

PROJECTIONS OF FULL-TIME ENROLMENT
Primary and Second Level, 2017 - 2035



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Contents

List of Tables	iii
List of Figures	iii
Acronyms	iii
1 Introduction	1
2 Projected Enrolments for 2017-2019	3
3 Migration and Fertility Scenarios	4
3.1 Migration	4
3.2 Fertility	5
4 Primary-Level Projections	6
4.1 Key Points to Note	7
5 Second-Level Projections	10
5.1 Key Points to Note	12
6 Review of 2015 Projections	14
Appendix A Supplementary Tables and Methodological Information	16
A.1 Fertility Assumptions	16
A.2 Migration Assumptions	18
A.3 Deaths	19
A.4 Flows at Second Level	19
A.5 Primary Level Other Factors	19
References	20

List of Tables

1	Overview of Enrolment Trends, 2016-2019	3
2	Projections of Enrolment at Primary Level, 2017-2035	6
3	Projections of Enrolment at Second Level, 2017-2035	11
4	Comparisons with 2015 Projections	14
A.1	Projected Births under each Fertility Assumption, 2017-2035 . . .	17
A.2	Projected Migration at Primary Level under each Migration Assumption, 2017-2035	19

List of Figures

1	Projections of Enrolment at Primary Level, 2017-2035	7
2	Projections of Enrolment at Second Level, 2017-2035	10
A.1	Total Period Fertility Rate, 1990-2016	16
A.2	Births, 1911-2016	18

Acronyms

CSO - Central Statistics Office

DES - Department of Education and Skills

ECCE - Early Childhood Care and Education

PLC - Post Leaving Certificate

P-POD - Post-Primary Online Database

TPFR - Total Period Fertility Rate

1 Introduction

This report provides the latest set of projections of full-time enrolment in first- and second-level schools aided by the Department of Education and Skills (DES). This release updates the previous set of first- and second-level projections published in July 2015 [1]. A separate document on third-level projections will also shortly be made available. This document covers all years from 2017 to 2035 for students in first- and second-level institutions aided by the Department of Education and Skills only.

The three migration assumptions and two fertility assumptions have been updated on the basis of new data which has become available since the previous publication, giving rise to six scenarios in total for which projected enrolments data is presented. The Department has chosen M2F1, a scenario encompassing a medium migration assumption and an assumption of gradually declining fertility, as the most likely scenario going forward.

Primary enrolments, which have already risen substantially in recent years, are projected to rise by an additional 8,967 pupils by 2018, reaching a peak of over 567,300 in 2018, before beginning to reduce. This peak figure is reflective of primary enrolment levels last seen in Ireland in the mid-1980s, where enrolments rose to a peak of 567,000 pupils in 1987 before beginning to reduce.

Post-primary enrolments are also projected to rise substantially by over 15,500 by 2019 and will continue to rise under all scenarios until 2025, at which point, enrolments at second level are expected to be in excess of 416,800 pupils for the first time in the history of the State. In total therefore, for the three years ahead (2017 to 2019), an additional 22,805 pupils are expected to enter the system across first- and second-level education.

The paper consists of six sections. The projected enrolments for the 2017-2019 academic years at both levels are discussed in Section 2. Section 3 introduces the migration and fertility scenarios that were embedded in the projections derivation. The model results, with the use of the migration and fertility assumptions, are presented in Sections 4 & 5 for primary- and post-primary-level education, respectively. Finally, the review of the 2015 projections and updates made to the current projections are outlined in Section 6.

2 Projected Enrolments for 2017-2019

The following table shows the final enrolments at first and second level for 2016, based on the annual returns of primary and post-primary schools, that are recorded in POD/P-POD (Primary/Post-Primary Online Database) [2] and the projected enrolments at first and second level for the following three academic years under scenario M2F1. It should be noted that each year refers to the beginning of a school year when enrolment is recorded in September of that year. Hence, the year 2016 refers to enrolment in September 2016 of the school year 2016/17.

Table 1: Overview of Enrolment Trends, 2016-2019

Year Beginning	First Level	Second Level
2016 (final)	558,402	352,257
2017	563,716	356,412
2018	567,369	360,966
2019	565,696	367,768

As can be seen from Table 1, a continuing increase in enrolments is expected at both first and second level. At first level, the increase in births in recent years is reflected in the corresponding continuing increase in the levels of enrolment up to a peak in 2018, before beginning to decrease slightly from 2019 on.

At second level, there is also a year-on-year increase projected from 2017 to 2019. The second-level projection follows directly from the trend seen at primary level in recent years of consistent year-on-year increases in enrolments, as the increased numbers of pupils at primary level in recent years begin to transition to post-primary education.

3 Migration and Fertility Scenarios

The latest available migration data from our 2015/16 census shows that we have returned to net inward migration. Data from 2013/14 and 2014/15 showed patterns of net outward migration. This pattern has been reversed and we are now projecting a prolonged period of net inward migration.

In recent years, births and the Total Period Fertility Rate (TPFR) have decreased significantly below the projected figures in the national projections, with the 2016 TPFR now standing at 1.9.

Taking the above information into account, the migration and fertility assumptions for the 2017 projections have been adjusted slightly as follows.

3.1 Migration

For migration at primary level the following set of assumptions were used:

M1: This assumption shows a return to net inward migration. The net inward migration will be at levels similar to those seen in the early 2000s.

M2: Net migration showing slightly positive inward migration again from 2017 onwards.

M3: Net migration will remain neutral for the whole period of the projections.

At post-primary level, it is difficult to distinguish the true number of emigrants from the education system from the data available, given the higher numbers of departures from the second-level system, particularly after the ending of compulsory school age. A flow-based approach, which includes migration flows, is therefore taken at second level using overall numbers of entrants to and leavers from the system at each programme level, retention rates and the "cohort survival" rates from one year to another.

3.2 Fertility

Assumptions were also made on the direction of the TPF_R, a synthetic indicator of fertility, which shows the average expected number of children a woman would have by the age of 49 based on the current year's information on births and ages of mothers. The most recent evidence shows the fertility rate in Ireland fell sharply from the 2010 level of 2.09 to 1.9 in 2016, and has now been below replacement rate for a number of years. The following TPF_R assumptions were applied:

F1: TPF_R will gradually decline in the coming years, reaching a level of 1.8 by 2025 and remain constant thereafter.

F2: TPF_R will decline to 1.65 by 2025 and remain at that rate thereafter.

These two sets of assumptions combine to give a total of six scenarios under which enrolments are projected from 2017 to 2035. The Department currently considers **M2F1** as the most likely scenario over this period.

4 Primary-Level Projections

Table 2 and Figure 1 show the levels of enrolment at first level under the various scenarios **M1F1** to **M3F2**, from 2017 to 2035.

Table 2: Projections of Enrolment at Primary Level, 2017-2035

Year	M1F1	M1F2	M2F1	M2F2	M3F1	M3F2
2017	564,062	564,062	563,716	563,716	562,976	562,976
2018	567,916	567,916	567,369	567,369	565,244	565,244
2019	567,657	567,657	565,696	565,696	561,659	561,659
2020	562,935	562,935	559,037	559,037	553,185	553,185
2021	553,826	553,321	548,066	547,534	540,387	539,878
2022	541,383	539,604	534,158	532,331	525,136	523,336
2023	525,790	522,253	517,520	513,907	507,632	504,043
2024	510,397	504,738	501,492	495,724	491,205	485,448
2025	494,456	486,329	485,276	476,999	474,945	466,655
2026	479,009	468,072	469,913	458,783	459,771	448,591
2027	463,859	449,777	455,025	440,702	445,185	430,764
2028	449,262	431,696	440,747	422,889	431,274	413,260
2029	436,484	415,578	428,287	407,034	419,174	397,701
2030	426,053	402,364	418,156	394,064	409,380	385,001
2031	417,634	391,610	410,009	383,529	401,536	374,707
2032	411,239	383,223	403,851	375,332	395,643	366,715
2033	407,021	377,317	399,832	369,581	391,842	361,129
2034	405,057	373,940	398,022	366,320	390,202	357,993
2035	405,345	373,073	398,419	365,531	390,719	357,284

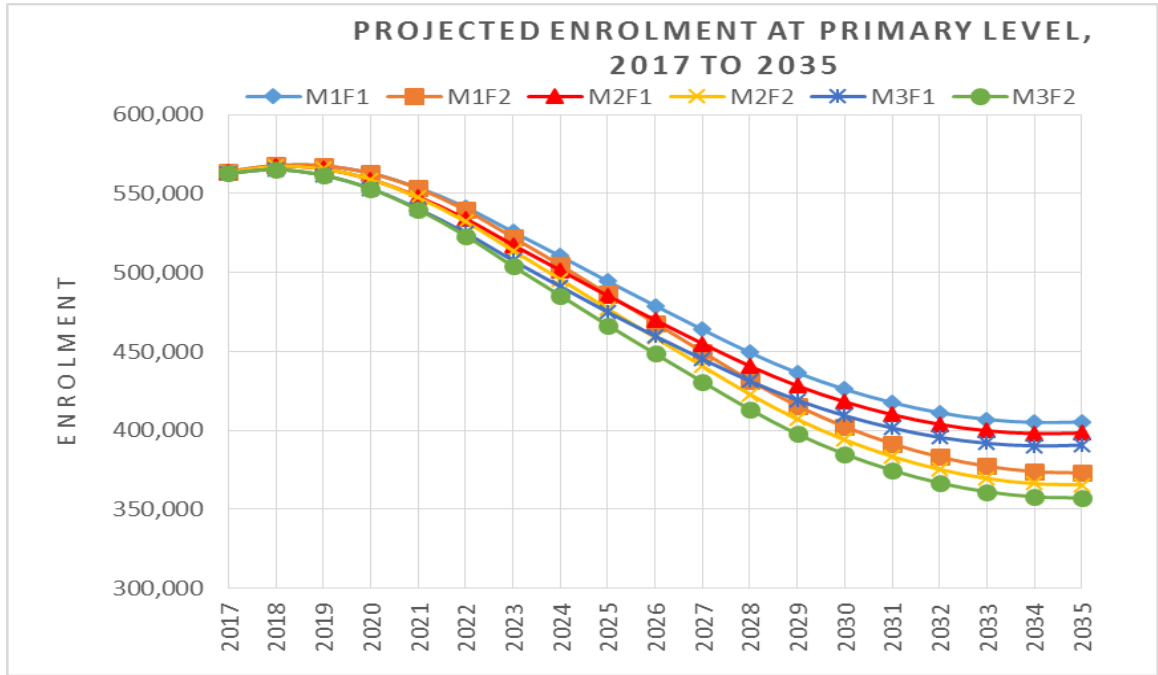


Figure 1: Projections of Enrolment at Primary Level, 2017–2035

4.1 Key Points to Note

- **Focusing on the immediate three-year period ahead** (2017-2019 inclusive) under scenario M2F1, enrolment is projected to increase by just under 9,000 pupils from 2016 to 2018 and decrease by 1,673 from 2018 to 2019. This reflects an assumed low level of net inward migration of the primary school population over that period. However, as the main driver of the increase is the underlying births figures for 2008 onwards, it is highly unlikely that enrolment at primary level will fall before the academic year 2017/18. All derived scenarios show the high enrolment numbers occurring in **2018**, with M1 (F1&F2) being the highest at 567,916.
- Currently **M2F1** is considered the most likely scenario. This would suggest an increase in enrolments at primary level to a peak of 567,369 by 2018, and a continuous decline thereafter, to a level of 398,419 by 2035.
- In general there is less variability in the projections of enrolment in the immediate future, given that these children are already born and so the

numbers are not subject to differing assumptions on fertility; the variation in the near term is due to differences in migration assumptions only.

- The Early Childhood Care and Education (ECCE) Scheme provides early childhood care and education for children of pre-school age. From September 2016, children can now participate in the ECCE scheme from the nearest starting point after the child's 3rd birthday and continue until they transfer to primary school (provided that they are not older than 5 years and 6 months at the end of the pre-school year) [3]. As a result, the number of primary entrants is reduced by the children enrolling in the second free pre-school year for the period of the projections.
- In all scenarios considered, continuing enrolment growth up to 2018 is implied. From 2019, all scenarios show falling enrolment numbers for the remainder of the period shown. This reflects a reduction in births year-on-year since 2009 and recent reductions in the fertility rate in Ireland. Continuing declines in the numbers of births from 2016 onwards are likely, as there is a natural reduction in the projected numbers of females aged 15-49 from that point onwards, reflecting lower levels of births in Ireland in the 1990s compared to the 1980s.
- There is greater uncertainty about trends beyond 2019 as the cumulative effect of using different migration or fertility assumptions is estimated. Under a low population-growth scenario **M3F2**, i.e., neutral net migration for the entire period of the projections combined with a steeper fall in fertility, enrolment could fall to around 357,284 by 2035. Under a high population-growth scenario **M1F1**, i.e., a quicker return to higher positive net migration combined with a gradual decrease in fertility from the current rates, enrolment would be at a level of around 405,345 by 2035.

- By the year 2035, all three scenarios are divided into two branches, i.e., M1, M2 & M3 migration rates that are considered in concert with F1 converge to ~390K, and scenarios that are derived by using F2 rate converge to ~357K. The results show that migration does not have an immense impact on the long-term timescale, but the difference in fertility rates has to be a main factor that drives the various scenarios to converge (Fig 1). Neither of the fertility rates F1 and F2 have an impact on the 2018 enrolment numbers yet, as the majority of these pupils were born in 2014 when fertility rates for both scenarios were set up as 1.95. By 2025, the fertility rates are gradually reduced to 1.80 and 1.65 for F1 and F2 respectively, to remain steady afterwards. However, since F2 fertility rate is lower, then all scenarios considering the F2 variable decline at a faster rate than F1.

5 Second-Level Projections

Second level comprises all Junior and Leaving Certificate course students in DES-aided schools and colleges. The figures below refer to the school-based enrolments up to Leaving Certificate and do not include PLC students.

There has been a noticeable increase in retention at second level in recent years, with the latest published retention report showing a retention rate to Leaving Certificate of all students of just over 90%. The increased rates are reflected as part of the assumptions on flows in and out of the second-level system. Figure 2 and Table 3 present projected enrolment to the year 2035 at second level.

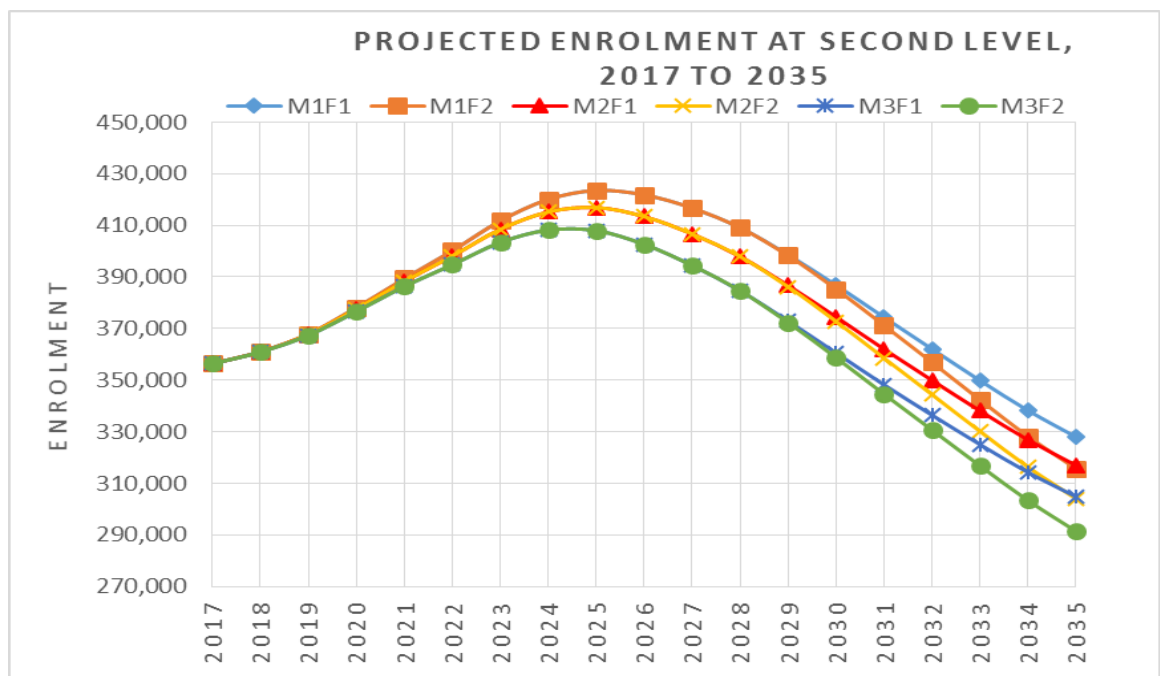


Figure 2: Projections of Enrolment at Second Level, 2017–2035

Table 3: Projections of Enrolment at Second Level, 2017-2035

Year	M1F1	M1F2	M2F1	M2F2	M3F1	M3F2
2017	356,412	356,412	356,412	356,412	356,412	356,412
2018	361,015	361,015	360,966	360,966	360,862	360,862
2019	367,901	367,901	367,768	367,768	367,349	367,349
2020	378,066	378,066	377,638	377,638	376,591	376,591
2021	389,347	389,347	388,310	388,310	386,290	386,290
2022	400,087	400,087	398,087	398,087	394,708	394,708
2023	411,718	411,718	408,430	408,430	403,349	403,349
2024	420,036	420,036	415,174	415,174	408,155	408,155
2025	423,513	423,513	416,897	416,897	407,920	407,920
2026	421,790	421,790	413,379	413,379	402,618	402,618
2027	416,667	416,667	406,687	406,687	394,473	394,473
2028	409,040	409,040	397,862	397,862	384,596	384,596
2029	398,600	398,265	386,667	386,163	372,866	372,293
2030	386,789	385,283	374,460	372,727	360,502	358,657
2031	374,330	371,166	361,954	358,497	348,148	344,522
2032	362,020	356,849	349,880	344,346	336,413	330,643
2033	349,818	342,314	338,047	330,107	325,007	316,755
2034	338,190	328,169	326,817	316,287	314,228	303,304
2035	327,961	315,612	316,965	304,035	304,800	291,392

5.1 Key Points to Note

- **Focusing on the immediate three-year period ahead** (2017-2019 inclusive), enrolment is projected to increase by almost 15,500 by September 2019, compared to September 2016 levels.
- The second-level projections are a direct continuous product of the primary enrolment estimates. The peak enrolment numbers in post-primary schools for M1/M2 (F1 & F2) are projected to occur in 2025, but for other remaining scenarios M3 (F1 & F2) to occur in 2024.
- Currently, **M2F1** is considered the most likely scenario. This would suggest a year-on-year increase in second-level enrolments to a peak of 416,897 over the period considered, occurring in 2025.
- The margin between the highest (**M1F1**) and lowest (**M3F2**) population-growth scenarios is over 15,000 pupils in the peak year (2025 – M1F1 and 2024 – M3F2). This reflects the cumulative effect of different migration assumptions at primary level feeding through to the second-level numbers. Up to the peak year 2025, children who will enter the post-primary system have already been born, so only the migration assumptions have an effect on the projected enrolments.
- After the year 2028, the margin between scenarios begins to widen further as assumptions on births also begin to have an effect on the projected figures.
- After 2025, enrolments are projected to begin to decline. Under the preferred M2F1 scenario, enrolments begin to decrease from 2025 to a level of just over 316,900 by 2035.

- Under the lowest population-growth scenario **M3F2**, i.e., neutral net migration for the entire period of the projections combined with a steeper fall in fertility, enrolment would be in the region of 291,400 in 2035. Under the highest population-growth scenario considered **M1F1**, i.e., a quick return to higher positive net migration combined with a more gradual fall in fertility, enrolment could be at approximately 327,960 by 2035.

6 Review of 2015 Projections

This section presents a short review of the last published projections [1] and outlines the updates to the projected figures that have been made for the 2017 iteration.

The percentage error rate of a prediction can be defined as follows:

$$\frac{|Predicted\ Value - Actual\ Value|}{Actual\ Value} * 100 \quad (1)$$

Table 4 shows the actual enrolment for 2015 and 2016 at primary and second level compared to the projected enrolment for 2015 and 2016 under the most likely scenario, and gives the percentage error rate for each level.

Table 4: Comparisons with 2015 Projections

Year	Education Level	Most Likely Scenario	Actual Enrolment	Difference	Error Rate
2015	Primary Level	555,134	553,380	1,754	0.32%
2015	Second Level	343,972	343,892	80	0.02%
2016	Primary Level	563,093	558,402	4,691	0.84%
2016	Second Level	349,764	352,257	-2,493	0.71%

There was an over-projection of 1,754 pupils at primary level in 2015 and 4,691 in 2016. This difference is due to the change in net migration, i.e., the net outward migration of 0-4-year-olds was slightly lower than projected. The model has therefore been updated accordingly. In addition, the difference between real and actual figures can be partially attributed to children participating in the ECCE scheme (See sub-section 4.1). As a result, the actual enrolment figures are lower compared to the projected ones.

At second level, there was a very little difference between the projected and actual figure in 2015. The difference was insignificant despite continuing increasing numbers choosing to do Transition Year, which have grown in recent years. In 2015/2016, almost 67% of Junior Cycle Year 3 pupils went on to do Transition Year, compared to 65% in 2014/2015. This higher proportion has been carried through the model, increasing the numbers expected to remain in the system over time.

Over the longer term, the downward trend in fertility assumptions, the increased numbers opting to take Transition Year and to a lesser extent, the more negative migration assumptions, have a slight impact on the projected numbers compared to the 2015 projections. Overall, as per the previous set of projections, enrolments are still expected to peak in 2018 for primary level and in 2025 for second level before beginning to reduce. However, the highest projected increase is expected to be lower than previously projected for primary level (about 7,100 pupils for M2F1) and moderately higher for second level (about 6,141 pupils for M2F1).

Further details on the data underlying the assumptions are available in Appendix A below.

Appendix A Supplementary Tables and Methodological Information

A.1 Fertility Assumptions

The Total Period Fertility Rate (TPFR) is a synthetic indicator of fertility at one point in time (a year) across all cohorts of women giving birth in that year. It shows the average expected number of children a woman would have by the age of 49 based on the current year's information on births and ages of mothers.

The number of births registered in Ireland in the intercensal period 2006-2011 peaked at 75,554 in 2009, when the TPFR was at a level of 2.09. Since then, recent figures released in May 2016 show that the number of births in 2015 had fallen to 65,909, giving a fertility rate of 1.9 [4]. The total period fertility rate has shown considerable volatility between the bands 1.85 and 2.15 in the past two decades, as shown in Figure A.1.

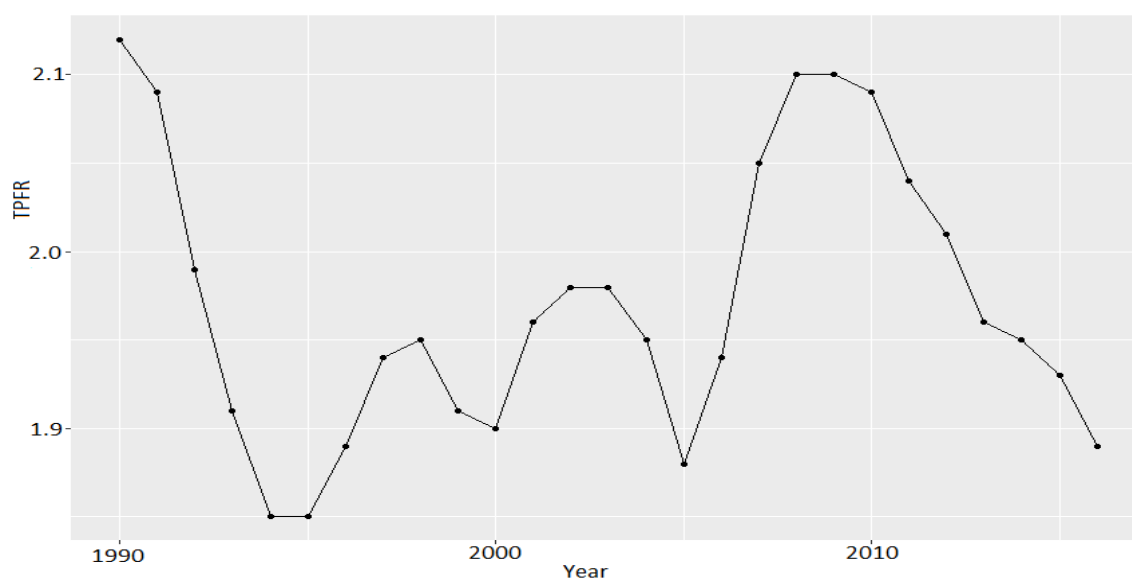


Figure A.1: Total Period Fertility Rate, 1990-2016

Assumption F1 allows for the TPF_R to gradually reduce to a level of 1.8, while assumption F2 allows for a sharper reduction to 1.65 over the period of the projections. Assumption F1 is chosen as the most likely fertility assumption. Ireland still has a relatively high fertility rate compared to other European countries, so a possible slow decline to a level of 1.8 - which is still significantly higher than the European average - seems the more likely of the two fertility assumptions.

Table A.1 shows the projected births under each fertility assumption for the period 2017 to 2035. Also, the historical births data (1911-2016) can be viewed in Figure A.2, where the periodicity of the data is clearly seen.

Table A.1: Projected Births under each Fertility Assumption, 2017-2035

Year	F1	F2
2017	60,143	58,854
2018	58,536	56,852
2019	56,943	54,880
2020	55,416	52,989
2021	54,030	51,249
2022	52,795	49,666
2023	51,740	48,265
2024	50,889	47,063
2025	50,266	46,077
2026	50,284	46,093
2027	50,574	46,360
2028	51,121	46,861
2029	51,879	47,556
2030	52,808	48,407
2031	53,865	49,376
2032	55,023	50,437
2033	56,230	51,544
2034	57,447	52,659
2035	58,617	53,732

Source: DES projections model

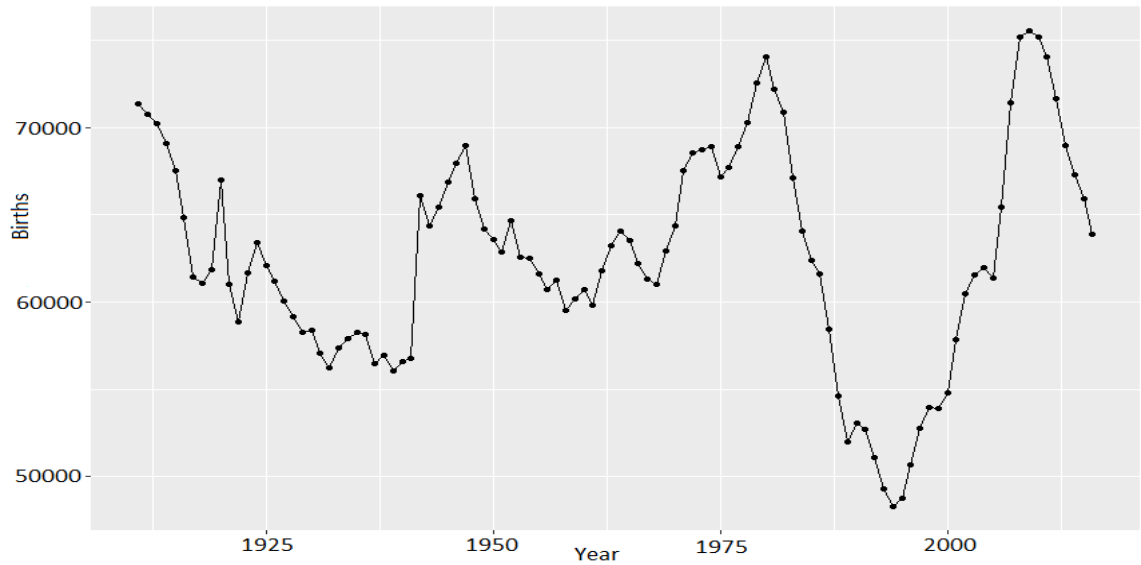


Figure A.2: Births, 1911-2016 [4]

A.2 Migration Assumptions

In order to arrive at migration assumptions for primary school-aged children, immigration and emigration multipliers based on the most recent trends seen in the primary school annual returns data are applied to projected age cohorts to derive a projection of emigration and immigration to and from the primary school system. Projected migration at primary level under each migration assumption can be seen in Table A.2.

At second level, it is more difficult to disaggregate the flows out of the system by destination, given the larger numbers of leavers and the wider range of possibilities for leaving destination. While migration is the main driver of the flows in and out of the primary level system as a whole, this is not the case at second level, where flows out of the system also include dropouts, transfers to the private sector and second-chance education. Therefore, a "cohort survival" method is applied to the second-level data which takes into account all flows to and from the system, including migration. This method applies flow percentages to each programme year at second level, based on the most recent trends in migration and retention and the percentages are then carried throughout the model.

Table A.2: Projected Migration at Primary Level under each Migration Assumption (average of F1&F2), 2017-2035

Year	M1	M2	M3
2017	1,212	826	0
2018	1,941	1,663	0
2019	4,154	2,489	0
2020	5,213	2,735	0
2021	5,877	3,111	0
2022	5,735	3,030	0
2023	5,558	2,932	0
2024	5,382	2,835	0
2025	5,200	2,736	0
2026	5,020	2,641	0
2027	4,843	2,547	0
2028	4,670	2,456	0
2029	4,516	2,376	0
2030	4,391	2,310	0
2031	4,289	2,257	0
2032	4,211	2,216	0
2033	4,157	2,188	0
2034	4,129	2,174	0
2035	4,126	2,172	0

Source: DES projections model

A.3 Deaths

Assumptions on deaths are taken directly from the CSO projections for each single year of age. The effect of deaths on the overall projections is miniscule given the small numbers involved.

A.4 Flows at Second Level

An inward and outward flow rate is applied to each programme year cohort at second level, reflecting trends in migration, retention, transfers to and from the private sector and repeats.

A.5 Primary Level Other Factors

A number of other factors, which have a smaller impact on overall figures at primary level, are included in the model: transfers to/from the private sector and special education, repeat rates in junior infants and 6th class in primary school.

References

- [1] <http://www.education.ie/en/Publications/Statistics/Statistical-Reports/Projections-of-Full-Time-Enrolment-Primary-and-Second-Level-2015-2033.pdf>

- [2] <http://www.education.ie/en/Publications/Statistics/Primary-Online-Database-POD/>

- [3] <https://www.dcy.gov.ie/viewdoc.asp?DocID=1143>

- [4] <http://www.cso.ie/en/databases/>