Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

Llywodraeth Cymru
Welsh Government

END OF PROJECT REPORT

Project Reference	SCG21-1821
Project Title	Ethnic and religious inequalities in children's social services in Wales: Patterns and outcomes
Lead Researcher	Professor Sin Yi Cheung
Host Institution	Cardiff University
Project Start Date	1 February 2023
Project End Date	30 June 2025
Costs (Original)	£297,371
Costs (Final expenditure)	£292,424.43 (estimate, awaiting Cardiff University confirmation from post-award team)

Ethnic and Religious Inequalities in Children's Social Services in Wales: Patterns and outcomes

Research Report

30 September 2025

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Main Messages

Research on children receiving care and support in Wales is emerging, but critical gaps remain in understanding ethnic and religious inequalities. This study presents the first comprehensive analysis of ethnic disproportionality in Wales's child welfare system over a ten-year period (2011–2020), focusing on Children in Need (CIN) and Children Receiving Care and Support (CRCS). Using anonymised linked administrative and census data, it compares ethnic representation within the child welfare system, examines educational attainment at the end of compulsory schooling, and differential use of primary and secondary health services, by ethnicity, religion, and care status. Key findings include:

• **Ethnic representation**: Mixed-heritage children were consistently the most overrepresented in the child welfare system, while Asian children were the most underrepresented. These patterns varied by gender, age, and over time, with disproportionality increasing from 2011 to 2016 and decreasing from 2017 to 2020.

• **Educational attainment:** White, Mixed-heritage, and Asian CIN/CRCS children are approximately 20% less likely to achieve 5 A*-C GCSEs (including English or Welsh, and Maths) than children with no social services contact. Black and Other-ethnicity CIN children show little to no disadvantage. CLA from Asian, Black, and Other ethnic backgrounds perform significantly worse than their CIN counterparts, unlike White and Mixed-heritage children, where outcomes are similar. Among all religious groups, CIN and CLA have lower GCSE attainment. CIN/CRCS Christian children have the highest performance; CLA Muslim children have the lowest GCSE results.

• **Health Service Use:** CRCS are more likely to use hospital and emergency services, especially for mental health, than children not in the welfare system. Among CRCS, Asian children had the highest hospital use; Mixed-heritage children had the lowest; Black children had the lowest GP use. Children from "Other" ethnic backgrounds had the highest Accident and Emergency (A&E) attendance. Muslim children were less likely to use GP services but more likely to need hospital or A&E care for mental health. Children with Christian or no religion backgrounds were more likely to use GP services and less likely to need hospital care. Children from "Other" religions had low GP use but high hospital and A&E attendance.

Executive Summary

Context

Research in England has identified complex patterns in child welfare provision by ethnic group, but similar evidence is lacking in Wales. What are the trends in the representation of ethnic minority children among those identified as Children in Need (CIN) or receiving Care and Support (CRCS) over the past decade? Does the increase in ethnic minority CIN/CRCS populations reflect demographic changes, or are certain groups disproportionately represented? Are these patterns consistent across different ethnic groups? How do educational outcomes for children with CIN/CRCS experience compare with peers of the same ethnicity and religion without social care involvement, and with White children? How do Children Looked After (CLA) perform compared to other CIN/CRCS of the same ethnicity and religion, and how does this compare to outcomes of White children? Among CIN/CRCS children, are there notable ethnic and religious differences in health service use? This project addresses these critical knowledge gaps relating to child welfare among ethnic and religious minorities in Wales.

Project summary

This project used anonymised linked administrative data for Wales, to study ethnic and religious inequalities in children's social services and children's outcomes in education and health service use. It identified two main groups of children who receive help from social services: (1) CLA; (2) other CIN and CRCS not looked after. Linking social care, education and health data to the 2011 and 2021 Censuses improved missing ethnicity data and enabled identification of children's religious affiliation. The study identified substantial ethnic disparities in child welfare involvement by linking CIN and CRCS data from 2011 to 2020. It examined ethnic and religious inequalities in education by comparing GCSE (General Certificate of Secondary Education) attainment among CLA, CIN/CRCS and children with no social care involvement, using Census-linked ethnicity and religion records. Health service use among CRCS and children with no social care experience was also compared by ethnicity and religion, through linked records of GP visits, hospitalisation and Accident and Emergency attendance.

Public involvement and engagement

The research team collaborated with the Ethnic Minorities and Youth Support Team Wales (EYST) and engaged ethnic minority social services users to advise throughout the project. Before funding was secured, an initial consultation with parents from diverse backgrounds helped shape the project's direction—most notably by highlighting the importance of including religion in the analysis. A diverse service user panel was established in partnership with EYST, alongside a separate project advisory group comprising professionals and academics. To ensure ongoing engagement, the service user panel met four times and the advisory group twice, both contributing meaningfully to data analysis and interpretation. Findings were presented at academic conferences and online seminars aimed at mixed audiences, including practitioners e.g. ExChange events. The project has published an open-access article in the *British Journal of Social Work* (2024) and produced an animated short film to share key findings with a wider audience, including service users. An additional paper is currently under review, and two further manuscripts are in preparation for submission to peer-reviewed journals.

Key findings and implications

The project generated the following original major findings, many of which had implications for social care policy and practice among an increasing diverse population in Wales.

- The trend of uneven ethnic representation was distinct from the changes in the absolute number of children in the child social welfare system by ethnicity. Over the ten-year period, in keeping with other research and Government statistics, Mixed-heritage children were the most overrepresented and Asian children the most underrepresented. The level of representation for Black children fluctuated considerably. The overall level of uneven ethnic representation in Wales increased from 2011-2016 and then decreased from 2017 to 2020. This pattern appeared more pronounced among girls and varied by age groups.
- For educational outcomes, White, Mixed-heritage, and Asian CIN had substantially lower GCSE attainment compared to children with no social care involvement, but not when compared to Black and Other-ethnicity children.

Among Asian, Black, and Other-ethnicity children, those who were CLA performed substantially worse than CIN. These findings aligned with concerns about the accuracy of need identification for Black and Other-ethnicity children in social care services and suggested the need for additional support in education for ethnic minority children in out-of-home care.

- Among children with no social care involvement, Christian children and those from other religious groups performed better than those with no religion. Social care involvement is linked to significantly lower educational outcomes, regardless of religion. Among CIN and CLA, Muslim children showed the lowest GCSE attainment - even lower than children with no religion. Christian children consistently performed best across all care categories. Socioeconomic factors, special educational needs, and gender also influenced attainment, but did not fully explain the religious disparities.

- For health service use, overall, CRCS were more likely to engage with secondary care such as hospitals and accident and emergency services, especially for mental health, than children not in the welfare system. Among CRCS, Asian children had the highest hospital use while Mixed-heritage children had the lowest; Black children had the lowest GP use. Children from “Other” ethnic backgrounds had the highest Accident and Emergency (A&E) attendance. Muslim children were less likely to use GP services but more likely to need hospital or A&E care for mental health. Children with Christian or no religion backgrounds were more likely to use GP services and less likely to need hospital care. Children from “Other” religions had low GP use but high hospital and A&E attendance, suggesting delay in help-seeking.
- Possible explanations for these delays included social stigma, lack of understanding, and beliefs about health systems, as well as institutional barriers, such as experience of discrimination and a lack of culturally sensitive services. All of these had implications for health and social care services.

Contents

Scientific Abstract

Background: Research has highlighted complex ethnic variations in child welfare provision, but there is limited Welsh evidence on ethnic disparities in children's social care, education and health service use, and no statistics on religion from anywhere in the UK. Understanding these patterns is critical for addressing inequalities among Children in Need (CIN) and Children Receiving Care and Support (CRCS).

Aim: This project aimed to investigate ethnic and religious inequalities in children's social services involvement in Wales and subsequent outcomes in education and health service use. It sought to clarify patterns of ethnic disproportionality in the child welfare system, ethnic and religious disparities in educational attainment, and health service use, and to identify implications for policy and practice.

Method: The study utilised anonymised, linked administrative data from Wales, integrating social care, education, and health records with the 2011 and 2021 Censuses. Analyses focused on Children Looked After (CLA) and other CIN and CRCS. General Certificate of Secondary Education (GCSE) results and health service use (GP visits, hospitalisations, and Accident & Emergency attendances) were analysed using logistic regression. The project also featured extensive public and user engagement via a project advisory group and a diverse service user panel.

Key Findings: Mixed-heritage children were most overrepresented and Asian children most underrepresented in Wales's child welfare system; Black children's representation varied. Ethnic disproportionality rose in 2011–2016, then declined in 2017–2020 and vary by gender and age. White, Mixed-heritage, and Asian CIN had lower educational attainment than peers without social care involvement, unlike Black and Other-ethnicity children. While CLA children perform similar to CIN children for White and Mixed-heritage children, Black, Asian and Other-ethnicity CLA performed worse than CIN. Among children not in social care system, Christian and other religious groups outperformed those with no religion; Muslim CIN and CLA had the lowest GCSE results. Socioeconomic status, special educational needs, and gender all impact outcomes but didn't fully explain religious disparities. Ethnic minorities (Asian and other-ethnicity) and religious minorities (Muslim and other-religion) are more likely to use secondary health care (hospital, accident and emergency) and less likely to use primary care (GP), suggesting delayed help-seeking due to stigma, discrimination, and lack of culturally sensitive services.

Scientific Report

1. Background and Rationale

A longstanding concern in child welfare is the uneven representation of ethnic minority children in the system - a phenomenon known as racial/ethnic disproportionality. This pattern of intervention is troubling whether it arises from systemic bias in the child welfare system or the socioeconomic disadvantages, both of which reflect ethnic inequalities requiring attention. Research on ethnic disproportionality in the UK remains limited and largely focused on England (Bywaters et al., 2017; Owen and Statham, 2009; Webb et al., 2020). There is some research on ethnicity in the Welsh family justice system (North et al., 2022) and smaller groups such as Children Looked After (CLA) or those on protection plans (Bywaters et al., 2020), but not the broader population of Children in Need (CIN) and Children Receiving Care and Support (CRCS). This wider population is significant. In England, Jay et al. (2022) estimated that 42% of children were classified as 'in need' before age 18. In 2022, children in Wales with a range of needs receive care and support from social services: abuse and neglect (51%), family dysfunction (16%), disability (16%) and the family being in acute stress (12%) and one in every 36 children had a care and support plan (Welsh Government, 2023a). The main law defining this activity is the Social Services and Well-being (Wales) Act 2014, alongside elements of the Children Act 1989, particularly for children at risk of significant harm. Important sub-groups include children on the Child Protection Register (CPR) who are identified as at risk and those who are 'looked after', i.e. in out-of-home care. To date, despite the importance of understanding ethnic disproportionality, the UK evidence base is unsystematic and of poor quality.

Educational outcomes for children in the child welfare system are notably poorer than for their peers. CIN and CLA children perform significantly worse academically, with only around 10% achieving 5 A*-C GCSEs including English/Welsh and Maths in 2013, compared to 50% of children with no social care experience (O'Higgins, Luke and Strand, 2021). Despite CLA children facing more severe family issues, their educational performance is often similar to, or slightly better than CIN children (Jay and Mc Grath-Lone, 2019; Lowthian et al., 2024; Sebba et al., 2015; Sinclair et al.,

2020; Sinclair, Luke and Berridge, 2019; Sutcliffe, Gardiner and Melhuish, 2017). This may be due to the protective effects of being removed from challenging family situations and placed in safer, more supportive environments. While CIN and CLA children receive social care and support for broadly similar reasons[i], the level of intervention differs. CIN typically remain in parental care because their home situations, while concerning, are generally less severe or harmful. In contrast, CLA are removed from their homes due to more serious circumstances, resulting in a much higher level of intervention through intensive out-of-home care. The similar educational performance between these groups suggests that CLA children's initial disadvantages may be mitigated by safer placements. However, these findings reflect overall averages and do not disaggregate by ethnicity – a major limitation. Ethnic minority children, though a smaller proportion of the UK child population, are disproportionately represented in the child welfare system (Warner et al., 2024). They may be less likely to benefit from social care services (Chand, 2008; Williams and Soydan, 2005), and face distinct educational challenges (Heath, Rothon and Kilpi, 2008). Few studies have examined educational performance gaps by social care status among ethnic minority children, except Fletcher, Strand and Thomas (2015) and Sacker et al. (2023). Ethnic minority children often have different educational trajectories and face distinct barriers compared to their White peers (Alexander and Shankley, 2020; Department for Education, 2021; Gillborn, 2023; Li, 2021; Mirza and Warwick, 2022; Saeed, 2022; Strand, 2015).

Beyond education, recent research analysing administrative data showed that children receiving social care services have heightened healthcare use in the U.S. (Bennett, Wood and Scribano, 2020) and across UK (Fleming et al., 2021; Fraser et al., 2022; Lowthian et al., 2024; McKenna, O'Reilly and Maguire, 2023). Ethnic minority children in the UK are not only more likely to be involved with social care but also have elevated mental and physical health needs (Bronsard et al., 2016; Ford et al., 2009; Martin et al., 2014; Pilowsky and Wu, 2006; Williams et al., 2001). They face disparities in accessing and using health service (Beaney et al., 2021; Coughlan et al., 2022; Zhang et al., 2023). Despite various US studies on this (Radney et al.,2024; Villagrana, 2017), UK-specific research on ethnic disparities in health service use among children in social care remains extremely limited.

Cultural and religious backgrounds are also linked with healthcare use (Bhui et al., 2003; Nwokoroku et al., 2022; Onyigbuo, Alexis-Garsee and Van Den Akker, 2016; Radhamony et al., 2023) and religion can shape health behaviour and act as a protective factor (King et al., 2006; O'Connell and Skevington, 2005). Qualitative research has highlighted the role of religion in the social care experiences of children in the UK (Cheruvallil-Contractor et al., 2024), but quantitative analysis of children's religion and its impact on health service use is scarce. While some US studies explore outcomes by religion (Lalayants et al., 2020) the vastly different religious landscape in the US (Berger et al., 2021) limits the applicability of these findings to the UK.

2. Aims and Objectives

This study aimed to build a comprehensive picture of the patterns and trends of ethnic and religious inequalities among children with social service contact in Wales, focusing on education outcomes and health service use. Capitalising on the strength of administrative data linkage, it answered the following research questions:

1. What are the trends in the representation of ethnic minority children among those identified as Children in need (CIN) or receiving care and support (CRCS) in Wales over the past decade?
2. Does the increase in ethnic minority CIN/CRCS populations reflect demographic changes, or are certain groups disproportionately represented?
3. Are these patterns consistent across different ethnic groups?
4. How do educational outcomes for CIN children compare with peers of the same ethnicity and religion who have no social care involvement, and to White children overall?
5. Do Children Looked After (CLA) from ethnic and religious minority backgrounds perform differently than CIN/CRCS within the same group, and does this pattern align with trends observed among White children?
6. Among CRCS, are there notable ethnic and religious differences in health service use? How do these patterns compare with children without social care involvement?

7. How do these patterns vary in general practice (GP) visits, hospitalisation and Accident and Emergency (A&E) attendance; and by specific health conditions such as mental health and injuries?

These research questions were answered in three stages. Stage 1 considered ethnic disproportionality between 2001 and 2010 in the Welsh child welfare system and how it varies by gender and age. In Stage 2, educational outcomes of CIN/CRCS and CLA from ethnic and religious minorities, measured by General Certificate of Secondary Education (GCSE), were compared with their peers with no social service involvement and White children. Stage 3 focused on health service use in primary and secondary healthcare settings: GP visits, hospitalisation and Accident and Emergency attendance. It further explored these patterns by the reasons of visit including mental health conditions and injuries.

3. Data and Methods

To answer the different research questions, specific datasets were built to provide the most comprehensive coverage. This project used data from CIN, CRCS and CLA data in Wales through the Secure Anonymised Information Linkage (SAIL) Databank (Ford et al., 2009; Jones et al., 2019; Lyons et al., 2009), which contains extensive health and administrative data on the Welsh population, accessible in anonymised form via a secure data sharing platform. Children's social care experiences were captured through three sources: (1) the Children in Need Census, which includes all children receiving social care support with a Children in Need plan in place between 1 January and 31 March each year; (2) the Children Receiving Care and Support Census, which superseded the Children in Need Census from 2016/17 onwards; and (3) the Children Looked After Census, which is collected annually by local authorities about children looked after and submitted to the Welsh Government. However, children who were classified as CIN solely due to 'disability' were excluded, as the presence of an impairment alone should not be considered as an adversity under the social model of disability. Finally, individual-level linkages to the ONS 2021 and 2011 Census datasets, which cover the resident population of Wales (CENW and CENS), enabled us to supplement missing ethnicity information (for cases not recorded in the social care or education datasets) and to identify children's religious affiliation (See Appendix 1 for datasets used).

To enable linkage between certain datasets, an Anonymised Linking Field (ALF) was used. An ALF is an individual's unique anonymous identifier. During the anonymisation process of data sources within the SAIL Databank, individuals are assigned an ALF based on their National Health Service number, name, sex, date of birth and postcode. This anonymisation and linkage methodology has previously been described (Lyons, et al., 2009). We did not have access to personal identifiable data (See Appendix 2 for steps in data linkage).

3.1 Datasets – Ethnic Disproportionality

Estimating ethnic disproportionality in the Wales child welfare system required information on both the number of children in the welfare system by ethnicity, and the number of children in the total population by ethnicity. The Welsh Government collects information on all children receiving social care support in the annual CIN Census (2010-2016) and CRCS Census (2017-2020), which covers approximately 80% of the total number of records reported by the Welsh Government (Lee et al., 2022). This is because Welsh local authorities did not report all open cases over 12 months.

Information on ethnicity for the child population from was obtained from the 2011 Census of Population, and from estimates in 3-year pooled Annual Population Survey (APS) data from 2013 to 2015 (for year 2014) to 2019 to 2021 (for year 2020). Since CRCS data in SAIL only differentiate between five broad ethnic categories, and more granular estimation based on APS becomes more problematic for small sample size, disproportionality was reported by five broad ethnic categories (White, Mixed heritage, Asian, Black, and Other) in the ten-year trend analysis[ii]. The total number of records from 2011 to 2020 was 126,694 in CIN and 77,180 in CRCS. Among them, the number (and percentage) of records with missing ethnicity information before data linkage was 4946 (3.9%) for CIN and 2116 (2.7%) for CRCS. After linkage to the 2011 CENW data this figure was reduced to 2503 (2%) for CIN and 1380 (1.8%) for CRCS. Therefore, our data linkage significantly reduced the missing data on ethnicity by almost 50% (i.e. from 3.9% to 2% for CIN) Both before and after data linkage, the distribution of missing was relatively even across CIN and CRCS Census years. See Appendix 5 Table A5.1.1 for sample details.

3.2 Datasets - Educational Outcomes by ethnicity and religion

To examine educational outcomes of children receiving care and support by ethnicity and religion, Stage 2 linked Welsh person-level administrative data on children's social services and educational attainment with Census data. Educational data were drawn from the Pupil Level Annual School Census (PLASC), which records pupil demographics and attainment for all children in schools maintained by Welsh local authorities, including those with and without social care involvement. Following the introduction of the Social Services and Well-being (Wales) Act 2014 in April 2016, the CIN data collection was superseded by the Children Receiving Care and Support Census due to changes in the inclusion criteria. While CIN and CRCS were both used to code the highest level of intervention a child has ever received, the CIN and CRCS Censuses capture slightly different groups of children, with children who receive preventative services under Section 15 of the Social Services and Well-being (Wales) Act 2014 not included in the CRCS census, whereas they were in the CIN census (Lee et al., 2022). Changes to the inclusion criteria of a 'child in need' means that the two datasets cannot be compared directly. Nevertheless, we used both datasets to identify each child's social care history and obtained approval from the Welsh Government, as this analysis focuses on individual-level social care experience histories rather than population-level comparisons. Information about children in state care is routinely collected by all local authorities and submitted to the Welsh Government annually in the form of the CLA Census.

The analytical sample was restricted by two criteria. First, CIN records are available only from 2010 and replaced by CRCS since 2017. This means that for earlier cohorts, CIN records are only available at a later age. Second, the maximum number of cohorts were included for this small population (i.e. ethnic and religious minorities with social services contact), with each cohort having the same observation window regarding age span for social service involvement. The research design focused on the most recent six birth cohorts with available GCSE results. This approach provides an observation window for social care involvement spanning Year 8 to Year 11 (12/13 to 15/16 years old) for cohorts born between 1997/1998 and 2002/2003 (Appendix 3 Table A3.1). While this is a relatively short observation window for children's social service involvement, previous research reports that as many as a quarter of those who

had any children's social care interventions in school years (from Year 1 to Year 11) were receiving an intervention in Year 11 (Berridge et al., 2020).

Among the 239,014 students born between 1 Sep 1997 and 31 Aug 2003, 181,406 records included data on GCSE results grade A*- C including English/Welsh and Maths (hereafter GCSEs). After data linkage, 180,464 cases included data on ethnicity and social care status. The final sample size for records that included data on ethnicity and all control variables was 180,088 (Appendix 3 Table A3.2). Following data linkage, 166,244 records contained information on religion. The final analytic sample, which also included complete data on all control variables, comprised 165,967 students (Appendix 3 Table A3.3)

3.3 Datasets - Health Service Use by ethnicity and religion

The first step was to create a one-year cross-sectional cohort of all school-aged children (5-16) within the Children Receiving Care and Support (CRCS) dataset for each year of available data that was not affected by COVID-19's impact on schooling (2016/17, 2017/18 and 2018/19)[iii]. While the CRCS dataset encompasses groups who differ in their level of support, such as Children Looked After (CLA) and those on the CPR, this study's focus on ethnic minorities resulted in a sample size too small for further disaggregation. The record of each child was randomly matched with four children not receiving care and support on gender, age (on 31 March), and area-level deprivation (using the Welsh Index of Multiple Deprivation, WIMD quintile). This random sample selected from the WDSD (Welsh Demographic Service Dataset) forms our comparison group.

Combining CRCS and the matched non-CRCS comparison group over three years, this study adopts a repeated cross-sectional design. A larger sample size can also increase the precision of statistical estimates by reducing standard errors. Some children appear in the CRCS census more than once over the three years and these children are counted in each year's data. Two restriction criteria were applied to the data. First, children needed to have an ALF to be included in the analysis. Second, children were required to be registered to a SAIL providing General Practitioner (GP) for the full year, except for two weeks (350/365 days), to take GP moves into consideration. These criteria ensured we only included children who were living in

Wales, and therefore those who had access to Welsh healthcare services. After applying these two restriction criteria, the sample size including both CRCS and the matched non-CRCS children is 165,030.

Methods

Ethnic disproportionality is estimated by dividing the percentage of (for example) Black children in a child welfare population by the percentage of Black children in the total population (see equation 1). Any number below one reflects underrepresentation of children of that ethnic group in the child welfare system compared to the general population, while numbers higher than one reflect an overrepresentation of that ethnic group in child welfare system compared to the general child population.

$$Disproportionality_{Black} = \frac{Children\ in\ Need_{Black} / Children\ in\ Need_{Total}}{Child\ Population_{Black} / Child\ Population_{Total}} \qquad \text{(equation 1)}$$

To explore the extent to which ethnic disproportionality in children's social care is associated with deprivation, previous research (e.g. Bywaters et al., 2020) has compared ethnic differences in intervention rates (estimated as children in need rates per 10,000 children) within each deprivation quintile. Scholars often use the term 'ethnic inequality' or 'disparity' to describe unequal distributions of children in need and socioeconomic factors across ethnic groups. Following this approach, we examined intervention rates (estimated using equation 2) by five broad ethnic groups by deprivation profiles of the neighbourhoods in which children in the dataset reside. We linked the Welsh Index of Multiple Deprivation (WIMD) banded into quintiles at the level of Lower Super Output Areas (LSOAs) to both child welfare data and the general population. However, around 20% of the child welfare cases had missing LSOAs and thus missing deprivation information.

$$Intervention\ Rate_{Black} = \frac{Children\ in\ Need_{Black}}{Child\ Population_{Black}} \qquad \text{(equation 2)}$$

Educational outcomes were assessed by reporting the proportion of children achieving five GCSEs grade A*-C, including English/Welsh and Mathematics. This is widely used as a benchmark of achievement for pupils taking national exams at the end of their secondary education, normally at age 16 (Department for Education, 2019). It is also the typical gateway to progressing to Advanced-Level exams (A-Level,

taken at the end of two years of sixth form/college education, normally at age 18) and access to university education. Logistic regression models were employed to estimate the independent effects of ethnicity, religion and social service involvement on the likelihood of GCSE attainment (coded as 1 or 0), adjusting for socioeconomic and demographic variables. Interaction terms between ethnicity and social service involvement were included to examine how these factors intersect in shaping educational outcomes. As the analysis is based on population-level data rather than sample surveys, effect sizes and confidence intervals are reported in accordance with recommended practice (Wasserstein & Lazar, 2016; Wasserstein, Schirm & Lazar, 2019), rather than significance tests. For ease of interpretation, we present predicted probabilities of achieving the GCSE threshold in Figures 3-4, based on the interaction model. Logistic regression models on religious inequalities also controlled for ethnicity, free school meals and special educational needs.

Health Service Use

There are nine key outcomes of interest, structured by three types of healthcare use: (1) at least one GP visit, (2) hospital inpatient admissions, and (3) A&E visit for any health conditions; each of these by diagnosis during visit, using three categories: (1) all diagnoses, (2) mental health conditions, (3) injuries. Health diagnoses were obtained using primary care (GP, Welsh Longitudinal General Practice dataset) and secondary care (hospital, using the Patient Episodes Dataset for Wales and Emergency Department Dataset) records. Although an individual can visit the GP for a range of reasons, we were only interested in visits that resulted in a diagnosis being recorded. This meant we would not elevate the number of GP visits by counting prescriptions, symptoms, test results and administration reasons which are also captured in medical records. Details see Appendix 6.

Variables used in Analysis (see Appendix 4 for a full list and definition)

Independent variables:

Children's social care status is defined as the child's social care involvement between year 8 and year 11 (age 12 – 16). Their social care status is coded as the highest level of social welfare intervention ever experienced (no social care,

CIN/CRCS, CLA). Children whose highest level of intervention was CLA but only for short breaks were recoded as CIN, as these children remain at home most of the time. Short breaks are for usually for sick or disabled children to provide temporary relief to family caregivers.

Ethnicity status was extracted from PLASC and recoded into five categories: White, Mixed heritage, Asian or Asian British, Black or Black British and Other.[iv] For individuals who have inconsistent ethnicities across years in PLASC, the most up-to-date one was used. If ethnicity was missing throughout PLASC, the ethnicity variable from the ONS 2011 Census was used. If it was also missing in the ONS 2011 Census, for children with social care histories we supplemented this with the ethnicity information from CIN/CRCS/CLA datasets. This approach overcomes the limitation noted by Moffat & Yoo (2020), whose sample lacked some combinations of ethnicity and religion, potentially leading to artefactual estimates for certain religious groups.
Religious affiliation was extracted from Censuses 2011 and 2021 and recoded into four broad categories: Christian, Muslim, Other, and None.

Control variables:
Socioeconomic status: (1) Ever received free school meal[v] (FSM) in Key Stage 4 (KS4) was used as an indicator of household low income (1 = yes); (2) the Welsh Index of Multiple Deprivation (WIMD) for area-level deprivation on 1 May (examination season) in the GCSEs year, in quintiles (1 = most deprived and 5 = least deprived).
Special Education Needs[vi] (SEN): the highest category ever provisioned (1= No special provision, 2=School Action, 3=School Action Plus, 4=Statutory assessment, 5=Statemented); **Sex** (1=male; 0=female); **Academic season of birth** (1=Jan – April, 2=May – August, 3=Sep - Dec); and **birth cohort** (1=born in 1997/1998 through 6=born in 2002/2003). For descriptive statistics of all key variables see Appendix 5.1. Tables 5.1.1 to 5.1.4.

4. Service User Involvement

Parents' active participation was vital in co-producing this research. Service users shaped the direction and interpretation of the research throughout this project. The research team worked in close partnership with the Ethnic Minorities and Youth

Support Team (EYST) to engage parents from ethnically diverse backgrounds who had experience with children's social services. Before funding was secured, an initial consultation with these parents helped shape the project's priorities—most notably by identifying the need to include religion as a key dimension in the analysis. Building on this, a diverse service user panel was established in collaboration with EYST, alongside a project advisory group comprising social work professionals and academics. To ensure sustained involvement, the service user panel met four times and the advisory group twice, both contributing actively to shaping the direction of research and the interpretation of the findings. Several critical themes from users' perspectives were highlighted: fear and mistrust of social services often rooted in past experiences of hearsay, especially regarding child removal; language and cultural barriers can hinder access to services and lead to misinterpretation of family practices; educational inequalities including racism, school exclusions and lack of culturally relevant curricula were recurrent concerns; mental health and GP access were flagged as under-supported, particularly for new arrivals. Outputs from the project to-date include an open-access article in the *British Journal of Social Work* (Jing et al., 2024) and an animated short film (Ethnic and Religious Inequalities in Child Welfare in Wales, 2025) designed to communicate key findings with a wider audience, including service users themselves.

5. Results

5.1 Trends of Ethnic Disproportionality in the Child Welfare System

The number of 0-17 years-olds by ethnicity in the child welfare system in Wales is presented in Figure 1 and Appendix 5 Table A5.1.1. The more limited definition of children for whom data were collected, following the 2014 Act, can first be seen in 2017. Comparing the numbers for CIN (2011-2016) and CRCS (2017-2020), it appeared that number of children in the social welfare system decreases for White children but remains relatively stable for Mixed-heritage and Asian children whilst increasing for Black and Other children. It is thus questionable whether the varied changes in the raw number of children in need were driven by the changing ethnic composition of the general population, or the changing level of ethnic disproportionality following the change of legal framework, as they imply different policy implications for addressing ethnic inequality. Further disaggregation of the percentages of children of

each ethnicity in the child welfare system by their percentages in the general population shows that Mixed-heritage children were consistently overrepresented in the child welfare system over the years, varying from 1.5 (2016-2017) to 1.1 (2019) times their proportion in the general population. Asian and Other children were consistently under-represented from 0.5 to 0.7 times their proportion in the general population. The representation of Black children fluctuated between 0.8 (2014) and 1.2 (2011 and 2016) across the years. White children had a relatively stable level of representation across years that was about the same as their proportion in the general population.

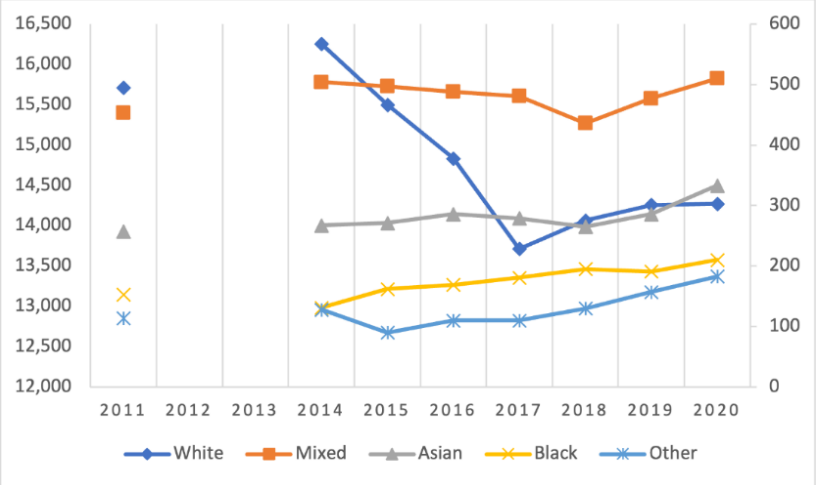

Figure 1. Number of children in the child welfare system by ethnicity and by year. Left axis for White children, right axis for Mixed heritage, Asian, Black, and Other ethnicity.

The change of legal framework, first observed in the data in 2017, has brought different changes to the level of representation in the child welfare system for different ethnic groups. Comparing 2016 to 2017, representation in the child welfare system dropped substantially for Black children, while remaining similar for the other four ethnic groups. This pattern suggests that whether children receiving preventative services are included in the child welfare census may change the observed level of ethnic representation in the child welfare system dramatically, especially for Black children, who appear likely to be overrepresented in the preventative services.

In CIN 2011-2016, the level of representation remained relatively stable for White, Asian and Other children, whilst it increased for Black and Mixed-heritage children, showing a pattern of increasing ethnic disproportionality. However, in CRCS 2017-2020, while the level of representation remained relatively stable for White children, the levels of both the overrepresentation of Mixed-heritage children and the underrepresentation of Black, Asian and Other children decreased, showing a pattern of decreasing ethnic disproportionality. The patterns were very different when we compared the ethnic trend in the child welfare system in terms of absolute numbers (Figure 1) and the level of representation (Figure 2). While the number of White children on average decreased by about 1,000 from CIN (2011-2016) to CRCS (2017-2020), their representation relative to other ethnic groups has remained stable around 1.

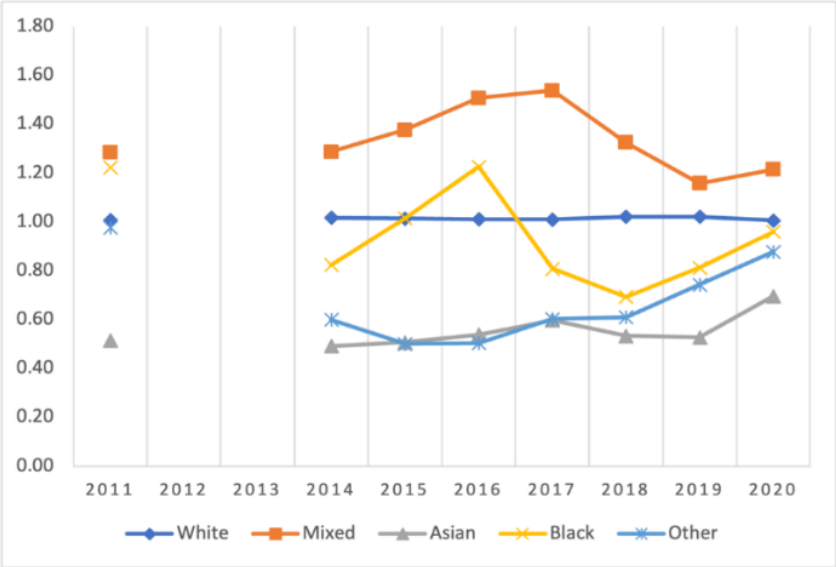

Figure 2. Ethnic disproportionality in the child welfare system by year

Overall, the number of Mixed-heritage and Asian children has remained relatively stable in 2011-2020. The level of overrepresentation for Mixed-heritage children has been rising for CIN (2011-2016) and decreasing for CRCS (2017-2020). By contrast, the level of underrepresentation for Asian children has been gradually decreasing in 2011-2020. While the number of Black and Other children has been gradually increasing in 2011-2020, the level of representation for Black children has fluctuated around 1 for CIN (2011-2016) and the level of underrepresentation for Black children has decreased in CRCS (2017-2020). For Other children, their underrepresentation

has remained relatively stable for CIN (2011-2016) and decreased dramatically in CRCS (2017-2020).

Trends by gender and age group

Ethnic disproportionality in the child welfare system remained broadly consistent when disaggregated by gender and age (see Appendix 5 Figures A5.1 and A5.2). CIN recorded biological sex CRCS captured gender identity at the time of the Census (North et al., 2022). Mixed-heritage children were persistently overrepresented, and Asian and Other-ethnicity children under-represented across both sexes and all age groups. The representation of Black children fluctuated across the years, and White children showed relatively stable representation. From 2016 to 2017, representation dropped substantially for Black children. Disproportionality increased in CIN (2011-2016) and decreased in CRCS (2017-2020), with patterns more pronounced among girls. Further details on analyses by age and gender can be seen in Jing et al. (2024).

Ethnicity and neighbourhood deprivation (2011)

Additional analyses in Jing et al. (2024) using 18 ethnic categories and neighbourhood deprivation quintiles (2011) revealed substantial heterogeneity in social care involvement within broad ethnic groups, though data limitations precluded comparison over time.

5.2 Ethnic and Religious Inequalities in Educational Attainment

Overall, the probability of attaining five grades GCSEs A*- C varied across years. As shown in Table 1, children with no social care involvement consistently outperformed their CIN/CRCS and CLA peers. The likelihood of CIN/CRCS and CLA children reaching this academic benchmark was approximately one-third of that for children with no social care involvement. Althought CIN/CRCS and CLA children achieved similar proportions overall, the group with higher attainment fluctuated by birth cohort. For example, CLA children slightly outperformedCIN in the 1997/1998 and 1998/1999 cohorts, whereas CIN children surpassed CLA in the 2000/2001, 2001/2002, and 2002/2003 cohorts.

Table 1. The proportion of children attaining 5 GCSEs A*-C including English/Welsh and Maths, by social care experience and birth cohort

Cohort	No social care	CIN/CRCS	CLA	All
1997/1998	0.57	0.17	0.19	0.56
1998/1999	0.60	0.19	0.20	0.58
1999/2000	0.63	0.25	0.25	0.61
2000/2001	0.56	0.17	0.14	0.54
2001/2002	0.56	0.19	0.16	0.54
2002/2003	0.51	0.16	0.10	0.50
Total	0.57	0.19	0.17	0.55

Table 2 shows that Asian children consistently have the highest proportion reaching the threshold across all cohorts. Children of Mixed-heritage and Other ethnicity generally perform on par with or better than White children. Black children tend to underperform compared to White children in the 1997/1998, 1999/2000, and 2002/2003 cohorts. However, they perform similarly to White children in the 1998/1999 and 2001/2002 cohorts and even outperform them in the 2000/2001 cohort.

Table 2. The proportion of children attaining 5 GCSEs A*- C including English/Welsh and Maths, by ethnicity and birth cohorts

Cohort	White	Mixed	Asian	Black	Other	All
1997/1998	0.56	0.58	0.63	0.46	0.56	0.56
1998/1999	0.58	0.60	0.67	0.58	0.61	0.58
1999/2000	0.61	0.63	0.69	0.58	0.64	0.61
2000/2001	0.53	0.55	0.65	0.55	0.58	0.54
2001/2002	0.54	0.58	0.67	0.54	0.64	0.54
2002/2003	0.49	0.53	0.65	0.44	0.51	0.50
Total	0.55	0.58	0.66	0.53	0.59	0.55

Educational gaps by ethnicity and social care status net of socioeconomic status

Controlling for area-level deprivation (proxied by WIMD and FSM); demographic variables sex, birth cohort and term of birth; and SEN status, logistic regression

models were employed to estimate the association between ethnicity and social care involvement and educational attainment. (See Appendix 5 Table A5.2.1 Model 1 for results). Children from all four ethnic minority groups show higher odds of attaining five A*–C GCSEs (including English/Welsh and Maths) compared to White children, with odds ratios of 1.782 (Asian), 1.297 (Black), 1.146 (Other), and 1.115 (Mixed). However, this overall advantage does not apply uniformly to all subgroups within each ethnic category. In contrast, social care experience is associated with significantly lower odds of attainment: 0.436 for Children in Need (CIN) and 0.372 for Children Looked After (CLA), relative to those with no social care involvement. Findings on the control variables are largely consistent with prior studies. After accounting for other variables, FSM status and being in more deprived neighbourhoods are linked to a decreased likelihood of attaining five GCSEs A*-C.

Interaction between ethnicity and social care status

Model 2 in Appendix 5 Table A5.2.1 included interaction terms for ethnicity and social care experience to examine their combined effects on the probabilities of attaining 5 A*- Cs GCSEs including Language and Maths. To ensure clear comparisons, predicted probabilities of reaching the threshold were estimated and visualized (Figure 3) based on the regression results. The estimates assume control variables set to the following values: no history of special educational needs (SEN=1), not receiving free school meals in Key Stage 4 (FSM=0), middle area-level deprivation (WIMD quintile=3), male (gender=1), born between January and April (term of birth=1), and belonging to the latest cohort (cohort= 2002/2003).

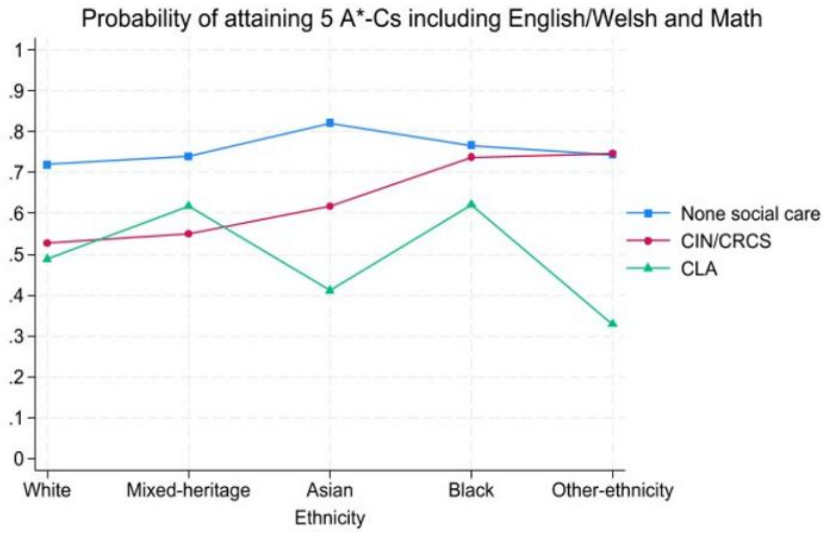

Figure 3. Probability of attaining 5 A*-C GCSEs including English/Welsh and Maths by ethnicity and social care status

First, the extent to which ethnicity moderates the relationship between CIN and educational attainment was estimated. The impact of being a CIN/CRCS on GCSE attainment varies by ethnicity. For White, Mixed, and Asian children, CIN/CRCS status is linked to a substantial drop in attainment—around 20 percentage points. In contrast, the effect is minimal for Black children (−2.9%) and slightly positive for those of "Other" ethnicity (+0.3%), suggesting that ethnicity moderates the relationship between CIN/CRCS experience and educational outcomes. We further examined how ethnicity moderates the difference in educational performance between CIN/CRCS and CLA. The difference in attainment between CIN/CRCS and CLA also varies by ethnicity. For White children, CLA pupils perform slightly worse than CIN (48.8% vs. 52.7%). Among Mixed-heritage children, CLA pupils perform slightly better (61.8% vs. 55.1%). However, for Asian, Black, and Other-ethnicity children, CLA status is linked to a substantial drop in attainment compared to CIN/CRCS—most notably among Other-ethnicity children (32.9% vs. 74.7%).

Religious inequalities in educational outcomes

The association between religion and educational attainment (achieving 5 GCSEs A*-C), controlling for socioeconomic status, demographic variables, and children's social care status, is reported in Model 1 of Appendix 5 Table A5.2.2. Compared to Christian

children, the odds of reaching the attainment threshold are 0.710 for Muslim children, 0.994 for those of "Other" religion, and 0.681 for children with no religion. This indicates Christian children have the highest likelihood of success, while those with no religion have the lowest, with Muslim and Other religion children falling in between. This supports findings by Moffat & Yoo (2020) that religion can act as a protective factor in education. However, the stronger advantage observed among Christian pupils suggests that alignment between the education system and Christian norms may enhance this effect, while partially limiting the benefit for non-Christian groups.

Consistent with previous findings (Berridge et al., 2020; Sinclair et al., 2019, 2020), Model 1 shows that having social care experience is associated with odds ratios of 0.450 (for CIN) and 0.408 (for CLA) for attaining the threshold, indicating a lower probability of attaining the threshold compared to the reference group of children with no social care experiences. Findings on the control variables are also consistent with prior studies. All ethnic minority children outperform White children. After accounting for other variables, FSM status and being in more deprived neighbourhoods are linked to a decreased likelihood of attaining the threshold. Model 2 included interaction terms between religion and social care experience to examine whether the association between religion and GCSE performance differs for children with social care involvement compared to those without. To ensure clear comparisons, predicted probabilities of meeting the attainment threshold were estimated and visualised (Figure 4) based on the regression model. These estimates assume the following reference values for control variables: no special educational needs (SEN=1), not receiving free school meals at Key Stage 4 (FSM=0), mid-level area deprivation (WIMD quintile=3), male (gender=1), White (ethnicity=1), born January–April (term of birth=1), and part of the 2002/2003 cohort.

Figure 4 illustrates that the relationship between religion and GCSE performance differs notably for CIN/CRCS and Children Looked After (CLA) compared to those with no social care involvement. Among children not involved with social care, all religious groups outperform those with no religion. However, the pattern is more complex among CIN and CLA children. For CIN, Christian pupils continue to outperform their no-religion peers, while Muslim and Other-religion pupils underperform. Among CLA

children, Christian and Other-religion pupils maintain an advantage, but Muslim pupils again underperform. These findings suggest that the protective effect of Muslim affiliation diminishes—or even reverses—among children with social care experience, a group already facing significant educational disadvantage.

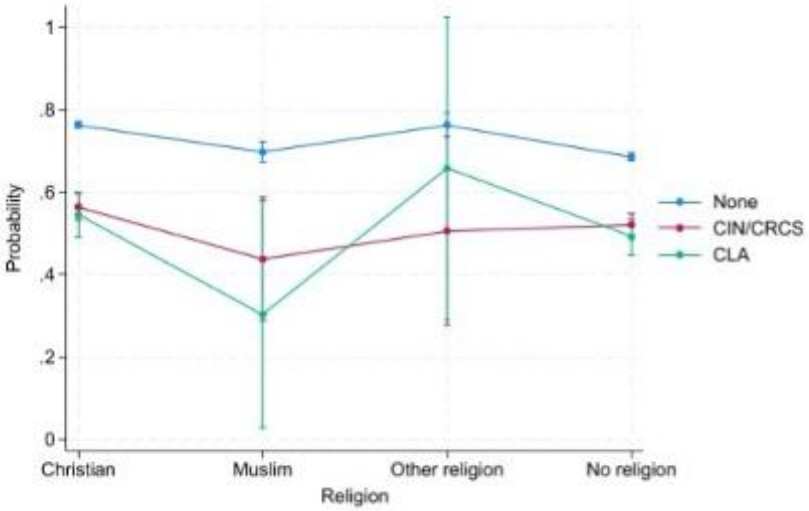

Figure 4. Probability of attaining 5 GCSEs A*-C including English/Welsh and Maths by religion and social care status,

5.3 Health Service Use by ethnicity and religion

CRCS children had lower rates of GP visits for all diagnostic but significantly higher rates for mental health-related visits—about double those of non-CRCS children (Figure 5). GP visits for injuries were similar across groups, except for Other-ethnicity children, where CRCS children had higher use than their non-CRCS peers. Among CRCS children, White children had the highest and Black children the lowest GP visit rates across all diagnostic categories. Hospital admissions (for all reasons, mental health, and injuries) were consistently higher among CRCS children across all ethnicities, with the largest disparities seen in mental health admissions—CRCS children had 3–5 times the probability of non-CRCS children, depending on ethnicity. Asian children had the highest, and Mixed-heritage children the lowest, hospital admission rates. A&E attendance patterns were mixed: CRCS children had higher attendance rates for Asian, Black, and Other-ethnicity groups, while non-CRCS children had higher rates among White and Mixed-heritage groups. For mental health-related A&E attendance, CRCS children had higher rates across all ethnicities, with Other-ethnicity children consistently showing the highest rates.

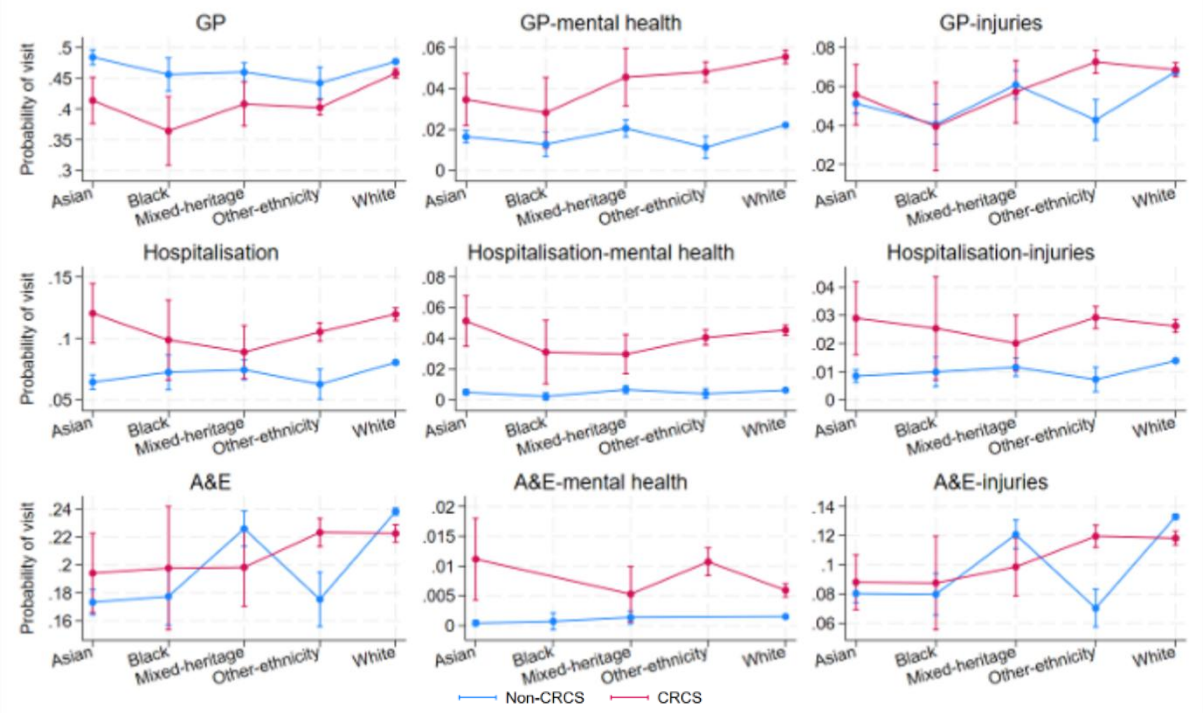

Figure 5. Healthcare use by CRCS status and ethnicity

Across all religious groups, CRCS children were less likely than non-CRCS children to have GP visits for any diagnostic reason, but more likely to have visits for mental health conditions (Figure 6). GP visits for injuries were similar across groups. Hospitalisation admissions (for all reasons, mental health, and injuries) were consistently higher among CRCS children across all religions, with the largest disparities seen in mental health admissions—CRCS children had 6.7 to 16.8 times the probability of non-CRCS children. Among CRCS children, Muslim and Other-religion groups had higher hospitalisation admissions than Christian and no-religion groups. A&E attendance patterns were generally similar between CRCS and non-CRCS children for all reasons and injuries, except for mental health-related visits, where CRCS children had higher probabilities across all religious groups. Other-religion children consistently had the highest probabilities of A&E visit among CRCS children.

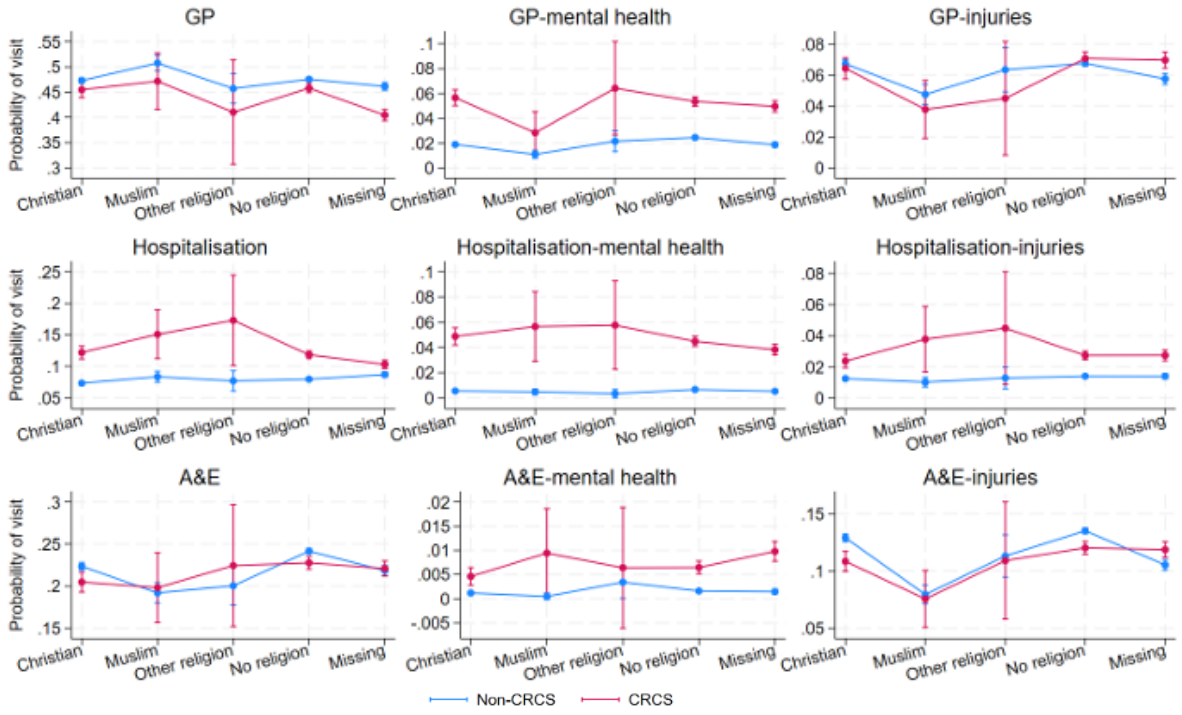

Figure 6. Healthcare use by CRCS status and religion.

6. Discussion

6.1 Summary of Findings

Amid growing attention to ethnicity in the UK child welfare system (Bywaters et al., 2019; Sacker et al., 2023; Javed et al., 2025; Webb et al., 2020), this study presents the first ten-year analysis of ethnic disproportionality in Wales. Findings show that changes in the number of ethnic minority children in the system do not reflect changes in ethnic disproportionality. Mixed-heritage children were consistently overrepresented, and Asian children underrepresented, across years, genders, and age groups. White children's representation remained proportionate to their population share. Disproportionality was more pronounced among females and in the 0–4 and 16–17 age groups. Ethnic disproportionality in the child welfare system increased in CIN data (2011–2016) but declined in CRCS data (2017–2020), a trend consistent across genders and most age groups except 10–15.

For educational outcomes, CIN/CRCS experience is linked to a 20% drop in GCSE attainment for White, Mixed-heritage, and Asian children, but has minimal impact for Black and Other-ethnicity children. Additionally, CLA status is associated with significantly lower attainment than CIN for Asian, Black, and Other-ethnicity children,

but not for White or Mixed-heritage groups. These patterns suggest that thresholds for social care intervention may differ by ethnicity, potentially leading to the inclusion of children with better academic outcomes in some groups. This raises important questions about how structural or institutional factors may influence intervention decisions and contribute to hidden inequalities.

Further findings show that CLA status is associated with significantly lower GCSE attainment for Asian, Black, and Other-ethnicity children compared to their CIN peers, while White and Mixed-heritage CLA children perform similarly to their CIN counterparts. This suggests that out-of-home care may be less effective for ethnic minority children, potentially due to systemic issues such as a lack of culturally appropriate placements or differences in care experiences. These findings align with previous research showing wider CLA-related attainment gaps for Asian children and narrower gaps for Black children. Ethnic minority children without social care experience generally outperform White peers, consistent with national trends. However, direct comparisons with earlier studies are limited due to differences in ethnic categorisation and control variables.

Religion can enhance educational attainment by providing cultural, social, and religious capital (Byfield, 2008; Glanville et al., 2008; Muller & Ellison, 2001). However, non-Christian affiliations may offer fewer advantages in an educational system historically aligned with Christian norms. Despite this, few quantitative studies have examined the impact of religion on attainment while controlling for ethnicity and other socio-demographic factors. Using population-level data from Wales, this study finds that religion generally acts as a protective factor. Pupils from Christian, Other-religion, and Muslim backgrounds outperform those with no religion, though the advantage declines in that order. Among children with social care experience, however, the benefits of non-Christian affiliation—particularly Muslim—are reduced or reversed.

This study is the first in the UK to provide population-level evidence of ethnic and religious disparities in healthcare use among CRCS children. Patterns of healthcare use varied by ethnicity and religion. Asian children's higher hospital admission suggests possible gaps in early intervention, while low GP use among Black children may reflect systemic or cultural barriers. White children showed higher GP use,

possibly indicating better primary care engagement. Mixed-heritage children had low hospital admission, and Other-ethnicity children showed high A&E attendance, pointing to potential access or awareness issues.

Religious differences also shaped healthcare use. Christian and non-religious children were more likely to access GP services and less likely to require hospitalisation, while Muslim and Other-religion children had lower GP use but higher hospital and A&E attendance, especially for mental health. These findings highlight the need for culturally and religiously sensitive outreach, improved mental health support for minority faith groups, and strategies to promote earlier, more appropriate healthcare engagement.

6.2 Implications for Practice and Further Research

The implementation of the Social Services and Well-being (Wales) Act 2014, effective from April 2016, marked a turning point in the ethnic composition of children Wales's child welfare system. Notably, Black children experienced a substantial decline in representation between 2016 and 2017, a trend consistent across gender and age. This shift may be attributable to the exclusion of children receiving preventative services from the CRCS Census, suggesting that census inclusion criteria can substantially affect ethnic representation. If Black children are overrepresented in preventative services, their exclusion from official counts may obscure true levels of involvement. These findings highlight the importance of methodological transparency when comparing ethnic disproportionality across time and regions. This study identified demographic-specific increases in representation of previously underrepresented groups. For example, Black girls aged 5–9 and 16–17; Asian adolescents aged 16–17; and Other-ethnicity girls aged 10–15 showed notable increases. In contrast, Mixed-heritage children saw a general decline, except for an increase among those aged 10–15. These patterns suggest age- and gender-specific challenges that should inform the design and targeting of preventative interventions.

This study presents the first decade-long analysis of ethnic disproportionality in Wales's child welfare system, revealing persistent overrepresentation of Mixed-heritage children and underrepresentation of Asian children. These patterns align with recent UK-wide studies (Bywaters et al., 2020), though earlier research (e.g. Owen &

Statham, 2009) identified Black children as the most overrepresented. The divergence raises questions about whether national differences in disproportionality reflect variations in child welfare practices or underlying social determinants.

Compared to previous research on Cafcass, CP, and CLA, the CIN/CRCS data show similar disproportionality patterns, with Mixed-heritage children more overrepresented than Black children. While U.S. research has examined ethnic disparities across multiple decision points in the child welfare process, such granular analysis remains underdeveloped in the UK. Internationally, the underrepresentation of Asian children in Wales mirrors Canadian trends, while the highest overrepresentation in Wales is among Mixed-heritage children—unlike Canada and the U.S., where Black children are most overrepresented. Cross-national comparisons must be approached cautiously due to different ethnic classification systems; for example, children of mixed White and Black heritage may be categorised differently across countries.

Educational outcomes further complicate the picture. Children's social care services may inaccurately identify the needs of Black and Other-ethnicity children, and out-of-home care may be less effective for addressing the educational needs of most ethnic minority children. While these interpretations are tentative, they highlight the need for further research to explore potential ethnic inequalities within a system designed to promote social justice. They also prompt reflection on the role of ethnicity in social work practice and whether anti-racism should be explicitly embedded in the code of practice for social workers in Wales and beyond. Religion also emerges as a significant factor. The stronger performance of Christian pupils may reflect alignment between school culture and dominant religious norms. However, this advantage diminishes among children in care, possibly due to cultural mismatches between religious identity and the social care system. Muslim children may be particularly disadvantaged if their needs are not adequately recognised. This highlights the need for more inclusive educational practices and equitable access to support for pupils from non-dominant religious groups.

Finally, ethnic and religious minority children with social care involvement are more likely to access secondary rather than primary care, indicating delays in help-seeking.

This may reflect cultural beliefs, stigma, or systematic institutional barriers such as discrimination and lack of culturally sensitive services.

6.3 Strengths and Limitations of the Research

This is the first UK study to examine ten-year trends in ethnic disproportionality among CIN and CRCS. A key methodological contribution was linking CIN/CRCS records to the 2011 Census improving ethnicity data coverage— especially for smaller ethnic groups, where missing data can distort disproportionality estimates. It is also the first study to link religion from Census data, enabling analysis of educational outcomes and healthcare use. However, findings should be interpreted cautiously, as the CRCS Census covers only about 80% of cases, - those open between January and March each year.

To estimate disproportionality, this study used multi-year averages from the APS to approximate yearly ethnic populations, following StatsWales' approach. This avoids assuming uniform growth but introduces sampling variability, particularly for smaller ethnic categories. Due to small sample sizes, detailed subgroup analysis (e.g. Black African vs. Black Caribbean, Gypsy, Irish Traveller, Roma, Arabs, Indian, Pakistani, Chinese, etc), was not possible, despite known differences in outcomes[vii]. GCSE-focused analysis excludes children who dropped out, potentially underestimating disadvantage. Outcomes for asylum-seeking or refugee children could not be examined. Finally, missing data on religion (8–15%) in the Census and limited socioeconomic controls remain key limitations.

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8. Acknowledgements

The authors would like to acknowledge all data providers who enabled the use of anonymized data for research purposes including ADR Wales for their acquisition of the data held within the SAIL Databank used in this study. This work was supported by the Children's Social Care Research and Development Centre (CASCADE) Partnership. The CASCADE partnership receives infrastructure funding from Health and Care Research Wales (517199). We also extend our thanks to all participants of the service user panels and members of the project advisory group for their valuable contributions to the development and refinement of this research project.

9. Appendices

Appendix 1: Datasets

Dataset	Description	Used to identify
Children in Need (CIN)	The Welsh Children in Need census collected individual records between 2009/10 - 2015/16 on all children in need, including those looked after by a local authority or those on the child protection register, who have an open case with a local authority on the 31st March that has been open continuously for the three months from 1st January to 31st March in the return year.	Children who had a Children In Need plan in place
Children Receiving Care and Support (CRCS)	In April 2016, following the introduction of the Social Services and Well-being (Wales) Act 2014, the CIN data collection was superseded by the Children Receiving Care and Support Census due to changes in the inclusion criteria.	Children who had a Children Receiving care and support plan in place
Looked After Children Wales (LACW)	Information collected by local authorities and submitted annually to Welsh Government about looked after children. Provides information about demographics and episodes in care	Children who entered the care of the local authority (i.e. a child in care/looked after)
Welsh Demographic Service Dataset (WDSD)	Register of all individuals registered with a Welsh GP, includes individuals anonymised address and practice history	The comparison group of children with no social care experiences
Welsh Longitudinal General Practice Dataset (WLGP)	Attendance and clinical information for all interactions with general practices registered to share their data with the SAIL Databank. This includes patients' symptoms, investigations, diagnoses, prescribed medication and referrals to tertiary care	Healthcare use (diagnoses)

Patient Episode Database for Wales (PEDW)	All inpatient and day case activity undertaken in NHS Wales plus data on Welsh residents treated in English Trusts.	Healthcare use (diagnoses)
Emergency Department Dataset (EDDS)	Clinical and attendance information about all attendances at Accident and Emergency (A & E)	Health care use (diagnoses)
Education Wales (EDUW)	Schools and Pupil data for Wales which covers state funded learning centres.	GCSE results
Office for National Statistics Census 2011	Population census socio-demographic details of all individuals living in Wales on census date in 2011	Child's ethnic and religious affiliation
Office for National Statistics Census 2021	Population census socio-demographic details of all individuals living in Wales on census date in 2021	Child's religious affiliation
Annual Population Survey (APS)	The Annual Population Survey (APS) is a large-scale household survey conducted in the UK, combining results from the Labour Force Survey and additional sample boosts. Because of its large sample size, the APS is particularly useful for producing reliable estimates for smaller areas and sub-groups of the population.	The number of children by ethnicity in Wales

Appendix 2: Data Linkage

Table A2.1. Steps carried out to construct the dataset used in Ethnic Disproportionality in Child Welfare System

Step	Process
1.	The CIN and CRCS datasets were used to identify children who had a "children in need" or care and support plan in place between 2009/10 - 2015/16 to 2016/17 - 2020/21, and their ethnic affiliation, gender, week of birth and postcode.
2.	Anonymous Linking Fields (ALFs) (Ford et al 2009) were used to match these children to the ONS Census 2011 and ONS Census 2021 to reduce the missing ethnic variable.
3.	Comparison population level ethnic groups were built from three-year pooled Annual Population Survey (APS) data from 2013–2015 (for year 2014) to 2019–2021 (for year 2020).

Table A2.2. Steps carried out to construct the dataset used in ethnic and religious disparities in educational outcomes - GCSE attainment

Step	Process
1.	The EDUW dataset was used to create a spine of all children who were born between 1 September 1997 and 31 August 2003 and enrolled in a Welsh state school. Educational attainment (5 A* - C including English/Welsh and Maths) at Key Stage 4 (GCSE), ethnic affiliation (at Key Stage 4), free school meals (ever) and the highest level of SEN provisioning (ever) was also obtained.
2.	The Unique Pupil Number (known as the Individual Record Number, IRN in SAIL) was used to link to the children's social care datasets (CINW, CRCS and LACW) to identify contact with children's social care when the child was aged 12 – 16 years old, between 2009/10 - 2017/18. A binary (yes/no) variable was created for each child to determine whether each child had any contact with children social care: 'none' (no involvement), ever 'CIN/CRCS', ever on the 'child protection register' (CPR), or ever 'looked after'. For children whose

	needs changed across the study period, the highest level of social care support was used (i.e. looked after, followed by protection register, with the lowest level of intensity being those in need or receiving care and support). Children who entered care for short breaks only were not included as these children enter care only temporarily to provide their families with respite. With permission from Welsh Government, the group of children in need and receiving care and support were combined. If ethnic affiliation was missing from the education data, the ethnicity recorded from the social care data was used to improve data completeness.
3.	To determine a child's WIMD quintile (area-level deprivation), we used the LSOA in the WDSD recorded on the 1 May for the year they were in Key Stage 4. The Anonymous Linking Field (ALF) (Ford et al 2009) was used to link to the WDSD. This date was chosen because it marks the beginning of the exam period.
4.	To improve the number of children who had a recorded ethnic affiliation, the dataset was linked to the ONS Census 2011 using the ALF. For a small number of children, the recorded ethnic affiliation changed over the study period and/or across the different datasets. In these instances, we used the ethnic affiliation recorded in the ONS 2011 Census.

Table A2.3. Steps carried out to construct the dataset used in health service use

Step	Process
1.	Three standalone cohorts of children who received care and support or looked after in the years 2016/17, 2017/18 and 2018/2019 were created using the CRCS. Ethnic affiliation was also obtained (but not used in the first instance – see step 4). Children who entered care for short breaks only, as identified by the LACW dataset, were not included as these children enter care only temporarily to provide their families with respite.

2.	For each birth cohort year, a group of matched (age, sex and WIMD quintile) children with no social care experience was created using the WDSD (a 'spine' of all individuals who are registered to a Welsh GP). A matching ratio of 4:1 was used, using the without replacement matching method, meaning that a child without social care experience could only be used for a match with one child. This meant that a small number of children had less than 4:1 matches. Matches were selected at random.
3.	All children were required to be registered to a GP which provides data to SAIL (around 86% of GP practices in Wales) for 350 days of the year (1 January to 31 December) for the year that they were captured in the CRCS. We used the ALF to link to the WDSD to determine this. This was required to ensure that both groups had similar opportunities (i.e. access to healthcare) to have a diagnosis recorded.
4.	The ONS Census 2011 and 2021 was used to identify religious and ethnic affiliation, using the ALF. The religious and ethnic affiliation in the 2021 Census was used in the first instance because it was most recent and closer to the study period, but when not available data in the 2011 Census was used. In a small number of cases, children had conflicting religious and ethnic affiliation reported in the same 2021 Census. In this instance, we selected one at random. We believe that this may be due to reasons such as split households, temporary stays with extended families etc.
5.	To boost the ethnic affiliation for both groups, we linked to the EDUW dataset (using ALF). Again, if there were conflicting records, we selected one at random.
6.	Healthcare use was identified by linking to GP (WLGP), inpatient admissions (PEDW) and A&E attendance (EDDS) using the ALF. Read codes (clinical coding system used in primary care to record diagnoses, procedures or symptoms) and International Classification of Diseases version 10 (ICD-10) (clinical coding system used for diagnoses in inpatient admissions) were used to identify diagnoses

	(see Appendix F1 for codes). A&E use a unique combination of local authority codes and ICD-10 codes (see Appendix F2 for codes). A binary variable (yes/no) was created to indicate whether the child had received a diagnoses (any classification) in each healthcare setting for the year of interest (1 January – 31 December, depending on the year of interest – the year they were registered in CRCS i.e. 2017, 2018 or 2019). A total number of visits to each healthcare provider (GP, inpatient admission, A&E attendance) was then calculated, including if no diagnoses was reported. This was quite common in the A&E department, where there is a high level of missing diagnostic data.

Appendix 3: Sample

Table A3.1. Cohort selection of 6 birth cohorts from 1997/1998 to 2002/2003

National Curriculum year	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
School year						Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11					
School year							Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11				
School year								Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11			
School year									Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11		
School year										Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	
School year											Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11
CIN records													•	•	•	•	•	•	•		
CRCS records																				•	•

Note: Light green cell indicates that the child's social care status data come from CINW, and dark green cell indicates the data come from CRCS.

Table A3.2. Number of students by ethnicity and social care status

	None	CIN	CLA	Total
White	161,425	5,224	2,211	168,860
Mixed	3,903	149	61	4,113
Asian	3,778	45	22	3,845
Black	1,322	21	16	1,359
Other	1,871	28	12	1,911
Total	172,299	5,467	2,322	180,088

Table A3.3. Number of students by religion and social care status

Religion	Freq.	Percent	Highest level of social service ever	Freq.	Percent
Christian	84,335	50.81	None	158,620	95.57
Muslim	4,300	2.59	CIN	5,545	3.34
Other religion	1,184	0.71	CLA	1,802	1.09
No religion	76,148	45.88	N= 165,967		

Table A3.4. Number of children in the child welfare system and matched comparison group (1 to 4) by ethnicity and religion

Variable	Count	Percent	**Variable**	Count	Percent
Ethnicity			Religion		
Asian	7,791	4.72	Christian	44,433	26.92
Black	1,757	1.06	Muslim	4,557	2.76
Mixed-heritage	5,311	3.22	Other religion	1,324	0.8
Other-ethnicity	9,793	5.93	No religion	86,614	52.48
White	137,976	83.61	Missing	28,102	17.03
Missing	2,402	1.46	N=165,030		

Appendix 4: List of Variables

Table A4.1. Variables used in Ethnic Disproportionality in Child Welfare System

Variable	Derived from	Description
Ethnicity	CIN and CRCS	To identify child's ethnicity. This information was then used to calculate the level of disproportionality in the child welfare system
Gender	CIN and CRCS	To identify child's gender. This information was then used to describe the difference in the level of disproportionality by gender.
Week of birth	CIN and CRCS	To identify child's age. This information was then used to describe the difference in the level of disproportionality by age group.
Welsh Index of Multiple Deprivation (WIMD)	CIN and CRCS	This is the Welsh Index of Deprivation Decile from 2019, available in WDSD. The WIMD 2019 is the Welsh Government's official measure of relative deprivation for small areas (Welsh Government, 2019) and was provided based on the postcodes of the households. It is based on small areas known as Lower Super Output Areas (LSOAs) each with a population of around 1600 people. The WIMD ranks these LSOAs from most deprived to least deprived on a measure that takes into account a range of factors including income and employment, health, education, access to services, housing community safety and the physical environment. The WIMD was divided into quintiles, with one being the most deprived and 5 the least.

Table A4.2. Variables used in ethnic and religious disparities in educational outcomes - GCSE attainment

Variable	Derived from	Description
Ethnicity	EDUW, CIN and CRCS,	To identify child's ethnicity (1) White (Gypsy or Irish Traveller, Roma, English, Welsh, Scottish, Northern Irish or British), (2) Mixed heritage (White and Black

	ONS Census 2011	Caribbean, White and Black African, White and Asian, Any other mixed-heritage background/ multiple ethnic background), (3) Asian (Indian, Pakistani, Bangladeshi, Chinese, Any other Asian background), (4) Black (Caribbean, African, Any other Black background) and (5) Other (Arab, Any other ethnic group). This information was then used in logistic regression models to estimate ethnic variation in GCSE attainment among children with no social care experience, children in need and children looked after.
Religion	Census 2021 and 2011	To identify child's religion (1) Christian, (2) Muslim, (3) Other religion, (4) No religion. This information was then used in logistic regression models to estimate religious variation in GCSE attainment among children with no social care experience, children in need and children looked after.
Social care experience	CIN, CRCS, CLA	To identify child's highest level of social welfare intervention ever experienced between Year 8 to Year 11 in three categories: (1) None, (2) Children In Need, and (3) Children Looked After (CLA).
GCSE 5 A*-C	EDUW	To identify child's GCSE attainment. This binary variable (attaining this threshold or not) was then used as dependent variable.
Gender	EDUW	To identify child's gender. This information was then used to control for gender in logistic regression models.
Academic term of birth	EDUW	To identify child's academic term of birth. This information was then used to control for term of birth in logistic regression models.
Cohort	EDUW	A variable we created to identify which birth cohort the child belongs (1=born in 1997/1998 through 6=born in 2002/2003).
SEN status	EDUW	To identify child's highest Special Education Needs (SEN) category ever provisioned (1= No special provision, 2=School Action, 3=School Action Plus, 4=Statutory assessment, 5=Statemented).
Free School Meal	EDUW	To identify whether a child has ever received free school meal in key stage 4.
WIMD	CIN, CRCS and CLA	This is the Welsh Index of Deprivation Decile from 2019, available in WDSD. The WIMD 2019 is the Welsh Government's official measure of relative deprivation for

		small areas (Welsh Government, 2019) and was provided based on the postcodes of the households. It is based on small areas known as Lower Super Output Areas (LSOAs) each with a population of around 1600 people. The WIMD ranks these LSOAs from most deprived to least deprived on a measure that considers a range of factors including income and employment, health, education, access to services, housing community safety and the physical environment. The WIMD was divided into quintiles, with one being the most deprived and 5 the least.

Table A4.3. Variables used in health Service Use

Variable	Derived from	Description
Ethnicity	EDUW, CIN and CRCS, ONS Census 2021 and ONS Census 2011	To identify child's ethnicity (1) White, (2) Mixed-heritage, (3) Asian or Asian British, (4) Black or Black British and (5) Other. This information was then used in logistic regression models to estimate ethnic variation in healthcare use among children with no social care experience, children in need and children looked after.
Religion	Census 2021 and 2011	To identify child's religion (1) Christian, (2) Muslim, (3) Other religion, (4) No religion. This information was then used in logistic regression models to estimate religious variation in healthcare use among children with no social care experience, children in need and children looked after.
Social care experience	CIN, CRCS and CLA	To identify whether the child had any social welfare intervention experience in year 2016/17, 2017/18 and 2018/19: (1) None, (2) Children with social care experience.
GP visit	WLGP	To identify whether the child had at least one GP visit for any (diagnostic) reason in the year. This binary variable was then used as dependent variable.

GP visit for mental health reasons	WLGP	To identify whether the child had at least one GP visit for mental health diagnoses in the year. This binary variable was then used as dependent variable.
GP visit for injuries	WLGP	To identify whether the child had at least one GP visit for injuries diagnoses in the year. This binary variable was then used as dependent variable.
Hospitalisation	PEDW	To identify whether the child had at least one hospital inpatient admission for any reason in the year. This binary variable was then used as dependent variable.
Hospitalisation for mental health reasons	PEDW	To identify whether the child had at least one hospital inpatient admission for mental health reasons in the year. This binary variable was then used as dependent variable.
Hospitalisation for injuries	PEDW	To identify whether the child had at least one hospital inpatient admission for injuries reasons in the year. This binary variable was then used as dependent variable.
A&E visit	EDDS	To identify whether the child had at least one A&E visit for any reason in the year. This binary variable was then used as dependent variable.
A&E visit for mental health reasons	EDDS	To identify whether the child had at least one A&E visit for mental health reasons in the year. This binary variable was then used as dependent variable.
A&E visit for injuries	EDDS	To identify whether the child had at least one A&E visit for A&E reasons in the year. This binary variable was then used as dependent variable.
Gender	WDSD, CIN, CRCS and CLA	To identify the gender of children with social care experiences and then match children with no social care experience based on gender, age and WIMD.
Week of birth	WDSD, CIN, CRCS	To identify the age of children with social care experiences and then match children with no social care experience based on gender, age and WIMD.

WIMD	WDSD, CIN, CRCS	To identify the WIMD of children with social care experiences and then match children with no social care experience based on gender, age and WIMD.

Appendix 5: Results

A5.1: Descriptive Statistics

Table A5.1.1. Number of children in the child welfare system by ethnicity and by year

	Year	White	Mixed heritage	Asian	Black	Other	Total
CIN	2011	15,712	453	257	153	114	16,689
CIN	2014	16,253	504	267	131	128	17,283
CIN	2015	15,501	497	271	162	90	16,521
CIN	2016	14,833	488	286	169	110	15,886
CRCS	2017	13,714	481	279	181	110	14,765
CRCS	2018	14,064	436	265	195	130	15,090
CRCS	2019	14,258	477	286	191	157	15,369
CRCS	2020	14,273	510	333	210	183	15,509

Table A5.1.2. Descriptive statistics for ethnicity and education

Variable	N	Mean	Std. dev.	Min	Max
GCSE 5 A*-Cs incl. language & maths	180,088	.55	.497	0	1
Variable	Freq.	Percent	Variable	Freq.	Percent
Ethnicity			WIMD		
1. White	168,860	93.77	1	40,256	22.35
2. Mixed	4,113	2.28	2	36,758	20.41
3. Asian	3,845	2.14	3	35,677	19.81
4. Black	1,359	0.75	4	32,824	18.23
5. Other	1,911	1.06	5	34,573	19.2
Highest level of social service ever			Gender		
None	172,299	95.67	Female	88,218	48.99
CIN	5,467	3.04	Male	91,870	51.01
CLA	2,322	1.29	Term of birth		
SEN			Jan - Apr	58,851	32.68
No special provision	95,683	53.13	May - Aug	60,131	33.39
School Action	41,160	22.86	Sep - Dec	61,106	33.93
School Action Plus	36,722	20.39	Cohort		
Statutory assessment	232	0.13	1997_1998	31,752	17.63
Statemented	6,291	3.49	1998_1999	30,120	16.73
Free school meal ever in ks4			1999_2000	29,394	16.32
no	151,798	84.29	2000_2001	29,827	16.56
Yes	28,290	15.71	2001_2002	29,214	16.22
Total	180,088		2002_2003	29,781	16.54

Table A5.1.3 Descriptive statistics for religion and education

Variables	Freq.	Percent
GCSE A*-Cs including English/Welsh and math	93273	0.562
Religion		
Christian	84,335	50.81
Muslim	4,300	2.59
Other religion	1,184	0.71
No religion	76,148	45.88
Highest level of social service ever		
None	158,620	95.57
CIN	5,545	3.34
CLA	1,802	1.09
SEN		
No special provision	88,414	53.27
School Action	37,715	22.72
School Action Plus	33,353	20.1
Statutory assessment	209	0.13
Statemented	6,276	3.78
Free school meal ever in KS4		
no	141,458	85.23
Yes	24,509	14.77

Table A5.1.4. Religious composition of children aged 3 to 15 in Wales, based on Census 2021

No religion	263518
Christian	143048
Muslim	17255
Not answered	30568
Other	4367

Source: https://statistics.ukdataservice.ac.uk/dataset/england-and-wales-census-2021-rm118-religion-by-age/resource/5440edb4-0deb-4f94-ae45-d86e4dd883da

Table A5.1.5. Descriptive statistics for Health Service Use

Variable	Count	Percent	**Variable**	Count	Percent
Ethnicity			CRCS	31,858	19.30
Asian	7,791	4.72	GP=1	77,115	46.73
Black	1,757	1.06	GP-mental health	4,538	2.75
Mixed-heritage	5,311	3.22	GP-injuries	10,901	6.61
Other-ethnicity	9,793	5.93	Hospitalization	14,187	8.60
White	137,976	83.61	Hospitalization-mental health	2,203	1.33
Missing	2,402	1.46	Hospitalization-injuries	2,647	1.60
Religion			A&E	37,843	22.93
Christian	44,433	26.92	A&E-mental health	423	0.26
Muslim	4,557	2.76	A&E-injuries	20,681	12.53
Other religion	1,324	0.8			
No religion	86,614	52.48			
Missing	28,102	17.03	N=165,030		

Figure A5.1 Ethnic disproportionality for girls (upper graph) and boys (lower graph) by year.

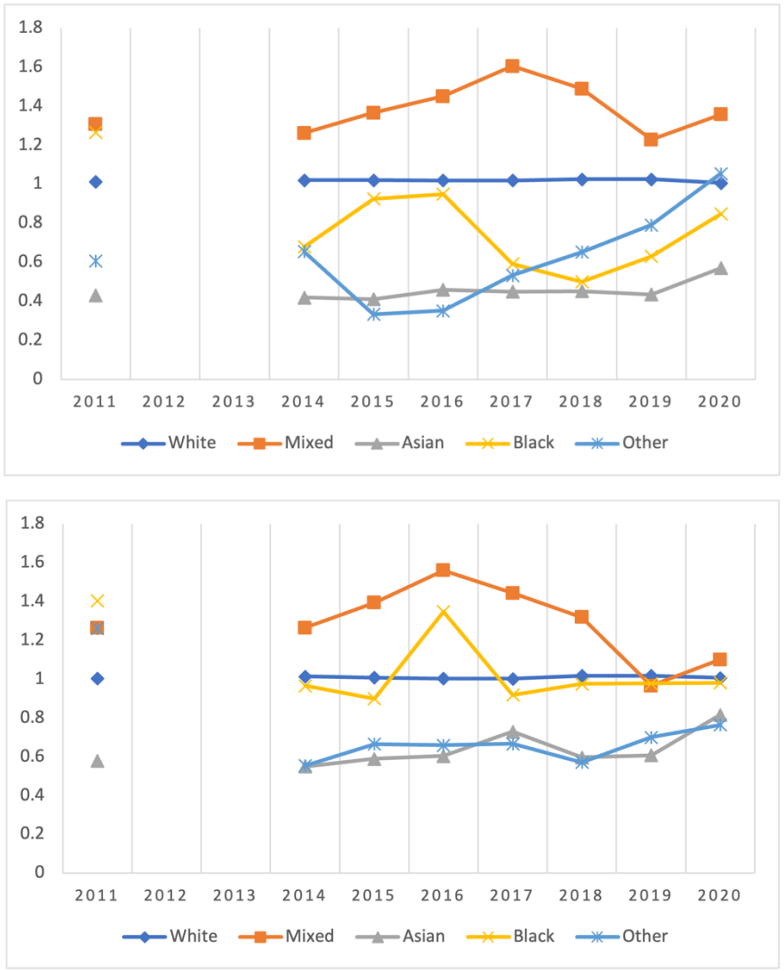

Figure A5.2. Ethnic disproportionality by age groups 0-4 (upper left), 5-9 (upper right), 10-15 (lower left), 16-17 (lower right) by year.

A5.2: Regression Models

Table A5.2.1 Logistic regressions of Attaining 5 GCSEs Grade A*-C including Language and Maths in GCSE on ethnicity and social service experience

Variables	Model (1) Odds Ratio	(95% CI)	Model (2) Odds Ratio	(95% CI)
Ethnicity [a]				
Mixed	1.115	(1.036 - 1.201)	1.110	(1.029 - 1.196)
Asian	1.782	(1.649 - 1.925)	1.794	(1.659 - 1.939)
Black	1.297	(1.147 - 1.468)	1.284	(1.134 - 1.454)
Other	1.146	(1.032 - 1.272)	1.136	(1.022 - 1.262)
Highest level of social service [b]				
CIN	0.438	(0.406 - 0.474)	0.436	(0.402 - 0.472)
CLA	0.373	(0.331 - 0.420)	0.372	(0.329 - 0.421)
Interactions between ethnicities and social service level				
Mixed*CIN			0.989	(0.631 - 1.551)
Mixed*CLA			1.530	(0.805 - 2.909)
Asian*CIN			0.808	(0.394 - 1.657)
Asian*CLA			0.408	(0.126 - 1.318)
Black*CIN			1.967	(0.673 - 5.754)
Black*CLA			1.341	(0.360 - 4.992)
Other*CIN			2.331	(0.975 - 5.572)
Other*CLA			0.454	(0.076 - 2.716)
SEN status [c]				
School Action	0.223	(0.217 - 0.229)	0.223	(0.217 - 0.229)
School Action Plus	0.133	(0.129 - 0.137)	0.133	(0.129 - 0.137)

Statutory assessment	0.103	(0.075 - 0.141)	0.103	(0.075 - 0.141)
Statemented	0.059	(0.055 - 0.064)	0.059	(0.055 - 0.064)
Ever received Free School Meal in KS4	0.462	(0.447 - 0.477)	0.462	(0.447 - 0.477)
WIMD [d]				
2nd quintile	1.368	(1.324 - 1.414)	1.368	(1.324 - 1.414)
3rd quintile	1.827	(1.767 - 1.889)	1.827	(1.766 - 1.889)
4th quintile	2.212	(2.137 - 2.291)	2.212	(2.137 - 2.291)
5th quintile, least deprived	3.137	(3.026 - 3.252)	3.138	(3.027 - 3.253)
Male	0.864	(0.845 - 0.884)	0.864	(0.846 - 0.884)
Term of birth [e]				
May - August	0.951	(0.926 - 0.976)	0.951	(0.926 - 0.977)
Sep - Dec	1.044	(1.017 - 1.073)	1.044	(1.017 - 1.073)
Cohort [f]				
1998/1999	1.191	(1.148 - 1.236)	1.191	(1.148 - 1.237)
1999/2000	1.432	(1.379 - 1.487)	1.432	(1.379 - 1.487)
2000/2001	0.969	(0.933 - 1.005)	0.969	(0.933 - 1.005)
2001/2002	1.000	(0.963 - 1.038)	1.000	(0.963 - 1.038)
2002/2003	0.778	(0.750 - 0.807)	0.778	(0.750 - 0.808)
Constant	2.086	(2.004 - 2.170)	2.086	(2.004 - 2.171)
Observations	180,088		180,088	

Reference groups: [a] White, [b] non-care children, [c] no SEN plan, [d] most deprived quintile, [e] born between Jan – April, [f] 1997-1998.

Table A5.2.2. Logistic regression of attaining 5 GCSEs Grade A*-C including English/Welsh and Math in GCSE on religion and social service experience

Variables	(1) odds ratio	CI	(2) odds ratio	CI
Religion (Ref=Christian)				
Muslim	0.710	(0.636 - 0.792)	0.714	(0.639 - 0.798)
Other religion	0.994	(0.857 - 1.153)	0.999	(0.859 - 1.161)
No religion	0.681	(0.665 - 0.697)	0.677	(0.661 - 0.693)
Highest level of social service (Ref=none)				
CIN	0.450	(0.416 - 0.487)	0.401	(0.355 - 0.453)
CLA	0.408	(0.357 - 0.467)	0.370	(0.300 - 0.458)
Interactions between religion and social service level				
Muslim*CIN			0.840	(0.451 - 1.566)
Muslim*CLA			0.509	(0.135 - 1.919)
Other religion*CIN			0.793	(0.314 - 1.999)
Other religion*CLA			1.609	(0.309 - 8.380)
No religion*CIN			1.242	(1.060 - 1.456)
No religion*CLA			1.194	(0.908 - 1.569)
SEN status (Ref=no SEN plan)				
School Action	0.221	(0.215 - 0.227)	0.221	(0.215 - 0.227)
School Action Plus	0.131	(0.127 - 0.135)	0.131	(0.127 - 0.135)
Statutory assessment	0.113	(0.082 - 0.156)	0.113	(0.082 - 0.156)
Statemented	0.057	(0.053 - 0.062)	0.058	(0.053 - 0.062)
Ever received Free School Meal in KS4	0.494	(0.477 - 0.511)	0.494	(0.477 - 0.511)
WIMD				
2nd quintile	1.327	(1.282 - 1.374)	1.327	(1.282 - 1.374)

3rd quintile	1.740	(1.680 - 1.803)	1.740	(1.679 - 1.802)
4th quintile	2.058	(1.984 - 2.135)	2.058	(1.983 - 2.134)
5th quintile, least deprived	2.885	(2.778 - 2.996)	2.884	(2.777 - 2.996)
Male	0.881	(0.861 - 0.902)	0.881	(0.861 - 0.902)
Ethnicity (Ref=White)				
Mixed	1.138	(1.050 - 1.234)	1.139	(1.051 - 1.235)
Asian	1.935	(1.719 - 2.178)	1.931	(1.715 - 2.174)
Black	1.404	(1.208 - 1.631)	1.399	(1.204 - 1.626)
Other	1.475	(1.291 - 1.685)	1.472	(1.288 - 1.682)
Term of birth (Ref=Jan-Apr)				
May - August	0.952	(0.926 - 0.980)	0.952	(0.926 - 0.979)
Sep - Dec	1.050	(1.021 - 1.080)	1.050	(1.021 - 1.080)
Cohort (Ref=1997/1998)				
1998/1999	1.188	(1.143 - 1.235)	1.188	(1.143 - 1.236)
1999/2000	1.423	(1.368 - 1.480)	1.423	(1.368 - 1.481)
2000/2001	0.962	(0.925 - 1.000)	0.961	(0.925 - 1.000)
2001/2002	0.994	(0.955 - 1.033)	0.994	(0.956 - 1.033)
2002/2003	0.791	(0.761 - 0.822)	0.791	(0.761 - 0.822)
Constant	2.653	(2.540 - 2.772)	2.661	(2.547 - 2.780)
Observations	165,967		165,967	

Table A5.2.3. Healthcare utilization by social care status and ethnicity

Variables	GP	GP-mental health	GP-injuries	Hospitalisation	Hospitalisation -mental health	Hospitalisation - injuries	A&E	A&E-mental health	A&E-injuries
Ethnicity	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio
Asian	1.028	0.740	0.746	0.788	0.788	0.609	0.670	0.288	0.569
	(0.978 - 1.080)	(0.612 - 0.893)	(0.668 - 0.833)	(0.713 - 0.870)	(0.548 - 1.133)	(0.468 - 0.794)	(0.629 - 0.715)	(0.092 - 0.902)	(0.521 - 0.622)
Black	0.918	0.572	0.584	0.893	0.341	0.712	0.690	0.472	0.565
	(0.824 - 1.024)	(0.359 - 0.911)	(0.448 - 0.761)	(0.723 - 1.103)	(0.109 - 1.060)	(0.420 - 1.207)	(0.599 - 0.794)	(0.066 - 3.372)	(0.465 - 0.687)
Mixed-heritage	0.933	0.926	0.894	0.919	1.063	0.834	0.934	0.910	0.896
	(0.876 - 0.992)	(0.749 - 1.144)	(0.787 - 1.015)	(0.818 - 1.032)	(0.723 - 1.561)	(0.630 - 1.103)	(0.867 - 1.005)	(0.403 - 2.054)	(0.815 - 0.984)
Other-ethnicity	0.869	0.506	0.617	0.765	0.641	0.524	0.680	1.811	0.493
	(0.783 - 0.965)	(0.314 - 0.817)	(0.478 - 0.796)	(0.620 - 0.943)	(0.286 - 1.435)	(0.289 - 0.950)	(0.594 - 0.778)	(1.360 - 2.413)	(0.404 - 0.600)
CRCS	0.926	2.586	1.016	1.551	7.551	1.905	0.916	3.960	0.874
	(0.895 - 0.958)	(2.403 - 2.782)	(0.956 - 1.079)	(1.470 - 1.636)	(6.792 - 8.395)	(1.720 - 2.110)	(0.881 - 0.951)	(3.130 - 5.009)	(0.833 - 0.917)
Asian* CRCS	0.813	0.824	1.075	1.278	1.446	1.818	1.256	6.548	1.266
	(0.689 - 0.959)	(0.538 - 1.264)	(0.781 - 1.480)	(0.991 - 1.649)	(0.874 - 2.393)	(1.063 - 3.108)	(1.032 - 1.528)	(1.762 - 24.333)	(0.982 - 1.633)
Black* CRCS	0.738	0.865	0.957	0.902	1.982	1.359	1.248		1.266
	(0.566 - 0.962)	(0.395 - 1.894)	(0.497 - 1.844)	(0.592 - 1.377)	(0.524 - 7.495)	(0.548 - 3.368)	(0.913 - 1.706)		(0.808 - 1.984)
Mixed-heritage* CRCS	0.875	0.878	0.922	0.782	0.606	0.914	0.925	0.979	0.910
	(0.743 - 1.031)	(0.595 - 1.297)	(0.665 - 1.280)	(0.583 - 1.049)	(0.335 - 1.098)	(0.512 - 1.630)	(0.763 - 1.123)	(0.292 - 3.283)	(0.711 - 1.166)
Other-ethnicity* CRCS	0.917	1.697	1.724	1.132	1.390	2.135	1.476		2.057

	(0.813 - 1.035)	(1.035 - 2.783)	(1.310 - 2.268)	(0.900 - 1.424)	(0.613 - 3.154)	(1.151 - 3.958)	(1.269 - 1.718)		(1.658 - 2.552)
Constant	0.913	0.023	0.073	0.088	0.006	0.014	0.313	0.002	0.153
	(0.903 - 0.924)	(0.022 - 0.024)	(0.071 - 0.074)	(0.086 - 0.090)	(0.006 - 0.007)	(0.013 - 0.015)	(0.308 - 0.317)	(0.001 - 0.002)	(0.151 - 0.156)
Observations	162,628	162,628	162,628	162,628	162,628	162,628	162,628	160,780	162,628

Table A5.2.4. Healthcare use by social care status and religion

	GP	GP-mental health	GP-injuries	Hospitalisation	Hospitalisation -mental health	Hospitalisation - injuries	A&E	A&E-mental health	A&E-injuries
Variables	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio	odds ratio
Religion									
Muslim	1.149	0.575	0.691	1.153	0.864	0.812	0.825	0.408	0.583
	(1.076 - 1.226)	(0.425 - 0.779)	(0.595 - 0.803)	(1.025 - 1.297)	(0.535 - 1.396)	(0.592 - 1.115)	(0.760 - 0.895)	(0.099 - 1.680)	(0.518 - 0.655)
Other-religion	0.938	1.143	0.939	1.053	0.611	1.029	0.870	2.894	0.861
	(0.831 - 1.059)	(0.765 - 1.710)	(0.736 - 1.197)	(0.837 - 1.325)	(0.227 - 1.643)	(0.595 - 1.780)	(0.752 - 1.008)	(1.041 - 8.048)	(0.715 - 1.037)
Non-religion	1.011	1.308	1.005	1.095	1.194	1.124	1.106	1.349	1.055
	(0.985 - 1.037)	(1.197 - 1.428)	(0.956 - 1.056)	(1.044 - 1.148)	(1.016 - 1.404)	(1.008 - 1.255)	(1.074 - 1.140)	(0.957 - 1.899)	(1.017 - 1.095)
Missing	0.955	0.988	0.846	1.204	0.954	1.119	0.971	1.233	0.795
	(0.920 - 0.990)	(0.866 - 1.128)	(0.784 - 0.912)	(1.127 - 1.285)	(0.744 - 1.224)	(0.959 - 1.306)	(0.930 - 1.015)	(0.762 - 1.995)	(0.750 - 0.841)
RCRS	0.930	3.128	0.953	1.755	9.128	1.922	0.895	3.893	0.821
	(0.870 - 0.993)	(2.719 - 3.598)	(0.845 - 1.074)	(1.584 - 1.945)	(7.490 - 11.123)	(1.563 - 2.364)	(0.829 - 0.966)	(2.378 - 6.373)	(0.746 - 0.903)
Muslim*	0.932	0.846	0.827	1.109	1.352	1.987	1.163	5.053	1.154

CRCS									
	(0.731 - 1.187)	(0.422 - 1.695)	(0.477 - 1.432)	(0.792 - 1.551)	(0.658 - 2.776)	(0.999 - 3.954)	(0.876 - 1.544)	(0.860 - 29.685)	(0.784 - 1.698)
Other-religion* CRCS	0.888	1.001	0.729	1.428	1.952	1.879	1.290	0.482	1.169
	(0.568 - 1.389)	(0.471 - 2.126)	(0.297 - 1.787)	(0.816 - 2.500)	(0.594 - 6.415)	(0.673 - 5.243)	(0.826 - 2.017)	(0.051 - 4.562)	(0.663 - 2.062)
No religion* CRCS	1.002	0.721	1.102	0.883	0.766	1.030	1.035	1.044	1.065
	(0.928 - 1.082)	(0.611 - 0.852)	(0.958 - 1.267)	(0.783 - 0.997)	(0.605 - 0.969)	(0.811 - 1.308)	(0.947 - 1.131)	(0.594 - 1.834)	(0.953 - 1.190)
Religion missing* CRCS	0.852	0.881	1.288	0.688	0.812	1.038	1.133	1.735	1.394
	(0.782 - 0.929)	(0.721 - 1.078)	(1.099 - 1.509)	(0.601 - 0.788)	(0.596 - 1.108)	(0.789 - 1.364)	(1.026 - 1.252)	(0.897 - 3.355)	(1.230 - 1.579)
Constant	0.897	0.019	0.072	0.079	0.006	0.013	0.288	0.001	0.148
	(0.879 - 0.916)	(0.018 - 0.021)	(0.069 - 0.075)	(0.076 - 0.082)	(0.005 - 0.006)	(0.012 - 0.014)	(0.281 - 0.295)	(0.001 - 0.002)	(0.144 - 0.152)
Observations	165,030	165,030	165,030	165,030	165,030	165,030	165,030	165,030	165,030

Appendix 6: Healthcare codes

Table A6.1. Read codes (version 2) and ICD-10 codes used to identify diagnoses in GP and inpatient admissions

Disease	ICD-10 prefix	Read code prefix
Certain infectious and parasitic diseases	A and B	A
Neoplasms	C and D00 - D48	B
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50 - D89	C
Endocrine, nutritional and metabolic diseases	E	D
Mental and behavioural disorders	F	E
Diseases of the nervous system	G	F
Diseases of the eye and adnexa	H00 - H59	F
Diseases of the ear and mastoid process	H60 - H95	F
Diseases of the circulatory system	I	G
Diseases of the respiratory system	J	H
Diseases of the digestive system	K	J
Diseases of the skin and subcutaneous tissue	L	M
Diseases of the musculoskeletal system and connective tissue	M	M
Diseases of the genitourinary system	N	K
Pregnancy, childbirth and the puerperium	O	L
Certain conditions originating in the perinatal period	P	Q
Congenital malformations, deformations and chromosomal abnormalities	Q	P
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R	R
Injury, poisoning and certain other consequences of external causes	S and T	S and T
External causes of morbidity and mortality	V, X and Y	U

Factors influencing health status and contact with health services	Z	Z
Codes for special purposes (e.g. COVID-19)	U	NA

Table A6.2. Local authority A&E codes to identify diagnoses type in A&E

Diagnosis type	Code
Wound	
Laceration	01A
Contusion	01B
Abrasion	01C
Soft tissue inflammation	01D
Wound, other or unspecified	01Z
Head injury	
Glasgow Coma Score 15	02A
Glasgow Coma Score <15	02B
Dental Injury	02C
Head Injury, other or unspecified	02Z
Fracture	
Open Fracture	03A
Closed Fracture	03B
Fracture Dislocation	03C
Fracture, other or unspecified	03Z
Joint injury	
Sprain	04A
Dislocation	04B
Subluxation	04C
Joint Injury, other or unspecified	04Z
Amputation	
Amputation, other or unspecified	05Z
Soft Tissue Injury	
Muscle Injury	06A
Tendon Injury	06B
Nerve injury	06C
Visceral Injury	06D
Vascular Injury	06E
Soft Tissue Injury, other or unspecified	06Z
Burns, Scalds and thermal Conditions	
Electric	07A
Chemical	07B
Radiation	07C
Scald	07D
Sunburn	07E
Hyperthermia	07F
Hypothermia	07G
Frostbite	07H
Burns, Scalds and Thermal Conditions, other or	07Z
Foreign Body	
Ingested Foreign Body	08A
Foreign Body, other or unspecified	08Z

Puncture Wounds	
Needle Stick Injury	09A
Human Bite	09B
Animal Bite	09C
Insect Bite or Sting	09D
Puncture Wounds, other or unspecified	09Z
Poisoning or Overdose	
Alcohol	10A
Prescribed Drug	10B
Non-prescribed/purchased drug	10C
Illicit drug	10D
Poisoning or Overdose, other or unspecified	10Z
Drowning	
Near drowning	11A
Drowning, other or unspecified	11Z
Infectious Disease	
Notifiable disease	12A
Non-notifiable Disease	12B
Local Infection	
Septicaemia	13A
Infection, other or unspecified	13Z
Respiratory Conditions	
Asthma	014A
Chronic Obstructive Pulmonary disease	014B
Respiratory Conditions, other or unspecified	014Z
Endocrinological Conditions	
Diabetes	015A
Endocrinological Conditions, other or	015Z
Cardiovascular Conditions	
Myocardial Infarction	016A
Vascular Condition	016B
Cardiovascular Conditions, other or unspecified	016Z
Neurological Conditions	
Seizure/Convulsion	017A
	017B
Neurological Conditions, other or unspecified	017Z
Gastrointestinal Conditions	
Gastrointestinal Conditions, other or unspecified	018Z
Urological Conditions	
Urological Conditions, other or unspecified	019Z
Dermatological Conditions	
Dermatological Conditions, other or unspecified	20Z
Psychological/Psychiatric Conditions	
	21Z
Obstetric Conditions	

Obstetric Conditions, other or unspecified	22Z
Gynaecological Conditions	
Gynaecological Conditions, other or unspecified	23Z
Haematological Conditions	
Haematological Conditions, other or unspecified	24Z
Ophthalmic Conditions	
Ophthalmic Conditions, other or unspecified	25Z
Rheumatological Conditions	
Rheumatological Conditions, other or unspecified	26Z
Genito-Urinary Medicine	
Genito-urinary Medicine, other or unspecified	27Z
Ear, Nose and Throat Conditions	
Ear, Nose and Throat Conditions, other or unspecified	28Z
Pain	
Chest Pain, non cardiac	29A
Abdominal Pain	29B
Pain, other or unspecified	29C
Allergy (including Anaphylaxis)	
Allergy (including Anaphylaxis), other or unspecified	30Z
Social Problems/Homelessness	
Chronic Alcohol Abuse	31A
Chronic Drug Abuse	31B
Social Problems/Homelessness, other or unspecified	31Z
Nothing Abnormal Detected	97Z
Diagnosis Type Not Otherwise Specified	98Z
Diagnosis Not Recorded	99Z

Endnotes

[i] In 2019, the most common reasons children received care and support were abuse or neglect (54%), disability or illness (17%), family dysfunction (13%), and acute family stress (10%). For children looked after, abuse or neglect was also the leading reason (68%), followed by family dysfunction (15%) and acute stress (8%). These patterns have remained stable since 2016–17. For more details, see Wales Children Receiving Care and Support Census, 2019.

[ii] As the population data, and consequently ethnic disproportionality, is not available for years 2012 and 2013 (APS three-year pooled data is only available starting from 2013-2014, when ONS introduced them after stablishing survey design and incorporating the 2011 census population weights), CIN data in these two years were also excluded to make the patterns directly comparable. However, CIN results for 2011 and 2012 are available upon request from authors.

[iii] CRCS data held within the SAIL Databank comprises 81% of the total number of records reported by the Welsh Government.

[iv] Due to sample size limitations, subgroups had to be combined, meaning that educationally advantaged groups (e.g. Indian and Chinese) were in the same category as those known to be educationally disadvantaged (e.g. Pakistani).

[v] Free School Meals (FSM) are provided to pupils in state-funded schools whose families receive qualifying benefits (e.g. Universal Credit with earnings ≤ £7,400/year). All children in Reception to Year 2 in England receive FSM automatically. Eligibility is similar in Wales, with transitional protections in place until the end of the 2025/26 school year.

[vi] For the definition of Special Education Needs (SEN) and levels of intensity, see Welsh Assembly Government, 2013.

[vii] For example, Indian and Black African children tend to outperform White peers, while Pakistani, Black Caribbean, and Gypsy/Roma children often underperform. Similarly, only Mixed White and Black Caribbean children show significant underachievement.