marriages in each area, 1960-62.

Area	Expected Number	Actual Number	Actual Expected=100
Carlow	527	507	96
Dublin County Borough	6,616	11,777	178
Dun Laoghaire Borough	491	803	164
Dublin County (remainder)	1,430	1,621	113
Kildare	1,009	980	97
Kilkenny	1,025	760	74
Laois	802	602	75
Longford	506	336	66
Louth	947	1,117	118
Meath	980	913	93
Offaly	854	707	83
Westmeath	810	744	92
Wexford	1,195	1,170	98
Wicklow	779	929	119
Clare	1,274	848	67
Cork County Borough	986	1,629	165
Cork County	4,055	3,493	86
Kerry	1,870	1,303	70
Limerick County Borough	587	787	134
Limerick County	1,328	1,051	79
Tipperary North Riding	919	750	82
Tipperary South Riding	1,091	910	83
Waterford County Borough	345	500	145
Waterford County	698	608	87
Galway	2,514	1,575	63
Leitrim	616	354	57
Mayo	1,849	1,137	61
Roscommon	1,013	552	54
Sligo	845	583	69
Cavan	1,028	687	67
Donegal	1,740	1,224	70
Monaghan	850	622	73
Ireland	41,579	41,579	100

Table 7. Ever married as % of all males by age, 1926-61

Age group	1926	1936	1946	1951	1961
15-19	.1	.1	.2	.1	.2
20-24	4.0	3.8	5.0	5.1	7.5
25-29	20.2	17.7	20.3	23.4	32.8
30-34	37.6	36.5	39.0	42.1	50.8
35-39	50.4	51.6	52.7	55.3	61.1
40-44	59.8	60.7	62.1	64.1	66.4
45-49	66.5	65.3	66.6	68.0	69.5
50-54	70.7	67.8	69.5	70.0	71.3
55-59	73.6	71.1	69.7	71.4	71.7
60-64	74.0	72.5	70.4	71.0	72.0
65-69	76.6	73.9	72.0	70.7	72.6
70-74	78.8	75.2	74.9	72.1	71.7
75-79	81.7	79.4	76.9	76.1	72.9
80-84	84.7	83.2	80.3	79.1	76.7
85 and over	78.3	78.4	82.9	82.0	80.5
15 and over	43.8	43.2	44.9	47.1	51.6
All ages	31.0	32.4	32.3	33.5	35.3

The proportion of males who are married or widowed has risen steadily since 1936 for each age group under 55 as well as all ages combined, though there have been some declines in the upper age groups. There are some noticeable differences in timing; for men between 40 and 55, the increase in nuptiality was already quite substantial by 1951. On the other hand, the lower age groups and particularly those under 30, had not been greatly affected by then; for these age groups the rising propensity to marry is largely of more recent origin.

Since a steep differential in nuptiality between largely urban and largely rural areas has been noted, it may be surmised that the observed increase in nuptiality is to some extent related to the increasing degree of urbanisation. Table 8 throws some light upon this point.

Table 8. Proportion of males in town areas, and proportion of ever married males in town and rural areas 1926-1961.

Year	Males in town areas as % of all males	Ever married as % of all males	
		Town Areas	Rural Areas
1926	30.0	32.9	30.1
1936	33.1	33.8	30.2
1946	34.5	34.6	31.1
1951	38.7	35.6	32.1
1961	43.2	37.7	33.4

The proportion of males ever married has risen steadily both in urban and in rural areas; the rise has been somewhat more marked in the former than in the latter. Also, the town areas have gained in numerical importance, and this fact coupled with the somewhat higher nuptiality in the town areas appears to have made

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a slight contribution to the general increase in the married and widowed section of the male population.

It may seem surprising that the ratios of ever married to all males differ so little between the two types of areas. This is, however, explained by differences in age structure. Whilst the rural areas contain the predominant share among the older family men and women internal migration brings a constant influx of young, largely unmarried, men and women into the towns, who keep the marriage rate at a high level but meanwhile reduce the proportions actually married.

Table 8 thus cannot help to assess conclusively the extent to which urbanisation has contributed towards raising nuptiality; a more sophisticated approach is called for in attempting to answer this question.

When individual age groups are analysed, the difference in marriage habits between urban and rural areas is shown up very clearly. The largest discrepancy is found in the age group 30-34 years. In 1926, the proportion of males who are married or widowed was 53.6% in town areas but only 29.4% in rural areas; the corresponding 1961 figures are 66.8% for towns and 36.2% for rural areas.

For any given age group, the proportions of ever married men in urban and in rural areas observed for 1926 have been applied to the number of males enumerated in both types of areas in 1951; the sum of the figures obtained, divided by all men of that age group in Ireland, gives an expected proportion ever married for 1951. A comparison of this ratio with the actual proportion ever married in 1926 attempts to show the effect of increasing urbanisation

whilst a comparison of expected and actual 1951 figures
thus indicates the increase of nuptiality after the
effect of urbanisation has been eliminated. The
analysis has been carried out for each 5 year age group
between 20 and 50, which are those in which substantial
increases in proportions married have been observed, and
has been repeated to give a comparison between 1951 and
1961.

Table 9. Analysis of changes in proportions
ever married for selected age groups,
1926-51 and 1951-61.

| Age group | Ever married as % of all males in age group | | | | |
| | 1926 | 1951 | | 1961 | |
		Expected	Actual	Expected	Actual
20-24	4.0	4.5	5.1	5.4	7.5
25-29	20.2	21.6	23.4	24.7	32.8
30-34	37.6	38.8	42.1	44.3	50.8
35-39	50.4	51.3	55.3	57.1	61.1
40-44	59.8	60.7	64.1	64.6	66.4
45-49	66.5	67.5	68.0	67.9	69.5

The conclusion to be drawn from the table is
that the population movement from rural to town areas
does not in itself explain more than a small fraction of
the increase in the proportion of married men. The main
explanation must be sought in changes which have taken
place in marriage habits.

From the point of view of population growth,
the key figure is, of course, the number of married
women under 50 (or perhaps under 45) in the population.
The proportion which this number bears to the total size
of the female population is influenced by changes in both
age structure and marriage habits. These two factors and
their joint influence are shown in Table 10.

Table 10. Proportion of women aged 15-49 and proportion married, 1926-1961.

Year	Women aged 15-49 as % of all females	Married women aged 15-49 as % of	
		All women 15-49	All females
1926	48.4	38.5	18.6
1936	47.9	38.5	18.5
1941	48.7	38.3	18.6
1946	48.2	42.4	20.4
1951	46.1	45.1	20.8
1956	44.6	47.5	21.2
1961	42.7	50.4	21.5

The proportion of the female population in the reproductive age group, and the proportion of this section actually married, remained practically constant between 1926 and 1941 but have since then moved in opposite directions. The relative decline in the number of women aged 15-49 was largely brought about by emigration. Its effect on the number of married women of childbearing age in relation to population size was, however, more than offset by the change in marriage habits which took place.

As far as nuptiality is concerned, the Irish population thus seems geared to a higher rate of natural population increase than before; changes in mortality tend in the same direction. Other important factors, summed under the heading of fertility, will be considered separately.

4. FERTILITY

Simple measures of fertility are the crude birth rate, the general fertility rate and the legitimate fertility rate, i.e. the ratio of births to total population or number of women aged 15-49, or the ratio of legitimate births to married women aged 15-49. As they

take to a different extent the age and civil status
distribution of the population into account, they tell
a somewhat different story, as seen from Table 11.

Table 11. Measures of fertility, 1925-27
to 1960-62 (3 year average).

| Years | Total births per 1,000 | | Legitimate births per 1,000 married women 15-49 |
	Total population	Women aged 15-49	
1925-27	20.6	86.2	217.5
1935-37	19.4	83.1	208.5
1940-42	20.0	83.0	209.4
1945-47	23.0	96.5	219.3
1950-52	21.5	95.1	205.4
1955-57	21.1	95.5	197.5
1960-62	21.6	101.6	198.3

Until the end of the last war the three
indicators moved very closely together, showing a fall
in the birth rate in the 1930s followed by a recovery.
During the first ten years following the end of the war,
the number of births per married women of childbearing
age declined by about one-tenth; this was partly offset
by higher nuptiality, but unfavourable changes in age
structure helped to reduce the crude birth rate. More
recently, the decline in legitimate fertility appears
to have been arrested and the rising proportion of married
women offset the changes in age distribution, to keep the
crude birth rate stable.

For a more rigorous analysis, it is necessary
to take into account changes in age distribution within
the group of women aged 15-49. For 1960-62, the age
distribution of mothers at birth is available, and with
its help it is possible to derive two sets of expected
birth rates per thousand population for previous dates.
One set of figures is based on the assumption that the
1960-62 age-specific fertility rates for each 5 year age

group had applied to women of each age group at the
previous Census dates. The second set of expected
figures uses the 1960-62 legitimate and illegitimate age-
specific fertility rates, applied to married women and
to single or widowed women of each age group separately.
In Table 12 the results are compared with the actual
birth rate.

Table 12. Expected and actual birth rates, 1925-27 to 1960-62 (average).

| Period | Births per thousand population (3 year average) | | |
| | Expected on basis of | | Actual |
	Age structure	Age and marital status structure	
1925-27	25.7	19.3	20.6
1935-37	25.6	19.1	19.4
1940-42	26.7	19.6	20.0
1945-47	26.3	22.1	23.0
1950-52	25.1	22.0	21.5
1955-57	23.6	21.5	21.1
1960-62	21.6	21.6	21.6

The actual course of the crude birth rate
diverges sharply from that of the rate expected on the
basis of the age structure but very little from that
expected on account of age and civil status distribution.
This may be interpreted as saying that the birth rate is
largely explained by the number of married women in the
various childbearing age groups; changes in the number
of children born per married woman of a given age group
appear to be minor in character.

Inter-area differences in the birth rate may
be analysed in the same way as changes over time. The
results for 1960-62 are presented in Table 13.

Table 13. Expected and actual birth rate by areas, 1960-62.

Area	Births per thousand population per annum		
	Expected on basis of		Actual
	Age structure	Age and civil status structure	
Carlow	20.07	21.71	24.91
Dublin County Borough	26.99	26.16	24.19
Dun Laoghaire	25.47	24.12	22.84
Dublin County remainder	27.11	30.65	27.10
Kildare	20.42	23.96	24.40
Kilkenny	19.19	19.21	19.49
Laois	19.87	20.65	21.92
Longford	18.25	17.95	20.05
Louth	23.49	23.51	23.64
Meath	19.96	21.39	21.71
Offaly	19.95	21.96	23.46
Westmeath	20.46	21.28	23.11
Wexford	19.91	21.13	21.25
Wicklow	21.89	23.61	22.40
Clare	17.79	17.03	18.46
Cork County Borough	24.83	24.58	25.33
Cork County	20.18	19.98	20.12
Kerry	18.10	17.46	18.30
Limerick County Borough	24.82	26.46	26.14
Limerick County	18.56	17.59	19.70
Tipperary North Riding	19.98	19.87	21.96
Tipperary South Riding	19.31	20.40	22.61
Waterford County Borough	25.22	26.59	24.66
Waterford County	19.57	20.20	19.85
Galway	18.50	17.55	19.50
Leitrim	16.43	15.44	17.00
Mayo	16.90	16.47	17.27
Roscommon	17.39	16.97	16.28
Sligo	18.75	18.02	18.63
Cavan	18.01	17.67	18.62
Donegal	18.39	17.39	17.10
Monaghan	19.35	18.95	20.32
Ireland	21.57	21.57	21.57

The birth rate is high in Dublin city and county and in the neighbouring counties, as well as in the county boroughs of Cork, Limerick and Waterford, whilst a low birth rate is found for most of the western counties. The actual birth rate is generally close to the rate expected on the basis of age structure, and even closer when differences in proportions of married women are taken into account. If the areas are ranked by expected or actual birth rate, the rank correlation coefficient between expected and actual birth rate is .900 for the first set, and .945 for the second set of expected figures. Thus local variations in age and conjugal condition distribution account to a large extent for regional differences in the birth rate, and there appear to be little differences in family formation habits.

Birth rates by themselves have little meaning, and it is of interest to consider the level of births in relation to the number required for replacement of the population. For this purpose, gross and net reproduction rates may be computed. The gross reproduction rate indicates the number of baby girls to whom, together with a corresponding number of baby boys, the average woman will give birth to in the course of her life at existing age-specific fertility rates and in the absence of any deaths incurred by females before the age of 50. The net reproduction rate measures the same but with due allowance made for deaths occurring to potential mothers both in childhood and in the childbearing period.

The gross and net reproduction rates are not perfect measures of fertility, and in particular suffer from the defect that fertility is confounded with nuptiality. Nevertheless they provide useful measures, a

figure of 1 indicating exact replacement, and a difference
from 1 the theoretical percentage increase or decrease
within a generation.

For the average of the years 1960-62, the
gross reproduction rate works out as 1.877 and the net
reproduction rate as 1.796, thus indicating, with certain
qualification, a natural population increase of 80%
within a generation. Fertility is considerably above
the comparable figures for 1955-57 which are estimated as
1.675 for the gross and 1.580 for the net reproduction rate.
It is also considerably above the level of England and
Wales, where the gross and net reproduction rates are
similarly estimated at 1.347 and 1.305 respectively.

A striking contrast with England and Wales is
also obtained when the timing of the births is considered.
If a group of women are followed throughout their lifetime
it is estimated that the median age at birth, i.e. the
age at which they will have given birth to half of the
children whom they will ultimately have borne, is 28.66
for England and Wales but 31.95 for Ireland. Thus
English women will have completed more than half their
family formation by the time they reach the age of 30,
whilst in Ireland, women make a greater contribution to
population growth at ages over 30 than at ages under 30.

An attempt has also been made to estimate
regional variations in fertility. Eight groups of boroughs
or counties have been distinguished, and for each of these
groups, the gross and net reproduction rates together
with median age of mother at birth is shown in Table 14.

Table 14. Fertility indicators in different areas, 1960-62

Area	Reproduction rate		Median age of mother at birth (Years)
	gross	net	
Dublin County Borough	1.683	1.606	30.70
Dublin and Louth Counties	1.865	1.780	30.42
Remainder of Leinster	2.072	1.978	30.71
Cork, Limerick and Waterford County Boroughs	1.925	1.838	30.45
Cork, Limerick and Waterford Counties	1.825	1.741	31.33
Remainder of Munster	1.997	1.905	31.20
Connaught	1.889	1.801	31.72
Ulster (3 counties)	1.843	1.758	31.46
Ireland	1.877	1.796	31.95

The highest reproduction rates are found for
Leinster outside Dublin and Louth and for Munster outside
Cork, Limerick and Waterford, where a fairly high nuptiality
is combined with fairly high fertility. In Dublin city,
on the other hand, where nuptiality is only moderately high
and fertility well below the national average, the
reproduction rates are at a somewhat lower level than for
the country as a whole. The median age of mother at birth
is somewhat lower in Leinster and in the Munster boroughs
than in the rest of the country.

On the whole, however, the similarities are more
striking than the differences. The large inter-area
variations in the extent of economic development have not
so far produced very considerable variations in family
formation habits, and it still makes sense to speak of an
Irish pattern of large families.

LABOUR FORCE AND EMIGRATION.

In studying socio-economic population character-
istics long term trends are less important and short term
movements more important than in a purely demographic

analysis.   The present analysis will therefore be
confined to the decade 1951-61, some attention been given
to annual changes.

In 1951, out of a population of 2,960,600 there
were 1,272,000 or 43.0% gainfully occupied.   The size of
the labour force declined more rapidly than total
population during the following decade, with the result
that out of 2,818,300 persons, only 1,108,100 or 39.3%
are recorded as being in gainful occupations.   In other
words, the labour force was reduced by 163,900 persons.

This number may be split up into five components
indicating respectively the effect of changes in total
population size, sex structure, age structure, conjugal
condition structure of the female population, and changes
in work participation rates, i.e. proportions occupied in
various population groups.

For this purpose, four hypothetical totals of
gainfully occupied are calculated for 1961, based on 1951
work participation rates (a) for the population as a whole,
(b) for all males and all females, (c) for males and
females of each age group, (d) ditto but separating single,
married and widowed women.   The age groups used are
individual ages from 14 to 19 (combined for married and
widowed women), the five-year age groups 20-24, 25-29, ...,
40-44, the ten-year age groups 45-54, 55-64, then 65-69,
70-74, 75 and over.   From these totals, the contribution
of each factor to the decline in the labour force is
obtained by difference, as given in Table 15.

Table 15. Analysis of changes in number
gainfully occupied, 1951-1961

	Number (thousand)
Gainfully occupied 1951	1,272.0
Effect of changes in :	
total population size	-61.1
sex structure	- 7.1
age structure	-60.0
conjugal status structure	-17.4
specific work participation rates	-18.3
Gainfully occupied 1961	1,108.1

The major part of the explanation thus may be said to lie in the falling population and in the age distribution becoming less favourable. The increasing proportion of married women and changes in work participation rates were also contributory factors.

The changes which work participation rates have undergone are, however, not uniform and do not even all point in the same direction. An analysis of this factor is therefore given in Table 16 in some detail.

Table 16. Changes in work participation for
various population groups, 1951-61

Population group	Number occupied (thousand)		Occupied as % of total	
	On 1951 basis	Actual	On 1951 basis	Actual
Males 14-19	96.6	84.3	64.4	56.2
20-24	77.5	72.4	96.3	90.0
25-64	588.3	587.9	95.2	95.2
65-	86.4	76.9	57.8	51.5
Females				
Single 14-19	66.7	65.8	47.6	47.0
20-24	47.2	50.8	77.7	83.7
25-64	94.4	103.1	57.1	62.3
65-	11.0	9.6	27.4	23.8
Married	22.5	24.3	4.8	5.2
Widowed	35.9	33.1	28.4	26.2
All 14 and over	1,126.4	1,108.1	56.4	55.4

Whereas in 1961 as in 1951 about 95. of the men - probably virtually all of the able-bodied - between 25 and 65 years of age are gainfully occupied, there is an increasing proportion of men under 25 who have not yet entered the labour force and an increasing proportion of men over 65 who have retired. The work force is thus reduced by about 27,000. This is partly offset by higher work participation rates for single women between 20 and 65 which added 12,000 to the labour force. Minor upward changes in work participation rates for married women and downward changes for single women under 20 and over 65 and for widows only mean a fractional reduction in the number gainfully occupied.

Changes in population size and age distribution, with their repercussions on the labour force, may likewise be considered as the joint effect of two factors, one of them being the natural ageing process combined with births and deaths, the other one external migration.

It is of some interest to see what would have happened to the population of the country in the absence of emigration. This has been estimated by assuming the same number of births from the second quarter of 1951 to the first quarter of 1961 as actually registered, the mortality conditions of the 1950-52 life tables applying for the first five years and those of the abridged 1960-62 life tables applying for the second five years of the intercensal period. Table 17 compares this hypothetical 1961 population with the actual one and the effect of migration is obtained by difference. It should be noted that no allowance has been made for loss of births to Ireland through emigration of parents or potential parents prior to the birth of their children.

Table 17. Hypothetical and actual population by age, 1961.

Age group	Males (thousands)			Females (thousands)		
	Without migration	Actual	Effect of migration	Without migration	Actual	Effect of migration
0- 4	149.8	153.4	+3.6	143.8	147.4	+3.6
5- 9	151.1	147.0	-4.1	145.4	140.7	-4.7
10-14	158.4	148.3	-10.1	151.1	140.5	-10.6
15-19	142.6	120.3	-22.3	136.9	113.5	-23.4
20-24	131.6	80.4	-51.2	127.3	77.6	-49.7
25-29	124.1	72.3	-51.8	114.1	73.1	-41.0
30-34	103.5	75.2	-28.3	95.2	77.5	-17.7
35-39	97.4	81.6	-15.8	96.8	85.2	-11.6
40-44	93.7	84.8	-8.9	92.7	85.5	-7.2
45-49	98.2	89.0	-9.2	95.2	85.6	-9.6
50-54	88.1	81.7	-6.4	81.9	75.4	-6.5
55-59	74.2	68.6	-5.6	72.8	67.5	-5.3
60-64	70.3	64.4	-5.9	71.3	66.6	-4.7
65-69	50.2	51.1	+0.9	53.1	52.3	-0.8
70-74	41.2	44.1	+2.9	45.0	48.7	+3.7
75-79	29.1	29.7	+0.6	32.2	33.5	+1.3
80-84	17.6	16.7	-0.9	21.6	20.4	-1.2
5 and over	6.9	7.7	+0.8	10.0	10.8	+0.8
All ages	1,628.0	1,416.5	-211.5	1,586.4	1,401.8	-184.6

Net migration thus appears to have reduced the size of the population by about 396,000 during the last decade, males accounting for the greater half of the loss. The number of young people in their twenties has been most drastically reduced, the loss amounting to more than 40% in the case of men aged 25-29; men and women aged 20-29 accounted for almost half the total of the outward migration. All age groups from 5 to 65 share the loss of numbers in various degrees. On the other hand, it appears that on balance some men and women of retiring age have returned to Ireland, and there also seems to be a recent inward balance in the number of couples with small children.

In 1951, the total population of the country was 2,960,600 persons. In the absence of migration, the number would thus have increased by 253,800 to 3,214,400; in actual fact, it fell by 142,300 to 2,818,300. It is also estimated that, assuming the additional labour supply arising from demographic causes could have been absorbed in

the economy, the labour force would have risen from
1,272,000 by about 142,600 to 1,414,600 instead of
declining by 163,900 to 1,108,100, and the overall work
participation rate would have risen from 43.0% to 44.0%
instead of falling to 39.3%.

Actual net outward migration in the inter-
censal period 1951-61, as deduced from the recorded balance
of births and deaths, amounted to about 409,000 persons.
This is somewhat higher than the total of 396,000 deduced
from Table 17. The discrepancy is explained by the fact
that emigration tended to reduce by about 13,000 the number
of deaths occurring in the country; these would have been
lost to the country even in the absence of migration.

From the recorded natural population increase
and the estimate of total population, the estimated
migration each year may be deduced; the figures obtained
differ from those given for net passenger movement. The
split-up of change in population size is shown in Table 18,
together with changes in the labour force as estimated in
"Economic Statistics"; these are likewise split up into
changes in number at work and in unemployment. These
figures are based on a revised estimate for the labour force
in 1951, and thus the total for the decade somewhat differs
from that previously quoted.

Table 18.. Population and labour force changes each
year, April 1951 - April 1961.

Period	Population change (thousand)			Labour force change (thousand)		
	Total	Births less deaths	Net migration	Total	At work	Unemployed
1951-52	-8	+27	-35	-8	-22	+14
1952-53	-4	+29	-33	-23	-29	+6
1953-54	-8	+28	-36	-3	-3	0
1954-55	-20	+25	-45	-20	-17	-3
1955-56	-23	+25	-48	-20	-21	+1
1956-57	-13	+28	-41	-26	-41	+15
1957-58	-32	+26	-58	-21	-16	-5
1958-59	-7	+25	-32	-12	-8	-4
1959-60	-14	+27	-41	-11	-5	-6
1960-61	-14	+26	-40	-10	-3	-7
1951-61	-143	+266	-409	-154	-165	+11

Assuming that the labour force estimates are reasonably accurate, an interesting problem poses itself. The change in the labour force may be considered as made up by two components, viz. the domestic change and net migration of the labour force, the domestic change being the balance of intake into and withdrawals from the occupied population.   Is it possible to estimate the two components?

For the period 1951-61, it has previously been estimated that without migration, the labour force would have increased by about 143,600 persons, or working with adjusted 1951 labour force figures, this comes to about 150,000 persons.   As, in fact, the labour force declined by 154,000 persons it seems that 304,000 potential workers emigrated.

To assume a net domestic labour force intake of 15,000 persons each year does not seem satisfactory as it gives unrealistic figures for the net emigration each year.   Instead, we may assume that withdrawals from the labour force, and thus the net intake, is closely related to changes in numbers at work, and that migration of workers is closely correlated with total migration.   The problem then reduces to one of regression analysis.

Given three variables x_1, x_2, y, all measured as differences from their means.   y is to be split up into two additive components y_1, y_2 such that

$$y_1 = \beta_1 \, x_1 + \epsilon_1$$

$$y_2 = \beta_2 \, x_2 + \epsilon_2$$

$$y_1 + y_2 = y$$

The maximum likelihood values for y_1 and y_2 are sought, given a series of observations for x_1, x_2 and y.   Assuming

that the errors ϵ_1 and ϵ_2 have equal variances; the solution is

$$y_1 = \tfrac{1}{2}(y + b_1 x_1 - b_2 x_2)$$

$$y_2 = \tfrac{1}{2}(y - b_1 x_1 + b_2 x_2)$$

where b_1 and b_2 are the partial regression coefficients of y on x_1 and x_2.

In this instance, x_1 refers to change in number at work, x_2 to net migration and y to change in total labour force. Computation yields

$$b_1 = 0.4620$$

$$b_2 = 0.3646$$

thus for the variables x_1', x_2', y', y_1' and y_2' which include their constant term

$$y_1' = 19.06 + 0.5 y' + 0.2310 x_1' - 0.1823 x_2'$$

$$y_2' = -19.06 + 0.5 y' - 0.2310 x_1' + 0.1823 x_2'$$

Table 19 shows the result in numerical terms.

Table 19. Analysis of labour force change, 1951-1961.

(thousands)

Period	Total	Net domestic intake	Net migration
1951-52	-8	+16	-24
1952-53	-23	+7	-30
1953-54	-3	+23	-26
1954-55	-20	+13	-33
1955-56	-20	+13	-33
1956-57	-26	+4	-30
1957-58	-21	+16	-37
1958-59	-12	+17	-29
1959-60	-11	+20	-31
1960-61	-10	+21	-31
1951-61	-154	+150	-304

If this analysis is correct, then not only does migration of workers vary, largely in response to the employment situation, but there are also considerable year-to-year variations in the extent to which marginal workers like married women and old people enter or leave the labour force. Of course, as these conclusions lean heavily on data and assumptions which may not be highly accurate, they are of a somewhat tentative nature.

6. OUTLOOK

The period analysed here ends in 1961. In one sense, this is an advantage since this year may mark a turning point in Irish population history. For the first time since 1948, the total population began to increase again after 1961, and it is possible that the total of 2,818,000 persons reached then will be the lowest one recorded for time to come. The total population is estimated to have risen in each of the three years following April 1961, the total rise up to April 1964 amounting to 31,000 persons.

During this 3-year period, average annual births amounted to 61,700 which is the same as the average over the decade 1951-60, but the number of deaths, about 33,000 per annum, was well below the level of the preceding decade. With a natural increase of 86,000 persons, the total net emigration which is implied in the population estimates amounts to 55,000 for the three years, or an annual emigration rate somewhat above 18,000.

In the light of what has been shown for the recent past, it is possible to arrive at a reasonable assessment of what is likely to happen during the whole of the current decade and thus at a population projection for 1971. Assumptions for births, deaths and migration are of course required.

For male and female births, it will simply be assumed that the average number between 1961 and 1971 is the same as between 1961 and 1964. Whilst the current high marriage rates and low emigration make for an increased number of births, this may be offset by some reduction in marital fertility. For a long-term projection, the fertility assumptions would need to be more carefully considered, but for a medium-term forecast the level of births is not of outstanding importance.

Mortality is likely to fall further, but the reduction is assumed to be only half of what it was between 1951 and 1961. The precise assumption made is that the survivor ratios between 5-year age groups deduced from the 1960-62 life tables operate during the five years 1961-66, but in the following quinquennium higher survivor ratios operate. Denoting these ratios for 1951, 1961 and 1971 by r_{51}, r_{61} and r_{71} respectively, the assumption is that

$$(1 - r_{71})/(1 - r_{61}) = \sqrt{(1 - r_{61})/(1 - r_{51})}$$

The net loss of population through migration is estimated as 100,000 persons. The total is based on recent experience and is in agreement with the targets set by the Second Economic Programme. The sex and age distribution of this migrating population is assumed to be the same as that estimated for 1951-61 and given in Table 17. This may not be quite realistic, as some of the age groups recently depleted by emigration may be less likely to furnish substantial numbers for emigration than others which are more intact, but it is difficult to see how a better hypothesis could be obtained. Table 20 gives the result of the calculations.

20. Population 1961 and projected population 1971 by sex and age (thousands).

Age	1961		1971	
	Males	Females	Males	Females
0 - 4	153.4	147.4	155.3	148.5
5 - 9	147.0	140.7	150.1	143.5
10 - 14	148.3	140.5	147.7	141.6
15 - 19	120.3	113.5	136.2	128.4
20 - 24	80.4	77.6	124.2	117.5
25 - 29	72.3	73.1	95.8	94.3
30 - 34	75.2	77.5	66.7	69.0
35 - 39	81.6	85.2	64.1	67.0
40 - 44	84.8	85.5	69.6	73.0
45 - 49	89.0	85.6	74.9	78.7
50 - 54	81.7	75.4	77.4	79.0
55 - 59	68.6	67.5	78.5	77.6
60 - 64	64.4	66.6	67.2	66.3
65 - 69	51.1	52.3	53.3	57.4
70 - 74	44.1	48.7	45.4	53.0
75 - 79	29.7	33.5	28.9	34.3
80 - 84	16.7	20.4	16.9	22.4
85 and over	7.7	10.8	7.5	12.0
All ages	1,416.5	1,401.8	1,460.2	1,463.7

Whilst too much reliance should not be put upon the figures for individual age groups, the broad tendencies are clear. If the assumptions made are realistic, total population will grow by more than 100,000 in the current decade to reach a total of over 2,900,000 by 1971 and thus return to the 1955 level.

The excess of men over women in the population as a whole would be wiped out and there may be a slight surplus of women over men, though this would be really marked among people aged 65 years and over only, and it does not apply to the age groups under 30.

There would be a substantial increase of 150,000
or more in the number of men and women between 15 and 30
years of age, and also a rise in the number of old people.
On the other hand, the number of persons in the age groups
between 30 and 50 would decline by about 100,000.

At 1961 work participation rates in each group,
the total labour force would rise from 1,108,000 to
about 1,175,000, made up of 850,000 men and 325,000 women.
The gainfully occupied proportion of the total population
would rise from 39.3% to 40.2%, and women would form the
greater part of the net inflow into the labour force.

The analysis has been presented here as seen
from the demographic angle, and for a fuller treatment,
economic factors should be taken into account.   Neverthe-
less it seems worth while to note the demographic influences
in assessing economic prospects and policies.   The con-
clusion obtained with regard to the growing importance of
women in the labour force forms one example of such
demographic tendencies which could be borne in mind.