

# Trends and Patterns in Visual Impairment Amongst Young People in Ireland

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How prevalent is visual impairment (VI) amongst the general population? The most recent definitive measure we have derives from the 2016 census and shows the total number of individuals with VI at 54,800 or 1.2% of the total population in that year. The corresponding figures for 2011, the previous census year, were 51,700 and 1.1% of the total population.

## Incidence of Visual Impairment

Between 2011 and 2016 the number of people affected by VI increased by 6% therefore, or at a somewhat faster rate than the overall increase in population, which was 3.6%. This disproportionate increase is entirely explained by the ageing of the population in the intervening period and the fact that the incidence of VI rises with age, being at its highest amongst the oldest age cohort.

Table 1: Incidence of Visual Impairment						
(%)	0-14	15-24	25-44	45-64	65-plus	Overall
2011	0.36	0.53	0.60	1.20	4.60	1.10
2016	0.40	0.59	0.60	1.20	4.20	1.20

**Table 1** sets out the incidence rates of VI for different population age cohorts in the two most recent census years<sup>1</sup>. In 2016 the proportion of the population affected by VI rose from 0.4% in the case of 0-14 year-olds to 0.6% for 15-24 year-olds to 4.2% for those aged 65-plus. The corresponding proportions for 2011 are not very different, although it is noteworthy that the incidence of VI amongst the two youngest cohorts increased somewhat over this period.

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1 2011 is the first census year in respect of which data on visual impairment were separately collected. In earlier censuses data on visual impairment and hearing impairment were combined.

## Visual Impairment and Other Disabilities

Amongst those with VI across the general population, a minority (35%) have VI only, and almost half (46%) have VI in combination with at least two other disabilities (multi disability visual impairment or MDVI). This implies that some 19% have VI together with just one other disability. These proportions vary with age as **Table 2** indicates.

**Table 2: Visual Impairment(VI) and Other Disabilities, 2016**

(% of those with VI)	0-14	15-24	25-44	45-64	65-plus	Overall
<b>VI Only</b>	55.3	58.0	57.4	39.6	20.3	35.3
<b>VI + One Other</b>	13.0	15.4	16.5	18.8	21.2	18.9
<b>MDVI</b>	31.7	26.6	26.1	41.6	58.5	45.8

Those with VI only account for a much higher proportion of those who are visually impaired in the younger than in the older age groups whereas, amongst those affected by VI, MDVI is much more prevalent amongst the oldest cohorts. Thus, the probability of someone with VI having two or more other disabilities is almost 60% amongst those aged 65-plus, or about twice the corresponding probabilities in respect of those aged 0-14 and 15-24.

## Numbers Affected by MDVI

Still, MDVI is not a condition of trivial incidence amongst the young. **Table 3** sets out the absolute numbers in 2011 and 2016. In 2016, census returns indicate that there were almost 2200 people aged 24 and younger affected by MDVI, of whom almost 1300 were in the 0-14 age range. This represented a 31% increase from 2011.

**Table 3: Numbers Affected by MDVI**

	2011	2016	(% change)
<b>0-14</b>	986	1276	29.4
<b>15-24</b>	677	896	32.3
<b>0-24</b>	1663	2172	30.6

## Factors Behind the Increase in MDVI

That such a large increase in the number affected by MDVI took place is worthy of further analysis. There are three statistical factors at work here:

- (i) the increase in the population of 0-24 year-olds;
- (ii) the increase in the incidence of VI amongst this age group, and
- (iii) the increase in the probability of MDVI, given VI, amongst this age group.

The first of these factors is of modest importance: the population of 0-24 year-olds rose by just 1.5% between 2011 and 2016. On the other hand, as already noted, there was a significant increase in the incidence of VI amongst 0-14 year-olds and 15-24 year-olds between 2011 and 2016, and significant increases in the probability of multiple disabilities, given VI, for these age cohorts over the same period. **Table 4** sets out the relevant statistics.

Table 4: Factors Behind the Increase in MDVI, 2011-2016						
	2011	2016	2011	2016	Change (%)	
	0-14	0-14	15-24	15-24	0-14	15-24
<b>Incidence of VI (per 10,000)</b>	36	40	53	59	11.1	11.3
<b>Probability of MDVI given VI</b>	0.28	0.32	0.22	0.27	12.4	20.4

Between 2011 and 2016, the numbers affected by VI rose from 36 to 40 per 10,000 in the case of 0-14 year-olds, and from 53 to 59 per 10,000 amongst 15-24 year-olds. For those with VI, the probability of having multiple disabilities increased from 0.28 to 0.32 for 0-14 year-olds and from 0.22 to 0.27 for 15-24 year-olds over this period. To obtain further insights into these patterns, we carry out a more granular analysis by age cohort below.

## Other Disabilities Co-presenting With VI

What other disabilities are most commonly associated with VI amongst young people? Does the pattern here vary appreciably with age? Have there been notable changes in these patterns over time? These are the questions to which we now turn our attention.

**Table 5** contains some relevant data. It sets out the absolute numbers affected by VI in combination with another specified disability, according to the 2016 census. So, in that year, 1336 0-14 year-olds were affected by VI and a learning disability, 1013 children in the same age group were affected by VI and an intellectual disability, and so on<sup>2</sup>. These numbers indicate that the most common disabilities co-presenting with VI amongst 0-14 year-olds are learning disability and intellectual disability, followed by some sort of physical disability. A similar pattern obtains amongst 15-24 year-olds.

<b>Table 5: Other Disabilities Co-presenting With VI</b>		
	<b>0-14</b>	<b>15-24</b>
<b>Deafness</b>	432	270
<b>Intellectual Disability</b>	1013	665
<b>Learning Disability</b>	1336	868
<b>Physical Disability</b>	975	611
<b>Psychological Condition</b>	636	513
<b>Other<sup>3</sup></b>	807	583

## Probability of Having Another Disability With VI

**Table 6** uses the same data to produce estimates of probabilities. Given visual impairment, what is the probability that a 0-14 year-old child will also be affected by a learning disability, an intellectual disability, a physical disability? The answers are: 0.33, 0.25 and 0.24. The corresponding probabilities for 15-24 year-olds are somewhat lower, but not greatly dissimilar, at 0.26, 0.20 and 0.18 respectively. It is worth noting that the pattern of co-presenting disabilities is very different amongst older people. Thus, amongst visually impaired people aged 65-plus, by far the most common additional handicap is a physical disability (probability 0.633), followed by 'other' disability (0.473).

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- 2 These numbers are not additive: included amongst those with VI plus a learning disability, for example, are children who also had an intellectual disability and/or another disability.
  - 3 The category 'other disability' is defined in the census as 'A difficulty with pain, breathing, or any other chronic illness of condition'.

**Table 6: Probability of Having Another Disability With VI**

	<b>0-14</b>	<b>15-24</b>	<b>65-plus</b>
<b>Deafness</b>	0.110	0.080	0.38
<b>Intellectual Disability</b>	0.250	0.200	0.06
<b>Learning Disability</b>	0.330	0.260	0.27
<b>Physical Disability</b>	0.240	0.180	0.63
<b>Psychological Condition</b>	0.160	0.150	0.11
<b>Other</b>	0.200	0.170	0.47

## Future Trends

What about likely future trends in VI and MDVI amongst younger people?

The remarkably large increase in MDVI in 0-24 year-olds between 2011 and 2016 has already been noted and three statistical factors have been adduced to explain this phenomenon: (i) the increase in the population in this age range; (ii) the increased incidence of VI in this population and (iii) the increased probability of multiple disabilities, given VI, in this age cohort.

Looking forward, it seems clear that the first of these factors will continue to be of modest importance. Indeed, the latest available CSO population projections<sup>4</sup> envisage the numbers of 0-14 year-olds declining in the period out to 2026 under all combinations of assumptions regarding migration and fertility. On the other hand, under all scenarios, the population of 15-24 year-olds is projected to rise. Taking the two age groups together, numbers are projected to increase by between 1.5% and 6.8% over the 2016-26 period depending on the assumptions made in respect of migration and fertility. That being the case, it seems reasonable to suppose that the more influential factors will relate to the incidence of VI and the probability of multiple disabilities, given VI.

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4 Population and Labour Force Projections, 2017-2051

## Factors Behind the Increase in MDVI, 5-Year Age Groups

It might be useful to examine the 2011-2016 data in more detail than was done above in order to better understand what has been happening here.

**Table 8** presents the same statistics as Table 4, but broken down this time into 5-year age cohorts. This more granular approach confirms the patterns detected in the earlier analysis, namely a consistent increase in the incidence of VI and a consistent increase in the probability of MDVI, given VI, across all the younger age cohorts between 2011 and 2016.

		0-4	5-9	10-14	15-19	20-24
<b>Incidence of VI (per 10,000)</b>	<b>2011</b>	19	44	47	50	56
<b>Incidence of VI (per 10,000)</b>	<b>2016</b>	22	48	50	58	60
<b>Probability of MDVI, given VI</b>	<b>2011</b>	0.32	0.28	0.27	0.24	0.21
<b>Probability of MDVI, given VI</b>	<b>2016</b>	0.35	0.34	0.28	0.29	0.24

To what extent this reflects an increased willingness of people to reveal such information in their census returns or an increase in the rates of detection/diagnosis of VI and MDVI, can only be surmised. But, there are reasons to believe that the true incidence of VI and MDVI have been rising over time. As medical science has advanced, so the survival rates of babies born very prematurely or with very low birth weights have improved, and such babies are known to have a greater than average susceptibility to VI and associated disabilities. This factor is likely to remain in play into the future.

The more granular analysis provides one interesting increment of insight. It allows us to map the transition of age cohorts between 2011 and 2016, on the basis that those aged 0-4 in 2011 were aged 5-9 five years later, and so on. There are a couple of things worth noting here. One is that each cohort exhibited a higher incidence of VI at the later date. For example, children aged 5-9 in 2011 had an incidence of 44 per 10,000 of VI, but amongst the same cohort of children, aged 10-14 in 2016, the incidence had risen to 50. For the most part, these increases in incidence are small enough to be explicable in terms of accidents, the contraction of vision-damaging illnesses and/or the deterioration in an underlying condition.

But this is not true of the transition from the 0-4 cohort in 2011 to the 5-9 cohort in 2016. Here the incidence rises from 19 per 10,000 to 48 per 10,000. This large increase would suggest that VI goes undetected to a considerable degree amongst very young children. This is surely a serious problem – the earlier VI is detected, the sooner it can be treated and developmental issues associated with it addressed. It also suggests that as detection improves over time, the rate of incidence of reported VI amongst 0-4 year olds will increase. This is another reason to expect that the demand for ChildVision's services will continue to grow.



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