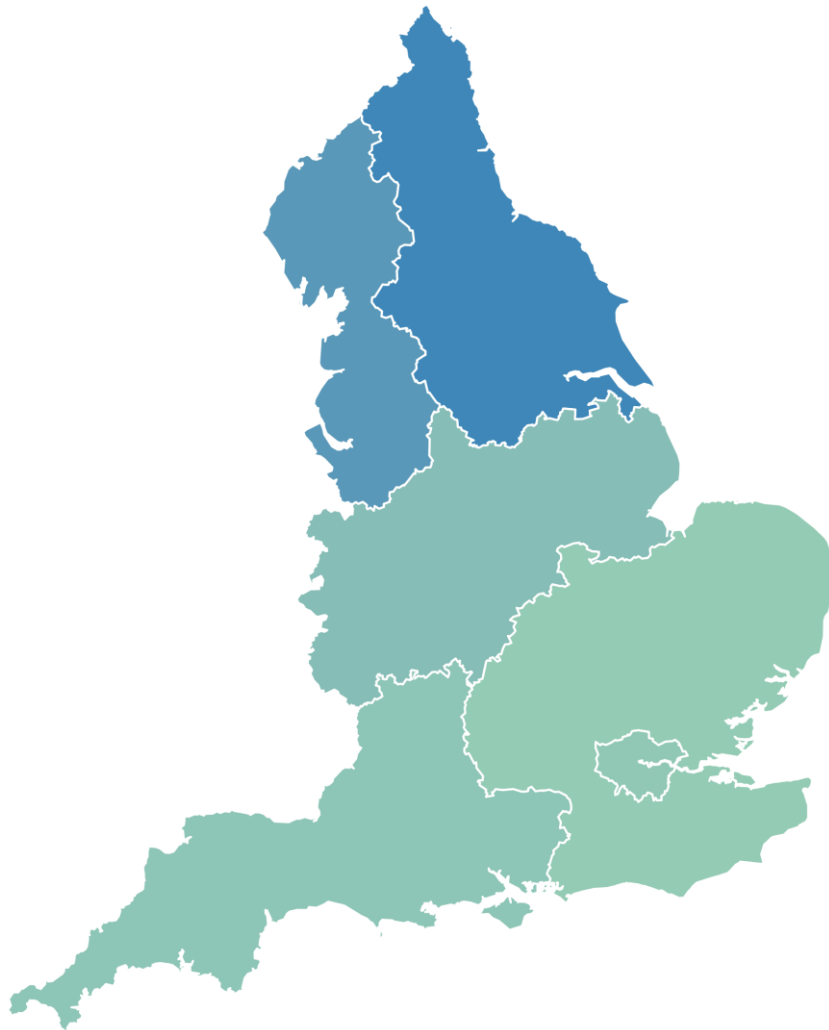# Care Demand and Regional Variability in England: 2010/11 to 2016/17

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Acknowledgements

Headline Findings

Introduction

There has been much attention to the national increase in the volume of care proceedings since the President of the Family Division identified this as a 'looming crisis' in 2016[1], and currently at their highest recorded levels. As S31 care and supervision proceedings are only initiated because of actual or likely significant harm to the child, the increase in their numbers raises important questions about the reasons, the consequences, and the capacity of the system to deal with this volume.

To date, there have been no published reports on the ways in which **regional variability** might contribute to an understanding of the national trends in care demand or to the resultant orders. This is the reason for this report. It aims to stimulate important new questions about regional and area variability in regard to care demand and the legal orders made at the end of cases.

Our findings are based on an analysis of all six regional court circuits in England as classified by Cafcass. They cover the period 2010/11 to 2016/17 and use information derived from the Cafcass electronic case management system. This timeframe has been chosen because it captures the major changes in family justice legislation, with the implementation of the Family Justice Modernisation Programme and introduction of the Children and Families Act 2014.

The volume of care proceedings and regional variability

The much reported national increase in the volume of S31 care proceedings has taken place in *all* six circuits but the size and pace varies. **Currently, the North East and South East have the largest volume and they have also both experienced the greatest change in recent years,** with a 14% yearly increase from 2014/15, compared to 11% in London and 8% for the other three circuits.

Are children at equal risk of becoming subject to care proceedings?

Children were **not** at equal risk of becoming subject to care proceedings. The North West and North East circuits had the highest rates in the country throughout the whole period. In 2016/17, **the North East had the highest rate of children subject to proceedings (30 per 10,000), followed by the North West (27 per 10,000),** and London had the lowest rate (18 per 10,000).

Are women at equal risk of their children becoming subject to care proceedings?

The risk is greatest for women (aged 15 - 44) in the North East and North West (18 and 17 per 10,000 respectively in 2016/17) and has been so throughout the period, with **London currently experiencing the lowest rate (**10 per 10,000 women in 2016/17).

How do 'repeat' mothers and 'repeat' children contribute to care demand across circuits?

'Repeat' mothers made up a sizeable proportion of care demand in all circuits each year (on average approximately 20%), **with relatively little variation across circuits**. These were the mothers who returned to court for further S31 care proceedings within 5 years of their previous S31 proceedings, either with the same child or a new baby.

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[1] 15th View from the President's Chambers: care cases: the looming crisis
https://www.familylaw.co.uk/news_and_comment/15th-view-from-the-president-s-chambers-care-cases-the-looming-crisis

'Repeat' children make up a small percentage of care demand in all circuits. The North West has the lowest average proportion (4%) and **London has the highest (8%).** These are the children who returned to court for further S31 care proceedings within 5 years of their previous S31 case.

Duration of proceedings

All circuits have increased the proportion of proceedings that complete within 26 weeks. In 2016/17 the percentage ranged from 55% (the Midlands, the South East and London) to 62% (the North West, North East and South West). Proportionately more cases completed in the North West and North East within 26 weeks in 2016/17 in these two circuits than others such as London, with a lower volume of care demand.

Legal outcomes at the end of the proceedings

Circuits that recorded a high percentage use of care orders tended to make less use of supervision orders and vice versa. **In the North West approximately 47% of children were placed on a care order in 2016/17, compared to 40% in the Midlands and 28% in London.** In the same year, children in the London circuit were more likely to be made subject to a supervision order (25%) than children in the Midlands (12%) and North West circuits (9%).

Percentage use of special guardianship orders increased notably over the period in **all** circuits and **all** showed a marked decline in use of placement orders.

Summary

Although the North East and the South East currently have the highest volume of care proceedings, the North West and North East have emerged as hot spots in regard to the risk of women and children coming before the courts in care proceedings. The probability of children and women becoming subject to or party to proceedings in these two regions is the highest in England.

London differs from all other circuits. It has the lowest risk of proceedings in relation to children and women. Completing cases within 26 weeks has taken longer in London than in other circuits until recently. Over time London has consistently made proportionately more supervision orders in which children remain or return to their birth parents. The rate of special guardianship orders is higher in London, alongside the North East and South East, but London has the lowest rates of care orders and placements orders compared to all other circuits. In short, it appears that London makes proportionately more use of family-based care, but it also has the highest proportion of 'repeat' children.

Describing these patterns is important because it shines a light on significant differences between circuits that require further explanation. This is the next step for the team.

Recommendations

This report is being published at an important time. A sector led Care Crisis Review[2] is under way and the Nuffield Family Justice Observatory is about to enter its development phase[3]. In addition, there

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[2] https://www.frg.org.uk/involving-families/reforming-law-and-practice/care-crisis-review

[3] Broadhurst, K. Budd, T and Williams, T. (2018) *The Nuffield Family Justice Observatory for England and Wales: Making it Happen.* Available from: http://www.nuffieldfoundation.org/sites/default/files/files/Nuffield_Family_Justice_Observatory_making_it_happen_v_FINAL_13_02_18.pdf

are important new developments nationally to link data across government departments, with the aim of generating better intelligence about how the system is working. The work of Paul Bywaters and colleagues[4] has demonstrated the value of linking Department for Education (DfE) data on looked after children with data held by the Ministry of Housing, Communities and Local Government to study deprivation. Work is ongoing within Cafcass to increase the range of variables against which data is collected, to further increase the analytic value of population level resources. Regarding core social care and family justice datasets, the work of Matthew Jay and colleagues[5] (2017) provides a firm set of broader recommendations about how to increase linkage opportunities and their utility.

All these initiatives and pioneering research studies create fertile ground for following up issues raised in this report to further probe regional variability. It will be important for researchers, analysts and frontline practitioners to work collaboratively not only to identify important regional variation but also to probe the reasons behind it. The analyses we present provide useful discussion material for the Local Family Justice Boards.

Specific recommendations are as follows:

- In line with other studies such as the work of Bywaters and colleagues, the findings warrant further examination of the relationship between **care demand and deprivation**.
- Given apparent differences in the use of legal orders, the findings also suggest that analysis of differences in **professional behaviour** is also important, as this also appears as a key factor in patterns and outcomes of family court activity.
- Further probing of **case characteristics** would allow us to see if there are any systematic differences between the **profiles of cases** in the North and those elsewhere that might increase risk and the likelihood of the need for a care order.
- Given that England and Wales are part of the same family justice system, it is important to explore regional variability across the two countries.

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[4] Bywaters P., Brady G., Bunting L., Daniel B., Featherstone B., Jones C., Morris K., Scourfield J., Sparks T. and Webb C. (2018) Inequalities in English child protection practice under austerity: A universal challenge?, *Child and Family Social Work*, 23 (1), pp. 53-61.

[5] Jay, M.A., Woodman, J., Broadhurst, K., Gilbert, R. (2017) Who cares for children? Population data for family justice research. Available from: http://wp.lancs.ac.uk/observatory-scoping-study/

Contents

Introduction

The volume of public law proceedings for care and supervision has increased markedly and is currently at its highest recorded level. Frontline practitioners are expressing difficulty in managing this demand, as captured by the President of the Family Division in his 15th View from the President's Chambers. This is a troubling situation given the vital role played by family courts in providing independent oversight and adjudication regarding questions of whether a child can remain with parents, be returned to their care, or needs an alternative long-term permanency plan. To date, however, the focus of discussion and analysis regarding the volume of S31 proceedings (commonly known as 'care demand[6]') has focused on the national picture (largely England), with insufficient attention paid to regional variation.

This report pursues a new line of inquiry. It aims to stimulate important questions about *regional* variability in England in the family courts regarding public law children's cases. We consider differences and similarities across all six court circuits in England in terms of the risk of children and women coming before the family courts, the volume of public law care and supervision proceedings, and patterns of legal orders made as outcomes of care proceedings. Until now there have been no publications with this focus.

Analysis of patterns and outcomes of family court activity in England lags behind related fields of health, economics and education, where there has been substantial interest in regional variability. Probing regional variability, in related fields, has long been recognised as important in regard to policy development and resource allocation. The remarkable descriptive maps of London poverty by Charles Booth[7] (1898-99) pioneered area based investigations into London life and labour, using striking data visualisations that were powerful summaries of variation at that time. In this context, the analyses we present in this paper are long overdue. The changing wider socio-economic context and increasing regional polarisation makes it particularly important and timely to explore variation across court circuits in different parts of the country. It is widely recognised that the impact of austerity has intensified divides between North and South that have previously existed, affecting life chances in every area- housing, health, employment and infrastructure[8]. A key question that needs to be examined is the extent to which patterns of the family court activity reflect these wider and growing regional disparities. Certainly the work of Bywaters and colleagues (2018) would suggest this relationship. It is against this background that we present our findings.

The paper builds on the findings of a presentation made at a conference hosted by the Centre for Child and Family Justice at Lancaster University in July 2017. The conference drew together over 140 family justice practitioners from the North and included lawyers, judges, senior leaders in children's services, Cafcass and voluntary sector personnel to examine ways of addressing the national "crisis" in care demand. Questions raised by the President of the Family Division in his 15th View from the President's Chambers provided the stimulus for the conference. The present report builds on two substantive studies funded by the Nuffield Foundation and supported by Cafcass:

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[6] In Cafcass care demand only refers to care applications, rather than including standalone s31 supervision applications. In contrast, we have included all applications under S31 (care and supervision).

[7] https://booth.lse.ac.uk/

[8] Whitehead, M., McInroy, N. and Bambra, C. (2014) Due North: report of the inquiry on health equity for the North. Liverpool: University of Liverpool and the Centre for Economic Strategies.

  Ron Martin, Peter Sunley, Ben Gardiner & Peter Tyler (2016) How Regions React to Recessions: Resilience and the Role of Economic Structure, Regional Studies, 50:4, 561-585, DOI: 10.1080/00343404.2015.1136410

  Hood, A., and Waters, T. (2017) Living standards, poverty and inequality in the UK: 2017–18 to 2021–22. Available from: https://www.ifs.org.uk/uploads/publications/comms/R136.pdf

  The Equality Trust. A Divided Britain? Inequality Within and Between the Regions. Available from: https://www.equalitytrust.org.uk/sites/default/files/A%20Divided%20Britain.pdf

- A national study of supervision orders and special guardianship (Harwin *et al.*, 2015-2018)[9]
- Vulnerable Mothers: Birth Mothers and Recurrent Care Proceedings (Broadhurst *et al.*, 2013 – 2018)[10]

This paper updates the evidence presented at this conference, against the following questions:

1. What are the trends in **care demand and case characteristics** nationally and across court circuits?
2. Do 'repeat children' or 'repeat mothers' help explain rising demand across court circuits?
3. Are children at **equal risk** of being subject to care proceedings across court circuits?
4. How do regions **converge or diverge** in the legal outcomes at the end of the proceedings to achieve and/or to support permanency?
5. What variability exists **within** circuits: exploring care order outcomes at Designated Family Judge area level.

The aim of the paper is to **describe** and **comment on** the statistical trends observed across the circuits, presenting the results in an accessible manner. Because of our interest in the **family court arena**, our analysis is based on the 6 court circuits in England as classified by Cafcass that correspond to distinct geographical regions for the practice of law, see Figure 1. They are the North West, the North East, the Midlands, South West, South East and London. To provide a more detailed picture of family courts we also examine variability in relation to care order usage in all 40 Designated Family Judge (DFJ) areas in England as classified by Cafcass.

We have chosen to focus our analysis on the years from 2010/11 to 2016/17 as this period captures the recent and significant developments in family justice reform. In 2011 the government published its Final Family Justice Review Report[11] prompting the start of the Family Justice Modernisation Programme and the creation of a single family court. In April 2014 a new Children and Families Act came into effect introducing some major reform in the role of the court and, for the first time, enacting statutory time limits to the duration of proceedings in all but exceptional circumstances. Our time frame allows us to capture earlier and later practice, which has also been affected by some highly influential judgments such as Re B and Re B-S[12] calling for adoption to be recommended only when "nothing else will do".

We hope that the findings will stimulate questions in the family justice community and beyond to compare variation and to start to explore reasons for similarity and difference. More broadly, they raise important questions concerning social justice and equity, and judicial workforce resources and planning.

Methodology Summary

Our findings are based on our analysis of Cafcass England case management data which we have restructured for our research purposes. We used information on all S31 proceedings (care and supervision) over the period 2010/11 to 2016/17. While Cafcass has records from 2008/07, the data on legal outcomes is more reliable from 2010/11. As such we have confined all analyses to start from 2010/11.

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[9] http://www.nuffieldfoundation.org/supervision-orders-and-special-guardianship
[10] http://www.nuffieldfoundation.org/vulnerable-birth-mothers-and-recurrent-care-proceedings
[11] Family Justice Review Final Report (2011). Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/217343/family-justice-review-final-report.pdf
[12] CARE PROCEEDINGS: Re B (Care Proceedings: Appeal) [2013] UKSC 33; Re B-S (Children) [2013] EWCA Civ 1146

In order to analyse regional variation, our main units of comparison are the six court circuits in England as classified by Cafcass, as shown in Figure 1. To assess the similarities and differences of S31 proceedings across the six circuits, we created several summaries: volume of cases, risk of proceedings for children and women, case profile characteristics, (age of the mother at start of proceedings, number of children in the case, age of the children at the start of proceedings, child gender, proportion of 'repeat' mothers and 'repeat' children, and case duration). We also created child summaries for the legal orders made at the end of the case (see below). In order to analyse how these summaries varied across the circuits over time, a trend model was fitted for each summary. These models allowed us to compare differences between the circuits and changes over time. All trend models used the North West as the baseline circuit, unless otherwise stated. Significant differences over time and between the other circuits were determined at the 5% level. Because of this statistical approach, throughout the report we use the word 'significant' to refer only to results which are *statistically significant at the 5% level*. Additionally, a table of model results is included below each figure (see Appendix A for further explanation).

Regarding the outcome of proceedings, six types of legal orders were selected for analysis. They were chosen because they aimed to provide or support legal permanence in placement. They were:

- order of no order
- supervision order
- residence order/child arrangements order (live with)
- special guardianship order
- care order
- placement order.

These orders provide proxy indicators of planned placement arrangements for children as Cafcass does not currently collect information on placements at the end of the proceedings. It plans to introduce more detailed information on the 'care plan' for a child in the near future.

A more comprehensive methodology is provided in Appendix A.

Figure 1: Map of the six circuits in England. These are the geographical regions (as defined by Cafcass) for which we have compared trends.

Profiling care demand nationally and across court circuits

The following section contains results from our analysis regarding the volume of cases each year and the risk of S31 proceedings for children and mothers at a national and circuit level.

Trends in the national volume of S31 proceedings 2010/11 to 2016/17

Figure 2 provides the national context to the analysis of court circuits that follows. From approximately 9,100 S31 (care and supervision) proceedings issued nationally in 2010/11 to 14,700 in 2016/17, there has been a significant increase over time. Moreover, the pace of the increase has accelerated. The year-on-year increase in the volume of proceedings rose from 2% for 2011/12 to 12% for 2016/17. The same *proportional* trend is demonstrated whether the focus is on the number of S31 proceedings, mothers who are party to the proceedings or children.

Figure 2: Total number of S31 proceedings (cases, children and mothers) in England, per year [13]

Table 1: Estimated coefficients from a Poisson model of the trend for the number of S31 proceedings (cases, children and mothers) starting in England [14]

Total	Intercept	p	Year	p	Year^2	p
Cases	9.164	<0.001	0.018	0.005	0.008	<0.001
Children	0.557	<0.001	-0.007	0.369	0.001	0.618
Mothers	-0.041	0.001	0.001	0.915	-0.001	0.490

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[13] Fitted lines show trends for each total.
[14] Number of cases was taken to be the baseline.

Trends in the volume of S31 proceedings across each circuit

In 2016/17 every circuit experienced record levels of proceedings apart from the South West which showed a minor fall in demand. The South East and North East had the highest volume of all circuits (3,100 and 2,900 respectively) and the South West had the lowest (1,630). However, the pattern varies in size and pace as shown in Figure 3. The North West, South West and Midlands all experienced a similar proportional year-on-year increase of approximately 8%. In the South East and North East no initial growth took place between 2010/11 and 2013/14 but the yearly increase was approximately 14% from 2014/15. London experienced comparable increases in volume to the North West and others, but initial year-on-year growth was 3%, but more recently rose to 11%. In short, from this analysis it seems likely that the rise in national demand is having different consequences for different circuits.

Figure 3: Number of S31 proceedings starting in each circuit, per year

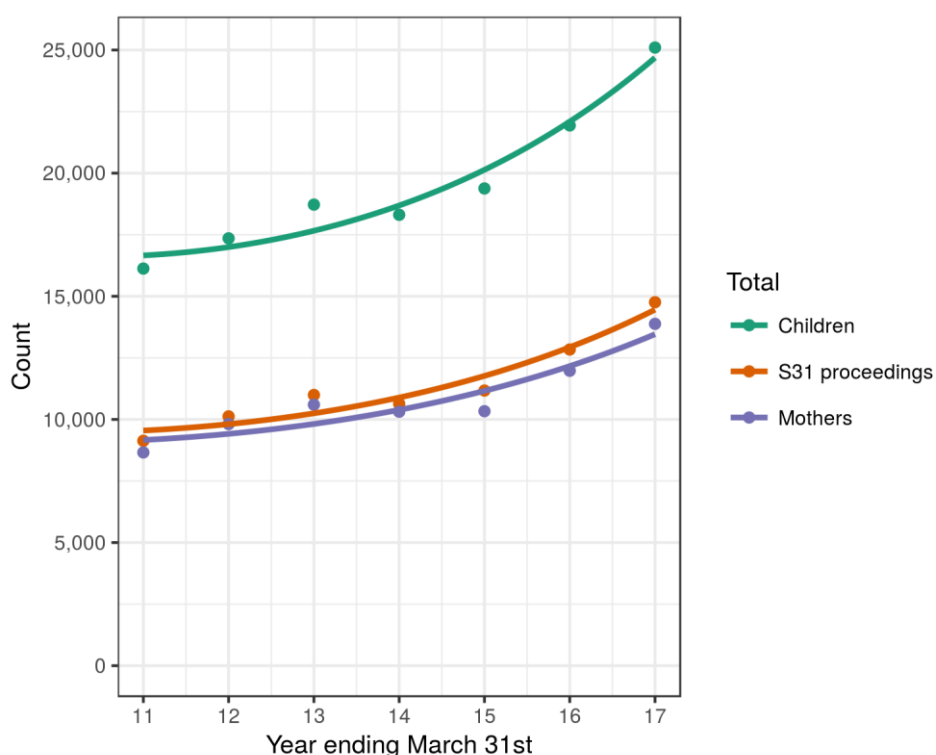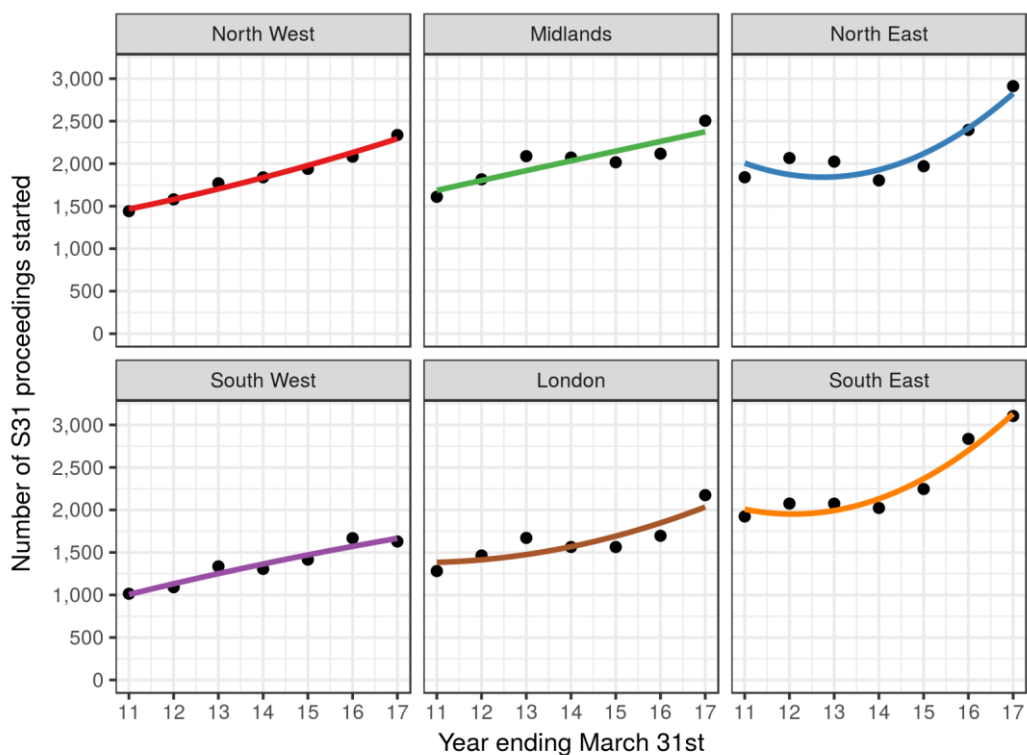*Table 2: Estimated coefficients from a Poisson model of the trend for the number of S31 proceedings starting in each circuit[15]*

Circuit	Intercept	p	Year	p	Year^2	p
North West	7.29	<0.001	0.076	<0.001	0.000	0.956
Midlands	0.141	<0.001	-0.008	0.723	-0.002	0.646
North East	0.307	<0.001	-0.155	<0.001	0.023	<0.001
South West	-0.373	<0.001	0.042	0.098	-0.006	0.153
London	-0.061	0.059	-0.055	0.022	0.008	0.042
South East	0.306	<0.001	-0.105	<0.001	0.018	<0.001

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[15] The North West was used as the baseline circuit.

Are children at equal risk of S31 proceedings in each circuit?

Information on the volume of care demand alone is not sufficient to shed light on the rate at which children are being made subject to S31 proceedings. If we want to understand children's risk of becoming subject to S31 proceedings, we need not just to count children in proceedings, but consider the underlying size of the population of children. To this end, we calculated the number of children subject to proceedings per 10,000 of the child population aged 0-17 (ONS mid-year estimate) in each circuit (see Appendix A).

Figure 4: Rate of children subject to S31 proceedings in 2016/17

Figure 5 shows that children are *not* at equal risk of becoming subject to S31 proceedings. It demonstrates a *current* divide between the North East and North West and the other four circuits in children's risk of exposure to S31 proceedings. In 2016/17, the rates were 27 and 30 per 10,000 for the North West and North East, while for the other four regions the rates were between 18 and 20 per 10,000.

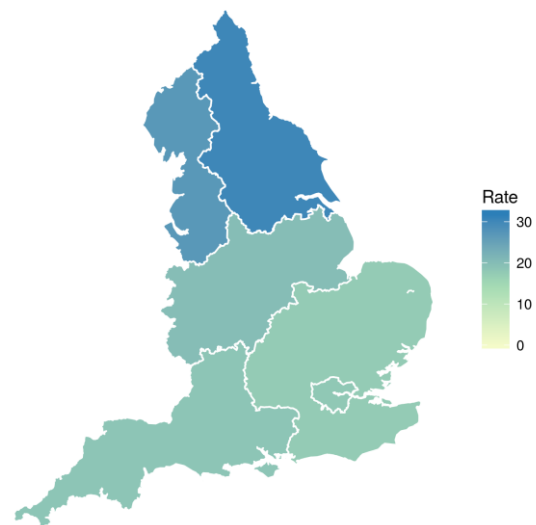*Figure 5: Rate of children subject to S31 proceedings (per 10,000 of the 0-17 ONS mid-year population estimate), by circuit, per year*
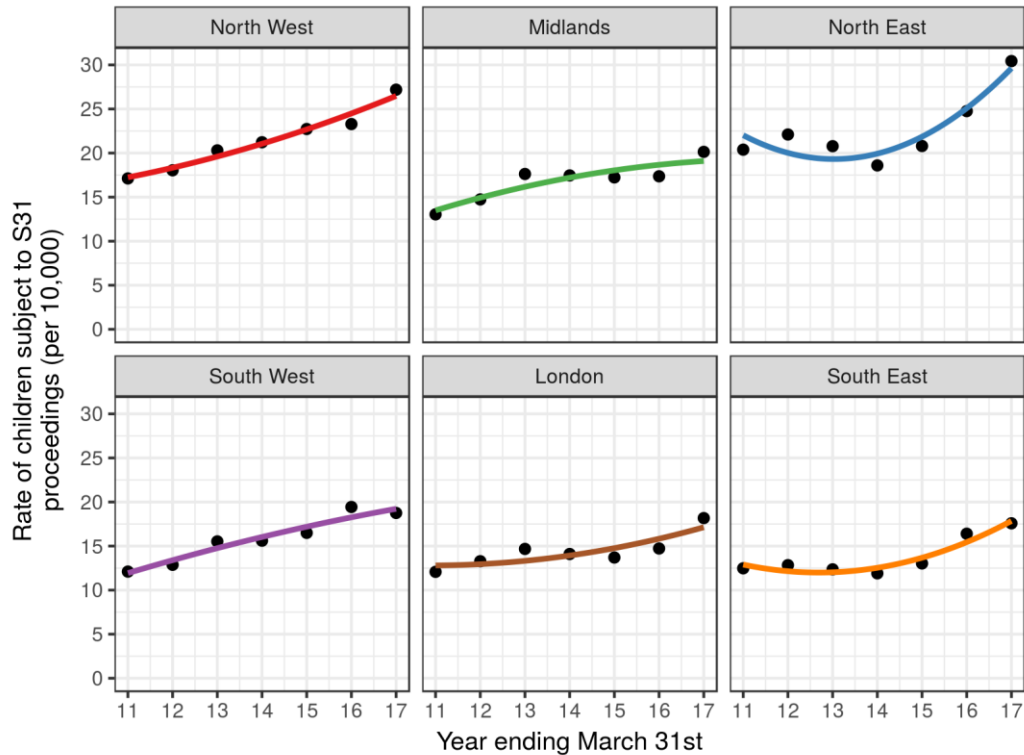
Table 3: Estimated coefficients from a Poisson model of the trend for the number of children subject to S31 proceedings, offset by the 0-17 ONS mid-year population estimate, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-6.364	<0.001	0.062	<0.001	0.002	0.393
Midlands	-0.242	<0.001	0.043	0.012	-0.01	<0.001
North East	0.239	<0.001	-0.173	<0.001	0.026	<0.001
South West	-0.364	<0.001	0.054	0.005	-0.008	0.008
London	-0.296	<0.001	-0.056	0.002	0.006	0.049
South East	-0.296	<0.001	-0.132	<0.001	0.019	<0.001

While risk grew in every circuit over the period, its pattern and pace varied considerably. In the North West rates increased steadily year-on-year by 8% whereas the North East and South East experienced little change until 2014/15, with yearly increases of 14% subsequently. By contrast, in the Midlands and South West, the most rapid proportionate increases took place in 2011/12 (10% and 12% respectively) with lower growth in 2016/17 (2% and 5% respectively).

In general, risk was consistently highest for the North West and the North East circuits over the entire period. This means that children in the North East were 1.7 times more likely to become subject to proceedings than those in London.

The differing patterns in the North West and North East are noteworthy, with a particularly rapid year-on-year rise from 2014/15 compared to steady growth in the North West. But taken together, the figures are stark. The volume of S31 proceedings in the North constitutes 36% of all proceedings nationally in 2016/17. This is disproportionate to the child population, as only 28% of children live in the North.

This analysis highlights clear differences regarding trends in the North West and North East compared to the other circuits.

Are woman at equal risk of becoming party to proceedings across the circuits?

In this analysis, as with the children, we wished to find out whether women were at equal risk of becoming party to proceedings across the different circuits. This was calculated as the number of women party to proceedings per 10,000 of the female population aged 15-44 (ONS mid-year estimate) in each circuit.

The trends are in line with the results seen for the children. The risk is greatest for women in the North West and North East (17 and 18 per 10,000 respectively in 2016/17) and has been so throughout the whole period, with London currently experiencing the lowest rate (10 per 10,000 in 2016/17). This means that a woman in the North East was 1.8 times more likely to become party to proceedings as a woman in London. The South East showed a rise in exposure
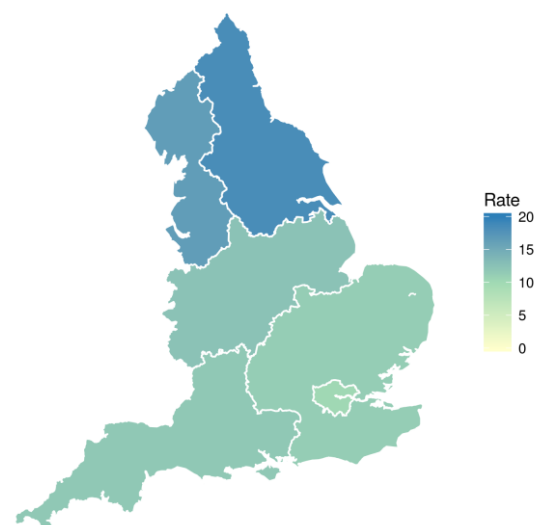
Figure 6: Rate of women party to S31 proceedings in 2016/17

to risk over the last two years, albeit less pronounced, and from a lower base than that seen for the North East. The Midlands and South West have also shown upward trends, but they have reduced over time.

Figure 7: Rate of mothers party to S31 proceedings (per 10,000 of the 15-44 female ONS mid-year population estimate), by circuit, per year
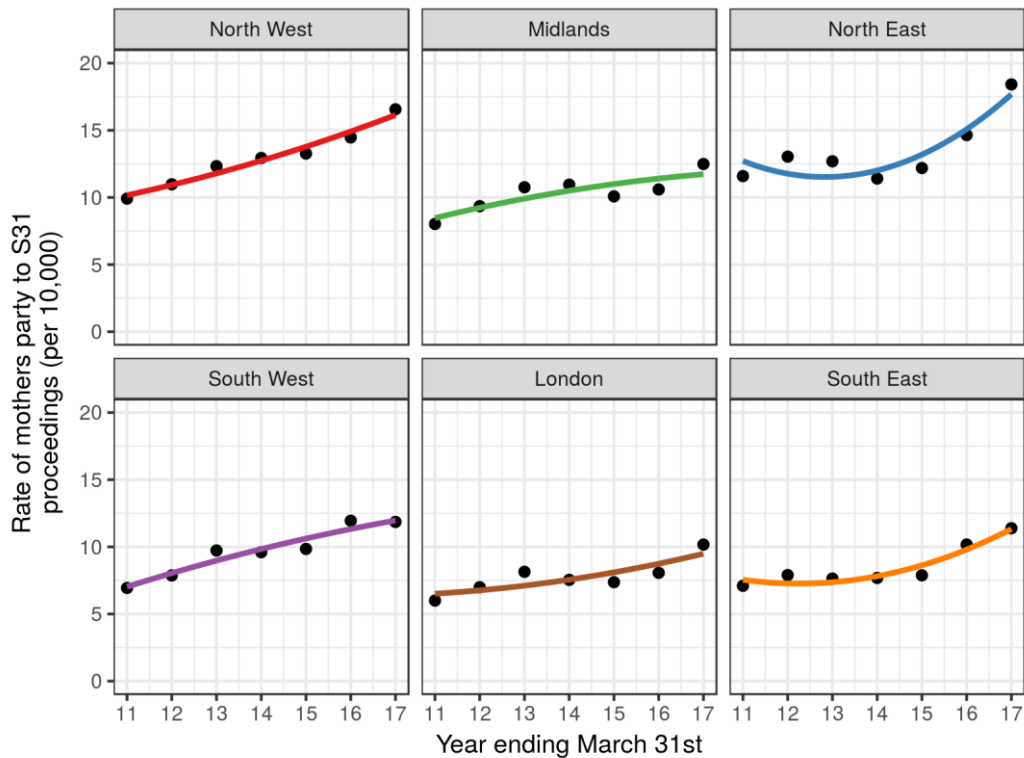
Table 4: Estimated coefficients from a Poisson model of the trend for the number of mothers party to S31 proceedings, offset by the 15-44 female ONS mid-year population estimate, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-6.893	<0.001	0.074	<0.001	0.000	0.850
Midlands	-0.182	<0.001	0.017	0.458	-0.007	0.060
North East	0.216	<0.001	-0.161	<0.001	0.024	<0.001
South West	-0.363	<0.001	0.059	0.024	-0.008	0.043
London	-0.445	<0.001	-0.038	0.118	0.004	0.284
South East	-0.304	<0.001	-0.115	<0.001	0.018	<0.001

Comparing case profiles at the start of proceedings across circuits

In this section, profiles of S31 proceedings across the circuits show more similarities than differences in regard to maternal age, child age and gender, and the number of children in a case.

Age of mothers at the start of proceedings

Figure 8 shows that in 2016/17 between 7%-9% of mothers across each circuit were aged under 20 compared to 11%-14% in 2010/11. Over time, all circuits demonstrate, effectively, the same steady decline in the proportion of mothers aged under 20 years old at the start of proceedings[16]. At the other end of the age spectrum, London had the highest proportion of mothers aged 30 and over (62%) in 2016/17 compared to 48%-53% in all other circuits.

Figure 8: Percentage breakdown of maternal age at the start of proceedings, by circuit, per year
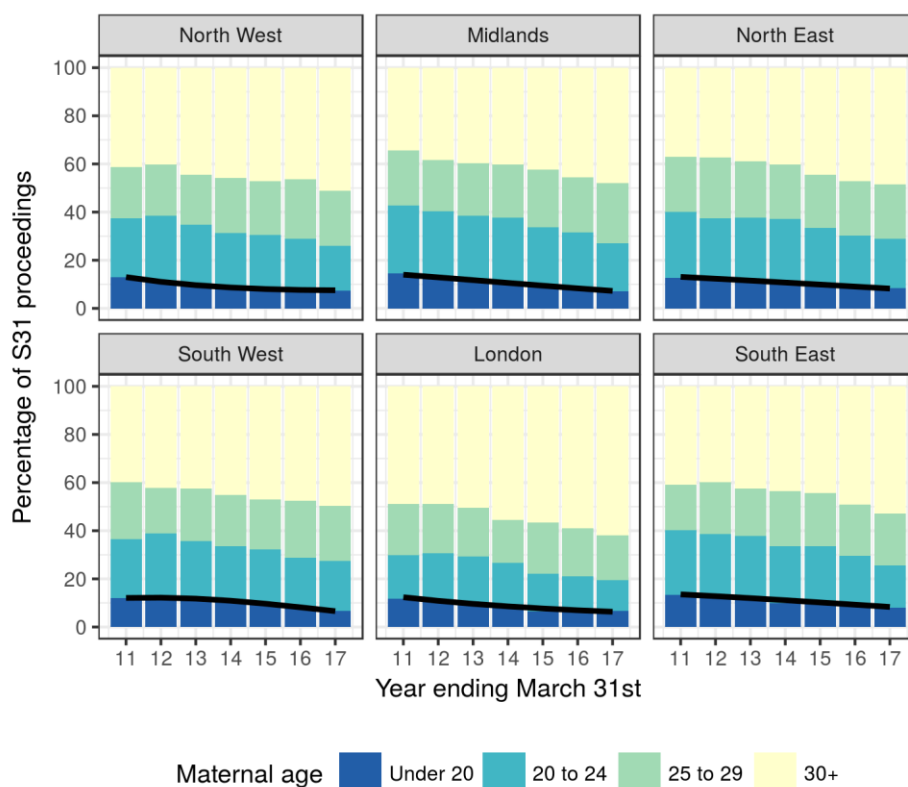
Table 5: Estimated coefficients from a Binomial model of the trend for the proportion of mothers aged under 20, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-1.903	<0.001	-0.200	<0.001	0.016	0.069
Midlands	0.087	0.372	0.110	0.154	-0.022	0.078
North East	0.009	0.926	0.136	0.071	-0.020	0.093
South West	-0.081	0.475	0.235	0.007	-0.041	0.004
London	-0.055	0.614	0.050	0.562	-0.012	0.386
South East	0.050	0.599	0.141	0.061	-0.022	0.070

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[16] The South West was found to have a statistically significant faster decline than the other circuits, but practically the results were similar.

Number of children involved in the case

There has been no notable change in the number of children involved in a given set of proceedings across circuits, or over time. In each region, approximately 60% of cases involve only one child and this proportion has hardly changed in the last 7 years[17]. The regional proportion of cases concerning two children, and those with three or more are also very similar and consistent over time.

Figure 9: Percentage of S31 proceedings that have 1, 2 or 3 or more children subject to proceedings, by circuit, per year
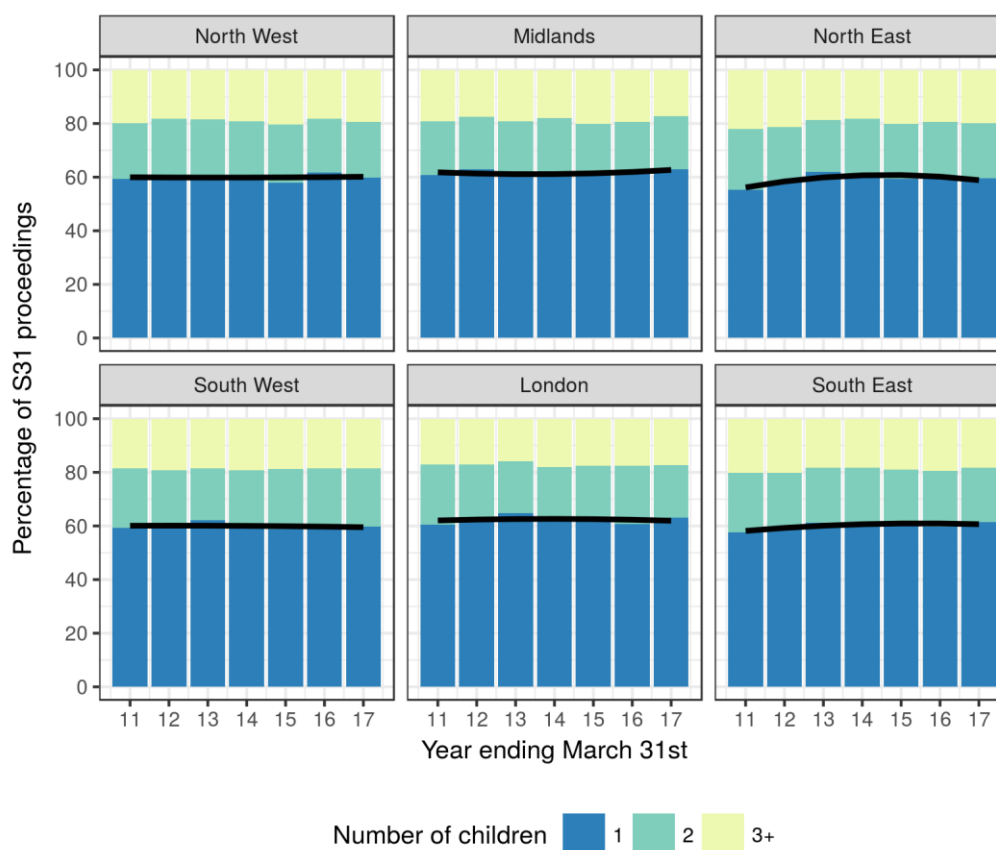
Table 6: Estimated coefficients from a Binomial model of the trend for the proportion of S31 proceedings in which only one child was subject, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	0.404	<0.001	-0.004	0.902	0.001	0.862
Midlands	0.077	0.225	-0.020	0.664	0.004	0.559
North East	-0.155	0.011	0.110	0.017	-0.015	0.030
South West	0.005	0.943	0.007	0.899	-0.002	0.809
London	0.088	0.189	0.021	0.671	-0.004	0.614
South East	-0.074	0.224	0.055	0.219	-0.007	0.344

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[17] The only exception to this pattern was the North East where this proportion was significantly smaller in 2010/11 (56%) but moved closer to the other circuits in 2016/17 (59%).

Age of children at the start of proceedings

The percentage of children aged under one at the start of proceedings for 2016/17 was highest in the Midlands (27%) with little variation between the other 5 circuits (22%- 24%). All six circuits showed little to no change in the proportion of children aged under one between 2010/11 to 2012/13, followed by a 3%-7% year-on-year decrease.

As regards the older age groups, the percentage of children aged 10 and over at the start of proceedings was highest in London (32%) in 2016/17 and between 24% and 27% in the other circuits.

Figure 10: Percentage breakdown of children's ages at start of S31 proceedings, by circuit, per year [18]
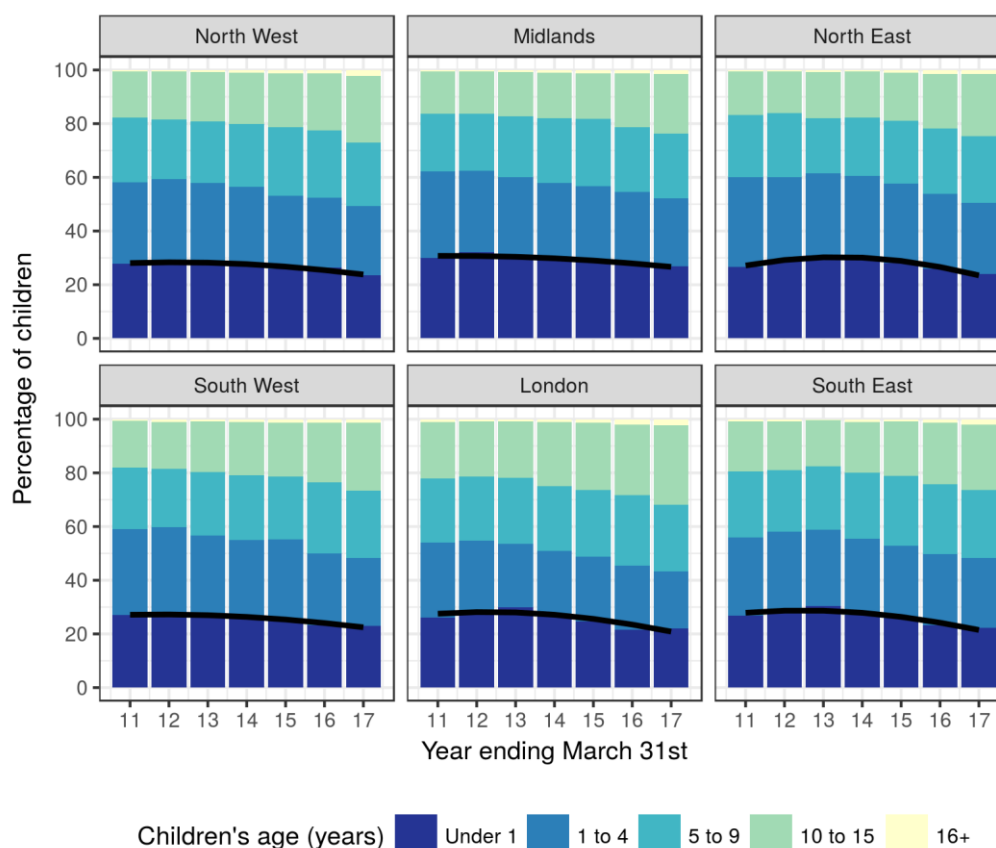
Table 7: Estimated coefficients from a Binomial model of the trend for the proportion children who are aged under 1 year at start of proceedings, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-0.941	<0.001	0.024	0.397	-0.010	0.020
Midlands	0.129	0.013	-0.020	0.613	0.004	0.521
North East	-0.045	0.373	0.104	0.006	-0.017	0.005
South West	-0.046	0.446	-0.009	0.831	0.001	0.912
London	-0.027	0.636	0.024	0.567	-0.008	0.222
South East	-0.009	0.860	0.033	0.380	-0.009	0.129

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[18] Fitted lines show the trend for the percentage of children aged under 1 year

Gender

There were no significant variations by gender across the circuits. The proportion of boys and girls was approximately 51% and 49% respectively over the entire period for all circuits.

Do 'repeat' mothers and 'repeat' children contribute to rising care demand across circuits?

'Repeat' mothers

We have previously reported on the substantial *national* risk birth mothers have regarding returning to court for new S31 proceedings (Broadhurst et al, 2017[19]). In this report, we take a different approach for the purposes of comparing regions. We examine how circuits are similar or different in the proportion of S31 proceedings each year that concern a mother who had appeared before[20].

As can be seen from Figure 11, 'repeat' mothers make up a sizeable proportion of care demand in each circuit with relatively little variation in the range from the lowest to the highest. In the Midlands the proportion is significantly higher at 23% compared with approximately 19% for all other circuits.

Figure 11: Percentage of mothers party to S31 proceedings for whom it has been less than five years since their previous S31 proceedings, by circuit, per year [21]

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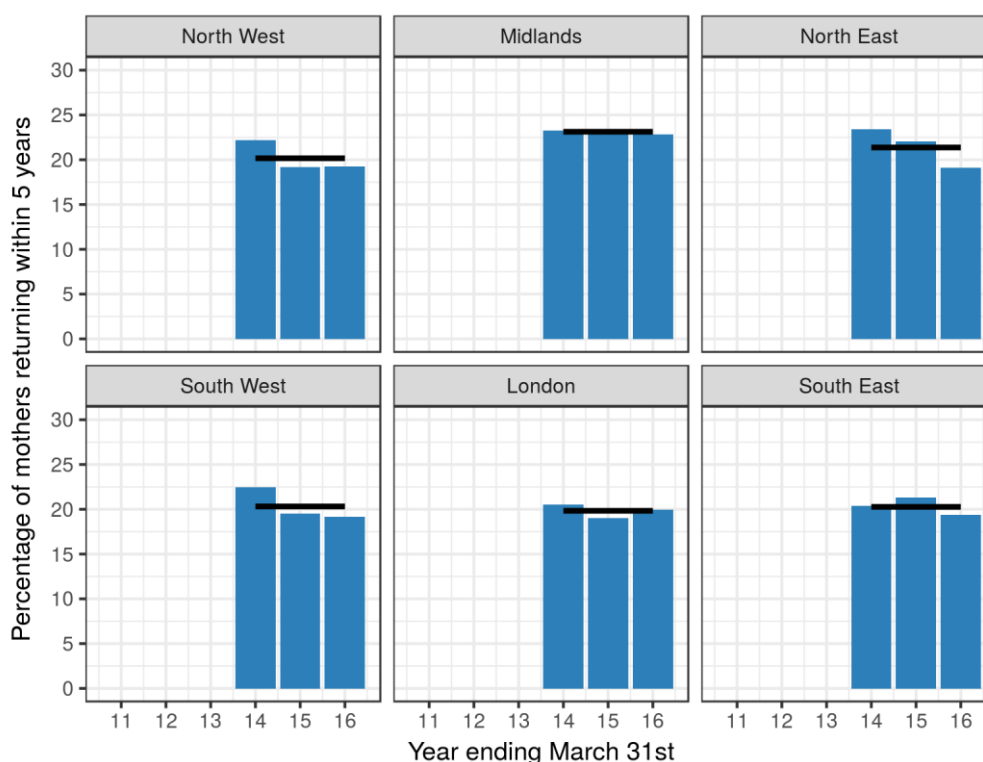
[19] Broadhurst, K., Mason, C., Bedston, S., Alrouh, B., Morriss, L., McQuarrie, T., Palmer, M., Shaw, M., Harwin, J., and Kershaw, S. (2017) Vulnerable Birth Mothers and Recurrent Care Proceedings. Final Main Report. Available from: https://lancaster.box.com/shared/static/a7pppykncjiwcpi0vgbi6a2prkglcc7v.pdf.

[20] A mother is counted as 'repeat' if she has been party to a set of proceedings within the previous 5 years of the given year. Since the data source only starts from 2007/08, this means that we are only able to produce statistics for this measure from 2013/14 and onwards.

[21] Fitted lines show the average percentage over the three available years for each circuit.

Table 8: Estimated coefficients from a Binomial model of the average proportion of mothers in a year who are returning within 5 years of their previous S31 proceedings

Circuit	Intercept	p
North West	-1.376	<0.001
Midlands	0.175	<0.001
North East	0.073	0.116
South West	0.009	0.857
London	-0.021	0.673
South East	0.006	0.888

'Repeat' children

Figure 12 demonstrates that 'repeat' children make up a small percentage of care demand in all circuits. These are the children who returned to court for further S31 proceedings within 5 years of their previous case. The North West has the lowest average proportion (4%) from which all other circuits are significantly different, and London is the highest (average of 8%).

Figure 12: Percentage of children who return to court for further S31 care proceedings within five years of their previous S31 proceedings, by circuit, per year

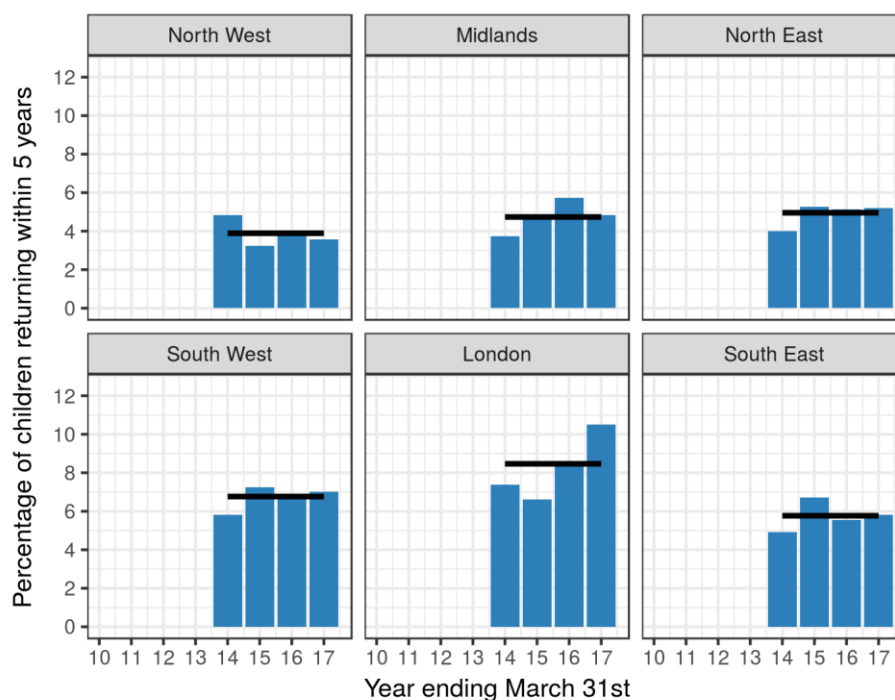*Table 9: Estimated coefficients from a Binomial model of the average proportion of child subject to S31 proceedings each year who are returning within 5 years of their previous set of proceedings*

Circuit	Intercept	p
North West	-3.206	<0.001
Midlands	0.205	<0.001
North East	0.253	<0.001
South West	0.583	<0.001
London	0.826	<0.001
South East	0.413	<0.001

The duration of S31 proceedings

In 2016/17 the proportion of cases completing within 26 weeks of the application ranged from approximately 55% (the Midlands, London and South East) to approximately 62% (the North West, North East and South West).

The proportion of cases completing in 26 weeks increased over the period most rapidly in the North West and North East. The pace was slightly slower in the South West and South East, and slowest in London. However, by 2016/17, as already noted, London achieved a similar proportion of proceedings completing within 26 weeks to the Midlands and South East.

Figure 13: Proportion of S31 proceedings ending each year which are less than 26 weeks, by circuit
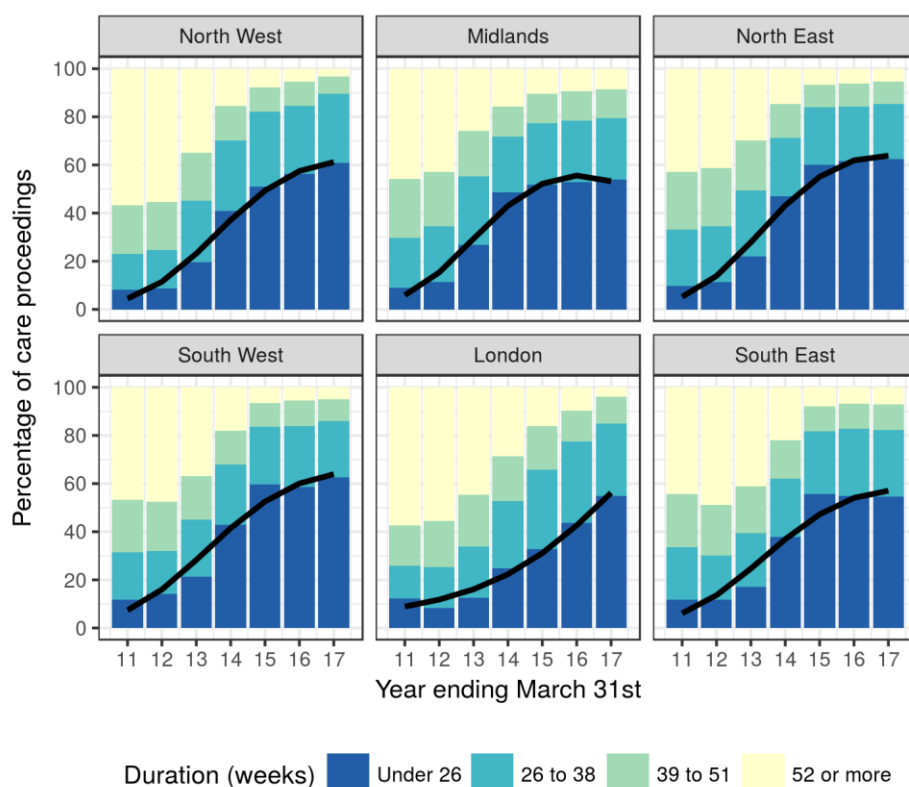
Table 10: Estimated coefficients from a Binomial model of the average proportion of S31 proceedings ending in less than 26 weeks, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-3.063	<0.001	1.105	<0.001	-0.086	<0.001
Midlands	0.295	0.011	0.072	0.308	-0.029	0.002
North East	0.165	0.156	0.066	0.347	-0.013	0.193
South West	0.535	<0.001	-0.165	0.031	0.016	0.130
London	0.739	<0.001	-0.815	<0.001	0.110	<0.001
South East	0.333	0.004	-0.145	0.036	0.010	0.283

Outcomes of S31 proceedings: convergence or divergence?

The national picture: contextualising regional legal outcomes

In this section we look first at national trends in the use of the 6 order types that provide the legal basis for a permanent child placement or, in the case of supervision orders, are intended to support permanency. Understanding the national trends helps provide a benchmark by which regional patterns can be charted and compared.

Nationally, the most significant impact of the rise in care demand has been the steady increase in the volume of care orders (up from approximately 4,900 in 2010/11 to 8,400 in 2016/17) and more than twice the number of any other type of order (Figure 16). However, to better understand how practice is actually changing it is more appropriate to look at percentage use of each legal order, as shown in the next section.

Figure 14: Number of children subject to each of the six legal orders per year.

Table 11: Estimated coefficients from Poisson models of the number of children subject to each of the six legal orders per year. Each legal lorder was modelled separately thus p-values test how different from zero are the coefficients

Legal order	Intercept	p	Year	p	Year^2	p
ONO	6.123	<0.001	-0.021	0.524	0.001	0.891
RO/CAO	7.284	<0.001	0.210	<0.001	-0.027	<0.001
SO	7.610	<0.001	0.131	<0.001	-0.008	<0.001
SGO	7.373	<0.001	0.341	<0.001	-0.032	<0.001
CO	8.555	<0.001	0.072	<0.001	-0.001	0.578
PO	8.162	<0.001	0.194	<0.001	-0.034	<0.001

Percentage use of legal orders

Care orders constituted the highest proportion of orders (35%) made in 2016/17 at the end of the proceedings. They accounted for more than double the percentage of SGOs (17%), placement orders (16%), supervision orders (15%) and more than three times the proportion of residence order/child arrangement orders (live with) (10%).

The most notable changes over time nationally are not however, in relation to care order usage, which has shown some fluctuations (30%-35%), but in regard to special guardianship orders and placement orders. SGO usage has increased over time, but has levelled off at 18% in the last three years. Use of placement orders shows a generally downward trend. The largest year-on-year decrease took place in 2016/17 with a drop of 3 percentage points. There has been a modest increase in the use of supervision orders over the last 7 years (up from 13% to 15%) while there has been effectively no change in the proportion of children (10%) who are subject to a residence order/child arrangements order (10%). Orders of no order were rarely used and they decreased from 3% to 2% over time.

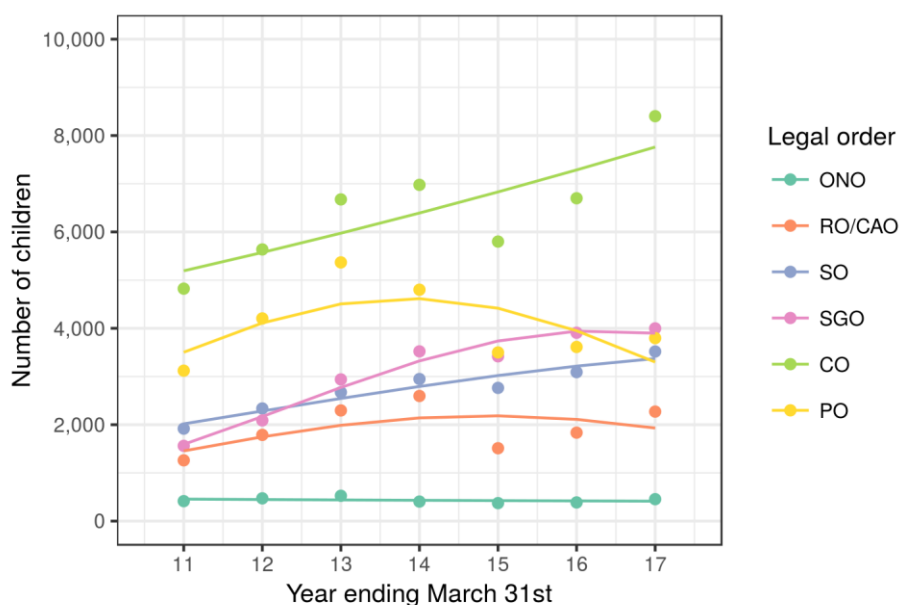*Figure 15: Percentage of children subject to each of the six legal orders per year*
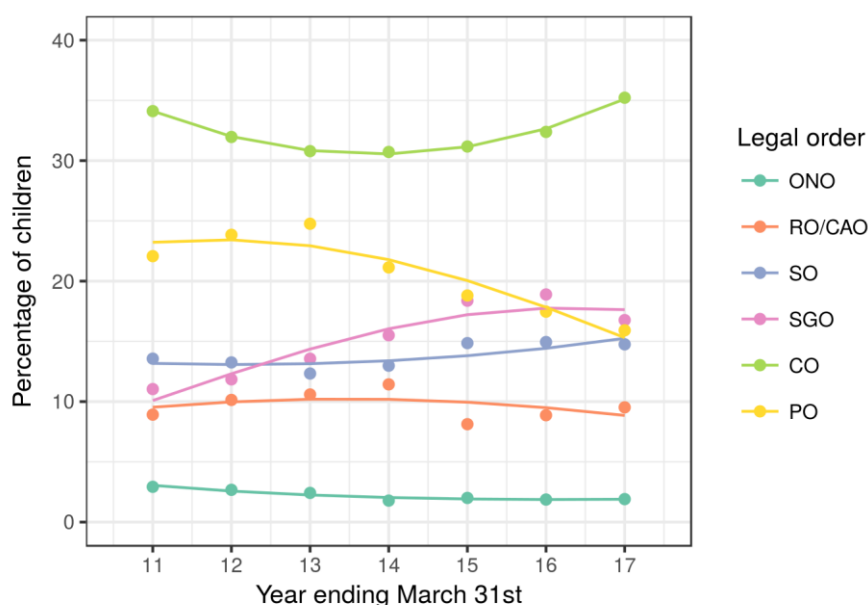
Table 12: Estimated coefficients from Binomial models of the proportion of children subject to each of the six legal orders per year. Each legal lorder was modelled separately thus p-values test how different from zero are the coefficients

Legal order	Intercept	p	Year	p	Year^2	p
ONO	-3.460	<0.001	-0.194	<0.001	0.019	<0.001
RO/CAO	-2.250	<0.001	0.063	<0.001	-0.013	<0.001
SO	-1.886	<0.001	-0.016	0.287	0.007	0.001
SGO	-2.187	<0.001	0.247	<0.001	-0.023	<0.001
CO	-0.658	<0.001	-0.116	<0.001	0.021	<0.001
PO	-1.196	<0.001	0.031	0.015	-0.019	<0.001

Outcomes of S31 proceedings: in what ways do regions converge and diverge?

Regional disparities in the use of supervision orders and care orders

There was clear evidence of regional disparities in the use of supervision orders and care orders made at the end of S31 proceedings. Here our interest was in *standalone supervision orders used to support family reunification* rather than placement within the extended family or with friends.

In 2016/17, the North West had the lowest use of supervision orders at 9%; the Midlands, North East and South West (12% to 14%), and London was highest at 25%. This means that in 2016/2017, children in S31 proceedings within the London circuit were approximately 3 times more likely to be made subject to supervision orders than children in the North West circuit.

Over time the North West has generally made less use of supervision orders than all other circuits, with an average of 8%. The Midlands initially made similar usage to the North West, but has had a significant steady increase over time to 13%. The North East and South West, while make greater use of supervision orders than the North West (on average 13% and 14% respectively), have also seen little change over time. Similar to the Midlands, the South East and London have both also seen steady increase over time (on average, year-on-year increases of 5% and 3%, respectively).

Figure 16: Percentage of children subject to a supervision order, by circuit, per year

Table 13: Estimated coefficients from a Binomial model of the trend for the proportion of children subject to a supervision order, by circuit

Circuit	Intercept	p	Year	p	Year^2	p
North West	-2.337	<0.001	-0.101	0.027	0.017	0.015
Midlands	-0.007	0.937	0.203	0.001	-0.021	0.020
North East	0.610	<0.001	-0.064	0.258	0.005	0.534
South West	0.559	<0.001	0.091	0.147	-0.015	0.114
London	1.009	<0.001	0.122	0.028	-0.014	0.104
South East	0.433	<0.001	0.146	0.010	-0.015	0.081

Usually regions that had a high percentage use of supervision orders make less use of care orders and vice versa. For example, London, which made the most use of supervision orders throughout the period, had the *lowest proportion of care orders* whilst the reverse was true in the North West. For the North West, in 2016/17, approximately 47% of children were placed on a care order, compared to 40% in the Midlands, 30%-34% for the North East, South West and South East and 28% in London. Not all these children were permanently removed from their parents. Evidence from a recent audit indicates that the North West circuit is more likely than other circuits to place children on care orders at home[22]. However as already noted, it is not possible currently to establish placement arrangements from the Cafcass database to obtain systematic information on this practice across all regions.

Figure 17: Percentage of children subject to a care order, by circuit, per year

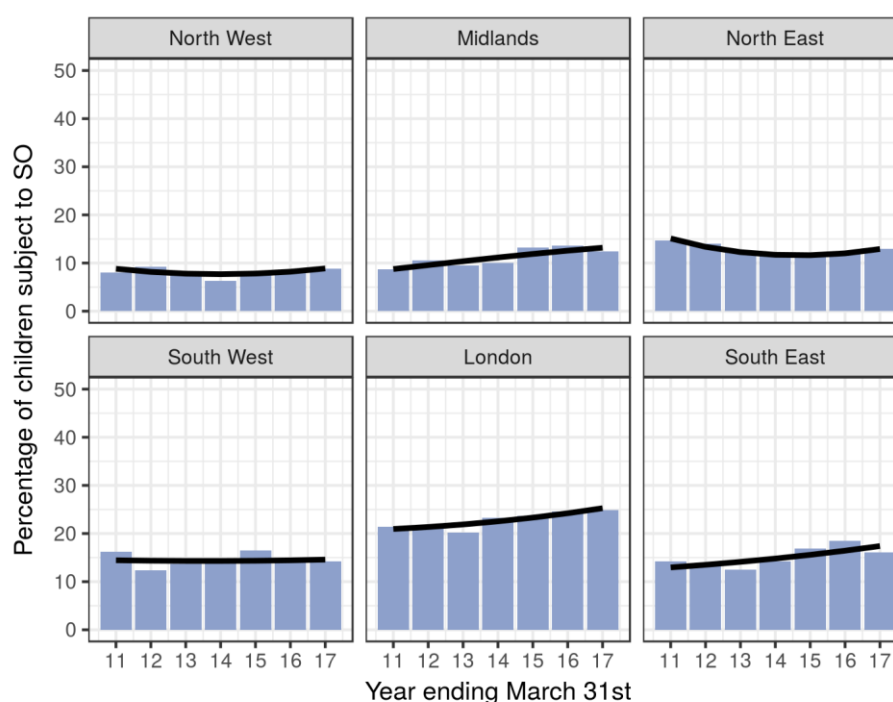*Table 14: Estimated coefficients from a Binomial model of the trend for the proportion of children subject to a care order, by circuit*

Circuit	Intercept	p	Year	p	Year^2	p
North West	-0.376	<0.001	-0.069	0.007	0.019	<0.001
Midlands	-0.107	0.029	-0.034	0.336	0.000	0.954
North East	-0.321	<0.001	-0.091	0.011	0.007	0.188
South West	-0.469	<0.001	0.023	0.583	-0.006	0.348
London	-0.611	<0.001	-0.074	0.063	0.004	0.467
South East	-0.324	<0.001	-0.114	0.002	0.007	0.175

[22] Hodgson, S. Hayes, S. and Bunker, P (2017). Placement at home with parents: North West Audit Summary Report, Sefton MBC, CAFCASS and ADCS.

Comparing the use of placement orders across circuits

The use of placement orders showed more similarities than differences across the circuits and over time. In 2016/17 there was relatively little variation between the North West, North East, South West and South East in the percentage use of placement orders (15%-17%) but the proportion was significantly higher in the Midlands (20%) and significantly lower in London (10%). But the main story is about the declining trend in making a placement order over the period which is similar across all circuits, irrespective of the start point, as shown in Figure 18.

Figure 18: Percentage of children subject to a placement order, by circuit, per year
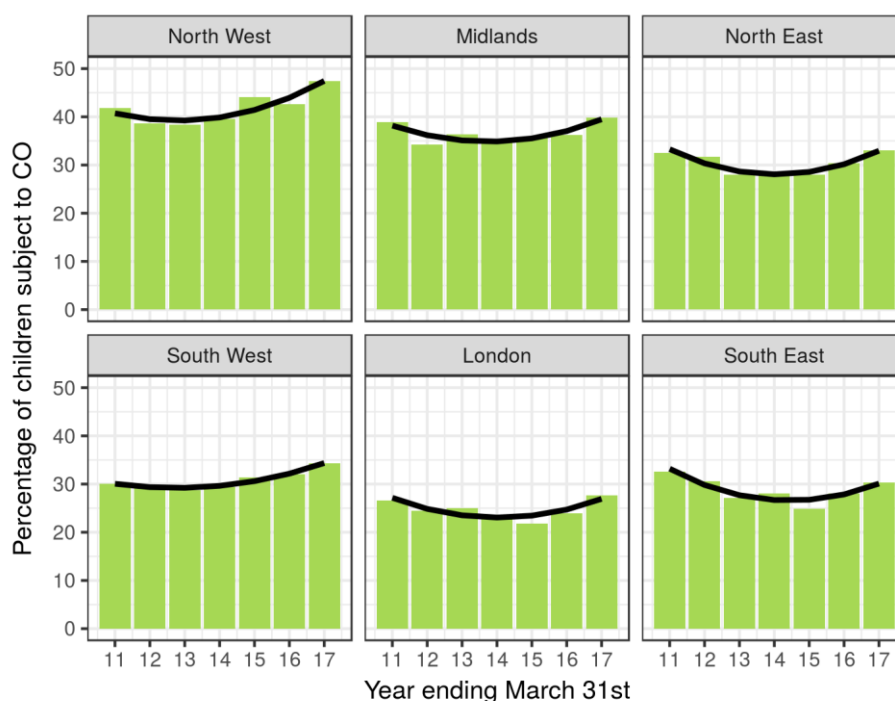

Table 15: Estimated coefficients from a Binomial model of the trend for the proportion of children subject to a placement order, by circuit

Circuit	Intercept	p	Year	p	Year^2	P
North West	-1.181	<0.001	0.035	0.260	-0.022	<0.001
Midlands	0.146	0.009	-0.020	0.625	0.008	0.234
North East	0.008	0.884	0.026	0.529	-0.001	0.849
South West	-0.043	0.514	-0.032	0.505	0.012	0.101
London	-0.253	<0.001	-0.071	0.135	0.005	0.543
South East	-0.041	0.461	0.045	0.281	-0.004	0.518

Comparing trends in the use of special guardianship orders across circuits

All circuits showed an increase in percentage use of SGOs over time and the variation between the majority of circuits was relatively small in 2016/17. It ranged from 19% (the North East, London and the South East) to 16% (North West and South West). Only the Midlands was markedly lower (12%).

Year-on-year growth increased at 20% in all circuits apart from the North East where initial growth was significantly higher (30% per year). The pace of change has levelled off in all circuits in recent years.

Figure 19: Percentage of children subject to a special guardianship order, by circuit, per year
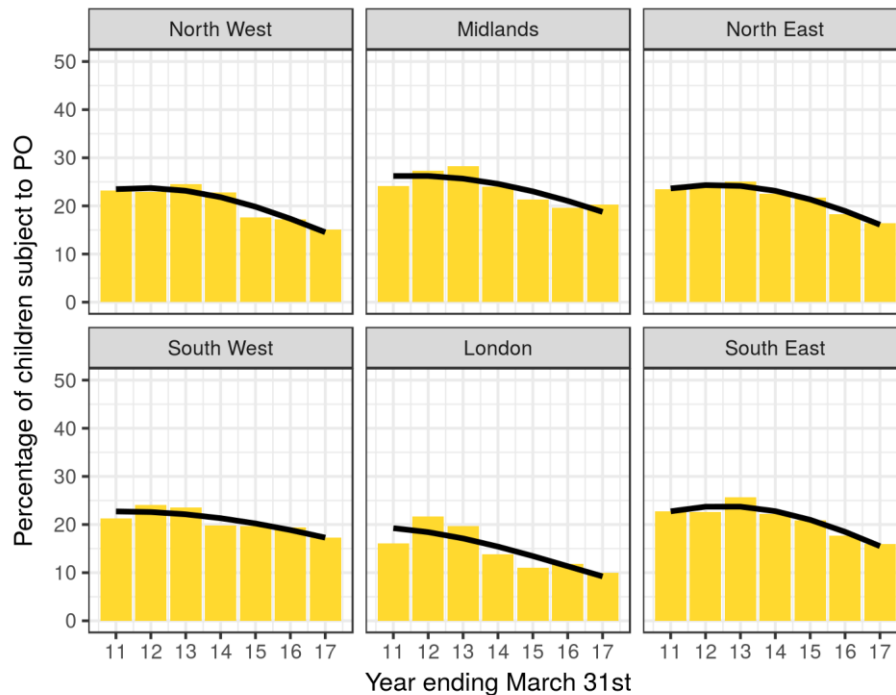

Table 16: Estimated coefficients from a Binomial model of the trend for the proportion of children subject to a special guardianship order, by circuit

Circuit	Intercept	p	Year	P	Year^2	p
North West	-2.316	<0.001	0.213	<0.001	-0.014	0.015
Midlands	0.137	0.082	-0.023	0.676	-0.010	0.228
North East	-0.016	0.841	0.168	0.001	-0.024	0.002
South West	0.029	0.755	0.001	0.990	-0.003	0.773
London	0.302	<0.001	0.052	0.343	-0.013	0.095
South East	0.262	0.001	0.014	0.787	-0.008	0.267

Comparing the use of residence/child arrangements orders (live with) across circuits

The trends for percentage use of residence orders/child arrangement orders (live with) also show more similarities than differences across the circuits. In 2016/17 percentage use was highest in the North East (12%) and lowest in the North West (6%). The Midlands, South West, London and the South East ranged between 9% and 10%.

Only the North East and South West made significantly higher use of RO/CAOs than the other circuits between 2010/11 and 2016/17. The other circuits showed no significant change over the period.

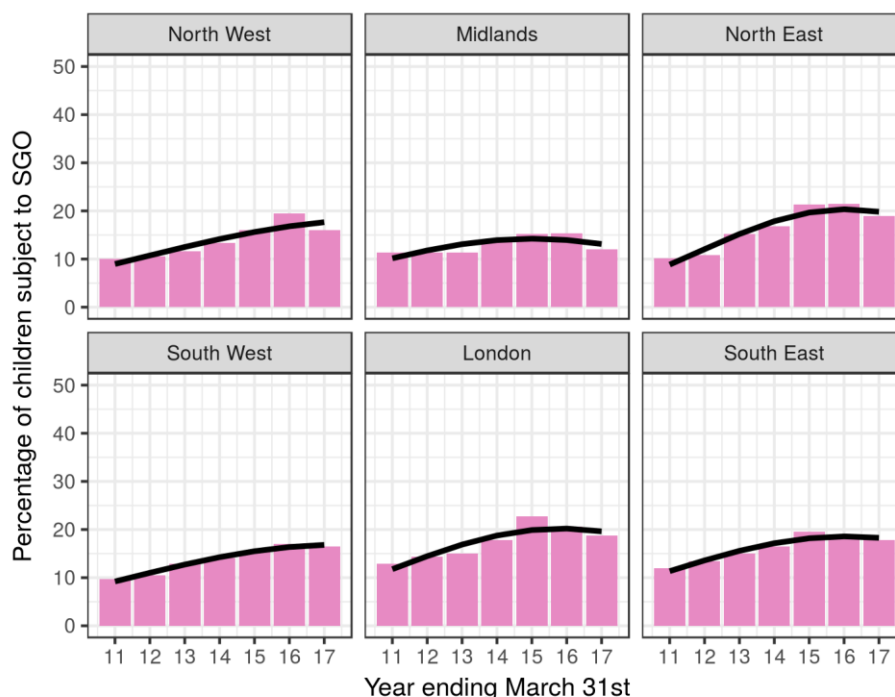*Figure 20: Percentage of children subject to a residence order/ CAO (live with), by circuit, per year*
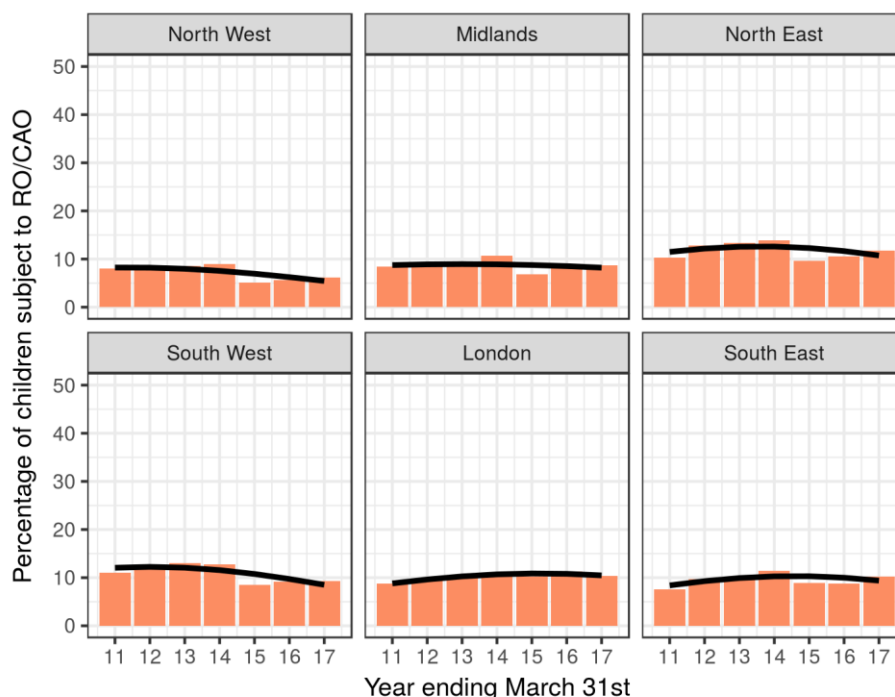
Table 17: Estimated coefficients from a Binomial model of the trend for the proportion of children subject to a residence order/ CAO (live with), by circuit

Circuit	Intercept	p	Year	P	Year^2	p
North West	-2.411	<0.001	0.010	0.830	-0.014	0.063
Midlands	0.066	0.443	0.014	0.827	0.008	0.423
North East	0.368	<0.001	0.072	0.230	-0.002	0.847
South West	0.424	<0.001	0.023	0.737	-0.002	0.832
London	0.074	0.415	0.100	0.127	0.001	0.931
South East	0.021	0.802	0.117	0.060	-0.004	0.689

Area based trends in the use of legal orders

Our results on the use of legal orders have shown notable variation across circuits in their use of care orders and supervision orders over time but similarities for all other order types. It is possible to move beyond this circuit level analysis and to compare the use of orders among Designated Family Judge (DFJ) areas which make up the patterns we see at the circuit level. This allows us to examine how far practice *within a circuit* is similar to or differs from the national average. Here we take the example of care order usage as they comprise the largest numbers.

In order to examine variation in the percentage use of care orders by DFJ area, a funnel plot was produced. Funnel plots are a good way of visualising variation against an average. In Figure 21 below, each point is a DFJ area, coloured according to its circuit. The straight horizontal line represents the national *average* which we would expect most DFJ areas to be close to. The dotted or broken lines represent `control limits' – we would expect 95.0% of the DFJ areas to fall within the inner boundaries and 99.8% with the outer boundaries of the funnel. If DFJ areas fall outside the lines, then variation is greater than expected and indicates that these areas depart significantly from the national trend.

Figure 21 shows that approximately half of the DFJ areas do depart significantly from the national trend (outside the 99.8% limits), which merits further investigation. Another notable finding was that differences based on DFJ areas for London and the North West echo what we have found at circuit level. Three of the four North West areas were significantly above the funnel and all London areas were significantly below (99.8% limits).

Figure 21: Percentage of children subject to a care order between 2014/15 and 2016/17 (3 years), given number of children ceasing proceedings, for each DFJ area
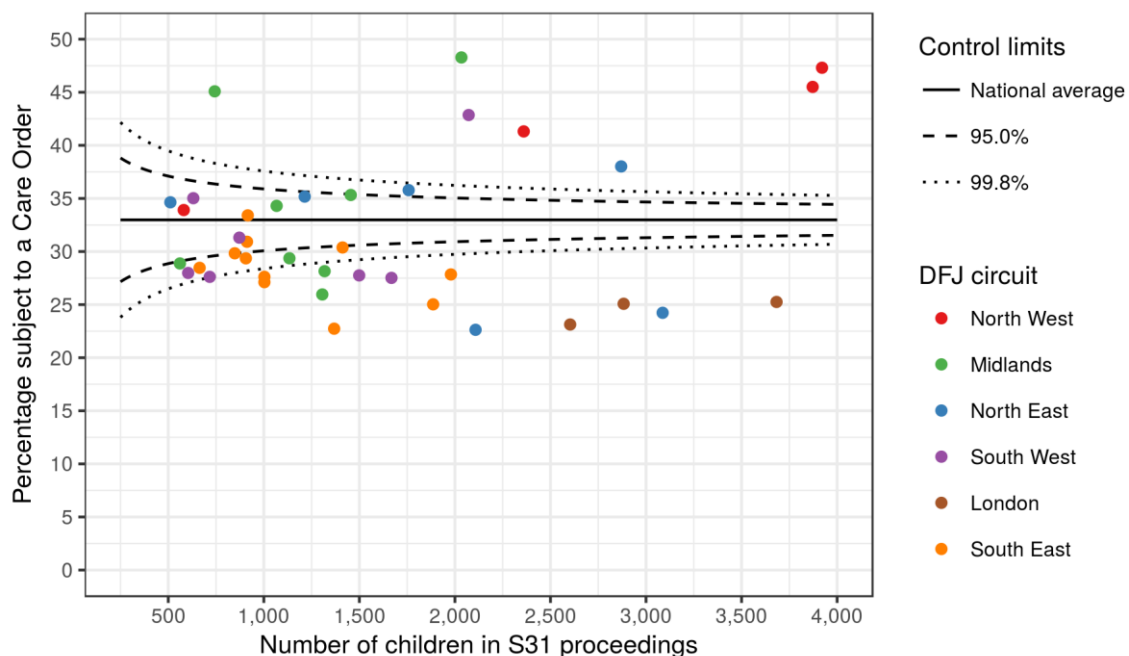
Why is regional data and analysis important?

We started this report by stating that analyses of regional variation are common in the fields of health, education and welfare. However, in regard to family justice, analyses of regional patterns and outcomes of family court practice are wanting. In this paper we present the first published analysis of regional variability, identifying tangible and significant differences. So, what has been learnt from this investigation into variability in care demand and legal outcomes across court circuits?

A regional lens is essential to understand variability within the family court arena

At its most basic, our investigation has confirmed the importance of applying a regional lens to capture variations across court circuits and DFJ areas. Variability is a complex phenomenon (Jay *et al.*, 2017) and describing variation is a first step only. It is however, an essential start-point that has yielded some important new insights. By using a national dataset that captures the entire population of children subject to care and supervision proceedings we can be confident our results are representative and reflect patterns across the country. At the same time our methodology ensures that the patterns and trends we have identified across circuits and over time are statistically valid and capture what are likely to be genuine differences and similarities.

Court circuits are as different as they are similar- Northern hotspots

The study has shown that care demand is *not* equally distributed across the country and neither is the risk of becoming subject to S31 proceedings. The risk to children and women was consistently highest in the North West and North East circuits over the entire period. In short, the North has emerged as a hotspot in regard to *entry* into the family justice system. We also saw that children in the North West are more likely to be placed on a care order than children in other circuits and more likely to be placed at home on a care order[23] than returned home on a supervision order. As the decisions that courts take for children regarding permanency options have major consequences, further analysis is vital to understand the differences we have uncovered.

Clearly it will be important to follow up, systematically, why children and their mothers in the North are more at risk of being drawn into the family courts for S31 proceedings. One of the questions we raised in the introduction to this paper was whether the patterns of the family court activity reflect the wider and growing regional disparities between North and South. It is not possible to answer this question from the present analysis. However, its findings and the related published research on looked after children (Bywaters *et al.*, 2018) suggest that the link between deprivation and S31 proceedings merits further thorough investigation. However as the threshold for S31 proceedings is higher than that for children becoming looked after, Bywater's results cannot simply be extrapolated to children brought before the court because of significant harm. **What is now needed is a specific inquiry investigating whether there is a link between care demand, significant harm and deprivation, and if so, the nature of this relationship.**

It would also be useful to **examine a broader range of parental and child case characteristics** than was possible in this report to understand why children and women in the North face heightened risk of care proceedings. None of the case features we investigated helped shed light on this question as there was very little variation across the circuits. As Cafcass did not collect data for the whole period on ethnicity, it was not possible to investigate if and how ethnicity might play a part in care demand.

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[23] Hodgson, S. Hayes, S. and Bunker, P (2017). Placement at home with parents: North West Audit Summary Report, Sefton MBC, CAFCASS and ADCS.

Nor could we collect data on issues such as mental health, domestic violence and substance misuse which would give a more nuanced understanding of the nature of parental difficulties and the way in which they relate to children's significant harm. However, data concerning parental characteristics is difficult to capture at a national level in care proceedings without linking records across government departments because this information is not routinely collected in structured electronic format. At present qualitative detail is not easy to extract at population level from case files. However, there are encouraging new developments regarding the linkage of data across health, education and welfare. In relation to parental substance misuse, an issue widely known to be associated with elevated risk of S31 proceedings, Public Health England as of 2017 is collecting information on parental status of those in treatment, their type of substance misuse and whether their children are receiving early intervention or are known to social care. These sources will help provide better understanding of the pathways into S31 proceedings.

Finally, further **analysis is needed of the contribution of professional behaviour** to the differences we have outlined. The consistent differences over time in the use of supervision orders and care orders may have more to do with professional cultures than other factors such as service availability but at present we cannot draw such conclusions. Further probing by the local family justice boards will be important to shed light on these findings.

Are court circuits more likely to show similarities than differences when there is a strong central mandate?

The study has also highlighted similar patterns across circuits and over time as well as differences. Notable examples were the trends regarding the duration of care proceedings, special guardianship orders and placement orders. A possible hypothesis is that greater uniformity is found when there is a strong centrally driven agenda. The introduction of the 26 week timeframe in the 2014 legislation is an obvious example but the influence of case law is another. Many consider that the growth in special guardianship and decline in placement orders are the result of leading cases in 2013/14, (Re B and Re B.S), when it was argued that adoption should be recommended only 'when nothing else will do'. Conversely, the lack of a centrally driven agenda may help explain why circuits have exercised greater variability regarding care order and supervision order usage.

Regional systems are complex

The circuit-based analyses have shown how difficult it is to understand some of the patterns. Fluctuations within regions over time cannot be easily explained. Some of the variation across circuits is also difficult to understand.

A regional analysis can open up avenues of inquiry but to follow through requires recognition of the complexity of the system. The trends are likely to reflect an interaction between the wider socio-economic context, the professionals within the system, resources and the national mandate. There are numerous relationships between the different components, the people, the agencies, the cultures and the practices. All these components have an influence on the patterns of activity within the family courts that we have described. But they cannot be examined from the current data sources alone.

Data needs: collaboration and co-production

As noted in the headline findings, this report is being published at an important time. A sector led Care Crisis Review is under way and the Nuffield Foundation Family Justice Observatory has just begun its development phase. Bywater's work has demonstrated the value in child protection of data linkage with the Indices of Deprivation produced by the Ministry of Housing, Communities and

Local Government. Additionally, a new data user group has been launched between the REES Centre and the Department for Education. In our national study of supervision orders and special guardianship, we have been able to link the Cafcass data with the National Pupil Database (NPD).

All these initiatives create fertile ground for following up issues raised in this report through co-production and collaboration with policy personnel and data scientists. They also increase opportunities for family justice practitioners to access data easily, and through forums such as local family justice boards, to share data and compare practice within and across circuits and DFJ areas.

Given the valuable information that has emerged from this analysis of the English circuits a logical next step is **to undertake a similar analysis to include Wales**.

Appendix A: Methods

In this section, details are given on the source of the data, definitions of measures, the sample, and the statistical approach used for analysis.

Data Source

The source of data used was the case management system maintained by the Children and Family Court Advisory and Support Service (Cafcass). This comprises a legacy system which covers records from 2007/08 to 2013/14, and the current system from 2014/15.

We made use of information recorded on applications made to the family court under S31 of the Children Act 1989, between 1st April 2010 and 31st March 2017. This covers all 40 DFJ areas, 254 courts, and 152 local authorities. While records go back to 2007/08, there was a substantial amount of missing legal order outcome data up to 2009/10. Therefore we have concentrated on the period 2010/11 to 2016/17.

Definitions

Circuit: Each family court operates within a DFJ area and each area belongs to a circuit within the family justice system. There are technically seven DFJ circuits according to Cafcass: North West, North East, Midlands, South West, South East, London and the High Court. Due to small numbers cases heard at the High Court were removed from analysis.

Child: a person who is subject to a set of S31 proceedings.

Adult: a person who is party to a set of S31 proceedings as an applicant, respondent or other.

Mother: a female who is party to a set of S31 proceedings as an applicant, respondent or other, and is the birth mother to at least one child who is subject to the same S31 application.

Proceedings start date: the date in which the first application of the S31 application was submitted.

Legal orders: Six legal order categories were created for the analysis (see Table 18). These categories were chosen because they either provide or support permanency. As the Cafcass database does not specify the placement at the end of the court case, the legal orders need to be seen as *proxies* for placement. Certain combinations of legal orders were also included if the combination was deemed possible[24], otherwise we selected the final legal order(s) recorded for the child in the case (if applicable).

Proceedings end date: once proceedings have closed, if at least one legal order which is captured within one of the six legal order categories, the final date of these legal orders is used. If no valid legal orders were recorded, then the date of the last legal order is used. If no legal order is recorded, the date used is that of when Cafcass closed the case on their system.

Duration of proceedings: the number of weeks between the proceedings start and end date.

Population size of a circuit: in a given year a local authority will submit the majority of its S31 applications (90% or more) to either a single family court, or multiple family courts but within a single circuit. This means that a population estimate can be produced for a given circuit by first

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[24] In less than 5% of all records, the combination recorded on the case management system was not deemed possible. Discussions were held with Cafcass on this matter and the approach adopted above was agreed.

associating a local authority with a circuit given where it submits the majority of its applications, and then aggregate the ONS mid-year population estimates for local authority districts to the circuit level.

Table 18: Definition of legal order categories used for analysis

Legal order category	Legal orders
ONO	Order of No Order [ONO]
SO	Supervision Order [SO]
RO/CAO (live with)	Residence Order [RO] Child Arrangements Order [CAO live with] SO & RO/CAO live with
SGO	Special Guardianship Order [SGO] SGO & SO SGO & RO/CAO live with SGO & SO & RO/CAO live with
CO	Care Order
PO	Placement Order [PO] CO & PO
Other	Other combinations of the selected 6 legal orders (e.g. CO & SGO, CO&SO, etc) Other legal orders (e.g. Secure Accommodation Order, Contact Order, etc)
No recorded order	No recorded order

Sample inclusion criteria

Given the research aims, three units of analysis were used: proceedings, child and mother. To build a sample for each, certain criteria had to be satisfied.

A **set of proceedings** was included for analysis if it:

- Contained at least one S31 care or supervision application in which at least one child was subject to the proceedings.
- The case started or ended between 1 April 2010 and 31 March 2017.
- The case was heard within one of the six circuits.

A **child** was included for analysis if they were subject to a S31 application.

A **mother** was included for analysis if they were party to proceedings which had been included for analysis in which one of their children was subject to proceedings.

Statistical Analysis

For each year ending March 31, we produced descriptive summaries aggregated to the level of the family justice circuits. These summaries were calculated in several different contexts: S31 proceedings starting and ending each year, mothers party and children subject to proceedings. The complete list of summaries which were analysed is listed in Table 19.

For each summary a generalized linear model was fitted.[25] The linear predictor was specified such that there was a baseline linear and quadratic trend for time as well as trends for each circuit. Thus variation can be attributed to general changes over time experienced across all circuits as well as that of a particular circuit. These models had the general form:

$$g(measure) = \beta_0 + \beta_1\, year + \beta_2 year^2 + \beta_3 circuit + \beta_4 circuit: year + \beta_5 circuit: year^2$$

That is to say, we model each summary through the use of:

- Link function g(•).
- A main linear and quadratic association with time (year and year^2). This allows the model to show the general time trend across all regions.
- A main association with the circuit. This allows the model to show how a circuit generally differs from the others.
- Interactions between circuit and the linear and quadratic time components (circuit:year and circuit:year^2), allow the model to show how a circuit changes over time differently from other regions.

The probability distribution and link function used in modelling each summary measure is stated in Table 19. Additionally, significance was determined at the 5% level and all analyses were carried out using R v3.4.3.[26] [27]

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[25] Nelder, J. A., & Baker, R. J. (1972). *Generalized linear models*. John Wiley & Sons, Inc.

[26] R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/

[27] R packages used:
`dplyr`: Hadley Wickham, Romain Francois, Lionel Henry and Kirill Müller (2017). dplyr: A Grammar of Data Manipulation. R package version 0.7.4. https://CRAN.R-project.org/package=dplyr
`ggplot2`: H. Wickham. ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag New York, 2009
`RColorBrewer`: Erich Neuwirth (2014). RColorBrewer: ColorBrewer Palettes. R package version 1.1-2. https://CRAN.R-project.org/package=RColorBrewer

Table 19: List of summaries analysed by circuit. For each summary, the measure which was modelled is stated along with the probability distribution and link function used

Summary	Modelled summary measure	Probability distribution	Link function
Total counts			
Number of S31 proceedings, children and mothers entering each year in England	Total number	Poisson	Log
Number of S31 proceedings by circuit	Number of S31 proceedings	Poisson	Log
Rates of entry			
Children subject to S31 proceedings	Number of children subject to S31proceedings offset by ONS 0-17 mid-year population estimate	Poisson	Log
Mothers party to S31 proceedings	Number of mothers party to S31 proceedings offset by the ONS female 15-44 mid-year population estimate	Poisson	Log
Repeat Status			
Mother five-year repeat status	Proportion of mothers party to proceedings who have been party to proceedings in the previous 5 years	Binomial	Logit
Child five-year repeat status	Proportion of child subject to proceedings who have been subject to proceedings in the previous 5 years	Binomial	logit
S31 proceedings started			
Mother age profile	Proportion of mothers aged under 20 years old	Binomial	Logit
Number of children per proceedings	Proceedings involve 1 child vs 2 or more	Binomial	Logit
Child age profile	Proportion of children aged under 1 year old	Binomial	Logit
Child gender	Proportion of male children	Binomial	logit
S31 proceedings ended			
Duration	Duration is under 26 weeks vs 26 or more weeks	Binomial	Logit
National numbers of the different legal outcomes	Count of final legal outcomes	Poisson	Log
National percentage use	Proportion of final legal orders	Binomial	Logit
Percentage use of legal orders by circuit	Proportion of final legal orders	Binomial	Logit