A profile of special educational needs and disability in Northern Ireland using educational and social data

Final Report

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Ulster University
Dr Una O'Connor Bones (PI)
Professor Gary Adamson
Dr Finola Ferry
Dr Peter Mulhall
Professor Jamie Murphy
Dr Laurence Taggart
Professor Roy McConkey

University of Leicester
Dr Eoin McElroy

NICCY
Niamh Devlin
Mencap
Mary Anne Webb
Children in Northern Ireland
Pauline Leeson
Ellen Finlay
Autism NI
Arlene Cassidy
Kerry Boyd
University of Northampton
Professor Richard Rose
Manchester Metropolitan University
Professor Christopher Hatton

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Executive Summary

Background

The current project sought to access and analyse available administrative data in Northern Ireland (NI) to explore and better understand special educational needs (SEN) among pupils and within NI schools. The origins of this administrative data project are grounded in the remit of the Administrative Data Research Centre Northern Ireland (ADRC-NI). As part of a wider UK network, the ADRC represents a partnership between universities, government departments and agencies, national statistics authorities, funders and the wider research community. Access to, and analysis of, administrative data, therefore, has potential to provide valuable insights of interest and relevance to policy makers, service providers and service users.

The contribution of administrative data to inform education policy and provision is supported by current evidence. At school level, the numbers of pupils with SEN in NI have increased in the past ten years at a rate that is proportionately higher than in the general school population, and the percentage of pupils with SEN – including those with and without a statutory statement – has remained higher than in England. There have also been observable changes in the profile of pupils with SEN; concerns around the capacity and skills of schools to accommodate and support the particular needs of certain groups of children; and challenges and delays in the identification and assessment of SEN.

The original aim of the project was to explore the educational profile of pupils with SEN in NI, over an eight-year period from 2010/11-2018/19, using individual-level data provided via the Unique Pupil Number (UPN). The UPN is used by education systems, including the Department of Education (DE); it is allocated to each pupil individually and is intended to remain with the pupil throughout their school career. Undertaking secondary data analysis using the UPN provides a valuable opportunity for longitudinal monitoring and tracking of educational outcomes over time. Access to, and analysis of, UPN-linked data for children with SEN in NI has never before been attempted. The potential value of such individual level analysis to families, educators, policy makers and researchers alike cannot be overstated. However, data access is a prelude to data analysis and, until access can be facilitated, this potential will remain unrealised. In this context, it was envisaged that the project would illustrate the utility of administrative data for research purposes, promote access to administrative data research in NI, and greatly incentivise data custodians to share data, thereby dramatically extending the ADRC's reach in the region.

From the outset, the development, implementation and completion of the project has been severely hindered by a series of administrative and other challenges that have prevented access to this original data. The introduction of the Digital Economy Act in 2018 and roll out of the General Data Protection Regulation (GDPR) required the DE to seek additional legal confirmation allowing access to the data, whilst the outcome and subsequent out-workings of

the Brexit referendum in 2018 further re-directed Departmental staff. Subsequent to this, the societal lockdown and associated restrictions introduced and maintained during the COVID-19 pandemic seriously hindered access to social data held in secure room facilities and significantly impacted the pace at which alternative data could be accessed, checked and resolved. Delays in data access necessitated identification of a revised project aim using available, alternative data on pupils with SEN.

The revised aim of the project was two-fold. Firstly, to interrogate the utility of existing education data sources as a means of gaining insights into the profile of pupils with SEN in NI and to describe the changing demography of pupils with SEN over an eight-year period. Secondly, to interrogate the utility of existing social data sources as a means of gaining insights into the relationship between SEN and disability relative to wider socio-economic influences. This was achieved in two ways. Firstly, from the DE Research and Statistics Branch who provided publicly available and specifically requested data on the pupil population with SEN. Secondly, from the Northern Ireland Statistics and Research Agency (NISRA) who provided data on the Northern Ireland Longitudinal Study (NILS). The NILS covers 28% of the population, including children and young people, and draws on data from a range of sources. This combined data enabled generation of a baseline profile of the health and disability of the sub-population of children and young people relative to the wider socio-economic circumstances of their lives.

Methodology

The methodology for the project evolved to align with the new data sources, ensuring that analytic parameters addressed the revised project aims. Data access and analysis was, by necessity, undertaken in two discrete stages. The characteristics of each data set did not permit direct data linkage, although the variables of SEN and disability had relevance to both. DE data analyses drew on ten data sets that provided information on pupils with SEN using a range of disaggregated variables, including: education region, school type (primary, post-primary and special), SEN Stage, over-arching SEN category, individual SEN type, gender and year group. Additional data relative to pupils' SEN status (Free School Meal Entitlement, Multiple Deprivation Measure, address by Local Government District) were also provided. Where possible, data was based on the primary need of the pupil to ensure he/she was only counted once.

Data were analysed in three linked phases: relative to the pupil population generally; relative to over-arching categories and individual SEN; and relative to Multiple Deprivation Measures and Local Government District residence. Using these variables, data was presented to compare the prevalence of SEN at NI and regional levels at 2010/11 and 2018/19, and to illustrate the degree of change in these rates over the eight-year period. The extent to which prevalence rates and corresponding change ratios can be reported with accuracy – particularly disaggregation for individual SEN – was dependent on levels of suppression and statistical

disclosure; this was particularly notable in some instances at Stage 5, in relation to grammar and special schools and in relation to Local Government Districts.

NILS data analyses drew on all male and female members aged between 4-19 years enumerated at the 2011 Census and also returned in the 2011 School Census (as well as members of households enumerated in the 2011 Census and linked with those also returned in the 2001 Census). The data set was linked at NISRA, tested for potential disclosure problems and de-identified. Data analyses were undertaken in two stages: firstly, cross-sectional analyses of individual, household deprivation and school level predictor variables with health/disability outcome variables in the full 2011 sample were executed. Mixed effects binary logistic regression models were applied to examine the unique associations between predictor and outcome variables. Secondly, longitudinal analyses were conducted. Models were estimated in which health and disability variables in 2011 were predicted by individual- and household-level factors in 2001.

Key Findings

Prevalence of SEN in schools across Northern Ireland

- Analysis of school-level data showed that the overall number of schools in NI decreased by 5%, whilst overall pupil numbers increased by 5%.
- There was a proportionately higher increase (21%) in the overall numbers of pupils with SEN compared to the wider pupil population.
- There were clear distinctions across school types between rates of growth for pupils generally and for those with SEN. In primary schools, there was a 13% increase in total pupil numbers and a 16% increase in the number of pupils with SEN.
- In contrast, in post-primary schools, there was a 4% decrease in total pupil numbers, but the number of pupils with SEN increased by 26%.
- Further analysis of post-primary data showed that the number of pupils with SEN increased by 19% in secondary schools and by 65% in grammar schools. There was also substantive growth in special schools, with data showing a 34% increase in pupil numbers.
- Prevalence rates for Free School Meal Entitlement (FSME) among pupils with SEN increased across primary, post-primary and special schools and at a similar rate of change.
- In primary and post-primary schools, FSME prevalence rates were substantively and consistently higher among pupils with SEN, although change ratios were higher among pupils with no SEN.
- Data analysis over time revealed a few peaks in prevalence rates in intervening years, notably 2014/15 in mainstream schools and 2016/17 in special schools.
- Analysis of pupil data at a regional level indicated that overall SEN prevalence rates were more often highest in the Belfast region in mainstream schools and in the Western region (Stage 5) in special schools.

- Higher change ratios were recorded across regions, school types and SEN Stages, although these were more apparent in the Western and North Eastern regions. Change ratios were also generally higher at Stage 5, with greater differences observed in secondary and grammar schools.

Over-arching categories of SEN

- The use of seven over-arching categories is part of the standardised collection and recording of information on pupils with SEN and is used by the DE and EA to inform policy development and planning; identify current and future funding needs; and monitor trends.
- The seven categories are: Cognitive and Learning; Social, Emotional and Behavioural Difficulties (SEBD); Communication and Interaction; Sensory; Physical; Medical Conditions and Syndromes; and Other. Individual types of SEN are classified within each category; this categorisation, therefore, represent a useful lens from which to begin to explore SEN prevalence rates over time.
- Preliminary analysis of data on the over-arching categories between 2010/11 – 2018/19 revealed that the recording of pupils with SEN was concentrated in three categories: Cognitive and Learning; SEBD and Communication and Interaction. Collectively, these three categories represented the overwhelming majority of the total SEN pupil population in 2010/11 and 2018/19 (87.2% and 89.7% respectively). This concentration of data suggested that focused analysis on the prevalence of these over-arching categories - and on the most recorded individual SEN types within them - had more potential to yield useful initial insights.
- Adopting this approach made it possible to look at prevalence rates using a range of disaggregated variables. For over-arching categories, analysis was undertaken by region, school type and SEN Stage; by FSME; and by Multiple Deprivation Measure (MDM). For individual SEN, analysis was undertaken by region and school type; by gender, year group and SEN Stage; by MDM and by Local Government District (LGD) based on pupils' truncated home post code.
- The extent to which prevalence rates and corresponding change ratios can be estimated – particularly for individual SEN - was dependent on the available data. In some instances, multiple suppressed data or figures of 0.0% prevented analysis at Stage 5, in relation to special schools and in relation to LGD distribution.

Over-arching Categories: Cognitive and Learning

- Comparison of the data at regional level between 2010/11 and 2018/19 showed overall prevalence rates for Cognitive and Learning increased over time (49.46% - 63.26% respectively). The highest prevalence rates were in Belfast region (12.27% - 13.97%), although the greater change was in the North Eastern region (1.5). There was least change in primary schools and most change in grammar schools. Prevalence rates were consistently higher among males across all school types. The only exception was

among females at Stages 1-4 in secondary schools in the Belfast region (11.94% - 11.83% compared to 9.61% – 10.46% for males).

- Overall prevalence rates increased for FSME pupils (36.5% - 54.2% respectively) and decreased for non-FSME pupils (63.5% - 54.2% respectively). In primary, secondary and special schools, prevalence rates for both genders were more commonly highest in MDM 1 and lowest in MDM 10; this distribution was reversed in grammar schools.

Cognitive and Learning: Dyslexia/SpLD[1]

- In secondary schools, overall prevalence rates increased for both genders at Stages 1-4 and Stage 5 whilst in primary and grammar schools, they varied across regions.
- At Stages 1-4, prevalence rates were highest for females and males in primary and grammar schools in the Western region, whilst the highest rates for both genders in secondary schools were in the Belfast region. The highest change ratio was for males attending grammar schools in the Southern region (3.0); this was followed by females attending secondary schools in the Belfast region (2.7) and females attending grammar schools in the North Eastern region (2.4).
- At Stage 5, prevalence rates were highest in the Western region for both genders in secondary schools and for females in primary schools. Prevalence rates in grammar schools were very low, with all regions showing 0.0% at different time points for both genders. Change ratios were highest for males attending secondary schools in the South Eastern region (12.3) and for females attending secondary schools in the Belfast region (6.8).
- Analysis by year group indicated growth in prevalence rates at Stages 1-4 and Stage 5 in secondary and grammar schools and at Stage 4 in primary schools. In primary schools, these prevalence rates increased more noticeably for both genders from year 3; in secondary schools, change ratios were generally higher for females over the year groups.
- There was some variation in the distribution of Dyslexia by MDM. In primary schools, the highest prevalence rates for both genders were in MDM 5 in 2010/11 and 2018/19. In secondary schools, overall prevalence rates were highest in MDM 5 at Stages 1-4 and MDM4 at Stage 5; in grammar schools, at Stages -14, rates were highest in MDM 10 for both genders at the two time, whilst there was little data to make a meaningful interpretation at Stage 5.
- Comparison of the distribution and density of Dyslexia/SpLD sin 2010/11 and 2018/19 showed some variation. At Stages 1-4, there was little change in the distribution of high-density districts in primary schools, whilst distribution decreased in post-primary schools. At Stage 5, wide-spread distribution in post-primary schools in 2010/11 had reduced substantively in 2018/19.

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[1] Dyslexia/Specific Learning Difficulty was the term used by the Department of Education (NI) at the time.

Cognitive and Learning: Mild Learning Difficulties[2]

- Prevalence rates for Mild Learning Difficulties at Stages 1-4 decreased in primary schools and fluctuated in secondary and grammar schools. Rates were typically very low across all school types at Stage 5 and, in each instance, decreased to 0.0% from 2016/17 onwards.

- At Stages 1-4, prevalence rates were highest for females and males attending primary and secondary schools in the Belfast region and for females attending grammar schools in the Western region. The highest change ratios were for females (22.0) and males (27.5) attending grammar schools in the Southern region.

- Analysis of prevalence rates by year group indicated a general decrease at Stages 1-4 in primary and secondary schools and some increase in grammar schools; across schools, data at Stage 5 was very low to make meaningful interpretations. Comparison of prevalence rates between year groups at Stages 1-4 showed a noticeable increase between Years 2 and 5 in primary schools, a general decrease from Years 8 to 12 in secondary schools and fluctuating rates in grammar schools.

- There was some variation in the distribution of Mild Learning Difficulties by MDM. At Stages 1-4, the highest prevalence rates in primary and secondary schools were in MDM 1 in 2010/11 and 2018/19. In grammar schools, overall rates were highest in MDM 10 in 2010/11 and in MDM 8 in 2018/19. At Stage 5, there was little or no distinction across MDM at both time points.

- Comparison of the distribution and density of Mild Learning Difficulties in 2010/11 and 2018/19 showed some variation. At Stages 1-4, there was little change in the distribution of high-density districts in primary schools, whilst distribution expanded in post-primary schools. At Stage 5, high-density districts had shifted in primary schools and partly shifted in post primary schools, although the number of high-density districts had not changed. There was insufficient data to compile definitive maps in special schools.

Cognitive and Learning: Moderate Learning Difficulties

- Prevalence rates for Moderate Learning Difficulties at Stages 1-4 decreased in primary and secondary schools and fluctuated in grammar schools. In these schools, rates fluctuated at Stage 5, whilst there was an overall increase in special schools.

- At Stages 1-4, prevalence rates were highest in the Western regions for both genders in primary and grammar schools and for males in secondary schools; they were highest in the Belfast region for females in secondary schools. Across these schools, the highest change ratios were for females attending grammar schools in the Western region (3.5) and for males attending grammar schools in the Southern region (2.5).

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[2] Mild Learning Difficulties was the term used by the Department of Education at the time. Pupils with mild learning difficulties will have attainments below expected levels in most areas of the curriculum, and normally have their learning needs met through the school's own resources.

- At Stage 5, prevalence rates were highest in the North Eastern region for both genders in primary and secondary schools and in the Western and Southern regions for males in special schools. Change ratios were highest for females attending special schools in the Southern region (2.0) and among males in primary schools in the Western and North Eastern regions (1.4). There were higher change ratios, particularly for males in grammar schools in the Southern region (7.0) although this should be interpreted in the context of very low prevalence rates.
- Comparison of Moderate Learning Difficulties across year groups indicated that at Stages 1-4 prevalence rates decreased or plateaued over time for both genders in primary and secondary schools (and did likewise in special schools at Stage 5); rates were very low or 0.0% across year groups in grammar schools.
- There was slight variation in the distribution of Moderate Learning Difficulties by MDM. At Stages 1-4, the highest prevalence rates in primary and secondary schools were in MDM 1 in 2010/11 and 2018/19, with some distribution in MDM 2 and 3 in primary schools. At Stage 5, the highest prevalence rates were recorded more consistently in MDM 5 in primary and secondary schools, with highest rates in MDM 1 in special schools.
- Comparison of the distribution and density of Moderate Learning Difficulties in 2010/11 and 2018/19 showed some variation. At Stages 1-4, the distribution of high-density districts decreased in primary schools, whilst distribution shifted to different districts in post-primary schools. At Stage 5, the high-density districts remained largely unchanged in primary schools and shifted slightly in special schools; there was more evidence of change in high-density districts in post-primary schools.

Over-arching categories: Social, Emotional and Behavioural

- Comparison of the data at regional level between 2010/11 and 2018/19 showed overall prevalence rates for Social, Emotional and Behavioural increased over time (9.28% - 17.65% respectively). The highest prevalence rates were in Belfast region (2.91% - 5.03%) although the greater change was in the Western region (2.3).
- Prevalence rates across school types were consistently higher among males; the one exception was in the Belfast region at Stages 1-4 where rates for females in secondary schools (3.68% - 2.96%) exceeded those for males. The highest change ratios were recorded for females in the majority of instances at Stages 1-4 and Stage 5 across school types.
- Overall prevalence rates increased for FSME pupils (42.94% - 49.75% respectively) and decreased for non-FSME pupils (57.06% - 50.25% respectively). Prevalence rates were highest in primary schools (20.73% - 25.16%). In primary, secondary and special schools, the highest rates for both genders were more commonly in MDM 1; in grammar schools, they were more commonly in MDM 10.

Social, Emotional and Behavioural: ADD/ADHD

- In primary and grammar schools, overall prevalence rates varied across regions, whilst in secondary schools they increased for both genders at Stages 1-4 and Stage 5.
- At Stages 1-4, prevalence rates were highest in the Belfast and South Eastern regions for both genders in primary, secondary and grammar schools. The highest change ratio was for females attending grammar schools in the North Eastern region (4.5); this was followed by females attending secondary schools in the Belfast region (2.9) and females attending primary schools in the South Eastern region (2.6).
- At Stage 5, prevalence rates were highest in the Western and South Eastern regions for both genders in primary and special schools; rates were highest in the South Eastern region for both genders in secondary schools and for males in grammar schools. Change ratios were highest in the Western region for females (3.0) in primary schools and males (3.5) in grammar schools.
- Analysis by year group indicated variable growth in prevalence rates at Stages 1-4 in primary, secondary and grammar school. At Stage 5, there were decreases across year groups in secondary and special schools, with limited data for primary and grammar schools.
- There was some variation in the distribution of ADD/ADHD by MDM. From the available data, the highest total prevalence rates across schools at Stages 1-4 were in MDM 1, 3 and 10 in 2010/11 and in MDM 1, 2, 3, 5 and 10 in 2012/19.
- Comparison of the distribution and density of ADD/ADHD by LGD in 2010/11 and 2018/19 showed some variation. At Stages 1-4, the number of high-density districts reduced in post-primary schools, with a slight expansion in primary schools; the distribution of these largely changed for both school types. At Stage 5, high-density distribution shifted in primary schools, increased in special schools and reduced slightly in post-primary schools.

Social, Emotional and Behavioural: SEBD

- There was an overall increase in prevalence rates across school types at Stages 1-4 (excepting special schools) and at Stage 5.
- At Stages 1-4, prevalence rates were highest in the Belfast and Western regions for both genders in primary, secondary and grammar schools. Across these schools, the highest change ratios were in Western, South Eastern and Southern regions.
- The highest change ratios were for females attending grammar schools in the Western region (5.2) and males attending grammar schools in the Southern region (4.1).
- At Stage 5, prevalence rates were highest in the Belfast region for females in primary, secondary and grammar schools and in the South Eastern region for pupils in special schools. Change ratios were highest in special schools for females in the South Eastern region (7.5), followed by males attending grammar schools in the Belfast region (7.3) and females attending secondary schools in the Southern region (5.5).

- Analysis by year group revealed general increases in prevalence rates across year groups in primary schools at Stages 1-4 and Stage 5 and in secondary schools, particularly at Stage 5.
- Analysis of SEBD by MDM at the two time points, showed the highest total prevalence rates across schools at Stages 1-4 were predominantly in MDM 1, with MDM 4, 5 and 10 also represented. At Stage 5, highest total prevalence rates remained predominantly in MDM 1, with MDM 2, 3 and 5 also represented.
- Comparison of the distribution and density of SEBD by LGD in 2010/11 and 2018/19 showed some variation. At Stages 1-4, the number of high-density districts expanded in primary and post-primary schools, with some change in distribution and there was similar expansion at Stage 5 in primary, post-primary and special schools.

Over-arching categories: Communication and Interaction

- Comparison of the data at regional level between 2010/11 and 2018/19 showed overall prevalence rates for Communication and Interaction increased over time (10.21% - 21.85% respectively). The highest prevalence rates were in Belfast region (2.20% - 5.20%) and the greater change ratio was in the Belfast and North Eastern regions (2.4 in both instances).
- Prevalence rates across school types were consistently higher among males across school types. In contrast, the highest change ratios were recorded for females in the majority of instances at Stages 1-4 and Stage 5 across school types.
- Overall prevalence rates increased for FSME pupils (42.94% - 49.75% respectively) and decreased for non-FSME pupils (65.85% - 54.87% respectively). Prevalence rates were highest in primary schools (19.92% - 23.86%), although the highest change ratio was in post-primary schools. Analysis by MDM 1 revealed a broad spread across schools, with high rates recorded across most levels, particularly in 2018/19.

Communication and Interaction: ASD

- Overall prevalence rates for both genders at Stages 1-4 and Stage 5 increased in primary, secondary and grammar schools, with increases for both genders in special schools at Stage 5.
- At Stages 1-4, prevalence rates were highest in the Belfast region for both genders in primary schools and for females in secondary schools; it was highest in the North Eastern region for males in secondary schools and in the South Eastern region for both genders in grammar schools. The highest change ratios were for females in grammar schools in the North Eastern region (15.5), females in secondary schools in the Belfast region (7.3) and females in primary schools in the North Eastern region (7.0).
- At Stage 5, prevalence rates were highest in the South Eastern region for both genders in primary schools and for males in secondary schools. Rates were highest in the Belfast region for females in secondary schools and for both genders in grammar schools; they were highest in the Southern region for both genders in special schools.

- The highest change ratios were for females in primary schools in the North Eastern region and females in grammar schools in the Western region (5.0 in both instances).
- Analysis across year groups indicated a general pattern of growth in prevalence rates at Stages 1-4 in primary and secondary schools, with more fluctuations in grammar schools. At Stage 5, rates increased across year groups in special schools, with some growth in primary schools. There were fluctuating rates or limited data in secondary and grammar schools.
- There was some variation in the distribution of ASD by MDM. At Stages 1-4, the highest prevalence rates in primary and secondary schools were spread across multiple MDM in 2010/11 and were in MDM 1 and 7 in 2018/19; in grammar schools, the highest rates were in MDM 10 at the two time points. At Stage 5, highest rates were recorded more consistently in MDM 5 in primary and secondary schools and in MDM 10 in grammar schools at the two time points. Rates in special schools were highest in MDM 2 in 2010/11 and in MDM 1 in 2018/19.
- Comparison of the distribution and density of ASD by LGD in 2010/11 and 2018/19 showed some variation. At Stages 1-4, the number of high-density districts expanded substantively in primary and post-primary schools. Distribution of high-density districts similarly expanded across primary, post-primary and special schools at Stage 5, with the biggest growth in primary schools.

Communication and Interaction: Speech and Language Difficulties

- Overall prevalence rates for both genders generally increased at Stages 1-4 in primary and grammar schools with some variation in secondary schools. At Stage 5, rates increased in secondary schools and decreased in special schools, with some variation in primary schools and limited data in grammar schools.
- At Stages 1-4, prevalence rates were highest in the Western region for both genders across all school types. The highest change ratios were for females attending secondary schools in the Belfast region (16.5) and males attending grammar schools in the Southern region (7.5).
- At Stage 5, prevalence rates were highest in the Southern region for both genders in special schools, in the Belfast region for males in primary and secondary schools and in the Western region for females in secondary schools.
- The highest change ratios were for males attending special schools in the Southern region (7.5) and for females in secondary schools in the Western region (4.2).
- Analysis across year groups indicated a general pattern of growth in prevalence rates at Stages 1-4 in primary and secondary schools, with limited or 0.0% cases for grammar schools. At Stage 5, rates generally decreased across year groups in special secondary schools, with little change in primary schools and limited or 0.0% cases in grammar schools.
- There was some variation in the distribution of Speech and Language Difficulties by MDM. At Stages 1-4, the highest prevalence rates in primary and secondary schools were recorded more consistently in MDM 1 and 2 in 2010/11 and 2018/19; data was

very low, with multiple 0.0% cases in grammar schools. At Stage 5, the highest prevalence rates in primary and secondary schools were spread across multiple MDM in 2010/11 and were in MDM 1, 2, 3 and 5 in 2018/19. Rates in special schools were highest in MDM 1 in 2010/11 and in MDM 1 and 2 in 2018/19.

- Comparison of the distribution and density of Speech and Language Difficulties by LGD in 2010/11 and 2018/19 showed some variation. At Stages 1-4, the number of high-density districts in primary schools reduced, whilst there was a shift in districts in post-primary schools. At Stage 5, high-density rates reduced in primary schools and shifted slightly in post-primary and special schools.

Northern Ireland Longitudinal Study

- The socio-demographic and health variables contained within the NILS provide an opportunity to explore the wider profile of the NI population and/or sub-populations – including children and young people with SEN – and so, has potential value to complement education data.
- Drawing on 2001 and 2011 Censuses, cross-sectional and longitudinal analyses were undertaken to quantify the associations between health variables along with variables (or predictors) typically associated with health outcomes; these were broadly grouped at individual, household and school levels. Data analysis focused on those health variables most relevant to the NILS sub-population of children and young people.
- Cross-sectional analysis showed that those deprived in employment, tenure and education were between 1.14 and 1.49 times more likely to have a learning, intellectual, social or behavioural difficulty. Children enrolled at schools with below average attendance and above average rates of Free School Meals (FSM) were more likely to have a learning difficulty. Children in single-parent families were 1.39 times more likely to have a learning difficulty and males were almost three times more likely than females to have a difficulty.
- Children deprived in employment and living in social housing were more likely to have a communication difficulty; similarly, children enrolled in schools with below average attendance and above average FSM were at greater risk of developing a communication difficulty. Males were almost two and a half times more likely to have a communication difficulty.
- Children deprived in household employment and living in social housing were more likely to have an emotional, psychological or mental health condition although no school factors were associated with this. Children from single parent households were almost twice as likely and males were at an increased risk.

Conclusions and Implications

The education and social data accessed and analysed in the current project afforded an opportunity to create a profile of the SEN pupil population in NI. The lessons learned over the course of the project highlight how the findings can be utilised in the short and longer-term, as

well as what issues need to be resolved to maximise best use of administrative data in NI. The availability of administrative data has been a step-change in social science research, bringing cross-cutting reach to benefit academics from a range of disciplines and reinforcing the value of data sharing across the UK and beyond. Although the initial trajectory of the project was diverted, the accessible and available data can meaningfully contribute to our understanding of SEN in NI and be used to inform, frame and contextualise any policy relevant discussion.

In the short term, findings will provide a useful evidence base upon which to build future research and facilitate future data sharing as new data becomes available and accessible; in the longer term, a key legacy goal will be to encourage and facilitate further data sharing in NI. The range of education and social data accessed and analysed in the current project highlights administrative data as a valuable resource that can inform our understanding of the sizeable, and growing, SEN pupil population, who can be monitored over time and in a manner relative to certain characteristics. This will be important as procedures for assessing, identifying and recording SEN, including recently introduced SEN and Medical Registers and a new 3-stage approach to the Code of Practice become embedded.

Successful use of administrative data is rooted in the expectation that data will be available and accessible, and the difficulties encountered in the current project highlighted some fundamental challenges. These included the challenge of using alternative (and potentially more restrictive) data; the challenge of linking data from different sources; and the challenge of navigating remote access to data. The profile of children and young people with SEN in terms of their educational outcomes and the wider association of SEN status with a range of social, economic and health inequities position them as a particularly vulnerable group who are more likely to experience adversities across their life span and underlines the importance of contemporaneous available and accessible data. It is hoped that the findings of this project will promote the utility of data on special educational needs and disability in NI; inspire future use of administrative data in the region; encourage data custodians to facilitate improved opportunities in data access; and contribute towards the formulation of a larger study as opportunities for future individual level data linkage and analyses emerge.

Section 1: Background to the study

1.1. Overview of SEN

Pupils with special educational needs (SEN)[3] and disabilities represent a sizeable proportion of the total school population across the United Kingdom (UK), with up to 20% of children requiring some form of targeted support to meet their learning needs (DE, 2019; DfE, 2019). Reflecting national and international inclusive policy, the majority of these children are educated alongside their peers in mainstream classrooms, whilst the remainder attend special schools. Recent data shows incremental increases in the numbers of children with SEN along with estimated increases over the next ten years (The Papworth Trust, 2018; Special World, 2018).

The trajectory of these children and young people in the UK illustrate consistently poorer educational outcomes than peers who do not have SEN and their right to access equitable education provision is frequently compromised (NICCY, 2020; UNICEF 2011). Children and young people with SEN are more likely to be excluded from school (UN, 2011), are less likely to achieve a Level 2 qualification (DfE, 2020) and in adulthood are over-represented amongst those not in education, employment or training (NEET) (UN, 2016; House of Commons, 2012). A significant body of evidence also identifies children and young people with SEN as a particularly vulnerable group who are more likely to experience adversities across their life experience, and there are strong associations between the educational profile of pupils with SEN and a range of social, economic and health inequities. For example, evidence shows that almost three quarters of delays in issuing statements of SEN are attributable to delays in health trust advice (NIAO, 2017) which in turn can have a detrimental impact on the educational progress of these pupils. Other studies have estimated that just under half of children who have learning disabilities will develop additional mental health problems (Oldfield et al. 2017) which, in turn, can lead to poorer physical health and premature death (Heslop et al. 2013). Failing to support children with SEN also results in significant burden and distress for parents and families. More so, significant costs are endured in considerable long-term social and economic costs for society; often leading to lost earnings, reduced productivity and increasing

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[3] The term special educational needs (SEN) is used throughout, unless otherwise stated, to reflect current language in Northern Ireland.

financial burdens across education, health, social care and justice systems (Chorozoglou et al. 2015).

An ecological or whole child approach (Bronfenbrenner,1979) recognises the influences of wider circumstantial factors on outcomes for children; this suggests that analysis of pupils with SEN and its intersection with other dimensions of diversity, including socio-economic status (SES), environment, gender and ethnicity, can provide a better understanding of the profile of this population (Brussino, 2020). SES is well documented as an indicator of outcomes in education, health, behaviour and development (Molina-Garcia et al. 2017) and research has shown that the combined influences of low SES, parental health and family well-being can be a key predictor of children's life outcomes (Neubourg et al. 2018). Overall, children growing up with lower SES experience more critical life events than their peers and this has been explored from a range of perspectives. Children growing up in families with lower SES are at greater risk of poor educational outcomes than their peers (National Education Union, 2018). A similar trend is identified in health outcomes; for example, studies have shown that children growing up in families with a lower SES are more likely to have less healthy nutrition and a higher body mass index (BMI), exhibit greater behavioural problems, take part in less physical activity and experience a lower quality of life (Jimenez-Mora, 2020; Fairclough et al. 2016; Reiss, 2013; Heckman, 2011).

Children and young people with SEN, therefore, can be viewed as a highly heterogeneous, complex and changing phenomenon; whilst the evidence base has afforded an opportunity to catalogue and begin to address the inequities this population faces, greater attention is required to determine how SEN is recorded and reported, how it changes and in what context, before this inequity can be truly understood and ameliorated. The co-occurrence of social, economic and environmental factors has implications for health, social care and education organisations who provide interventions and support throughout the life span. Prevention, early intervention and co-ordinated service delivery can do much to reduce and resolve issues before they become more difficult and expensive to treat in later life (RCPCH, 2017). It is recognised that a more collaborative, joined-up approach can better meet the needs of children. In this respect, the provision of joined-up data across government departments and agencies has potential to contribute to the existing knowledge base.

An added complication is the cost of supporting children and young people with SEN and disability which has spiralled in recent years, highlighting it as a critical educational, health, economic and social dilemma (NIAO, 2020). In the UK and US, joint analysis of the cost of supporting a person with ASD over his/her lifespan has been estimated as £0.92M ($1.4M); for children, this is largely related to special education services and loss of parental productivity whilst for adults, it is related to supported/residential living costs and loss of individual productivity (Buescher et al. 2014). The annual spend on services in the UK for inpatients with learning disabilities and challenging behaviour is estimated as £557 million, whilst local authorities have spent £5.3 billion annually on community services for adults with learning disabilities (NICE, 2016). Other calculations estimate that raising a child with a disability can be up to three times more costly than raising a child without a disability, with over half (56%) of families reporting these extra costs are only partly covered by disability benefits (Scope, 2019; Contact a Family, 2018). In England a £215 million funding boost has been introduced to increase school capacity to support pupils with SEN (DfE, 2017) and in Northern Ireland, £7.5M was made available to support the additional resourcing impact of implementing a new SEN framework. More recently, the DE has provided additional funding of £1.4M to support special educational needs as part of its Education Restart Programme enabling the safe re-opening of educational settings in the aftermath of restrictions implemented during the Covid-19 pandemic.

1.2. Northern Ireland Context

Northern Ireland has, and continues to experience, a process of significant social and political change; in addition, the financial challenges of recent years, and spiralling costs in relation to education, health, disability and social care have presented significant challenges for future service provision. As a post-conflict society, divisions still exist in many aspects of public life that have, arguably, been exacerbated by intransigence within the power-sharing governing Assembly. The most recent suspension (lasting 3 years) meant that up to 160 pieces of legislation were stalled, affecting critical decisions on education, health and welfare (Gstrein and Prince, 2020). This resulted in growing pressure on departmental budgets, including delays in SEN reform and related support (Meredith, 2019).

The association between education, health, disability and socio-economic status has been an enduring concern in NI (Gibb et al. 2016; Equality Commission 2015), particularly where the co-existing deprivation indicators - including poverty, housing conditions and unemployment – impact on outcomes for children (JRF, 2018). Child health in Northern Ireland is relatively poorer compared to the rest of the UK and is amongst the poorest in Western Europe, with a sizeable gap between people who live in more and less deprived areas (*ibid*). Recent reporting has demonstrated a link between poor child health outcomes and social determinants such as family circumstances and environment (RCPCH, 2017). Almost 1 in 4 children in NI are living in poverty; greater proportions of these have lower birth weights, higher rates of tooth decay and higher levels of obesity than children living in less deprived areas, and childhood mortality rates remain higher than elsewhere in the UK (NICCY, 2017). In international comparisons, childhood economic adversity in NI has been identified as higher than other adversities (McLafferty and O'Neill, 2019). Although there are varying perspectives on the extent of this influence, studies have shown that children growing up with lower SES are more likely to be identified as having SEN.

In Northern Ireland, the term SEN describes children and young people who are not able to benefit from the education generally available for children and young people of the same age without additional support or adaptations in the content and delivery of their learning. SEN covers a range of conditions, including intellectual, physical, mental, emotional or behavioural difficulties (OECD, 2012). Although this term is used in NI, there are variations in other UK jurisdictions: Special Educational Needs and Disability (SEND) in England, Additional Learning Needs (ALN) in Wales and Additional Support Needs (ASN) in Scotland.

Education policy and legislation in NI identifies a child with SEN as having a learning difficulty which is significantly greater than the majority of children of his/her age, or who have a disability that prevents full use of educational facilities generally provided in schools (DE, 1996). At school level, the numbers of pupils with SEN in NI have increased in the past ten years at a rate that is proportionally higher than in the general school population (DE, 2019), and the percentage of pupils with SEN – including those with and without a statutory statement – has remained higher than in England (NIAO, 2020).

There have also been observable changes in the profile of pupils with SEN. For example, in a UK-wide analysis, McConkey (2020) reported that NI has had the highest prevalence rates for

autism over a nine-year period from 2010/11, whilst a report by the NI Children's Commissioner found that schools lacked the capacity and skill to support the increasing number of children with Social, Emotional and Behavioural Difficulties (SEBD) (NICCY, 2020). In addition, other challenges, notably in relation to how schools identify children in need of additional support, delays in the statutory assessment and statementing process, and lack of systemic transparency, continue to dominate public and policy debate (NIAO, 2020; NICCY, 2020; NIAO, 2017).

The increasing numbers of children with SEN brings a corresponding rise in associated costs which are predicted to rise further as more children are diagnosed and those with severe and profound disabilities live longer (Brokenbrow et al. 2016). It is a cost which has escalated in recent years and is the fastest-growing area of expenditure within an already stretched education budget (NI Affairs Committee, 2019). A review undertaken by the NI Audit Office revealed an annual spend of £250 million on SEN that neither the Department of Education nor the Education Authority (EA) *'... can currently demonstrate value for money in terms of economy, efficiency or effectiveness in the provision of support to children with SEN in mainstream schools'* (NIAO, 2017, p.4).

The enduring scrutiny of SEN extends beyond educational provision. A report by the Equality Commission (2015) and monitoring by the NI Commissioner for Children and Young People (2013) identified children and young people with SEN as one of the most vulnerable and disadvantaged groups in NI, an oversight described as a recurrent human rights issue. Significantly, evidence has also established a compelling relationship between the educational profile of these pupils and the wider circumstances of their lives – for example, their family status is more likely to be socio-economically disadvantaged, they are more likely to experience social isolation (NIAO, 2015), experience depression and anxiety (Bunting et al. 2020); a small but significant number end up in the youth justice system (DoJ, 2011), while a disproportionate number of 18-year olds with SEN are not in any form of education, employment or training (OFMDFM, 2012).

The current situation in NI is complicated further by the fact that SEN provision has been subject to a protracted period of review. The Department of Education commenced a review in 2006, with the intention to reform the current system under a new SEN Legislative Framework. Delays in the implementation of the Framework, arguably exacerbated by multiple suspensions

of the NI Assembly, has meant the process is not wholly complete and, to date, more than £3.6 million has been spent on the review (NIAO, 2020). There have been, however, some developments.

A complete review of SEN categories was undertaken in 2017/18 and a new listing has been in use since 2019[4]. A key distinction of the new categorisation system is the introduction of a Medical Register alongside the SEN Register. This means pupils with a medical condition only will be placed on the Medical Register and pupils with SEN only will be placed on the SEN Register; pupils with a medical condition who also require SEN provision will be placed on both Registers (DE, 2019). Pupils who are recorded on the Medical Register are not eligible for additional educational support unless they also have a co-occurring SEN. This will have implications for how SEN is recorded and reported. For example, under the new system, Mild Learning Difficulties has been removed from the list whilst Autism Spectrum Disorder (ASD) and Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (ADD/ADHD) are categorised as medical conditions. It is too early, yet, to determine how the new categorisation system will (re)define data collection and reporting on SEN; however, there is clear potential to begin to monitor this as a policy imperative over the next few years. In addition, the new proposed framework includes measures to ensure greater co-operation between the Education Authority (EA) and health and social care authorities in preparing joint plans for the provision and sharing of resources. Draft SEN Regulations and draft SEN Code of Practice are undergoing a period of public consultation and, in advance of this, the DE has set out the steps schools should take in moving from the current five stages of SEN provision to a new three-stage approach (DE, 2021).

1.3. Literature Review

1.3.1. Overview

Disability is frequently used as a biological umbrella term that encompasses the range of physical, intellectual, communication and mental impairments; some people will have a single

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[4] https://www.education-ni.gov.uk/sites/default/files/publications/education/SEN%20and%20Medical%20Categories%20Guidance%20-%20January%202019_4.pdf

impairment whilst others may experience multiple impairments over their life course (WHO, 2011). The International Classification of Functioning, Disability and Health (ICF) (2012) defines disability as the interaction between biological, social, environmental and personal factors; the nature and extent of these interactions occur and affect people in different ways, impacting on quality of life and well-being, social participation and access to services. Evidence suggests an ecological relationship between the prevalence of special educational needs, educational outcomes and wider social, health and economic influences. It is necessary to understand the relationship between these trends, for it can help to identify appropriate short-term provision for pupils and to strategise for longer-term planning. As well as consulting national data, it is also helpful to identify and examine the wider research which has taken place in the field. Understanding the range of qualitative and quantitative evidence available both locally and globally can help to inform practice, as well as illuminate gaps in knowledge that can lead to future research directions (Smith et al. 2011). It also enables researchers and policymakers to pinpoint the strengths and limitations of existing studies, which can help to inform decisions about future research and data collection.

What follows is a review of literature pertaining to children and young people with SEN that provides a reliable summary of relevant research in the area. The principles of a systematic approach have been applied to conduct this review; this includes a search strategy of multiple sources of literature, an overview of databases used to conduct searches and inclusion/exclusion criteria for publications. Due to the scope of the research and the large amount of globally published literature in this field, full synthesis of each piece of included literature is not undertaken within the limits of this report; rather, tables of findings have been produced and a summary of key research is included. In line with the remit of this project, the review is structured around two over-arching themes:

1) The prevalence of SEN and disability nationally and internationally.
2) The relationship between SEN and disability and the wider circumstances of children's lives.

The review aimed to provide a summary of relevant literature that was collected through extensive searches of books and book chapters, journal articles, reports and evaluations, as well as conference papers and proceedings. It was based on a search of keywords generated by examining the terminology used within educational and disability literature, and adapted as further articles were read and common alternative words appeared. The majority of literature

included in the review was identified through systematic searches of both education and health related electronic databases: ProQuest (Complete Collection), which includes Education and Health and Medical; EBSCOHost, which includes British Education Index, Child Development and Adolescent Studies, Education Abstracts and ERIC. These databases cover both national and international literature. Broader searches of internet sources were carried out via general search engines, such as Google Scholar. As well as academic publications located across databases, the review includes findings from existing UK, Irish and international policy reports and evaluations. Each literature search was restricted to English language publications and the search period was set to 2010-2021, although influential texts from previous years are at times referenced. Reference lists of selected articles were also searched to identify further relevant articles. Consulting recent systematic reviews and meta-analyses (for example, on studies that have been carried out on the prevalence of a specific SEN) were helpful in ensuring relevant studies had been identified for this review.

1.3.2. Theme One: The prevalence of SEN and disability nationally and internationally

Globally, rates of disability have been steadily increasing and it is estimated that up to 15% (or a billion) of the world's population live with some form of disability (WHO, 2011). Within this population, overall incidence and prevalence rates for children and young people has been difficult to record with precision (Drabble, 2013; WHO, 2012). Fluctuations in available systematic data are typically attributed to variations at national level in defining, identifying and classifying the disability, the type of measurement instruments used, and shifting priorities in government politics and funding (Alkahtani, 2016; Meijer and Watkins, 2016; OECD, 2012).

The Warnock Report (DES, 1978) was influential in concluding that up to one in five (20%) children were likely to need special education provision in the course of their school career. This estimate has been used as a benchmark in much education policy and planning, and reported figures have fluctuated around it as systems for recording SEN have evolved. While the main focus of this section is on information and data available within Northern Ireland and the wider UK and Ireland, global literature is also explored, especially from countries with similarly developed systems of special educational needs, including Western Europe and North America. It further includes publications relating to the incidence and/or prevalence rates of certain learning difficulties, in particular ASD, where prevalence rates have consistently

increased across the globe. This data was also important to consider since the types of SEN will have implications for the level and type of support required for these children and young people. The literature makes clear that better understanding of the prevalence of children with SEN is imperative for predicting future needs and for planning long-term educational policies and strategies. The wider literature offered examples of how data from national health and education surveys, state-wide data and more local datasets have been consulted and analysed to discover trends, not only in the prevalence rates of SEN in general, but also in specific disabilities or learning needs of children and young people. Studies highlighted the necessity of having accurate data in order to plan ahead for services and support, as well as the difficulty in obtaining this data. The literature also confirmed that most studies did not calculate prevalence rates alone, but used cross-sectional data to seek patterns in identification rates, such as the relationship with race and/or ethnicity, age, gender and socio-economic status.

There have been some attempts to compile an overall profile of prevalence rates in different contexts across countries, and many regional studies on individual SEN have suggested increases in certain conditions and decreases in others. For example, in the UK, national data in England and Scotland has shown growing prevalence in the numbers of pupils with Speech, Language and Communication Needs and Social, Emotional and Behavioural Difficulties (DfE, 2019; Scottish Government, 2019; House of Commons, 2018) and some reduction in the numbers of pupils with specific learning difficulties such as Dyslexia and Moderate Learning Difficulties (MLD) (DfE, 2019; Scottish Government, 2019). Many large-scale studies have emerged from the USA. A recent US-wide analysis (Zablotskky et al. 2019) looked at the prevalence rates of developmental disabilities in US children aged 3-17 years and found increases between the 2009 and 2017, that were similarly reflected over time in numerous regional and state-level studies. Houtrow et al. (2014) analysed US National Health Interview Survey datasets from 2001 to 2011 to examine trends of childhood disability, and found that, overall, the prevalence of childhood disability increased by 15.6%. The percentage of disability cases due to a physical health conditions declined by 11.8% while the percentage of cases due to neurodevelopmental or health conditions increased by 20.9%. An earlier study by Halfon et al. (2012) also identified increasing rates of childhood disability, with emotional, behavioural, and neurological disabilities being more prevalent than physical impairments. Elsewhere, a similar study carried out on trends of childhood disability in Taiwan between 2000 to 2011 found that the prevalence of all disabilities combined increased consistently from 9.98 per 1,000 to 15.41 per 1,000. Intellectual Disability (ID) was the leading category in each year,

whilst the proportion of ASD increased steadily to become the third leading disability in 2011. Systematic studies have also indicated an increase in the numbers of pupils with complex needs or life-limiting conditions, boosted by improved survival rates and increased life-expectancy (Aitchison et al. 2020; Brenner et al. 2018).

Arguably, the rising prevalence rate of ASD has featured conspicuously in a number of studies. Ozerki's (2016) review of international studies across 21 countries published between 2006-2016 revealed that rates of ASD were on the rise internationally. In Northern Ireland, McConkey (2019) used annual school census data between the years of 2010/11 to 2018/19 to examine changes in prevalence rates of ASD in the region, which has had consistently higher rates of ASD than other UK jurisdictions. He found higher rates of ASD amongst pupils living in more socially deprived areas as well as growing rates in post-primary schools and a proportionate increase in the prevalence rate amongst females. Ramsay et al.'s (2016) work focused on the widening criteria used in diagnosing ASD as a factor to explain the significant increase in prevalence rates over time. Their study considered the different methodologies utilised to determine ASD prevalence rates, drawing out strengths and weaknesses of these and emphasising the challenge of determining accurate rates, particularly where there was an absence of a universal system to collect data about individuals with ASD across organisations. Similarly, Fombonne (2018) addressed the increased rates of ASD, arguing that low prevalence rates reported in the 1960s and 70s were the result of complex methodologies and cautioned against a lack of standardization, particularly when evaluating prevalence differences between studies. Moreover, in a review of worldwide prevalence estimates since 2014, Chiarotti and Venerosi (2020) demonstrated the escalation in ASD but noted variations in prevalence which they attributed to multiple data sources from which ASD is detected. Discrepancies in population characteristics, methodology and diagnostic criteria have been noted across other analyses including, for example, prevalence studies relating to Dyslexia, ADHD and EBD in Hearing Impaired (HI) pupils (Wagner et al. 2020; Skounti et al. 2017; Stevenson et al. 2015).

There is also some evidence of disproportionate prevalence amongst pupils in certain demographic and socio-economic sub-groups. For example, analysis of the national prevalence of developmental disabilities in US children over time found increases amongst boys, Hispanic children, children with low birth weight, children living in urban areas and with less-educated mothers (Zablotsky et al. 2019). Other syntheses of the literature have critiqued interpretations of disproportionality by race and ethnicity, citing divergent data sets, sample and statistical

analyses that can produce conflicting results (Cruz and Rodl, 2018). Elsewhere there has been analysis on the disproportionality of black children in special education (Morgan et al. 2016). A recent study in England revealed over-representation of Black Caribbean and Pakistani pupils for Moderate Learning Difficulties (MLD) and over-representation of Black Caribbean and Mixed and White Caribbean pupils for Social, Emotional and Mental Health (SEMH) difficulties (Strand and Lindorff, 2018). However, the authors acknowledge that longitudinal studies, including those with large representative samples, can often be under-powered to detect relatively low incidence outcomes such as the type of SEN in ethnic minority groups; they call for cautious interpretation and conclude that more population level studies are required.

1.3.3. Theme 2: The relationship between SEN and disability and the wider circumstances of children's lives

While it is important to utilise regional and national data to identify incidence and prevalence trends, the explanatory value of this data is limited (Black, 2019). The second theme, therefore, considers the wider circumstances of children's lives and their association with SEN or disability. The studies included in this section have used cross-sectional data to seek potential explanations for these patterns, including environmental factors, socio-economic status, gender and ethnicity.

1.3.3.1. Environmental Factors

There has been considerable focus on the association between identification of SEN and environmental factors, such as the health of the child's parents (including maternal mental health and health issues during pregnancy) and the education or employment status of the child's mother and/or father. These are most often examined in combination with other factors, such as SES and race/ethnicity, with evidence pointing toward a complex interplay that can influence the early cognitive development of children. In discussing the association between SES and SEN, Shaw et al. (2016) noted the complex relationship between this and other factors related to poverty such as low-birth rate and parental stress and the likelihood of a child developing learning difficulties. The following paragraphs provide a brief synopsis of studies which explore a variety of environmental factors and their association with SEN.

Anders et al. (2010) used data from a large national sample of young children in England (n=2509) whose developmental progress was followed from pre-school, alongside parental interviews and parent and teacher questionnaires, to consider the child, family home and pre-school factors which can affect the later likelihood of SEN identification. With regard to family factors, results showed that Free School Meal (FSM) eligibility, low family SES and low parental education were related to lower educational attainment. Compared to children whose mothers had a degree or higher degree, the odds of children whose mothers had no qualifications being identified with SEN in relation to reading difficulties were found to be 2.3 times as high. Other studies have underlined this link between maternal education levels and SEN identification in children. For example, a study carried out in Bhutan (Mont et al. 2013) proposed that children's disabilities may vary according to their mothers' education levels. Among children whose mothers had no education the disability prevalence rate was 22.8%, while it was only 13.5% among children whose mothers attended secondary education. He et al. (2017) carried out a similar but larger scale study in China working with data of 764,718 children aged 0-14 years to examine the relationship between parent education and child disability. The prevalence of child disability was found to be significantly associated with each parent's education and again this association was stronger for maternal education.

Other studies have focused more specifically on the health of parents (especially mothers) and how this affects the likelihood of a child having a disability or special educational needs. For example, a Canada-based study (Zelkowitz et al. 2011) examined the effects of maternal anxiety during infant hospitalisation in the Neonatal Intensive Care Unit on the child's cognitive and behavioural development at age 24 months. This was found to be a significant independent predicator of child cognitive development and internalising behaviour problems. Matt et al. (2013) examined the relationship between Diabetes Mellitus (DM) in mothers and intellectual disability (ID) in children, using state-wide data in South Carolina. They found a small but statistically significant increased risk for ID among children born to mothers with DM. Other health-related studies have focused more specifically on the association between maternal health and the likelihood of a child being diagnosed with ASD. For example, Kalkbrenner et al. (2020) followed a cohort of children (births between 1991-2011) in Denmark from 1 year of age until an autism diagnosis to examine the links between maternal smoking and risk for specific autism sub-phenotypes. Their study concluded that while smoking during pregnancy had many harmful impacts (which may include harming the baby's developing brain) it did not appear to lead to autism or autism in combination with intellectual problems

or attention deficits. A study by Rai et al. (2013) investigated associations between parental depression and maternal antidepressant use during pregnancy with ASD among offspring. A history of maternal but not paternal depression was associated with an increased risk of ASD in offspring. However, the researchers concluded that antidepressant use during pregnancy was unlikely to contribute to the emergence of ASD.

1.3.3.2. Socio-economic status

Much has been written about the association between socio-economic status (SES) and the identification of SEN nationally and internationally. In reviewing literature published between 1990-2010 (24 primary studies and 13 reviews), Simkiss et al. (2011) concluded that the association was inconsistent and inconclusive, with the most consistent findings being the association of poor socio-economic circumstances with learning disabilities and behavioural problems. They also found many studies to have a high or medium risk of bias. A more recent review by Spencer et al. (2015) similarly aimed to determine the association of socioeconomic disadvantage with the prevalence of childhood disabling chronic conditions in high-income countries (160 studies between 1991 and 2013 were included in the review). Findings indicated that in high income countries, childhood disabling chronic conditions are associated with social disadvantage. While this evidence was consistent across the countries included in the review, limited evidence is provided to explain the association.

Most primary studies carried out to determine this association use cross-sectional data from national or regional census statistics, alongside relevant data from education or health organisations. A long-scale study carried out by Blackburn et al. (2013), using data from the Office for National Statistics Longitudinal Study (ONSLS) for England and Wales, examined whether exposure to social disadvantage in early childhood increases the risk of developing chronic conditions in later childhood. Similar to the findings of other UK studies (eg. MacDonald and Deacon, 2019; Donkin et al. 2014; Dickerson and Popli, 2011), socio-economic disadvantage in earlier childhood was found to be a predisposing factor for onset of disabling chronic conditions at a later stage. A report published in 2016 (Shaw et al.) explored why the links between special educational needs and disability (SEND) and poverty are so strong in the UK. This report included a review of literature, alongside interviews with ten experts in the field; it concluded that poverty is both a cause and effect of SEND and is determined by a number of factors: intergenerational disability; co-occurring causal

circumstances such as low levels of maternal education, smoking and consuming alcohol during pregnancy, and parental stress. Such trends in association are not unique to the UK. For instance, a study by Mugoya et al. (2015) provided empirical evidence connecting poverty with disability risk factors in Kenya. Using data from the 2008/2009 Kenya Demographic and Health Survey they examined links between childhood disability and SES, finding that almost all the disability risk factors were more prevalent among rural residents compared to urban counterparts. In China, a study by Zheng et al. (2012) found there to be a significant relationship between sociodemographic factors and Intellectual Disability (ID). Their study, which examined a total of 5964 communities in China, found that the risk of having mild or severe ID increased with male sex, lower maternal education, mother's older age at delivery, lower income and rural residence.

The increasing focus on studies exploring the prevalence of ASD has already been noted. These include studies which specifically examine the association of SES and ASD prevalence. A Sweden-based study conducted by Rai et al. (2012) found that children of families with lower income, and of parents with manual occupations, were at higher risk of ASD. Similar findings were reported by Delobel-Ayoub et al. (2015), whose study explored the links between SES and the prevalence of ASD among children aged 8 years in France. Analysis of data collected both from a population-based registry and regional census information led to the conclusion that prevalence of ASD (with associated ID) was higher in areas with the highest levels of deprivation, and that a higher prevalence of ASD without associated ID was found in areas with the highest percentage of immigrants. US-based studies tend to show the opposite trend in association, where ASD has consistently been found to be over-represented in high SES families. For example, Thomas et al. (2012) used information on 8-year-olds with ASD from four counties in New Jersey (a total of 586 children were identified) and found that ASD prevalence was higher in counties with a higher median income. Durkin et al. (2010) also sought to identify the association between SES and ASD prevalence in the US. This was a cross-sectional study using data from the Autism and Developmental Disabilities Monitoring Network alongside area-level census SES indicators. Their study also found that ASD prevalence was positively correlated with SES. Both studies suggested that these trends in the US may be explained by differential access to paediatric and developmental services across families of differing socio-economic status.

1.3.3.3. Gender

The literature on the relationship between SEN and gender explored the variance on reported prevalence rates between males and females. Studies have commonly identified a higher prevalence of SEN among males in school populations (Black, 2019; McCoy et al. 2016; Van der Veen et al. 2010). Black's (2019) analysis of DfE (2018) data in England highlighted that only one third of pupils with SEN identified in mainstream and special schools were female. Analysis of *Growing Up in Ireland* data showed that 29 per cent of boys were identified as having a SEN compared to 21 per cent of girls (McCoy et al. 2016). There is general consensus that gender is a significant determinant in the prevalence of SEN, although it is also recognised that lower rates of detection in females has affected accurate representation in the data (Hutchinson et al. 2021).

There is an extensive literature relating to gender differences in the prevalence of specific SEN. The association between gender and intellectual disabilities has been examined from different perspectives (Pitetti et al. 2017; Einfield et al. 2010). Einfield et al. (2010) investigated the effect of gender on intellectual disability using the Australian Child to Adult Audit and concluded that gender was not a factor in determining the presence of an intellectual disability. Elsewhere, Pitetti et al. (2017) reported that males with an intellectual disability displayed motor skills that were well below the capabilities of those without a disability. Males have also been documented as more at risk of experiencing speech and language difficulties. For example, Tseng et al. (2015) analysed data from The Department of Statistics of Taiwan Ministry of Health and Welfare and concluded that gender was a risk factor for a speech and language disability, with greater prevalence in males which increased over time. Harrison and McLeod's (2010) examination of the Longitudinal Study of Australian Children identified a similar risk factor amongst males. Other studies have reported links between gender and reading disabilities, with varying conclusions. Yoshimasu et al.'s (2010) review of data found that males were twice as likely to meet the criteria for a reading disability diagnosis compared to females. Van der Veen et al. (2010) noted that whilst the prevalence of SEN was generally higher amongst males, the rate was higher amongst females in relation to literacy and/or numeracy difficulties.

Successive studies have acknowledged higher prevalence of ASD among males, with ratios varying from 4:1 to 2:1 (Curtis et al. 2017; Whitely et al. 2015; Frazier et al. 2014; Campbell et al. 2014; Hiller et al. 2014; Kirkovski et al. 2013; Rivet and Matson, 2011). Some authors have argued that females with ASD may be under-recognised (Gray et al. 2021) whilst others have posited that the type of diagnostic instrument and bias in diagnosis itself have contributed to a male predominance (Lai et al. 2015). The higher representation of males has been attributed to several influences, including males exhibiting externalising disorders and greater levels of social problems than females (Naerland et al. 2017; Mandy et al. 2012), males presenting with two or more co-occurring diagnoses (Stacy et al. 2013) and females displaying less repetitive stereotyped behaviour (RSB) that is typically used by professionals to identify ASD (Hiller et al. 2014; Mandy et al. 2012). The differences in prevalence between the sexes is increasingly associated with perceived issues in how ASD is assessed, and research has suggested that late or mis-diagnosis of females has led both to a male bias in perceptions of autism and a subsequent under-estimation of prevalence. Other studies have highlighted females' ability to camouflage or compensate for their ASD behaviours (Gray et al. 2021; Bitsika and Sharpley, 2019; Kirkovski et al. 2013; Dworzynski et al. 2012). As diagnostic techniques improve, there is growing evidence pointing to higher prevalence amongst females (Estrin et al. 2020; Perez-Crespo et al. 2019; Dean et al. 2016).

In recent years, studies have explored how gender can increase the risk of a child or young person with SEN experiencing further difficulties such as school transition, low school satisfaction and poorer psychological health. For example, McCoy et al. (2020) used large-scale longitudinal data from over 7000 young people and showed that females with SEN were more likely to experience problems transitioning between primary and secondary school. Arciuli and Emerson (2020) reported that young females with disabilities self-reported low school satisfaction whilst Srum and Kasari's (2019) study of over 2000 students entering Higher Education found females with ASD at specific risk of experiencing poorer psychological health.

1.3.3.4. Ethnicity

Skiba et al. (2008, p.264) described the disproportionate identification of Black pupils with SEN as being '*among the most long-standing and intransigent issues in the field'*. It is important to understand both the under-representation and over-representation of ethnic

minority pupils in the identification of SEN. Under-representation may indicate barriers to accessing support and provision, while over-representation may lead to '*restriction of opportunities because of lowered expectations, or feelings of stigmatisation/labelling on the part of the identified pupils'* (Strand and Lindorff, 2018, p.5-6). In these respects, better understanding is crucial as the Black, Asian and Minority Ethnic (BAME) communities are a substantive proportion of the population; for example, in the 2011 Census, individuals identifying as BAME represented just under 14% of the population in England and Wales.

A higher volume of studies which consider ethnic or racial disparities in relation to SEN has been carried out in the USA. The data consulted in these studies rarely considers ethnicity and race alone, but may include other control factors such as age and socio-economic status to understand potential causes of disproportionality. Recent longitudinal studies have shown that Black pupils have been under-represented relative to White pupils (Hibel et al. 2010; Morgan et al. 2015, 2017). Using national datasets, Morgan et al. (2017) found that racial or ethnic minority children were less likely to be identified as having disabilities; this under-identification meant that ethnic minority children were less likely to receive special education services. A similar trend was found in Travers and Krezmien's (2018) study of racial disparities in autism identification, where minority students in most states were under-identified and therefore more likely to experience restricted access to relevant interventions and services. An earlier study by Sullivan (2013) which also explored racial disparities showed substantial variability across states, with Hispanic and American Indian/Alaskan Native students often less likely to be identified with autism than White students. However, Asian/Pacific Islander students were commonly more likely to be identified with autism than their White counterparts. A study by Roring (2013) offers an example of how socio-economic status can play a factor alongside race and ethnicity. This study found that in low SES schools, minority students were twice as likely as White students of being classified with a Specific Learning Disorder. In middle SES schools, there was an opposite trend in race, with White children at higher odds of being given this label.

A recent study by Imma et al. (2019) analysed data from Colorado and Wisconsin to determine whether children excluded from ASD prevalence rates due to missing residency or other missing information differed from those included by race and ethnicity. They found that, compared with confirmed ASD cases, those excluded due to missing residency were more than twice as likely to be Hispanic, yet the number of cases excluded due to missing residency

information was too small to account for prevalence differences. Confirmation of ASD case status was more likely for children with relevant health records than for those with school records only, and relevant health records were more likely to be missing for Black and Hispanic children than for White children. They concluded therefore that observed disparities in ASD prevalence were not accounted for by missing demographic data, but may reflect disparities in healthcare access for developmental evaluations.

Within the UK, an extensive piece of research was carried out by Strand and Lindorff (2018) on ethnic disproportionality in the identification of SEN in England. In contrast to other studies characterised as small-scale and under-representative, this study both analysed recent national data and explored trends from data published over the previous 12 years to determine the extent, causes and consequences of existing disproportionality. It focused predominantly on Moderate Learning Difficulties (MLD), Social, Emotional and Mental Health (SEMH) and ASD. They found that Black, Caribbean and Pakistani pupils were over-represented for MLD, while Indian and Chinese pupils were under-represented; Black Caribbean and Mixed White and Caribbean pupils were substantially over-represented for SEMH; and all Asian groups were substantially under-represented for SEMH and for ASD. While some of this could be accounted for by socio-economic factors, disproportionality for SEMH and ASD were substantial even after background controls for age, sex and socio-economic deprivation. They concluded that social processes were the most significant factor in the over-representation that existed among ethnic minority pupils.

An earlier study by Emerson (2012) aimed to estimate the independent association between household disadvantage, local area deprivation, ethnicity and the identification of intellectual and developmental disabilities of children in England aged 7-15 years. The study found that minority ethnic status was, in general, associated with lower rates of identification of intellectual and developmental disabilities. Exceptions included higher rates of identification of less severe forms of ID among Gypsy/Romany and Traveller children of Irish heritage, and higher rates of identification of more severe forms of ID among children of Pakistani and Bangladeshi heritage.

1.3.3.4. Summary

The literature identifies SEN prevalence as an enduring national and international educational priority, with some conditions showing greater variability in prevalence than others. At the same time, the incidence of SEN relative to the wider circumstances of children's lives indicates certain groups are more at risk than others. With this knowledge, the availability of DE data alongside the social, econometric and health data provided through Censuses 2001 and 2011 provides a basis to begin to explore this relationship in Northern Ireland. The following sections outline the project context, the methodology applied, and the sequential data analysis undertaken to address project goals.

1.4. Project Context

The origins of the project are grounded in the remit of the Administrative Data Research Centre Northern Ireland (ADRC-NI). As part of a wider UK network, the ADRC represents a partnership between universities, government departments and agencies, national statistics authorities, funders and the wider research community. Access to, and analysis of, administrative data, therefore, can provide valuable insights of interest and relevance to policy makers, service providers and service users. It was anticipated that the project would promote access to administrative data research in NI and greatly incentivise data custodians to share this, thereby dramatically extending the ADRC's reach in the region. From the outset, the development, implementation and completion of the project was impacted by GDPR, Brexit and Covid-19 that have caused a number of administrative challenges necessitating substantive recalibration of the project goals at several points over the duration of the research period. The project team maintained an open line of communication with the ESRC throughout, ensuring that any proposed adjustments were shared and agreed in advance.

1.4.1. Administrative Challenges 1: Original Aim

The original aim of the project was *to create a comprehensive longitudinal educational profile of children with SEN in NI, using education data from 2010 onwards and linking with NI Census data and NI Multiple Deprivation Measures (MDM).* The original objectives were to:

1. Link pupils' individual education data with relevant area level socio-economic and census data in a whole child framework.

2. Begin to profile a typology of SEN and assess variability in classification over time across a series of lower-level and higher-level covariates.

3. Explore longitudinal profiles of change of fluctuations in SEN classification over time.

4. To analyse and explain differences in emergent trajectories (for example, newcomer status, change in family composition, etc).

5. Describe the prototypical educational achievement trajectories for pupils with SEN across school types.

6. Begin to identify, target and strategise for a population accountability approach to support pupils with SEN across NI and that informs the policy development, planning and provision.

Although the project proposal was approved in 2018, its implementation was impeded by a series of problematic obstacles in data acquisition.

- During the initial phase of the ADR in NI, the existing legal gateway enabled NISRA to secure agreement in principle from the Department of Education (DE) for access to education data on a project-by-project basis.

- The introduction of the Digital Economy Act in 2018 and roll out of the General Data Protection Regulation (GDPR) changed the legal landscape and the DE had to ask for legal advice to confirm that education data could be shared with NISRA for this project.

- The request for a legal review was submitted to the Departmental Solicitors' Office (DSO) and progress on the project was not possible until the legal gateway was confirmed.

- The outcome and subsequent out-workings of the Brexit referendum in 2018 further re-directed Departmental staff.

- In the event of a positive response from the DSO, a time span of 6-9 months would be necessary to receive the data and create the linked research data set.

- The protracted difficulty of acquiring educational data has been a persistent shortcoming in robust data analysis and linkage; specific to this project, the most significant deficiency has been the inaccessibility of pupil data via the Unique Pupil Number (UPN).

- The UPN, introduced in 2009, remains with a pupil throughout his/her school career, thereby enabling valuable longitudinal monitoring and tracking of outcomes over time. For the population of pupils with SEN who were the focus of the project, access to their UPN data would have been the first educational data linkage of its kind in NI and would have provided opportunities for data custodians, researchers and policy makers to learn from the originality of the initiative.

- The research team opted to delay the start of the project by the standard 3 months in the hope that education data would be forthcoming. When it became apparent that this was unlikely to happen in the short-medium term, an alternative approach was required. Although this revised approach would not provide the same analytic focus and scope, it would enable a re-defined examination of certain dimensions of SEN in NI.

1.4.2. Administrative Challenges 2: New Aim

It is anticipated that the complexities of navigating the educational legal gateway will be resolved although it is unlikely that any longitudinal data set will be available or accessible before early 2022. The necessary recalibration of the project, therefore, required identification of refined goals that would align to the capacity of available, alternative data on pupils with SEN; that would enable meaningful data linkages and analysis; and that would identify areas for further investigation when individual pupil data becomes available. This was achieved through an alternative dual analytic strategy, utilising data from two sources.

1) Department of Education (DE) Research and Statistics.
2) Northern Ireland Statistics and Research Agency (NISRA), specifically the Northern Ireland Longitudinal Study (NILS).

Access to new, alternative data required establishing channels of communication with each organisation, identifying the availability and feasibility of potential data sets and negotiating access within the timeframe of the project. Data from the DE was collated using both publicly available data as well as data specifically requested from the Research and Statistics Branch, and related to all pupils with SEN recorded in the annual school census from 2010/11 – 2018/19. Access to specifically requested data was not immediate and relied upon the availability of DE staff to retrieve and compile the required variables. NILS data related to a sub-population of children and young people aged 4-19 years enumerated in the 2011 NI

Census and access was similarly not immediately available. In this instance, a full research application was developed for submission to NISRA in October 2019. Crucially, the application was developed to meet revised project goals as well as fulfil the eligibility criteria of NILS Research Approvals Group, namely, that it demonstrated a longitudinal element; it related to Health and Social Care research; and it supported the development and delivery of public policy[5]. The application was approved in November 2019.

The revised aim of the project was *to explore the profile of special educational needs and disability amongst children and young people in Northern Ireland using education and social data*. The revised objectives of the project were to:

1) Document and describe the profile of SEN between 2010/11 and 2018/19.
2) Describe changes in the distribution and prevalence of SEN over time and distinguish variations at sub-regional and school levels.
3) Describe the health and disability of children aged 4-19 enumerated in the 2001 and 2011 Censuses relative to their environmental circumstances.
4) Link Census 2011 data with School Census 2011 data to identify the broad profile of the school attended by children in 2011.

Whilst the revised aim and objectives would generate a more general profile of SEN and disability in NI, it was anticipated that exploitation of the two available data sources would afford a series of valuable initial insights and demonstrate the potential for further, more comprehensive, individual-level data linkage in the future.

1.4.3. Administrative Challenges 3: The Impact of COVID-19

Planning to access the NILS data commenced in early 2020. The secure room environment in which the data is held and the confidential and sensitive nature of the data required the project team to comply with mandatory NISRA Research Support Unit (RSU) conditions; this included confirmation of Access NI approval, active Accredited Researcher Status and completion of Safe Researcher Training. The scale and complexity of the variables in the data set required significant preparatory work, in collaboration with RSU colleagues, to ensure structural

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[5] https://www.nisra.gov.uk/sites/nisra.gov.uk/files/publications/NILS_RAG_Criteria.pdf

coherence across analytic phases. During this ground-work phase, the first social restrictions wrought by the COVID-19 pandemic presented a fresh set of challenges:

- The secure room that houses the data was closed over 2020 and into 2021, with limited access for RSU staff only, meaning that the original plans for data analysis were not possible.

- Work on finalising the list of Census variables, developing data syntax and writing the code for analyses has been undertaken at distance. The limitations and restrictions in secure room access has significantly impacted the pace at which the proposed variables can be checked, run for accuracy and resolved (for example, a query that ordinarily would be resolved in a matter of minutes can now take up to several weeks).

- Restricted access remains in place and this limitation required some adjustment to the range of variables that could be used, whilst maximising the amount of information that could be realistically extracted from the variables.

- Completion of this phase of data analysis, therefore, is based on a two-fold aim. Firstly, to interrogate the utility of existing education data sources as a means of gaining insights into pupils with SEN in NI and to describe the changing demography of pupils with SEN over an eight-year period. Secondly, to interrogate the utility of existing social data sources as a means of gaining insights into the relationship between SEN and disability relative to wider socio-economic influences.

Section 2: Methodology

The methodology for the project evolved to align with the new data sources, ensuring that analytic parameters addressed the revised project aim and objectives. Detailed, data access was, by necessity, undertaken in two discrete stages. The distinct characteristics of each data set do not permit data linkage, although the variables of SEN and disability have relevance to both. Although the focus of the project was re-directed, the revised methodology retained both utility and purpose: the variables in each data set collectively enabled preliminary analysis of the educational and social profile of SEN and disability in Northern Ireland, and the analytic approach broke new ground in identifying alternative options for how secondary data can be shared and used.

2.1   Department of Education Data

Data obtained from the Department of Education was largely drawn from the School Census Survey. The Survey collects pupil information on an annual basis and data relates to pupils enrolled on Census day, which is Friday of the first full week in October. Data collected provides detail on pupil enrolment figures across school types (including nursery, primary, post-primary and special schools). It also records disaggregated information on characteristics, including Special Educational Needs (SEN), Free School Meal Entitlement (FSME), gender, religion and ethnicity, providing both an educational and broader socio-demographic profile of pupils in NI schools.

DE data covered the school years 2010-11 – 2018/19 and related specifically to the population of pupils recorded as having SEN attending primary, post-primary and special schools during this time. Pupils were sub-divided into those at Stages 1-4 of the statutory assessment process for the identification of SEN and pupils at Stage 5 (those with a formal statement of SEN). Data were provided in several files: by over-arching SEN category, by individual SEN type and by education sub-region (former Education and Library Boards). Additional data relative to pupils' SEN status (FSME, address by Local Government District and by truncated post code) were also provided. In total, 10 data sets were accessed (Table 1). One data set was publicly available on the DE website and the remaining nine were made available through a formal request to the Department's Statistics and Research team.

Table 1. Department of education data sets

Data Set (DS)	Descriptor	Publicly Available /Requested Data
DS1	Annual enrolments at schools and in funded pre-school education in Northern Ireland.	PA
DS2	SEN at Stages 1-4 and Stage 5, by education region and school type.	RD
DS3	SEN at Stages 1-4 and Stage 5, by over-arching category and school type.	RD
DS4	Cognitive and Learning; Social Emotional and Behavioural Difficulties; and Communication and Interaction at Stages 1-4 and Stage 5, by education region and school type.	RD
DS5	Individual SEN reported under Cognitive and Learning; Social Emotional and Behavioural Difficulties; and Communication and Interaction at Stages 1-4 and Stage 5, by education region, school type, gender, year group and MDM.	RD
DS6	FSME by SEN (Stages 1-4 and Stage 5) and No SEN, and by school type.	RD
DS7	FSME and SEN at Stages 1-4 and Stage 5 by over-arching category and school type.	RD
DS8	Individual SEN (Cognitive and Learning) in primary, post-primary and special schools by LGD pupil truncated postcode 2010/11 and 2018/19	RD
DS9	Individual SEN (SEBD) in primary, post-primary and special schools by LGD pupil truncated postcode 2010/11 and 2018/19	RD
DS10	Individual SEN (Communication and Interaction) in primary, post-primary and special schools by LGD pupil truncated postcode 2010/11 and 2018/19	RD

2.1.1 Data Analysis

In the absence of the opportunity to follow individual pupils longitudinally, the annual school census instead provided valuable data from which to undertake a time trend analysis of the prevalence of SEN between 2010/11 and 2018/19. Specifically requested data, such as the data sets accessed in this project, are typically restricted to researcher use only. For this reason, calculation and presentation of prevalence rates was employed as a comparable means to

present the distribution of SEN over time[6]. In calculating prevalence rates, pupils were represented as a percentage of the total school population at NI level and at regional levels; prevalence change per 100 pupils was used in order to take account of differences in school populations. Comparison between prevalence rates in 2010/11 and 2018/19 was calculated as a change ratio. This shows the extent to which prevalence rates have grown over the eight-year period; the higher the figure is above 1.0, the greater the degree of change. The collection and presentation of disaggregated pupil data by the DE means that it is possible to further explore SEN prevalence using a range of variables. Further analyses was undertaken utilising variables of gender, year group (age), education sub-region and multiple deprivation markers (MDM) in order to explore potential associations between SEN prevalence and socio-demographic pupil variables. Cross-tabulation of SEN with these variables provided further comparative insights and distinctions on prevalence rates over time.

The data was analysed in three linked phases for the years 2010/11-2018/19.

1) In Phase 1, the population of pupils with SEN attending primary, post-primary and special schools was collated to illustrate changes in prevalence rates at Stages 1-4 and Stage 5 across school types relative to the whole school population.

2) In Phase 2, prevalence rates in the SEN pupil population were analysed by the seven over-arching SEN categories and FSME status. In the case of the over-arching categories, the pupil population was disaggregated by pupils at Stages 1-4 and pupils at Stage 5 to compare prevalence over time in relation to these two variables. In the case of individual SEN types, the pupil population was disaggregated by pupils at Stages 1-4 and Stage 5; gender; year group; MDM. This analysis was undertaken at NI level and by the five education sub-regions.

3) In Phase 3, the SEN pupil population was cross-tabulated with pupils' home address (by Local Government District level and by truncated post code). Phase 3 analysis also utilised geo-mapping systems to determine the distribution of SEN (at Stages 1-4 and Stage 5) across NI relative to the most recent deprivation indicators.

An important caveat in data analysis relates to the way in which education data is collected, recorded and reported. This has been influenced, in part, by historic variations in the

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[6] Prevalence is presented graphically in the findings sections. It should be noted that scaling on the y-axis is dependent on prevalence figures for that particular data, and so will vary across graphs.

procedures used by the former Education and Library Boards in assessing and statementing pupils with SEN. Publicly available data provided in the school census typically records any SEN a pupil has, rather than the primary need recorded by the school; this means a pupil can be recorded more than once in an over-arching category (for example as having Dyslexia and Moderate Learning Difficulties within Cognitive and Learning) or recorded across more than one category. Data used in relation to FSME is based on this approach. Data on SEN categories and individual SEN was specifically requested based on the primary need of pupils so that he/she was only counted once; this, however, can increase the likelihood of data suppression and reliance on estimates in instances where recorded figures are low. Variability in available SEN data inevitably constrains the quality of analysis that can be undertaken in relation to this pupil population. Whilst it can provide certain valuable comparative analysis of SEN prevalence during the time period, the partial nature of the data does not facilitate development of a comprehensive, individual-level pupil profile. In this respect, there is a strong rationale to expedite access to robust data provided via the Unique Pupil Number in order to better understand the prevalence of SEN in Northern Ireland.

2.1.2 Data Suppression and Estimation

Data suppression is a method applied to minimise the risk of directly or indirectly identifying individuals from datasets which contain personal or sensitive information. Within the parameters of this study, the level of detail provided in some data sets – for example, in relation to certain individual types of SEN where numbers were low – was potentially disclosive, so it was inevitable that varying degrees of data suppression would be applied. In the DE data, where the number of cases in a given cell was less than five, the symbol '*' was used to reduce the risk of identification. When the number of cases was greater than five but still small enough to heighten the risk of identification, the symbol '#' was used. This process of suppression is understandable, but it poses difficulties when calculating and reporting incidence and prevalence.

It is possible to adopt a systematic process of estimation, ensuring the quality of the data is not compromised. For example, in cases where '*' occurs in the datasets, the true value lies between 1 and 4 (inclusive). Therefore, in such cases, a three-step approach was utilised to ascertain estimated figures. This method provided a lower-bound estimate, an average estimate and an upper-bound estimate.

Step 1. In cases where a '*' appeared in the data, a figure was estimated based on the lowest possible rate i.e. assumption that '*' equated to n=1.

Step 2. Estimation of an average rate assumed that '*' equated to n=2.5.

Step 3. Estimation of a maximum rate assumed that '*' equated to n=4.

A value was not assigned to '#', therefore ALL figures are underestimated by an unknown degree in cases where a '#' is present in the original datasets.

2.1.3   Unavailable Data

Within the current data sets, certain pupil information relating to categories and individual types of SEN are not available due to low figures where data suppression is applied to minimise potential disclosure. For the same reason, data at full post code level for individual types of SEN was not available; in this instance, however, use of truncated postcode data enabled some mapping of SEN at a localised level and relative to current deprivation indicators.

2.2   The Northern Ireland Longitudinal Study Data

The Northern Ireland Longitudinal Study (NILS) is proportionally the largest longitudinal study in the UK, covering 28% of the population (NISRA, 2019). The NILS draws on data from a range of sources, including Census returns since 1981 onwards, the NI Health Card Registration System and General Register Office; consequently, it is a strong research resource for exploring socio-demographic and health characteristics of the population. The 2001 and 2011 Census were the prime data source for the purpose of this study, with data relating to:

1) All male and female NILS members aged between 4-19 years enumerated at the 2011 Census and also returned in the 2011 School Census.

2) NILS application-members of the household enumerated in the 2011 Census and the 2001 Census, where a NILS member in (1) is also enumerated in the 2001 Census.

The value of the combined data lay in the opportunity to compile a baseline profile of the health and disability of this sub-population of children and young people relative to the wider socio-economic circumstances of their lives. Successful linkage of 83,680 individuals was achieved for the 2011 sample, with 47,109 of these cases present in both 2011 and 2001 Censuses. Through the NILS application process, the project team had access to a broad range of health

variables, along with many variables that may be associated with health outcomes (henceforth referred to as correlates or predictors). Three broad levels were identified under which these correlates could be grouped: i) individual (e.g. demographic factors such sex, ethnicity), ii) household (e.g. household-level economic deprivation, living in social housing), and iii) school (e.g. attending a school with an above average number of children receiving free school meals). The aim was to quantify the associations between these correlates and the available health variables in order to identify key risk factors for child and adolescent health problems and disability (relevant to SEN) in Northern Ireland.

A total of 12 health variables were included in the 2011 Census in comparison with only two in the 2001 Census. This meant that in the 2001 - 2011 sub-sample, a narrower range of variables was available due to the more limited assessment undertaken at this wave. As such, two distinct sets of analyses were undertaken: i) cross sectional analyses in which we quantified the associations between the available correlates and select health outcomes in the 2011 data, and ii) longitudinal analyses in which we examined predictive associations using the sub-sample who had data in both 2001 and 2011.

In the cross-sectional analyses, the outcome variables were the 7 of the 12 binary categorical variables (those most relevant in relation to SEN) taken from the 2011 Census, which were coded 0 (no health condition/disability) and 1 (condition present). In the longitudinal analyses, the outcomes were harmonised measures of self-reported general health (coded as 0 = very good/good/fair; 1= bad/very bad) and disability (coded as 0 = activities not limited; 1= activities limited a little/a lot). In the longitudinal analyses, health and disability status in 2001 were included as covariates to control for baseline health status.

In both sets of analyses, categorical indicators of household-level socio-economic deprivation were available from on the 2001 and 2011 Census data, and these were included as predictors. Several school-level indicators of deprivation were available in the 2011 School Census and were included as predictors in the cross-sectional analyses. Additional individual-level predictors (eg sex, ethnicity) were taken from both sweeps of the Census. All predictor variables were coded as either binary or nominal categorical variables (with the exception of age which was continuous). A full list of correlates/predictor variables (grouped by individual, family and school domains) and outcomes can be found in Appendix 1.

2.2.1 Data cleaning and coding: processes and challenges

The integrated software package, STATA, was used to manage the data; typically used in a variety of research fields, including epidemiology, its capabilities in data management, statistical analyses and regression makes it an ideal tool when dealing with population data. Access restrictions due to the COVID-19 pandemic meant that preliminary preparation and checking of data was undertaken remotely. As discussed in Section 1.4.3, the closure of the secure room to external researchers presented a considerable practical challenge to the research team, delaying the analytic process by many months. As the lead analyst on the NILS data, the Early Career Researcher (ECR) was based in England and travel to the secure room was not possible following the initial UK-wide lockdown in March 2020. This disrupted plans for the ECR to travel to Belfast for a five-day period in order to clean the data, run the analysis and inspect the output. As an alternative, the ECR worked on STATA code remotely which was then sent to a member of the RSU team to input and run. This led to considerable delay, as the ECR had to rely on a Microsoft Access database in order to familiarise himself with the variables and subsequently write the STATA code to clean and analyse the data. This resulted in a protracted 'trial and error' process, whereby the ECR would produce code, the NISRA staff member would run the code during their limited access time, output would be inspected and returned to the ECR, and the code refined and re-run if required. In practice, this meant that even minor issues could take days, if not weeks, to rectify. However, notwithstanding these considerable challenges, the output required was produced, ensuring the key research questions were addressed.

2.2.2 Data analysis

The data set was linked at NISRA, tested for potential disclosure problems and de-identified. Originally designed to be made available to the research team, the data were accessed by the assigned RSU employee only. All analyses were conducted in STATA version 15.1 (StataCorp, 2017). Data analysis comprised:

1. Cross-sectional analyses of individual, household deprivation and school level predictor variables with health/disability outcome variables in the full 2011 sample. Logistic regression models were used to examine the unique associations between individual, household and school risk factors and health outcomes.

2.   Longitudinal analyses of individual and household deprivation predictor variables with health/disability outcome variables. Logistic regression models were estimated in which health and disability variables in 2011 were predicted by individual- and household-level variables in 2001, controlling for health and disability status at the 2001 assessment.

To account for the nested structure of the data (individuals were nested within Super Output Areas), two-level mixed effects models were used in both the cross-sectional and longitudinal analyses. The results from these analyses were graphically illustrated as odds ratio plots using the R package ggplot2 (Wickham, 2011).

Prior to the COVID-19 pandemic, it was proposed to analyse quantitative typologies of disadvantage using latent class analysis and to examine the cross-sectional and longitudinal associations these classes had with health status. The continued restrictions in data access have not permitted this within the timeframe of the project but this analysis could be pursued in a subsequent project.

2.2.3   Data suppression and unavailable data

Presentation of Census data aims to *'... balance the utility (or statistical value) of published statistics against the potential for disclosure of confidential information'* (NISRA, 2011, p.9). This includes aggregating data such as age groups or amalgamating data if information falls below a minimum threshold. For confidentiality reasons, NISRA policy also dictates that tabular output with cell counts less than 10 are suppressed.

2.3   Recording Special Educational Needs 2010/11 -2018/19

Data relating to pupils with SEN is informed by procedures set out in the Code of Practice on the Identification and Assessment of Special Educational Needs (DE, 1998) and supplementary guidance (DE, 2005). During the data period under analysis, identification and assessment of SEN followed the five-stage approach set out in the Code of Practice[7].

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[7] To be replaced by a new 3-stage approach from April 2021 (DE Circular No., 2021/06).

Stage 1:	Teachers identify and register a child's special educational needs and, consulting the school's SEN co-ordinator, take initial action.
Stage 2:	The SEN co-ordinator takes lead responsibility for collecting and recording information and for co-ordinating the child's special educational provision, working with the child's teachers.
Stage 3:	Teachers and the SEN co-ordinator are supported by specialists from outside the school.
Stage 4:	The Education Authority considers the need for a statutory assessment and, if appropriate, makes a multi-disciplinary assessment
Stage 5:	The Education Authority considers the need for a statement of special educational needs; if appropriate, it makes a statement and arranges, monitors and reviews provision.

<div align="right">(DE, 1998, p.3)</div>

In most cases, the identification of a pupil's SEN takes place in school, with the class teacher and SEN co-ordinator (SENCo) collecting and recording evidence from a range of sources. The Education Authority's decision to undertake a statutory assessment is based on this evidence, although it does not guarantee a statutory statement. An independent, informal Dispute Avoidance and Resolution Service (DARS) and more formal Special Educational Needs and Disability Tribunal (SENDSIT) can be called upon where there is disagreement between parents and schools and/or parents and the Education Authority. An annual review system operates at regional level as part of the statutory provision for statemented pupils; it forms part of the process of continuous assessment and, typically, should assess progress in meeting stated objectives and targets, review any special provision made for the child and consider if the statement needs to be maintained or amended. Data on pupils with SEN for 2010/11 – 2018/19 was grouped into seven overarching categories (DE, 2005). Each over-arching category is subdivided into individual types of SEN. Data on pupils can therefore be recorded by category and by individual SEN (Table 2). A pupil can be recorded in more than one category and/or type of SEN, although it is unknown whether a pupil's categorisation changes over the course of their school career.

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https://www.education-ni.gov.uk/sites/default/files/publications/education/DE%20Circular%202021%2006%20-%20Three%20Stages%20of%20Special%20Educational%20Provision%20%28fin....pdf

Table 2. Overarching SEN categories

Category	SEN
1. **Cognitive & Learning**	Dyslexia, Dyscalculia, Dyspraxia, Mild Learning Difficulties, Moderate Learning Difficulties, Severe Learning Difficulties, Profound and Multiple Learning Difficulties, Unspecified
2. **Social, Emotional & Behavioural**	Social, Emotional and Behavioural Difficulties, Attention Deficit Disorder, Attention, Deficit Hyperactivity Disorder
3. **Communication & Interaction**	Speech and Language Difficulties, Autism, Asperger's Syndrome
4. **Sensory**	Severe/Profound Hearing Loss, Mild/Moderate Hearing Loss, Blind, Partially Sighted, Multi-Sensory Impairment
5. **Physical**	Cerebral Palsy, Spina Bifida and/or Hydrocephalus, Muscular Dystrophy, Significant Accidental Injury, Other
6. **Medical Conditions / Syndromes**	Epilepsy, Asthma, Diabetes, Anaphylaxis, Down, Other Medical Conditions/Syndromes, Interaction of Complex Medical Needs, Mental Health Issues
7. **Other**[8]	Other

A review of the SEN categories was undertaken in 2017/18, and a new categorisation system with associated descriptions was implemented in January 2019. The DE stated that the rationale for the change was to 'reflect contemporary language used to describe SEN' as well as to separately create 'a more comprehensive set of medical diagnoses categories' (DE, 2019, p.3). The introduction of the new categorisation will undoubtedly have implications for how data is presented in the future as the new system means that some pupils will be recorded on the SEN Register only and others will be recorded on the Medical Register only. In some instances, a pupil with a medical diagnosis who also has been assessed in other SEN categories will be recorded on both Registers. Within the new categorisation system, conditions formerly identified as SEN - including Autism Spectrum Disorder (ASD), Attention Deficit Disorder / Attention Hyperactivity Deficit Disorder (ADD/ADHD) and Dyspraxia are listed as medical conditions.

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[8] DE (2005, p.17) guidance indicates this category should only be used for very unusual special educational needs which are substantially different from any of the types of need described in the other categories. Data does not collect what conditions fall under 'Other'.

Section 3: School and pupil numbers 2010/11 – 2018/19

Overall school and pupil numbers for primary, post-primary and special schools are drawn from publicly available data provided by the DE. This data is presented as final enrolment figures collected through the annual census for each school year. Data on pupils with SEN is provided at individual school level but are subject to high levels of suppression, so the total enrolment figures for each school type provide a consistent benchmark from which to analyse the SEN pupil population over time. Comparison of data sets for 2010/11 school year[9] and 2018/19 school year[10] provided an initial overview of general changes in school and pupil numbers over time, as well as more specific changes in the numbers of pupils with SEN across school types.

Key Messages

- There was an overall decrease in the number of schools and an overall increase in the number of pupils.
- The overall increase in the numbers of pupils with SEN was proportionately higher than the increase generally in the school population.
- In primary schools, there was a 13% increase in total pupil numbers and a 16% increase in the number of pupils with SEN.
- In post-primary schools, whilst there was a 4% decrease in total pupil numbers, the number of pupils with SEN increased by 26%.
- Breakdown of post-primary numbers showed the number of pupils with SEN increased by 19% in secondary schools and by 65% in grammar schools.
- There was a 34% increase in the number of pupils in special schools.
- Prevalence rates for FSME pupils with SEN increased over time and at a similar rate of change across school types.
- There were some peaks in intervening years, notably in 2014/15 in mainstream schools and in 2016/17 in special schools.

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[9] : https://www.education-ni.gov.uk/publications/school-enrolments-school-level-data-201011
[10] https://www.education-ni.gov.uk/publications/school-enrolment-school-level-data-201819

- In primary and post-primary schools, FSME prevalence rates were consistently and substantively higher among pupils with SEN, although in each school type, change ratios were slightly higher among pupils with no SEN.
- At a regional level, overall SEN prevalence rates were typically highest in the Belfast region in mainstream schools, although rates were highest in other regions when analysed by SEN Stage.
- The change in prevalence rates showed some variation across regions, school type and SEN Stage; generally, change was more apparent in the Western and North Eastern regions. Change ratios were generally higher at Stage 5, with greater differences in secondary and grammar schools compared to primary and special schools.

Analysis of the overall profile of schools and pupil numbers (Table 3) between 2010/11 and 2018/19 indicated that at school level, the overall increase in the numbers of pupils with SEN over the past ten years is proportionately higher than the increase generally in the school population. The most notable difference is in the post-primary sector; although there was a decrease of 4% in overall pupil numbers here, there was an increase of 26% in the overall numbers of pupils with SEN. When examined by school type, this revealed a 19% increase in secondary schools and a 65% increase in grammar schools.

Table 3. Rates of change in schools, pupils, and pupils with SEN from 2010/11 to 2018/19

	No. Schools 2010/11	No. Schools 2018/19	% Change	No. Pupils 2010/11	No. Pupils 2018/19	% Change	SEN Pupils 2010/11	SEN Pupils 2018/19	% Change
Primary	846	813	-4%	163,378	184,245	13%	33,878	39,131	16%
P-Primary	217	196	-10%	147,902	142,239	-4%	24,748	31,300	26%
Secondary	149	130	-13%	85,769	79,377	-7%	20,585	24,448	19%
Grammar	68	66	-3%	62,133	62,862	1%	4,163	6,852	65%
Special	41	39	-5%	4,458	5,959	34%	4,458	5,959	34%
Total	1,104	1,048	-5%	315,738	332,443	5%	63,101	76,390	21%

Comparison of SEN numbers between 2010/11 and 2018/19 provide an overview of prevalence rates, with some variation across school types as well as at Stages 1-4 and Stage 5 (Appendix 2). In mainstream schools, prevalence rates were higher in secondary schools in 2010/11 and

2018/19 (24.0% and 30.8% respectively), followed by primary schools (20.7% and 21.2% respectively) and grammar schools (6.7% and 10.9% respectively). Change ratios showed a higher change in grammar schools (1.6) followed by secondary schools (1.3), with little or no change in primary (1.0) schools. Analysis of SEN Stages by school type (Figures 1-4) showed a prevalence increase at Stages 1-4 in secondary, grammar and special[11] schools and a slight decrease in primary schools; the change ratio was higher in grammar schools (1.6), followed by special schools (1.4), secondary schools (1.3), with little or no change (1.0) in primary schools. At Stage 5, there was a prevalence increase in primary, secondary and grammar schools and a slight decrease in special schools; the change ratio was again higher in grammar schools (1.9), followed by secondary schools (1.3), primary schools (1.2), with little or no change in special schools (1.0).
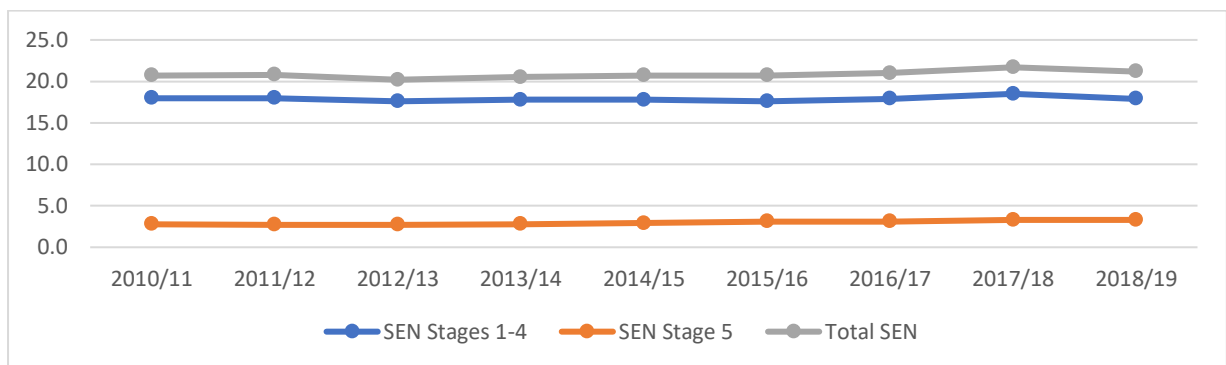
Figure 1. SEN prevalence rates in primary schools
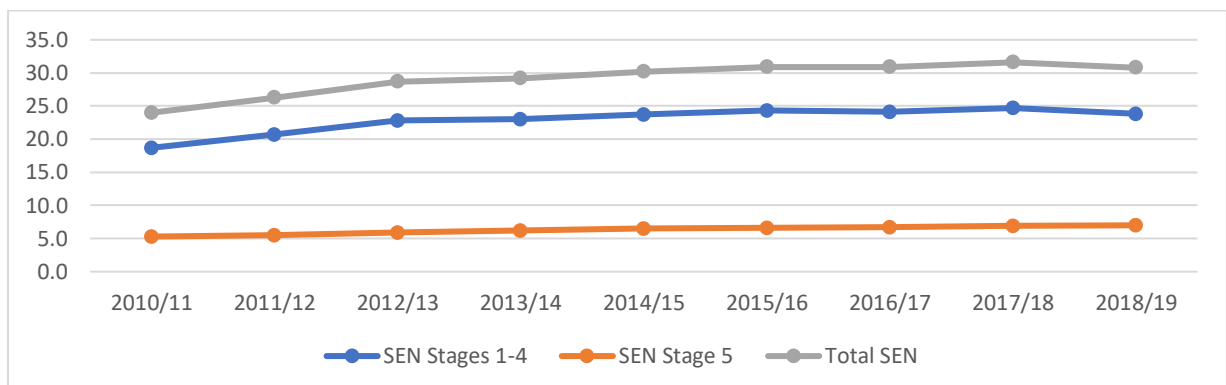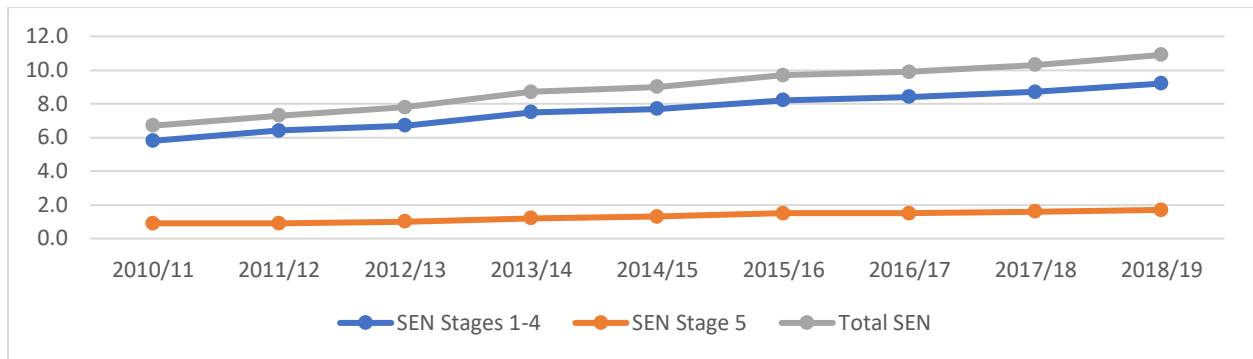

Figure 2. SEN prevalence rates in secondary schools

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[11] It is acknowledged that the overwhelming majority of pupils in special schools will be Stage 5; the placement of a minority of pupils at Stages 1-4 in the special school environment can be due to medical conditions, Acquired Brain Injury or behaviour issues that justify removal from a mainstream setting.

Figure 3. SEN prevalence rates in grammar schools
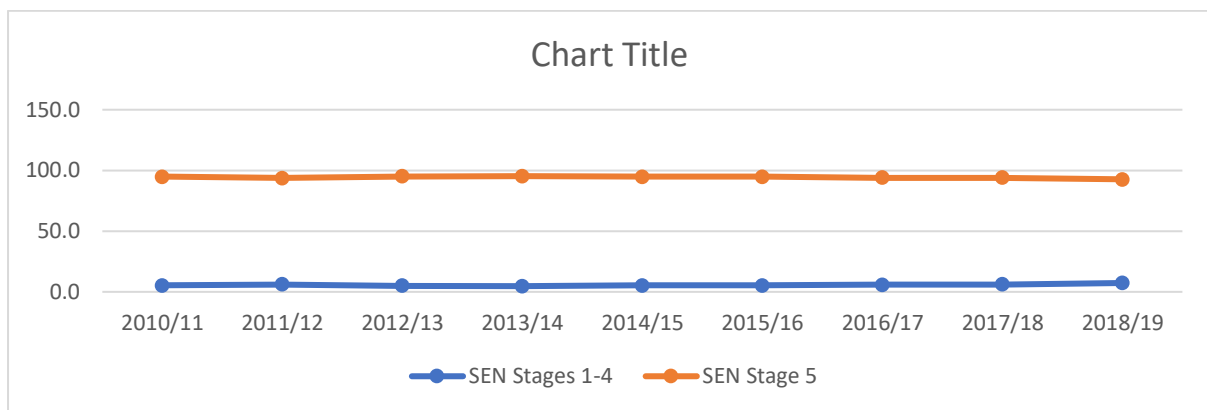
Figure 4. SEN prevalence rates in special schools

3.1   SEN and Free School Meal Entitlement

Pupils in primary, post-primary and special schools are recorded as FSME if they have applied for, and been granted, entitlement through the Education Authority (EA). Free School Meal Entitlement and SEN status typically shows higher than average correlation and the prevalence data confirms this association. The FSME status of pupils can be used as an indicator (although not exclusively) of social deprivation; whilst this association is not universally applicable to all children, the correlation between FSME and SEN (or some types of SEN) is a useful indicator in terms of the barriers to learning that may be experienced by this population of pupils. Pupils with SEN and who also have FSME are a sub-sample of the overall SEN population in schools. Initial analysis of the data at school level (DS10) allowed analysis of this relationship by school type, by SEN Stage, by FSME and non-FSME status. Data refers to any special educational need the pupil had rather than the primary need recorded by the school.

In **primary schools** (Figure 5), comparison of the overall prevalence rate of FSME pupils with SEN showed an increase between 2010/11 and 2018/19 (71.2% and 89.1%

respectively) and a change ratio of 1.3. Prevalence rates for FSME pupils with no SEN also increased (18.4% and 25.3% respectively), giving a change ratio of 1.4. Analysis by SEN Stage showed slightly higher prevalence rates at Stages 1-4, giving a change ratio of 1.3; at Stage 5, the change was 1.2. Although the data showed an overall increase over the time period, prevalence rates for pupils at Stages 1-4 and Stage 5 and for those with no SEN were highest in 2014/15, with the prevalence rate gradually decreasing for each group thereafter.
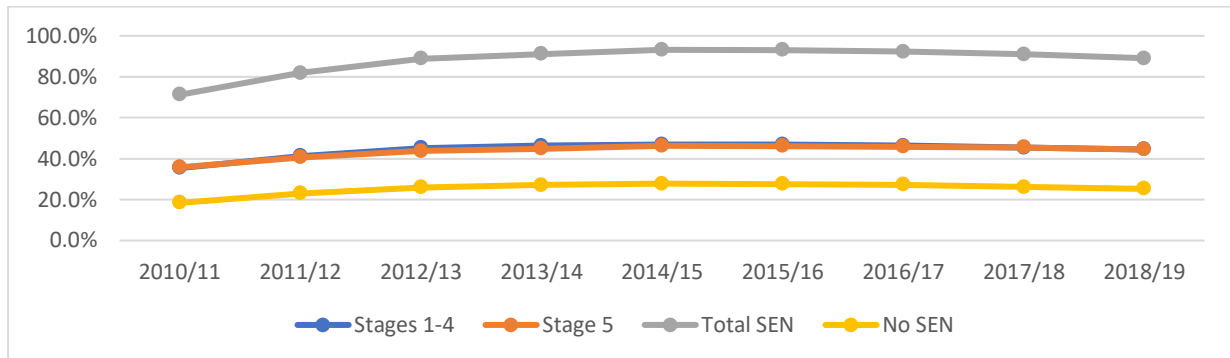
Figure 5. FSME Prevalence by SEN/no SEN in primary schools

In **post-primary** schools (Figure 6), comparison of the overall prevalence rate for FSME pupils with SEN also showed an increase between 2010/11 and 2018/19 (65.1% and 86.1% respectively), a change of 1.3. The rate for FSME pupils with no SEN increased (15.3% and 24.2% respectively), with a change ratio of 1.6. Analysis by SEN Stage showed a similar change of 1.3 at Stages 1-4 and Stage 5, although prevalence rates year-on-year were higher at Stage 5. Additionally, although the prevalence rates for FSME pupils with SEN gradually increased between 2010/11 and 2012/13, there was a decrease across both groups in 2013/14, followed by a peak the following year; this pattern was replicated amongst FSME pupils with no SEN.
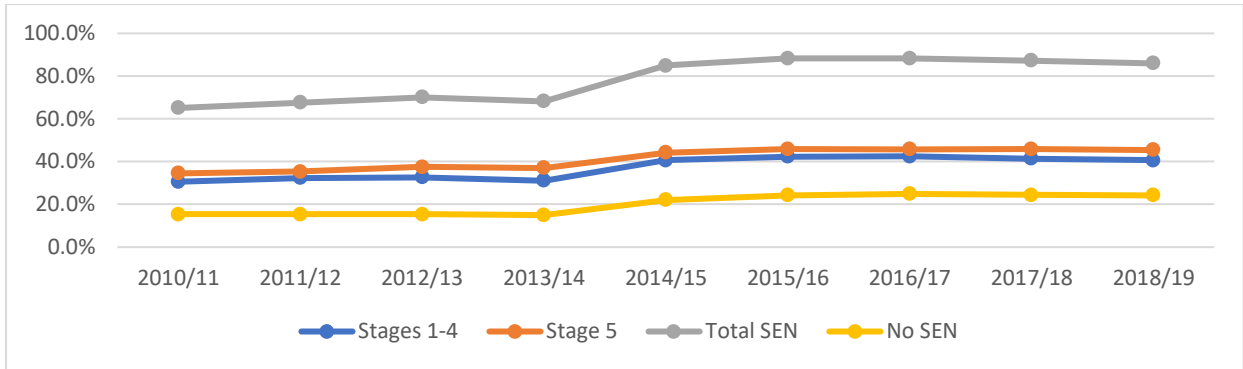
**Figure 6. FSME Prevalence by SEN/no SEN in post-primary schools**

In **special schools (Figure 7)**, comparison of the prevalence rate for FSME pupils at Stage 5 increased from 45.5% in 2010/11 to 52.8% in 2018/19, a change ratio of 1.2. Although the data showed an overall increase over the time period, the prevalence rate at Stage 5 was highest in 2016/17 and decreased gradually in subsequent years.
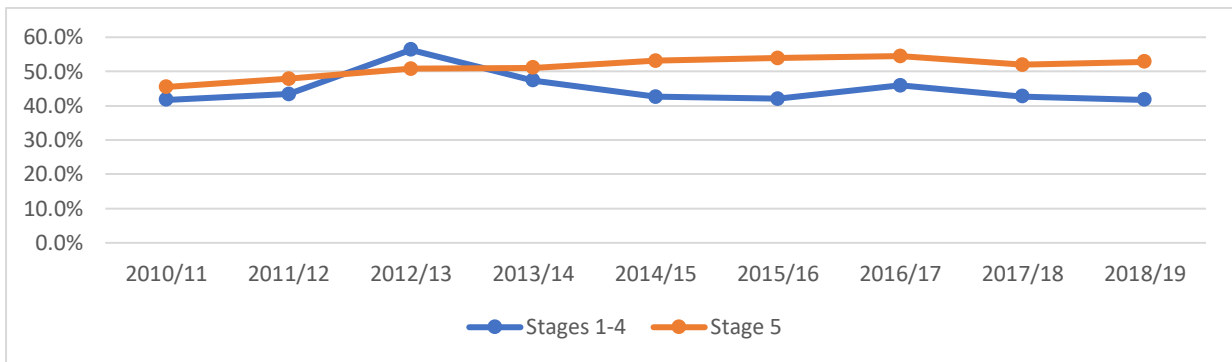
Figure 7. FSME prevalence and SEN in special schools

3.2   SEN at regional level

The Education Authority (EA) in Northern Ireland is responsible for ensuring that efficient and effective primary and secondary education services are available to meet the needs of children and young people.   Services were formerly delivered by five Education and Library Boards (ELBs); the ELBs were dissolved in 2015 to become regions of the EA – Belfast Region, North Eastern Region, South Eastern Region, Southern Region and Western Region - each comprising to greater or lesser extents urban and rural populations. Presentation of prevalence data at regional level, therefore, enables a degree of geographic analysis on the distribution of SEN across NI and comparison of the extent of change between 2010/11 and 2018/19. It is

acknowledged that the transition from ELBs to regional authorities may have generated some variation in the assessing and statementing pupils with SEN and the subsequent recording of these pupils. Initial analysis of regional data sought to present the prevalence rates and change ratio at Stages 1-4 and Stage 5 in primary, post-primary (secondary and grammar) and special schools between 2010/11 and 2018/19.

3.2.1   SEN by region, school type and SEN Stage, 2010/11 – 2018/19

In **primary schools**, overall SEN prevalence rates varied slightly across regions over time (Figure 8). Comparison of prevalence rates at 2010/11 and 2018/19 showed the highest rates were in the Belfast region (26.83% and 26.89% respectively), with minimal change only in the North Eastern and South Eastern regions (1.1). At Stages 1-4 (Figure 9), there was little or no change across the five regions, with only the South Eastern region showing a slight change (1.1). In contrast, prevalence rates at Stage 5 (Figure 10) increased in four of the regions over time and were highest in the South Eastern region (3.14% and 3.84% respectively); the change ratio was highest in the Western region (1.5).
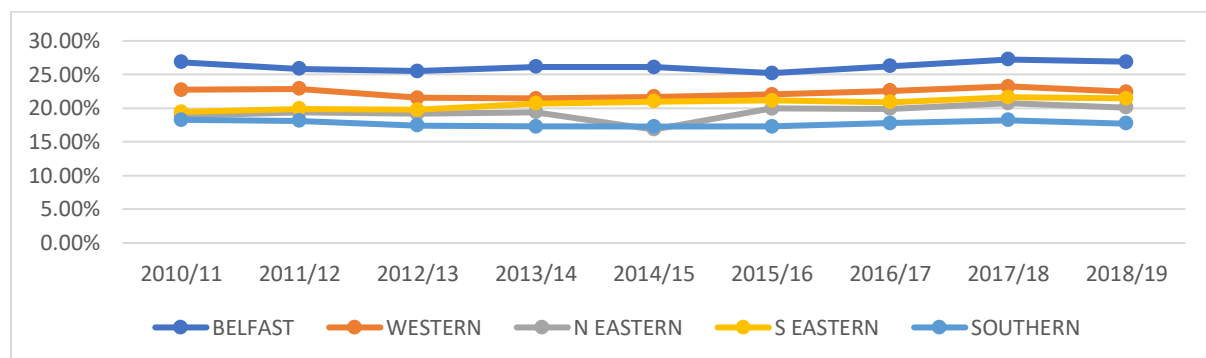
Figure 8. Total prevalence rates for SEN in primary schools by education region
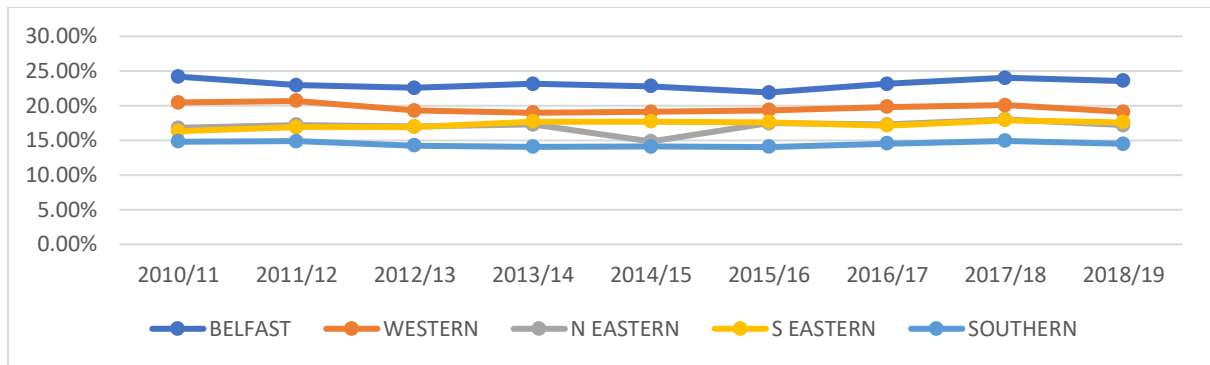
Figure 9. Prevalence rates at Stages 1-4 in primary schools by education region
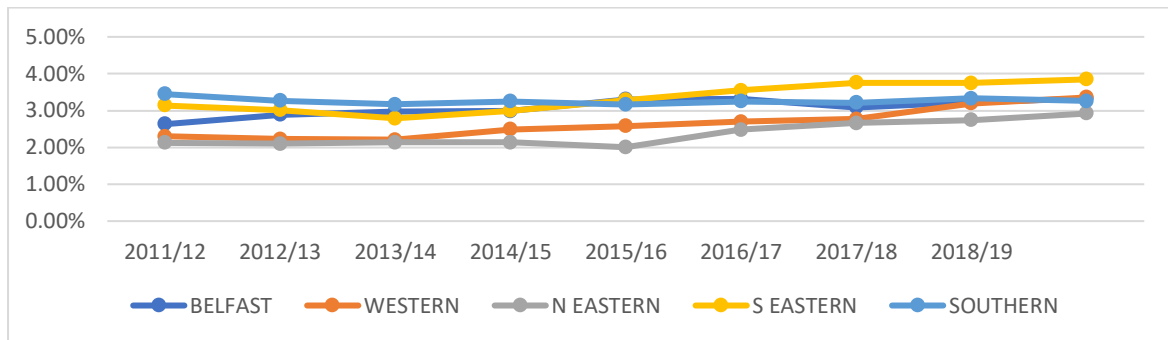
Figure 10. Prevalence rates at Stage 5 in primary schools by education region

In **secondary schools**, overall SEN prevalence rates varied across regions over time (Figure 11). Comparison of the data showed the highest prevalence rates were in the Belfast region (38.18% - 42.21% respectively) and the highest change ratio was in the North Eastern region (1.6). At Stages 1-4 (Figure 12), prevalence rates remained highest in Belfast (34.54% - 35.88% respectively), with the higher change ratio in the North Eastern region (1.7). At Stage 5 (Figure 13), prevalence rates increased across all regions over time and were highest in the Western area (5.27% - 8.38% respectively); change ratios were highest in Belfast (1.7), and Western (1.6) regions.

Figure 11. Total prevalence rates for SEN in secondary schools by education region

Figure 12. Prevalence rates at Stages 1-4 in secondary schools by education region
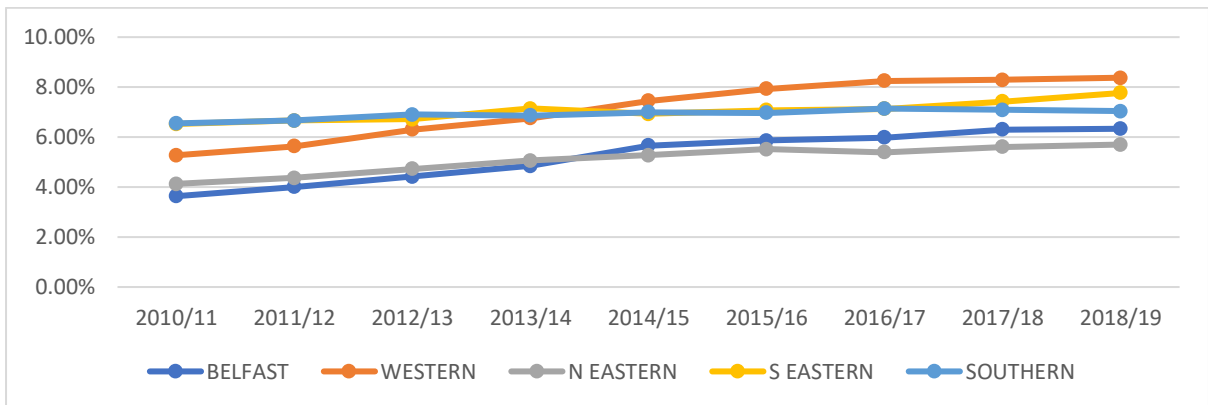
Figure 13. Prevalence rates at Stage 5 in secondary schools by education region

In **grammar schools**, overall SEN prevalence rates varied across regions over time (Figure 14), with somewhat higher change ratios than found in secondary schools. Comparison between 2010/11 and 2018/19 showed the highest prevalence rates were in Belfast (11.13% - 15.24% respectively), with the higher change ratio in the Southern region (3.1). At Stages 1-4 (Figure 15), overall prevalence rates were highest in the Western region, whilst the change

ratio was highest in the Southern region (3.8). At Stage 5 (Figure 16), prevalence rates generally increased over time and were highest in the Belfast region (1.10% - 2.45% respectively), with the highest change ratio in the North Eastern region (2.8).
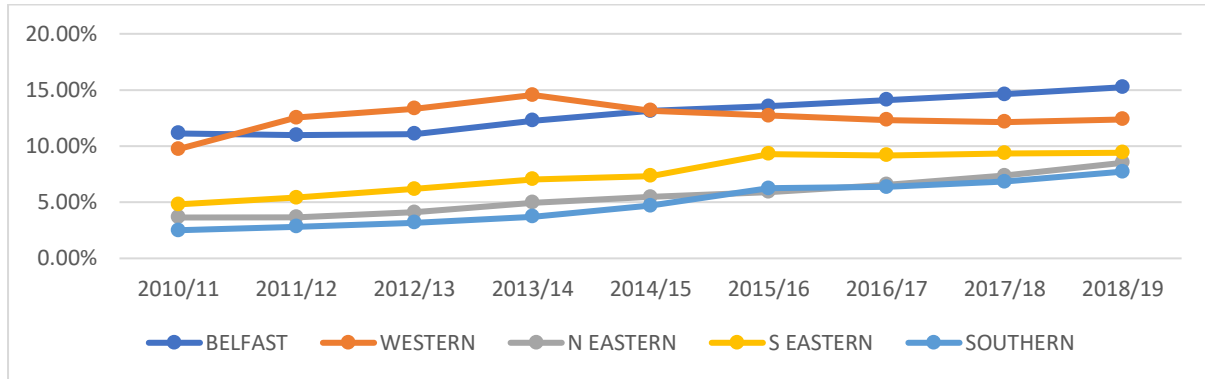

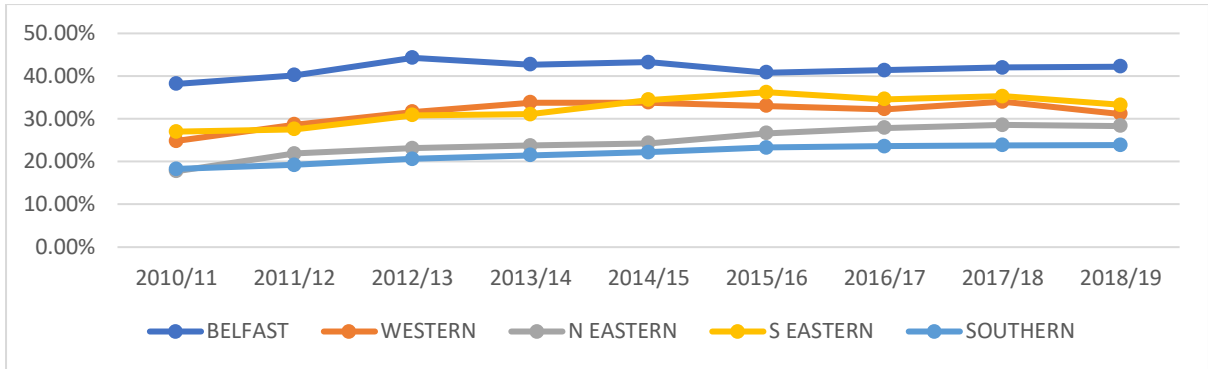**Figure 14. Total prevalence rates for SEN in grammar schools by education region**
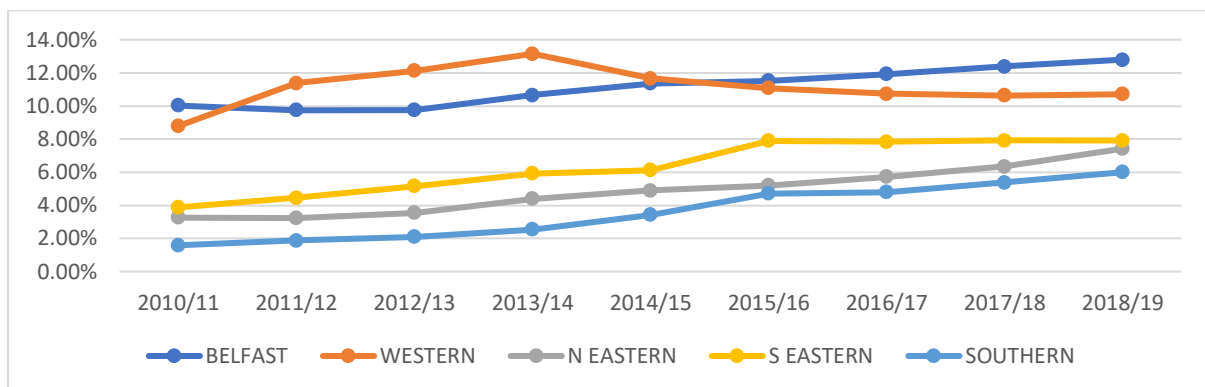
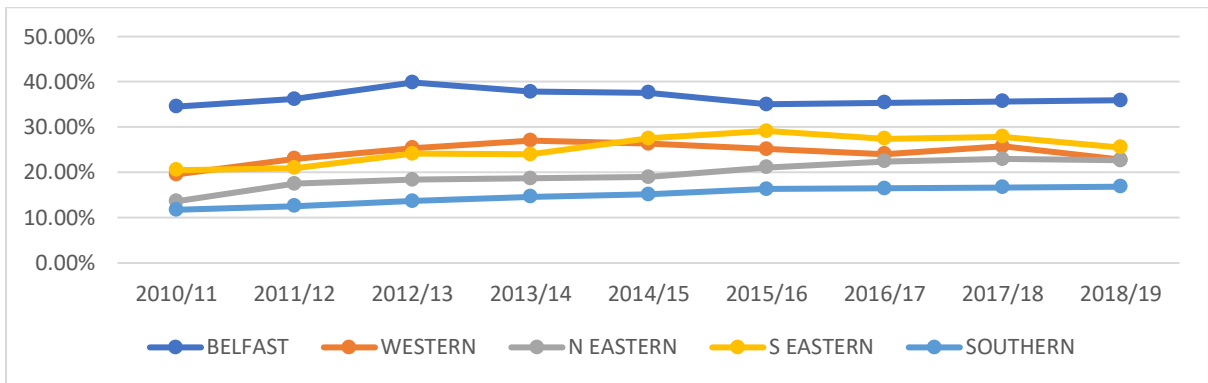**Figure 15. Prevalence rates at Stages 1-4 in grammar schools by education region**
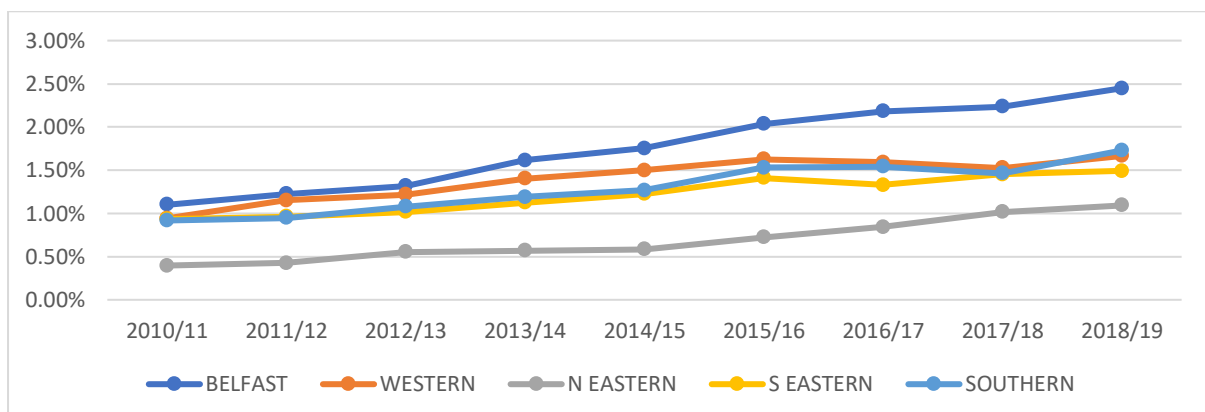
Figure 16. Prevalence rates at Stage 5 in grammar schools by education region

In **special schools** (Figure 17), overall prevalence rates at Stage 5 were higher in the Western region (97.16% - 95.50%), with minimal change only in the Southern region (1.1).
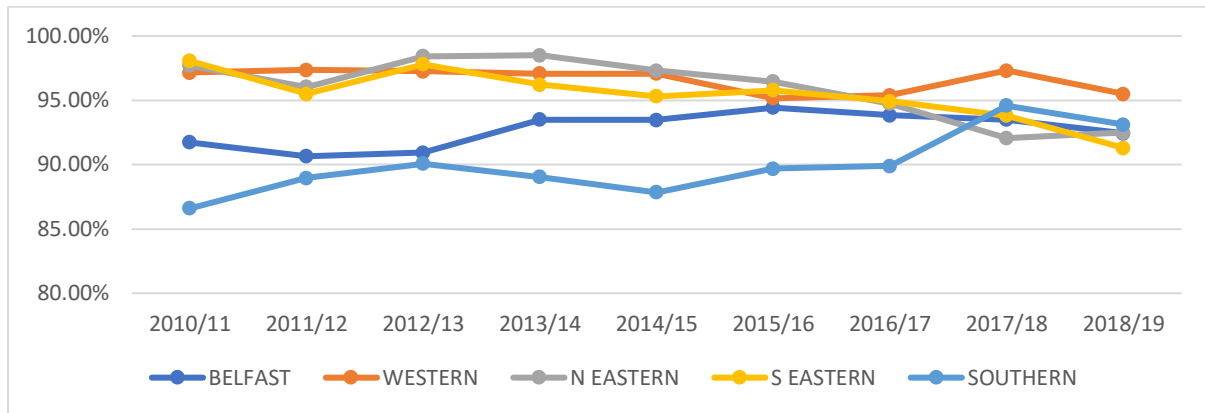
Figure 17. Prevalence rates at Stage 5 in special schools by education region

Section 4: SEN by Over-Arching Category, 2010/11-2018/19

Analysis of SEN at NI and regional levels has provided an initial overview from which to begin to compare SEN prevalence. Further understanding can be gained through more detailed analysis and the following section examines prevalence more closely using data relating to over-arching categories and individual types of SEN. The use of over-arching categories is part of the standardised collection and recording of information on pupils with SEN and is used by the DE and EA to: inform policy development and planning; identify current and future funding needs; and monitor trends (DE, 2019). Analysis of the seven over-arching categories therefore provided a useful lens on the recording of SEN over time, not least since the data provided were based on the primary need of the pupil to ensure he/she was counted only once. Preliminary analysis of this data between 2010/11 – 2018/19 revealed that the recording of SEN was concentrated in three over-arching categories: Cognitive and Learning; SEBD and Communication and Interaction. Collectively, these three categories represented the overwhelming majority of the total SEN pupil population - 87.2% in 2010/11, and 89.7% in 2018/19 (Figures 18 and 19).
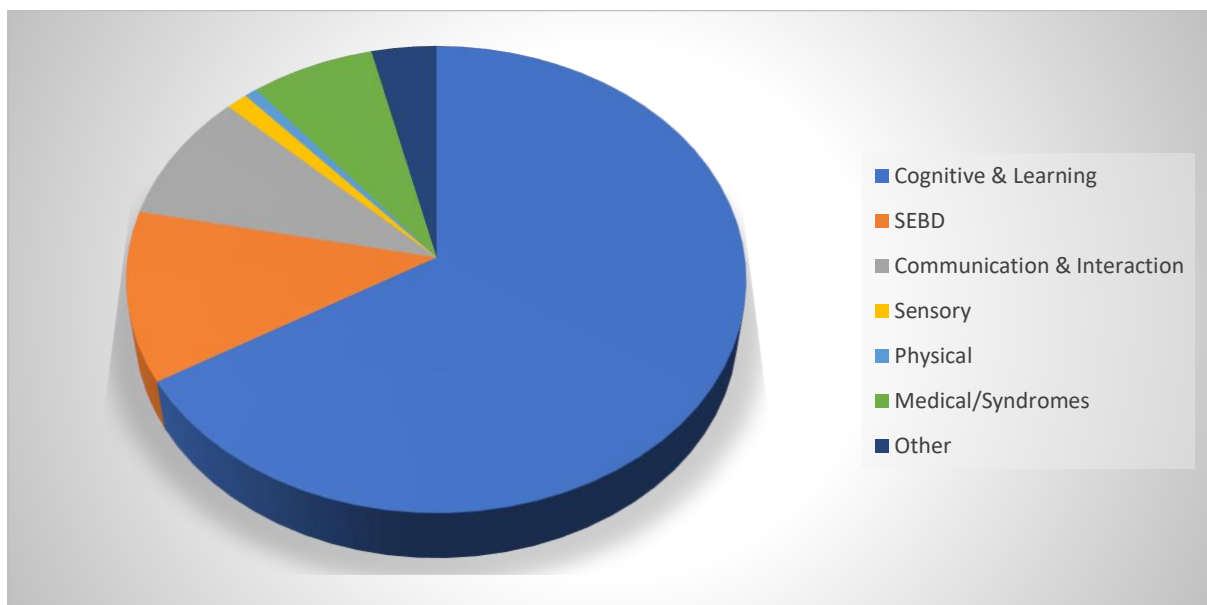
Figure 18. Prevalence of SEN by over-arching category, 2010/11
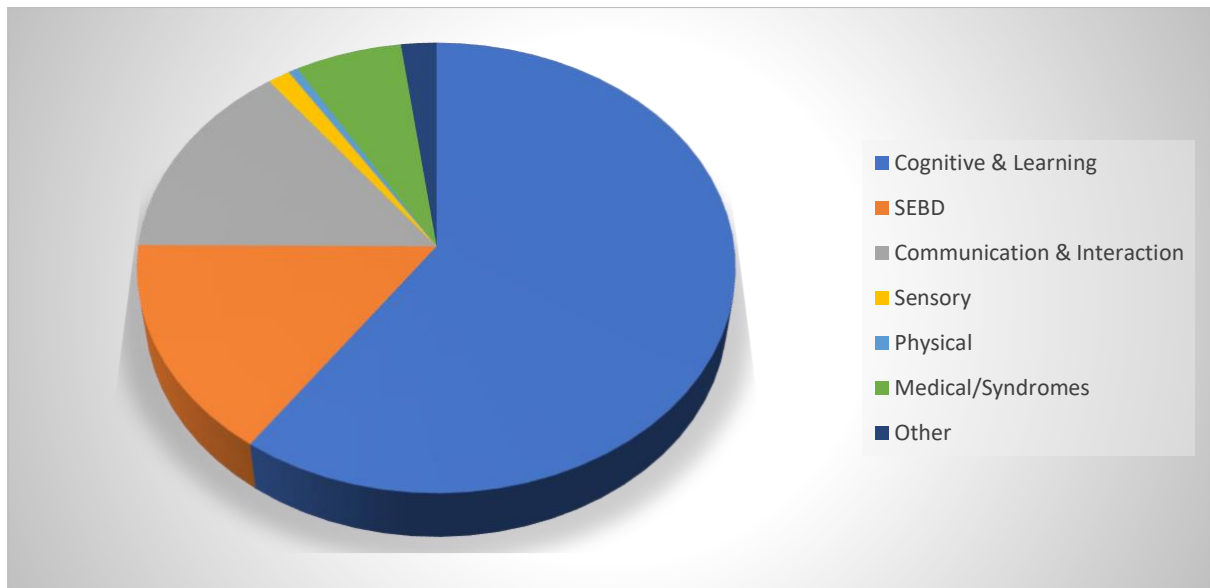
Figure 19. Prevalence of SEN by over-arching category, 2018/19

The concentration of data in these three over-arching categories suggested that analysis of this data had greater potential to yield useful initial insights on SEN prevalence for these categories and for the individual SEN within them that had the higher prevalence rates. Adopting this approach made it possible to look at prevalence rates using a range of disaggregated variables:

Overarching category:

- by region, school type and SEN Stage
- by FMSE
- by MDM

Further analysis of individual SEN was undertaken:

- by region, school type, gender and SEN Stage
- by year group
- by MDM
- by pupils' truncated home post code (see note)

In a few instances, a figure was missing in the original data set – either it was fewer than 5 cases or it could not be provided under the rules of statistical disclosure. In these cases, it was possible to estimate the range and insert an estimated figure based on the data that was available for that year.

Note: Much of the data collected in relation to SEN is presented at school level. The location of the school can provide insight into the distribution of SEN regionally; however, in the absence of individual pupil data, further analysis based on pupil enrolment by Local Government District (LGD 1992) of the pupils' home address allows some preliminary exploration of the density and geography of SEN that may complement the social data of the NILS study. Northern Ireland has been divided into 11 Local Government Districts (LGD) since 2015; LGD data provided for this project were based on the former 26 District Council Areas (DCA) (Appendix 3) which enabled closer geographic comparison of any changes in the distribution of SEN.

It is not possible to present LGD data comprehensively or definitively; as already noted, the level of suppression generally allows, at best, a preliminary understanding of SEN distribution. Maps, therefore, are presented by primary, post-primary and special schools where data permits. The data that is presented by LGD in relation to individual SEN at Stages 1-4 and Stage 5 were calculated according to the base pupil enrolment data by school type to give a representation of the distribution and density of these SEN across Northern Ireland in 2010/11 and 2018/19. This data refers to any special educational need rather than the primary need recorded by the school. Viewed in this context, the maps are indicative of their potential when applied to individualised pupil data.

Section 5: Cognitive and Learning at regional and school level, 2010/11 – 2018/19

<div style="border:1px solid black;">

Key Messages

- Comparison at regional level showed overall prevalence rates for ***Cognitive and Learning*** increased over time, with peaks across all regions, particularly between 2014/15 and 2017/18.
- Prevalence rates varied by school type and SEN Stage, with primary schools showing the most consistent prevalence decrease over time and grammar schools showing the highest change ratios.
- Prevalence rates were consistently higher among males across all regions and school types. The only exception was a higher rate among females at Stages 1-4 in secondary schools in the Belfast region.
- Overall prevalence rates increased across schools for FSME pupils and decreased for non-FSME pupils. In primary, secondary and special schools, prevalence rates for both genders were more commonly highest in MDM 1 and lowest in MDM 10; this distribution was reversed in grammar schools.

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At regional level, comparison of overall prevalence rates (Appendix 4) for Cognitive and Learning between 2010/11 and 2018/19 showed an increase over time (49.46% and 63.26% respectively), a change of 1.3. The highest prevalence rates were in the Belfast region (12.27%-13.97% respectively); the biggest change was in the North Eastern region (1.5), with the lowest change in Belfast (1.1). Peaks in prevalence rates across all regions, particularly between 2014/15 and 2017/18, were higher than 2018/19 data (Figure 20).
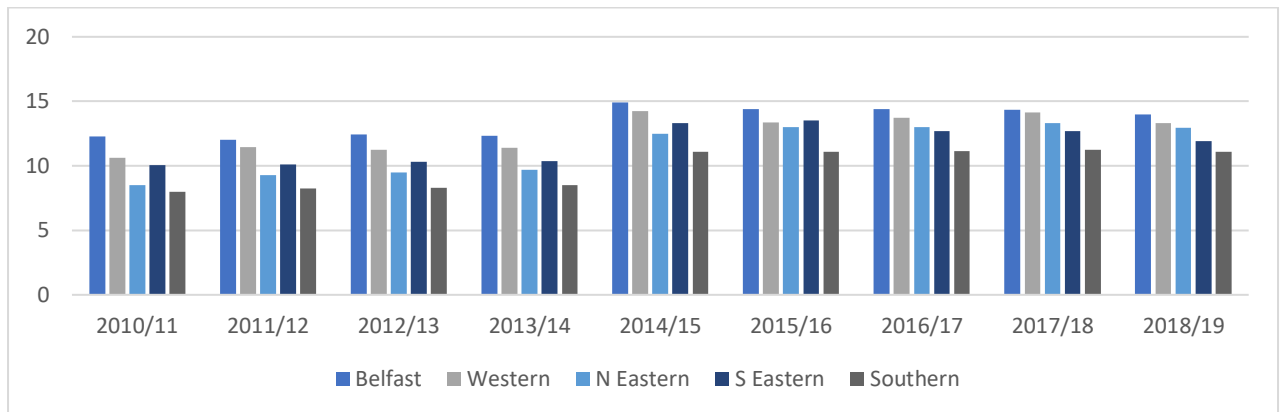
Figure 20. Cognitive & Learning prevalence rates

Further comparison of the data at 2010/11 and 2018/19 by SEN Stage showed distinctions by gender and school type. In **primary schools**, prevalence rates were consistently higher amongst males across all regions at Stages 1-4 and Stage 5. At Stages 1-4 (Figure 21), prevalence rates, overall, were highest for females (7.18% - 5.67% respectively) and males (9.23%-6.33% respectively) in the Belfast region; however, rates decreased gradually for both genders and across all regions, with little change over time. At Stage 5 (Figure 22), whilst prevalence rates were highest for both genders in the North Eastern region, there was a general decrease over time, with only the Western region showing change for both females (1.4) and males (1.2).
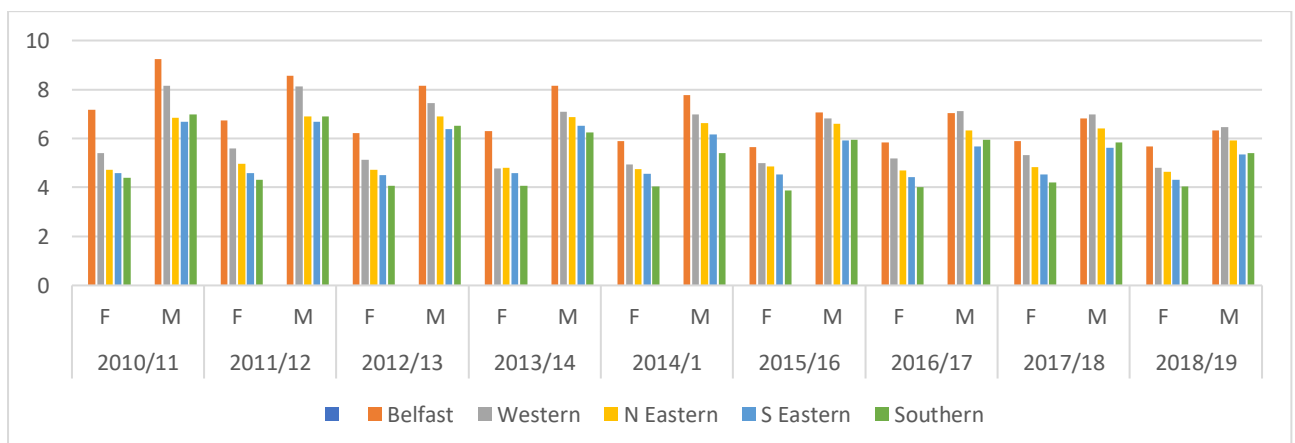
Figure 21. Cognitive & Learning in primary schools at Stages 1-4 by region and gender
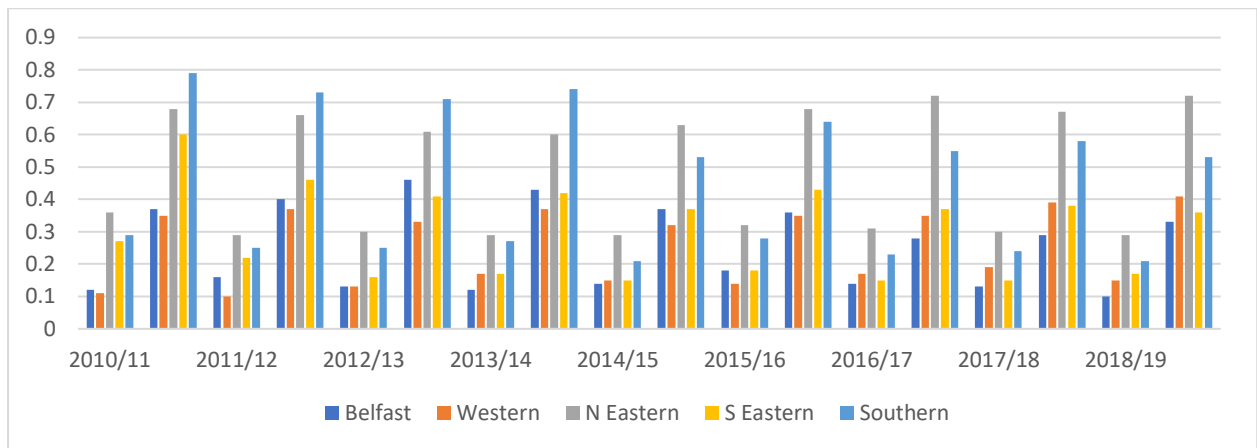
Figure 22. Cognitive & Learning in primary schools at Stages 5 by region and gender

In **secondary schools**, prevalence rates were highest for females and males in the Belfast region at Stages 1-4 (11.94% - 11.83% and 9.61% - 10.46% respectively) (Figure 23). Notably, this was the only instance when rates for females exceeded that for males. Prevalence rates increased over time in each region; change ratios were higher for females and males in the North Eastern region (2.2 and 1.6 respectively). At Stage 5 (Figure 24), prevalence rates were highest overall in the Southern region for females and males (1.01% - 1.08% and 2.45% - 2.30% respectively), with little change over time. Change was highest for females (2.2) in the Western region and for males (1.3) in the Belfast region.

Figure 23. Cognitive & Learning in secondary schools at Stages 1-4 by region and gender

Figure 24. Cognitive & Learning in secondary schools at Stage 5 by region and gender

In **grammar schools**, prevalence rates at Stages 1-4 were consistently higher amongst males across all regions (Figure 25). The highest prevalence rates were in the Western region (2.21% - 2.30% for females and 2.98% - 2.67% for males), although there was little or no change over time. Change ratio was highest for males and females in the Southern (5.0 and 4.4 respectively) and North Eastern (2.3 and 5.1 respectively) regions. At Stage 5 (Figure 26), prevalence rates were highest overall in the Southern region for females and males (0.02% - 0.26% and 0.10% - 0.10% respectively). Change was highest for females (5.0) in the Southern region and for males in the North Eastern region (5.0).
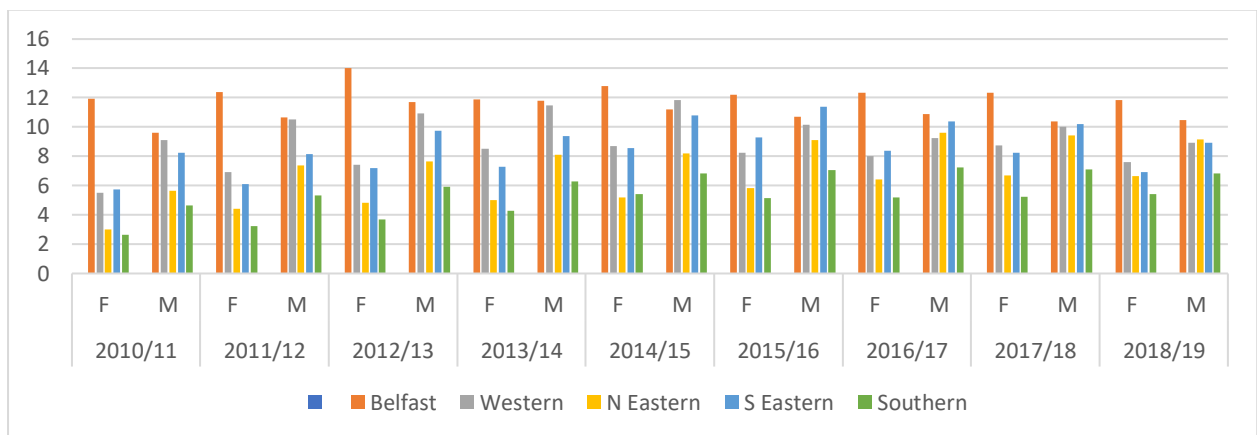

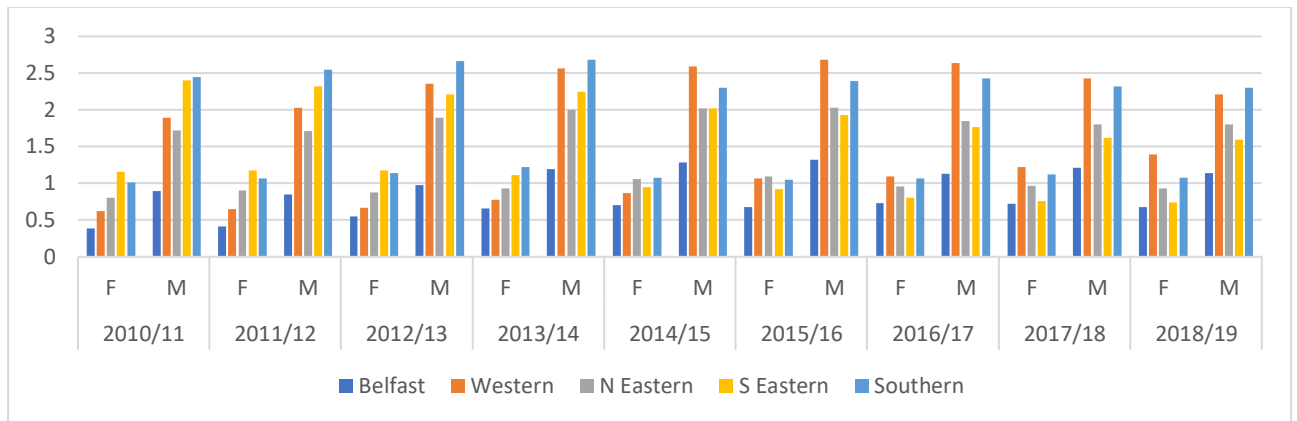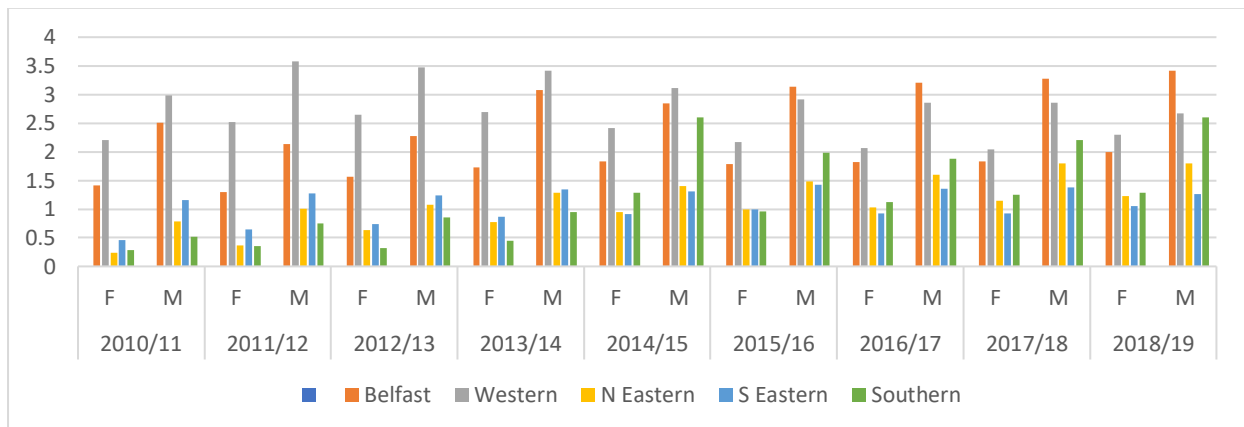**Figure 25. Cognitive & Learning in grammar schools at Stages 1-4 by region and gender**
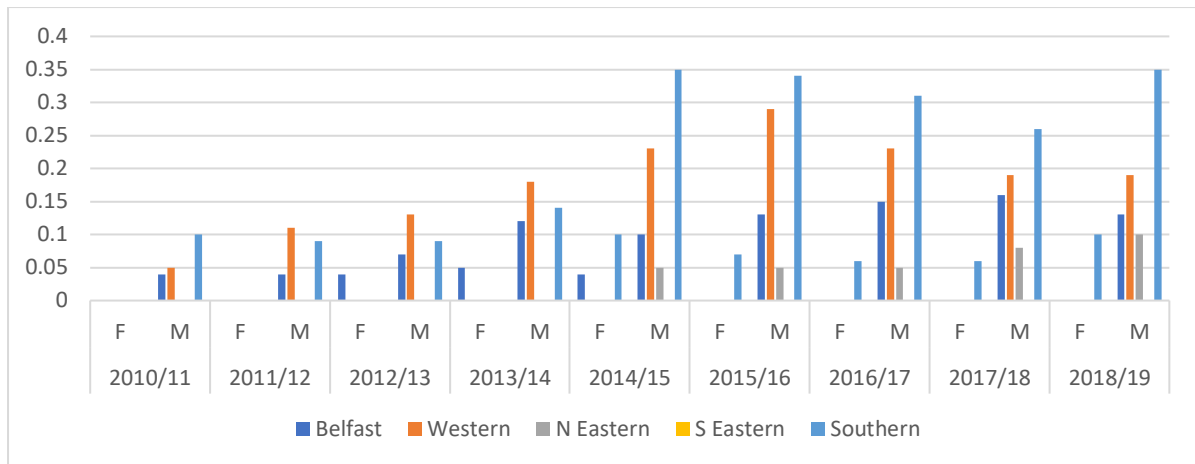
Figure 26. Cognitive & Learning in grammar schools at Stage 5 by region and gender

In **special schools** at Stage 5, prevalence rates were consistently higher amongst males across all regions (Figure 27). The highest prevalence rates were in the North Eastern region (24.68 – 20.51% for females and 43.46% - 45.86% for males), although there was little change over time. The Western region showed the higher change ratio for both genders (1.3 for females and 1.2 for males).
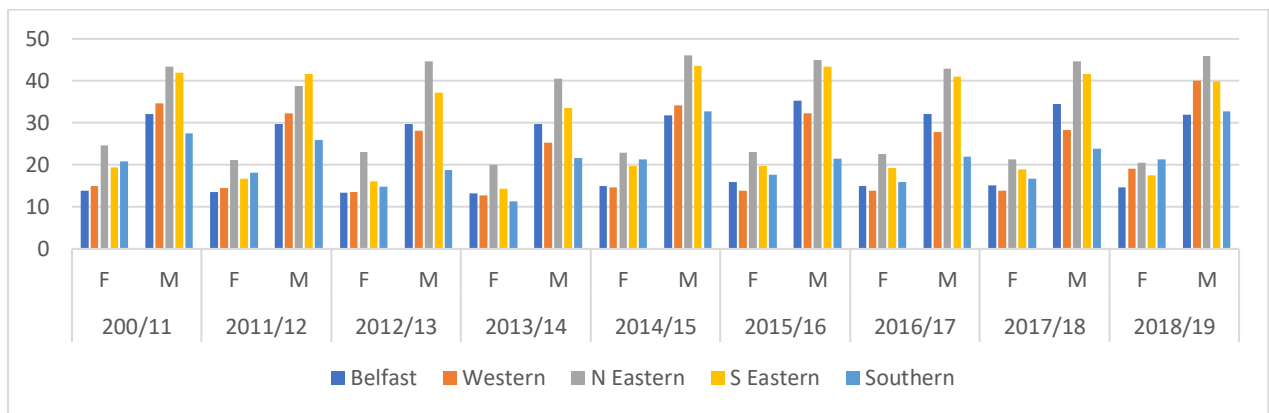
Figure 27. Cognitive & Learning in special schools at Stage 5 by region and gender

5.1 Cognitive and Learning at school level by FSME and MDM, 2010/11 and 2018/19

Overall, the prevalence rate of FSME pupils reported under Cognitive and Learning increased between 2010/11 and 2018/19 (36.5% - 45.8%), a change ratio of 1.3 in contrast to a prevalence decrease among non FSME pupils (63.5% - 54.2%) and change ratio of 0.9 (Figure 28). There

were increases in FSME across all school types; the highest prevalence rates were in primary schools (20.4% to 22.4%), although post primary schools showed highest change ratio (1.5). Among non-FSME pupils, a prevalence decrease across school types showed minimal no change over time. The data masked some fluctuation over the time span, in particular, a peak in 2012/13 for FSME and non-FSME.
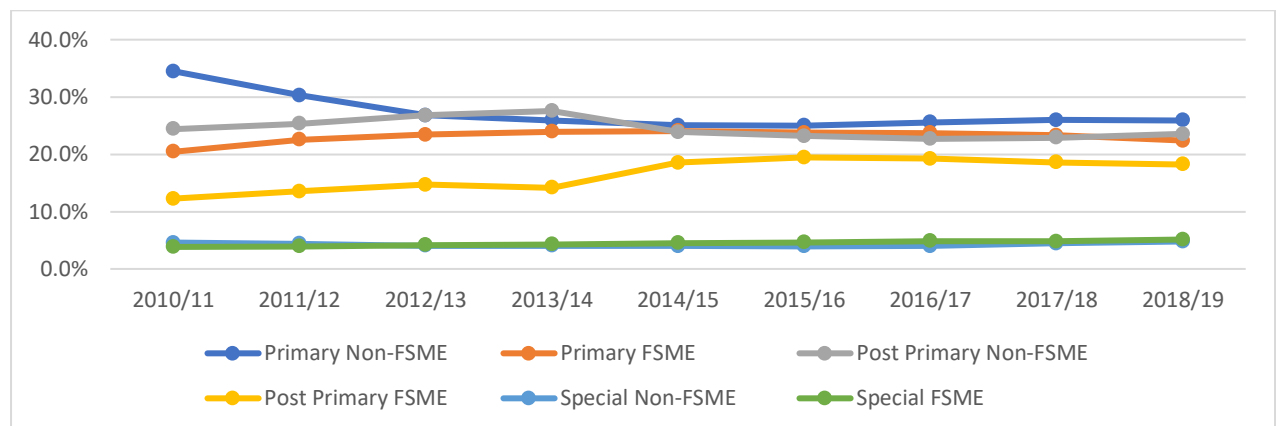
Figure 28. Cognitive & Learning prevalence rates for FSME/non-FSME reported by school type

Overall prevalence rates for Cognitive and Learning by MDM showed some variation. In **primary schools** at Stages 1-4, rates were highest in MDM 1 in 2010/11 and in 2018/19. At Stage 5, rates were highest in MDM 5 in 2010/11 and in MDM 2 and 4 in 2018/19. In **secondary schools** at Stages 1-4, prevalence rates were highest in MDM 1 in 2010/11 and 2018/19. At Stage 5, prevalence rates in 2010/11 were highest in MDM 5 and this also remained in 2018/19. In **grammar schools** at Stages 1-4, prevalence rates in 2010/11 were highest in MDM 10 in 2010/11. Data was very low at Stage 5; prevalence rates in 2010/11 were evident only in MDM 6; in 2018/19, rates were highest in MDM 5, 7 and 8. In **special schools**, at Stage 5, prevalence rates for were highest in MDM 1 in MDM 1 in 2010/11 and in 2018/19.

Section 6: Cognitive and Learning: Individual SEN

6.1   Dyslexia/SpLD

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Key Messages

- Comparison at regional level showed overall prevalence rates for *Dyslexia/SpLD* generally increased at Stages 1-4 and Stage 5 in primary, secondary and grammar schools.
- At Stages 1-4 and Stage 5, prevalence rates were highest in secondary schools and rates for males were consistently higher across school types.
- The highest change ratios were evenly distributed between females and males across school types at Stages 1-4 and Stage 5.
- Overall prevalence rates increased across schools for FSME pupils and decreased for non-FSME pupils, with highest rates in primary schools. Over time, higher prevalence rates by MDM tended to be concentrated in MDM 4 and 5 for pupils in primary and secondary schools and MDM 10 for pupils in grammar schools.
- Distribution by LGD showed a notable reduction in high-density districts in post-primary schools over time, particularly at Stage 5.

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In **primary schools**, comparison of prevalence rates (Appendix 5) showed some variation. At Stages 1-4, prevalence rates increased across regions for females, with more variation for males. Rates were highest in the Western region for females and males (0.87% - 0.99% and 1.78% - 1.48% respectively), with minimal change over time (Figure 29). The highest change was in the Southern region for females and males (2.1 and 1.6 respectively). At Stage 5 (Figure 30), prevalence rates largely increased for both genders across regions; rates were highest overall in the Western region for both genders (0.01% - 0.03% for females and 0.06 – 0.11% for males). Change ratios were highest in Western region for females (3.0) and in the Belfast region for males (5.0).
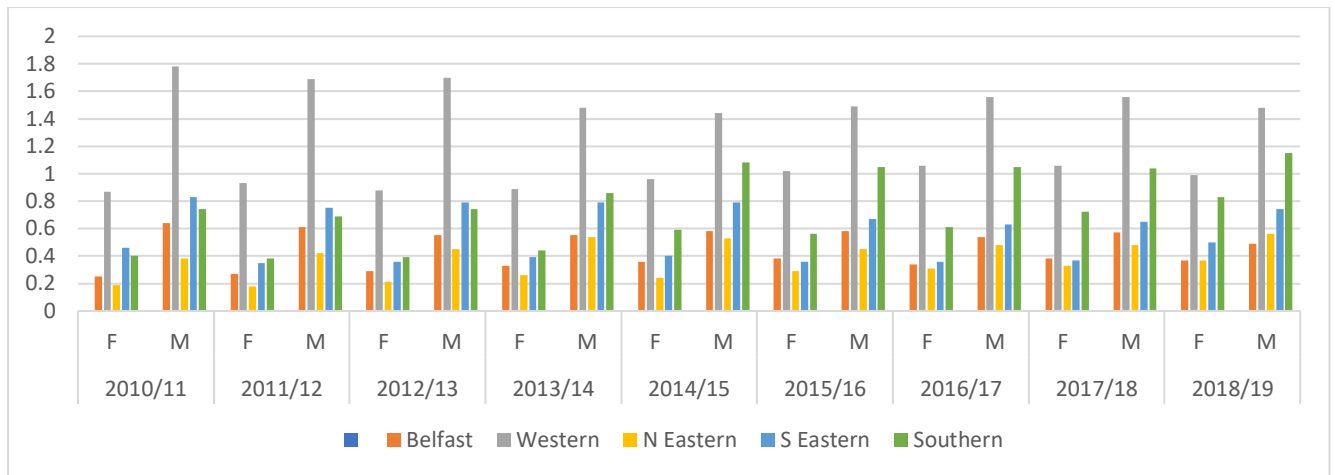
Figure 29. Prevalence of Dyslexia/SpLD in primary schools at Stages 1-4 by region and gender
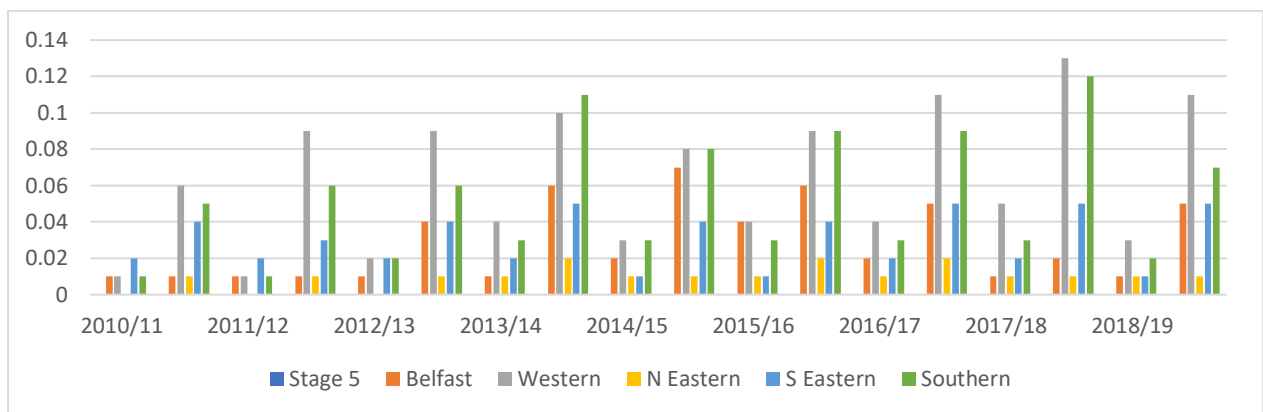
Figure 30. Prevalence of Dyslexia/SpLD in primary schools at Stage 5 by region and gender

Comparison of Dyslexia/SpLD by **year group** indicated a growth in prevalence rates at Stages 1-4, with little data to draw definitive estimates at Stage 5. When looked at by year group at Stages 1-4, the prevalence rate for Dyslexia would appear to begin to increase from Year 3, with steady rises in subsequent years; this pattern was evident amongst females and males. Change was more noticeable amongst females, with the biggest differences in Year 3 (2.0) and Year 4 (1.8); among males, change was highest in Year 3 (1.3).

A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest for both genders in MDM 5 in 2010/11 and in 2018/19. There was little distinction across MDM at Stage 5 in both years, with multiple instances of 0.0%. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Fermanagh and

Strabane districts in 2010/11 and in Fermanagh and Omagh districts in 2018/19 (Maps 1 - 2). There was insufficient data to map by LGD at Stage 5.

Map 1 & 2: Distribution of Dyslexia/SpLD in primary schools at Stages 1-4 by pupil LGD

Council Boundaries
Dyslexia/SPLD Primary (Stages 1-4) 2010/11
- 0% - 0.66%
- 0.67% - 1.42%
- 1.43% - 1.94%
- 1.95% - 2.93%
- 2.94% - 5.17%

0   15   30 Miles

Council Boundaries
Dyslexia/SPLD Primary (Stages 1-4) 2018/19
- 0.6% - 0.67%
- 0.68% - 1.38%
- 1.39% - 1.96%
- 1.97% - 3.14%
- 3.15% - 4.28%

0   15   30 Miles

In **secondary schools**, comparison of prevalence rates showed an increase over time across regions; this was evident at Stages 1-4 and Stage 5 for both genders (Figures 31 and 32). Prevalence rates were highest in the Western region at Stages 1-4 for females and males (2.43% - 2.54% and 5.03% - 3.21% respectively), although change was lower here than elsewhere (1.0 and 0.6 respectively). Change was highest in the Belfast region for both genders (2.7 and 2.0 respectively). Prevalence rates were also highest in the Western region at Stage 5 (0.15% - 0.70% for females and 0.90% - 1.27% for males), giving a change of 4.7 and 1.4 respectively. The biggest change was in the Belfast region for females (6.8) and South Eastern region for males (12.3).
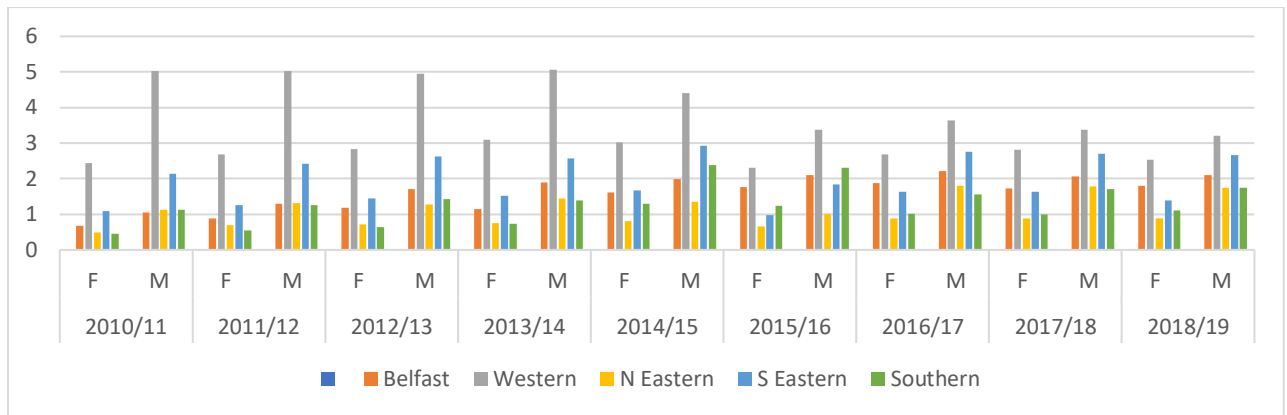
Figure 31. Prevalence of Dyslexia/SpLD in secondary schools at Stages 1-4 by region and gender
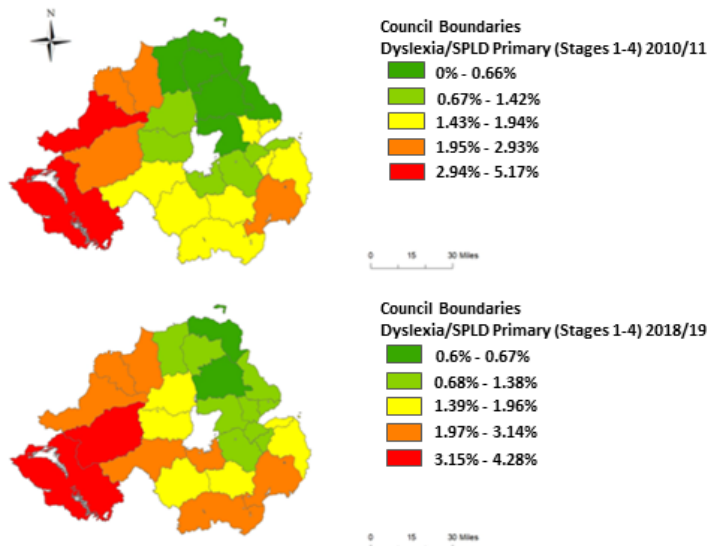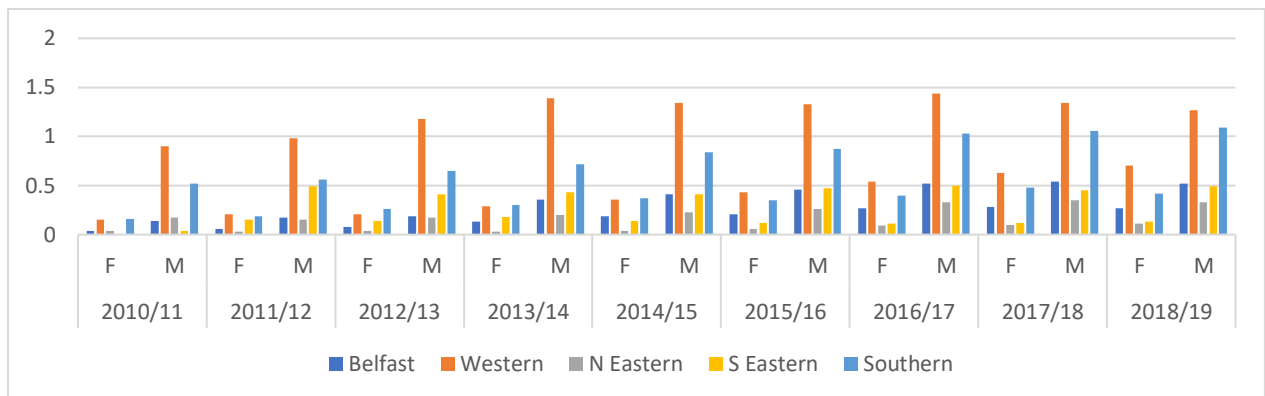

Figure 32. Prevalence of Dyslexia/SpLD in secondary schools at Stage 5 by region and gender

Comparison of Dyslexia/SpLD by **year group** indicated a growth in prevalence rates at Stages 1-4 and 5 for both genders (the only exception was a decrease in males in Year 13 and no change in males in Years 9 and 10 at Stages 1-4). Overall, prevalence rates for both genders at Stages 1-4 and Stage 5 appeared to stabilise and/or decrease slightly between Years 8 and 12, with minor increases noted in a few instances. Calculation of change ratios showed a bigger difference between prevalence rates amongst females, with the biggest change ratio at Stages 1-4 in Year 13 (2.4) and Year 11 (1.7). Amongst males, change ratios showed the biggest difference at Stages 1-4 in Years 8 and 14 (1.3 in both instances) and at Stage 5 in Year 12.

A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM3 and 5 in 2010/11 and in MDM 5 in 2018/19. At Stage 5, rates were highest in MDM 4 in 2010/11and MDM 5 in 2018/19.

In **grammar schools**, comparison of prevalence rates showed a general increase over time. At Stages 1-4 (Figure 33), the highest prevalence rate was in Belfast amongst females and males (0.82% - 1.01% and 1.76% - 1.79% respectively), with little change (1.2 and 1.0 respectively). Higher changes were evident in the North Eastern region for females (2.3) and Southern region for males (3.0). At Stage 5 (Figure 34), prevalence rates were very low, with all regions showing 0.0% at different time points for both females and males. In this context, there was higher change in the Southern region for females (3.0) and in the Western region for males (7.5).

Figure 33. Prevalence of Dyslexia/SpLD at Stages 1-4 by region and gender
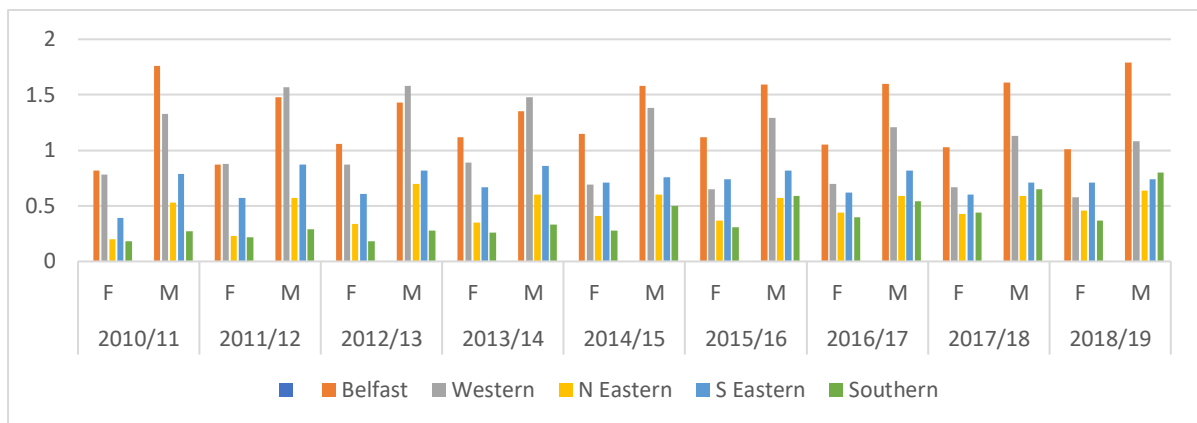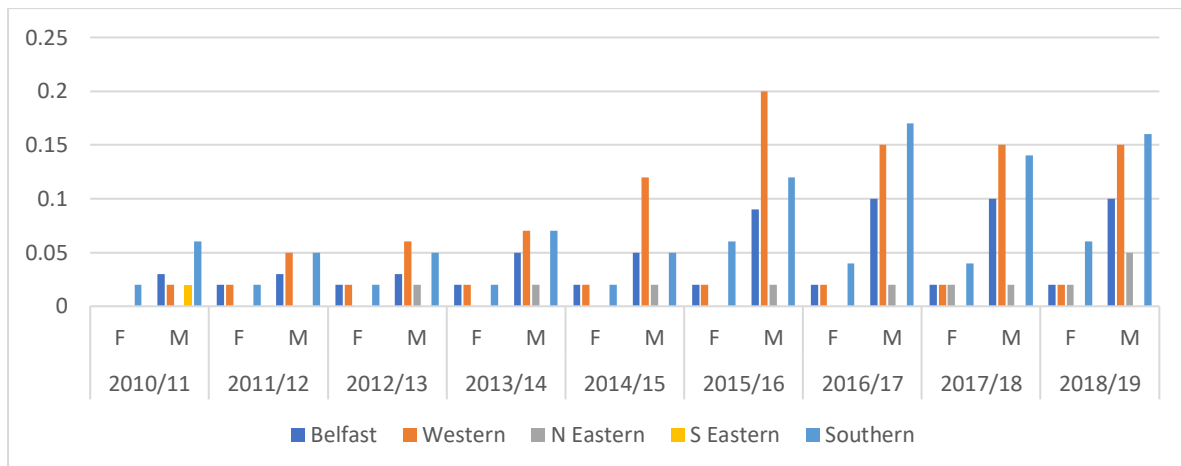

Figure 34. Prevalence of Dyslexia/SpLD in grammar schools at Stage 5 by region and gender

Comparison of Dyslexia/SpLD by **year group** indicated a growth in prevalence rates at Stages 1-4, with little data to draw definitive estimates at Stage 5. Across year groups at Stages 1-4, there appeared to be a gradual and relatively steady pattern of growth in prevalence rates

amongst females, with slightly more variation amongst males. Change ratios were higher amongst females, with the biggest differences in Year 9 (2.5) and Year 8 (2.0). Change ratios were lower amongst males, with the biggest difference in Year 9 (1.3). At Stage 5, the only evidence of prevalence increase was amongst male pupils in Year 9; as a change ratio, this showed a difference of 2.0.

A comparison of prevalence rates by **MDM** between 2010/11 and 2018/19 showed rates at Stages 1-4 were higher among both genders in MDM 10. At Stage 5, rates were mostly 0.0% at the two time points. Mapping by LGD using pupils' truncated post code was undertaken at post-primary level so distribution at Stages 1-4 and Stage 5 must be interpreted in relation to secondary and grammar schools. At Stages 1-4, the highest density was in Fermanagh, Omagh, Strabane, Derry and Limavady districts in 2010/11, and in Fermanagh and Omagh districts in 2018/1. At Stage 5, higher densities were in Fermanagh, Omagh, Strabane, Derry, Limavady, Cookstown, Dungannon, Armagh, Banbridge, Down and Castlereagh districts; in 2018/19 density was highest in Fermanagh only (Maps 3-6).

Map 3 & 4: Distribution of Dyslexia/SpLD in post-primary schools at Stages 1-4 by pupil LGD
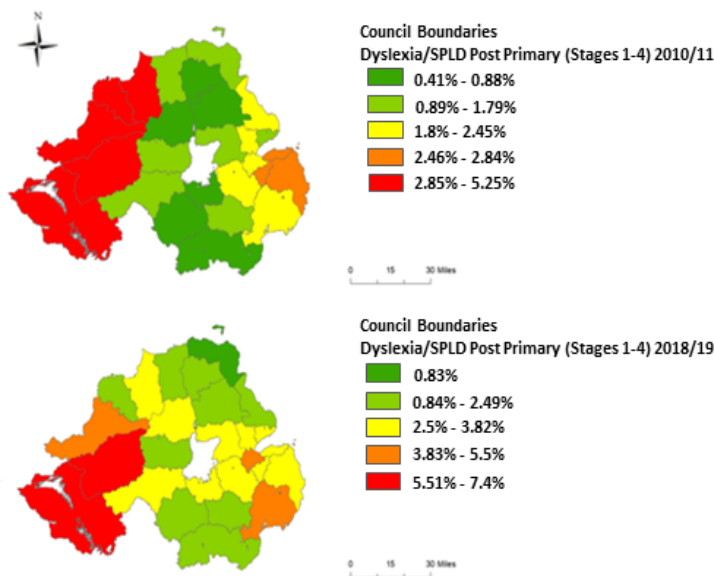
Map 5 & 6: Distribution of Dyslexia/SpLD in post-primary schools at Stage 5 by pupil LGD

Council Boundaries
Dyslexia/SPLD Post Primary (Stage 5) 2010/11
- 0%
- 0.01% - 1%

Council Boundaries
Dyslexia/SPLD Post Primary (Stage 5) 2018/19
- 0% – 0.21%
- 0.22% - 0.72%
- 0.73% - 1.2%
- 1.21% - 1.67%
- 1.68% - 4.08%
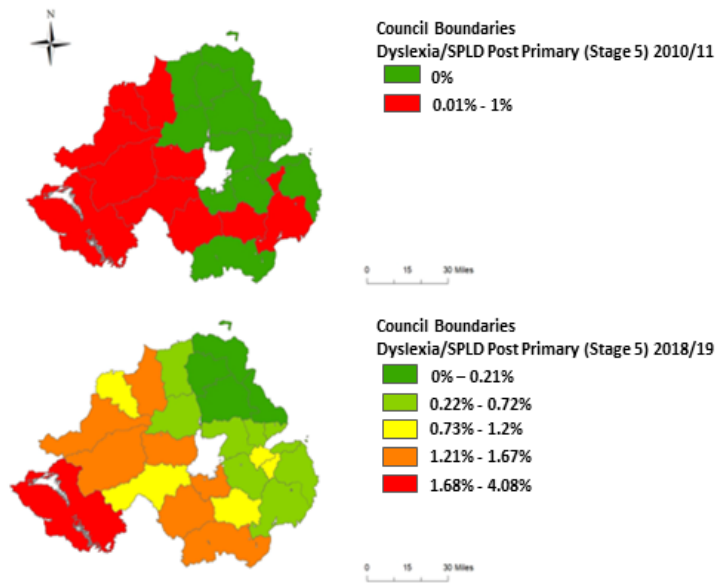
6.2 Mild Learning Difficulties

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Key Messages

- Comparison at regional level showed overall prevalence rates for *Mild Learning Difficulties* at Stages 1-4 decreased in primary schools and fluctuated in secondary and grammar schools. At Stage 5, rates decreased to 0.0% across all school types from 2016/17 onwards.
- At Stages 1-4, prevalence rates were highest in secondary schools and higher for males across school types.
- The highest change ratios were evenly distributed between females and males.
- Over time, higher prevalence rates by MDM tended to be concentrated in MDM 1 pupils in primary and secondary schools and MDM 8 and 10 for pupils in grammar schools.
- Distribution by LGD at Stages 1-4 showed little change in the distribution of high-density districts in primary schools but an expansion in post-primary schools over time.

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In **primary schools** there was a decrease in Mild Learning Difficulties over time and for both genders at Stages 1-4 and Stage 5 (Figures 35 and 36). At Stages 1-4, prevalence rates were highest in the Belfast region for females and males (3.40% - 2.44% and 4.23% - 2.86% respectively). Highest change ratios were for females in the Western and North Eastern regions (0.6 in both instances) and for males in the Western region (0.5). At Stage 5, rates decreased to 0.0% for both genders from 2016/17 onwards.
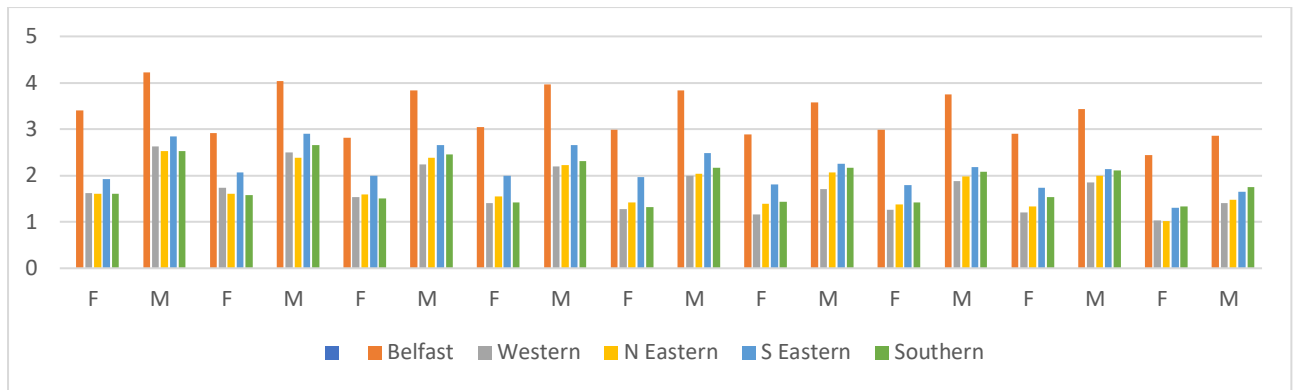
Figure 35. Prevalence of Mild Learning Difficulties in primary schools at Stages 1-4 by region and gender
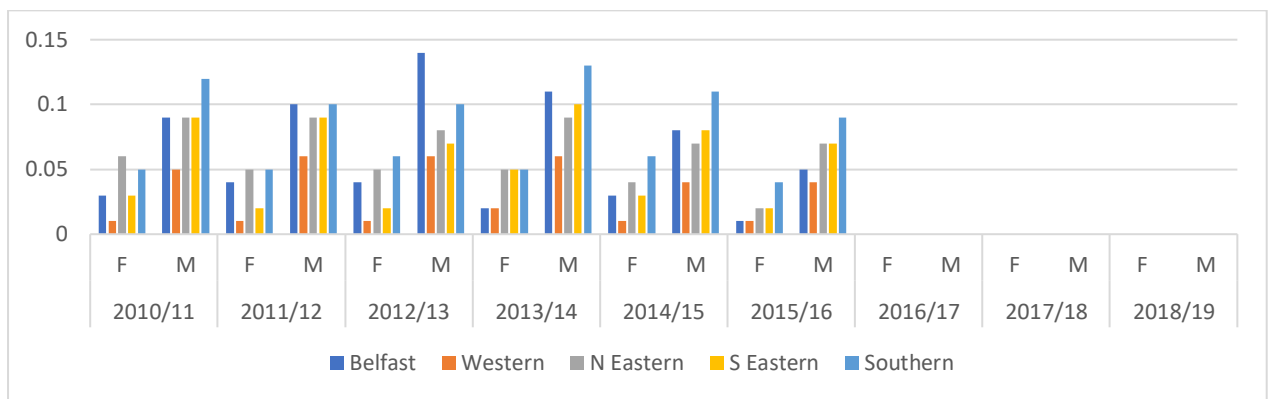
Figure 36. Prevalence of Mild Learning Difficulties at Stage 5 by region and gender

Comparison of Mild Learning Difficulties by **year group** indicated a decrease in prevalence rates over time at Stages 1-4, with little data to draw definitive estimates at Stage 5. Analysis of prevalence rates within year groups revealed a noticeable increase between Year 2 and Year 5, with rates largely decreasing in Years 6 and 7; this pattern was evident amongst females and males. Calculation of change ratios showed little difference in prevalence rate decrease amongst females and males. A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and in 2018/19. At Stage 5, there were no recorded prevalence rates over MDM at both time points. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Larne, Ards, Belfast, Lisburn and Banbridge districts in 2010/11; highest density remained in these districts in 2018/19 with the addition of Ballymoney. At Stage 5, density was highest in Moyle in 2010/11, changing to Belfast and Down in 2018/19 and in Fermanagh and Omagh districts in 2018/19 (Maps 7 - 10).

Map 7 & 8: Distribution of Mild LD in primary schools at Stages 1-4 by pupil LGD

Council Boundaries
Mild Learning Difficulties Primary (Stages 1-4) 2010/11
- 3.5% - 3.95%
- 3.96% - 4.56%
- 4.57% - 5.47%
- 5.48% - 6.42%
- 6.43% - 10.54%

Council Boundaries
Mild Learning Difficulties Primary (Stages 1-4) 2018/19
- 1.61% - 1.92%
- 1.93% - 2.54%
- 2.55% - 3.16%
- 3.17% - 4.14%
- 4.15% - 6.89%

Map 9 & 10: Distribution of Mild LD in primary schools at Stage 5 by pupil

Council Boundaries
Mild Learning Difficulties Primary (Stage 5) 2010/11
- 0%
- 0.01% - 0.21%
- 0.22% - 0.32%
- 0.33% - 0.46%
- 0.47% - 0.58%

Council Boundaries
Mild Learning Difficulties Primary (Stage 5) 2018/19
- 0%
- 0.01% - 0.11%
- 0.12% - 0.16%
- 0.17% - 0.23%
- 0.24% - 0.35%

In **secondary schools**, there were both increases and decreases in prevalence rates over time. At Stages 1-4 (Figure 37), rates were highest in the Belfast region for both genders (5.16% - 3.55% and 6.39% - 5.13% respectively), with this decrease shown in the change ratios (0.7 and 0.8 respectively). In contrast, prevalence rate increases for both genders in North Eastern and Southern regions gave changes of 1.9 and 1.4 respectively. At Stage 5, prevalence rates decreased to 0.0% for both genders from 2016/17 onwards (Figure 38).
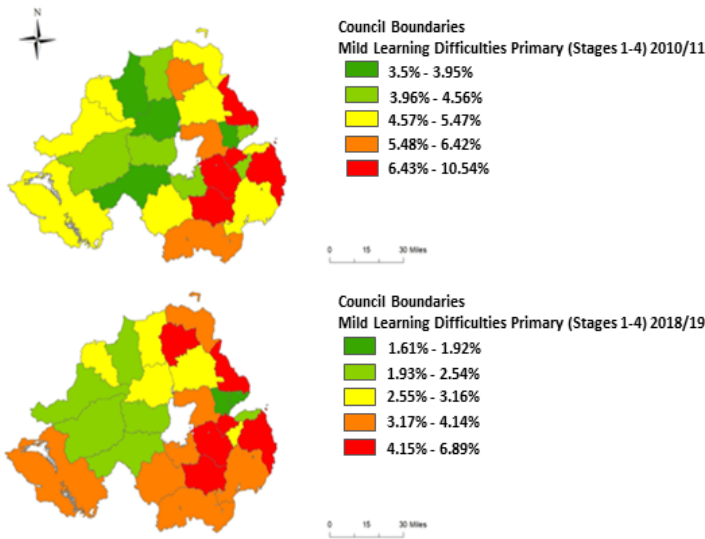
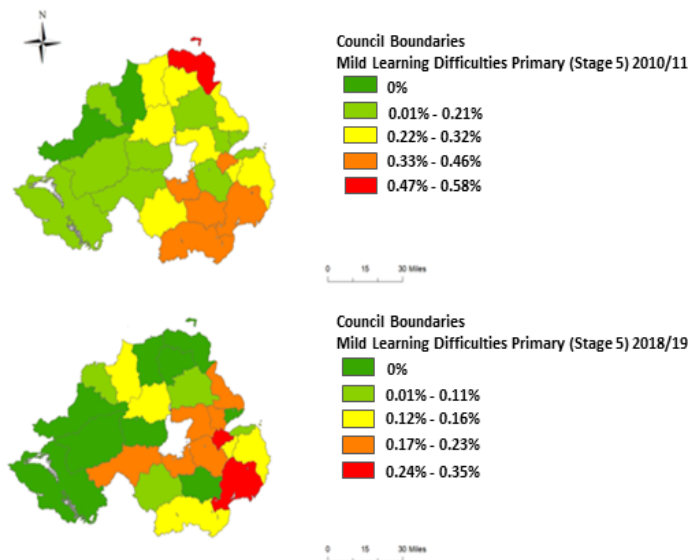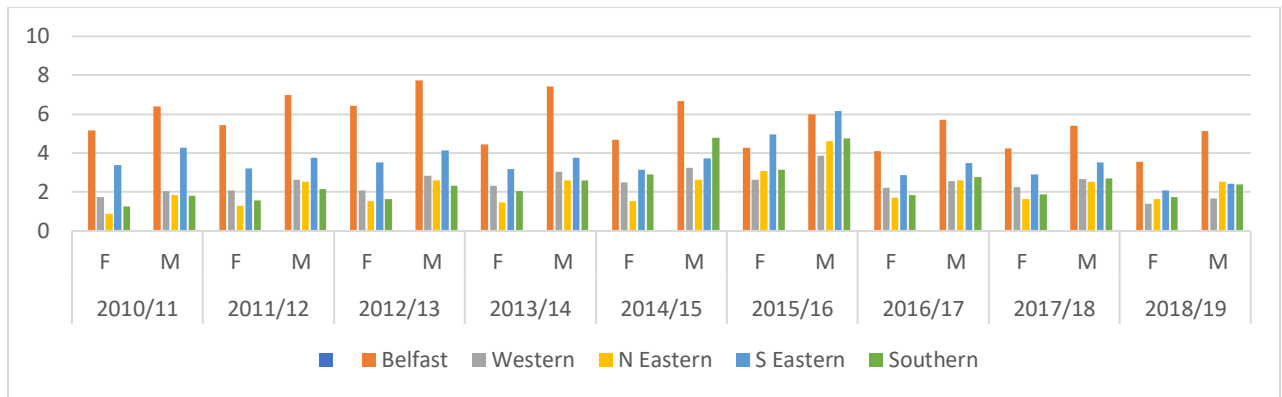**Figure 37. Prevalence of Mild Learning Difficulties in secondary schools at Stages 1-4 by region/gender**
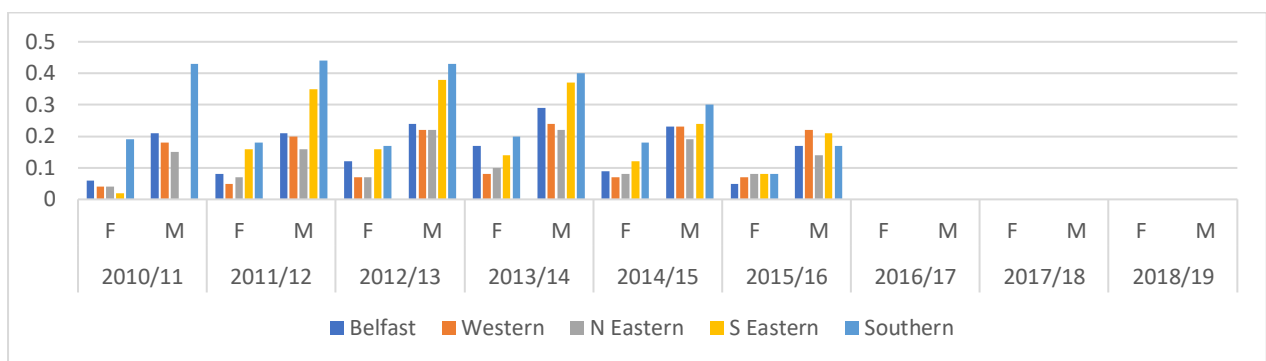
Figure 38. Prevalence of Mild Learning Difficulties in secondary schools at Stage 5 by region/gender

Comparison of Mild Learning Difficulties by **year group** indicated a general decrease or plateauing in prevalence rates over time at Stages 1-4, with some slight fluctuations in intervening years; there was little data to draw definitive estimates at Stage 5. Analysis of prevalence rates within year groups suggested a general downward trend between Year 8 and Year 12, with more noticeable decreases post-16. Calculation of change ratios showed little difference in prevalence rate decrease amongst females and males in Years 8-12. Although prevalence rates are very low post-16, slight prevalence increases gave change ratios in Years 13 (1.3) and 14 (1.5) among females and in Year 13 (1.2) among males. A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and in 2018/19. There was little distinction across MDM at Stage 5 at both time points.

In **grammar schools** there was some variation at Stages 1-4, with both increases and decreases in prevalence rates across regions (Figure 39). Rates were highest in the Western region for females (0.16% - 0.36%) and in the Belfast region for males (0.47% at both time

points). The highest change ratio for females and males was in Southern region (22.0 and 27.5 respectively). At Stage 5, prevalence rates decreased to 0.0% for both genders from 2016/17 onwards, with inconsistent rates prior to this, as illustrated in Figure 40.
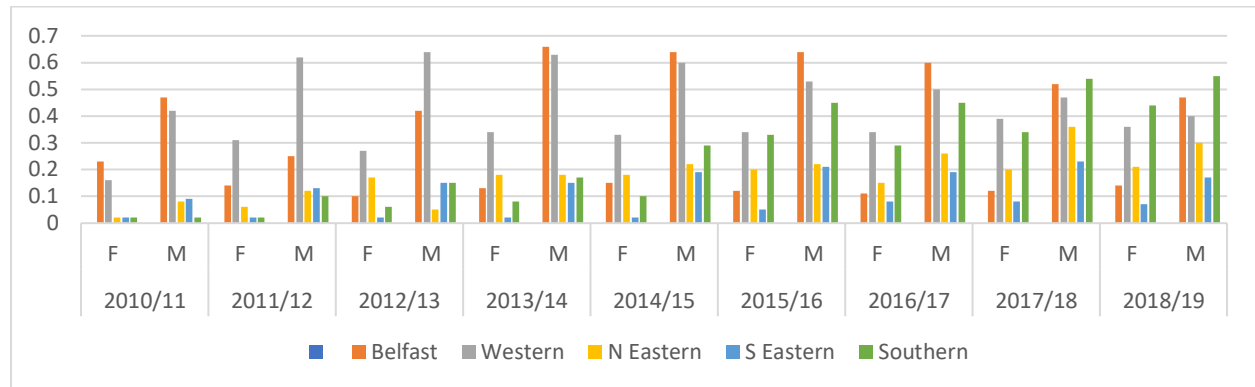
Figure 39. Prevalence of Mild Learning Difficulties in grammar schools at Stages 1-4 by region/gender
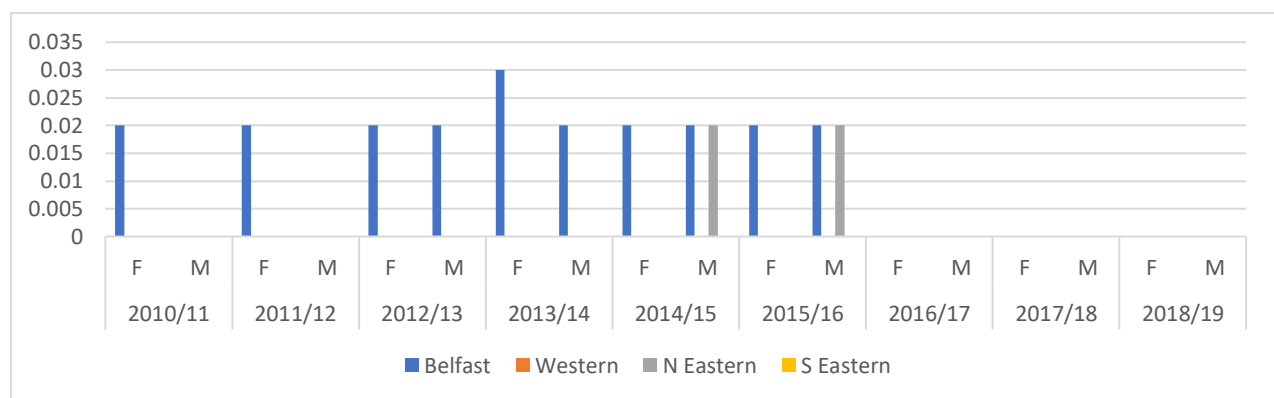
Figure 40. Prevalence of Mild Learning Difficulties in grammar schools at Stage 5 by region/gender

Comparison of Mild Learning Difficulties by **year group** indicated a general increase in prevalence rates over time at Stages 1-4, with some slight fluctuations in intervening years, although it is acknowledged rates are very small; there was little data to draw definitive estimates at Stage 5. Analysis of prevalence rates within year groups revealed fluctuations between Year 8 and Year 14. Change ratios showed some difference in prevalence rate increases over year groups, showing, for example, a change of 4.0 among females in Year 13 and a change of 3.0 among males in Year 8.

A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM 10 in 2010/11 and in MDM 8 in 2018/19. There was little distinction across MDM at Stage 5

at both time points. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Belfast and Castlereagh districts in 2010/11; in 2018/19, this had expanded to include Belfast, Ards, Moyle, Ballymoney, Dungannon and Fermanagh. At Stage 5, density was highest in Newry and Mourne and Armagh in 2010/11, shifting to Newry and Mourne and Belfast districts in 2018/19 (Maps 11 - 14).

Map 11 & 12: Distribution of Mild LD in post-primary schools at Stages 1-4 by pupil LGD
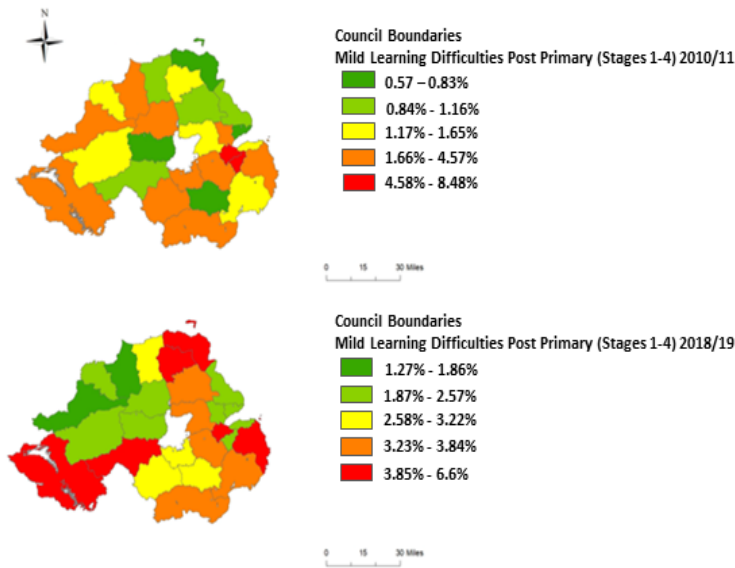
Map 13 & 14: Distribution of Mild LD in post-primary schools at Stage 5 by pupil LGD
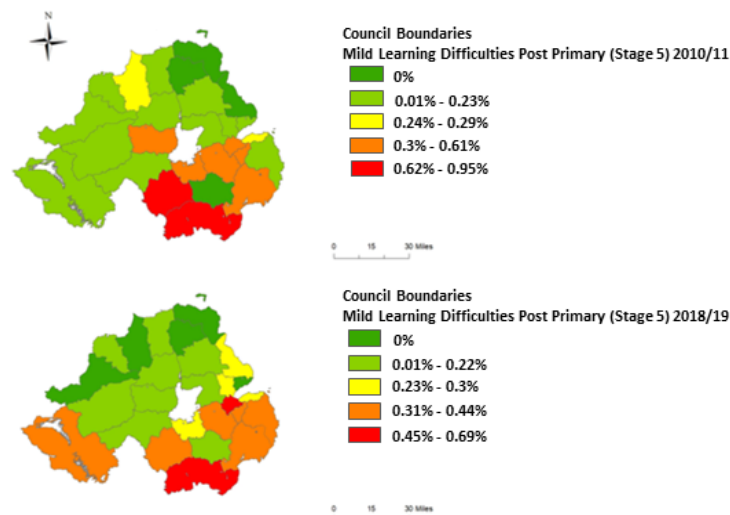
In **special schools** at Stage 5, there were fluctuations in prevalence rates for females and males across regions, with rates decreasing to 0.0% for both genders from 2016/17

onwards; rates were inconsistent prior to this, with more instances of 0.0% for males than females (Figure 41).
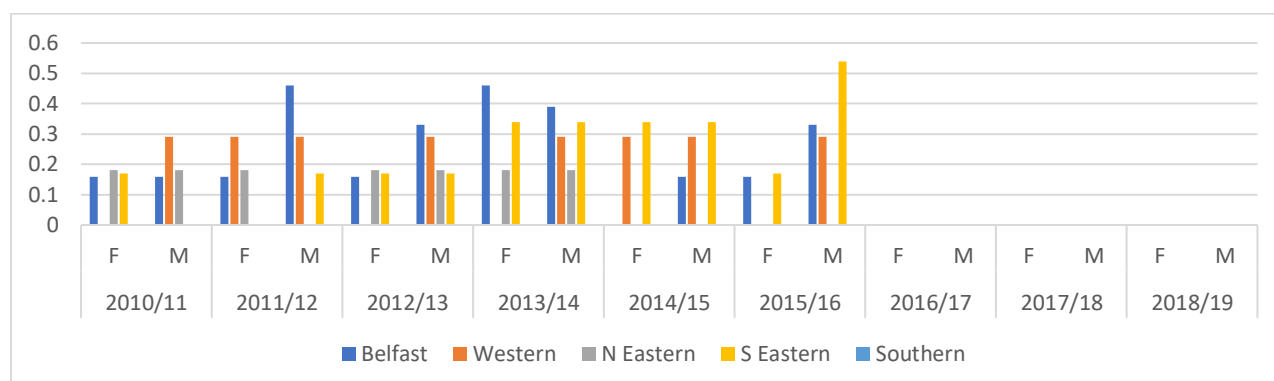
Figure 41. Prevalence of Mild Learning Difficulties in special schools at Stage 5 by region/gender

A comparison of prevalence rates by **MDM** showed rates at Stage 5 were highest in MDM 2 in 2010/11, with no recorded rates in 2018/19.

6.3   Moderate Learning Difficulties

Key Messages

- Comparison at regional level showed overall prevalence rates for *Moderate Learning Difficulties* generally increased in primary, post-primary and grammar at Stages 1-4, and increased in primary, secondary and special schools at Stage 5.
- At Stages 1-4, prevalence rates were highest in secondary schools for females and males; at Stage 5, rates were highest for both genders in special schools.
- The highest change ratios at Stages 1-4 and Stage 5 were for females; the highest change ratio for males related to decreases in prevalence rates.
- Over time, higher prevalence rates by MDM tended to be concentrated in MDM 1 pupils in primary and secondary schools at Stages 1-4; at Stage 5, higher prevalence rates were more consistently recorded in MDM 5 in primary and secondary schools and in MDM 1 in special schools.
- Distribution by LGD at Stages 1-4 saw a reduction of high-density districts in primary schools and a shift in districts for post-primary schools. At Stage 5, there

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> was more evidence of distribution change in post-primary schools, with little change in primary and special schools.

In **primary schools,** there was an overall decrease for both genders at Stages 1-4, and some variation at Stage 5 (Figures 42 and 43). At Stages 1-4, prevalence rates were generally higher in the Western region for females and males (0.39% - 0.23% and 0.67% - 0.34% respectively). Change ratios were higher in the Southern region for females (0.4) and Belfast region for males (0.3). At Stage 5, prevalence rates were highest in the North Eastern region for females and males (0.25% - 0.25% and 0.50% - 0.68% respectively). Highest change ratios were in Western region for females (1.8) and in Western and North Eastern regions for males (1.4 in both instances).
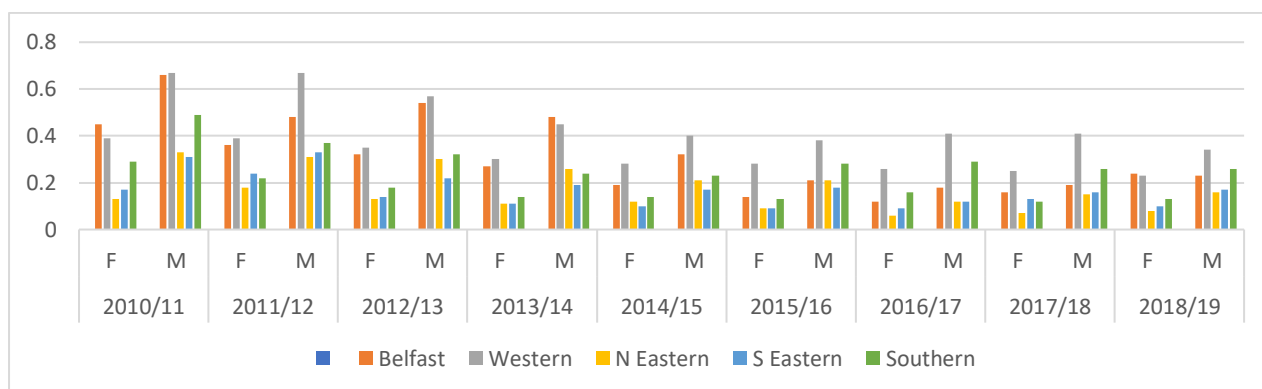
Figure 42. Prevalence of Moderate Learning Difficulties in primary schools at Stages 1-4 by region/gender
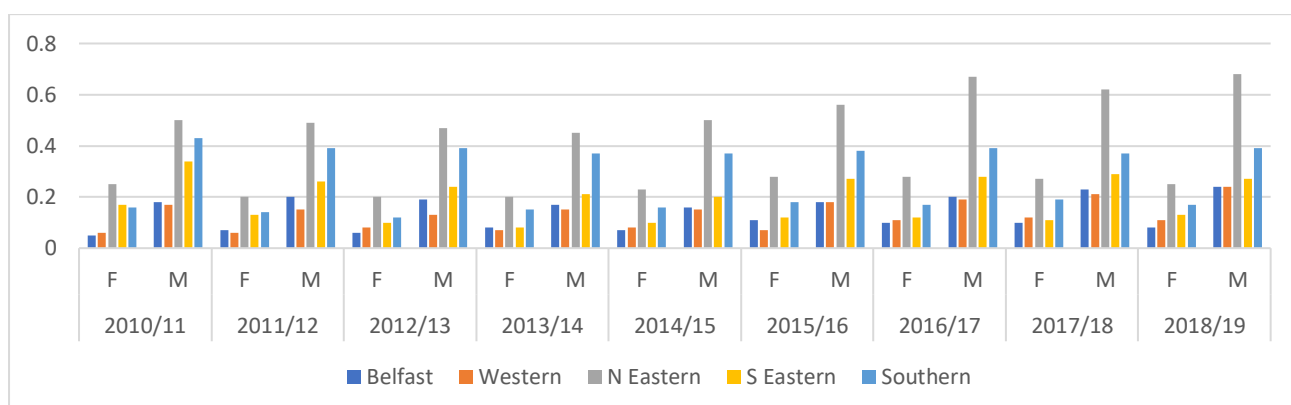
Figure 43. Prevalence of Moderate Learning Difficulties in primary schools at Stage 5 by region/gender

Comparison of Moderate Learning Difficulties by **year group** indicated prevalence rates decreased or plateaued over time at Stages 1-4 amongst females and males. Analysis of prevalence rates within year groups showed a general pattern of gradual increase from Year 1 to Year 7 for both genders. Calculation of change ratios showed little difference in prevalence rate decrease amongst females and males. At Stage 5, prevalence rates were consistently low or 0.0%, with minimal or no change over time across year groups.

A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest for both genders in MDM 1 in 2010/11 and in MDM 1, 2 and 3 in 2018/19. At Stage 5, they were higher in MDM 2 and 5 in 2010/11 and MDM 1,2 and 3 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 showed the highest density in Belfast, Omagh, Strabane and Fermanagh districts in 2010/11 and in Strabane district only in 2018/19. At Stage 5, density was highest in Coleraine, Ballymoney, Moyle and Down in 2010/11, remaining in Coleraine, Ballymoney and Moyle along with Larne in 2018/19 (Maps 15 - 18).

Map 15 & 16: Distribution of Moderate LD in primary schools at Stages 1-4 by pupil LGD
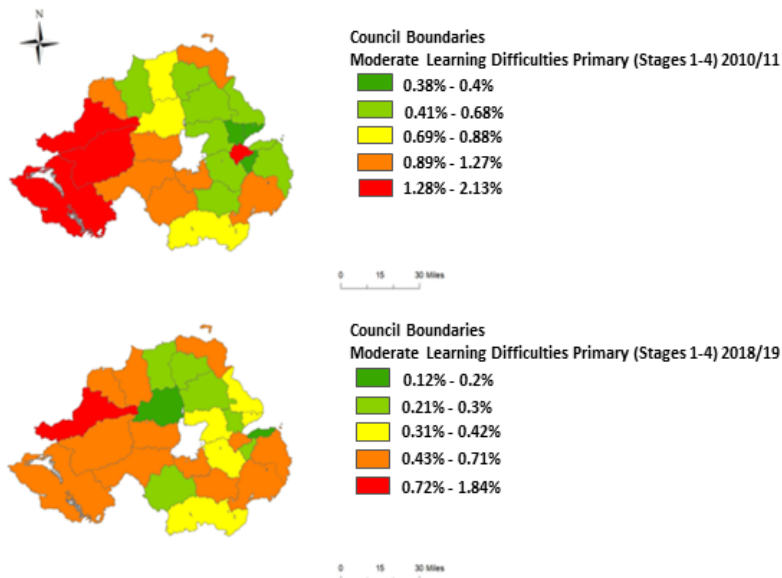
Map 17 & 18 Distribution of Moderate LD in primary schools at Stage 5 by pupil LGD
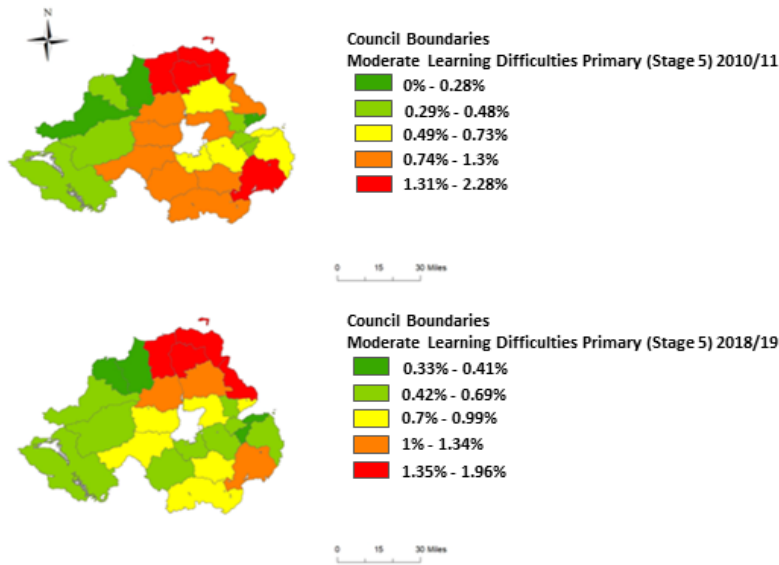
In **secondary schools** at Stages 1-4, prevalence rates showed a decrease across regions for both genders, with some fluctuations in intervening years (Figure 44). Prevalence rates were highest in the Belfast region for females (1.25% - 0.68%) and in the Western region over time for males (0.84% - 0.44%). Change ratios were highest in the South Eastern region (0.2) for both genders. At Stage 5, prevalence rates increased and decreased by region and by gender (Figure 45). Rates were generally higher in the North Eastern region for females and males (0.75% - 0.78% and 1.45% - 1.39% respectively). Change ratios were highest in Belfast region for females and males (1.4 and 1.2 respectively).
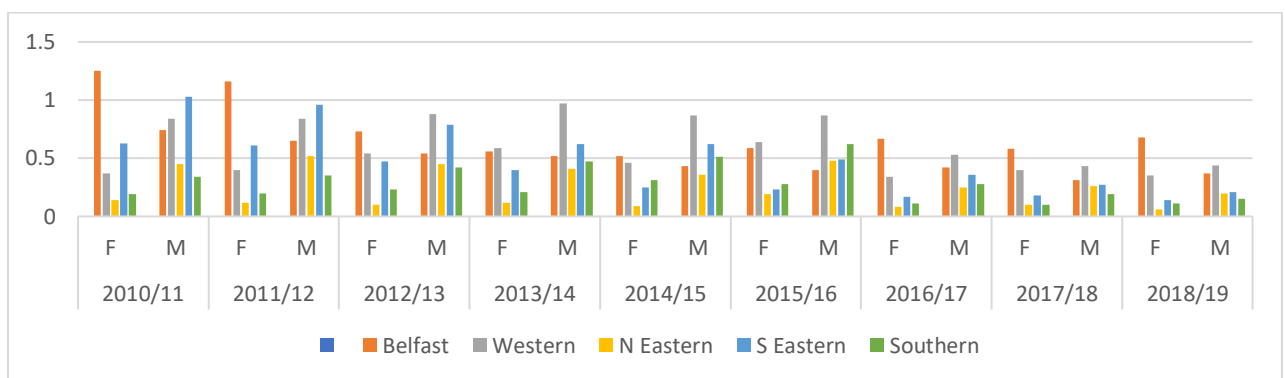
Figure 44. Prevalence of Moderate Learning Difficulties in secondary schools at Stages 1-4 by region/gender
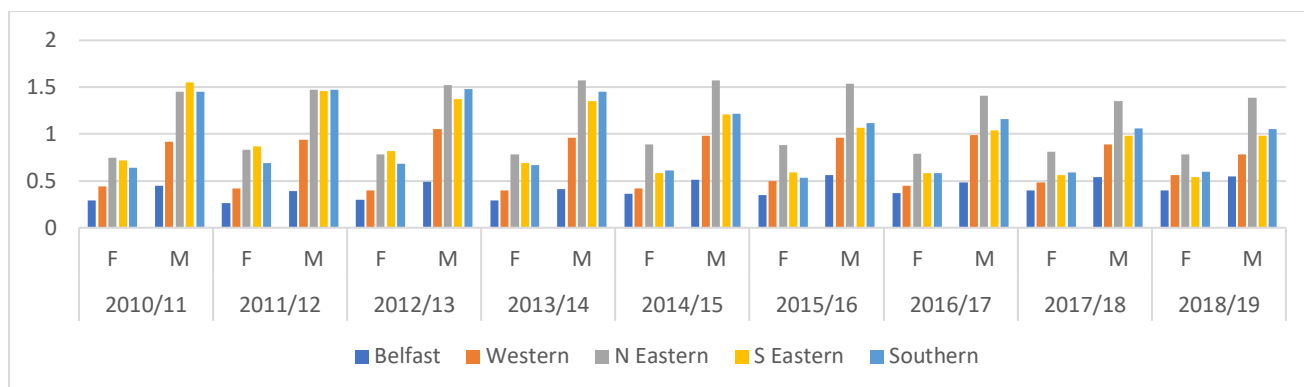
Figure 45. Prevalence of Moderate Learning Difficulties in secondary schools at Stage 5 by region/gender

Comparison of Moderate Learning Difficulties by **year group** indicated a general decrease or plateauing in prevalence rates over time at Stages 1-4, with minimal fluctuations in intervening years and across year groups. Prevalence rates at Stage 5 were generally higher, particularly for males in Years 8-12, than at Stage 4. Calculation of change ratios in both instances showed little difference between genders. A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and in 2018/19. At Stage 5, rates were highest in MDM 5 in 2010/11 and in MDM 2 and 5 in 2018/19.

In **grammar schools,** prevalence rates were low at Stages 1-4 and Stage 5 (Figures 46 and 47). At Stages 1-4, prevalence rates over time were slightly higher in the Western region for females and males (0.02% - 0.07% and 0.23% - 0.02% respectively). Change ratios were highest for females in the Western region (3.5) and for males in the Southern region (2.5). At Stage 5, prevalence rates were again very low or 0.0% across regions and for both genders. With the limited data, highest change ratios for females and males (2.0 and 7.0 respectively) were in the Southern region.

Figure 46. Prevalence of Moderate Learning Difficulties in grammar schools at Stage 1-4 by region/gender

**Figure 47. Prevalence of Moderate Learning Difficulties in grammar schools at Stage 5 by region/gender**

Comparison of Moderate Learning Difficulties by **year group** yielded little data at Stages 1-4 and 5, with prevalence rates for both genders consistently very low or 0.0% over time. A comparison of prevalence rates by **MDM** showed little distinction or 0.0% at Stages 1-4 and Stage 5 in 2010/11 and 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Belfast, Ards, Lisburn, Omagh and Strabane districts in 2010/11; in 2018/19, density had shifted to Coleraine, Ballymoney, Banbridge and Down. At Stage 5, density was highest in Derry in 2010/11, shifting to Belfast, Moyle, Omagh and Strabane districts in 2018/19 (Maps 19 - 22).

Map 19 & 20: Distribution of Moderate LD in post-primary schools at Stages 1-4 by pupil LGD
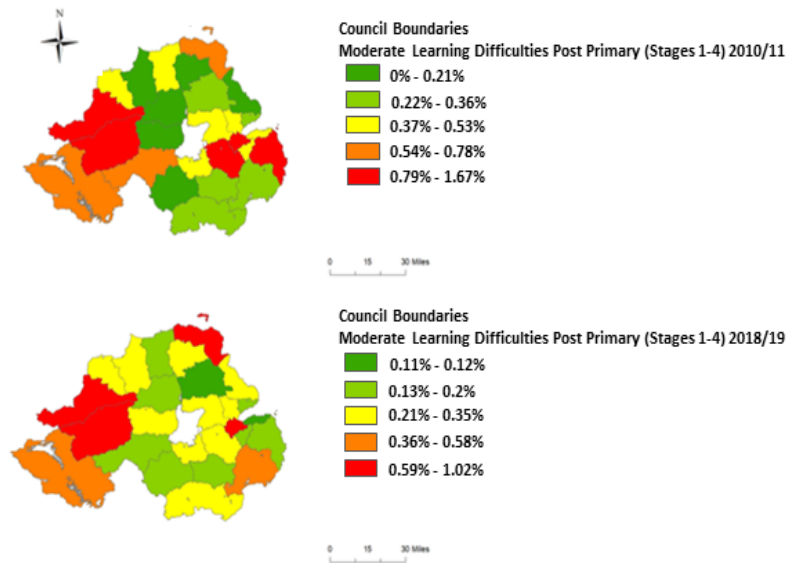
Map 21 & 22: Distribution of Moderate LD in post-primary schools at Stage 5 by pupil LGD
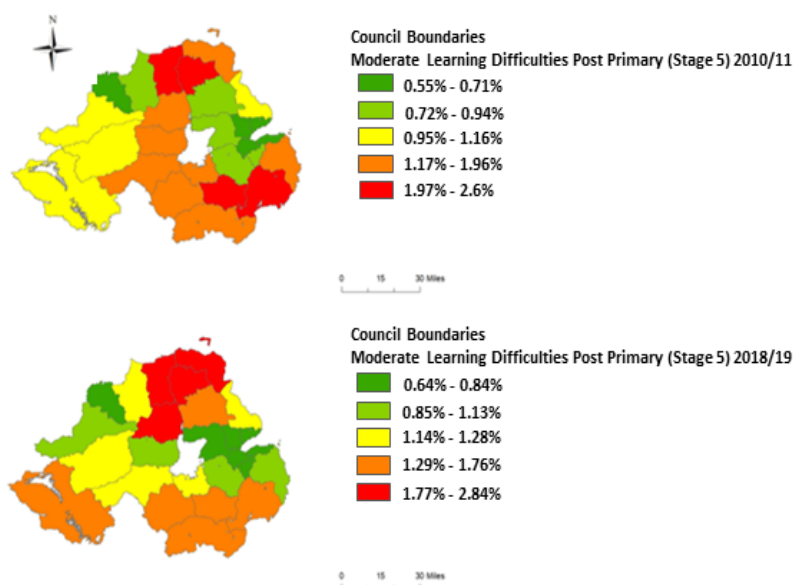
In **special schools**, prevalence rates predominantly increased over time across regions for both genders at Stage 5 (Figure 48). Prevalence rates were higher for males, particularly in Western and Southern regions, whilst there were fluctuations across regions for females. Change ratios were highest for females in the Southern region (2.0) and for males in the North Eastern region (1.3).
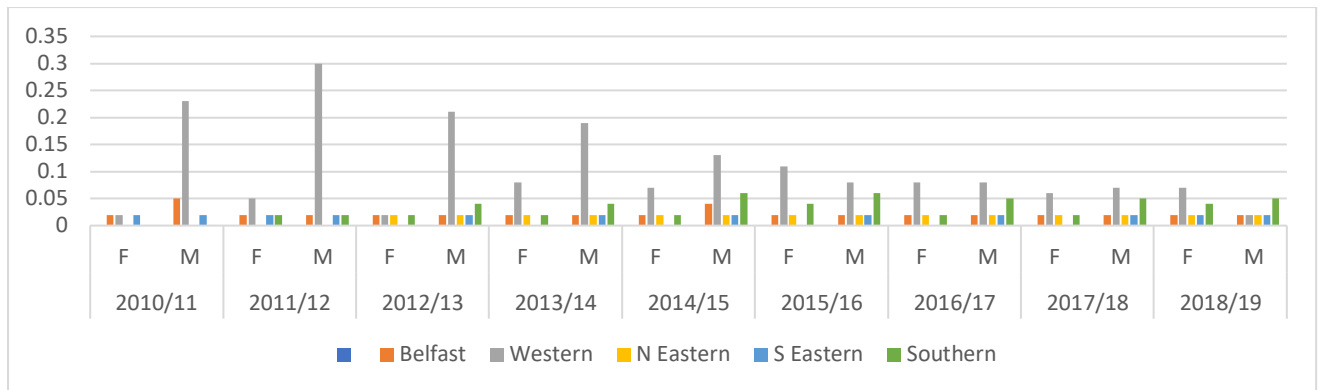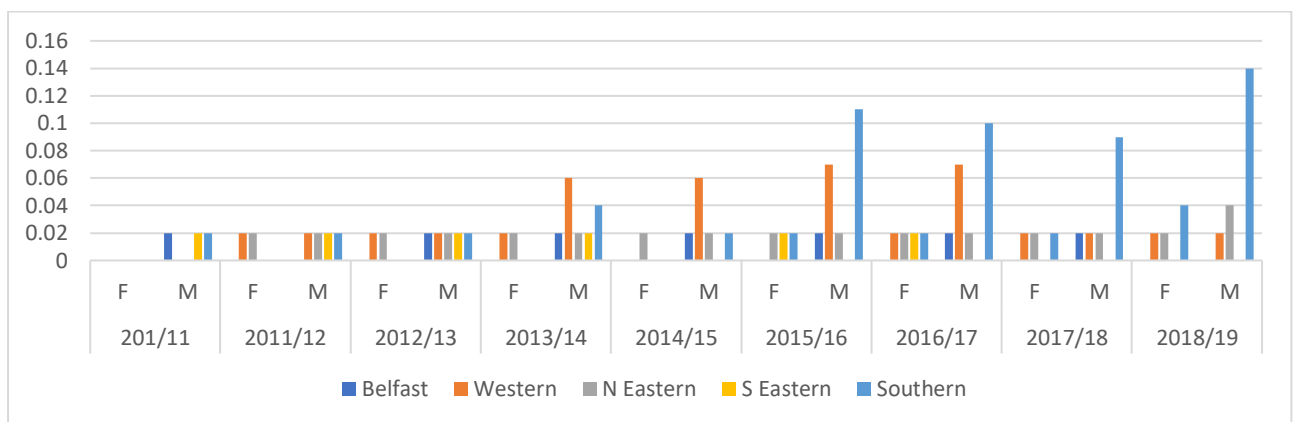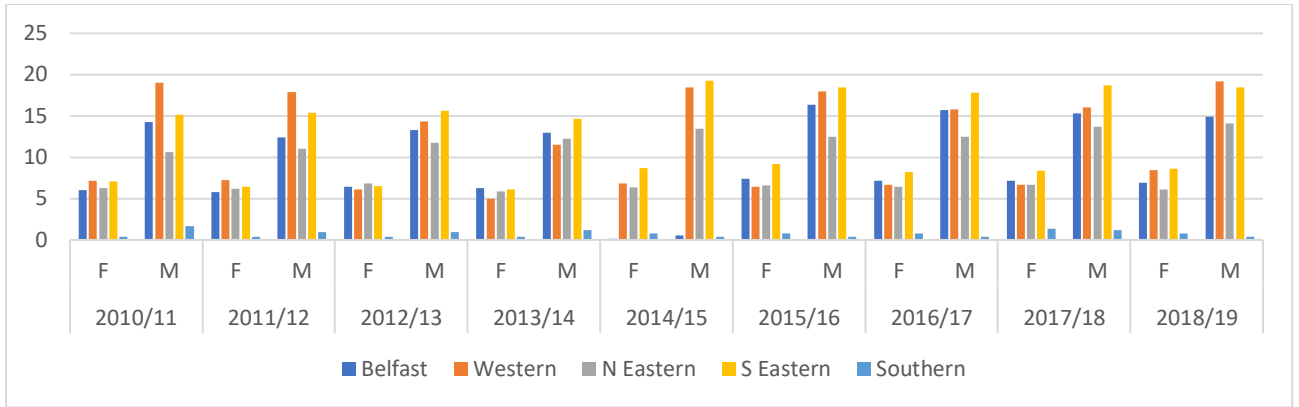
Figure 48. Prevalence of Moderate Learning Difficulties in special schools at Stage 5 by region/gender

Comparison of Moderate Learning Difficulties by **year group** indicated a general decrease or plateauing in prevalence rates over time at Stage 5, with minimal fluctuations in intervening years and across year groups. Prevalence rates appeared to peak between Years 9 and 12 for both genders over time, although change ratios were higher for females in Years 15 and 14 (5.0 and 3.1 respectively) and for males in Years 15 and 3 (2.9 and 2.3 respectively). A comparison of prevalence rates by **MDM** showed rates at Stage 5 were highest in MDM 1 in 2010/11 and in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stage 5 showed the highest density in Fermanagh, Derry, Limavady and Lisburn districts in 2010/11, shifting to Derry, Ballymena and Lisburn districts in 2018/19 (Maps 23 and 24).

Map 23 & 24: Distribution of Moderate LD in special schools at Stage 5 by pupil LGD
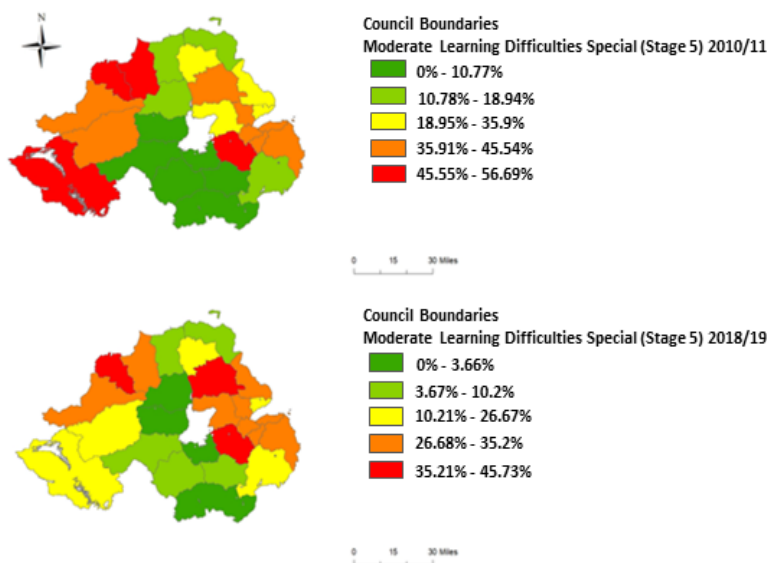
Section 7: Social, Emotional and Behavioural: Individual SEN at regional and school level

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Key Messages

- Comparison at regional level showed overall prevalence rates for *Social, Emotional and Behavioural* generally increased in primary, secondary and grammar schools, with more fluctuations in special schools.
- Although prevalence rates were typically higher among males across regions and school types there were some distinctions. In secondary schools, rates for females in the Belfast region were consistently higher at Stages 1-4; in special schools, although rates for males were consistently higher, these decreased in most regions over time whilst rates for females increased in some regions.
- In almost all instances, the highest change ratios were recorded among females across school types at Stages 1-4 and Stage 5.
- Overall prevalence rates increased across schools for FSME pupils and decreased for non-FSME pupils, with highest rates in primary schools. Higher prevalence rates by MDM tended to be concentrated in MDM 1 for pupils in primary, secondary and special schools.

</div>

At regional level, comparison of overall prevalence rates (Appendix 6) for Social, Emotional and Behavioural between 2010/11 and 2018/19 showed an overall steady increase over time (9.28% and 17.65% respectively), a change of 1.9 (Figure 49). The highest prevalence rates were in the Belfast region (2.91% - 5.03% respectively), followed by the South Eastern region (1.93% - 4.24%). The biggest change was in the Western region (2.3), with the lowest change in the North Eastern region (1.6).
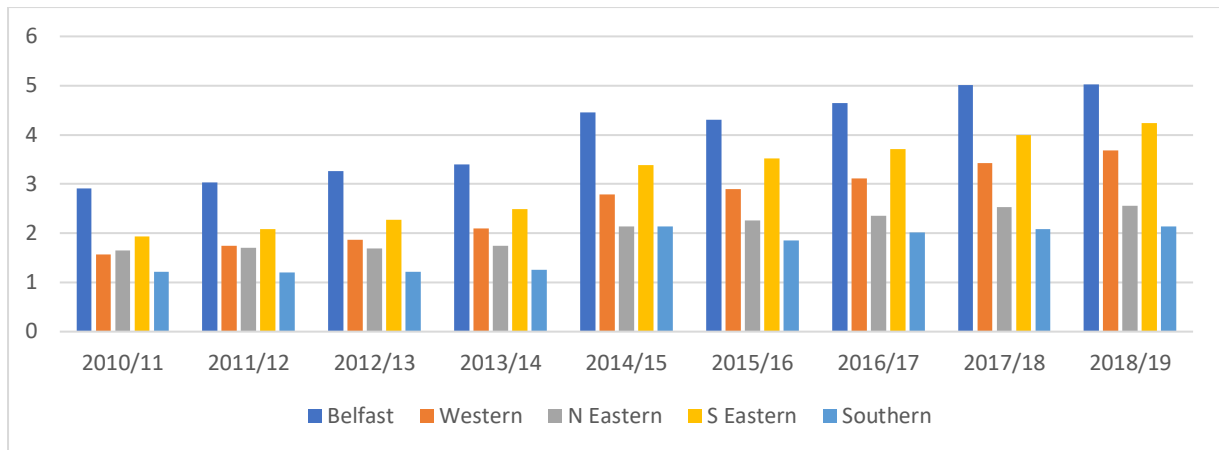
Figure 49. Social, Emotional and Behavioural prevalence rates

Further comparison of the data at 2010/11 and 2018/19 by SEN Stage showed some distinctions by gender and school type. In **primary schools**, prevalence rates were consistently higher amongst males across all regions at Stages 1-4 and Stage 5. At Stages 1-4 (Figure 50), prevalence rates, overall, were highest for both females (0.70% - 1.33% respectively) and males (2.32% - 3.56% respectively) in Belfast. The biggest change was in the Western and South Eastern regions for males (1.7 in both instances) and in the South Eastern region for females (2.2). At Stage 5 (Figure 51), prevalence rates were higher overall for males in the South Eastern region (0.38% - 0.63% respectively) and for females in the Belfast region (0.07% - 0.13%). The biggest change for both genders was in the Western region, with a change of 2.2 for males and 3.3 for females.
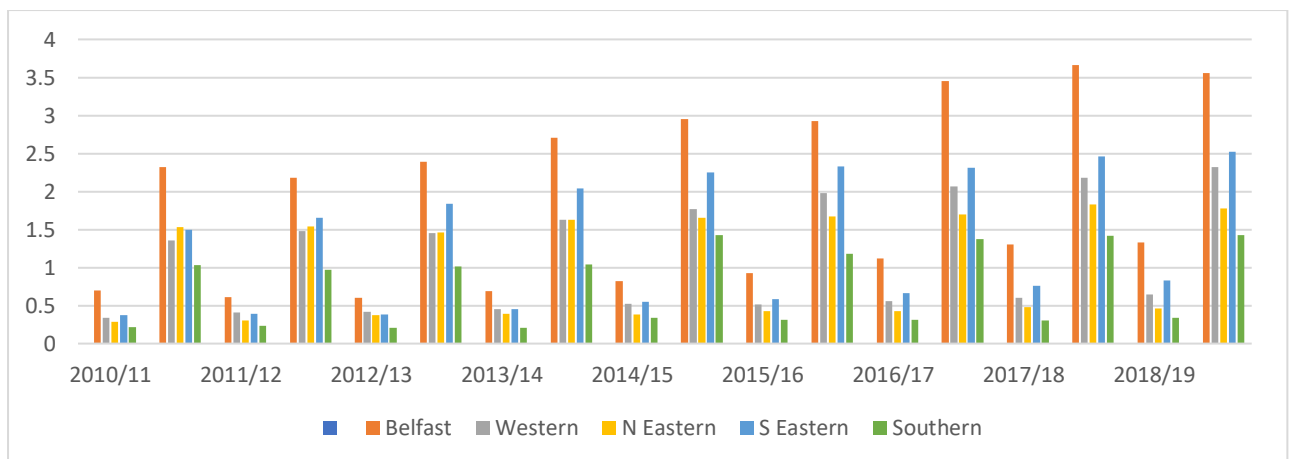
Figure 50. Social, Emotional and Behavioural in primary schools at Stages 1-4 by region and gender
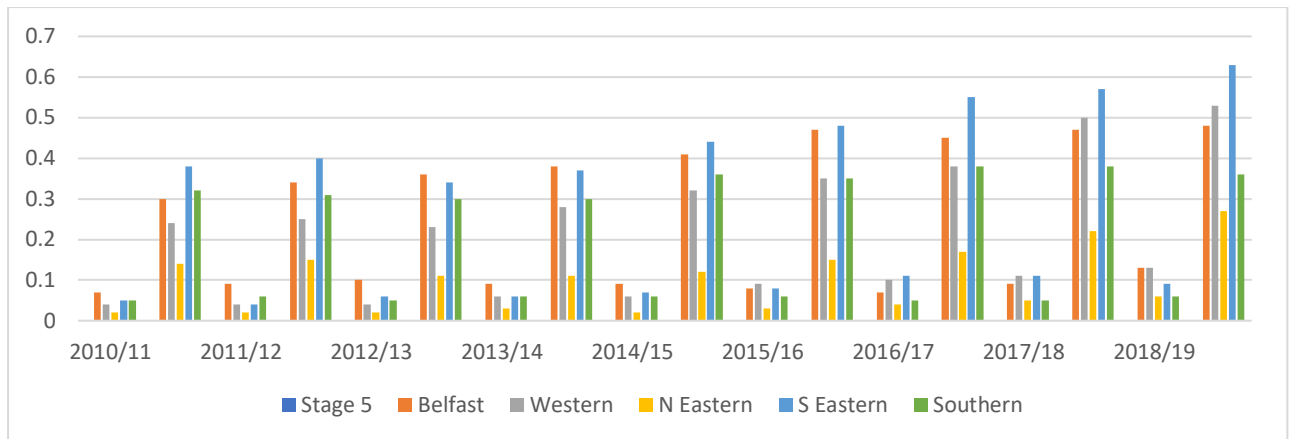
Figure 51. Social, Emotional and Behavioural in primary schools at Stages 5 by region and gender

In **secondary schools**, prevalence rates were highest for females and males in the Belfast region at Stages 1-4 (3.68% - 2.96% and 2.31% - 3.02% respectively) (Figure 52). Notably, this was the only instance when rates for females consistently exceeded that for males; elsewhere, rates were consistently higher amongst males. Change ratios were higher for females in the Western region (1.9) and for males in the South Eastern region (1.8). At Stage 5 (Figure 53), prevalence rates were higher overall in the Belfast region for males (0.74% - 1.52%) and in the Western region for females (0.19% - 0.32%). Change was highest for males (2.2) in the Western region and for females in the South Eastern region (2.5).

Figure 52. Social, Emotional and Behavioural in secondary schools at Stages 1-4 by region and gender
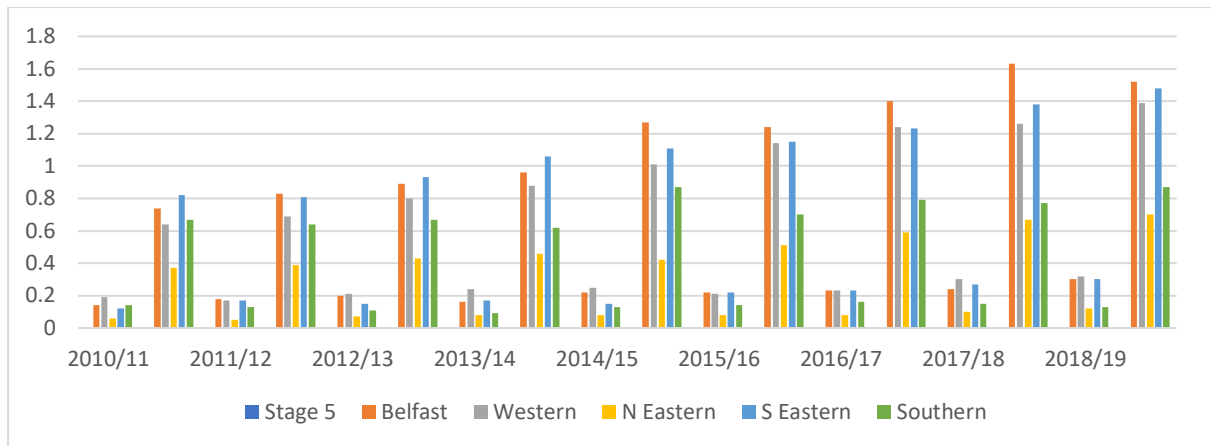
Figure 53. Social, Emotional and Behavioural in secondary schools at Stage 5 by region and gender

In **grammar schools**, prevalence rates at Stages 1-4 were consistently higher amongst males across all regions (Figure 54). The highest prevalence rates were in the Belfast region (0.35% - 0.46% for females and 0.54% - 1.20% for males), although there were slight fluctuations in rates across all regions over time. Change was highest for males and females in the Southern region (2.3 and 7.5 respectively), although it is acknowledged that prevalence rates over time for females were very low. At Stage 5, prevalence rates fluctuated across regions over time (Figure 55); the overall highest rates for males were in the South Eastern region (0.18% - 0.17%) and for females in the Belfast region (0.02% - 0.07%). Change was highest for males (6.0) in the North Eastern region and for females (3.5) in the Belfast region; again, low prevalence rates for both genders and instances of 0.0% are acknowledged.

Figure 54. Social, Emotional and Behavioural in grammar schools at Stages 1-4 by region and gender
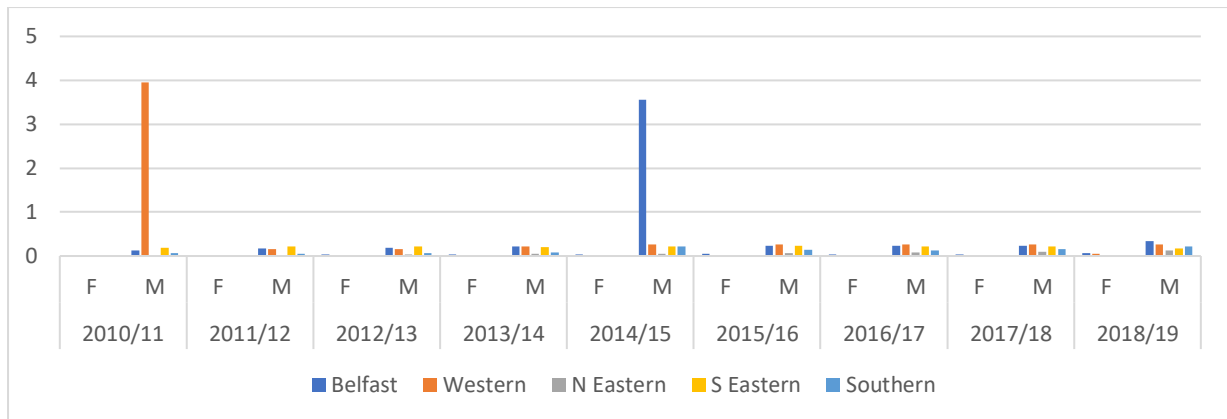
Figure 55. Social, Emotional and Behavioural in secondary schools at Stage 5 by region and gender

In **special schools** at Stage 5, prevalence rates were consistently and substantively higher amongst males across all regions (Figure 56). Prevalence rates fluctuated for both genders over the time span, with some peaks in intervening years. Comparison between 2010/11 and 2018/19 showed a decrease in prevalence rates for males in Belfast, Western, North Eastern and Southern regions, and an increase for females in Belfast, Western and South Eastern regions. The highest prevalence rates overall were in the South Eastern region (4.06% – 4.72%) for males and in the Belfast region for females (0.79% - 1.18%). Change rates were more variable, reflecting increases and decreases in prevalence rates; for example, for males, there were changes of 1.2 and 0.1 in South Eastern and Southern regions respectively, whilst for females, there were changes of 2.4 and 0.2 in Western and North Eastern regions respectively.
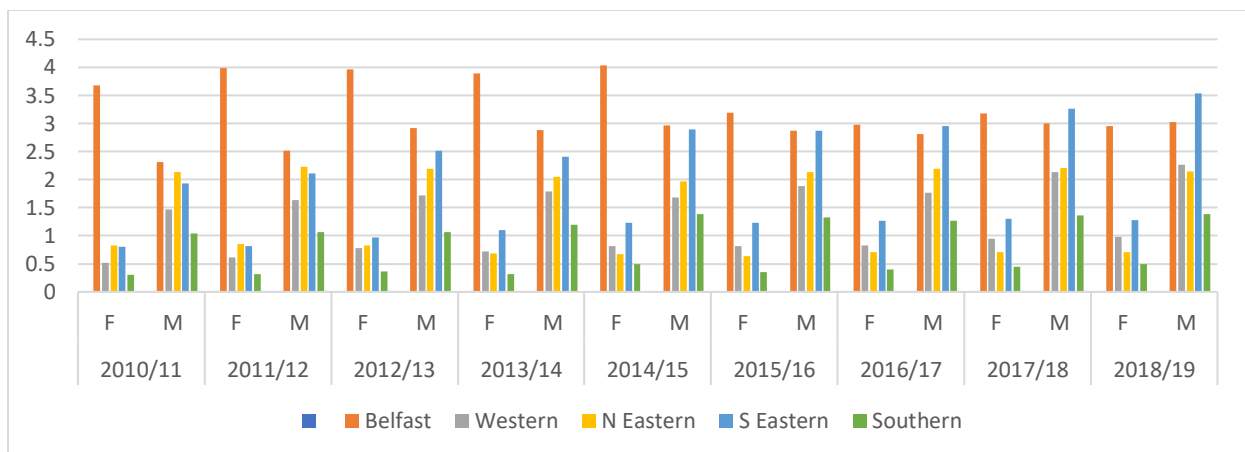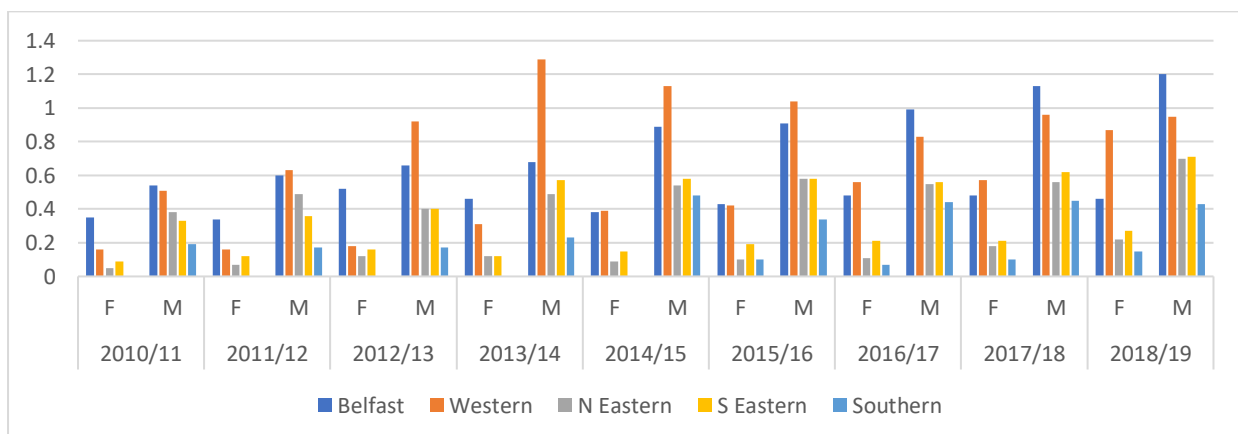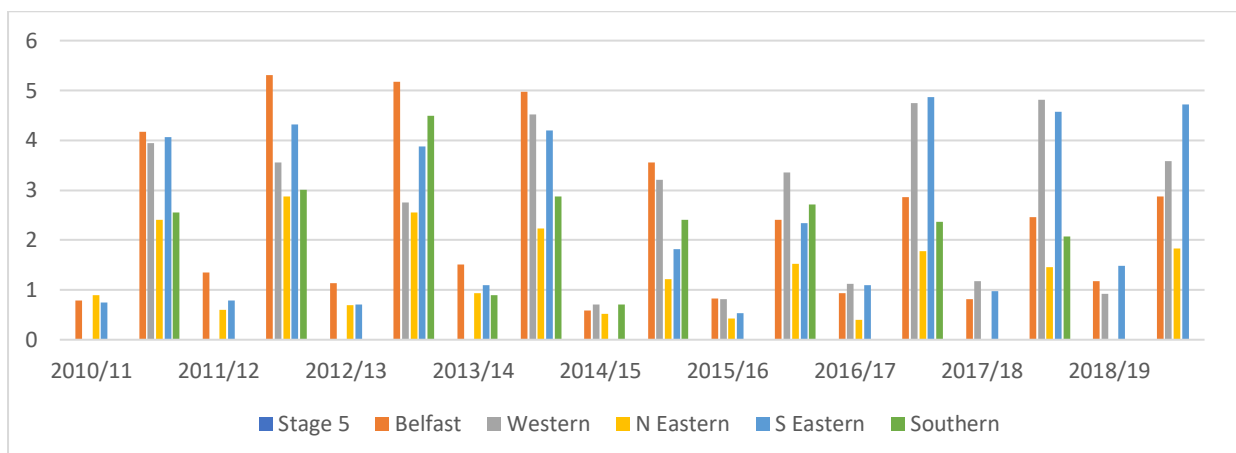

Figure 56. Social, Emotional and Behavioural in special schools at Stage 5 by region and gender

7.1 Social, Emotional and Behavioural at school level by FSME and MDM, 2010/11 and 2018/19

Overall, comparison of the prevalence rate of FSME pupils reported under Social, Emotional and Behavioural between 2010/11 and 2018/19 showed an increase (42.94% - 49.75%), a change ratio of 1.2 in contrast to a prevalence decrease among non FSME pupils (57.06% - 50.25%) which gave a change of 0.9 (Figure 57). Among FSME pupils, there were increases across all school types; the highest prevalence rates were in primary schools (20.73% - 25.16%), although this masked rates of over 26% between 2015/16 and 2017/18. There was minimal change rate in primary (1.2) and post-primary (1.1) schools and little or no change (1.0) in special schools. Among non-FSME pupils, a prevalence decrease across school types showed no change over time in primary schools (1.0) and changes of 0.8 and 0.7 respectively in post-primary and special schools.
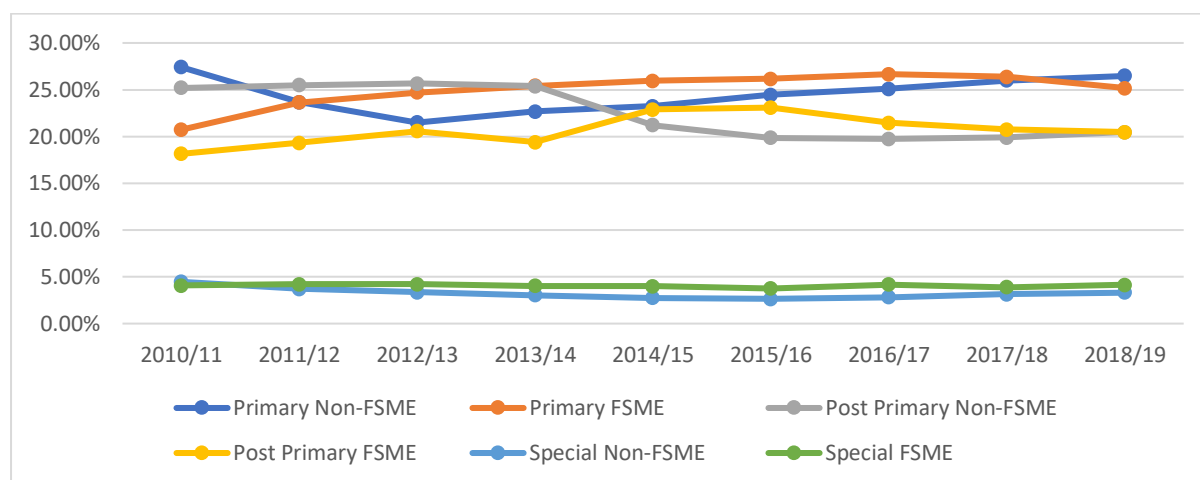
Figure 57. Social, Emotional and Behavioural prevalence rates for FSME/non-FSME pupils by school type

When analysed by MDM, in 2010/11, the overall prevalence rates for Social, Emotional and Behavioural in primary schools was highest in MDM 1 at Stages 1-4 and this remained in 2018/19. At Stage 5, prevalence rates in 2010/11 were higher across MDM 1, 2, 3 and 4; in 2018/19, rates were more widespread across MDM. At Stage 5, prevalence rates were very low, with instances of 0.0%. In secondary schools at Stages 1-4, the prevalence rate for highest in MDM 1 in 2010/11 and in 2018/19; this pattern was repeated at Stage 5. In grammar schools

at Stages 1-4, prevalence rates in 2010/11 were highest in MDM 3 and 10, shifting to MDM 5 and 10 in 2018/19. In special schools at Stage 5, prevalence rates were highest for both genders in MDM 1 in 2010/11 and in 2018/19.

Section 8: Social, Emotional and Behavioural: Individual SEN

8.1 ADD/ADHD

Key Messages

- Prevalence rates over time for *ADD/ADHD* increased in primary schools over time; there were increases and decreases in secondary and grammar schools and more evidence of a decrease in special schools. In most instances, the highest change ratios across school types were among females.
- Highest prevalence rates were recorded more consistently in the Belfast and South Eastern regions across school types and highest change ratios were also recorded more consistently in these regions. LGD mapping reflected this distribution and also revealed localised densities within other regions.
- In primary and secondary schools, there were higher prevalence rates in MDM 5 in 2010/11 and 2018/19, whilst in grammar schools, these were in MDM 10 and 2 respectively.
- Distribution by LGD at Stages 1-4 saw an increase of high-density districts in primary schools and a substantive decrease in post-primary schools. At Stage 5, high-density districts increased in special schools, decreased in post-primary schools and shifted in primary schools.

In **primary schools**, prevalence rates (Appendix 7) for both genders at Stages 1-4, and Stage 5 increased slightly over time (Figures 58 and 59). At Stages 1-4, prevalence rates were higher in the Belfast region for females and males (0.07% - 0.11% and 0.18% - 0.38% respectively). Change ratios were highest in the South Eastern region for females (2.6) and in the Belfast region (2.1) for males. At Stage 5, prevalence rates were generally low and so data should be interpreted accordingly. Rates were highest overall in the Western region for females (0.01% - 0.03%) and in the South Eastern region for males (0.14% - 0.09%). The change ratio was highest for females (3.0) in the Western region and for males in the Belfast and North Eastern regions (1.3 in both instances). Higher prevalence rate decreases showed in change ratios for females in the Belfast region (0.5) and for males in the Southern region (0.4).
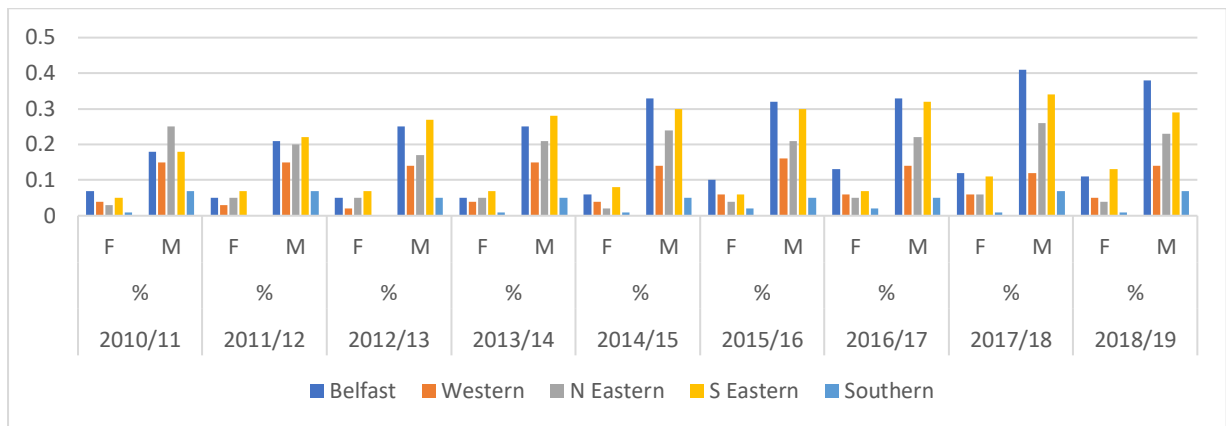
Figure 58. Prevalence of ADD/ADHD in primary schools at Stages 1-4 by region/gender
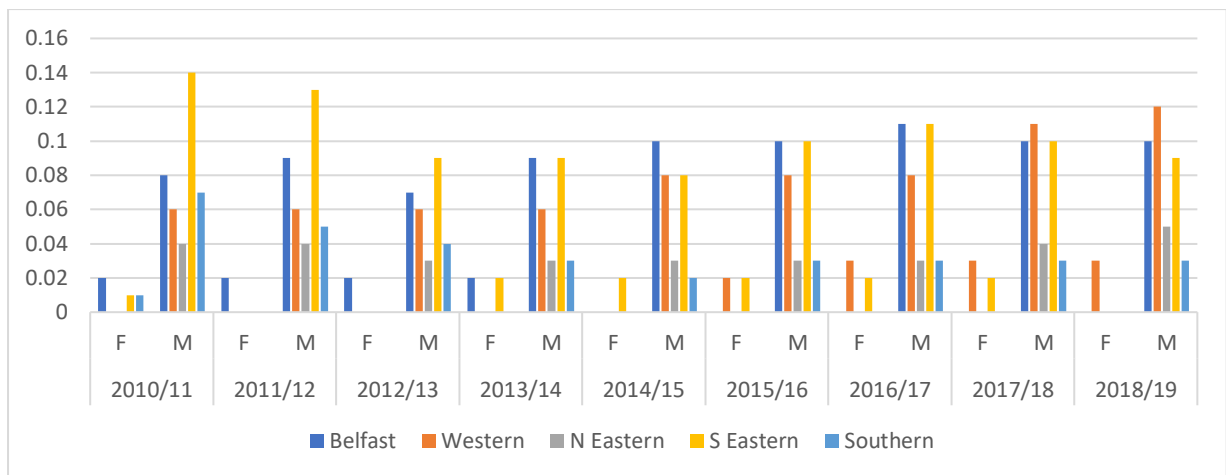
Figure 59. Prevalence of ADD/ADHD in primary schools at Stage 5 by region/gender

Comparison of ADD/ADHD by year group indicated a small but gradual growth in prevalence rates, particularly in males at Stages 1-4, with very low or 0.0% rates to draw definitive estimates at Stage 5. When looked at by year group at Stages 1-4, the prevalence rate for ADHD would appear to begin to increase from Year 3, with rates for males higher overall in Years 6 and 7. The highest change ratio for males (2.0) was in Year 6 although this should be interpreted in the context of low prevalence rates. A comparison of prevalence rates by MDM showed rates at Stages 1-4 were slightly higher in MDM 3 in 2010/11 and in MDM 1 in 2018/19. At Stage 5, prevalence rates were very low, with multiple instances of 0.0%. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Newtownabbey and Carrickfergus districts in 2010/11 and in Castlereagh, North Down and Larne districts in 2018/19 (Maps 25-28). Distribution at Stage 5 showed the highest density in Down in 2010/11 and in Fermanagh in 2018/19.

Map 25 & 26: Distribution of ADD/ADHD in primary schools at Stages 1-4 by pupil LGD

Council Boundaries
ADD/ADHD Primary (Stages 1-4) 2010/11
- 0% - 0.01%
- 0.02% - 0.23%
- 0.24% - 0.32%
- 0.33% - 0.5%
- 0.51% - 0.77%

Council Boundaries
ADD/ADHD Primary (Stages 1-4) 2018/19
- 0% - 0.05%
- 0.06% - 0.24%
- 0.25% - 0.57%
- 0.58% - 0.74%
- 0.75% - 0.94%

Map 27 & 28: Distribution of ADD/ADHD in primary schools at Stage 5 by pupil LGD

Council Boundaries
ADD/ADHD Primary (Stage 5) 2010/11
- 0%
- 0.01% - 0.12%
- 0.13% - 0.18%
- 0.19% - 0.35%
- 0.36% - 0.53%

Council Boundaries
ADD/ADHD Primary (Stage 5) 2018/19
- 0%
- 0.01% - 0.13%
- 0.14% - 0.27%
- 0.28% - 0.37%
- 0.38% - 0.82%

In **secondary schools**, there were increases and decreases in prevalence rates for both genders over time at Stages 1-4, and Stage 5 (Figures 60 and 61). At Stages 1-4, prevalence rates were highest in the Belfast region for females (0.14% - 0.41%) and in the South Eastern region for males (0.69% - 1.35%). Change ratios were highest in the Belfast region for females (2.9) and in the South Eastern region for males (2.0). At Stage 5, prevalence rates were highest in the South Eastern region for both females (0.08% - 0.14%) and males (0.52% - 0.60%). The

change ratio was highest for females (2.5) in the Belfast region and for males (0.1) in in the North Eastern region.
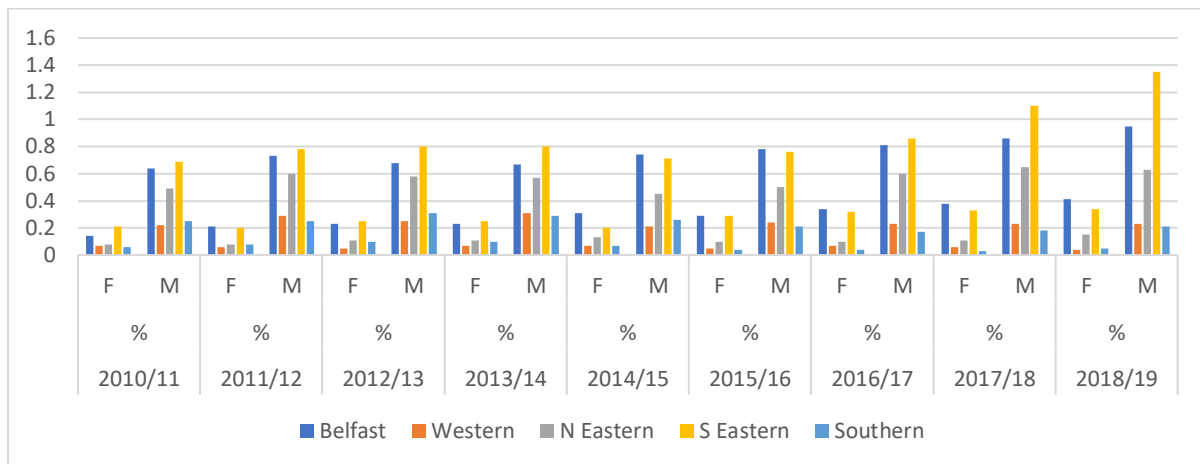
Figure 60. Prevalence of ADD/ADHD in secondary schools at Stages 1-4 by region/gender
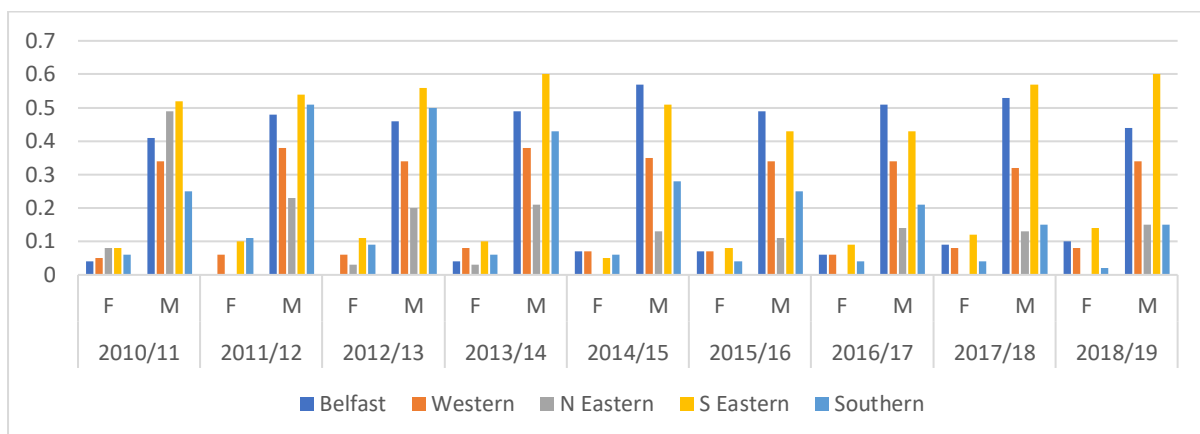
Figure 61. Prevalence of ADD/ADHD in secondary schools at Stage 5 by region/gender

Comparison of ADD/ADHD by year group indicated a general increase in prevalence rates for both genders at Stages 1-4 between Years 8 and 12. Change ratios were higher for females (2.0) in Year 9 and for males (1.7) in Years 8 and 11. At Stage 5, there was a general decrease in prevalence rates and higher change ratio (0.8) among males between Years 8 and 12, whilst rates remained the same for females. A comparison of prevalence rates by MDM showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and remained so in 2018/19. At Stage 5, rates were higher in MDM 1 in 2010/11 and in MDM 1 and 5 in 2018/19.

In **grammar schools**, there were increases and decreases in prevalence rates across regions at Stages 1-4, and Stage 5 (Figures 62 and 63). Prevalence rates were very low for

females, with 0.0% instances at Stage 5, so the data should be interpreted accordingly. At Stages 1-4, overall prevalence rates were highest in the South Eastern region for females (0.05% - 0.17%) and in the Belfast region for males (0.38% - 0.60%). Change ratios were highest in the North Eastern region for females (4.5) and in the South Eastern region for males (1.8). At Stage 5, prevalence rates were highest in the Belfast region for both females (0.02% - 0.02%) and males (0.10% - 0.12%); the highest change ratio for males (3.5) was in the Western region, with little or no change for females (1.0) across regions.
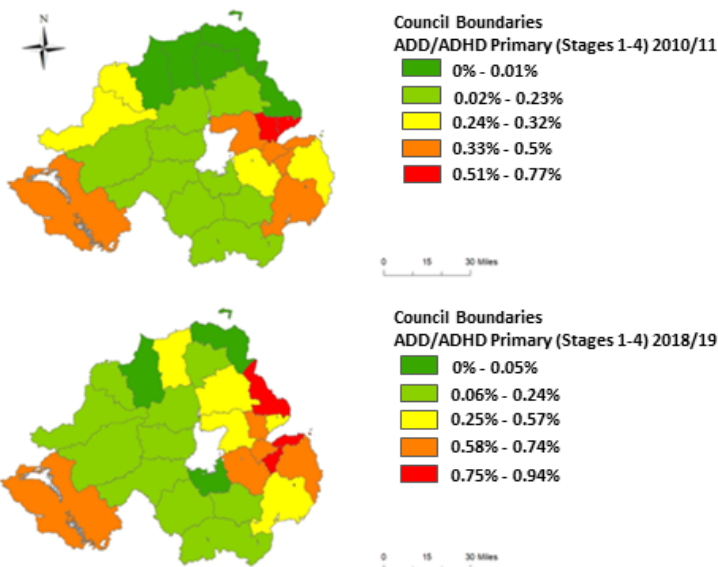

Figure 62. Prevalence of ADD/ADHD in grammar schools at Stages 1-4 by region/gender
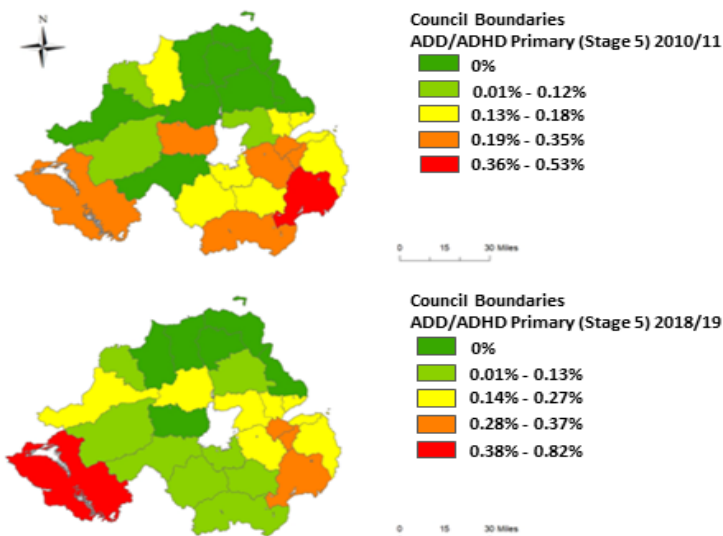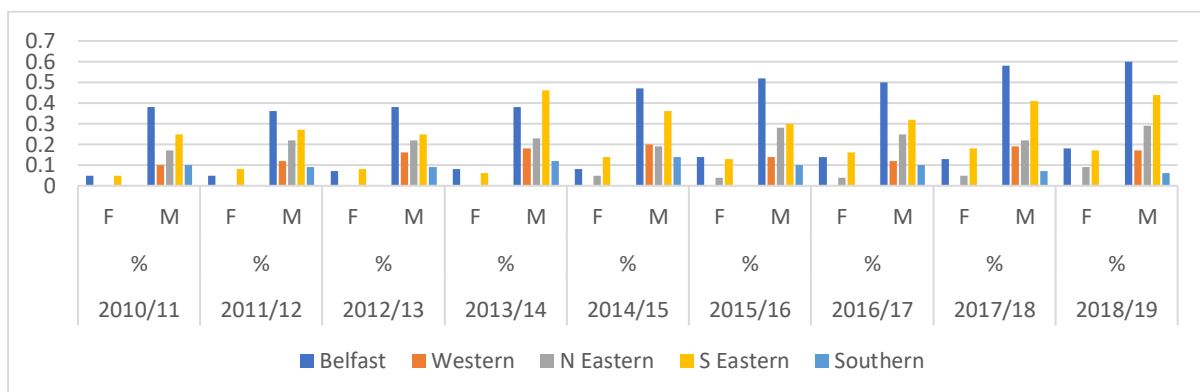

Figure 63. Prevalence of ADD/ADHD in grammar schools at Stage 5 by region/gender

Comparison of ADD/ADHD by year group indicated a small but gradual growth in prevalence rates, particularly in males at Stages 1-4, with very low or 0.0% rates to draw definitive estimates at Stage 5. When looked at by year group at Stages 1-4, prevalence rates among males fluctuated slightly over time, peaking in 2017/18 (0.07%). The highest change ratio for

males (2.0) was in Years 10 and 11 although this should be interpreted in the context of low prevalence rates.

A comparison of prevalence rates by MDM showed rates at Stages 1-4 were highest in MDM 10 in 2010/11 and remained so in 2018/19. At Stage 5, rates were higher in MDM 3 in 2010/11 and in 2018/19. At Stage 5, prevalence rates were very low, with multiple instances of 0.0%. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Larne, Carrickfergus, Newtownabbey, Belfast, Lisburn, Castlereagh and Down districts in 2010/11 and in Ards and Down districts in 2018/19. Distribution at Stage 5 showed the highest density in Craigavon and Down in 2010/11 and Down in 2018/19 (Maps 29-32).

Map 29 & 30: Distribution of ADD/ADHD in post-primary schools at Stages 1-4 by pupil LGD

Council Boundaries
ADD/ADHD Post Primary (Stages 1-4) 2010/11
0%
0.01% - 0.31%
0.32% - 0.54%
0.55% - 0.7%
0.71% - 0.96%

Council Boundaries
ADD/ADHD Post Primary (Stages 1-4) 2018/19
0% - 0.32%
0.33% - 0.66%
0.67% - 1.07%
1.08% - 1.71%
1.72% - 2.26%

Map 31 & 32: Distribution of ADD/ADHD in post-primary schools at Stage 5 by pupil LGD
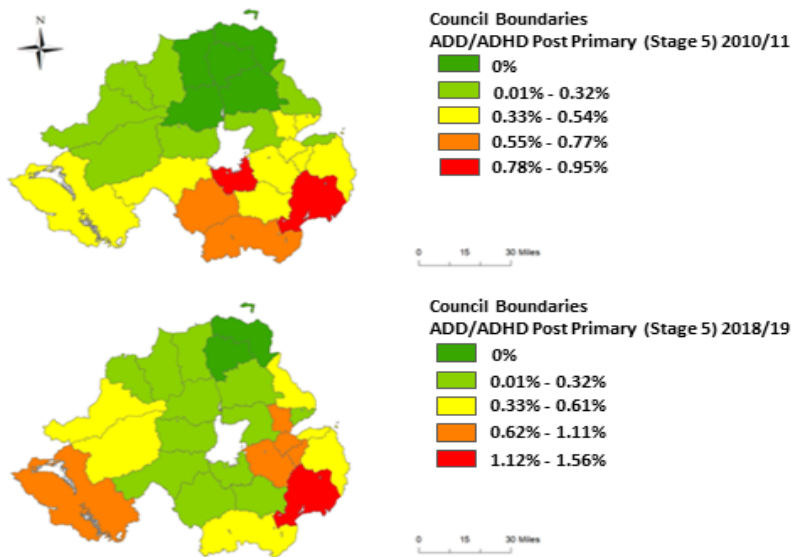
In **special schools** at Stage 5, prevalence rates largely decreased for both genders across regions, with rates decreasing to 0.0% for females in some instances. Prevalence rates remained highest for females (0.29% - 0.29%) in the Western region and for males (1.95% - 0.74%) in the South Eastern region (Figure 64). The higher change ratio for females (0.4) was in the Belfast region; for males, change ratios ranged from 1.2 in the Western region to 0.2 in the North Eastern region.
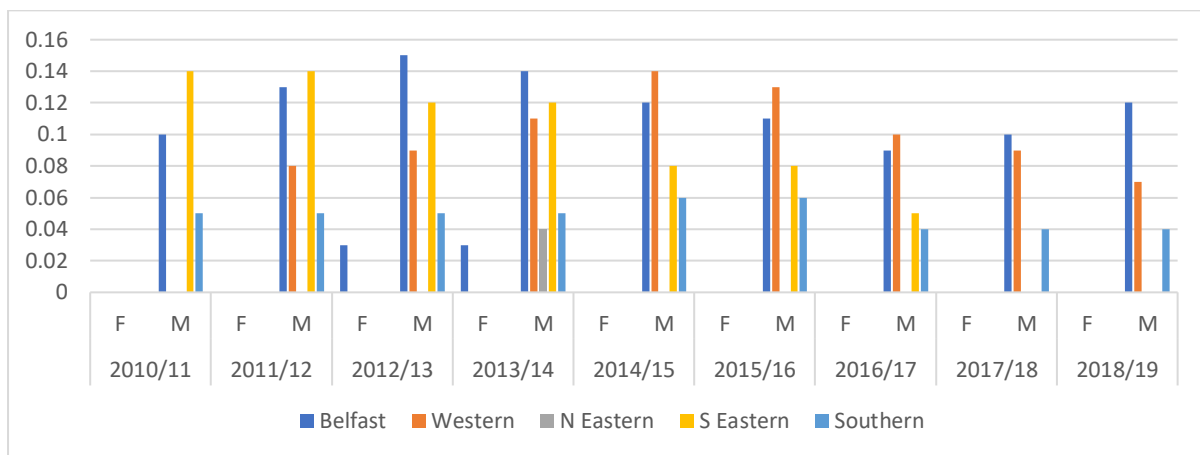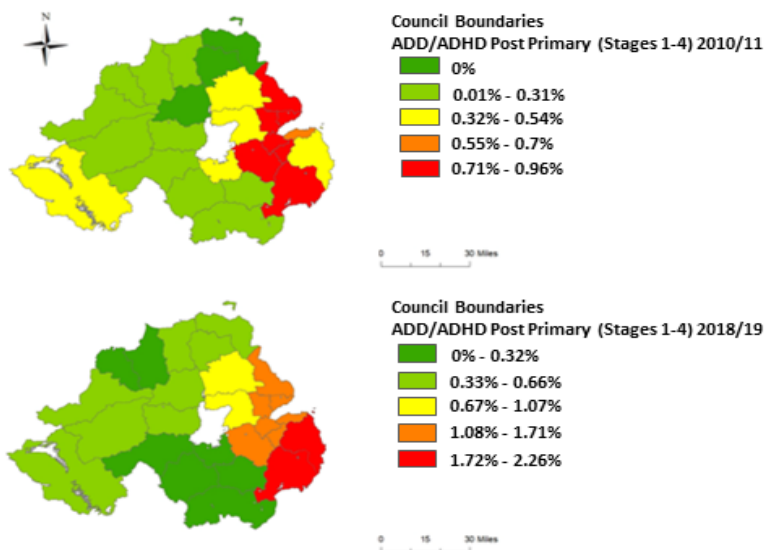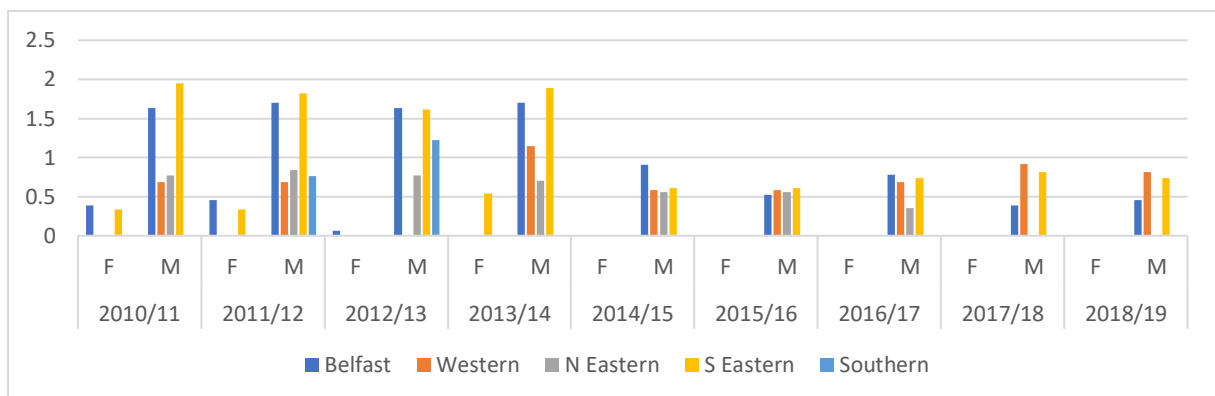

Figure 64. Prevalence of ADD/ADHD in special schools at Stage 5 by region/gender

Comparison of ADD/ADHD by year group indicated a general decrease in prevalence rates over time at Stage 5, with some fluctuations in intervening years and across year groups. Prevalence rates were lower for females; they remained generally steady across time and year

groups, most obviously between Years 7 and 13, although there were also multiple instances of 0.0%, particularly for females. Prevalence rates for males were noticeably higher between Years 7-12 inclusive, with the biggest change ratio (0.1) in Year 8. A comparison of prevalence rates by MDM showed rates at Stage 5 were highest in MDM 1 in 2010/11 and in MDM 2 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stage 5 shows the highest density in Lisburn district in 2010/11 and in Lisburn, Castlereagh and Down districts in 2018/19 (Maps 33-34).

Map 33 & 34 Distribution of ADD/ADHD in special schools at Stage 5 by pupil LGD
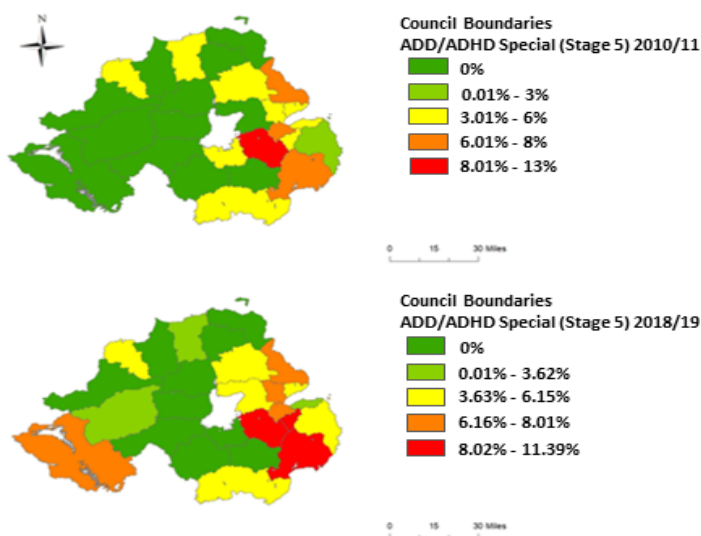
8.2 Social, Emotional and Behavioural: Social, Emotional and Behavioural Difficulties

Key Messages

- Prevalence rates for *SEBD* represent the combined data for Social, Emotional and Behavioural (Stages 1-2) and Social, Emotional and Behavioural Difficulties (SEBD) as collected by the DE. Prevalence rates typically increased over time across school types. There were increases for both genders across school types, most consistently in primary and special schools.

- Prevalence rates were consistently higher among males across all regions and school types with one exception. In secondary schools in the Belfast region, rates for

females were consistently higher at Stages 1-4. In most instances, the highest change ratios across schools were among females at Stages 4 and Stage 5.

- Highest prevalence rates were recorded more consistently in the Belfast region across school types and highest change ratios were more evident in the South Eastern region. LGD mapping reflected this distribution and also revealed localised densities within other regions.

- In primary and secondary schools, there were higher prevalence rates in MDM 5 in 2010/11 and 2018/19, whilst in grammar schools, these were in MDM 10 and 2 respectively.

In **primary schools**, prevalence rates increased for both genders at Stages 1-4, and Stage 5 (Figures 65 and 66). At Stages 1-4, prevalence rates were highest in the Belfast region for females and males (0.52% - 1.22% and 1.81% - 3.18% respectively). Change ratios were highest in the South Eastern region for both females (2.6) and males (2.0). At Stage 5, prevalence rates were highest overall for females and males (0.04% - 0.12% and 0.22% - 0.43% respectively) in the Belfast region. The change ratio was highest for females (5.0) in the North Eastern region, although prevalence rates were very low and data should be interpreted accordingly. The highest change for males was in the South Eastern region (2.8).
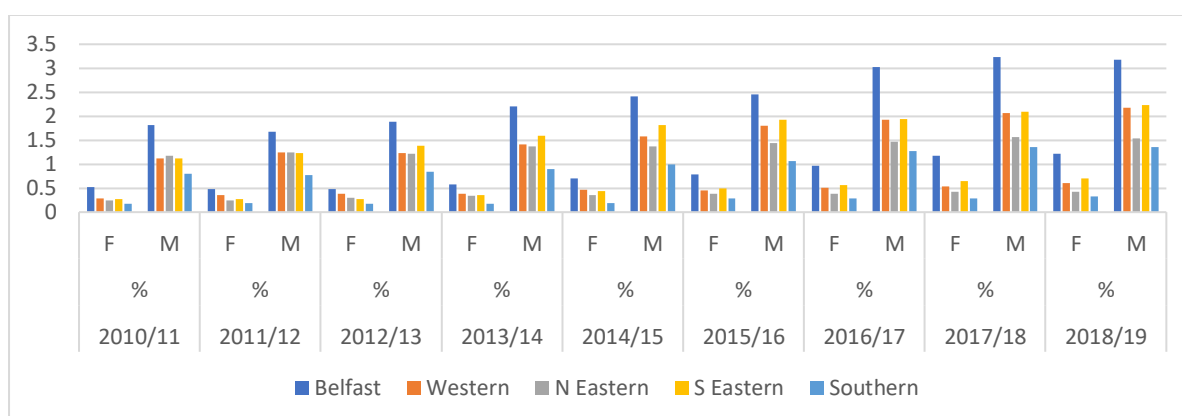
Figure 65. Prevalence of SEBD in primary schools at Stages 1-4 by region/gender
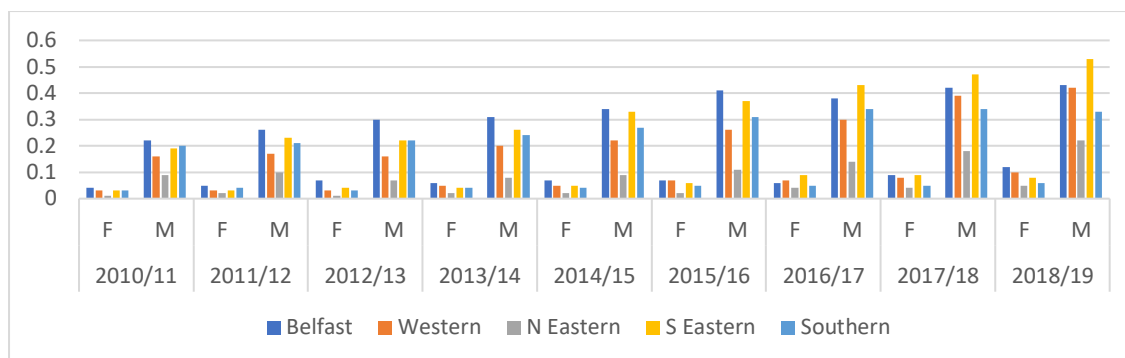
Figure 66. Prevalence of SEBD in primary schools at Stage 5 by region/gender

Comparison of SEBD by year group indicated steady growth in prevalence rates at Stages 1-4 for both genders, with consistently higher rates among males. When looked at by year group, prevalence rates for males appeared to peak in Years 2 and 3; this distinction was less apparent for females although rates were much lower overall. The highest change ratio for males (1.9) was in Years 3 and 4, and for females (3.0) in Year 1. At Stage 5, prevalence rates both increased and remained higher for males, with a small but general pattern of growth across year groups and highest change ratio in Year 7 (2.7). There were consistently low prevalence rates and little change among females across year groups over time. A comparison of prevalence rates by MDM showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and in 2018/19. At Stage 5, prevalence rates remained highest in MDM 1 in 2010/11 and were highest in MDM 1, 2. 3 and 5 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Antrim, Newtownabbey, Belfast, Derry and Coleraine districts in 2010/11 and in Newtownabbey, Belfast, Ards, Down, Derry and Omagh districts in 2018/19 (Maps 35-x38). Distribution at Stage 5 showed the highest density in Down in 2010/11 and in Down, Belfast, Lisburn, Larne and Fermanagh in 2018/19.

Map 35 & 36: Distribution of SEBD in primary schools at Stages 1-4 by pupil LGD

Council Boundaries
SEBD Primary (Stages 1-4) 2010/11
0.75% - 0.94%
0.95% - 1.08%
1.09% - 1.32%
1.33% - 1.77%
1.78% - 2.92%

Council Boundaries
SEBD Primary (Stages 1-4) 2018/19
0.91% - 1.67%
1.68% - 2.22%
2.23% - 2.68%
2.69% - 3.04%
3.05% - 4.78%

Map 37 & 38: Distribution of SEBD in primary schools at Stage 5 by pupil LGD

Council Boundaries
SEBD Primary (Stage 5) 2010/11
0%
0.01% - 0.29%
0.3% - 0.45%
0.46% - 0.71%
0.72% - 0.88%

Council Boundaries
SEBD Primary (Stage 5) 2018/19
0.41% - 0.43%
0.44% - 0.63%
0.64% - 0.75%
0.76% - 0.94%
0.95% - 1.3%

In **secondary schools**, there were increases and decreases in prevalence rates for both genders at Stages 1-4 and overall increases at Stage 5 (Figures 67 and 68). At Stages 1-4, prevalence rates were highest in the Belfast region for both females (3.79% - 2.55%) and males (1.83% - 2.07%). In this instance, prevalence rates were higher for females over time than for males. Change ratios were highest in the Western region for females (1.8) and in the South Eastern region for males (1.6). At Stage 5, there were higher prevalence rates for females and males in the Belfast (0.11% - 0.21% and 0.37% - 1.08% respectively) and Western (0.17% - 0.24% and 0.40% - 1.05%) regions. The change ratio was highest for females (5.5) in the Southern region, although rates are low and should be interpreted accordingly. The change ratio was higher for males in the Southern region (4.0).
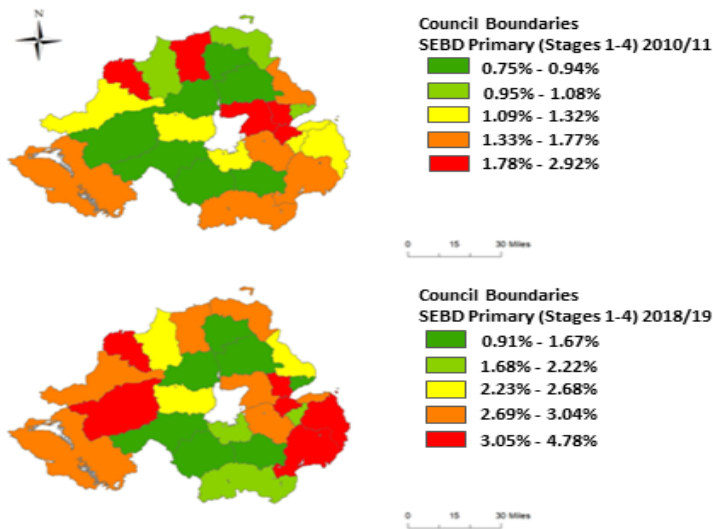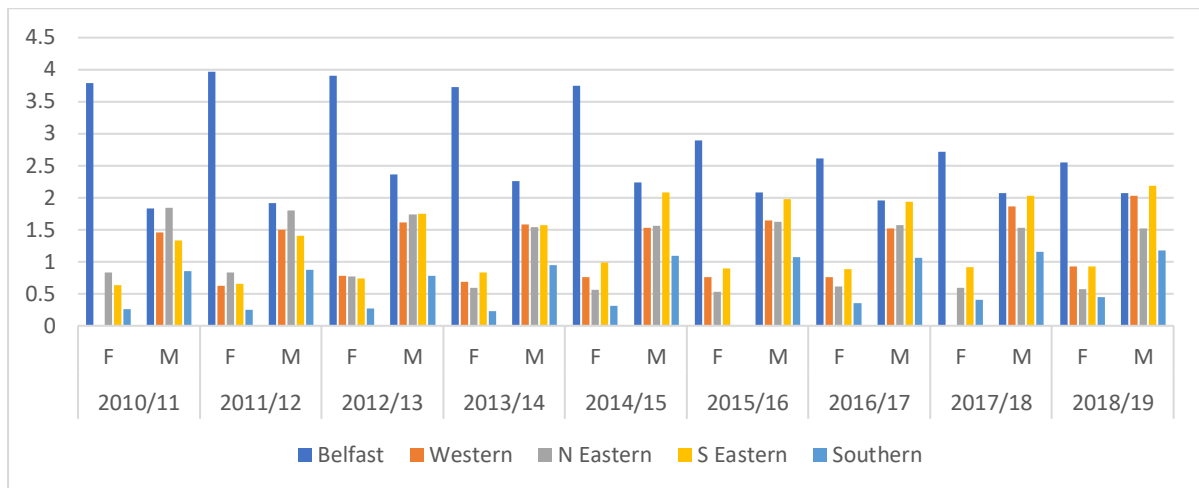
Figure 67. Prevalence of SEBD in secondary schools at Stage 5 by region/gender
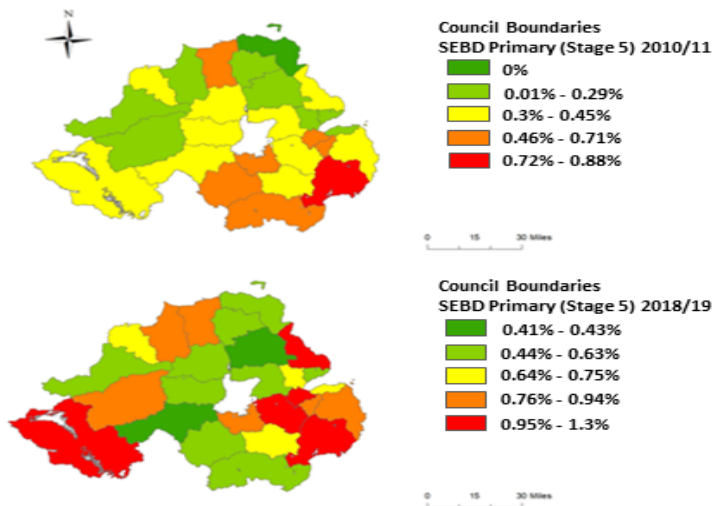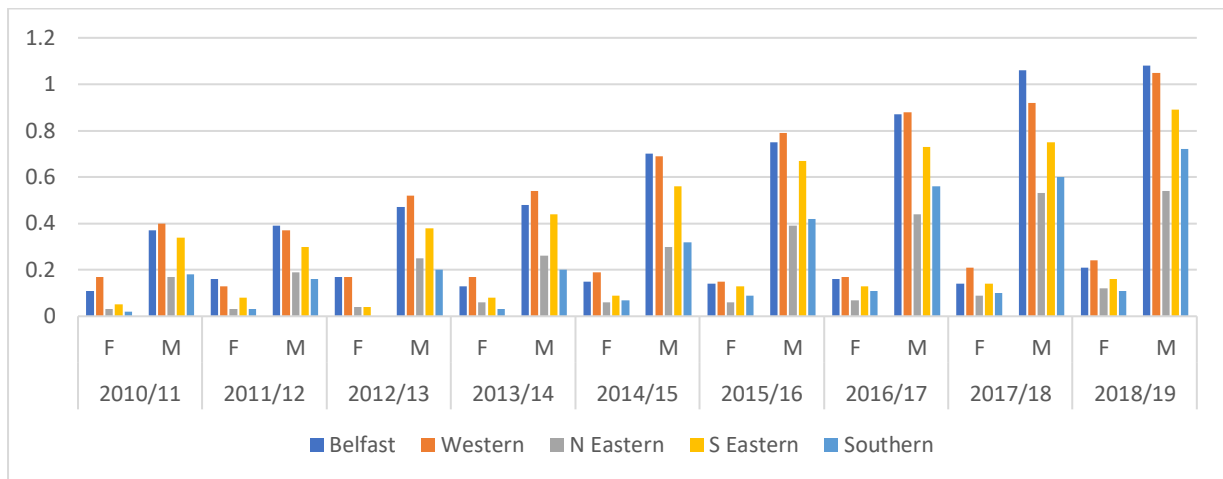

Figure 68. Prevalence of SEBD in secondary schools at Stage 5 by region/gender

Comparison of SEBD by year group indicated, that at Stages 1-4, prevalence rates for females increased in Years 8 and 9, decreasing thereafter, with rates for males generally increasing between Years 8 and 12. Change ratios were highest for females (1.8) and males (2.6) in Year 8. At Stage 5, there was a general increase in prevalence rates for both genders across year groups, with highest change ratio for males (3.5) in Years 8 and 9 and for females (4.0) in Years 10 and 12. A comparison of prevalence rates by MDM showed rates at Stages 1-4 were highest in MDM 1 in 2010/11 and remained so in 2018/19. This distribution remained the same at Stage 5 for both time points.

In **grammar schools**, there were mainly increases in prevalence rates across regions at Stages 1-4, and Stage 5 (Figures 69 and 70). At Stages 1-4, prevalence rates were highest in the Western region for females (0.16% - 0.83%) and males (0.42% - 0.79%). Change ratios were highest in the Western region for females (5.2) and in the Southern region for males (4.1). At Stage 5, prevalence rates were higher overall in the Belfast region for females (0.02% - 0.05%) - although there were multiple instances of 0.0% across regions over time - and in the Western region for males (0.07% - 0.19%). Change ratios were highest for females and males (2.5 and 7.3 respectively) in Belfast. Prevalence rates were very low or 0.0% in some instances, particularly for females at Stage 5, so the data should be interpreted accordingly.
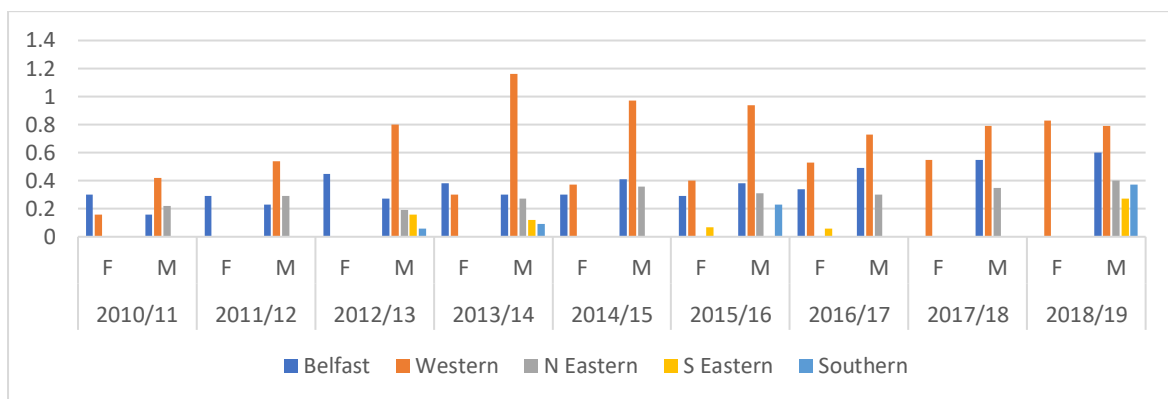
Figure 69. Prevalence of SEBD in grammar schools at Stages 1-4 by region/gender

Figure 70. Prevalence of SEBD in grammar schools at Stage 5 by region/gender

Comparison of SEBD by year group indicated prevalence rates increased at Stages 1-4 for both genders. The highest change ratio for females was in Years 9 and 10 (4.0 in both instances) and for males (9.0) in Year 8, although these figures should be interpreted in the context of low prevalence rates. At Stage 5, prevalence rates increased for males, with the highest change in Year 8 (4.0), although rates for both genders were very low, with multiple 0.0% rates,

particularly for females. A comparison of prevalence rates by MDM showed rates at Stages 1-4 were highest in MDM 10 in 2010/11 and in MDM 1, 4 and 5 in 2018/19. At Stage 5, there were multiple 0.0% rates, particularly for females; prevalence rates were evident only in MDM 2 in 2010/11 and were highest in MDM 5 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Belfast and Lisburn districts in 2010/11 and in Belfast, Lisburn, Fermanagh, Strabane and Omagh districts in 2018/19. Distribution at Stage 5 showed the highest density in Derry in 2010/11 and in Belfast, Moyle, Omagh and Strabane in 2018/19 (Maps 39-42).

Map 39 & 40: Distribution of SEBD in post-primary schools at Stages 1-4 by pupil LGD
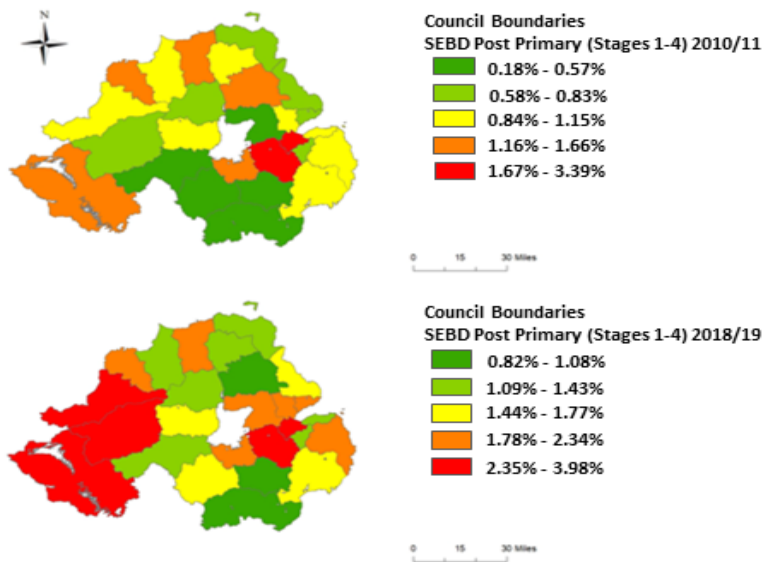
Map 41 & 42: Distribution of SEBD in post-primary schools at Stage 5 by pupil LGD
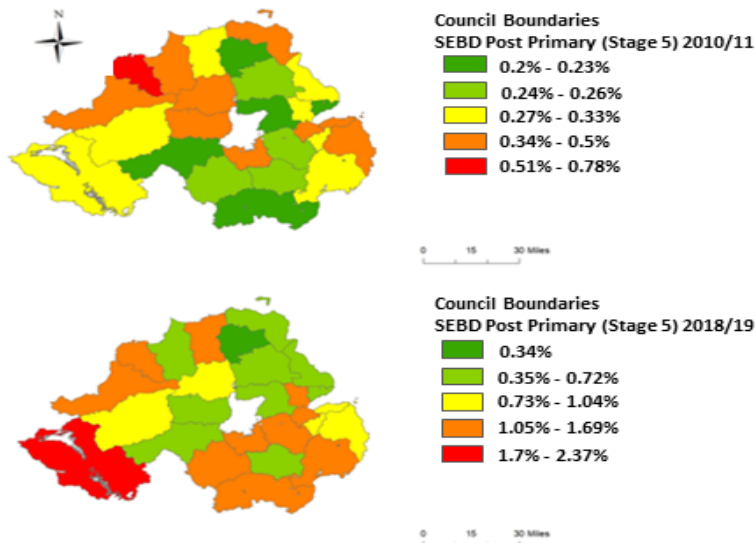
In **special schools** at Stage 5, prevalence rates largely increased for both genders across regions. Prevalence rates were highest for females (0.17% - 1.28%) in the South Eastern region and for males (2.19% - 2.77%) in the Western region (Figure 71). The higher change ratio for females (7.5) and males (3.9) in the South Eastern region. Prevalence rate decreases gave change ratios ranging from 0.0 – 0.5.

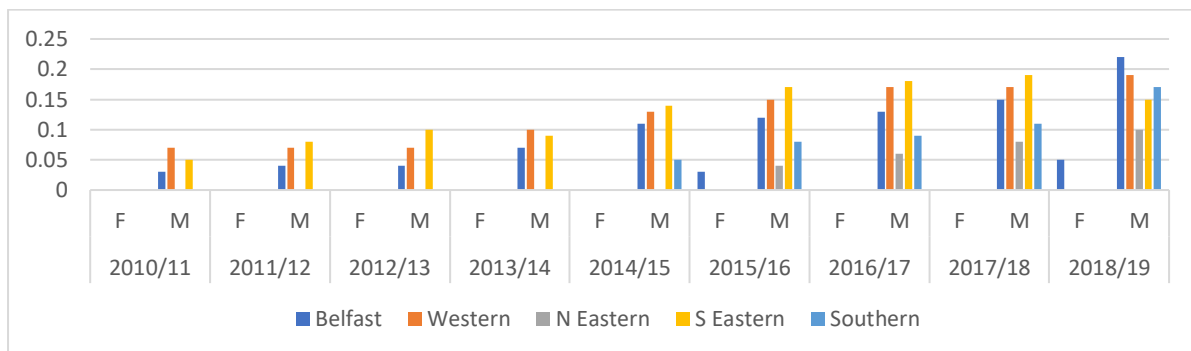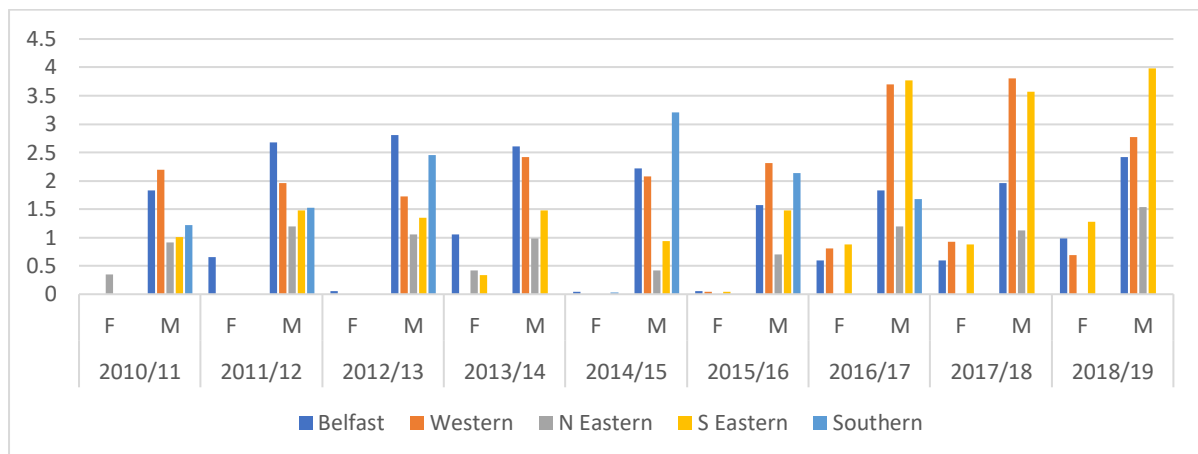
Figure 71. Prevalence of SEBD in special schools at Stage 5 by region/gender

Comparison of SEBD by year group at Stage 5 showed that prevalence rates over time were lower for females, where they increased or remained unchanged. The highest change for females was in Year 1 (10.0), although the data should be interpreted in the context of low rates. Prevalence rates for males increased over time until Year 10, decreasing thereafter; rates

seemed to peak between Years 6 and 8, with the biggest change ratio (3.8) in Years 3 and 8. A comparison of prevalence rates by MDM showed rates at Stage 5 were highest in MDM 1 in 2010/11 and in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stage 5 shows the highest densities were in Coleraine, Ballymoney and Moyle districts in 2010/11 and again in 2018/19 (Maps 43-44).

Map 43 & 44: Distribution of SEBD in special schools at Stage 5 by pupil LGD
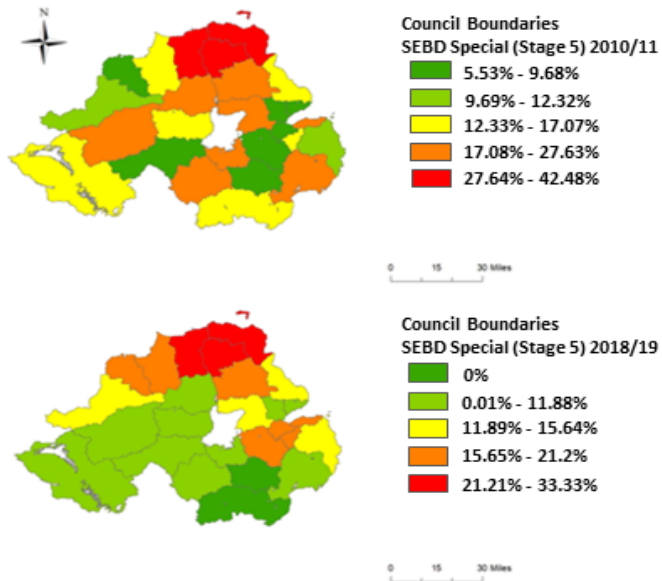
Section 9: Communication and Interaction at regional and school level, 2010/11 – 2018/19

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Key Messages

- Comparison at regional level showed overall prevalence rates for ***Communication and Interaction*** steadily increased across regions in primary, secondary and grammar schools and decreased in some regions in special schools.

- Prevalence rates were consistently higher among males across all regions and school types; however, change ratios were consistently higher among females at Stages 4 and 5 in secondary and grammar schools and in primary schools at Stage 5.

- Overall prevalence rates increased across schools for FSME pupils and decreased for non-FSME pupils, with highest rates in primary schools. Prevalence rates by MDM were widespread, with high rates recorded across many levels.

</div>

At regional level, comparison of overall prevalence rates (Appendix 8) for Communication and Interaction between 2010/11 and 2018/19 showed an overall steady increase over time (10.21% and 21.85% respectively), a change of 2.1 (Figure 72). The highest prevalence rates were in the Belfast region (2.20% - 5.20% respectively). The biggest change was in the Belfast and North Eastern regions (2.4 in both instances), with the lowest change in the Western region (1.8).
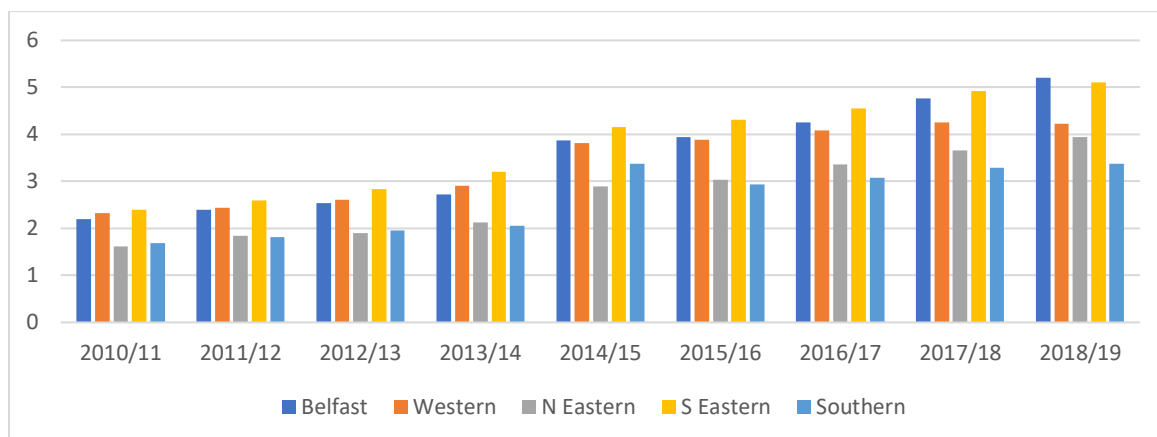
Figure 72. Communication and Interaction prevalence rates

Further comparison of the data at 2010/11 and 2018/19 by SEN Stage showed some distinctions by gender and school type. In **primary schools**, prevalence rates were, overall, consistently higher amongst males across all regions at Stages 1-4 and Stage 5. At Stages 1-4 (Figure 73), prevalence rates were highest for females and males (0.91% - 1.30% and 1.82% - 2.93% respectively) in Belfast. The change ratio for was highest for males (1.9) in the Southern region and for females (1.8) in the North Eastern region. At Stage 5 (Figure 74), prevalence rates were highest for females in the North Eastern region (0.41% - 0.77%) and for males in the South Eastern region (1.09% - 1.46%). The change ratio for females (2.0) was highest in the South Eastern region and for males (1.9) in the North Eastern region. Across regions at Stage 5, the change ratio tended to be higher for females.
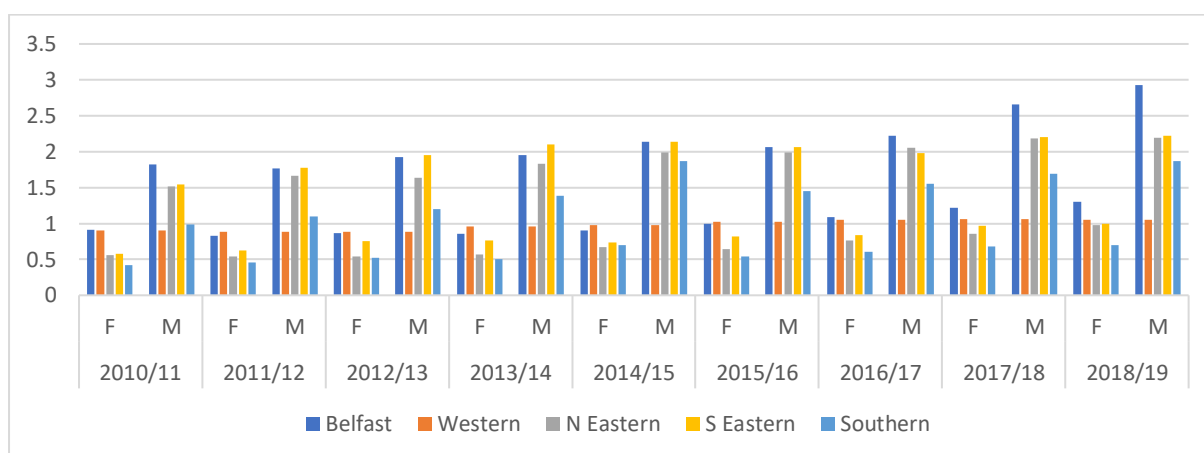
Figure 73. Communication and Interaction in primary schools at Stages 1-4 by region/gender
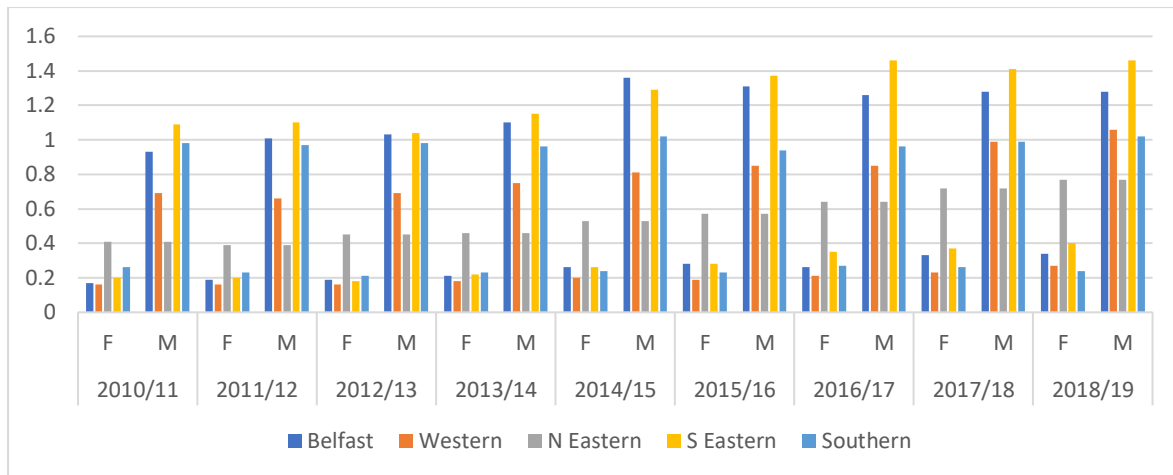
Figure 74. Communication and Interaction in primary schools at Stages 5 by region/gender

In **secondary schools** at Stages 1-4, prevalence rates were highest for females in the Belfast region (0.13% - 0.91%) and for males in the North Eastern region (0.54% - 1.95%) (Figure 75). Change ratios were higher for females in Belfast and South Eastern regions (7.0 and 7.1 respectively) and for males in the Belfast region (5.5). At Stage 5 (Figure 76), prevalence rates were higher overall in the Southern region for females (0.31% - 0.34%) and in the South Eastern region for males (1.08% - 2.38%). Change ratios were highest for males in the Belfast and South Eastern regions (2.2 in both instances) and in the Western and North Eastern regions for females (3.2 in both instances). Across regions at Stages 1-4 and Stage 5, change ratios tended, overall, to be higher for females.
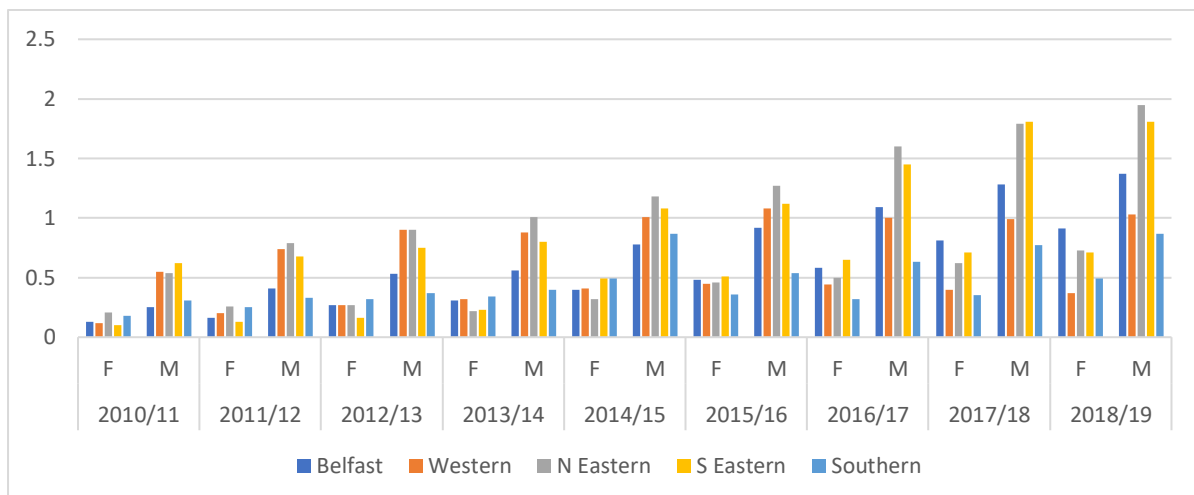
Figure 75. Communication and Interaction in secondary schools at Stages 1-4 by region/gender
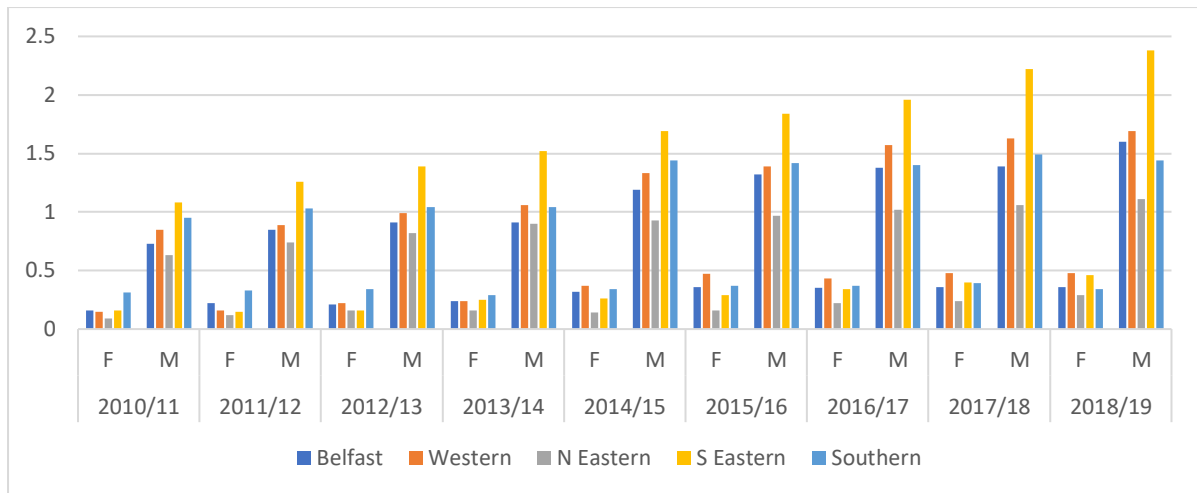
Figure 76. Communication and Interaction in secondary schools at Stage 5 by region/gender

In **grammar schools** at Stages 1-4 (Figure 77), prevalence rates were highest overall for males in the North Eastern region (0.22% - 1.16%) and for females in the Belfast region (0.08% - 0.30%). The change ratio was higher for both males (5.3) and females (18.0) in the North Eastern region. In both instances, prevalence rates were generally low so the data should be interpreted accordingly. At Stage 5 (Figure 78), prevalence rates were highest for males and females in the Belfast region (0.48% - 1.05% and 0.10% - 0.20% respectively). The change ratio was highest for males (2.2) in the Belfast region and for females (5.5) in the Southern region. Again, low prevalence rates at Stage 5 means the data should be interpreted accordingly.
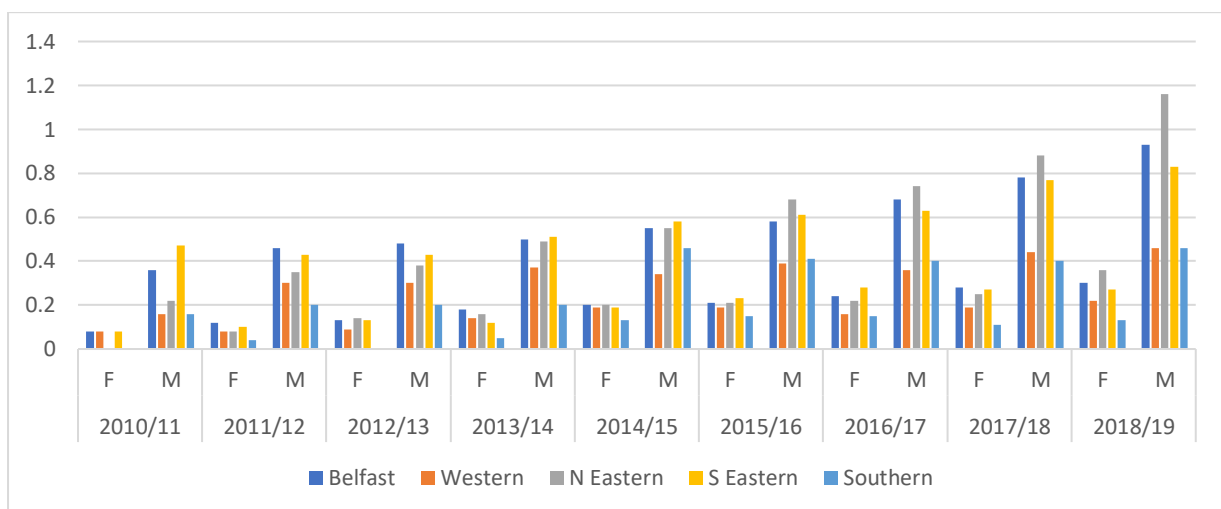
Figure 77. Communication and Interaction in grammar schools at Stages 1-4 by region/gender
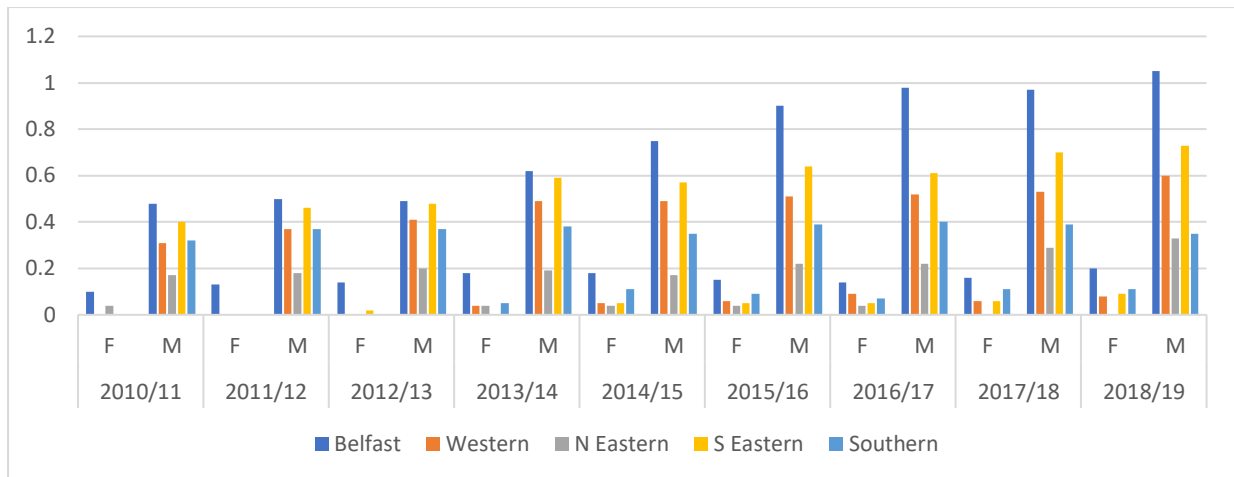
Figure 78. Communication and Interaction in grammar schools at Stage 5 by region/gender

In **special schools** at Stage 5 (Figure 79), overall prevalence rates were highest for males and females in the Southern region (16.81% - 18.81% and 3.62% - 4.74% respectively). Change ratios were highest for males (1.7) in the Belfast region and for females (1.3) in the Southern region. Additionally, there was a decrease in prevalence rates for both genders in some regions, with higher change ratios for males (0.7) and females (0.5) in the Western region.
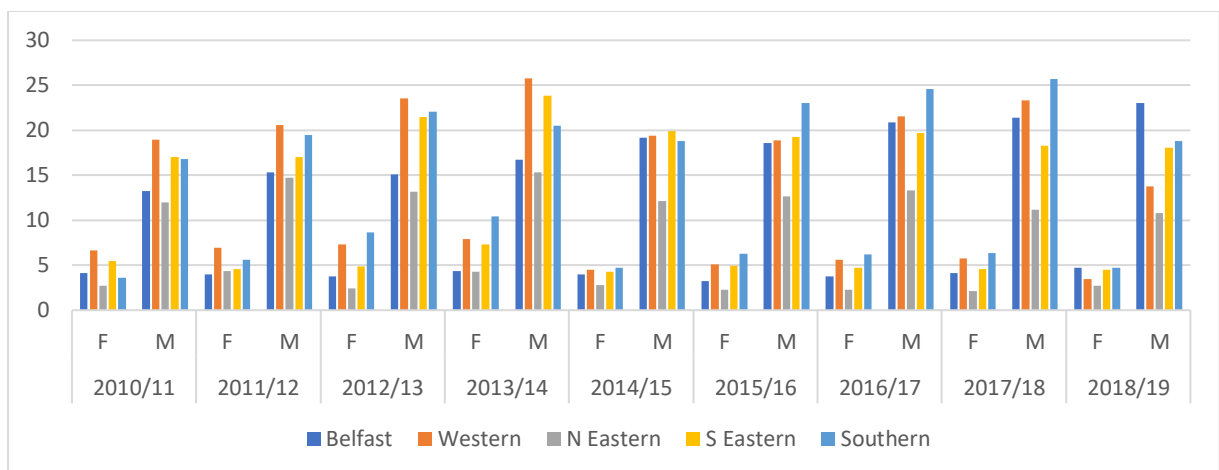
Figure 79. Communication and Interaction in special schools at Stage 5 by region/gender

9.1 Communication and Interaction at school level by FSME and MDM, 2010/11 and 2018/19

Overall, comparison of the prevalence rate of FSME pupils reported under Communication and Interaction between 2010/11 and 2018/19 showed an increase (34.15% - 45.13%), a change ratio of 1.3 in contrast to a prevalence decrease among non FSME pupils (65.85% - 54.87%), a change of 0.8 (Figure 80). Among FSME pupils, there were increases across all school types; the highest prevalence rates were in primary schools (19.92% to 23.86%), although the change ratio was highest in post-primary schools (2.3). Among non-FSME pupils, there were prevalence decreases in primary and special schools and a slight increase in post-primary schools, giving a change of 1.1.
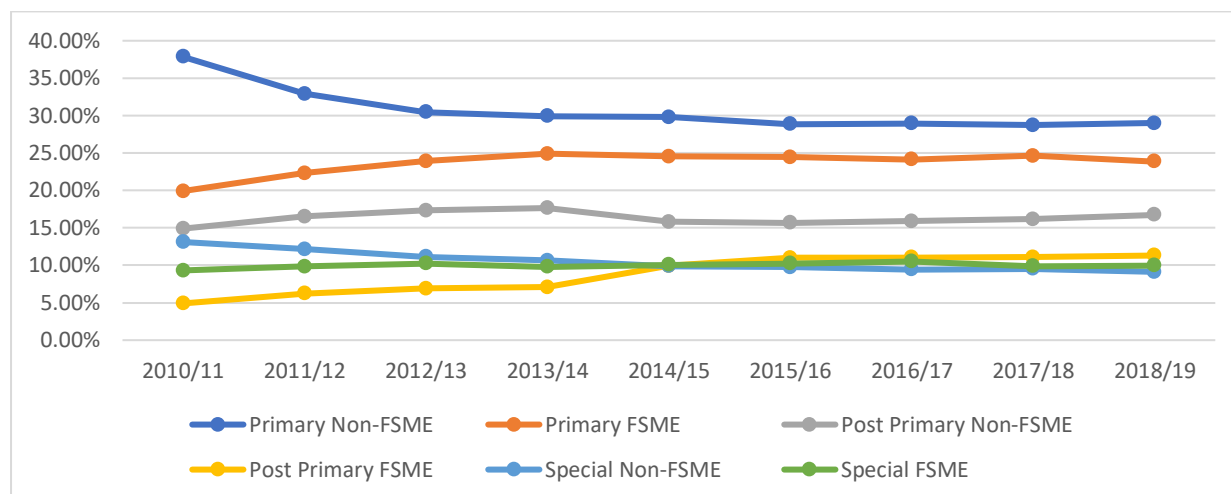
Figure 80. Communication and Interaction prevalence rates for FSME/non-FSME by school type

When analysed by MDM, in 2010/11, the overall prevalence rate for Communication and Interaction in **primary schools** was highest in MDM 1 at Stages 1-4 in 2010/11 and in MDM 1 and 2 in 2018/19. At Stage 5, prevalence rates in 2010/11 were slightly higher in MDM 5 and 8, spreading to MDM 1, 2, 3, 4 and 5 in 2018/19. In **secondary schools** at Stages 1-4 in 2010/11, prevalence rates were slightly higher across MDM 1, 2, 3, 5 and 7, although figures were low. In 2018/19, higher rates were in MDM 1, 5 and 7. At Stage 5, prevalence rates in 2010/11 were higher in MDM 4 and 5; in 2018/19, the prevalence rate was higher in MDM 1, 2, 3 and 5. In **grammar schools** at Stages 1-4, prevalence rates in 2010/11 were highest for males in in MDM 10, with very low or 0.0% rates for females across MDM. In

2018/19, the highest rate for males was in MDM 10 and for females in MDM 7, 9 and 10. At Stage 5, prevalence rates in 2010/11 were higher for males in MDM 10, with 0.0% - 0.01% rates for females across MDM. In 2018/19, rates remained highest for males in MDM 10 with slightly higher rates for females in MDM 8 and 10. In **special schools** at Stage 5, prevalence rates in 2010/11were highest across MDM 1, 2 and 5; n 2018/19, prevalence rates were highest in MDM 1.

Section 10: Communication and Interaction: Individual SEN

10.1 Autism Spectrum Disorder (ASD)

Key Messages

- Prevalence rates for *ASD* represent the combined data for Asperger's and Autism as collected by the DE. Prevalence rates showed overall increases across school types at Stages 1-4 and Stage 5. In most instances, the highest change ratios across school types were among females.
- In primary and grammar schools, prevalence rates for males were higher at Stage 5 than at Stage 4; in secondary schools, rates were higher for both genders at Stage 5.
- Higher prevalence rates were recorded more consistently in the Belfast and South Eastern regions across all school types and higher change ratios were recorded more consistently in Belfast and North Eastern regions. LGD mapping reflected this distribution and also revealed other localised densities within other regions.
- In primary and secondary schools, there were higher prevalence rates in MDM 5 in 2010/11 and 2018/19, whilst in grammar schools, these were in MDM 10 and 2 respectively.

In **primary schools,** prevalence rates (Appendix 9) for both genders at Stages 1-4, and Stage 5 increased over time (Figures 81 and 82), with increases for males at Stage 5 regularly higher than at Stage 4. At Stages 1-4, prevalence rates were highest in the Belfast region for females and males (0.09% - 0.54% and 0.37% - 1.66% respectively). Change ratios were higher across all regions for females (excepting the Southern region), with the highest change (7.0) in the North Eastern region; the highest change for males (4.5) was in the Belfast region. At Stage 5, prevalence rates were highest in the South Eastern region for females and males (0.09% - 0.22% and 0.60% - 0.89% respectively). Change ratios were higher for females (5.0) and males (2.5) in the North Eastern region, with ratios for females higher overall in three of the regions.
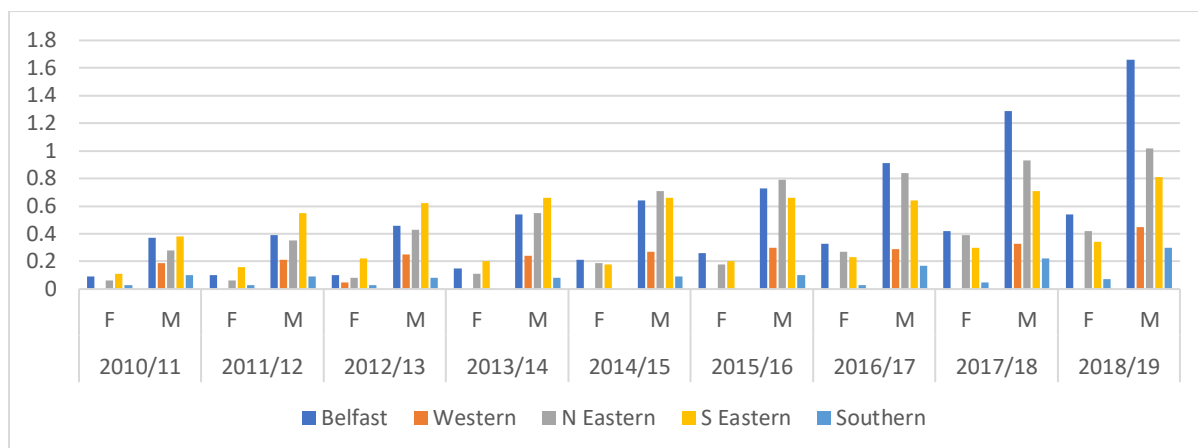
Figure 81. Prevalence of ASD in primary schools at Stages 1-4 by region/gender
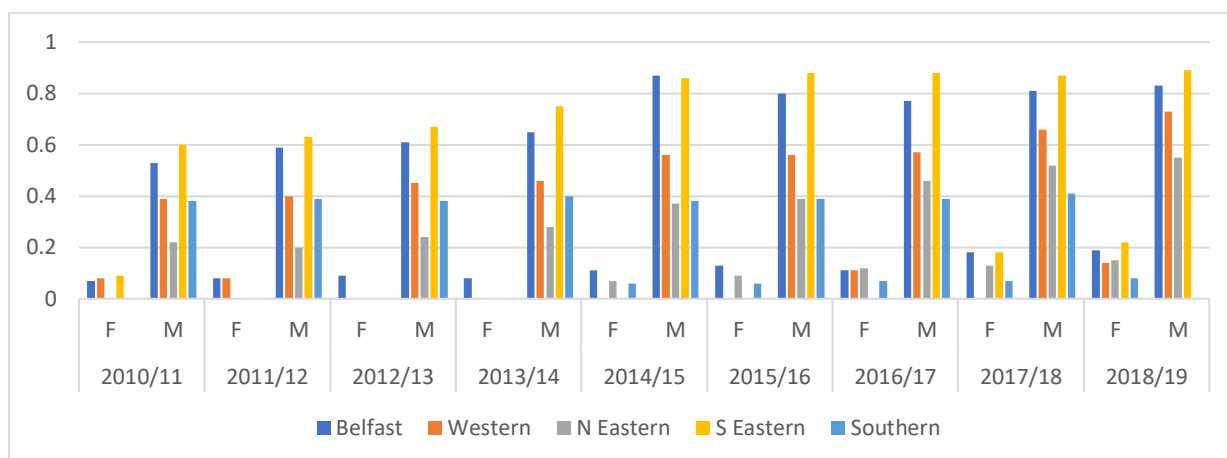
Figure 82. Prevalence of ASD in primary schools at Stage 5 by region/gender

Comparison of ASD by **year group** indicated a growth in prevalence rates for both genders at Stages 1-4 and Stage 5. When looked at by year group, the prevalence rates at Stages 1-4 appeared to rise from Year 1 upwards for males; although there was a similar pattern for females, this was more apparent from 2014/15 onwards. The highest change ratio for males (4.3) was in Year 5 and for females (5.0) in Year 4, although data should be interpreted in the context of low prevalence rates. At Stage 5, prevalence rates were consistently low for females with more evidence of increases among males; the highest change for males (2.2) in Year 6 and females (3.0) in Years 6 and 7 should be interpreted in the context of low prevalence rates. A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were slightly higher in MDM 4 and MDM 7-10 in 2010/11 and in MDM 1 in 2018/19. At Stage 5, prevalence rates were slightly higher in MDM 5 in 2010/11 and again in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Down

district in 2010/11 and in Magherafelt, Newtownabbey, Carrickfergus, Belfast and Castlereagh districts in 2018/19. Distribution at Stage 5 showed the highest density in Down in 2010/11 and in Down, Belfast, Castlereagh, Cookstown and Fermanagh districts in 2018/19 (Maps 45-48).

Map 45 & 46: Distribution of ASD in primary schools at Stages 1-4 by pupil LGD
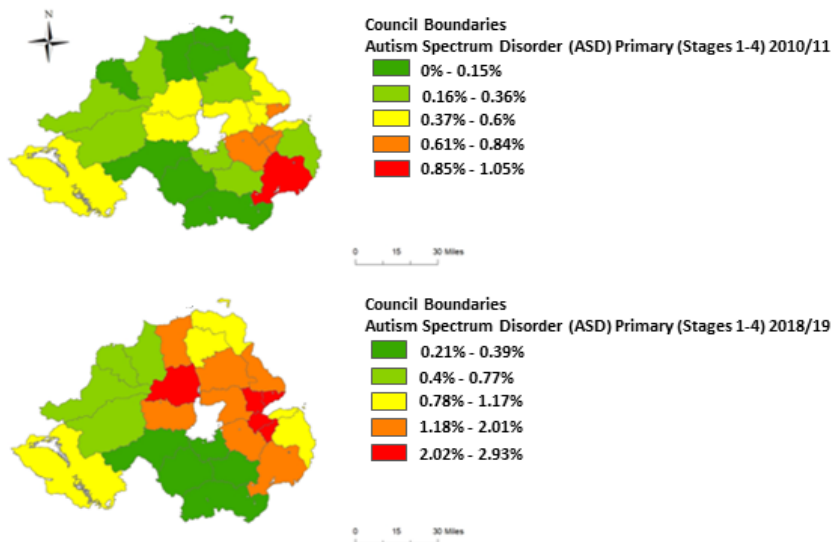
Map 47 & 48: Distribution of ASD in primary schools at Stage 5 by pupil LGD
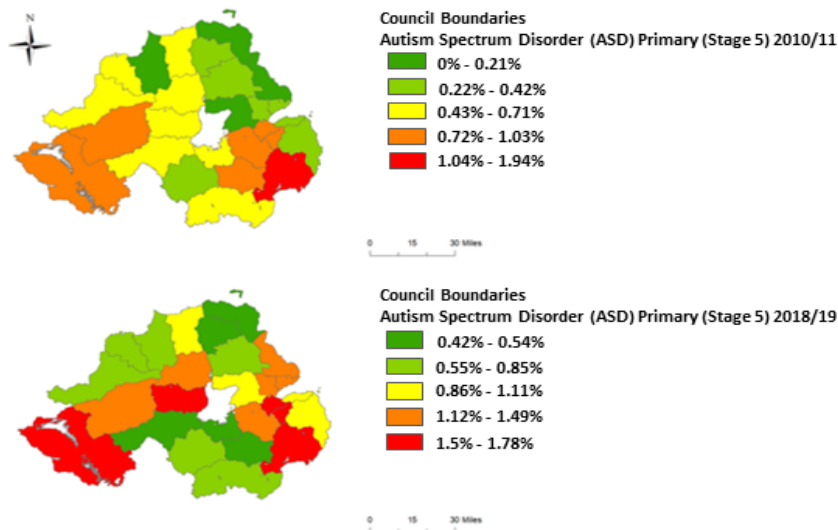
In **secondary schools,** there was an overall increase in prevalence rates for both genders at Stages 1-4, and Stage 5 (Figures 83 and 84), with rates higher at Stage 5 than at Stage 4. At Stages 1-4, prevalence rates were highest in the Belfast region for females (0.10% - 0.52%) and in the North Eastern region for males (0.28% - 1.31%). Change ratios were higher across

all regions for females (excepting the Belfast region), with the highest change (7.3) in the North Eastern region; the highest change for males (5.7) was in the Belfast region. At Stage 5, prevalence rates were highest in the Belfast region for females (0.12% - 0.24%) and in the South Eastern region for males (1.00% - 2.00%). Change ratios were higher for females (2.7) in the North Eastern region and for males (2.0) in the South Eastern region, with only the Southern region showing a reduced change among females (0.7).
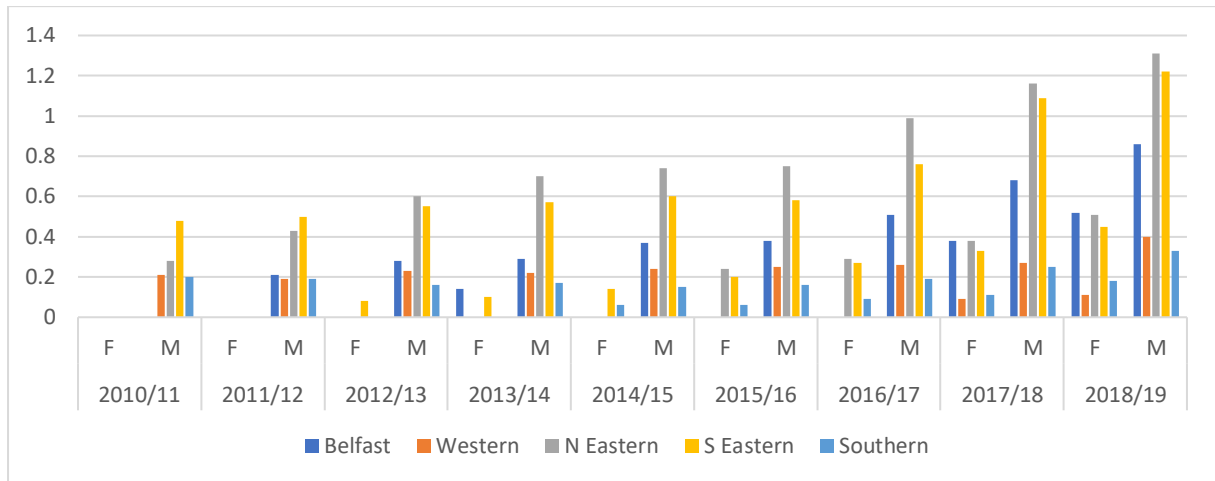
Figure 83. Prevalence of ASD in secondary schools at Stages 1-4 by region/gender
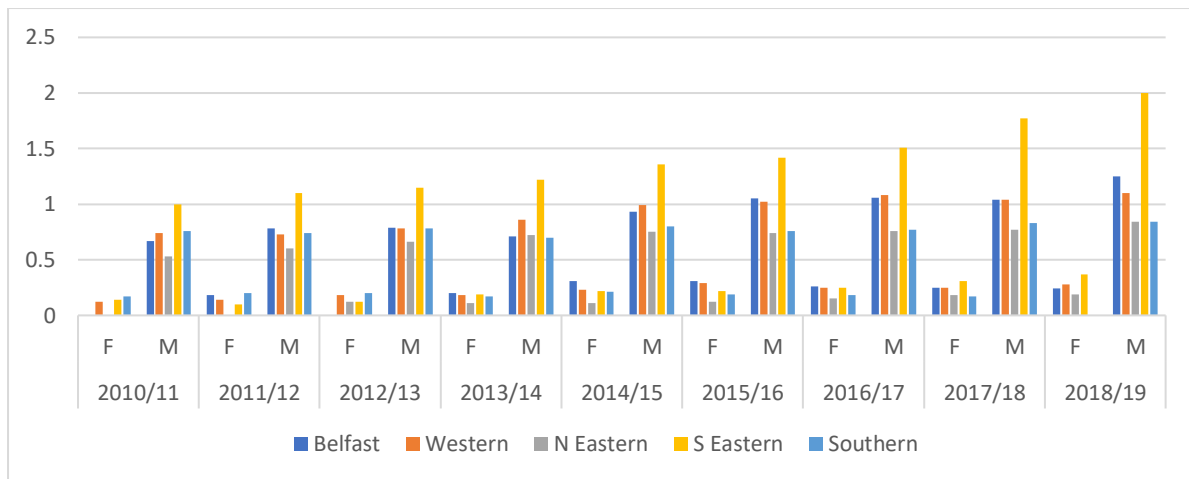
Figure 84. Prevalence of ASD in secondary schools at Stage 5 by region/gender

Comparison of ASD by **year group** indicated a growth in prevalence rates for both genders at Stages 1-4 and Stage 5. When looked at by year group, the prevalence rates at Stages 1-4 appeared to rise between Years 8 and 10 for both genders and decrease in subsequent years. The highest change ratio for males (4.0) was in Year 10 and for females (7.0) in Year 9, although the low prevalence rates mean data should be interpreted accordingly. At Stage 5, prevalence rates fluctuated between year groups, with the highest change ratio for females (4.0)

in Year 12 and for males (2.3) in Year 11. A comparison of prevalence rates by **MDM** showed these were generally low across all MDM at Stages 1-4 in 2010/11, with slightly higher rates in MDM 3-8; in 2018/19, rates were highest in MDM 7. At Stage 5, rates were highest in MDM 4 and 5 in 2010/11, shifting to MDM 2 and 5 in 2018/19.

In **grammar schools,** there was an overall increase in prevalence rates for both genders at Stages 1-4, and Stage 5 (Figures 83 and 84), with rates higher for males at Stage 5 in four of the five regions (excepting North Eastern). At Stages 1-4, prevalence rates were highest overall in the South Eastern region for females and males (0.05% - 0.26% and 0.43% - 0.66% respectively). Change ratios were higher across all regions for females, with the highest change (15.5) in the North Eastern region; the highest change for males (5.2) was also in this region. At Stage 5, prevalence rates were highest in the Belfast region for females and males (0.09% - 01.8% and 0.46% - 0.99% respectively). Change ratios were higher for females (5.0) in the Western region and for males (2.2) in the Belfast region, with only the North Eastern region showing a reduced change among females (0.5).
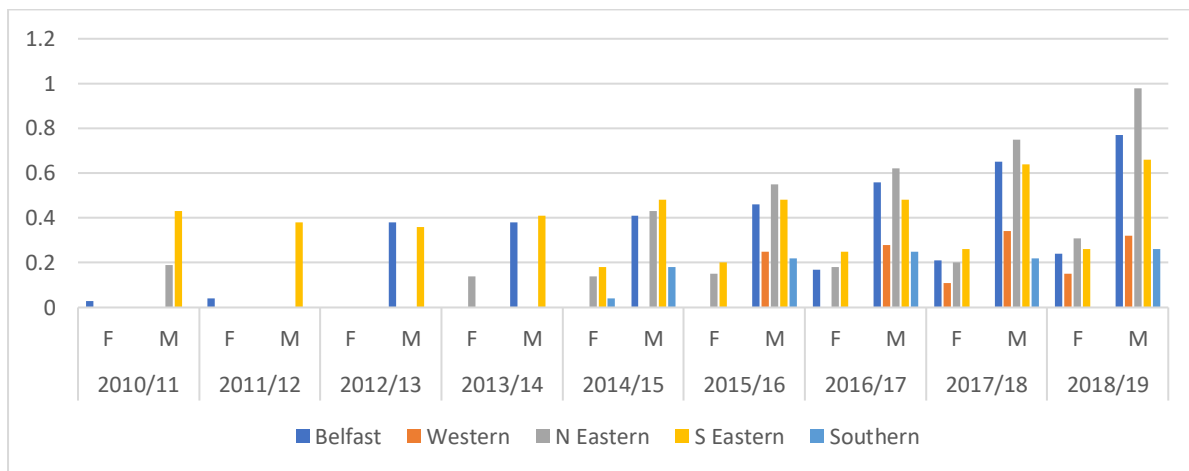
Figure 85. Prevalence of ASD in grammar schools at Stages 1-4 by region/gender
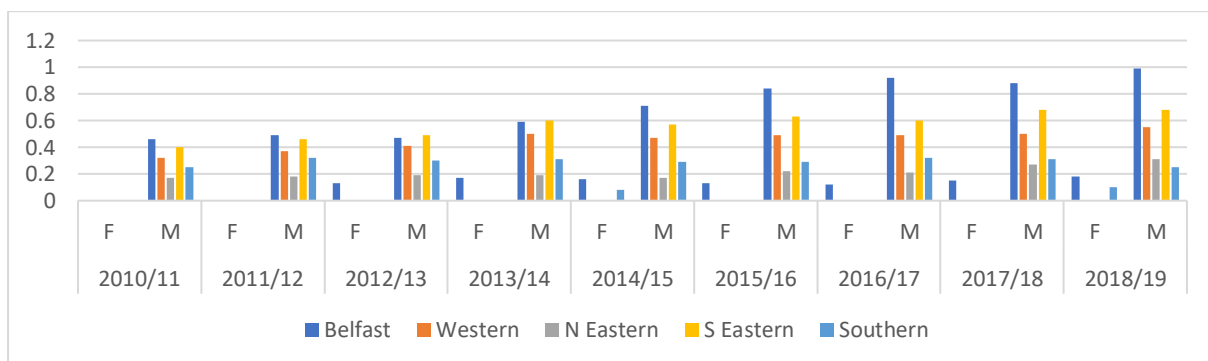

**Figure 86. Prevalence of ASD in grammar schools at Stage 5 by region/gender**

Comparison of ASD by **year group** indicated a growth in prevalence rates for both genders at Stages 1-4 and for males at Stage 5. When looked at by year group, prevalence rates fluctuated for both genders at Stages 1-4; there was a high level of suppressed data, so higher change ratio for males (3.3) and females (3.0) means data should be interpreted accordingly. At Stage 5, there continued to be a high level of supressed data; prevalence rates fluctuated between year groups, with little or no change for females (1.0), with the highest change for males at 2.0. A comparison of prevalence rates by **MDM** showed rates at Stages 1-4 were highest in MDM 10 in 2010/11 and again in 2018/19. At Stage 5, prevalence rates were generally low, but the highest rates remained in MDM 10 in 2010/11 and 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Antrim district in 2010/11 and in Antrim, Newtownabbey, Carrickfergus, Larne and Magherafelt districts in 2018/19. Distribution at Stage 5 showed the highest density in Down and Craigavon districts in 2010/11 and in Down, Belfast and Castlereagh districts in 2018/19 (Maps 49-52).

Map 49 & 50: Distribution of ASD in post-primary schools at Stages 1-4 by pupil LGD
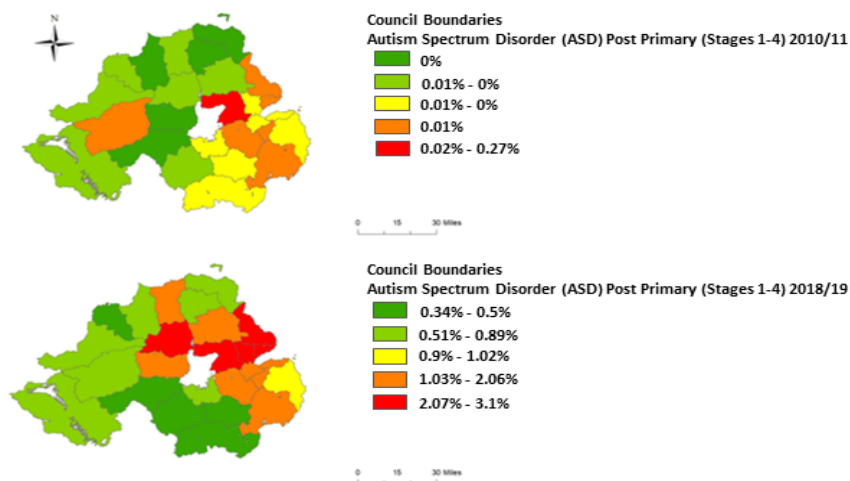
**Map 51 & 52: Distribution of ASD in post-primary schools at Stage 5 by pupil LGD**
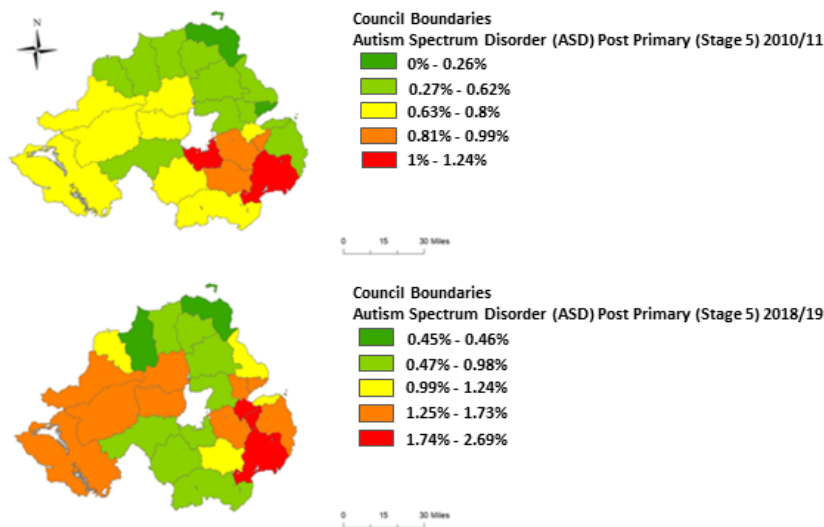
In **special schools,** prevalence rates increased for both genders at Stage 5 (Figures 85). Prevalence rates were highest overall in the Southern region for females and males (2.14% - 4.59% and 10.87% - 18.35% respectively). Change ratios were higher for females (4.7) and males (3.6) in the Belfast region; ratios among females were higher or equivalent to those among males.
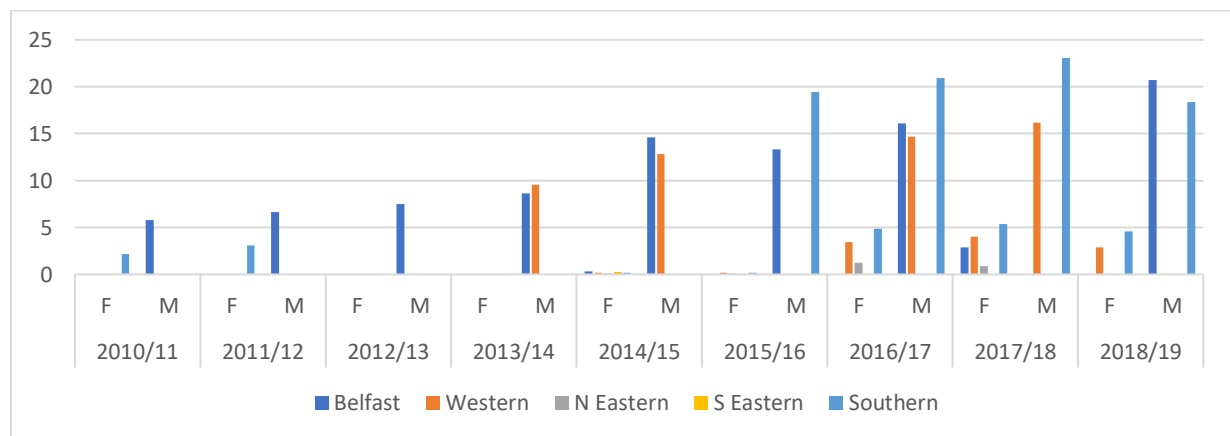
Figure 87. Prevalence of ASD in special schools at Stage 5 by region/gender

Comparison of ASD by **year group** indicated a growth in prevalence rates for both genders at Stage 5. When looked at by year group, prevalence rates for both genders showed a general pattern of increase; for females, this was more apparent between Year 1 – Year 8/9, with more fluctuation over all year groups for males. Change ratios were highest for females (6.3) in Year 9 and for males (3.1) in Year 4. A comparison of prevalence rates by **MDM** showed rates at

Stage 5 were highest in MDM 2 in 2010/11 and in MDM 1 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stage 5 shows the highest density in Cookstown, Newry and Mourne and Down districts in 2010/11 and in Belfast, Castlereagh, Newry and Mourne and Cookstown districts in 2018/19 (Maps 53-54).

Map 53 & 54: Distribution of ASD in special schools at Stage 5 by pupil LGD
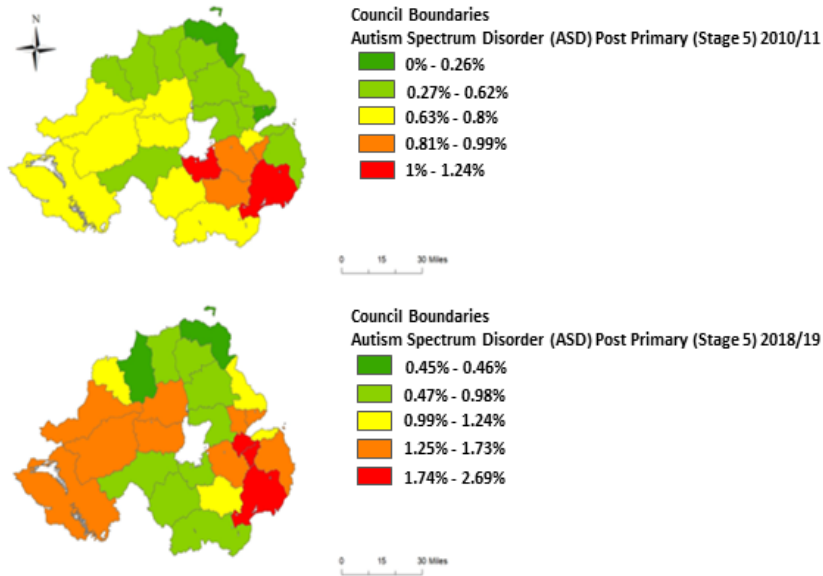
10.2   Communication and Interaction: Speech and Language Difficulties

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Key Messages

- Prevalence rates for *Speech and Language Difficulties* varied across gender, schools, and regions. There were increases for both genders in secondary schools and decreases for both genders in special schools. Rates fluctuated in primary schools and increased among males at Stages 1-4 grammar schools.
- Higher prevalence rates were recorded more consistently in the Western region across school types and higher change ratios were more evident in the Southern region. LGD mapping reflected this distribution and also revealed localised densities within other regions.
- In primary and secondary schools, there were higher prevalence rates in MDM 5 in 2010/11 and 2018/19, whilst in grammar schools, these were in MDM 10 and 2 respectively.

</div>

In **primary schools,** there were increases and decreases in prevalence rates for both genders at Stages 1-4 and for females at Stage 5 (Figures 86 and 87). At Stages 1-4, prevalence rates were highest in the Western region for females and males (0.71% - 0.78% and 1.76% - 1.95% respectively). Change ratios were highest for females (1.7) and males (2.1) in the Southern region, with decreases for both genders in the Belfast region and for males in the North Eastern region. At Stage 5, prevalence rates were highest overall in the South Eastern region for females (0.08% - 0.17%) and in the Southern region for males (0.44% - 0.52%). Change ratios were higher for females (2.1) in the South Eastern region and for males (1.7) in the Belfast region.
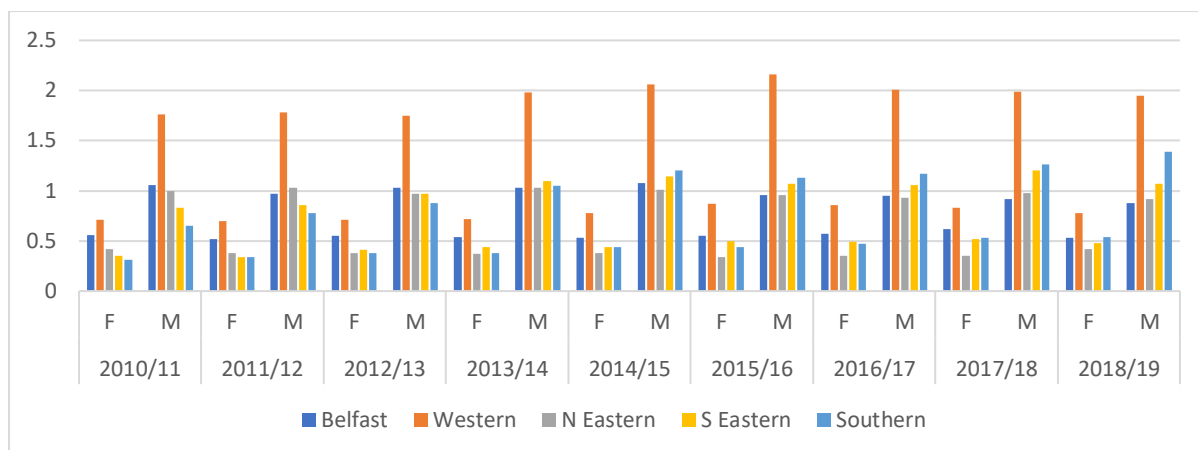
Figure 88. Prevalence of Speech and Language Difficulties in primary schools at Stages 1-4 by region/gender
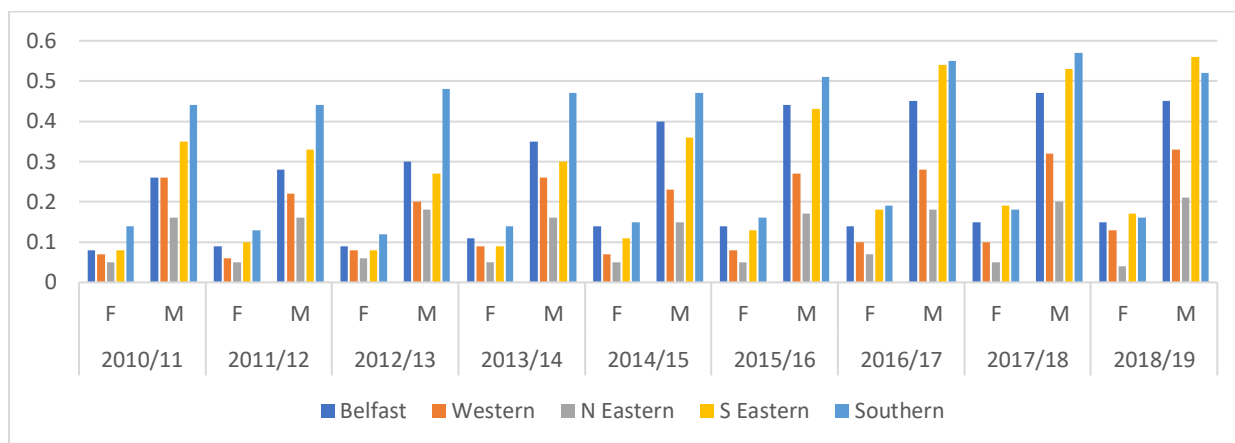
Figure 89. Prevalence of Speech and Language Difficulties in primary schools at Stage 5 by region/gender

Comparison of Speech and Language Difficulties by **year group** indicated an overall growth in prevalence rates for both genders at Stages 1-4 and Stage 5. When looked at by year group, the prevalence rate at Stages 1-4 typically rose between Years 1 and 3 for females and males. The highest change ratio for females (1.4) was in Year 3 and for males (1.5) in Year 4. At Stage 5, prevalence rates were consistently low for females with little change across year groups. Among males, prevalence rates generally increased between Years 1 and 5. The highest change ratio for both genders was 2.0. A comparison of prevalence rates by **MDM** at Stages 1-4 were highest in MDM 1 in 2010/11 and in MDM 2 in 2018/19. At Stage 5, rates were highest in MDM 1, 3 and 5 in 2010/11 and in MDM 2 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Fermanagh, Omagh, Strabane, Derry, Limavady and Antrim districts in 2010/11 and in

Fermanagh, Omagh, Derry and Cookstown districts in 2018/19. Distribution at Stage 5 showed the highest density in Down and Armagh districts in 2010/11 and in Down district in 2018/19 (Maps 55-58).

Map 55 & 56: Distribution of Speech and Language Difficulties in primary schools at Stages 1-4 by pupil LGD

Council Boundaries
Speech and Language Difficulties Primary (Stages 1-4) 2010/11
- 0.75% - 1.07%
- 1.08% - 1.53%
- 1.54% - 1.85%
- 1.86% - 2.7%
- 2.71% - 3.71%

Council Boundaries
Speech and Language Difficulties Primary (Stages 1-4) 2018/19
- 1.14% - 1.72%
- 1.73% - 2.05%
- 2.06% - 2.44%
- 2.45% - 3.04%
- 3.05% - 3.67%

Map 57 & 58: Distribution of Speech and Language Difficulties in primary schools at Stage 5 by pupil LGD

Council Boundaries
Speech and Language Difficulties Primary (Stage 5) 2010/11
- 0.24% - 0.33%
- 0.34% - 0.57%
- 0.58% - 0.89%
- 0.9% - 1.38%
- 1.39% - 1.61%

Council Boundaries
Speech and Language Difficulties Primary (Stage 5) 2018/19
- 0.45% - 0.67%
- 0.68% - 0.81%
- 0.82% - 1.01%
- 1.02% - 1.32%
- 1.33% - 1.61%

In **secondary schools,** there were increases in prevalence rates for both genders at Stages 1-4 and at Stage 5 (Figures 88 and 89). At Stages 1-4, overall prevalence rates were highest for females and males in the Western region (0.10% - 0.23% and 0.37% - 0.58% respectively). Change ratios were highest in the Belfast region for females (16.5); suppression rates for females in 2010/11 may have contributed to the high change ratio. Ratios were highest in the Belfast and Southern regions for males (4.2 in both instances). At Stage 5, prevalence

rates were highest in the Southern region for females and males (0.16% - 0.22% and 0.25% - 0.60% respectively). Change ratios were higher for females (4.2) in the Western region and for males (3.2) in the Belfast region.
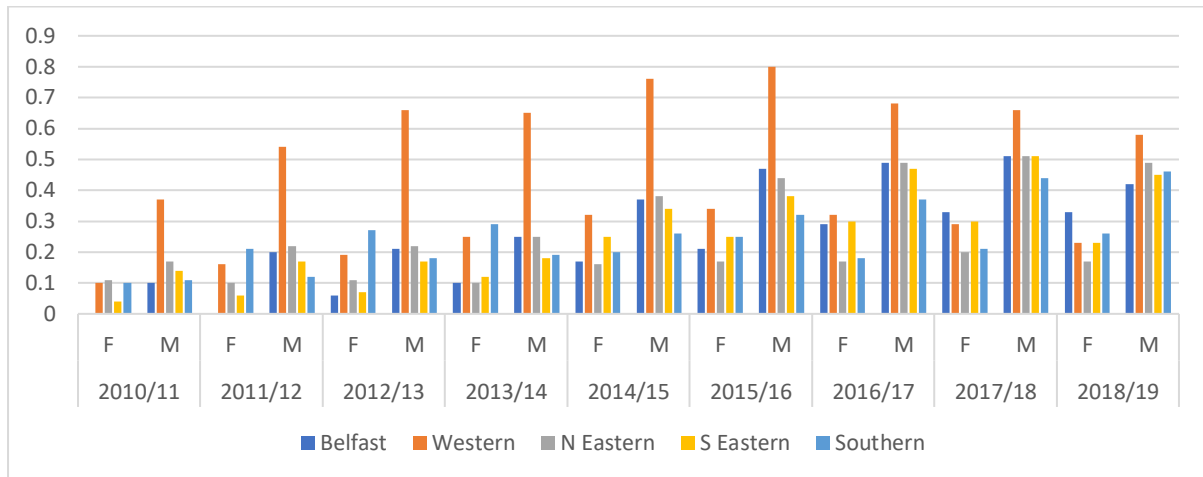
Figure 90. Prevalence of Speech and Language Difficulties in secondary schools at Stages 1-4 by region/gender
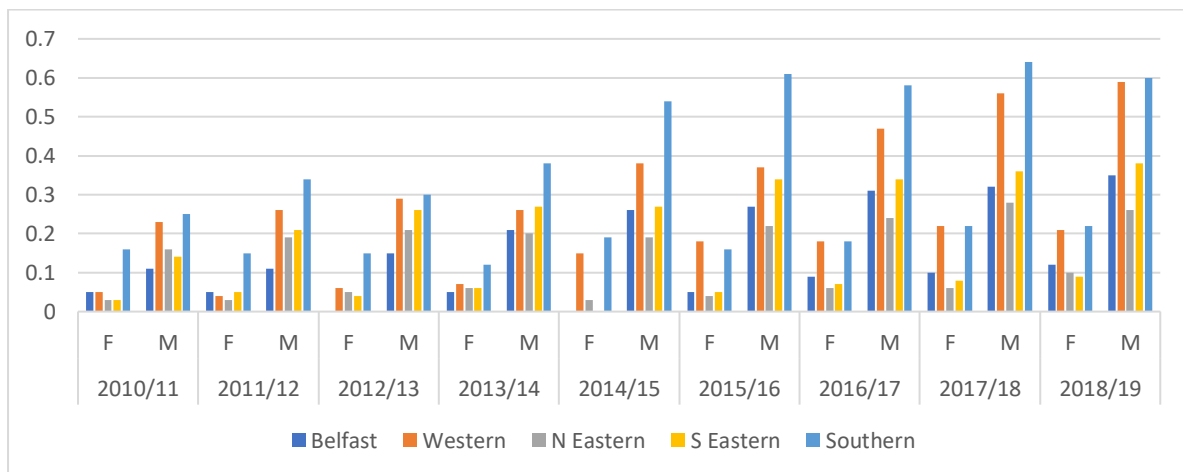
Figure 91. Prevalence of Speech and Language Difficulties in secondary schools at Stage 5 by region/gender

Comparison of Speech and Language Difficulties by **year group** indicated a growth in prevalence rates for both genders at Stages 1-4 and Stage 5, with overall rates slightly higher for females in the former and for males in the latter. When looked at by year group, rates at Stages 1-4 were generally higher between Years 8 and 10 for both genders. The highest change ratio for females (5.0) was in Year 11 and for males (5.0) in Year 8, although the low prevalence rates mean data should be interpreted accordingly. At Stage 5, prevalence rates for both

genders generally decreased over year groups. The highest change ratio for females (3.0) in Years 10-12 and for males (3.0) in Years 11 and 12 should be interpreted in relation to low prevalence rates. Comparison of prevalence rates by **MDM** at Stages 1-4 was based on low or 0.0% instances in 2010/11, with the highest of these in MDM 2; the highest rate in 2018/19 was in MDM 1. At Stage 5, there were similarly low rates in 2010/11 that were comparable across most MDM; in 2018/19, rates were highest in MDM 2, 3 and 5.

In **grammar schools** at Stages 1-4, prevalence rates increased among males and increased or remained the same among females (Figure 90). Prevalence rates were highest overall for females and males in the Western region (0.05% - 0.07% and 0.05% - 0.09% respectively. Change ratios were highest in the Southern region for females (2.5) and males (7.5). At Stage 5, a series of low or 0.0% rates, particularly among females, was insufficient to provide meaningful analysis (Figure 91).

Figure 92. Prevalence of Speech and Language Difficulties in grammar schools at Stages 1-4 by region/gender
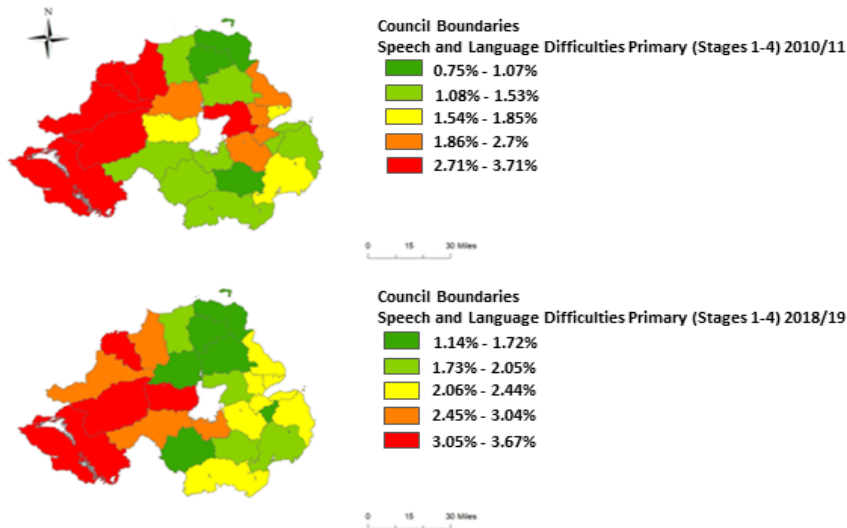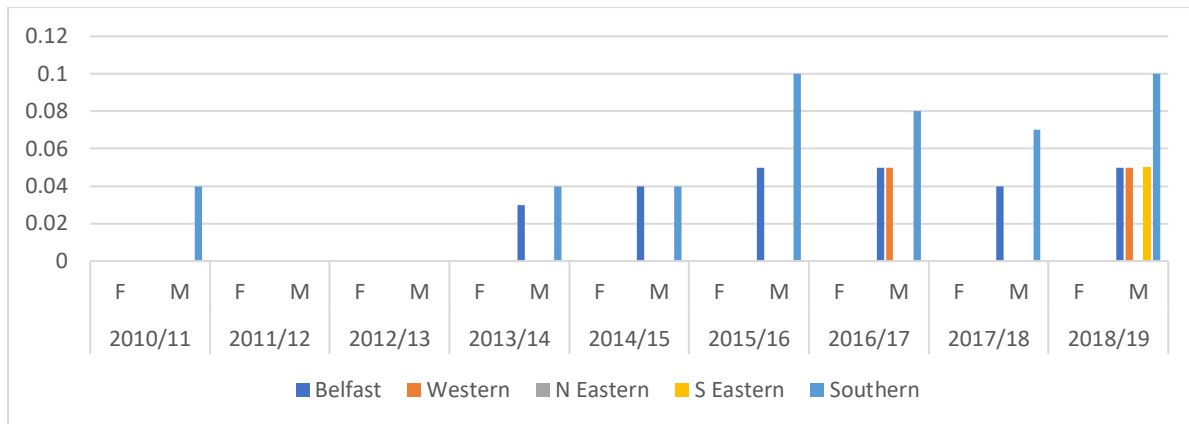
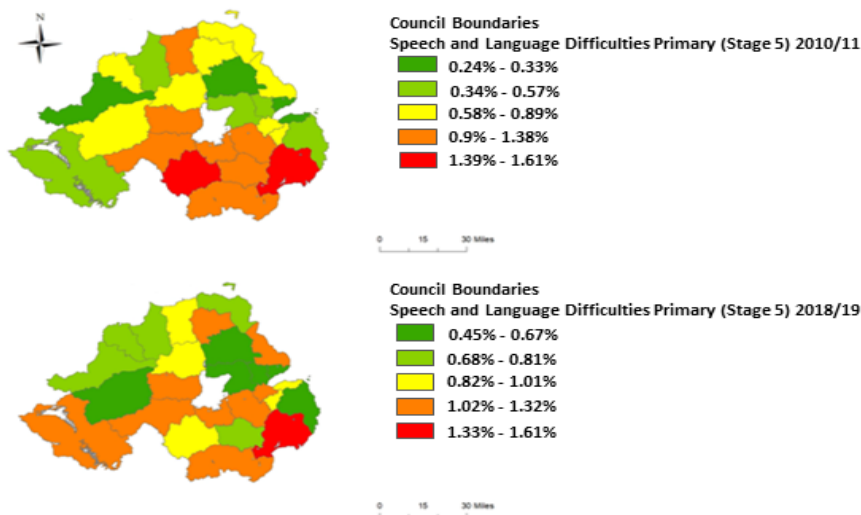**Figure 93. Prevalence of Speech and Language Difficulties in grammar schools at Stage 5 by region/gender**

Comparison of Speech and Language Difficulties by **year group** offered few insights at Stages 1-4 and Stage 5, and there were multiple cases of 0.0% for both genders. Reported prevalence rates were more apparent among males at Stages 1-4 although these were recurrently low over time and across year groups. Based on the data, prevalence rates by **MDM** at Stages 1-4 showed no cases in 2010/11. This was largely replicated in 2018/19; of the available data, the highest rate was in MDM 7. When mapped by LGD using pupils' truncated post code, distribution at Stages 1-4 shows the highest density in Derry, Limavady and Newtownabbey districts in 2010/11 and in Fermanagh, Antrim and Carrickfergus districts in 2018/19 (Maps 59-62). Distribution at Stage 5 showed the highest density in Armagh and Craigavon districts in 2010/11 and in Armagh, Newry and Mourne and Fermanagh districts in 2018/19.

**Map 59 & 60: Distribution of Speech and Language Difficulties in post-primary schools at Stages 1-4 by pupil LGD**
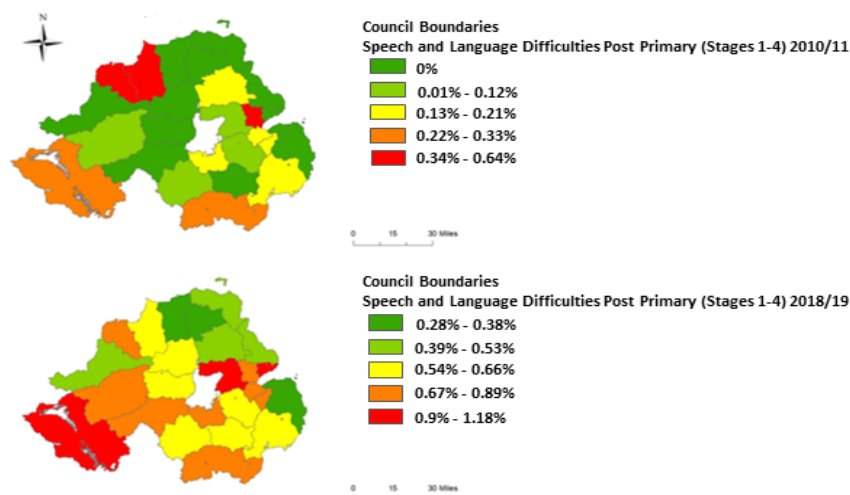
**Map 61 & 62: Distribution of Speech and Language Difficulties in post-primary schools at Stage 5 by pupil LGD**
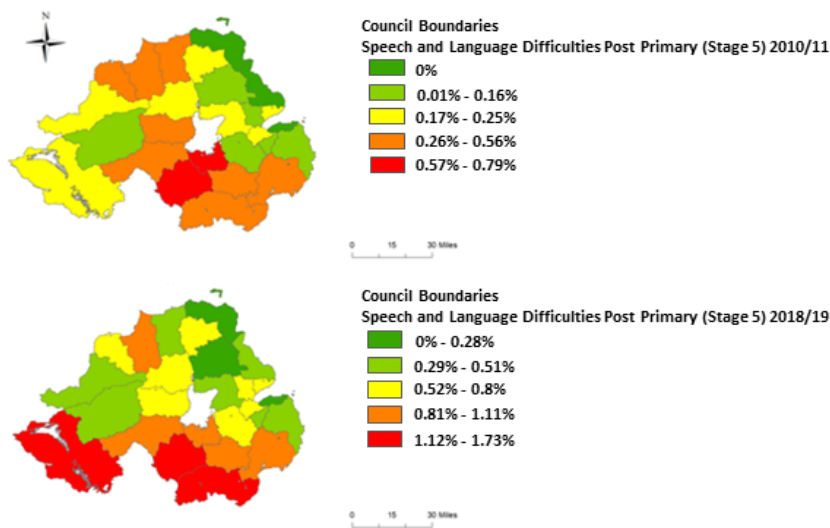
In **special schools** at Stage 5, prevalence rates largely decreased for females and males across regions (Figure 92), with only the North Eastern region showing an increase for both genders. Prevalence rates were highest overall for females and males in the Western region (0.05% - 0.07% and 0.05% - 0.09% respectively. Change ratios were highest in the Southern region for females (2.5) and males (7.5).
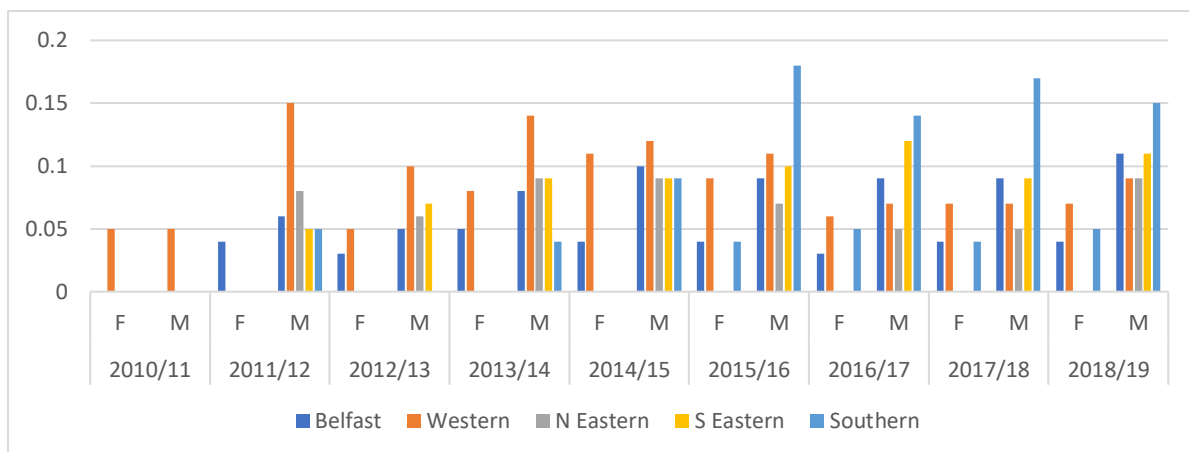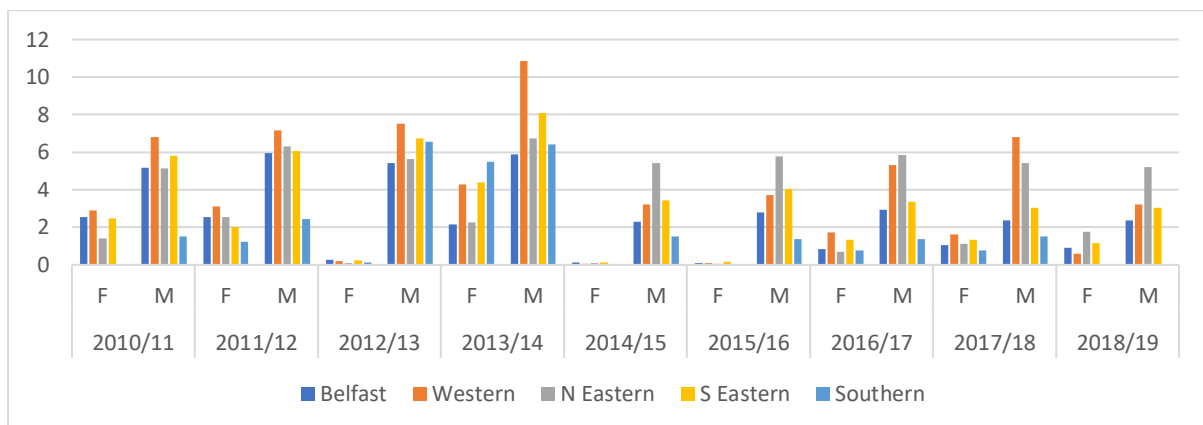

Figure 94. Prevalence of Speech and Language Difficulties in special schools at Stage 5 by region/gender

Comparison of Speech and Language Difficulties by **year group** indicated an overall decrease in prevalence rates for both genders at Stage 5 over time. Prevalence rates for both genders fluctuated between year groups; change ratios were highest for females (0.2) in Year 4 and for

males (0.3) in Year 10. A comparison of prevalence rates by **MDM** showed rates at Stage 5 were highest in MDM 1 in 2010/11 and in MDM 1 and 2 in 2018/19. When mapped by LGD using pupils' truncated post code, distribution at Stage 5 shows the highest density in Moyle, Coleraine, Ballymoney, Cookstown, Dungannon and Down districts in 2010/11 and in Moyle, Coleraine, Ballymoney, Strabane and Down districts in 2018/19 (Maps 63-64).

Map 63 & 64: Distribution of Speech and Language Difficulties in special schools at Stage 5 by pupil LGD
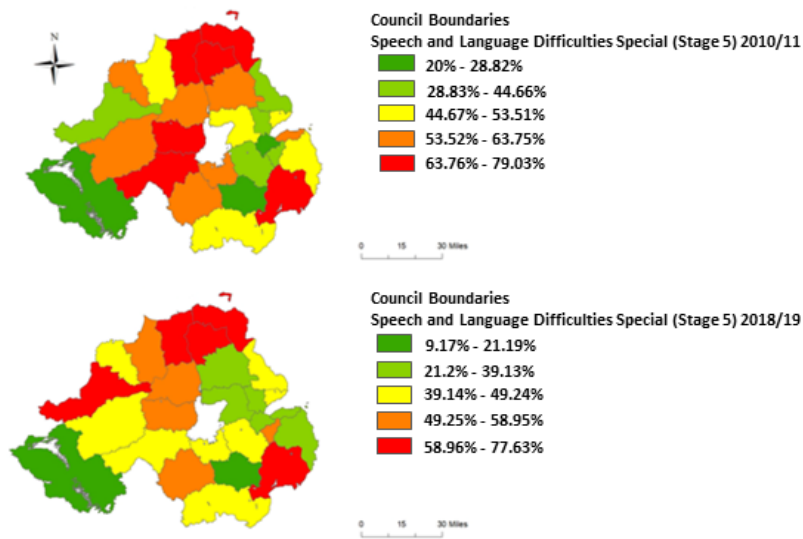
Section 11: Northern Ireland Longitudinal Study Analysis

The socio-demographic and health variables contained within the NILS represents a strong research resource to explore the wider profile of the population and/or sub-populations – including children and young people with SEN. In the context of this project, an obvious limitation of the NILS is the absence of recent Census data, along with variations in the disability variables recorded in 2001 and 2011 Censuses. Nonetheless, inclusion of the NILS data provides some preliminary insight into its potential value as a complement to education data; this is likely to become more relevant as reporting on Census 2021 will contain three new variables of relevance to the project: learning disability, learning difficulty and Asperger's/Autism.

As detailed in Section 2, NILS data analysis drew on 2001 and 2011 Censuses, making use of health variables along with variables (predictors or correlates) typically associated with health outcomes. Correlates were grouped in three broad levels: individual (eg demographic factors such gender, ethnicity); household (e.g. household-level economic deprivation, living in social housing); and school (e.g. attending a school with an above average number of children receiving free school meals). Data analysis was undertaken to quantify the associations between these predictors and available health variables in order to identify key risk factors for child and adolescent health problems and disability (relevant to SEN) in Northern Ireland. A total of 12 health variables were included in the 2011 Census in comparison with only two in the 2001 Census, leaving a narrower range of variables. As such, two distinct sets of analyses were undertaken: i) cross sectional analyses to quantify the associations between the available correlates and select health outcomes in the 2011 data, and ii) longitudinal analyses to examine predictive associations using the sub-sample who had data in both 2001 and 2011. The data presented in this section focuses on health variables most relevant to the NILS sub-population of children and young people.

11.1 Cross-sectional analysis in 2011 sweep of NILS

11.1.1 Descriptive Statistics

Frequencies and percentages of the health outcomes, along with individual, household and school-level correlates are presented in Table 4. The mean age of the sample in the 2011 Census was 11.15 years (SD=3.95).

Table 4. Frequencies/percentages of correlates and health outcomes in 2011 sample

Individual correlates		N	%	HOUSEHOLD CORRELATES		N	%
Sex	Male	42,417	50.69	Employment deprivation	Not deprived	68,045	0.81
	Female	41,263	49.31		Deprived	15,635	0.19
Ethnicity	White	81,759	97.89	Social housing	Not in social housing	72,699	0.87
	Other	1,759	2.11		Living in social housing	10,981	0.13
Household comp	2 parent household	60,233	0.72	Education deprivation	Not deprived	70,225	0.84
	1 parent household	22,276	0.27		Deprived	13,455	0.16
	Other	903	0.01	Car access	Car in house	73,507	0.88
					No car in house	10,173	0.12
				Housing deprivation	Not deprived	74,364	0.89
					Deprived	9,316	0.11
				Settlement	Urban	39,849	0.48
					Intermediate	13,319	0.16
					Rural	29,692	0.35
School correlates		N	%	**Health outcomes**		N	%
Free school meals	Below average	49,378	0.59	Learning, intellectual or social or behavioural difficulty	Absent	79,534	0.95
	Above average	34,302	0.41		Present	3,984	0.05
School attendance	Above average	48,416	0.58	Communication difficulty	Absent	82,006	0.98
	Below average	35,264	0.42		Present	1,512	0.02
Teacher/pupil ratio	Above average	52,333	0.63	Emotional, psychological or mental health condition	Absent	82,968	0.99

	Below average	31,347	0.37		Present	550	0.01
				Blind or visually impaired	Absent	83,211	0.99
					Present	307	0.01
				Deaf or partially hearing impaired	Absent	83,016	0.99
					Present	502	0.01
				Other health condition	Absent	81,457	0.98
					Present	2,061	0.02
				Any health condition	Absent	70,877	0.85
					Present	12,641	0.15

11.1.2 Associations between health conditions and individual, household and school predictors

The results from the mixed effects binary logistic regression analyses in the cross-sectional sample (2011) are presented in Figures 93-99. A non-technical description of how to interpret these plots can be found below (Note 1). Full results from these models are available upon request.

> **Note 1. Interpreting OR plots.**
> 1. The below plots illustrate the relationships between the 7 health outcome variables and the various individual, household, and school predictors.
> 2. Each relationship is expressed as an 'odds ratio' (ORs). ORs represent the chance of having a health condition given the presence of a predictor. For instance, if we examined the relationship between economic deprivation and any health condition, and found an OR of 2.0, we could conclude that those who were economically deprived were *twice as likely* to suffer from a health condition.
> 3. Each OR below is presented as a point on the graph, and is accompanied by a 95% confidence interval (CIs; lines around the point). An OR is an estimate of a relationship based on the data we have available, whereas confidence intervals provide us with a plausible range of where this estimate might fall in the entire population.
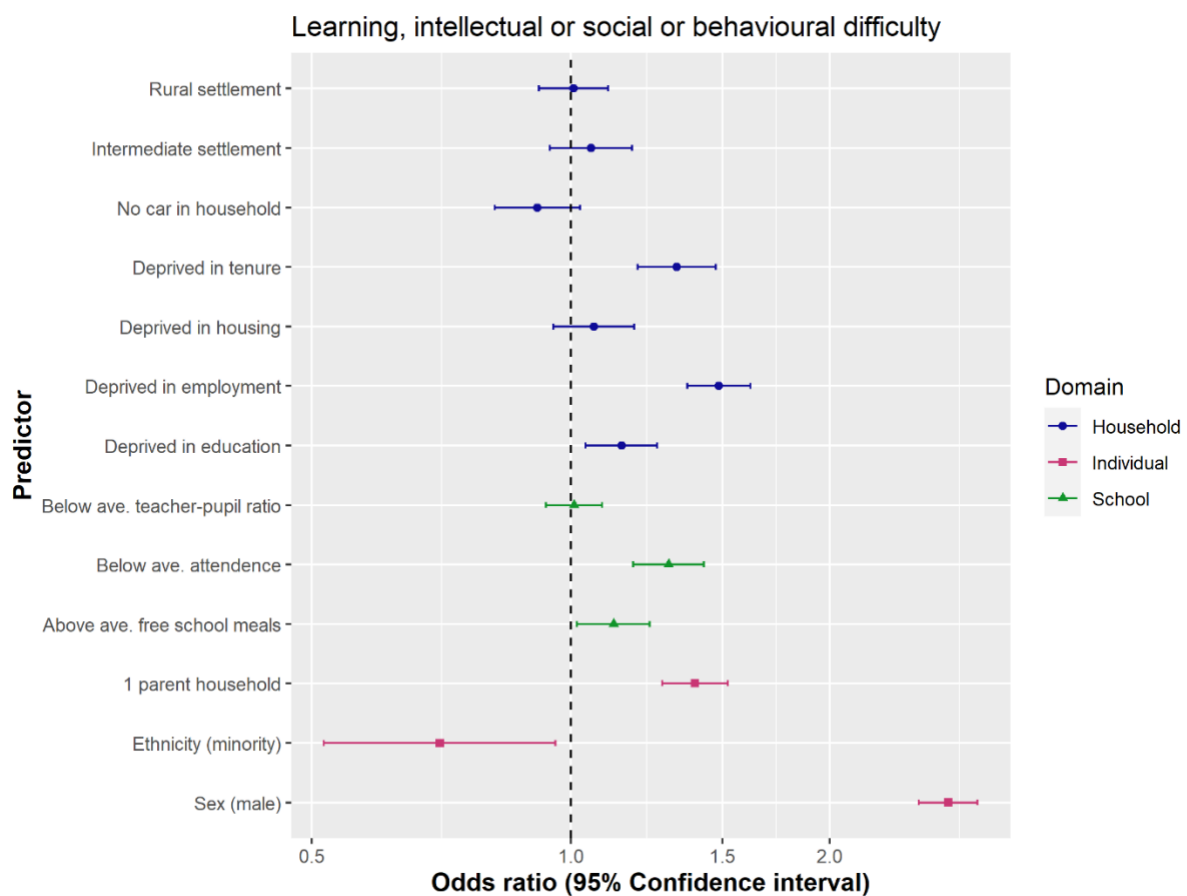
Figure 95. Mixed effects logistic regression predicting learning, intellectual, social, and behavioural difficulties

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with learning, intellectual or social or behavioural difficulty as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

As shown in Figure 95, those deprived in employment, tenure (i.e. living in social housing) and education were between 1.14 (95% CI=1.04-1.26) and 1.49 (95% CI 1.37-1.62) times more likely to have a learning, intellectual or social or behavioural difficulty, compared with those

who were not deprived in these dimensions. Children who were enrolled at schools with below average attendance (OR=1.30; 95% CI=1.18-1.42), and above average free school meal levels (OR=1.12; 95% CI=1.02-1.24) were also at greater risk of having a learning difficulty. Compared with two-parent households, children from single-parent households were 1.39 times (95% CI=1.28-1.52) more likely to have a condition, and males were almost three times as likely as females to have difficulties (OR=2.75; 95% CI=2.54-2.97).
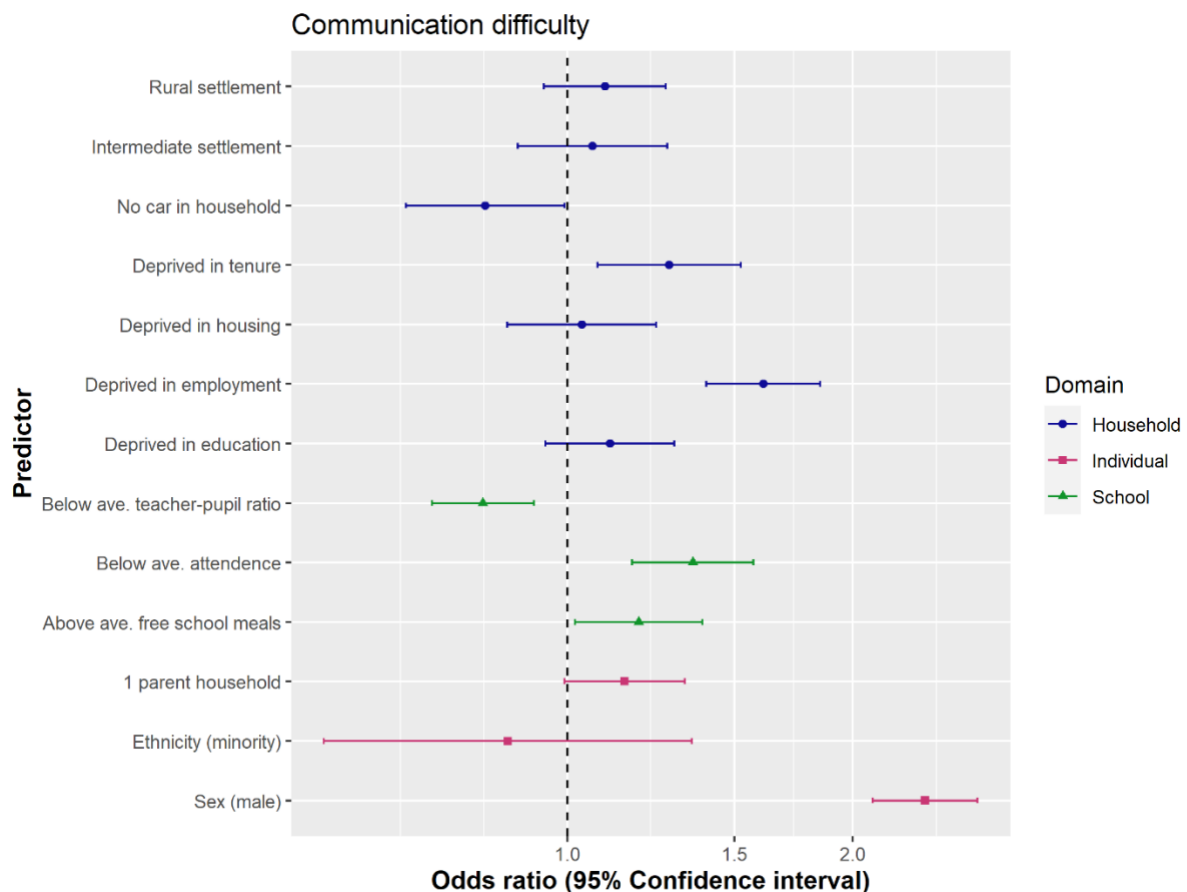
Figure 96. Mixed effects logistic regression predicting communication difficulty

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with communication difficulty as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

With regards to communication difficulties (Figure 96), children deprived in household employment (OR=1.60; 95% CI=1.40-1.84), and living in social housing (OR=1.28; 95% CI=1.08-1.52) were more likely to have a disorder. Children who were enrolled at schools with below average attendance (OR=1.35; 95% CI=1.17-1.57), and above average free school meal levels (OR=1.19; 95% CI=1.01-1.39) were also at greater risk of having a communication

difficulty. Males were almost two and a half times more likely to qualify for a communication difficulty (OR=2.39; 95% CI=2.10-2.71).

Figure 97. Mixed effects logistic regression predicting emotional, psychological, or mental conditions

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with emotional, psychological or mental condition as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

Looking at emotional, psychological and mental health conditions (Figure 97), children deprived in household employment (OR=1.87; 1.53-2.28) and living in social housing (OR=1.33; 1.04-1.70) were more likely to have these conditions. No school-level factors were associated with in/decreased risk of having a mental health problem. Children from single-parent households were almost twice as likely to have a mental health problem (OR=1.93; 1.57-2.38), and males were also at increased risk (OR=1.3; 95% CI=1.15-1.66).
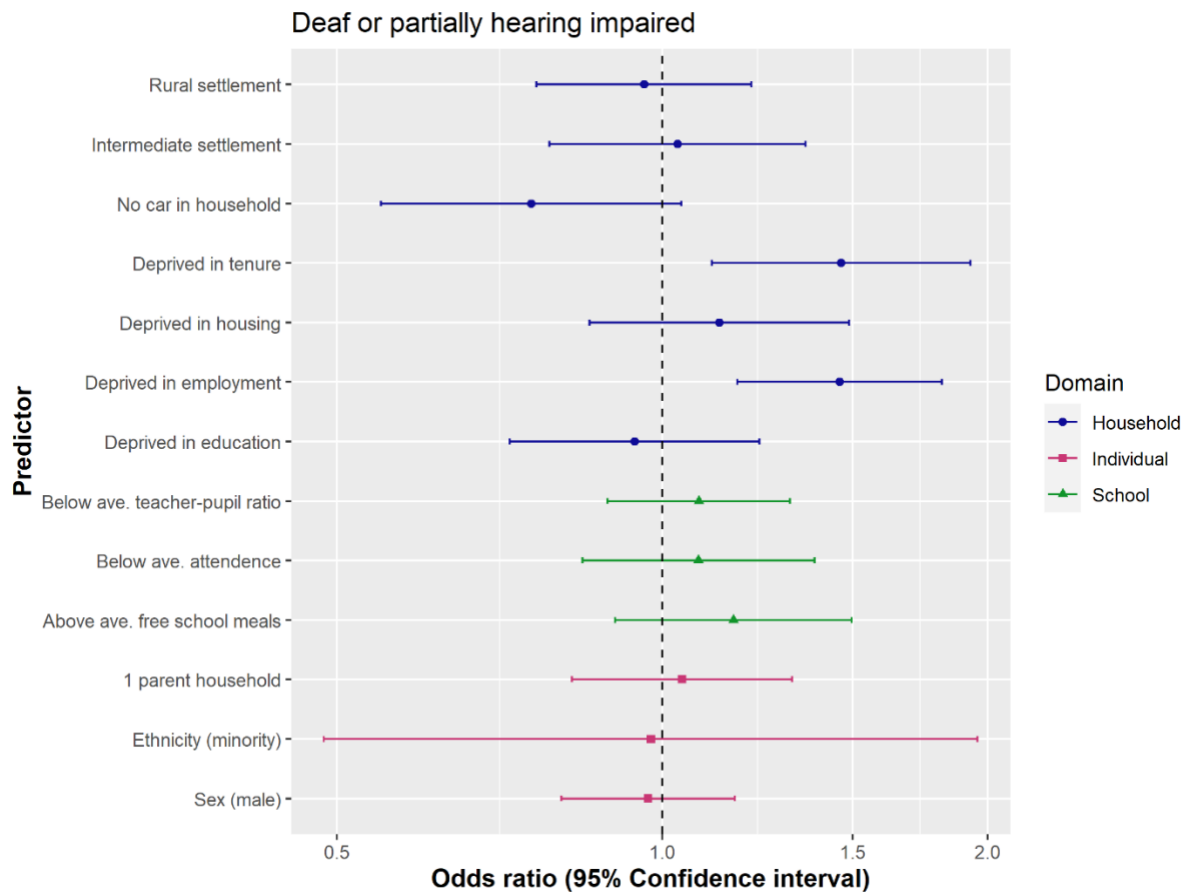
Figure 98. Mixed effects logistic regression predicting deafness/partial hearing

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with deaf or partially hearing as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

Looking at Figure 98, only deprivation in tenure (OR=1.46; 95% CI=1.11-1.93) and employment (OR=1.45; 95% CI=1.17-1.81) were associated with increased risk of hearing difficulties.
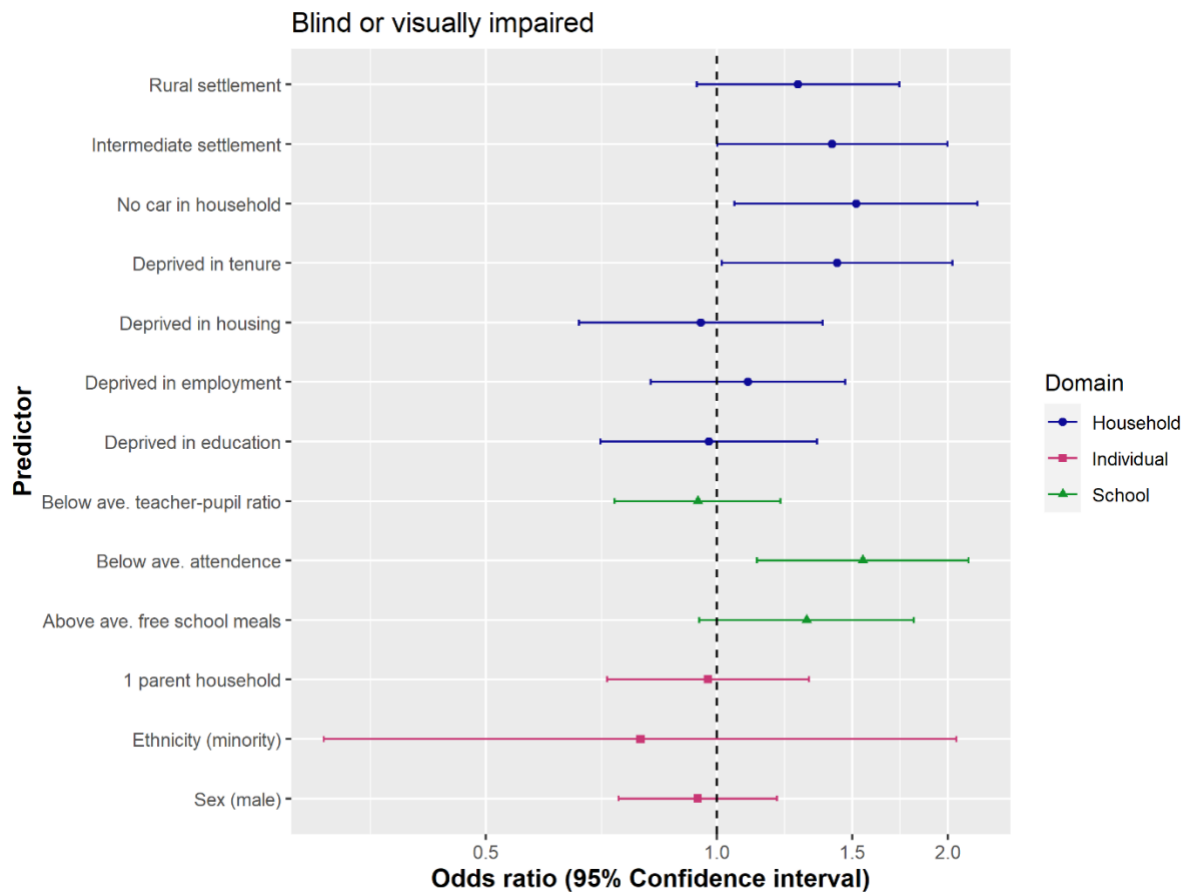
Figure 99. Mixed effects logistic regression predicting blindness/visual impairment

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with blind or visually impaired as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

Figure 99 shows that those living in social housing (OR=1.43; 95% CI=1.01-2.03) and with no access to a car (OR=1.52; 95% CI=1.05-2.19) were more likely to have visual problems. Those who had vision problems were also more likely to be enrolled at a school with poor attendance (OR=1.55; 95% CI=1.13-2.12).
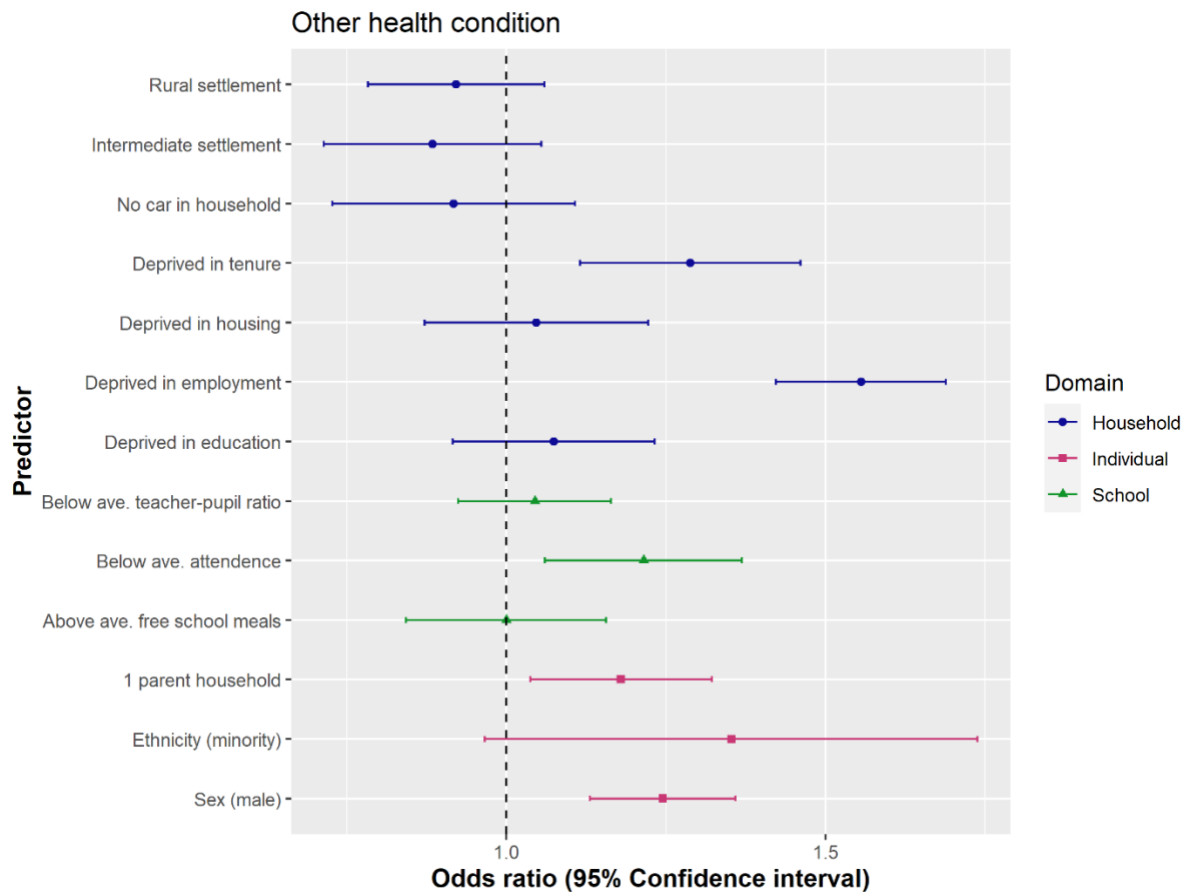
Figure 100. Mixed effects logistic regression predicting other health conditions

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with other health condition as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

Looking at other health conditions (Figure 100) - those not in the 10 categories covered in the 2011 Census - deprivation in employment was the biggest risk (OR=1.57; 95% CI=1.41-1.75), followed by tenure (OR=1.26; 95% CI=1.10-1.45). School-level attendance (OR=1.19; 95% CI=1.05-1.35) and single-parent households (OR=1.16; 95% CI=1.03-1.30) were also associated with increased risk. Males were 1.22 (95% CI=1.11-1.33) times more likely to have an 'other' health condition than females.
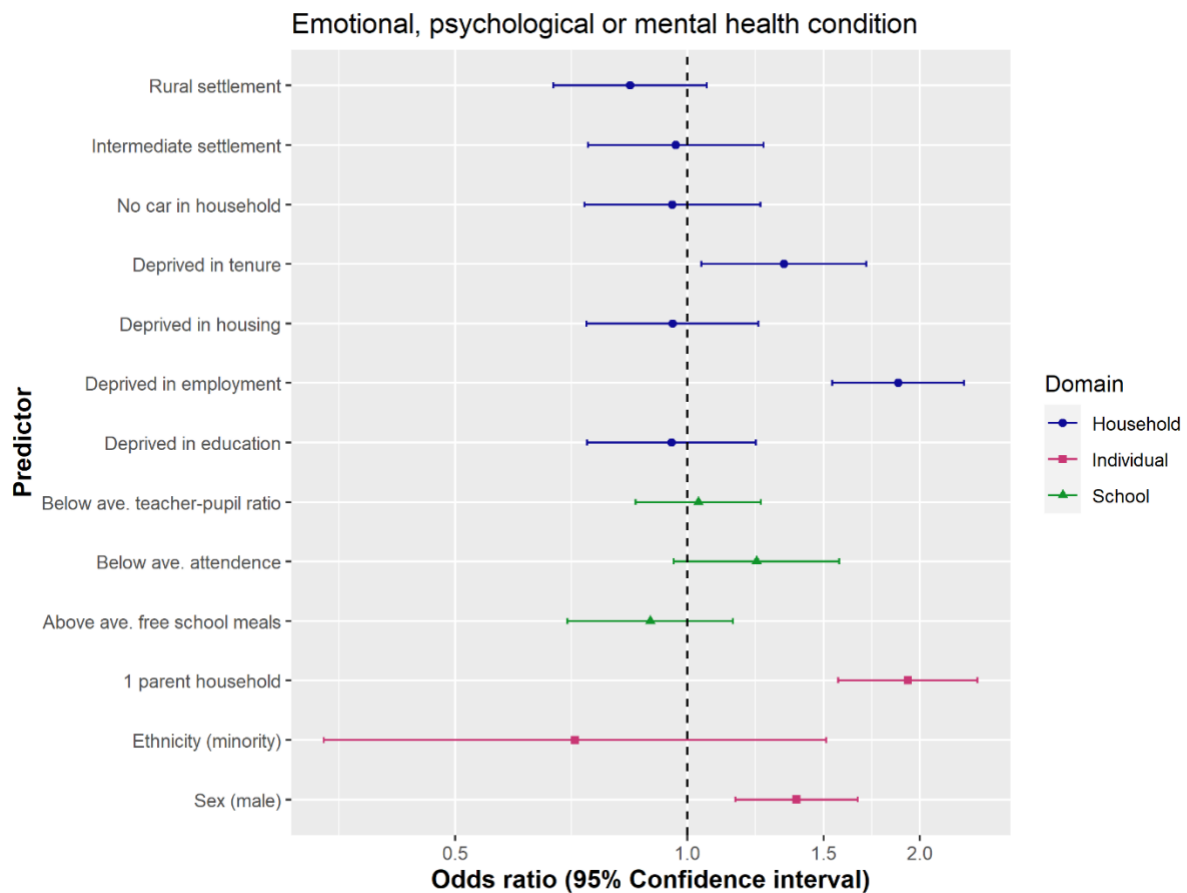
Figure 101. Mixed effects logistic regression predicting any health condition

Odds ratios and 95% confidence intervals from mixed effects logistic regression models with any health condition as the outcome. Predictors are presented on the Y-axis. X-axis shows the in/decreased risk of health outcome associated with each predictor.

The trends in Figures 95-100 are mirrored in Figure 101, which focusses on a composite 'any health condition' variable. Compared with those living in 2-parent households, those in 1-parent households were 1.28 times (95% CI = 1.21-1.34) more likely to suffer from at least one of the previous 11 health conditions. Males were over 1.5 times more likely to have a health condition than females (OR= 1.53; 95% CI = 1.47-1.60). Deprivation in employment was the strongest household-level predictor of health conditions, with children almost 1.5 times more likely to have a health condition when deprived in this dimension (OR = 1.47; 95% CI = 1.40-1.54). Living in social housing was also a significant predictor of having a health problem (OR = 1.31; 95% CI = 1.23-1.39). In terms of school-level predictors, children who attended schools with below average attendance (OR = 1.19; 95% CI = 1.12-1.26) and above average number of students qualifying for free school meals (OR = 1.08; 95% CI =1.02-1.14) were more likely to have a health condition.

11.2 Longitudinal analysis in 2001-2011 sub-sample of NILS

11.2.1 Descriptive Statistics

Table 5. Frequencies/percentages of correlates and health outcomes in 2001-2011 samples

Individual correlates		N	%	HEALTH OUTCOMES		N	%
Sex	Male	23,741	0.50	General health 2001	Very good/ good/fair	46,371	0.98
	Female	23,368	0.50		Bad/very bad	738	0.02
Ethnicity	White	46,520	0.99	General health 2011	Very good/ good/fair	46,764	0.99
	Other	492	0.01		Bad/very bad	248	0.01
Household comp	2 parent household	34,420	0.73	Disability (daily activities limited) 2001	Activities not limited	44,762	0.95
	1 parent household	12,043	0.26		Activities limited a little/a lot	2,347	0.05
	Other	646	0.01	Disability (daily activities limited) 2011	Activities not limited	44,029	0.93
Household correlates					Activities limited a little/a lot	2,983	0.06
Employment deprivation	Not deprived	40,240	0.85				
	Deprived	6,869	0.15				
Social housing	Not in social housing	38,796	0.82				
	Living in social housing	8,313	0.18				
Education deprivation	Not deprived	30,135	0.64				
	Deprived	16,974	0.36				
Housing deprivation	Not deprived	41,785	0.89				
	Deprived	5,324	0.11				
Settlement	Urban	22,332	0.47				
	Intermediate	7,437	0.16				
	Rural	16,960	0.36				

11.2.2 Associations between health outcomes and individual and household predictors

The results from the mixed effects binary logistic regression analyses in the longitudinal sample (2001-2011) are presented in Figures 102-103. A non-technical description of how to interpret these plots can be found in Note 1. Full results from these models are available upon request.

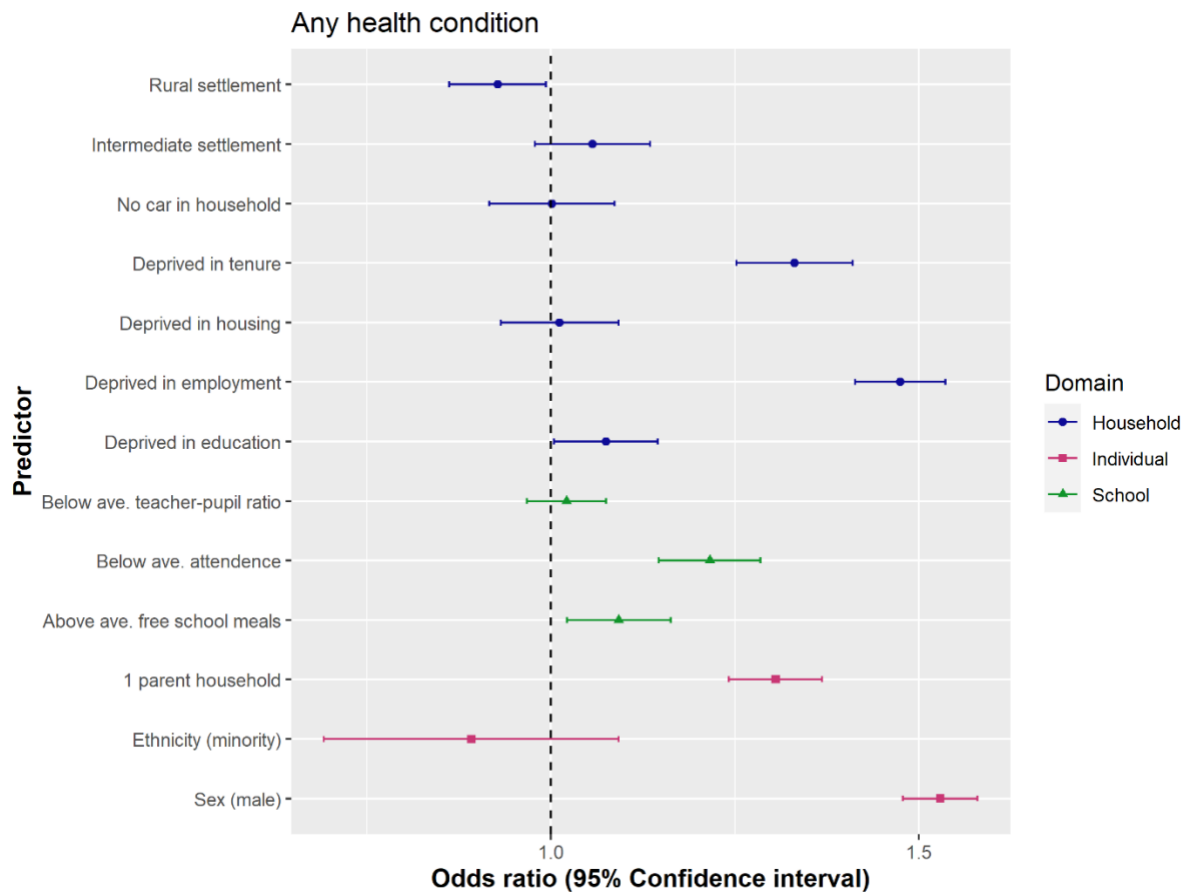**Self-reported health (bad/very bad)**
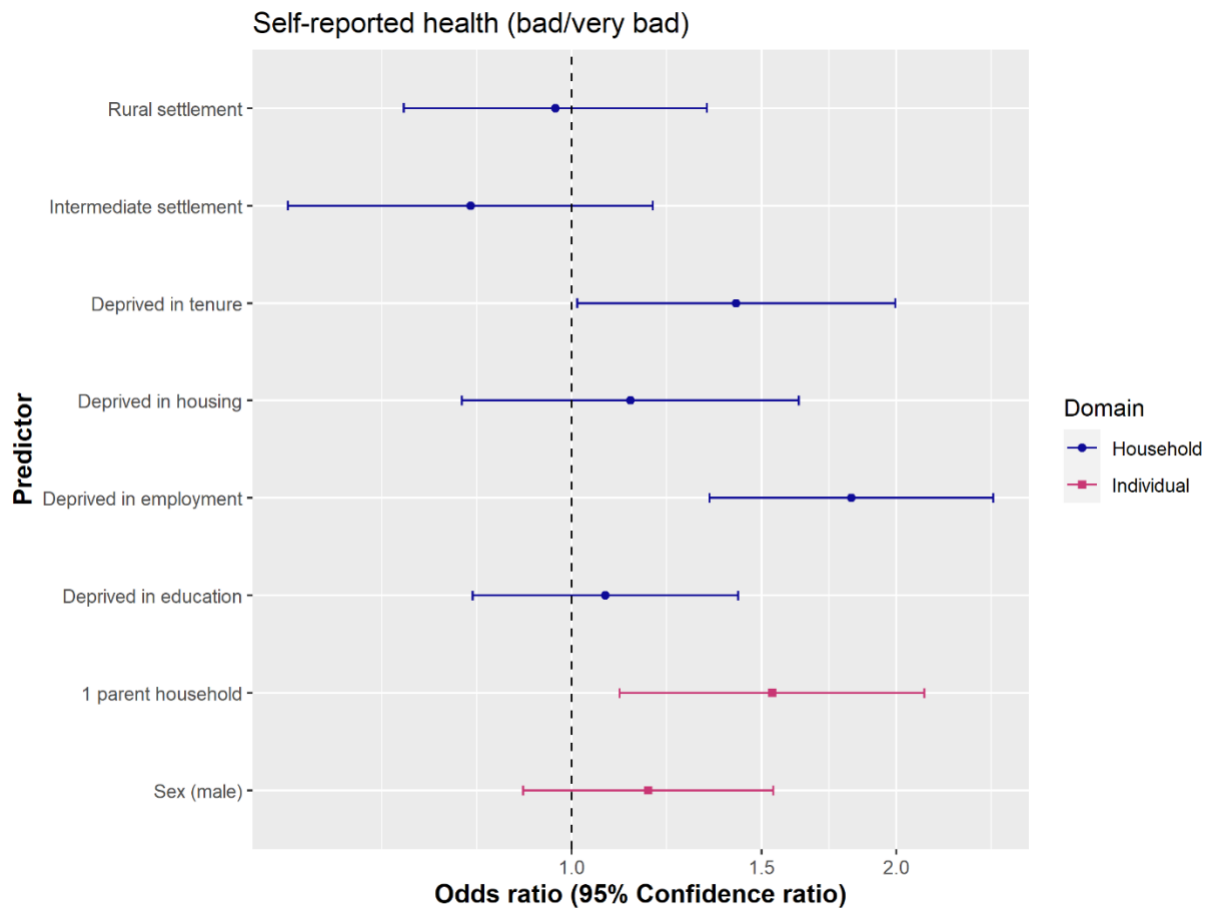
Figure 102. Mixed effects logistic regression predicting self-reported health in 2011

Odds ratios and 95% confidence intervals from mixed effects logistic regression model with self-reported health in 2011 as the outcome. Predictors are presented on the Y-axis (all based on 2001 data). X-axis shows the in/decreased risk of health outcome associated with each predictor. Model controls for self-reported health at 2001 sweep (OR = 21.05; 95% CI = 15.79-29.40).

Even after taking health status in 2001 into account, household deprivation in employment (OR = 1.82; 95% CI = 1.34-2.46), living in social housing (OR = 1.42; 95% CI = 1.02-1.99) and coming from a single parent household (OR = 1.53; 95% CI = 1.11-2.12) were all associated with poorer self-reported health a decade later.
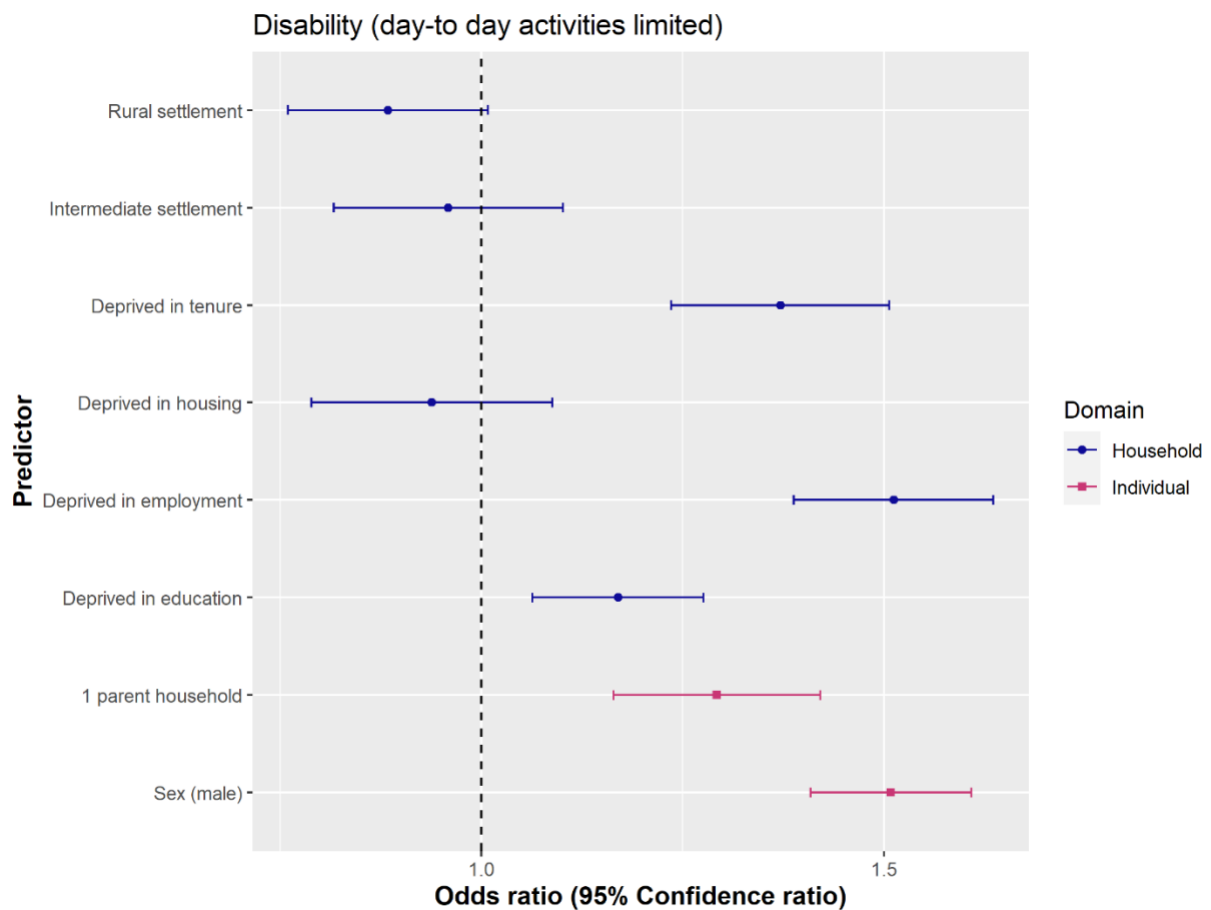
Figure 103. Mixed effects logistic regression predicting disability in 2011

Odds ratios and 95% confidence intervals from mixed effects logistic regression model with disability (day-to-day activities limited) in 2011 as the outcome. Predictors are presented on the Y-axis (all based on 2001 data). X-axis shows the in/decreased risk of health outcome associated with each predictor. Model controls for disability at 2001 sweep (OR = 9.74; 95% CI = 8.80-10.78).

Similarly, controlling for disability status in the 2001 Census, those deprived in household employment (OR = 1.51; 95% CI = 1.37-1.68), living in social housing (OR = 1.35; 95% CI = 1.21-1.51), and deprived in household education (OR = 1.15; 95% CI = 1.05-1.25) were more likely to report a limiting disability in 2011. Children from single-parent households (OR = 1.27; 95% CI = 1.14-1.41) were also at increased risk of later disability, whereas males were 1.5 times more likely to have a disability in 2011 (OR=1.51; 95% CI=1.39-1.63).

11.3 Summary

Findings drawn from social data highlight considerable inequalities in the health and disability status of children and young people in Northern Ireland. In cross-sectional analyses of data from 2011, we found that household-level factors such as deprivation in employment, living in social housing, and deprivation in education were consistently associated with six indicators of health problems (relevant to SEN), and a composite 'any health condition' variable. Deprivation in employment was a particularly strong predictor of health status, with children coming from deprived households frequently between 1.5 to 2 times more likely to have a condition/disorder. Living in social housing, coming from a single-parent household were also consistently linked with difficulties. Finally, males were generally at increased risk, and were twice as likely as females to have learning, intellectual, social, behavioural, and communication problems. Our findings are robust as they take into account the clustering of certain deprivations within geographical areas to provide a profile of inequalities in disability across all of Northern Ireland.

A limitation of the cross-sectional analyses in the 2011 data is that reverse causality cannot be ruled out, that is, time, costs, and other resources associated with caring for a health conditions/disabilities resulting in deprivation in one or more domains. However, longitudinal analyses of the 2001-2011 sub-sample further highlights the potential detrimental effect of inequalities on later health status, while taking into account the baseline health status of the children in 2001. Again, deprivation in employment and education, living in social housing, living in a single parent household and being male were associated with increased risk of poor health and disability a decade later, even after statistically controlling for the health of and disability status of children in 2001.

Section 12 Conclusions and implications of study findings

The original aim of this study was to use secondary data linkage techniques to develop an original and comprehensive profile of pupils with SEN in Northern Ireland, using unique education and social data. Enduring challenges in relation to data availability and data access necessitated a revised approach that would still provide useful preliminary insights on the prevalence of SEN utilising alternative administrative data. The revised aim of the study, therefore, was two-fold. Firstly, to interrogate the utility of existing education data sources as a means of gaining insights into pupils with SEN in NI and to describe the changing demography of pupils with SEN over an eight-year period. Secondly, to interrogate the utility of existing social data sources as a means of gaining insights into the relationship between SEN and disability relative to wider socio-economic influences.

The overall findings of the revised project reinforce that SEN is a highly heterogeneous, complex and changing phenomenon. Collective data provided by the DE and NISRA afforded an opportunity to create a profile of this pupil population. At the same time, it is clear that greater attention is required to determine how SEN is recorded and reported, how it changes and in what contexts, and the extent to which the co-occurrence of social, economic and environmental factors impact on educational outcomes and life chances of children and young people with SEN. This section, therefore, considers what was learned over the course of the project; how the findings can be utilised in the short and longer-term; and what issues need to be resolved to maximise best use of administrative data in NI.

12.1 Importance of access to administrative data

Investment in the Administrative Data Research Network in NI and wider UK has highlighted the potential utility of administrative data for research purposes. In particular, this project's outline of the processes of data access, data handling, data analysis and data impact has potential to be of benefit to other academics in the future exploitation of these resources. The availability of administrative data has been a step-change in the social science research infrastructure, with significant cross-cutting reach to benefit academics from a range of disciplines, reinforcing the value of data sharing across the UK and beyond. This knowledge

has relevance within and beyond education and will stimulate debate on SEN, particularly where there is established evidence of inequality, inequity and discrimination.

Undoubtedly, the unavailability of data based on the Unique Pupil Number (UPN) severely limited the range and scope of data analysis undertaken in this project. Nonetheless, although the initial trajectory of this project was diverted, a core component of the original project remit remained, namely the available data's potential to meaningfully contribute to our understandings of SEN in NI, with findings used to inform, frame and contextualise any policy relevant discussion. It is anticipated, therefore, that in the short to medium term, the findings from the revised project will: provide a useful evidence base upon which to build future research and facilitate future data sharing as new data becomes available and accessible; contribute to forward-planning on the future monitoring of, and provision for, SEN in NI; and reinforce the need for accessible new data to improve the visibility of SEN in the region. In the longer term, a key legacy aim of the project will be to encourage and facilitate further data sharing in NI. Valuable education and wider social data that can meaningfully inform stakeholders about pupils with SEN, in terms of their educational profile and within the context of the wider circumstances of their lives exists in NI but it is not currently accessible through the regional ADRC. It is hoped that the findings from this proposed project will greatly incentivise NI data custodians to share this valuable data.

12.2 Utility of administrative data and potential for knowledge transfer

Knowledge transfer to facilitate and incentivise further data sharing in NI is a fundamental legacy aim of the project. The DE and NISRA have substantial individual-level data that can be utilised to meaningfully inform stakeholders about the educational and socio-environmental circumstances of pupils with SEN. The range of education data accessed and analysed in the current project highlights administrative data as a valuable resource. The DE routinely uses some of this data to provide publicly accessible information on pupils with SEN; however, the current project clearly demonstrates the range and depth of data available has the potential to facilitate and inform important work for future researchers. The DE data provided valuable information on a sizeable, and growing, pupil population, enabling the prevalence of SEN to be estimated and monitored over time and in a manner relative to certain characteristics, including SEN Stage, school type, educational region, gender, year group, Free School Meal Entitlement and Multiple Deprivation Measure. The recent NI Audit Office review (2020)

highlighted that the proportion of children with a statement of SEN in NI has been consistently higher than the rate anticipated in the Code of Practice, and that the percentage of pupils at Stages 1-4 and Stage 5 is higher than in England. In this context, the findings have relevance and potential to inform SEN policy and provision level at regional, school and pupil levels.

The findings can be further viewed in the context of policy change in other jurisdictions. The decline in SEN pupil numbers in England has been attributed to more accurate identification emerging from the dual imperative of the Ofsted Special Educational Needs and Disability Review in 2010 and the implementation of SEND reforms in 2014, although the process has not been without challenges. It remains to be seen if the changes in SEN policy in NI will lead to a similar decline and what impact the implementation of the policy will have on provision. However, there are lessons to be learned in terms of clarity, accountability, funding and joined-up working that merit consideration as the new SEN Framework rolls out. Of relevance to this project is the new mechanism for recording SEN in NI. The Registers for SEN and Medical Conditions represent a new baseline from which to monitor the profile and outcomes of pupils. It is too early to fully gauge the extent to which changes to the categorisation system – including the removal of Mild Learning Difficulty and positioning of Autism and ADD/ADHD in the Medical Register - will affect the recording of SEN, although preliminary data provided by the NI Audit Office (2020) already indicates a significant decrease in the numbers of pupils at Stages 1-4. Of particular interest, as the body of data grows, will be the overall numbers and prevalence rates at Stages 1-4 and Stage 5 as well as for individual SEN conditions which are recorded within the Medical Register, including ASD and ADD/ADHD. Although it is recognised that some children, especially those recorded as having more than one SEN, may be recorded in both registers, comparison between the former and new categorisation systems merits future analysis.

Simultaneously, the professional and financial demands of supporting pupils with SEN in NI is well documented and these present challenges in terms of overall provision as well as specific considerations relative to school context. The data presented in this study has shown a rise in SEN across schools over time; in particular, the exponential increases in post-primary and special schools are indicative of the value in signposting potential pressure points and potential areas of increased need. Concerns have already been expressed on the insufficiency of places in special schools and absence of guarantees that all pupils will be accommodated.   The conclusion by the NI Audit Office that the Department of Education and Education Authority

'... cannot yet demonstrate value for money in the provision of support to children with SEN' further reinforces the importance of collating and evaluating data on individual pupils that can be monitored over the course of their school career. In this context, the Outcomes Based Accountability (OBA) Group established by the EA in 2018 is an opportunity to consider practices to standardise data collection, collation and reporting on pupil outcomes; as a unifying monitoring tool, an OBA approach was identified in the original aim for this project and its potential to monitor discrete populations of pupils, including those with SEN, continues to have relevance as part of a joined-up policy response for improved provision.

12.3   Challenges and limitations of administrative data

Utilisation of archived quantitative data is still a relatively under-used technique in the social sciences, with potential to exploit rich sources of research material through analyses that can yield alternative and/or comparative insights on an issue of interest. Its empirical merits offer a flexible yet systematic approach that can contribute to the process of inquiry across disciplines. Its success, of course, is grounded in the expectation that data will be available and accessible; however, the inherent difficulties in accessing the original data sources for this project – exacerbated by COVID-19 restrictions - have highlighted some fundamental challenges of undertaking secondary data analysis.

The first of these is the challenge of utilising alternative data when the exclusivity of original sources – for whatever reasons – is unavailable. It is a limitation that is not confined to NI (see, for example, Black, 2019; Banks and McCoy, 2011). Although publicly available and specifically requested data used in this project offered some valuable insights into the prevalence of SEN, the way in which data is collected and presented restricts the extent of analyses and, by association, the planning and provision of SEN and wider services. The absence of unique individual pupil data undoubtedly limited the extent to which the relationship between SEN and other variables, including age, gender and deprivation could be examined. For education data generally, key weaknesses are the reliance on aggregated data (preventing the use of statistical testing) and the potential for over-estimation as data counts any identified need (or co-occurring SEN) rather than the primary need; additionally, the increased likelihood of data suppression and/or possible disclosure with more discrete analyses impacts the extent to which definitive estimates can be drawn.

The second challenge relates to how best to utilise alternative education data with the NILS data. A limitation of the NILS data is its reliance on a proportionate overall sample size and the lack of contemporaneous Census data – the last being in 2011, with variations in disability variables in 2001 and 2011 Censuses. These constraints meant that 2011 Census data had more utility within the revised parameters of the education data. Further comparisons and linkages to the 2021 Census across the past decade may be made more difficult due to changes in recording SEN in the DE school census brought in by the introduction of the SEN and Medical Registers. In the longer term, however, there is potential value in cross-checking DE data with the new impairment categories (that now include learning disability, learning difficulty and Asperger's/Autism) introduced in the 2021 Census.

The final challenge is one of accessing data remotely, in this instance, the social data held by NISRA. Unlike data custodians in other jurisdictions, NISRA does not currently operate a policy of remote access for researchers. The merits of remote access using a variety of data safety monitoring procedures have been explored and applied in other settings and it is reasonable to propose that a similar infrastructure could be developed over time for Northern Ireland.

12.4   Conclusion

Pupils with special educational needs already represent a sizeable proportion of the school population and estimated increases over the next ten years highlight SEN as a key policy issue. The trajectory of these children and young people in terms of poorer educational outcomes and the wider association of SEN with a range of social, economic and health inequities position them as a particularly vulnerable group who are more likely to experience adversities across their life span. Changes to the structure and recording of SEN in NI underline the importance of contemporaneous available and accessible data that illuminates the educational and wider environmental situation of these children and young people.

Notwithstanding the challenges in data access, the available data did offer some preliminary insights into the prevalence of SEN in NI, as well as indicative evidence on the differential relationship between SEN and wider socio-demographic influences. It is hoped that the findings will (i) promote the utility of data on special educational needs and disability in NI, (ii) inspire future use of administrative data in the region, (iii) encourage data custodians to

facilitate improved opportunities in data access and (iv) contribute towards the formulation of a larger study as opportunities for future individual-level data linkage and analyses emerge.

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