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Formal school exclusions over the educational lifecourse in Wales

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ABSTRACT

For the first time, this paper takes a dynamic approach to studying formal school exclusions and their association with educational outcomes. In particular, we study every instance of school exclusions over a key part of a pupil's education lifecourse between Year 6 (end of primary school) to Year 11 (end of secondary school). Using a single population cohort of all pupils in maintained schools in Wales, we show that the frequency of formal school exclusions varies over pupils' lifecourse and identify five main exclusion trajectories, reflecting these variations over time, as follows: no exclusions, low level exclusions, early rise in exclusions, high-level Year 11 exclusions and late rise in exclusions. These general trajectories may suggest differences in the underlying reason for school exclusions that are not necessarily evident in pupils' official records or as reported by individual schools. We also show the differential impact of these exclusion trajectories on later educational outcomes. Highlighting these different trajectories may be useful to policymakers and practitioners when developing national and local guidance around school exclusions. They may also reflect unknown biases in the likelihood that a pupil gets excluded from school, often a major area of concern in debates around inclusive education.

Introduction

With the availability of consistent population data on formal[1] school exclusions, we have significantly improved our understanding of this highly contested area of education policy in recent years. Although there remain many shortcomings in officially recorded school exclusions, analysis of this has provided important insights into which groups of pupils are at greatest risk of exclusion and what impact exclusion has on later educational attainment and future life chances.

However, the analysis of officially recorded exclusions remains relatively under-developed. For example, with increasing years of administrative data we are only now beginning to study trends in school exclusions, and hence the possible impact of policies and guidance designed to improve[2] the use of school exclusions for all concerned. However,

most analyses use school exclusions as a static variable in their models; an excluded pupil, the number of instances of exclusion a pupil has had, or the number of days lost to exclusion – all observed at a single time point or aggregated over time. This might be appropriate for studies of permanent exclusions, but temporary school exclusions (or suspensions) are far more prevalent. These occur in time and, by definition, are temporary phenomena. A pupil can experience school exclusion at any time during their educational lifecourse, and they can experience temporary school exclusions repeatedly during their lifecourse. However, our understanding of school exclusions as a dynamic variable is very limited. We currently do not know, for example, if the characteristics of pupils who experience school exclusion differ according to when they are excluded and if particular patterns of school exclusion over pupils' educational lifecourses highlight unknown processes and practices of exclusion. Similarly, we do not know if the impact of being excluded on later educational achievement is the same irrespective of when they experience exclusion.

The purpose of this paper is to develop our insights into school exclusions by considering the temporal nature of school exclusions more explicitly. Using a single national cohort of 26,720 pupils in Wales, who were all in Year 6 in 2011/12, and tracking their educational lifecourse until Year 11 (in 2016/17),[3] we are able to examine (1) the characteristics of these pupils according to when they experienced exclusion; and (2) the associations between when they experienced exclusion and their subsequent attainment at the end of Year 11 (using General Certificate of Secondary Education [GCSE] attainment as a measure). For the first time, this paper explores the association between dynamic measures of formal school exclusions and educational achievement at age 16.

Background

The loss of school days due to exclusion, which occurs when a headteacher forbids a pupil from attending school either for a limited time or permanently, has been linked to negative outcomes over the lifecourse. Although exclusions across England and Wales are recommended only in cases of severe breaches such as violence or possession of drugs (Welsh Government, 2019), increasing exclusion rates have been recorded with a disproportionate number of exclusion instances being recorded among socially disadvantaged pupils, including children in receipt of free school meals (FSM; Munn & Lloyd, 2005; Tseliou et al., 2023), those with special educational needs (SEN), particularly those in receipt of personalised provision following an official statement of SEN (Tseliou et al., 2023; Warnock, 2006), as well as those who have been identified as being 'looked after' and in contact with social services (Gazeley et al., 2015; Jay et al., 2023).

The availability and use of large-scale administrative data has helped provide increasing levels of insight into how some of these 'risks' are associated with school exclusions (Strand & Fletcher, 2014). For example, Hatton (2018) uses data in England from 2016/17 to show higher rates of exclusion for pupils with moderate learning difficulties and autism compared to pupils with severe, profound and multiple learning difficulties. Fleming et al. (2020) have shown that children prescribed anti-depressants were found to have higher rates of exclusion.

Pupil-level risk factors of school exclusion highlighted above can be intertwined with a cumulative negative effect on pupils. More specifically, there is evidence that school

exclusions can have negative effects on children's lives, with exclusions being associated with outcomes linked to social disadvantage, including poor educational attainment (Paget et al., 2018), and subsequently to worse future employment outcomes (DfE, 2018). School exclusion has also been shown to have a negative impact on young people's health status, being closely linked to long-term physical and mental health problems (Fleming et al., 2020) but also with self-harm, highlighting the potential role of comorbid conditions (John et al., 2022) and complex needs that might not be identified from an early age disrupting the educational process.

The ability to explore exclusion trajectories in detail has been limited by the use of cross-sectional study designs and self-reported measures (Hemphill et al., 2014), which can raise the level of difficulty, especially since in studies of underage individuals parental consent is also required. Therefore, there is a need to investigate how patterns of exclusions and characteristics of excluded pupils differ across time, as exclusion trends might be closely linked to the pupil's educational stage, school practices and government guidelines. It is also important to focus on excluded individuals and the potential consequences of school exclusions on pupil outcomes in order to identify underlying differences in pupil-specific and school-level factors linked to school exclusions.

However, there are very few longitudinal studies of school exclusions. Paget et al. (2018) attempted to do this using the Avon Longitudinal Study of Parents and Children (ALSPAC), comparing exclusions before eight years of age (parent-reported) with exclusions at 15 years of age (child-reported). However, due to the relatively small nature of the ALSPAC cohort the authors were unable to fully test the relationship between younger and older exclusions, presumably also due to the very small number of school exclusions in the primary years. In another longitudinal study using administrative data in England, Melkman (2022) was able to examine exclusions among children in care up to Year 9 (aged 13/14 years). This showed a relationship between being excluded by Year 6 with being excluded in Year 9 among this vulnerable sub-group of the pupil population. Similarly, one of the most comprehensive quantitative studies of exclusions using administrative data in England by Strand and Fletcher (2014) was able to show that earlier exclusion (in Key Stage 3) was a predictor of later exclusions (in Key Stage 4).

Despite showing the potential of a longitudinal approach to studying school exclusions, these studies remain limited in their usefulness to policymakers and practitioners. None of these studies considers each instance of school exclusion longitudinally, limiting our understanding of differences between those who experience multiple and longer exclusions, which could severely disrupt their educational journey, and those who experience fewer and shorter exclusions. Considering that exclusions can have a cumulative effect on the pupil, the use of a longitudinal approach could improve the identification of pupils who are most at risk, as well as prompt early assessment of need and implementation of interventions that might prevent later exclusions and subsequently poorer outcomes.

Qualitative studies of school exclusion do report on the processes of school exclusion and are better placed to demonstrate that the incidence of a formal school exclusion often follows a complex set of conversations, behaviours, actions, interventions, warnings, etc., that involve pupils, parents and staff (e.g. Gazeley, 2010). However, such studies are often dependent on a small number of case study schools and/or pupils. Whilst these studies have been incredibly helpful in revealing the

process or story to a formal school exclusion, they are unable to identify common patterns or trends in the incidence of school exclusion during the pupils' journeys through school. Indeed, findings from such studies would suggest that the process leading to an incidence of a formal school exclusion is so complex that it is entirely plausible that we may not be able to observe any distinct longitudinal patterns at all.

The aim of the study, therefore, is to use a record linkage methodology to longitudinally explore the trajectories of pupils in terms of school exclusion and educational attainment as assessed by GCSEs passed at the end of Key Stage 4. We also investigate how these trajectories vary according to pupil-specific characteristics, such as special educational needs and free school meal eligibility. Another key feature of this study is the inclusion of contextual school-level factors. This is important in helping to understand how the incidence of exclusions, and the patterns of exclusions over time, may be determined by institutional policies and practices. The influence of these and the backgrounds of pupils are central to understanding how social relations, resources and power influence this process (Mosco, 2009).

Data and methodology

The study cohort

In order to study exclusion trajectories, we implemented a record linkage methodology to bring together different sources of administrative education data for a single cohort of pupils. This required three forms of data linkage. The first required linking different data collected at the level of individual pupils. The core of this is data from the Pupil Level Annual School Census (PLASC) that includes demographic details of the pupils, such as sex, ethnicity and eligibility for free school meals. This was then linked to other administrative datasets that provide more detailed information on their special educational needs, school absence, educational attainment and any incidents of formal school exclusion.

Since we are interested in how the incidence of exclusion changes over time, we also need to consider how some of these other factors also change over time. So, the second form of data linkage was to link individual pupil data across multiple years. The third form of data linkage draws upon school-level data that the pupils attended.

To do this, we used anonymised pupil-level administrative records, accessed through a secure research environment in SAIL (Ford et al., 2009; Lyons et al., 2009). After an initial assessment of the data available in SAIL and the robustness of the data over time, we decided to constrain our analysis to a single cohort of pupils who were aged 15 years old at the beginning of 2016/17 (i.e. in Year 11). Since the incidence of school exclusions is relatively low during the primary years (approximately 12–14% of all recorded exclusions), we only use data as far back as 2011/12 when the pupils were in Year 6, typically the final year of primary school. This results in a longitudinal dataset with annual data across a six-year period. A summary of the data used in this analysis is presented in Table 1.

We further constrain our cohort to include only pupils in mainstream schools in Wales (therefore not including Pupil Referral Units, special schools or independent fee-paying schools) and those for whom we have complete data across all six years. The total size of

Table 1. Summary of data.

Type of variable	Variables used	Year(s) of source
Fixed pupil-level variables	Sex	2016/17
	Ethnicity	
Dynamic pupil-level variables	FSM status	Annual between 2011/12 (Year 6)
	SEN	and 2016/17 (Year 11)
	Absence	
	Exclusion instances	
Pupil-level educational attainment	KS2 teacher assessments	2011/12
	GCSE attainment	2016/17
School-level variables	School medium	2016/17
	Faith school	
	Educational consortia	

our cohort is 27,085 individual pupils. Although this cohort does not include every 15-year-old in 2016/17 in Wales, we still treat this as a population for statistical purposes.

Further details about the variables used in this analysis are discussed in turn before we outline our analytical approach.

Sex and ethnicity

The PLASC dataset within the NPD (National Pupil Database) includes information on personal characteristics including sex and ethnicity. During the time period for this cohort, the PLASC records the sex of the pupils. This is not the same as gender, which could change over time. Ethnicity is also considered to be a fixed demographic factor and rarely changes over time. So for the purposes of this analysis we use the recorded sex and ethnicity of pupils in 2016/17 (the year they completed their GCSEs). As Wales is relatively homogenous, pupils were grouped into White British, White, Asian, Black, and Mixed/Other, to allow for the comparison between White British and White Other (Non-British, including Irish Traveller), which are often grouped together in official reports, while also preventing any confidentiality issues relating to small numbers within some of the ethnic categories.

Eligibility for free school meals (FSM)

Social disadvantage was assessed with FSM eligibility status, which has been previously linked to poor educational outcomes (Taylor, 2018). Since eligibility can change over time, we captured the dynamic changes in FSM eligibility by grouping our cohort into four categories depending on the number of years they had been identified as FSM eligible. These groups included those who had not been FSM eligible, those who were FSM eligible for one year, those who were FSM eligible for multiple years and those who were FSM eligible for all academic years.

Special educational needs (SEN)

Pupils with learning disabilities that call for special educational provision are grouped as having SEN, though their needs and the level of support needed may differ significantly. Throughout this study, we use the term SEN because we

draw from data before the Additional Learning Needs and Education Tribunal (Wales) Bill 2018, which replaced the legislation on SEN (Welsh Government, 2018), took effect.

We aimed to capture the differences in pupil SEN by exploring need in different ways, including:

(i) level of provision needed: we grouped our cohort into no provision, School Action (or Early Years Action), School Action Plus (or Early Years Action Plus) referring to a request for help from external services, and finally, a separate category of pupils with personalised provisions who have been issued with an official SEN statement;

(ii) type of need: we included both types of need that may be either prioritised and categorised as having the most profound effect on the child's life and education (primary), or considered as comorbid difficulties of lesser impact (secondary). Pupils were grouped into those with no identified SEN, those with behavioural or mental health needs (including emotional and social difficulties), cognitive or learning needs (including special learning difficulties), those with communication and interaction needs (including speech and language difficulties), and children with sensory or physical needs (including hearing and visual impairment);

(iii) number of different SEN types: as the impact of SEN is revised annually and can change over time, pupils can have different primary and secondary needs across different stages of education, indicating the presence of complex SEN that can be significantly disruptive and potentially linked to school exclusion. We thus grouped pupils into those with a single type of need identified and those with multiple needs;

(iv) time of identification: we explored the key stages during which any type of SEN was first identified by grouping pupils into those with no SEN data, those first identified with SEN at Key Stages 1 & 2 (due to the small number of pupils with SEN in early educational stages), Key Stage 3, and Key Stage 4.

School exclusion and attendance

Data on school exclusion instances included information on type, length and reason for exclusion. Annual pupil records included information on fixed-term (during which a child is temporarily removed from school for a period of up to 45 school days in one academic year) and permanent (occurring when a child is expelled from school) exclusions. We used the number of half-day sessions lost by each exclusion to assess the total number of days of school lost for each academic year towards the creation of our school exclusion trajectories. Absence for reasons other than exclusion was also included to capture those children who were identified as persistently absent (losing more than 61 sessions [or 30.5 days] per year). We aimed to explore the dynamic effect of such as a factor, similar to the FSM eligibility status variable described above, so we grouped pupils into those who had not been persistently absent, those who were identified as persistently absent for 1–2 years, and those who were persistently absent for three years or more.

School and wider area factors

To explore the link between school-level factors and exclusions, we included in our analysis the medium of instruction of the school each pupil attended, grouping pupils into English-medium, Welsh-medium type or dual/other medium type,[4] and whether the school the pupils attended was a faith school.[5]

We also had data available on which local authorities the schools were located in,[6] but these had to be aggregated to avoid any disclosure issues. For this reason, we created categories based on educational regional consortia, a system of collaboration supported by the Welsh Government to share school improvement services across local authorities in Wales. The four regions we use in this analysis are North (Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire, Wrexham), West (Powys, Ceredigion, Carmarthenshire, Pembrokeshire, Swansea, Neath Port Talbot), Central South (Rhondda Cynon Taff, Bridgend, Vale of Glamorgan, Cardiff, Merthyr Tydfil) and South East (Newport, Monmouth, Caerphilly, Torfaen, Blaenau Gwent).

Although pupils can move school (and local authority), they will tend to remain in a school with the same medium of instruction, stay either inside or outside the faith school sector, and remain within the same local authority and region. So for these school-level variables we use the school the pupils were attending in 2016/17 when they completed their GCSEs.

Educational attainment

Finally, we include data on educational achievement at the end of Key Stage 2 (KS2; end of primary school) and GCSE attainment at the end of Year 11, marking the end of Key Stage 4 (KS4; end of secondary school). KS2 outcomes are based on teacher assessments in Wales across three core subjects (English or Welsh [depending on the medium of instruction in the school], mathematics and science). We use the KS2 Core Subject Indicator (CSI) in this analysis to distinguish between pupils who reached 'expected levels' in all three core subjects and pupils who did not. This outcome measure is a strong predictor of later educational achievement in Wales. We include this measure of educational achievement from when pupils were in Year 6 (aged 10/11) to control for prior ability before we begin to examine the impact of school exclusions from Year 6 onwards.

Our main educational outcome of interest in this analysis is GCSE attainment. This is the main school leaving qualification in England and Wales and is usually required for participation in further education, etc. However, the qualification landscape for school leavers is quite complex and does change over time. In particular, the growth in more vocational qualifications, such as BTECs, has helped diversify the curriculum at KS4 that usually applies in Years 10 and 11. However, obtaining a good GCSE grade in the three core subjects of English/Welsh, mathematics and science remains very important to school leavers. For this analysis, we constrain our main educational outcome measure to whether pupils obtained a good grade (C or above) in at least one of the three core subjects.[7]

Statistical analysis

With the aim of exploring school exclusion variations across academic years, we created school exclusion trajectories. The GLLAMM (generalized linear latent and mixed models) command in STATA (Skrondal & Rabe-Hesketh, 2004) was used to perform latent class growth analysis (LCGA) because we had a count variable whose distribution was zero-inflated Poisson (no exclusion instances). The LCGA model was more appropriate given a Poisson distribution and a very sparsely populated repeated measure variable which meant we would not be able to use a more complex model, while it also accounted for the temporality of repeated measures. The number of classes in our analysis was chosen through a stepwise approach of identifying the model which minimised the Akaike Information Criterion (AIC) and the Bayesian information criterion (BIC) of the fitted model. AIC and BIC are used to compare different possible models and determine which one is the best fit for the data, with low values indicating a better fit model. The model which best fitted the data was identified, with pupils being grouped into five classes: i) no exclusion, ii) low exclusion number in early years, iii) high exclusion number in early years, iv) low exclusion number in later years, and v) high exclusion number in later years. Across univariate and multivariate models, 'no exclusion' was used as the reference category.

Following the LCGA, regression analysis models were undertaken to examine the relationship between the exclusion trajectories followed by pupil-specific, school- and area-level characteristics as well as the link with educational achievement as assessed by GCSEs passed at the end of KS4.

Frequency of formal exclusions over the lifecourse

In total, 2,578 pupils in the 2016/17 cohort experienced at least one instance of formal school exclusion between Years 6 and 11 (9.5% of all pupils): nearly one in ten pupils in this cohort. Figure 1 shows that the number of pupils who are excluded at least once
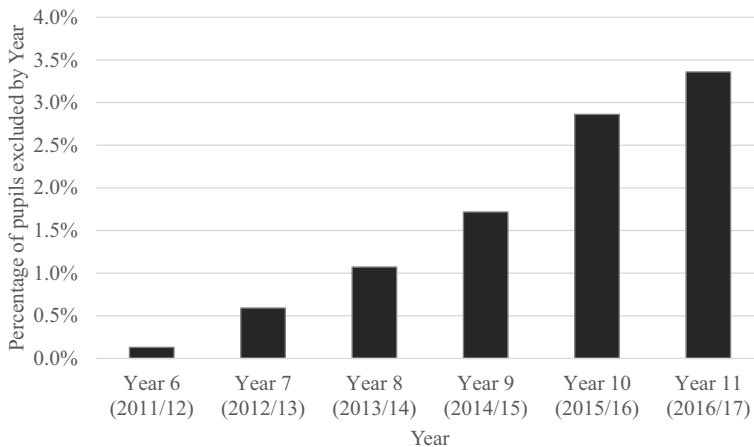

Figure 1. Formal exclusions over the educational lifecourse for the 2016/17 cohort.
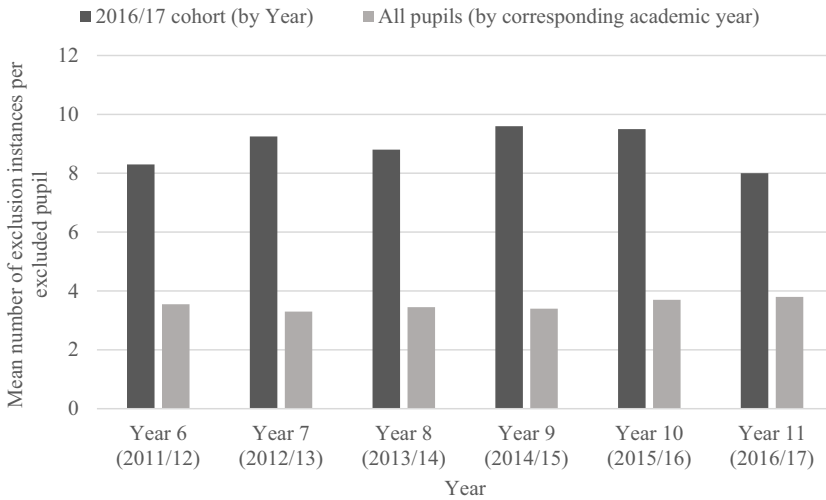
Figure 2. Mean number of exclusion instances per excluded pupil in the 2016/17 cohort (by year) and for all pupils in maintained schools (by corresponding academic year).

during the academic year increases year on year from 0.13% of the 2016/17 cohort in Year 6 (end of primary school) to 3.36% of the cohort in Year 11 (end of secondary school).

However, as we have demonstrated elsewhere (Tseliou et al., 2023) just looking at the number of pupils who experience exclusion can be misleading, and masks other patterns of exclusion that are taking place. This ignores each individual instance of exclusion, the frequency of these within the school year, the duration of each exclusion instance and the cumulative impact of these exclusions over time. To illustrate this, Figure 2 presents the mean number of exclusion instances an excluded pupil receives each year. Two sets of figures are provided here, the first for just the 2016/17 cohort by year, and the second for all pupils in the corresponding academic years. We can see that for the 2016/17 cohort, the mean number of exclusion instances remains relatively constant during the educational lifecourse – somewhere between eight and 10 instances of exclusion on average each year for a pupil who experiences at least one instance of exclusion in that year. The figures for all excluded pupils are much lower – between three and four instances on average for each corresponding year – which suggests that aggregating all pupils together masks the frequency of exclusion instances during these later years of the educational lifecourse.[8] As we know from previous studies (Tseliou et al., 2023) overall formal exclusion rates can go up and down over time, which could possibly shape the frequency of exclusions for our single cohort over time. Figure 2 also helpfully shows that the trend in exclusion instances over time remained fairly constant between 2011/12 and 2016/17, an important factor to consider when we look at the exclusion trajectories of the 2016/17 cohort only.

Exclusion trajectories: the classification of pupils

The figures on exclusion instances provide more insight into the lived experiences of school exclusion for pupils, but they still only provide a snapshot by each year. These

figures do not show, for example, if it is the same pupils who are experiencing school exclusions over time, or different pupils.

Latent class growth analysis is a sophisticated statistical technique that allows us to create different trajectories of school exclusions using the actual instances of school exclusion for our 2016/17 cohort over time. As we discussed earlier, this method produced five classifications, or types, of exclusion trajectories:

(i) Exclusion trajectory A: No exclusions
(ii) Exclusion trajectory B: Low level exclusions
(iii) Exclusion trajectory C: Early rise in exclusions
(iv) Exclusion trajectory D: High level Year 11 exclusions
(v) Exclusion trajectory E: Late rise in exclusions

Each trajectory illustrates a different dominant trend in the number of exclusion instances pupils experience between Year 6 and Year 11. The mean number of exclusion instances for each trajectory is presented in Table 2 and illustrated in Figure 3. Differences in these means over the educational lifecourse can also be usefully interpreted as the probability of an individual within that exclusion trajectory experiencing an exclusion instance.

The first trajectory ('no exclusions') requires little explanation – this is based on the majority of pupils (90.5% of all pupils in the cohort) who are not excluded at any point over their educational lifecourse.

The second trajectory ('low level exclusions') is based on 5.1% of all pupils in the cohort and just over half of pupils (54.0%) who may experience exclusion at any point between Year 6 and Year 11. These are pupils who are unlikely to be excluded repeatedly.
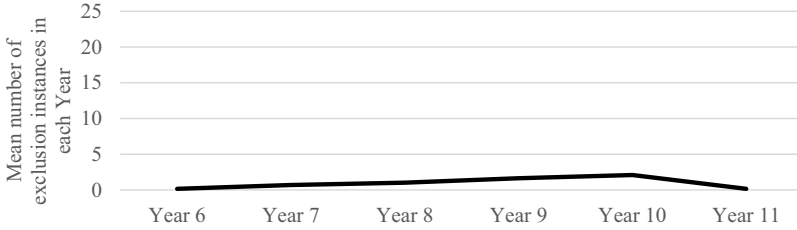
The third trajectory ('early rise in exclusions') is based on 1.0% of all pupils and 10.6% of all excluded pupils and can be characterised by being very likely to be excluded between Years 7 to 9 (during Key Stage 3). During Year 8, these pupils are excluded an incredible 14 times on average. But interestingly, the likelihood that these pupils are excluded in Years 10 and 11 is very low.

The fourth trajectory ('high level Year 11 exclusions') is characterised by a low probability of being excluded between Years 6 and 10 but then experiencing a relatively high number of exclusions (7.5 instances on average) in Year 11. Given the low incidence of exclusions before Year 11 this would suggest that the cause of their exclusion in Year 11 coincides with when pupils are meant to be working towards their final GCSE assessments. Although the number of exclusion instances per pupil is relatively low compared to some of the other trajectories, it is important to note that this is the largest group of excluded pupils and accounts for nearly a quarter of all excluded pupils (2.4% of all pupils in the cohort and 24.9% of all excluded pupils).

Table 2. Exclusion trajectories and mean number of exclusion instances by year.

	N	%	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
A. No exclusions	24,507	90.5	0	0	0	0	0	0
B. Low level exclusions	1,392	5.1	0.16	0.69	1.02	1.64	2.09	0.16
C. Early rise in exclusions	273	1.0	2.01	11.52	14.54	14.03	1.59	0.89
D. High level Year 11 exclusions	641	2.4	0.04	0	0.17	0.42	1.19	7.5
E. Late rise in exclusions	272	1.0	0.2	0.81	2.69	9.03	23.97	7.69

Trajectory B: Low level exclusions

Trajectory C: Early rise in exclusions
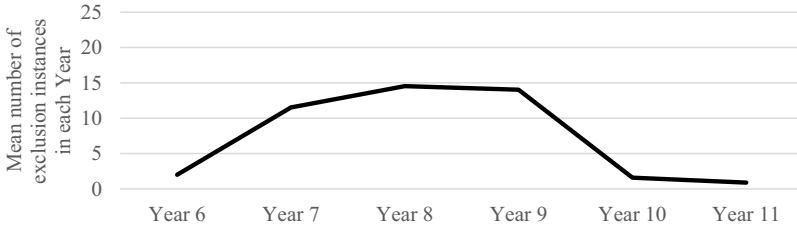
Trajectory D: High level Year 11 exclusions

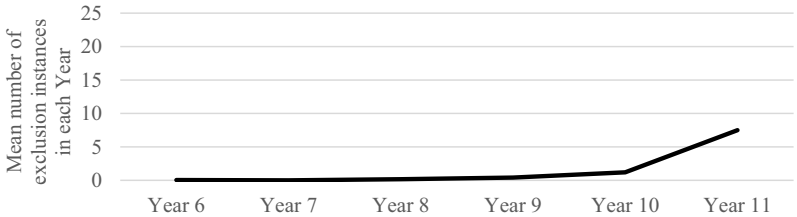**Trajectory E: Late rise in exclusions**
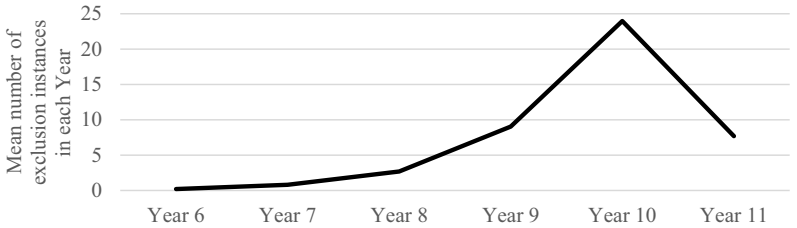
Figure 3. Exclusion trajectories, based on the 2016/17 cohort.

The final trajectory ('late rise in exclusions') is based on 1.0% of all pupils and 10.6% of all excluded pupils and can be characterised by an exponential rise in exclusions over time, peaking with an average of 24 exclusions during Year 10. Although the number of exclusions in Year 11 falls dramatically, the mean number of exclusions in Year 11 is still the highest of all the trajectories. Both this trajectory and the third exclusion trajectory are characterised by high levels of exclusions, but they differ markedly in their trajectories over time – one group experiencing exclusions quite early in their secondary education and the other group experiencing exclusions towards the end of their secondary education.

Exclusion trajectories and characteristics of pupils

We now consider the characteristics of pupils by exclusion trajectory. To do this, we use the latent class analysis categories (above) as the dependent multinomial variables in four multivariate regression models – one for each category of exclusion trajectory.

The first observation to make about the characteristics of pupils by exclusion trajectory is that we do not observe considerable differences between them based on these independent variables. Table 3 presents multivariable multinomial regression models to provide the odds ratios of pupils with these characteristics or independent variables being a member of each group of exclusion trajectories. All the well-known independent variables of excluded pupils are strong predictors of being a member in all four groups of excluded pupils: being male, White British, eligible for FSM, having SEN, and persistently absent from school. This might also suggest that differences between pupils based on their exclusion trajectories may be a result of other factors that we are unable to observe using administrative data. Crucially, however, whatever these factors or explanations may be, it is still the case that we can observe distinct groups of pupils and patterns of formal school exclusions over time.

A second observation to note is that the greater the level of 'risk', the greater the likelihood of being a member of any of these groups of excluded pupils. For example, pupils who we observed to be eligible for FSM over time are several times more likely to be excluded than pupils who are eligible for FSM just once over six years. Similarly, pupils who are persistently absent over time are more likely to be members of these excluded groups than pupils who were persistently absent in just one or two years. And, finally, we see that pupils with multiple SEN or greater needs (as indicated by the provision of support they receive) are more likely to be excluded than pupils with just one SEN.

Our third finding is that these pupil characteristics are greater predictors of being a member of the exclusion trajectories with relatively high rates of exclusion (trajectories C and E) than they are of the other two groups of exclusions with relatively low rates of exclusion (trajectories B and D). In other words, these groups with high incidences of exclusion are more homogenous than the others.

A fourth observation is that many of the school-level characteristics are also good predictors of whether pupils are excluded. These would suggest that the political economy of school exclusions has a key role in all these exclusion trajectories. For example, pupils in Welsh-medium schools are significantly less likely to be excluded than pupils in English-medium schools after controlling for pupil characteristics. Similarly, pupils in faith schools are less likely to be excluded than pupils in non-faith schools. Finally, Table 3 shows some marked geographical variations in the likelihood of being excluded – in general pupils in West Wales are the least likely to be excluded, and pupils in Central South and South East are more likely to be excluded.[9]

Although many of the predictors of school exclusion apply to all four exclusion trajectories, there are differences in how important these predictors are. For example, we can see that boys are considerably more likely to experience high incidences of exclusion during Key Stage 3 (the early rise in exclusion trajectory [C]) than the other trajectories. This is also the case for pupils who are consistently eligible for FSM and who have behavioural and mental health SEN. In contrast, pupils with a track record in school

Table 3. Characteristics of pupils by exclusion trajectory: multivariable multinomial regression models for school exclusion trajectory groups (reference group: pupils with no exclusion, N = 24,507).

		B. Low level exclusions	C. Early rise in exclusions	D. High level Year 11 exclusions	E. Late rise in exclusions
n		1,392	273	641	272
Gender	Female	1	1	1	1
	Male	2.21 (1.97–2.48)	2.68 (2.05–3.50)	2.51 (2.11–2.99)	2.39 (1.84–3.11)
Ethnicity	White British	1	1	1	1
	White Other	0.89 (0.68–1.8)	0.47 (0.21–1.05)	0.46 (0.27–0.79)	0.87 (0.47–1.60)
	Asian	0.66 (0.44–0.98)	0.25 (0.06–0.99)	0.26 (0.11–0.63)	0.25 (0.02–1.01)
	Black	1.25 (0.77–2.03)	0.68 (0.17–2.75)	0.43 (0.14–1.35)	0.35 (0.05–2.47)
	Mixed/Other	0.59 (0.42–0.81)	0.45 (0.20–1.02)	0.38 (0.22–0.68)	0.38 (0.16–0.93)
FSM status	No FSM	1	1	1	1
	FSM once	1.99 (1.57–2.52)	2.63 (1.38–5.04)	1.93 (1.39–2.68)	2.45 (1.38–4.34)
	FSM multiple	3.69 (3.16–4.09)	10.19 (7.42–13.98)	2.93 (2.43–3.54)	6.77 (5.06–9.07)
	FSM constant	5.55 (4.78–6.44)	15.80 (11.24–22.22)	4.35 (3.49–5.41)	9.60 (6.92–13.32)
Need type	No SEN type data	1	1	1	1
	Behaviour & mental health	6.48 (5.21–8.07)	18.14 (12.60–26.11)	4.39 (3.09–6.24)	12.06 (8.17–17.80)
	Cognition & learning	2.42 (2.14–2.74)	3.89 (2.94–5.15)	2.52 (2.12–3.00)	3.08 (2.24–4.07)
	Communication	2.09 (1.66–2.64)	4.05 (2.56–6.40)	1.71 (1.19–2.46)	3.91 (2.55–6.01)
	Sensory & physical	1.80 (1.32–2.46)	2.29 (1.11–4.72)	1.43 (0.87–2.33)	0.98 (0.36–2.65)
Comorbid need	No SEN type data	1	1	1	1
	1 SEN	2.12 (1.87–2.40)	2.60 (1.92–3.52)	2.08 (1.74–2.49)	2.65 (2.00–3.50)
	Multiple SEN	4.12 (3.53–4.80)	11.73 (8.85–15.57)	3.52 (2.80–4.41)	6.82 (5.03–9.24)
Need provision	No provision	1	1	1	1
	School Action	3.05 (2.63–3.55)	2.52 (1.43–4.48)	3.05 (2.48–3.75)	3.80 (2.48–5.83)
	School Action Plus	5.77 (5.02–6.62)	23.23 (15.13–35.66)	4.75 (3.90–5.78)	14.04 (9.75–20.21)
	SEN Statement	3.93 (3.07–5.04)	35.73 (22.01–57.98)	2.10 (1.35–3.26)	12.56 (7.67–20.58)
Persistent absence	No	1	1	1	1
	1–2 years	3.03 (2.66–3.44)	8.48 (6.41–11.20)	2.92 (2.43–3.50)	9.18 (6.94–12.15)
	3+ years	4.10 (3.47–4.83)	13.03 (9.47–17.93)	3.04 (2.35–3.94)	13.44 (9.73–18.58)
Medium type	English	1	1	1	1
	Welsh	0.77 (0.67–0.89)	0.40 (0.27–0.60)	0.81 (0.66–0.99)	0.73 (0.53–1.01)
	Other	0.28 (0.16–0.42)	0.27 (0.11–0.66)	0.44 (0.27–0.71)	0.24 (0.09–0.63)
School religion	No faith	1	1	1	1
	Faith school	0.99 (0.86–1.13)	0.91 (0.67–1.23)	0.87 (0.71–1.07)	0.93 (0.69–1.27)
Educational consortia	North Wales	1	1	1	1
	West Wales	0.86 (0.74–1.01)	0.93 (0.64–1.34)	0.65 (0.52–0.82)	0.69 (0.50–0.95)
	Central South Wales	1.32 (1.14–1.53)	1.29 (0.92–1.81)	0.81 (0.65–0.99)	0.66 (0.49–0.92)
	South East Wales	1.04 (0.87–1.24)	1.68 (1.18–2.41)	1.02 (0.82–1.28)	0.94 (0.67–1.32)

absence appear to be just as likely to belong to the late rise in exclusion trajectories (E) as well as belonging to the trajectory of early exclusions (C).

However, one of the most notable differences in the characteristics of pupils by exclusion trajectory is for ethnicity. In the main, White British pupils are more likely to be excluded than the other ethnic groups considered in the analysis. However, Table 3 shows that Black pupils are actually more likely to be members of the low-level exclusion trajectory (B). So whilst Black pupils are approximately 30–60% less likely to be members of exclusion trajectories C, D and E than White British pupils, they are 25% more likely to be members of exclusion trajectory B. Obviously, these results can only tell us so much, but perhaps the consistent likelihood of being excluded over the entire educational lifecourse, albeit relatively low, reflects a real qualitative difference in the experience and perception of exclusions for Black pupils. This may also help to explain why some studies suggest Black pupils are more likely to experience school exclusion (e.g. Demie, 2021; Strand & Fletcher, 2014) while other studies find no such relationship (e.g. Tseliou et al., 2023).

It is also important to observe that the factors in Table 3 that appear to vary the most by exclusion trajectory are school-level factors, particularly where in Wales the pupils go to school. As we observed above, pupils in West Wales are the least likely to be excluded and be in any of the four exclusion trajectories. But for all other pupils the probability of following a different exclusion trajectory varies considerably depending on where in Wales they are. For example, pupils in exclusion trajectory B are more likely to be in Central South. Pupils in exclusion trajectory C are more likely to be in South East Wales. Pupils in exclusion trajectory D are likely to be the most heterogenous depending on where they are from. Pupils in exclusion trajectory E are more likely to be from North Wales. This would suggest that one of the main reasons that pupils experience different trajectories of exclusion is possibly due to the political economy of school exclusions – such as different approaches to exclusions among schools, the support and guidance local authorities provide, variations in the interpretation of national guidance, and the resources to prevent and manage school exclusions.

Attainment and exclusion trajectories

We now go on to examine the attainment of pupils by exclusion trajectory to see if they have different impacts. As already discussed, studying the educational outcomes of excluded pupils is particularly challenging for two main reasons: (i) the relatively small number of pupils who are excluded among the pupil population; and (ii) the problematic relationship between attainment and school exclusions. We mitigate the first of these issues by using a population dataset that includes over 27,000 pupils from the 2016/17 Year 11 cohort. The second is much less easy to mitigate: being excluded from school means that pupils are less likely to be available or entered for assessments, and for such pupils GCSE attainment might not be considered to be the most important outcome anyway, given their circumstances. Nevertheless, GCSE attainment is an important and well-known outcome measure, and remains a very strong predictor of future educational, economic and social benefits.

For this analysis, we focus on pupils who obtained a good grade (C or above) in at least one of the three core subjects (English/Welsh, science and mathematics). An important

caveat is that we only compare pupils who are included in the GCSE data, which includes pupils with lower grades and pupils entered for GCSEs but who did not attempt any assessments. This excludes a large proportion of pupils for whom there are no data available – 39 per cent of pupils in total. Unfortunately, it is not clear whether these missing pupils were entered for other qualifications (e.g. BTECs). So, for this reason, these pupils are not included in the forthcoming analysis. However, we do consider the distribution of these missing pupils by exclusion trajectory (Figure 4). This shows that the level of missing pupils across each of the exclusion trajectories is similar across the groups and, crucially, commensurate with the proportion of missing pupils who did not have any exclusions (trajectory A).

In complete contrast, the proportion of pupils who achieved a good grade in any of the core subjects varies dramatically by exclusion trajectory. For example, we can clearly see that the two groups of pupils with the greatest experience of exclusions (trajectories C and E) are the least likely to obtain a grade C or above in any of the three core subjects. However, since we know the characteristics of the pupils by exclusion trajectory also varies, it is important that our analysis controls for these variations.

Therefore, Table 4 presents the univariate and multivariate odds ratios of whether pupils achieved a grade C or above. Comparing the odds ratios between these two sets of results can tell us about the relationship between the exclusion trajectories and outcomes independently of other pupil- and school-level characteristics and after controlling for these characteristics.

As Figure 4 suggests, the univariate relationship between exclusion trajectories and a good GCSE outcome is stark. Pupils in trajectory E (late rise in exclusions) are 94 per cent less likely to achieve a grade C or above in any of the three core subjects than pupils who will not experience any exclusion between Years 6 and 11. And for pupils in trajectory C (early rise in exclusions) this is even greater: 96 per cent less likely than non-excluded pupils. As we can see for the multivariate results (i.e. the fully adjusted model), the characteristics of the pupils in each of these trajectories only accounts for a small part of this difference. After controlling for a number of observed pupil and school-level
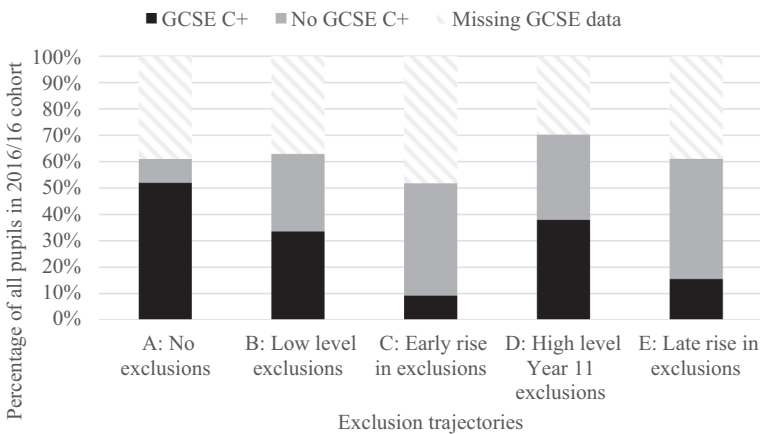

Figure 4. GCSE data by exclusion trajectories.

Table 4. Univariate and multivariable binary logistic regression models for pupils with GCSE grade C or above* by school exclusion trajectory groups (reference group: pupils with no GCSE grade C*, N = 16,594).

		Univariate	Fully adjusted
Exclusion trajectories	A – No exclusions	1	1
	B – Low level	0.20 (0.17–0.23)	0.36 (0.30–0.43)
	C – Early rise	0.04 (0.02–0.06)	0.11 (0.07–0.18)
	D – High level Year 11	0.20 (0.17–0.24)	0.35 (0.28–0.45)
	E – Late rise	0.06 (0.04–0.08)	0.13 (0.09–0.19)
Key Stage 2 results	Not achieved	1	1
	Achieved	8.97 (8.15–9.86)	3.66 (3.24–4.14)
Gender	Female	1	1
	Male	0.71 (0.65–0.77)	0.98 (0.89–1.09)
Ethnicity	White British	1	1
	White other	0.82 (0.67–0.99)	1.16 (0.87–1.55)
	Asian	3.20 (2.07–4.94)	4.77 (2.76–8.24)
	Black	1.28 (0.78–2.09)	4.19 (1.96–8.93)
	Mixed/other	1.03 (0.83–1.28)	1.29 (0.94–1.77)
FSM status	No FSM	1	1
	FSM once	0.43 (0.36–0.51)	0.67 (0.54–0.83)
	FSM multiple	0.27 (0.25–0.30)	0.53 (0.47–0.60)
	FSM constant	0.16 (0.15–0.18)	0.46 (0.40–0.54)
Need type	No SEN type data	1	1
	Behaviour & mental health	0.16 (0.13–0.19)	0.41 (0.29–0.59)
	Cognition & learning	0.15 (0.13–0.16)	0.29 (0.22–0.39)
	Communication	0.12 (0.10–0.13)	0.32 (0.24–0.44)
	Sensory & physical	0.17 (0.14–0.21)	0.46 (0.33–0.64)
Comorbid need	No SEN type data	1	1
	1 SEN	0.18 (0.17–0.20)	1.51 (0.30–1.77)
	Multiple SEN	0.08 (0.07–0.09)	Missing
Need provision	No provision	1	1
	School action	0.21 (0.19–0.24)	0.60 (0.46–0.78)
	School action plus	0.11 (0.10–0.12)	0.57 (0.43–0.73)
	SEN statement	0.07 (0.06–0.09)	0.52 (0.37–0.75)
Persistent absence	No	1	1
	1–2 years	0.30 (0.27–0.33)	0.49 (0.43–0.56)
	3+ years	0.15 (0.13–0.17)	0.34 (0.29–0.41)
Medium type	English	1	1
	Welsh	1.29 (1.17–1.43)	1.02 (0.90–1.16)
	Other	0.99 (0.74–1.32)	1.62 (0.96–2.71)
School religion	No faith	1	1
	Faith school	1.19 (1.07–1.31)	1.12 (0.99–1.27)
Educational consortia	North Wales	1	1
	West Wales	1.17 (1.05–1.32)	1.47 (1.27–1.70)
	Central South Wales	0.92 (0.82–1.02)	1.10 (0.96–1.27)
	South East Wales	0.67 (0.60–0.76)	0.63 (0.54–0.74)

Note: *In at least one of English/Welsh, mathematics or science.

characteristics, pupils in exclusion trajectories C and E are 89 per cent and 87 per cent, respectively, less likely to achieve a grade C or above in any of the three core subjects.

Interestingly, pupils in the other two exclusion trajectories – B (low level exclusions) and D (high level Year 11 exclusions) – are more likely to get a good GCSE grade than pupils in the other exclusion trajectories, but are still 64 per cent and 65 per cent less likely than non-excluded pupils to get a good grade.

It is also worth noting that the results in Table 4 show that most of the differences in boys' attainment compared to girls' attainment appears to be associated with the greater likelihood of them being excluded – a potentially important contribution to the debates around male educational under-performance.

The results of this analysis demonstrate that the different exclusion trajectories we observe in the administrative data are associated with pupils' educational outcomes in different ways. Importantly, there appears to be little difference whether pupils begin their exclusion trajectory early in their secondary education (i.e. in Years 6 and 7) or experience exclusions towards the end of their secondary education (i.e. in Years 10 and 11). The critical relationship appears to be the levels or frequency of exclusions they experience. The more exclusions they experience, the less likely they will achieve a GCSE grade C or better in their three core subjects.

Strengths and limitations

This is a large population-based study representative of the pupil population in mainstream education in Wales. Findings were based on official records of education data collected on an annual basis allowing for an objective recording of school exclusions, individual characteristics, such as SEN, and educational outcomes. The analyses also explored the longitudinal effect of school exclusions and pupil characteristics, including long-term social disadvantage, allowing for the investigation of how these might change over time and how they might be linked to educational outcomes.

Notwithstanding, some limitations need to be considered. The data included information on pupils in mainstream education, thus not including those in special schools such as Pupil Referral Units, who might have more complex needs and thus diverge from the rest of the pupil population. In addition, there are potential variations in the level of detail when recording pupil data across time, along with the fact that official guidelines might also vary over time, for example, by introducing new SEN categories or replacing existing ones. Although we accounted for a number of confounding factors, the potential role of additional confounding factors that were not available in our data needs to be taken into consideration during the interpretation of our findings. Finally, our secondary analysis of GCSE attainment was performed on a reduced dataset, limited by the drop in the number of pupils during the data linkage process (including different datasets on school exclusions, SEN, pupil characteristics, school absences and educational attainment) resulting in a lower linkage success rate. We have undertaken additional analyses (Figure 4) to showcase that missing data on educational attainment did not correspond with giving/achieving a GCSE, but there might still be bias related to loss of data following data linkage. Therefore, the inclusion of other qualifications or additional subjects, which were not available in the current dataset, could improve the representativeness of our findings.

Conclusion

For the first time, this paper explores the association between dynamic measures of formal school exclusions and educational outcomes. In particular, we have been concerned with the experience of school exclusions over a key part of a pupil's education lifecourse between Year 6 (end of primary school) and Year 11 (end of secondary school). As we have shown, the likelihood and frequency of formal school exclusions varies over this lifecourse. But we have also shown that this trajectory of school exclusions is not the same for all pupils. Our analysis of a single population cohort in Wales suggested that there are different patterns of formal school

exclusions for different groups of pupils. Our analysis suggests that there are four main exclusion trajectories, reflecting these variations over time. These general trajectories may suggest differences in the underlying reason for school exclusions that are not necessarily evident in pupils' official records or as reported by individual schools. They may also reflect unknown biases in the likelihood that a pupil becomes excluded from school, often a major area of concern in debates around inclusive education.

In the main, we see that there are not many significant differences in the known characteristics of pupils by these exclusion trajectories. But we do see that the pupils most likely to be formally excluded from school are increasingly homogenous among the groups most frequently excluded over time. These groups of pupils appear to be male, with special educational needs, are consistently eligible for free school meals and persistently absent from school. We also see that White British pupils in Wales are the most likely ethnic group to experience formal school exclusions. However, we also observed a potentially important deviation from this, where Black pupils were the most likely ethnic group to experience low instances of exclusion, but at any point over their educational lifecourse.

Where we could observe differences in pupils across these exclusion trajectories these were often related to school-level characteristics, such as the type of school they were attending or where the school is in Wales. Whilst there is only so much we can interpret from this analysis, it suggests that the ethos of the schools, differences in how schools respond to pupils who are struggling in mainstream classrooms, and variations in levels of support available from local authorities and other providers might be a very important consideration – something that is central to the other papers in this Special Issue.

Impact studies of school exclusion are notoriously difficult, and this paper also has its limitations. However, we have been able to show the very significant impact of school exclusions on educational attainment, even after controlling for many other factors, such as prior attainment at Key Stage 2, eligibility for free school meals and pupils' special educational needs. The odds of excluded pupils getting just one good grade (C or above) in one of the three core GCSE subjects, English/Welsh, mathematics or science, are considerably lower than pupils who are not excluded. Furthermore, the greater the number of exclusions pupils' experience over time, the lower this is. What may be somewhat surprising from our analysis is that when those exclusions are experienced – early in Key Stage 3 or later in Key Stage 4 – seems to make little difference to this. It is possible that pupils with early exclusion experiences might find themselves in a different curricular route to GCSEs or outside mainstream schools, but further analysis is required to determine if this is the case and how this may benefit pupils.

Highlighting these different trajectories may be useful to policymakers and practitioners when developing national and local guidance around school exclusions. First, there are clear differences between those pupils who seem to be repeatedly excluded and those who may experience only the occasional exclusion. But only by studying exclusions over the educational lifecourse does this perhaps become apparent. Importantly, our analysis suggests that there is a great deal of homogeneity in the characteristics of pupils with these different patterns of formal school exclusion. It is, therefore, quite easy to perceive pupils at risk of school exclusion as a homogenous group, without acknowledging the nuances between

them, and the different kinds of interventions they may need to prevent exclusions.

Secondly, when pupils experience an exclusion varies over the educational life-course. 'Early intervention', then, depends on which exclusion trajectory a pupil might be on. For example, pupils in trajectory C would appear to require significant early intervention before leaving primary school (Year 6), whereas pupils in trajectory E would appear to require significant early intervention from Year 8 onwards. Conversely, pupils in trajectory B may require a degree of on-going intervention throughout their whole educational lifecourse, but it is worth noting that this may not have the same level of impact as it could for other pupils at risk of exclusion. For pupils in trajectory D, there would appear to be a need for a different kind of intervention that is associated with their GCSEs and Key Stage 4.

These different responses to preventing or mitigating school exclusion mirror the differences in the apparent impact of formal exclusions on educational attainment. Our analysis shows that the frequency of formal exclusions seems proportionate to the possible impact of exclusions on attainment. Hence, intervention for those pupils who are more likely to experience formal exclusions (e.g. pupils in trajectories C and E) is highly probable to have the greatest impact on pupil attainment.

But a third consideration for policymakers and practitioners is in identifying the right pupils for the right kind of intervention, or even the focus of attention. Our analysis reveals that it is largely very difficult to differentiate between different groups of pupils based on their exclusion trajectories based on commonly used indicators, such as having special educational needs or being eligible for free school meals. The main differentiation we reveal is the longitudinal nature of these indicators – but that is only helpful in retrospect; we cannot really know whether a pupil will have an identified educational need or persistent socio-economic disadvantage in advance. Our analysis shows that common perceptions about which pupils are most likely to be excluded may be mis-placed. The example of Black pupils could be relevant here. Widely understood to be among pupils most at risk of school exclusion, we have demonstrated that this really only applies to one particular exclusion trajectory and one in which the frequency and impact on attainment is considerably lower than for pupils in other exclusion trajectories.

However, as noted throughout, our analysis is still very exploratory, and only dependent on what is contained in administrative datasets. There are many factors that have not been considered in this paper that could have relevance to our conclusions. Nevertheless, the use of population data does provide a robust foundation to warrant further detailed investigations that recognise the importance of pupils being on different exclusion trajectories.

Notes

1. Throughout this paper, we use the term 'formal exclusions' when referring to exclusions that have been officially recorded by schools, local authorities, and governments. However, it is acknowledged that this does not include 'informal exclusions', that is, exclusionary practices that go unrecorded officially.
2. There is considerable debate about the merits and needs of excluding pupils from schools. Whilst we acknowledge that this debate is important, it is not the purpose of this paper to

argue the strengths and weaknesses of school exclusion policies and practices. Instead, our focus is on understanding the outcome of existing school exclusion practices and policies, which we hope will contribute to this wider debate.

3. Year 6 is the final year of education in primary schools in England and Wales, when pupils are aged 10–11 years. Year 11 is the final year of compulsory education in England and Wales, when pupils are aged 15–16 years.

4. Wales has a bilingual education system, teaching in the medium of English and Welsh. Whilst both languages are compulsory in all schools, the main language of instruction – English, Welsh or both – varies between schools. In 2016/17 approximately 73% of pupils in Wales were educated in English-medium schools and a sizeable 16% in Welsh-medium schools.

5. The education system in Wales can be characterised as predominantly comprehensive – there are no selective state-maintained schools in Wales. The independent fee-paying sector is also relatively small compared to England and Scotland. And in contrast to England, most maintained school in Wales are operated by local authorities. The main exceptions to this are faith schools. In 2016/17 approximately 12% of pupils were educated in a faith school (Church of Wales or Roman Catholic). Faith schools generally are governed differently and have more autonomy when it comes to the appointment of staff, teaching and inspection of Religious Education, collective worship, admissions policy and the school's ethos.

6. There are 22 local authorities in Wales; some of these are very small with fewer than five secondary schools in them.

7. Many studies of educational outcomes in England and Wales use a slightly different indicator of achievement, usually whether a pupil obtains 5 GCSEs with grades C or above including the core subjects of English/Welsh, maths and science. However, many pupils who have experienced school exclusion do not achieve this outcome, so we use a lower level of achievement in our analysis, but that is still commensurate with the principle of obtaining at least one good grade in a core subject.

8. This would seem to suggest that younger pupils receive fewer instances of exclusion during the academic year than older pupils.

9. Although, as we will see, this varies considerably by exclusion trajectory.

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