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Access and equity in the school's marketplace

Access and equity in the school's marketplace: the case for random allocation in secondary school admissions

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Abstract:

How much power should the state have in determining where pupils go to school? In the last thirty years, successive governments have answered this question with policies that have emphasised parental choice, creating a 'quasi market' of schools and sidelined the state's role in school admissions. The complexity of balancing individual preference with collective responsibility for equal opportunity in school admissions is explored in this paper through the case study of Gloucestershire. The allocation procedures and patterns of distribution in the analysis of 6554 pupils in 39 secondary schools across the county suggests a systematic bias against the poorest pupils gaining access to the most desirable and highest performing schools.

The study argues that any reform of school admission procedures must be judged against a background framework, underpinned by three principles of justice, which can balance the competing claims of freedom, autonomy and equality. Using the framework as the foundation for policy reform, the logic of using random allocation in school admissions is outlined, and ultimately tested in four different hypothetical simulations, allocating pupils to selective and non-selective schools dependent upon different admissions criteria. In selective schools, the types of pupils admitted in random lotteries is sensitive to the cut-off scores employed, but all simulations show that random allocation could double the number of disadvantaged pupils admitted. Similar patterns are found in non-selective schools. Replacing the geographical proximity rule with 10% random allocation can increase the percentage of disadvantaged pupils admitted and loosen the tie between location and school assignment. The case is made for random allocation as a necessary but not sufficient tool for improving the fairness of school admissions procedures.

The thesis concludes by suggesting that these findings should be used as the basis for a democratic deliberation on the appropriate role for the state in balancing fair procedures and admission mechanisms with the freedom of parental choice.

Acknowledgements

The seeds of this thesis were planted between 2006 and 2008 when I was teaching in a secondary modern school in Manchester. I worked and taught with an energy to ensure that the children in my classroom were not condemned to a second rate education on account of them failing a single test aged 11, but it often felt that it was too late to persuade many of them otherwise.

When I came across Rawls' *veil of ignorance* for the first time in 2007, I was struck by its potential to be applied in Trafford's education system. I felt that no parent looking at a school choice behind the veil would subscribe to a bipartite system with only a 20% chance of gaining a place for their child at a grammar school. Rawls' idea that a system should be designed without self-knowledge and independently of vested interest was instinctively appealing to me in a system of segregated schools. I was fortunate enough to spend time developing these ideas on a Thouron Scholarship in 2008-09 at the University of Pennsylvania. The luxury of being able to step out of a teaching career temporarily to spend time on academic thought was liberating, but the evolution of those ideas were ultimately shaped by my own teaching experience, and any papers I wrote and policies I recommended were intentionally grounded in pragmatic reforms.

I do not believe there is sufficient appetite yet among politicians, parents (or the housing market) to consider random allocation as an acceptable mechanism for school allocation, but I do hope that my arguments for democratic dialogue on the issues of equality and fairness in the process will gain some traction and begin to move the conversation along. No child should have to face the prospect of a cliff-edge in school quality based on where they live, or on the basis of one test. I hope that we may eventually develop a school admissions process that does not force parents into a choice between prioritising their own children's education at the expense of other people's children.

The issue of selective school admissions also has a deeply personal dimension for me, having experienced the crushing news that I failed the grammar school test aged 11 and faced an unfamiliar family route into a non-selective school. The arguments in this thesis are therefore more than theoretical concepts for me. They are issues of great personal significance, for which I have a deep well of passion that I have drawn on throughout the last seven years, choosing again and again to return to this issue at the end of a day's work, on weekends, holidays, trains and work trips, in an effort to find a more just way of allocating children to school.

In the seven years that it has taken me to write this study, I have got married, had two children, moved house three times, had a career change and two promotions, and continued to work full time. Consequently, it may read slightly disjointed at times, as I have fitted the writing in where possible, but questions of justice against poor children has kept me returning to the issues. In the end, I believe my experience of a comprehensive education has given me a unique insight into how 'average' state schooling operates in England and I hope that the threads of my personal, professional and academic journey forge together in this thesis.

I am grateful to Debbie Watson and Richard Harris for their supervision, advice and patience in guiding me through the process of completing this work. I am thankful to St Mathias Trust for their financial assistance, to my employer, the Education Endowment Foundation for their support, and to my parents, Neil and Rhiannon for their support throughout. I am hugely grateful to Dimitris Vavoulis for his help and tuition in R coding. I struggled for several months to identify a replicable and viable code for randomly allocating pupils to schools and without his patience and guidance I'm sure I would still be looking for a solution.

Most of all I am grateful to my wife Helen, who has lived this entire doctorate with me, supporting me, encouraging me, listening to me talking endlessly about the systematic injustice of Gloucestershire's school admissions processes for seven years. She knows these arguments as well as I do.

Author's declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Degree Programmes and that it has not been submitted for any other academic award. Except where indicated by specific references in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

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Table of Contents:

Table of Figures:

Table of Tables:

Access and equity in the school's marketplace: the case for random allocation in secondary school admissions

> *The advancement of justice and the removal of injustice demand joint engagement with institutional choice…, behavioural adjustment and procedures for the correction of social arrangements based on public discussion of what is promised, how the institutions actually work out and how things can be improved.*
>
> (Sen 2009, p.268)

1 Introduction

In the realm of education, what does the state owe its citizens? Beyond the established political consensus for the provision of universal primary education for all, the answer is likely to be a contested one and dependent upon the respondent's conception of the relationship between the individual and the state. For those on the political right, education is largely an individual pursuit, motivated by self-interest and measured by a meritocratic standard (Le Grand, 2007). The opportunities need only be presented for the state to have fulfilled its obligations. For those on the left, the limits of individual capacity are shaped by social context and reliant upon the collective effort of all to ensure minimum educational standards; only the infrastructure to facilitate opportunity and support its take up is essential to realise the ambition of all (O'Neill, 1976).

The last thirty years of education policy reforms have attempted to align the two perspectives by recasting the citizen as consumer and the state as responsive to public need. Educational achievement is regarded as an individual endeavour, rewarded in a meritocratic framework, yet dependent upon society to provide the means for achievement. As Elmore, (2000, p.21) has noted, "all accountability relationships are necessarily reciprocal" - I expect this from you, and this is what I give you in order to meet my expectations.

The policies that have attempted to balance individual freedom and collective equality have sat most awkwardly within the market for school places. Replacing the monopolistic culture of state school provision with a range of providers delivering education on behalf of the state, coupled with the steady removal of power from local authorities as the intermediary between central government and schools, has divested greater autonomy and decision making power in individual schools (Ball, 2008). Together, they have produced a 'quasi market' of schools characterised by different curricula, teaching approaches and academic specialisms from which parents can choose the approach that best matches their preferences (Gewirtz, 1996).

The diversity of school provision and the exercise of parental choice encapsulates a key tension for the liberal democratic state: providing the freedom for parents to pursue their own choices in schooling must be balanced against an obligation to promote the welfare for all children (Ben-Porath, 2009). The preference for individual consumer choice in public services has pushed the state's role in school admissions to the periphery and the perennial question, central to this thesis remains: how much power should the state have in determining where pupils go to school?

Using established theories of justice as a framework for understanding the principles required for school allocation, this study draws upon their theoretical foundations in an attempt to apply principles to the process of allocating children to secondary schools. How should the state apparatus balance individual choice with equity of access for disadvantaged pupils? What role should state actors play in facilitating or regulating choice to provide more equal educational opportunity in school admissions? These are the central questions of this thesis. In answering them, they require an exploration of principles of justice; to John Rawls and Amartya Sen's contrasting notions of establishing fair and just institutions and practices, to Ronald Dworkin's enlightening arguments on individuals being held responsible for their choices. Building on the theoretical and empirical literature on individual agency, school choice and opportunity, this study develops a framework for a more interventionist role for the state in assigning pupils to schools, rebalancing power towards the state under a comprehensive ethical framework for school admissions. It makes a case for using random allocation to determine school places in place of existing admissions criteria such as geographical proximity, test rank score and religious affiliation. The random allocation mechanism is a key reform necessary to facilitate opportunity and social justice for all children, not just those with the means to exploit the market.

The complexity of balancing individual parental choice with collective responsibility in school admissions is explored and exemplified in this study through a focus on one local authority, Gloucestershire, with its 39 mainstream secondary schools. It provides a case study of how the parameters placed around the process of choice and the allocative procedure for matching preferences with places can lead to segregation along socioeconomic lines. The case of Gloucestershire exemplifies the problem within the current paradigm of individual choice: the freedom to choose a school leads to a clustering of disadvantaged pupils in a small number of schools, where the examination outcomes for pupils are low. Although a direct comparison of outcomes at the school level is not a fair test of school quality, exam results are the dominant metric for parents in choosing a school, and the stark differences in exam results between Gloucestershire schools creates a cliff-edge in choice terms: parents must negotiate the market and maximize their child's chances of attending a good school (Burgess, S, McConnell, B, Propper, C, Wilson, 2007). Parents who can buy a house in a location that maximizes their child's chances of attending their preferred school, or whose children pass a selective admissions test to a grammar school, have the widest choice set available. For those without these opportunities,

choice is limited to the local school. This study argues, like many before it, that the organizing principle of choice, with its emphasis on individual agency, has diminished equality (Burgess et. al, 2007).

1.1 Aims of the research

The contention of this study is that the current system of individual choice in school admissions systematically prevents children from poorer backgrounds from accessing the best schools,[1] despite the frequency of policy debates focusing on how to increase the numbers of disadvantaged pupils attending those schools. The aim of this study is to adopt a new approach to that debate, by bringing together seminal theories of justice with the empirical literature on school admissions to establish a framework of principles which can guide a fairer, more equitable process for allocating pupils to schools.

Studies which have challenged existing admissions procedures in an attempt to improve access for disadvantaged pupils, have proposed many alternative mechanisms such as quotas, or random allocation, but they have done so without reference to the principles that underpin them (e.g. Elliot-Major & Machin, 2018). Without common frames of reference on how children are allocated to schools, it is not possible to judge the fairness on society as a whole. This thesis is intended to bridge that gap by combining a theoretical analysis of issues of justice, applied in pragmatic ways to the challenges of school admissions under different conditions, using pupil data from Gloucestershire schools in 2015-16.

The theoretical framework, developed in the early chapters, is tested against four simple models in Gloucestershire's schools, illuminating the ethical and practical implementation challenges of radical school admissions reform. In doing so I establish an argument for the inclusion of random allocation of school places as a necessary, but not sufficient condition for improving access and equity in school admissions. It is not intended to be a comprehensive statistical exercise, but instead provide some indicative evidence of the social and moral implications for challenging the orthodoxy of how school admissions processes operate in England. The aim is to demonstrate that random assignment is a tool at the disposal of policy makers, which can balance the importance of individual expression of choice against equality of opportunity in educational provision.

[1] Although the term *best schools* is controversial, and somewhat undermined by evidence that suggests that outcomes are largely a reflection of the prior attainment of the intake (Gorard, Hordosy, & Siddiqui, 2013), it is nevertheless the issue of equity in having the option to attend that this study is concerned with. Acknowledging that contention, the best schools are herein referred to as 'desirable schools'. I use the terms grammar and selective schools interchangeably throughout.

1.2 Research questions

The five specific research questions of this study are as follows:

Research question 1: What is the role of the state in determining where pupils go to school?
Research question 2: What is a fair process for allocating pupils to schools?
Research question 3: What are the principles that should guide reforms to school admissions?
Research question 4: What is the value of random allocation as a tool for improving access and equity in school admissions?
Research question 5: How can those principles be applied to the context of Gloucestershire's secondary school system?

The first three questions are focused on the theoretical and philosophical arguments on school admissions reforms and seek to identify a fair and meaningful framework from which policy reforms can be enacted. In answering these questions, the lines of enquiry are developed in chapters * to * drawing on Gloucestershire examples to illuminate the implications of the arguments developed.

The fourth and fifth research questions are intended to provide insight into how the application of the proposed framework may be implemented, in light of one local authority, and is somewhat different in its methodological approach, in that it employs quantitative analysis to illustrate school level clustering of disadvantaged pupils in Gloucestershire secondary schools and modelling the impacts of random allocation in different simulations. Although some discursive analysis on different school allocation mechanism in Gloucestershire is presented, the main focus of analysis in answering research questions 4 and 5 is quantitative in approach.

As the review of the existing literature will show, and the empirical analysis of Gloucestershire's secondary school system will further emphasise, the current procedures and mechanisms for matching parental demand of school choice with places available, confer a great emphasis on individual agency to the detriment of equality. The discussion ranges across the fields of economics, social policy, politics and ethics in order to join the philosophical principles of justice to the fine-grained detail of admissions procedures and oversubscription criteria. What might appear at first to be discussion about abstract moral concepts and obscure technical details on admissions procedures, it will become clear that they are actually matters which should be at the heart of efforts to improve equality and opportunity for all children (Coldron, J., Tanner, E., Finch, S., Shipton, L., Wolstenhome, C., Willis, B., Demack, S. & Stiell, 2008). They are the threads running throughout this thesis and draw on philosophical schools of thought which offer contrasting approaches to the challenge of the role of the state in designing public institutions and processes to facilitate social justice (Sen, 2009).

1.3 Outline of work

The thesis is structured as follows. Chapter 2 reviews the literature on school choice, drawing on a range of empirical studies from the fields of education, economics and public policy. A distinction is made between the literature that focuses on the process and procedure of school choice policies, and the consequences of them. The chapter concludes with a focused piece on Gloucestershire, examining the local allocation procedure and the existing literature on how it impacts on Gloucestershire's system. The themes emerging from chapter 2 highlight the deleterious consequences of school choice and the complexity of altering school admissions processes. The studies reviewed rarely evaluate their success with reference to a common framework or benchmarks of social justice. Chapter 3 provides the theoretical foundation for developing a comprehensive framework for shaping policy reforms from which admissions criteria can be judged against. The work of John Rawls, Amartya Sen and Ronald Dworkin, as leading theorists of justice, are explored to give a multi-faceted dimension to inform a framework of justice for school admissions. The specific role of the state is discussed in chapter 4 and the framework of justice for school admissions developed in chapter 5. It concludes with three principles for designing school admissions protocols and processes focused on equality, procedural fairness and the role of random allocation in that process.

In chapter 6 the framework is tested in a case study of Gloucestershire using discursive and statistical analysis to examine the current system as well as modelling the use of random allocation under different admission conditions. Chapter 7 discusses these findings in relation to the research questions. Chapter 8 concludes the study.

2 Literature Review

The established literature on school choice is substantial and ranges across several genres: education, sociology, psychology, economics and public administration. For such a large body of literature it naturally subdivides into several categories, principally among them: studies that focus on the segregation of pupils between schools as a consequences of school choice; and those that focus on the impact of choice on competition and results. The latter set of studies have been the primary driver behind the establishment of a quasi-market of school choice, but it is the consequences that is of interest in this study, particularly the impact on sorting and segregation of pupils between schools. The market-based admissions processes that operate in the UK and in many US districts are of primary interest here owing to the established neo-liberal paradigm that underpins public policy reform in both countries (Bell & Hindmoor, 2009). This has created fertile ground for studies discussed in this chapter, where the socio-economic consequences of those reforms have been traced over years and discussed at length from multiple perspectives. Consequently, priority is given to studies which are focused on these countries.

Literature searches in the following databases: ERIC, JSTOR, Web of Science, PsycInfo, between 1990 and 2017 were conducted using the following search terms syntax: school choice, school admissions, equality, equity, selective schools, grammar schools, segregation, stratification, performance, admissions. Private schools, competition and school vouchers were deliberately excluded from the search terms as studies focused on these areas tend to be more concerned with the competitive effects of school choice and are not the focus of the current study.

The introduction of 1988 Education Reform Act in England which paved the way for a quasi-market of schools and similar reforms in Milwaukee in 1990 as the first Parental Choice programme in the US, have led to a proliferation of studies on the implications of choice. The studies I discuss in this literature review were published after 1990, taking the work of the prominent free market economist Milton Friedman's work and the seminal book by Chubb and Moe, published in 1990, *Choice, Markets and American Schools,* as the start of renewed interest in the intersection of philosophy, economics, sociology, and their impact of new reforms on educational sociology and behavioural economics.

The papers published after 2000 provide a more useful empirical evidence base for this study because of the creation of large administrative datasets in the late 1990s, most importantly the National Pupil Database, which opened up new areas for research and prompted advances in methodological techniques in the economics of education. There are a number of studies within this category that are discussed at length in this chapter. I justify their prominence in this literature review because of the importance of their findings and the implications for this thesis. I attempt to build on their work, picking up their lines of enquiry using similar, methods, approaches and reasoning.

2.1 Framing the literature and search strategy

The range of the literature on school choice is diverse enough to require significant segmentation. A considerable number of studies focus on whether the introduction of choice itself produces a competitive element between schools that drives improvements in attainment (Wilson & Bridge, 2019). Another sub-field within the literature focuses on the extent to which school choice leads to segregated school populations and the link between socio-economic segregation and the implications for sorting pupils between schools (Wilson & Bridge, 2019). In this review, I have conceptualized the process of secondary school choice in England as a three-stage process, which helps identify the relevant literature for this study. In categorizing the research in this way, I have sought to guide the reader through the process of choosing a school as the parent would face it, and what evidence underpins the systems that assign pupils to schools.

The three categories are as follows:

1. **Information gathering and preference forming –** the process whereby parents identify school information related to performance, ethos, pupil composition, geographical location, transport convenience. These information sources are gathered via formal channels such as Ofsted reports, and Department for Education performance tables. Informal information, such as reputation, gathered via social networks, local news reports as well as anecdotes and hearsay, can be equally valuable in influencing the preferences of parents.
2. **Expressing school preferences –** the formal procedure, run by the local authority, for parents to express their preference for schools, usually in rank order (see discussion below). The existing evidence suggests that not all expressed (or revealed) preferences are parents' true preferences. The interplay between expressing a preference and the allocation mechanism means that the process is not simple.
3. **School assignment mechanism –** The procedure for matching parental preferences to schools, taking account of school priority admission criteria.

These three stages will be used to structure the sections that follow.

2.2 Information gathering and preference forming

The basic premise of an educational marketplace is the concept of parents as autonomous choosers of schools, expressing a preference for a particular school based on published information on a school's ethos, its characteristics, pedagogical approach, religious affiliation, exam performance, or any other criteria which might be used for comparison (Adler, Petch, & Tweedie, 1989).

The extent to which each of these is considered by parents in their preference forming is detailed by Coldron et. al (2008). They identify poor exam results as a reason for parents not choosing their proximity school, but they also identify a number of non-published measures, such as poor behaviour and discipline which influence choices. The significance of school reputation and parental perception are important behavioural influences and are as likely to be conditioned by informal social networks as much as they are by official published metrics.

A number of studies (e.g. Gewirtz, 1996, and Ball et. al, 2000) have shown working class parents demonstrate a propensity to choose a school based upon more child-centred factors such as if the child's friends were attending and the child's happiness (Adler, Petch & Tweedie, 1989). Proximity and access were also high priorities for working class parents (Bagley, Woods, & Glatter, 2001), whereas Burgess, Greaves, Vignoles, & Wilson, (2014) identify socio-economically advantaged parents as having a stronger preference for more academic schools.

Coldron, Tanner et al, (2008) identify how individual characteristics and the influence of family background appear to play their part in contributing to the different outcomes evident in different choice decisions. They identify employment status and maternal qualifications as strong predictors of the likelihood of accessing formal sources of information in making decisions on school choice.

Publishing and communicating exam performance data is a necessary, but not sufficient condition for the effective functioning of a schools marketplace (Wilson & Piebalga, 2008). Burgess et. al (2014) demonstrate the principal driver for school preferences is a school's academic performance, although it is not clear from the existing evidence that headline GCSE results are anything more than a reflection of the prior attainment of their pupils (Andrews & Hutchinson, 2016a). Schools with high raw attainment outcomes are inevitably popular: Gloucestershire's seven oversubscribed selective schools are largely reflective of a national trend that shows a strong correlation between attainment outcomes and popularity(Andrews & Hutchinson, 2016b).Controlling for prior attainment would help distinguish schools who add value to their pupils regardless of starting points, although as Wilson & Piebalga (2008) have noted, even the introduction of Contextual Value Added (CVA) scores in the performance tables in 2006 was not capable of informing parental choice, as almost half of England's schools have values that are statistically indistinguishable from the national average. Furthermore, the published results, CVA and raw attainment show the school average, thereby masking the differential effectiveness of the school for different types of children. Within this context it is not surprising that parents appear to use headline performance measures on which to base their preferences.

Allen & Burgess (2011) suggest that information for school choice would be more useful if it was constructed based upon three principles:

1. Function – The information provided to parents must be a useful predictor of a child's exam performance.
2. Relevant – It informs parents of the performance of local children

3. Comprehensible – The information must be interpretable.

Hastings & Weinstein (2016) provide evidence from a natural experiment and a randomised controlled trial that the provision of information on school performance changes the behaviour of parents choosing schools. They suggest that the cost of poor information on schools is borne by the poorest families who then have less knowledge to navigate the system.

2.3 Expressing school preferences

Pathak, P, Sônmez, T., Fudenberg, D., Ehlers, L., Holmstrom, B., Kojima, F., Morris, S., Ray, D. & Yildiz, (2013) suggests that the complexity of the school allocation procedure requires a strategic response from parents which produces the propensity for gaming. Gaming takes various forms, as Coldron et. al's (2008) study of secondary school admissions showed. They identified 5% of parents who chose not to apply for their first preference school because oversubscription in previous years reduced the likelihood of being offered a place. Judging the probability of admission for a particular school is a strategic response to a two-sided game theory and results in uncertain outcomes (Binmore, 2007). They also found that 22% of parents increased their chances of admission by taking school catchments into consideration when moving house. This evidence is indicative of the extent to which school choice can lead to strategic action to gain a place at a particular school, but it is also important to note that in many studies it is not always possible to determine which preferences are resulting from actual choice or are a consequence of the constraints on choice by different families under different conditions (Wilson & Bridge, 2019).

Butler & Hamnett 's (2010) case study of choice in East London found evidence that many parents chose to move to the high performing borough of Redbridge to maximize their chance of accessing a non-selective school. However, the limitations of this strategy were apparent when oversubscription triggered the proximity rule preventing admission to a number of parents. For popular schools, catchment areas are a qualifying but not determining factor for acceptance. The additional complication of selective schools admitting on test ranks means that parents must express their preferences using a strategy that involves a judgement on the likelihood of acceptance.

The advice for first preference first systems is to 'express your true preferences' (Gloucestershire Council, 2016). This is a sound principle if there was equal probability of being accepted at any school in the county, but the existence of priority catchment areas in oversubscription criteria produces a conundrum for parents: nominate their true preference or behave strategically (Burgess et. al, 2014.)

Burgess, Greaves, Vignoles, & Wilson, (2011) also identify a difference in 'feasible choice sets' of primary schools to attend for high and low socioeconomic status (SES) families. The proportion of parents getting their first choice schools does not vary by SES, but when low SES parents apply to the

highest ranked school in the area as measured by KS2 attainment, they are admitted in lower proportions than their high SES peers because of the impact of geographical proximity as a tie breaker mechanism. In other words, geographical constraint limits access to higher attaining schools for poorer families. It is also important to acknowledge the actual number of oversubscribed schools in a choice set, which will further constrain actual choice, especially for families with limited geographical range (e.g. those reliant on public transport) and those living in rural or semi-rural locations (Wilson & Bridge, 2019).

The unequal access to entry is borne out in the pupil composition data which shows that high SES families have a feasible choice set of schools with an average FSM rate of 9%, compared to low SES families who have an average FSM rate of 19% in their choice of schools. Seen in this light, there are very little differences between parental preferences, only constraints on choice (Burgess et. al, 2011).

2.4 School allocation mechanism

The legal parameters for all allocation procedures are established by the statutory School Admissions Code, 2014 and requires individual admissions authorities in England to do three things:

1. Set a Published Admission Number (PAN) for the number of pupils to be admitted in the age group for which pupils are normally admitted (e.g. Year 7 for secondary schools).
2. Set and publish admission arrangements annually.
3. Determine the criteria which will be applied in the case of more pupils applying to the school than there are places - oversubscription.
   (Department for Education, 2014).

These procedures are decided by admission authorities which are determined by the legal status of the school: academies, foundation schools and voluntary-aided schools are their own admissions authority. Community schools and voluntary controlled schools are subject to the Local Authority's admission rules. Both independent and locally governed admission rules must comply with the statutory School Admission Code (Department for Education, 2014). Admissions authorities have the power to change their own rules but must be done in public consultation in a specified time frame and in line with the statutory School Admissions Code. When parents express their preferences for schools in the annual admissions process for secondary schools, local authorities are responsible for ensuring that they are allocated to schools in accordance with the published criteria and in the case of oversubscription, according to the published priority criteria. Alongside the School Admissions Code, a non-statutory guide attempts to provide a foundational framework for fair and equal school admissions, although the contradictions inherent in it, underline its use in this way.

There is a rich body of evidence in the United States and a growing number of econometric studies in England which examines how admissions policies have affected the school allocation process and the subsequent social composition of school populations (Bifulco, Ladd, & Ross, 2008; Burgess & Briggs, 2004). More recent evidence has identified the long term outcomes on college attendance and employment prospects (Chetty, Hendren, Kline, & Saez, 2014).

Within this body of evidence, specific studies are particularly pertinent to this one. For example, in 2007 Brighton and Hove local authority announced their intention to alter their school admission process. The new approach replaced geographical proximity with random allocation as a tie breaking mechanism in the event of oversubscription. However, this was accompanied by a re-drawing of catchment areas which gave priority in the lottery to the pupils living within them. Random allocation is used twice in the process. Initially to rank applicants within the catchment, and secondly to allocate places to pupils outside the catchment in the case of oversubscription. Allen, Burgess, & Mckenna, (2013, p.164) find a 'weakening of the dependence on location' for school assignment, but a marginal increase in social segregation. The new school allocation mechanism seems to have increased the levels of alike children being assigned to the same school, regardless of school quality.

However, between 2008-2010, Brighton schools experienced significant changes in pupil composition in terms of pupils eligible for FSM and prior attainment levels. Those pupils who had scored in the middle two quartiles at KS2 were most likely to benefit from attending a higher performing school under the new assignment mechanism, with the winners and losers associated closely with the new catchment areas. The authors find no evidence that a larger proportion of students leave the state system as a consequence of the measures.

For admissions reformers, the results from Brighton were disappointing in not being able to counter between school-segregation levels in socio-economic terms. This is the defining element in a number of studies which identify the levels of between-school segregation as higher than surrounding residential patterns (Wilson & Bridge, 2019).

The Brighton experiment is a significant departure from the established school assignment mechanism in England. It provides tentative evidence in an English context of the need to consider the mechanism of allocation in conjunction with the geographical location of the pupils. High levels of housing segregation by socioeconomic status in England means that any new school assignment mechanism must consider the clustering of similar pupils in small geographical units to prevent a replication of the Brighton experiment (Harris, 2013). Therefore, the role of the state is critical in establishing the framework by which parents make choices. Analysis of New Orleans school assignment processes suggests that without a strong interventionist approach by the state, the system is inefficient and is incapable of dealing with market failures including poorly performing charter schools, gaps in school information and cream-skimming by several schools (Jabbar, 2016).

Lotteries for school assignment have been deployed to achieve fairness in many US school districts when two or more pupils have competing claims for a place at a school (Pathak & Sethuraman,

2011). Single lottery mechanisms operate at an area-wide level where ties for a school place are broken by the lowest lottery number drawn. Multiple lotteries are conducted by each school on an individual basis. Both methods can be conceived of as a two sided matching problem (Pathak & Sethuraman, 2011): Schools are agents with priority lists for students. Students are agents with preferences for schools. Students list their preferences. When a school receives more first references than there are places available, a priority list of characteristics determines who should be given the place.

When school priorities are specified by law such as Looked After Children (LAC) or Special Educational Needs (SEN) children, the numbers of students with these claims are typically low and therefore it is highly unlikely that there are more applicants with these characteristics than places at secondary schools. If there are competing claims from two identical pupils for one school place (for example both with SEND eligibility) there needs to be a mechanism by which to discriminate between them. When the characteristic is SEND eligibility they both have the relevant characteristic and therefore there is no way to prioritise one over the other without a lottery (Stone, 2011). To break ties like this without a lottery, a continuous variable is required, such as geographical distance from the home location.

Allen's (2007) simulated experiment of reallocating pupils to their nearest secondary school provides an insight into the impact of the 1988 reforms and the implications of a greater role for the state in school assignment mechanism. Her analysis suggests that 52% of pupils are not attending their nearest school. She cautions against using this figure as a representation of the impact of post-1988 choice policies as a percentage of pupils would have been attending non-proximity grammar schools and faith schools before the 1988 choice reforms. She estimates a more conservative figure of 22% as the proportion of pupils who attend a non-proximity school for which it can be assumed is an exercise in choice.

Allen's (2007) analysis calculates the levels of segregation that exist in LAs. She demonstrates that higher levels are evident where there are greater proportions of grammar schools and voluntary aided schools, with a particularly strong effect on post-residential ability and FSM sorting. Interestingly, she notes that areas with VA, foundation and grammar schools do not have lower residential segregation levels than in areas where schools use catchment areas. In the simulations, allocating pupils to their nearest school would lower segregation in nearly all LAs and would result in a high-attaining peer group for FSM and low performing pupils. The peer group is defined as the proportion of pupils eligible for FSM in a school: a 'better' peer group is one which has a smaller percentage of FSM pupils in the new school than under current conditions; a 'worse' peer group is a higher percentage of FSM pupils. Under current admissions arrangements, Allen calculates that 61% of FSM pupils experience a worse peer group than in the proximity calculation. The discussion of peer groups and its impact on pupil attainment is discussed below. Allen's study is hampered by its hypothetical nature and captures perfectly the challenge of endogeneity in school choice policies: if there were greater constraints imposed on school choice and a strengthening of the link between residence and school, we would expect to see

considerable movement in the housing market as parents moved closer to their preferred school (Allen, 2007). Therefore, any simulation designed to reallocate pupils to school suffers from inexact results.

Robertson & Symons (2003) ran a similar hypothetical experiment to simulate allowing free choice for schools and pupils. They suggested it would lead to complete segregation by elite pupils would cluster in increasing numbers each year leading to an overall 'welfare loss', defined as a lower average attainment score across all schools. To counter this, they propose that compulsory allocation to schools would achieve a 'welfare maximum', with as many winning as losing, but there would be no way of compensating the losers in the system and they hypothesize that they would be lost to the system in an increasing take up of private school places. Robertson & Symon's work is a mathematical simulation, devoid of social context, and its application may be limited, but it is nevertheless instructive to consider the active role that the state can play in more equitable distribution of pupils to schools.

Targeted changes in the school assignment process bolster the argument for greater intervention. Bergman, (2014) suggests that a programme designed to integrate racially homogenous adjacent school districts in California led to a ten percentage point increase of poorer black students attending four year college courses, although a number of older studies examining de-segregation using a randomized assignment design show no effect on academic achievement in the short term (Rivkin & Welch, 2006). Similarly, Deming, Hastings, Kane, & Staiger, (2014) identify that offering parents their first choice of school increases college enrolment and employment prospects of poorer students. Overall, the evidence suggests that school-integration effects have a greater impact on disadvantaged pupils than choice policies which tend to focus on providing access to charter schools (Billings & Deming, 2014).

The Moving to Opportunity policy in the United States enabled low-income families to move to more affluent neighbourhoods. The academic impact of attending schools in the new neighbourhood was small although Chetty et al., (2014) find substantial increases in college enrolment and earnings for families with young children.

However, the additional contribution of school desegregation policies is to allow us to study the impact of peer effects on attainment. Although it is difficult to identify a causal mechanism for the presence of a more prosperous or higher attaining peer group, there is a mixed picture of research on the impact of the peer group. A number of papers: Proud, (2010), Hoxby (2003), Hanushek (2006), report that an increase or decrease of 0.1 of a standard deviation of the peer group, leads to a 0.2 standard deviation on individual outcomes. These findings are confirmed by Zimmer & Toma, (2000) and Robertson & Symons (2003). Proud's (2010) analysis of peer groups in primary schools using an instrumental variable analysis, identifies significant positive effects for having a higher ability peer group and suggests that children who are close to the average of the peer group are set to benefit the most. The impact is less for children of at the high and low ends of the attainment spectrum. In contrast, Angrist & Lang, (2004) find a small negative effect of an influx of lower ability pupils into the school. All peer group studies are fraught with complexity in trying to untangle teacher and school effects from

peer effects (Angrist, Joshua D, Pischke, 2015). It is likely that a peer group measure is highly correlated with unobserved characteristics, which will overstate the influence of the peer group (Atkinson, Burgess, Gregg, Propper, & Proud, 2004).

The studies reviewed in this section produce a challenging endogeneity problem for researchers: are outstanding schools a product of the higher attaining and more engaged pupils that they educate? The absence of a counterfactual is evident in much of the literature reviewed here and therefore inferring the direction of causality in school performance produces difficult questions for policy makers wanting to make a more equitable system of school assignment.

The issue of causality is unlikely to be answered given the difficulty in designing field experiments robust enough to test different policy initiatives, but existing methods producing the literature reviewed in this section suggests that hierarchical regression models can infer with a small enough bias to give strong enough guidance for policy makers wanting to introduce a more equitable system (Allen, 2013).

2.5 Catchment areas

The complexity of school admissions is encapsulated by priority catchment areas. Both Allen (2007) and Burgess, McConnell, Propper & Wilson (2014) suggest that approximately 50% of pupils in England do not attend their nearest secondary school - a figure that demonstrates the extent to which choice is being exercised by parents. Burgess et al., (2014) estimate choice sets of schools by using proximity distance as the key arbiter for oversubscribed schools. By comparing schools that are feasible by distance and those that they have a very high chance of admission because of the proximity rule, a theoretical choice set is constructed. They demonstrate the significant impact of using the proximity rule for admittance when a school is oversubscribed. Fitz, Gorard, & Taylor, (2002) examine how previous admissions legislation, specifically the School Standards and Framework Act (1998), increased the power of schools by giving them greater autonomy over their own admissions procedures, and in the case of foundation schools, the legal equivalent of local authorities to act as their own admissions adjudicators. This produced greater stratification of disadvantaged pupils as many schools abandoned a proximity criterion as the primary arbiter of admission. Although this loosened the tie between residential location and school admission, it created greater uncertainty over the admission process for local families.

Fitz et al., (2002) argue that admissions based on geographical catchment areas will produce patterns of school segregation that mirror patterns of residential segregation. The appeal of local schools for local children is popular as long as the school is ‘good’ or perceived to be a desirable place to send

your children, but any attempts to reduce the importance of catchment areas are likely to penalize parents who have bought houses within the catchment to increase their chances of admission.

Gibbons, Machin, & Silva, (2006) identify the cost associated with houses in catchment areas of high performing schools. They estimate a 5.4% increase in house prices within the catchment for a 10% rise in school performance. For poorly performing schools the authors estimate a 1.9% rise with every 100m from the school - living further away from these schools, results in higher house prices. However, they also warn against the endogeneity of house prices and school performance suggesting they are 'simultaneously determined' in a cyclical process: desirable neighbourhoods drive up house prices; richer families outbid poorer families; children of richer parents do better at school.

The Department for Education's own analysis found similar patterns. They suggested that house prices near the highest performing 10% of primary schools are 8.0% higher than in the surrounding area with a corresponding reduction for houses located close to poorly performing schools. For the best performing secondary schools the house price premium is close to 7%. Leech & Campos, (2003) analysis estimates the premium to lie between 16 and 20% of the two most popular secondary schools in Coventry.

2.6 Consequences of school choice

In the decade after the Education Reform Act (ERA) of 1988, there was an expectation that socioeconomic segregation would increase as parents exercised their right to express a preference for their school of choice, yet a number of studies did not find any increase in unevenness of FSM-eligible pupils across school types (Cheng & Gorard, 2010; Gorard & Taylor, 2002; Taylor, Gorard & Fitz, 2001). Conversely, Gorard, (2012) and Gorard et al., (2013) suggest that levels of segregation dropped after the 1988 Reform Act as parents who had previously been restricted by catchment areas were able to take advantage of the new rules and express a preference for a school beyond the locality. There have been slight fluctuations in levels of segregation by FSM status for the last thirty years, but these are most likely related to changes in the economic cycle, and the changing proportions of FSM eligibility during recessions, rather than changes in admissions arrangements in individual schools resulting from the ERA (Gorard et al., 2013).

Fitz et al., (2002) contrast the fluctuating rate of segregation across most English local authorities with the steady decline of segregation in London's inner boroughs in the time period between 1988 to 2000. The developed nature of the transport network in London and the density of schools allows parents to choose from within a wide area. Consequently, disadvantaged pupils are more widely and evenly dispersed across schools, even if poverty is more concentrated in specific housing locations. Changes in segregation over time can largely be explained by the prevalence of each indicator of disadvantage. During a downturn in the economy, there are more pupils with FSM status and they are

spread more evenly across schools (S. Gorard, Hordosy, & See, 2013). The absolute level of disadvantage in the pupil population and the reporting of the indicators on which they are measured can explain almost all of the changes over time in measures of between-school segregation (ibid).

The evidence suggests that segregation between schools reduced slightly after the 1988 reforms as there was a decoupling of residence to school allocation, although the magnitude of the reduction varies between analyses. Allen & Vignoles, (2007) identify a reduction of 5% between 1989 and 1995; Gorard, (2007) suggests 10%. By both measures, the fall is unlikely to be accounted for by parental choice mechanisms. The most significant reduction in segregation according to the GS index was 7% between 1991 and 1993, yet it did not continue to decline any further. The most likely explanation is again the impact of the recession and the more evenly distributed pupils eligible for FSM (Allen & Vignoles, 2007). A more nuanced finding is evident across LAs with 60% exhibiting a rising trend of segregation and 40% showing a falling trend. Areas with grammar schools have a typically high level of segregation but as they have expanded segregation has reduced owing to the lower admission marks required for entry. Disadvantaged parents were able to take advantage of the new rules that rescued the tie between residence and school attended (Gorard et al., 2013).

Fitz et. al, (2002) identify local authorities as an appropriate unit of analysis for measuring segregation changes over time. They suggest that attempts to classify education markets across LA boundaries is too ambiguous for quantitative analysis. Despite the potential for parents to express a preference for attending schools across local authority boundaries, the numbers are likely to be small and are outweighed by the coherence of well-defined geographical parameters from which to measure segregation.

By contrast, Harris & Johnston, (2008) note that the importance of local factors must be considered when comparing issues of segregation. Assuming that schools are competing with each other simply because they are in the same LA does not provide the insight into how pupils separate as a consequence of the decisions that parents make for their children. For this reason, Harris (2011) prefers the term separation to segregation: the latter implies a forced divide which does not align with the policy of choice.

Harris, (2013) finds a similar pattern of stable segregation in the period 2003 to 2008 in London's secondary schools. His analysis identifies a separation of higher and lower attaining pupils into different secondary schools. The sphere of influence of selective and non-faith schools is further on average than non-selective and non-faith schools.

Despite the reduction in segregation since 1988, there are still large disparities between locality and school types. Gorard et. al., (2013) estimate that between 20 and 50% of students would have to change schools for there to be an approximately even distribution of pupils by FSM-eligibility. Allen, Burgess, Davidson, & Windmeijer, (2015) find similar numbers.

Fitz et al., (2002), calculate the segregation index of 74 local authorities in 2000. They range from 0.0536 in Islington to 0.3736 in Solihull. The figure corresponds to the proportion of

disadvantaged pupils who would need to change schools for there to be an equal distribution across schools. Gloucestershire's figure is 0.3069. It is ranked 68 out of 74.

Fitz et al., (2002) also calculate the level of segregation between 1989 and 2000 for each local authority and find decreasing values in all but 24 of the LAs. Gloucestershire's segregation index decreased by 0.0286.

Patterns of segregation differ across school type with selective schools producing particularly low FSM numbers. Analysis conducted in 2016 by the Education Policy Institute identified an average of only 2.5% of pupils eligible for free school meals, compared with a national average of 13.2% in all English state schools (Andrews & Hutchinson, 2016). Pupils eligible for free school meals are still less likely to attend selective schools even when their Key Stage 2 scores are comparable to pupils from wealthier families (Allen, Coldron, & West, 2012). Of England's 163 selective schools, only one admits a greater proportion of disadvantaged children than is present at the LA level (Nye, 2016).

This pattern is not unique to selective schools: Allen & Parameshwaran (2016) identified 1000 socially exclusive primary schools where the school's FSM proportion was ten percentage points lower than the surrounding neighbourhoods. Similar work by Allen & West, (2011) show that socially selective schools, many of which have a religious foundation, use long and elaborate oversubscription criteria to allocate places, which discriminate against parents who do not have the time or ability to navigate the system.

Coe et al., (2008) have developed a method to identify the impact of grammar school attendance on non-selective schools. Their data of the 'creaming' effect suggests that 161 non-selective schools lose more than 20% of their pupils to grammar schools. 32% of non-selective schools nationally lose between 0 and 1% of the pupils who may have attended. A further 35% lose between 1% and 20%. Following changes to the School Admission Code in 2003 and 2007, Allen, Coldron & West, (2012) identify a small decrease in the social segregation declining in schools, even after neighbourhood characteristics are controlled for, as the regulatory framework on admissions was tightening. They suggest that focusing on the national school admissions code as a lever to influence the social composition of schools is a feasible policy tool and could be used to balance pupil intakes across schools.

Burgess et al., (2015) concludes that parental choice combined with the flexibility for schools to expand reduces post-residential sorting, but where the proximity rule is used as a criterion in the case of oversubscription, it leads to greater sorting.

2.7 Selection

The existence of selective grammar schools in England is often justified on the grounds of offering a distinctly different type of school in a diverse choice set. Their popularity is heavily influenced by the very high pupil outcomes at these schools, although a large number of studies have attempted to identify if selective schools are more effective once the starting points of their pupils have been accounted for (Coe et. al, 2008 and references therein).

Coe et. al.'s (2008) review of the literature on grammar schools identifies numerous methodological flaws in the existing studies, but nevertheless finds a consensus for a small positive impact for pupils attending selective schools, compared to similar pupils attending non-selective schools. They suggest that because many selective schools are single sex, the effects of selection and single gender can be difficult to untangle and many of the studies are limited by the quality of baseline and outcome data, misinterpreted value-added calculations, and the failure to understand the diversity of selective systems.

Three studies in the 2000s made use of national datasets of pupils. Jesson (2000), compared GCSE results between LAs that he characterized as fully comprehensive and those which retained grammar and secondary modern schools, using value added methodology. He concluded that selective systems were delivering worse educational outcomes overall than their comprehensive counterparts, accounted for by the majority of pupils in selective systems being educated in non-selective neighbouring schools which were providing an inferior education than comprehensive schools. Coe et al., (2008) find numerous limitations with the methodology, most notably the categorization of selective and non-selective areas, and the calculation of value added.

Schagen & Schagen (2003) used multilevel modelling techniques to identify pupils on the 'borderline' of grammar schools and non-selective schools and tracked them into the different types of school. At KS3, the pupils in grammar schools made more progress in grammar schools than those in comprehensive schools, which they term the grammar school effect. They suggest a number of reasons for this, some of which highlight the limitations of their own methodology and data.

A follow up paper by Schagen & Schagen in 2005 directly compared grammar schools with non-grammars, ignoring LAs as a unit of analysis. They were able to confirm their earlier findings using more refined outcomes data at the pupil level over five years of schooling and suggest that the grammar school effect is most pronounced for the 'borderline' pupils. They conclude that the lowest performing pupils in grammar schools benefit over and above that of similar pupils in comprehensive schools. Coe at al. (2008) question the categorization of 'borderline' pupils, suggesting that pupils who gain access to grammars are likely to have unobservable differences to those who don't.

Atkinson, Gregg, et al., (2004) compared the difference in outcomes across what they characterise as selective and non-selective LAs. They identified the pupils most likely to attend grammar schools using logistic regression techniques and found that 32% of high ability children eligible for free school meals (FSM) attend grammar schools compared with 60% of non-FSM pupils. They also suggest that the results of pupils in selective LAs compared with non-selective LAs

outperform their matched contemporaries in non-grammar schools by a grade in three and a half subjects.

Harris & Rose, (2013) also used a logistic regression to estimate the Odds Ratio (OR) of children in selective and non-selective schools achieving five A*-C grades at GCSE. They identified a 13-15% increase in the chances of achieving the expected outcomes at GCSEs at grammar schools compared to similar pupils at non-selective schools. They conclude that the outcomes represent factors operating in both types of school: an increase chance of success at a grammar school and a decrease chance of success at secondary moderns for pupils with similar prior attainment.

Burgess, Dickson, & Macmillan, (2014) examined the long-run effects of selective and non-selective areas on unemployment rates by matching non-selective LAs with selective LAs on a number of key characteristics. They calculated that regressing adjusted earnings on the dichotomous selection variable for selective/non-selective explains 14% of the earnings gap at the 90th and 10th percentiles, which is largely explained by the lower average attainment scores that will inevitably sort pupils into the different types of schools. Pupils in grammar schools have high raw attainment outcomes although even when pupil characteristics have been controlled for, they achieve an estimated one third of a GCSE higher in each of their best eight subjects, compared with similar pupils in non-selective schools (EPI, 2016a). The estimated effects for FSM-eligible pupils is higher at half a GCSE grade in each of eight subjects. Previous research by Coe et. al (2008) found a similar grammar effect, estimating the benefit of pupils attending to be between zero and three quarters of a grade per GCSE subject. Their models also suggest that the inclusion of a school composition variable reduces the grammar school advantage. This grammar school effect diminishes as a greater proportion of the school population attends grammar schools; the detrimental consequences of this for those who do not attend grammar schools is exacerbated by a higher number of grammar schools. The effects are estimated to be 0.1 grade less in each of eight GCSE subjects, increasing to 0.2 grades less for FSM-eligible pupils (EPI, 2016a). The negative effects appear to arise at the point where 70% of the highest attaining pupils attend grammar schools.

Allen & Treadaway (2015) compared 'highest failures' and 'lowest passers' of the 11+ in grammar school areas by comparing their 11+ scores with KS2 SATS scores at the end of primary school. They track the individuals who attend selective and non-selective schools and measure outcomes at GCSE. They found that the highest failers achieve better GCSE results in their non-selective schools than their peers who 'just' passed the 11+ (defined as pupils with the lowest KS2 mark in the primary school going on to a grammar school). When comparing similar scoring pupils at KS2 who attend different types of schools, the authors found that pupils in the grammar schools outperform their counterpart in non-selective schools by approximately half a GCSE grade in their core subjects. Although it is a simple matched design on a small number of observed variables, it is in line with other studies which find a small, but significant 'grammar school effect' for pupils who attend them. However, this study is also instructive in highlighting the deficiencies in the 11+ exam in identifying

potential (as measured by GCSE outcomes), and provides further evidence that the division of schooling based on a single test at 11, creates a system of winners and losers and the losers are most likely to be children from poorer backgrounds: the highest failers are twice as likely to be FSM-eligible than the lowest passers: 6% vs 3%.

2.8 Improving the school-pupil assignment mechanism

The popularity of schools and the impact of different mechanisms to assign pupils to schools has been widely studied (e.g. Allen, Burgess, & Mckenna, 2013; Bergman, 2014; Hanushek & Cleveland, 2006; Pathak, P, Sônmez, T., Fudenberg, D., Ehlers, L., Holmstrom, B., Kojima, F., Morris, S., Ray, D. & Yildiz, 2013). The School Admissions code provides some guidance on the rules for LAs to adhere to, but there is little guidance on how the mechanism should operate. The existing literature on how to improve the current system is largely theoretical or simulated: very few empirical studies exist on the impact of changing admissions systems, therefore a number of proposals that do exist are based on relatively weak evidence.

Pathak (2011) describes the allocation mechanism termed 'serial dictatorship': Students are sorted by priority group and assigned a lottery number. Students in a priority group who receive a low lottery number will have a high chance of receiving their first choice school. If the slots for the first choice school are filled, the process moves down to their second choice and so on.

The EPI (2016b) analysis models different scenarios for increasing the numbers of disadvantaged pupils attending grammar schools to reflect local and national FSM proportions. Increasing the quota of disadvantaged pupils from 2.4% to 6.8% to reflect the top 25% of attainers at KS2 would provide an additional 1000 places for disadvantaged pupils each year, although it would require grammar schools to admit pupils much lower down the attainment distribution, and it is not possible to estimate with certainty if grammar schools would be as effective at educating lower attaining pupils (EPI, 2016a). They conclude that disadvantaged pupil quotas will change the distribution of winners and losers from selective systems in favour of disadvantaged pupils, but it will not improve the overall outcomes of selective systems.

Given the individual nature of different school assignment criteria, a single serial dictatorship lottery is not possible (or legal) under the current Admissions Code. The notion of stability in the school assignment literature refers to ensuring that there is no unmatched student/school pair where a student prefers a different school to the one he has been assigned to, and he has a higher priority over someone who has been allocated a place (Sonmez & Abdulkadiroğlu, 2003). This is termed the Gale Shapley student optimal stable mechanism and is appealing because it is strategy proof: parents may express their true preferences without fear of losing out to someone who has expressed a higher preference, but

has a lower priority in the individual school criteria. This can be modified to take account of 'controlled choice constraints' (Sonmez & Abdulkadiroğlu, 2003, p. 732) which demand certain quotas or restrictions be imposed on schools.

In comparison to school choice programs and the option of attending a charter school, the evidence on mandated desegregation, which is the approach adopted by quotas, is studied by Bergman (2014) who suggests that the effect sizes are larger and offer a more promising route to improved outcomes for disadvantaged groups. Dobbie & Fryer, (2011) report on charter schools using an intent to treat analysis on college attendance is equal to 5 percentage points, whereas Bergman's study identifies an effect of 10 percentage points. The results suggest that where segregation prevents access to particular schools, the school assignment mechanism can be altered to improve the outcomes for targeted students.

Polling conducted by The Sutton Trust (2007) found that 52% of respondents believed that the fairest way to assign pupils to schools in the case of oversubscription was by proximity. However, the majority of respondents were unable to judge from a range of assignment mechanisms how fair or unfair they considered them. Of those that did make a judgement, 28% believed random ballots to be unfair, and 9% fair. 63% did not come to a conclusion.

When presented with a specific scenario on which to judge different mechanisms, support for random ballots increases significantly. Nearly as many parents (32%) supported the use of ballots to assign pupils to oversubscribed comprehensive schools compared to assignment on proximity (35%). This figure rose to 45% among respondents from the highest social classes.

Allen's (2013) study suggests redesigning the school assignment mechanism focusing on using capital funding to increase spare capacity in the system from 5-10% to around 20% to provide the flexibility for choice. She suggested that 80% of places should be guaranteed on proximity, with the remaining places allocated by lottery. This would provide a degree of certainty for families seeking admission to their local school, whilst retaining an element of choice in the system and a chance of admission through random allocation. Under the current School Admissions Code, random lotteries are not permitted across local authority areas, but individual schools can still operate random allocation or 'fair banding'.

The School's Adjudicator Report 2018 notes that only 113 secondary schools make use of the revision in the 2014 Schools Admissions code of being able to prioritise pupil premium pupils in oversubscription criteria (Office of the Schools Adjudicator, 2018). In responses to queries by the adjudicator for why more schools weren't using the provision, one local authority expressed the concern that it would potentially discriminate against pupils who were just above the FSM eligibility threshold. Other local authorities commented that in some cases the proportion of FSM pupils were so high that those not eligible for FSM would unfairly disadvantaged. Additionally, another noted that the high number of good and outstanding schools meant there was no advantage for priority placements as all pupils had equal access to attend good schools.

For the 163 grammar schools in England, 93 of them reported using one or more of the premiums, mostly the Pupil Premium, in their oversubscription criteria. Others reported setting aside a quota of places for children entitled to the pupil premium or reducing the pass mark admission. Other grammar schools use the pupil premium as part of a tie-breaker between two children who have equal marks for the last available place (Office of the Schools Adjudicator, 2018). In 2012, random ballots were used as a main ranking criterion by only 42 schools nationwide, with 121 choosing banding as a way of creating balanced school intakes (The Sutton Trust, 2007).

Without access to individual parental preference forms, it is impossible to know the group of schools that form a parent's choice set, or whether parents would choose a different set of preferences under different assignment rules therefore the evidence developing for alternative admissions criteria is largely theoretical and simulated in nature (Burgess, 2016).

2.9 Gloucestershire

Gloucestershire provides a geographically bounded case study to exemplify some of the evidence discussed so far in this section. The nature of the secondary school system in the county, with its seven selective grammar schools and 32 non-selective schools, captures many of the patterns observed in the wider literature already reviewed. The evidence related to Gloucestershire helps to frame the unique conditions of the county's system and provides the evidential foundation for examining the ethical and practical implications of altering the school admissions processes in line with the new principles framework for school admissions, which is developed in Chapter 4.

2.9.1 The process of school allocation

The system in Gloucestershire is classed as one where choice plays a central role in school allocation. Since the abolition of 'first preference first' procedures in the 2014 School Admissions code, local authorities have been required to introduce the equal preference system (Department for Education, 2014). Parents may nominate up to five preferences in rank order on a Common Admission Form – each of which is considered of equal preference in school allocation. In the first round of allocations, all first preferences are taken into account. In the event of a school receiving more first choices than places, the school's oversubscription criteria discriminates between them. If a pupil is denied a place at the first choice school, an attempt to assign their second preference is undertaken. This process is repeated until all school places are full or all preferences have been allocated (GCC, 2017).

Expressing a preference is complicated by the process for admission to selective schools in Gloucestershire. At the end of Year 5 parents may opt to register their children to take the common test for selective school admission early in the September of Year 6. Each year the test is sat by

approximately 2,000 pupils, although no official figures are provided. Parents decide which selective schools they wish to have their child's scores shared with, which provides confirmation that the child has sat the test. In order to be eligible for admission to selective schools, pupils must achieve the Qualifying Standard, which is not a pre-defined pass mark, but 'reflects a child's position in the rank order of standardised scores in the Admissions Test' (GCC, 2017, p. 4).

Selective school places are allocated by a third party agent - the local authority - in a process that can be characterised as a two-sided matching problem (Sonmez & Abdulkadiroğlu, 2003). Each school preference is considered against the stated admissions criteria for the school, until all places are matched with the highest ranked preferences on individual forms. If a selective school is oversubscribed, the oversubscription criteria are applied, which means that meeting the qualifying standard does not guarantee a place.

Although selective schools represent less than 20% of secondary schools in the county, their influence on the pupil composition of all secondary schools is considerable. Between 10% and 20% of children attend selective schools in Gloucestershire and over 75% of the county's secondary school population are within a reasonable travel distance of a selective school (EPI, 2016a). Coe et. al's analysis (2008) shows that all of Gloucestershire's grammar schools take pupils from neighbouring non-selective schools to varying extents. Some of Gloucester's non-selective schools lose up to 20% of their potential pupils, and Cheltenham's non-selective schools lose between 5 and 20%. It is the nature of those pupils that has a particular effect on neighbouring schools with the EPI estimating that where grammar schools provide 12.5% of secondary school places, they absorb 50% of all high attaining pupils - defined as those in the top 25% of the KS2 distribution. Areas where grammar schools provide places for 25% of the total number of secondary school pupils, the absorption rate of high attainers into those schools is approximately 100%. If this group were to be redistributed to alternative schools based on different allocation criteria, the implications of Attainment 8 and Progress 8 scores for individual schools could be significant.

The remaining 32 non-selective schools do not use a selection test, but the popularity of certain schools creates 'honeypots' causing a cycle of ever decreasing catchment areas as parents buy houses closer to the school to guarantee admission (Gibbons & Machin, 2006; Gibbons, Machin, & Silva, 2013; Gibbons, Silva, & Weinhardt, 2013).

The prevalence of priority catchment areas and geographical proximity in the admissions criteria are a pragmatic attempt to provide some guidance to parents on their likely success for expressing a preference for a particular school (GCC, 2017). Catchment areas provide a definite boundary for allocating pupils to different schools: to be one side of a boundary determines allocation to school A; the other side of the boundary means being allocated to school B. Complications arise when schools become so popular that living within the catchment no longer guarantees allocation to the school (Butler & Hamnett, 2010). In these instances, schools must allocate on proximity, as measured by a straight line from the school gate to the home residence. For pupils who live on the edge of

catchment areas and lose out as the sphere of allocation draws closer to the school, the consequences can result in them being assigned to less popular schools a long way from home (Allen, Rebecca, Parameshwaran, 2016).

2.10 Chapter summary and implications

The literature reviewed in this chapter identifies how policies of school choice affect families differently: in their information gathering, preference forming, and in the school assignment mechanism. A more robust School Admissions Code as well as policies to reduce gaming on the part of schools and parents have had moderate success but they have not been successful in overcoming the strong geographical relationship between catchment area and school attendance (Allen et al., 2012). Given the levels of socioeconomic segregation by residence in England, it is inevitable that school segregation will exist if geographical proximity remains the primary criterion for school assignment (Gorard & Siddiqui, 2018). The clustering of pupils by socioeconomic status is high: estimates of between 25 and 45% of pupils required to change schools to produce an even distribution. Disadvantaged pupils are more likely to attend schools with fewer qualified and less experienced teachers, a lower attaining peer group and with higher teacher turnover than their wealthier peers (Allen, Mian, & Sims, 2016). All of these characteristics hamper pupil progress and contribute to the large differences in outcome inequality between schools. School choice matters most for the poorest pupils, yet the current system produces a structural bias that creates multiple barriers and for pupils with the greatest amount to gain from access to a good school (Allen et al., 2016).

In Gloucestershire, the existence of seven selective schools has exacerbated segregation with wealthier pupils more likely to attend them, producing greater concentrations of disadvantaged pupils in non-selective schools (Gorard, 2001; Taylor & Gorard, 2001). These trends reflect the national picture, where approximately 40% of pupils in the most deprived decile of postcodes are likely to attend a Requires Improvement or Inadequate school, compared with approximately 20% in the least deprived decile (Clifton & Cook, 2013). For Outstanding schools, the opposite is true: only 20-25% of the most deprived decile of pupils are admitted to Outstanding schools compared with between 35 and 45% for the least deprived decile.

In light of the evidence discussed in this chapter of a strong systemic bias against disadvantaged pupils in school allocation, there are a number of options for creating a fairer system, each of which demands a more active role for the state.

First, acknowledging the impact of pupil peer effects and the apparent deleterious effects of segregation could lead to a natural solution to be interventionist in balancing pupil intakes across schools to ensure that FSM-eligible pupils were evenly distributed across schools. This would require quotas to be set and a FSM prioritisation criteria in the school allocation mechanism. An even

distribution could be defined in a number of ways for example, by ensuring that the dissimilarity index (discussed in the Chapter 5) did not exceed particular bounds. Alternatively, a more straightforward measure would be to check that each school admitted the proportions of FSM-eligible pupils reflected the local average.

A second option is to provide better choice-sets to parents would require a loosening of residence to school admission. This is most pronounced in the most popular schools where the catchment area represents such a small area around the school that any parent expressing a preference for the school but living outside the catchment is wasting their choice. Introducing a proportion of places that aren't decided by proximity rules would facilitate this.

Both types of reform could produce a more equitable process for pupils and a fairer distribution of school places for disadvantaged pupils, as the EPI 2016 analysis suggests, and the Brighton and Hove experiment provides some tentative evidence for. Yet to decide the policy details of school admissions without reference to an established framework of principles, or a stated purpose of intent, risks creating incoherence across multiple admissions authorities. The Brighton reforms demonstrated that it is possible to loosen the tie between residence and school assignment, but their success must be measured on more than the equitable distribution of school places across socioeconomic groups. It must be tested against a reasoned framework which can withstand the scrutiny and democratic deliberation which should underpin substantive reforms that affect how individuals use and interact with state-led institutions. Any significant reform in school admissions that challenges the status quo will need to be justified in reference to a robust framework that can hold together competing claims of individual pupils (parents as proxy) and their freedom to choose, against the collective welfare and the demand for greater equality. Without a framework from which to benchmark standards, it is not possible to gauge how policy reforms can enhance or limit the advancement of justice.

In order to establish the principles from which school admissions reforms can be developed it requires an exploration of social justice and the different conception of the relationship between individuals and the state. In the following section, the work of John Rawls, Amartya Sen and Ronald Dworkin are discussed, drawing on foundational ideas of justice to inform a framework of principles for school admissions.

3 Conceptions of justice

In the previous chapter, the literature on school choice was examined, identifying a systematic bias against disadvantaged pupils in the structure, process and allocation to schools. Before identifying potential policy reforms which may improve the current situation, it is necessary to examine principles of justice through the lens of parental freedom, individual autonomy and collective equality.

In this section, the work of John Rawls, Amartya Sen and Ronald Dworkin are discussed. The inclusion and focus on these philosophers is justified by their status as the leading theorists from the last 50 years, illuminating the debates from three broad and contrasting perspectives (Graham, 2007). Of all the contributions to the understanding of public justice in the last fifty years, Rawls' theory has done most to establish the limitations of justice in the public sphere, although it has been criticised on both the left and right of the political spectrum (Stone, 2011). This chapter begins by exploring the idea of justice initially from a Rawlsian, contractarian perspective, before examining the issue from a capabilities approach and resourcism approach. Although there is no one grand unified theory of justice that can guide the operation of social institutions, each one proves instructive in guiding policy and practice in the area of school admissions.

3.1 John Rawls - Justice as Fairness

If, as Rawls (1999) declares, that justice is the first virtue of social institutions, then it is incumbent on society to engage in democratic deliberation to question the limits of individual freedom and the imposition of how social institutions operate to benefit the common good. The foundational cornerstone of Rawls' theory of justice is an appeal to the base state of the human condition; to treat others as we would wish to be treated. Rawls demonstrates the appeal of this maxim through the 'veil of ignorance' – a thought experiment whereby individuals do not know the status or place in society they will inhabit. Only in this original position, will individuals adhere to a set of fundamental agreements which are fair. From the original position, a comprehensive framework unfolds to handle the competing claims of liberty and equality to safeguard the free and equal status of individuals.

Rawls (2000) regards his theory of justice as concerned with the 'background social framework' (p.10) to society; the basic structure of governance for individuals and associations from which two standards must be satisfied:

1. Each individual has a claim to equal basic liberties. These liberties must be compatible with the same scheme of liberties for everyone.
2. Social and economic inequalities are permissible if they satisfy two conditions:

i) The inequalities exist if they are attached to positions that are open to all under a process of fair equality of opportunity.

ii) Inequalities provide the greatest benefit to the least advantaged members of society (the 'difference principle').

(Rawls, 1999)

The two principles are deliberately ordered: equal basic liberties are considered to be of prime importance in a democratic society. When these have been guaranteed, only then is the basis of equality sanctioned (Graham, 2007). This is what Rawls considers a state of social cooperation to be: where the rules of reciprocity between individuals, and the individuals and the state are understood. Individuals willingly surrender their liberty for the sake of social cooperation through a hypothetical agreement which would be decided without knowing the place in society which we will inhabit. The unique result of this approach is to remove all morally arbitrary reasons for choosing how society should be governed. Utilitarianism is rejected on the grounds that individuals would not risk being subjected to persecution for the benefit of the majority. Similarly, meritocratic arguments are dismissed because they cannot account for natural advantages individuals are born with which give rise to inequalities regardless of the effort or merit of the individual. The distribution of justice cannot therefore be related to moral deserts (Sandel, 2009).

The divorce of distributive justice from individual action or due deserts is an arresting cornerstone of Rawls' theory and is integral to the unfolding of the argument presented in this thesis. In a game of football, the winner is the one who scores the most goals. Whether they deserve to win is often a debated point and may be dependent upon moments of good or bad luck in the game. Regardless of this, they are entitled to their win if they score more goals than their opponents (Sandel, 2009).

Rawls regards egalitarianism as the only acceptable form of justice, established in the form of two principles and focusing on the distribution of resources to satisfy a minimum democratic standard. It is important to acknowledge that the distribution of resources is unrelated to what an individual is owed through their own actions (Robeyns & Brighouse, 2010).

Rawls regards the 'entitlement to legitimate expectations' as the only thing that should matter in a discussion of distributive justice. This is different to issues of moral desert because it is about meeting the legitimate expectations in accordance with the rules of the game. Whatever benefits arise after the rules have been established are legitimate and explain part of the appeal of the difference principle. It provides a credible framework to define the relationship between individuals and the infrastructure of the state.

3.2 Amartya Sen - The capabilities conception of justice

For Sen (2009) the abstraction of Rawls' theory of justice is its greatest weakness. He regards Rawls' theory as one based on transcendental institutionalism with its requirement of an overarching leviathan authority focused on creating just institutions, procedures and processes. Sen provides a challenge to the transcendentalists. Utilitarians, egalitarians and libertarians all view the world differently and each adhere to a particular theory of the social order, with contrasting views on what drives human motivation and behavior. Therefore, to appeal to an impartial theory of justice requires a rejection of other reasonable conceptions of justice. Sen argues that reducing judgements to one single measure, as favoured by a comprehensive utilitarian perspective, discourages the comparability of comparing many good things.

It is on these grounds that Sen prefers comparative assessment as a theory for deciding upon the institutions, policies and procedures, because it allows an assessment based upon the values of those involved, emerging through public discussion. Successfully meeting the demands of a socially just state depends upon how goods are distributed between groups and individuals. This places the focus as much on the processes, and behaviour of people, as it does on the realised outcomes. For Sen, the actions and processes of individuals are not an inconvenience to a unified theory of justice, but as the consequences of the social world (Sen, 2009).

Realisation-focused justice, which Sen promotes, is a comparative theory of justice because it is focused on the procedures and outcomes of society, and asks, not what would the ideal situation *should* be, but what will make the world more just. Realisation-focused justice challenges Rawls' theory of justice for its preoccupation with identifying a set of perfect principles on how societies should operate, rather than developing theories that build from how the world actually is. Rawls' social primary goods model fails because it does not identify how much resource is needed for the disadvantaged in society to meet the two principles of justice (Robeyns & Brighouse, 2010). It neglects to account for the innate differences in individuals and their capacity to take advantage of those differences.

The notion that individuals who have received equal resources to satisfy Rawls' two principles of justice but are markedly different in their capacity to turn them into functioning, can meet an accepted threshold of justice is disputed (Sen, 2009). From this, a more developed conception of 'substantive freedoms' or capabilities to choose a life one has reason to value is introduced (Sen, 1999, p.74). The capabilities approach is central to the criticism of Rawls because the level of education someone has received is 'sensitive to their underlying capabilities, but not determined by it' (Brighouse & Unterhalter, 2010, p. 197).

Sen's approach repositions discussions of justice away from means-oriented evaluative approaches towards the capacity of the human condition to achieve their desired objectives. Rawls' preoccupation with the distribution of primary goods focuses on their role in enabling the pursuit of a

purposeful life, but evaluates their distribution as the end goal. Sen argues that means are merely enabling factors for attaining other things, such as a 'life that one has reason to value' (Sen, 2009, p.64).

Sen (2002) reserves further criticism for rational choice theorists, lamenting the preoccupation with measuring equality of opportunity through process, depicting the discussion in theoretical and policy debates as a tension between a consequence-based evaluation of social outcomes versus a procedural approach. In education, the rights of the individual to choose a school is presented as the pre-eminent moral foundation on which to base the terms of procedure. These are given priority over guaranteeing a particular outcome or avoiding unequal outcomes (Sen, 2002). How can social justice be achieved within a framework that places procedures above consequences? Sen argues that a commitment to balance the competing claims of procedures and consequences is critical for pursuing social justice.

Opportunities for self-determination in decision making plays a significant role for Sen and other capabilities-focused theorists. The process of choice is as equally important as the distributional outcomes and therefore how the end state is achieved is as important as the end state itself. The demands of equity are as important in the process of choice to provide the freedom to make genuine choices (as opposed to hypothetical ones). Here Sen departs substantially from Rawls in suggesting that if a person is given the opportunity to achieve but chooses not to do so, it should not necessarily be considered a societal obligation to address the inequity that ensues. Interestingly, this does not hold much weight with current educational policies or debates concerning the outcomes of disadvantaged pupils, where the assumed default position is for society to be collectively responsible for children's education to the extent that it has been an explicit national education priority since 2010 (Department of Education, 2010). This is more in line with Rawlsian thinking who suggests that the moral justification for those who are incapable of choosing well from being blighted by their poor decisions. The difference principle abandons the notion of individual 'due deserts' in place of increased collective welfare with the poorest benefiting most (Graham, 2007). This has led to capability proponents criticising the lack of personal responsibility inherent in this world view.

The challenge for Sen's capabilities approach when applied to school allocation is that distribution of primary goods in this respect is allocated school places. With school places varying in quality, the allocation to a particular school will confer different levels of capability upon the children. For those allocated to a better school will produce greater capability and thus, the school becomes a means to receive better capabilities in the form of education to pursue the life that they value. In this respect the allocation of school places is being measured as an end in itself, but it is also just the beginning of another part of a child's educational journey. When the goods in question are considered ends, there is a tendency to apply the standards of moralistic justice that assume some element of personal responsibility (Jencks, 1988). When the goods in question are considered a beginning, society tends to apply the standards of humane justice, where context and external factors are considered important influential elements and should be mitigated for (Jencks, 1988). For school admission, it is

both a beginning and an end and therefore conflicting moral frameworks can prevent a clear perspective on what it is that society owes children in the school allocation process.

For utilitarians, the distribution of outcomes is acceptable only if the overall social welfare had been maximized; an egalitarian would regard state intervention as necessary to limit inequality, and for libertarians, only through the exercise of freedom can equality be achieved. Even within these broad schools of thought, there are subgroups that define justice in more nuanced terms. For luck egalitarians, all obstacles to equality apart from choice must be neutralised, including socially or genetically derived deficiencies. For Rawlsian egalitarianism, the distribution of primary goods constitutes the measure of a just society, whereas for proponents of the capability-based egalitarianism, frameworks of justice should focus on facilitating opportunities for individuals rather than simply measuring the end results (Sen, 2009).

For a full and complete framework of justice, balancing the competing claims of procedural justice against consequential justice is the perennial challenge which can lead to an unhelpful dichotomy of whether to measure justice on the Rawlsian primary goods model of distribution or Sen's process-oriented capabilities approach. Philosophers in both camps draw a clear distinction between the primary goods as a valued end in itself, or as a means to other things, namely freedom and opportunities to lead a fulfilling life.

The distribution of opportunities in school admissions is a particular case that can unify both approaches. The unique characteristic of school admissions is that it is both an end in itself and an opportunity to facilitate a better life. The distribution of school admissions as a measure of justice is an outcome of great interest and therefore qualifies as a Rawlsian primary good. Yet school admissions are also the beginning of another chapter in education - the very thing that Sen argues facilitates capability and opportunity. School admissions are both beginnings and endings: regarding them as endings demands that the distribution can be justified from a Rawlsian perspective; regarding them as beginnings or means to other, better ends, demands a Senian approach. To satisfy justice both Rawlsian and Senian conceptions of justice must be adhered to.

3.3 Ronald Dworkin - The resourcism approach to justice

According to Rawls' difference principle, unequal distributions can be justified if it benefits the worst off. But Sen questions the legitimacy of focusing upon one attribute or good, noting that people have multiple layers of identity, and the overemphasis on one subgroup of people with a single characteristic, such as FSM eligibility, ignores the inequalities that may arise by the characteristics they possess in other areas (Graham, 2006). To deal with the question of what needs to be treated equally; needs or resources, Dworkin, (2004) argues, akin to Rawls, that resources should be the focus of the equality debate, but he criticises the difference principle for the lack of individual responsibility. For

Rawls, a fundamental principle of his theory of justice is divorcing resources from 'just deserts' - the notion that certain individuals benefit from the good fortune of being born with certain qualities that society values (Sandel, 2009). Dworkin does not disagree but argues that distributive justice should not be reflective of factors outside the control of individuals, only the choices that people make. The unequal distribution of resources should be 'circumstance insensitive, but choice sensitive' (Graham, 2007, p.78).

Dworkin conceives of a hypothetical scenario where a group of people are given equal amount of resources, having agreed beforehand that because no one has *a priori* claims on them, the fairest way of distributing them is to do so equally. Individual tastes differ and therefore they may not value their package of resources equally. This leads to the group to conclude that the way to solve satisfaction is by conducting an auction whereby all enter on equal terms in terms of resources, but they differ in their tastes (Graham, 2007). In the bidding that ensues, individuals are responsible for their choices, that is, they can choose to bid for lifestyle choices that will enhance their welfare, but they must accept that the inequality that emerges is a result of people's individual preferences for different resources.

Dworkin accepts that the fairness initiated through the auction will eventually give rise to the inequality from misfortune and bad luck. His aim is to minimize the disadvantage that this may create and proposes an insurance market which everyone can choose (or not) to buy into. Aligned with his core principle, this must adequately reflect the choices that people have made, including accepting their tastes and preferences and the cost of these in the hypothetical marketplace. Therefore, the insurance scenario is an acknowledgement of the partial compensation for a lack of marketable talents' (Graham, 2007, p.81).

This scenario reveals another aspect of Dworkin's model which positions it naturally between Rawls' emphasis on the difference principle and the Sen's concern with the choice and process aspect of justice. On the Rawlsian side, Dworkin agrees that justice should be divorced from moral desert, but as Sen suggests, if a person is given the opportunity to achieve but chooses not to do so, it should not be considered a burning moral obligation to address it. Dworkin's hypothetical scenarios shed light on the complexities of accepting the unequal distribution of resources as the natural consequence of humanity, but requiring some personal responsibility for the choices that are made. Any contingencies will only be a partial compensation for the lack of marketable talents, but Dworkin's contribution is to acknowledge that inequalities may arise as the consequence of pooling our natural assets. However, runaway inequalities can be curtailed by building in structural restrictions on the level of inequality.

The three theories of justice discussed so far provide global principles from which the specific local applications can emerge. Each one offers instruction which can be used to inform the design of school admissions processes. For Rawls, the focus is on establishing the rules by which all parents can subscribe to, prior to entering the process for school allocation; for Sen, a focus on the process for allocation and facilitating capability to take advantage of opportunities provided; for Dworkin, partial compensation for a lack of natural endowed talents. In developing a more granular understanding of the

pillars of justice for a school admissions framework, three fundamental issues arise from the preceding discussion.

First, the value and purpose of education for both the individual and the state is discussed by Rawls and Sen in their questioning of how opportunities should be distributed. Second, the meaning of equality of opportunity, and specifically the distinctive nature of equality of opportunity in education, and third, the role of the state in how it facilitates opportunity and frames choices.

It is therefore not credible to lay out an argument for reforming school admissions without first considering the purpose of education, and the distinction between equality of inputs and equality of outputs. The nuance of this distinction is at the core of the school admissions and the imperative for reform and each is discussed in turn below.

3.4 The purpose of education

Brighouse & Unterhalter, (2010) outline a framework for creating a set of just educational institutions. They identify the value of three intersecting educational spheres: instrumental, intrinsic and positional. The instrumental value of education is concerned with what education gives people access to. The outputs of education provide the currency that individuals exchange for participation in the social, democratic and economic spheres of society. But because outputs cannot be decoupled from inputs, there is an inevitable debate on whether our focus for measuring justice should be on providing equal resources at input (a return to the Rawlsian concept of social primary goods), or on outputs, with its concern over what the education provides the individual with the capacity to do – illustrated for example by Sen's notion of capabilities.

A pragmatic approach to understanding the instrumental value of education is to consider the concept of adequacy (Brighouse & Swift, 2008). It asks what inputs or resources are needed to bring all children up to an adequate level. Since 1988, an adequate education for English 16-year olds was defined as achieving five GCSE A*-C grades. Adequate thresholds may be considered arbitrary and therefore contested or subject to redefinition, but whatever the benchmark, it also requires every child to leave school being able to do the same things as defined by what is adequate (Ladd, 2008).

Central to the concept of adequacy lie two questions formulated by Strike (2008); 1.) "How much education are people entitled to? 2.) What are the collective interests in education and what amount of education is required to realize those interests?" (p.471). Tooley (1995) and West (1970) propose that if a minimum adequate education is met for all children, there is no reason why we should object to inequalities above that level. Beyond the threshold, inequalities are acceptable based upon a meritocratic standard (Gutmann, 1999). In other words, there is no ceiling on educational achievement; those who achieve above the threshold will still be allowed to do so. The argument suggests that inequalities are an inevitable part of a system – the best we can do is to ensure adequacy.

However, Strike (2008) diverges from Tooley, West and Gutmann markedly by suggesting that although adequacy sets the level at which the state owes children an education, it does not "relieve the state of the obligation to provide whatever additional education it chooses to provide equally" (p.467). There are therefore two ceilings; one that ensures all children receive an adequate education, however defined; the second ceiling ensures that all resources provided by the state are done so equitably. Beyond the second ceiling, inequalities are justified as long as they are based upon relevant criteria such as "ability, aspirations, choice, and effort" (Strike, 2008, p.478).

Strike's formulation of a minimum adequate education is appealing because it distinguishes between the private and the public sphere, requiring the state to provide equal inputs to enable all to achieve a minimum standard, but not demanding equal outputs, which would necessarily restrict individual liberty.

The traditional liberal view regarded ability and effort as private and beyond the realm of public legislation (O'Neill, 1976). If we regard individuals as autonomous choosers, alike in their ability to take advantage of educational opportunities, then the public commitment to equality need only be satisfied by ensuring that the public infrastructure does not act as an impediment for those opportunities. Any observed inequalities will be the consequence of individual choices, acceptable under the premise that the difference between people as autonomous beings will inevitably produce different outcomes.

By contrast, if we consider individuals to be socially conditioned by their environment, with their ability to choose and take advantage of opportunities a consequence of those things controlled by the public sphere, then the public commitment to equality should be much greater, and to some liberals, an overreach into the private sphere of individual autonomous action (O'Neill, 1976).

The educational inequality debate, and the concept of equal educational opportunity as a separate distinction within it, is difficult to reconcile because of the contested nature of the public and private spheres. The claim that educational inequalities are too high in a school system premised on individual choice is unlikely to hold weight for an individual who regards rational, autonomous action as independent of social context. Our understanding of what the state's role should be in mitigating for educational inequality is likely to be conditioned on what we consider is legitimate to be contained in the public sphere (O'Neill, 1976).

3.5 The positional value of education

The variation in outcomes between schools varies greatly (Clifton & Cook, 2013; Gorard et al., 2013). Whether this is a function of the quality of the school or a consequence of the types of pupils attending the school was discussed in the previous chapter. What is important to consider here is that the differences between them creates a hierarchy in the schools' marketplace. Gaining a place at a particular school provides an advantage in accessing the labour market or proceeding to higher

education. The value of education in this respect is an external one; it is determined by its worth in comparison to what others hold (Jonathon, 1990). When the goods in question are finite, such as places at good schools, this produces a positional dilemma: the admittance of a child for a place in a good school necessarily involves consigning another child to a less good school. The operation of allocating school places in this hierarchical structure is a zero-sum game; a good education for one child diminishes the quality of another's. Parents must navigate the system by choosing a school that maximizes the external value of education for their children (Jonathan, 1990). When the differences between schools are so large, and the consequences of being assigned to one school over another are significant, the gradient of opportunity for individual children becomes defined by the hierarchical marketplace of schools. The eternal dilemma in this system is that equality and positionality cannot be reconciled.

A benchmark for providing a minimum adequate education may provide a partial way out of the positional dilemma, but it requires the state to provide educational inputs to children differentially to ensure that all achieve a minimum standard. It embraces a capabilities approach because it recognizes that the different levels of input must be determined by certain criteria that help to ensure more equal outputs. The Pupil Premium Grant in English schools follows this logic. Additional funding is provided to schools to educate children who are classified as disadvantaged with an expectation that exam results for disadvantaged pupils will improve to be comparable with non-disadvantaged groups. Note that there is no expectation of equal outcomes, but simply an expectation that disadvantaged pupils will meet the adequacy threshold. In this respect, it is still a measure of equality that emphasizes the importance of outputs, but requires inequality of inputs to achieve it.

However, the issue of differential inputs raises the question of what is meant by equal educational opportunity? The provision of true equality of opportunity would require the state to engineer a system whereby all pupils begin on the start line with an equal chance of winning the prize (West, 1970), but that clearly requires educational resources to be distributed according to need, rather than on an egalitarian basis (Jencks, 1988). For Sen, this is critical to his capability approach. A simple comparison of inputs and a concern only with the process, not the outcome, renders the Rawlsian social primary goods model irrelevant to a serious pursuit of equal educational opportunity.

How the prize of education is defined is a matter of critical importance. If we subscribe to Tooley's (1995) understanding of equality of opportunity as the ability of "everyone in society to secure the goods in question" (p.12), we must acknowledge that 'the goods' cannot be the same for everyone; not everybody has the ability to become a surgeon, so it makes little sense to have equality of opportunity for something that not everyone can achieve (Tooley, 1995, p.15). Individual agency distorts the process, both through genetic predispositions to learning, and the effort exerted. Equal opportunity must be understood not simply as providing access or an opportunity to do something, but ensuring that all have an equal power to do it.

However, if we view the goods as *some kind* of employment, or an ability to lead an autonomous, "genuinely flourishing life" (Strike, 2008, p, 469) that includes autonomy and the capacity to contribute to society, while taking into account innate differences in curiosity, motivation and genetic ability, equal opportunity is easier to attain (West, 1970).

Brighouse (2000) argues that the idea of equal educational opportunity is warranted precisely because the ability to secure a flourishing life is dependent on the quality and outputs of education. Some schools are better than others, some are perceived to be better and the facilitation of individual children's underlying innate differences will be achieved at better schools regardless of whether those innate differences produce academics, musicians or artists.

3.6 Chapter summary and implications

When the foundational theories of justice articulated by Rawls, Sen and Dworkin are read through an educational lens, three issues emerge that are particularly pertinent to school admissions: the personal and collective value of education; the meaning of equal educational opportunity; and the role of the state in balancing freedom and equality. The next chapter examines the state's role in more depth, identifying the potential for a more paternalistic role, capable of balancing multiple tensions.

4 The role of the state

There is a considerable challenge of applying a theoretical conception of justice to state infrastructure and the processes of public policy, particularly in education where the nature of the good itself is contested. It is simultaneously considered both a private good and a public goal which creates a contested space on the appropriate role of the state in enabling achievement of both personal and common objectives. Education is a route to securing employment and achieving a 'flourishing life' but the value of society's levels of education is a matter of public interest because of its importance in establishing a stable economy and a democratic order (Strike, 2008). This chapter discusses further the potential for the state to balance both freedom and equality, the twin aims of a modern democratic state and critical in underpinning school admissions reform.

4.1 Parental rights and the state

The history of education policy in the post-war era reflects the prevailing view on the roles and limits of the state. Where a greater role for the state is pursued as a political goal, there is a focus on fostering equality, community and cohesion which necessarily limits the scope an individual has to pursue their own choices and preferences. Conversely, the objective of enabling greater individual autonomy, typically promoted by the political right, has demanded a new organising framework for public services to facilitate the expression of individual choice. For example, the notion of the comprehensive schooling ideal enacted in the 1960s by the Labour government was designed to engender equality of educational opportunity and end the division of separate education experiences at 11 years (Ball, 2008). The 1988 Education Act (Education Reform Act 1988, 1988) did not reverse the decisions of twenty years earlier, but they heralded the primacy of the autonomous parent to express a preference for an individual school. By creating a new architecture of school admissions, they diminished (theoretically at least) the role of the state in determining an individual's educational experience. Both policies demonstrate how governments shape our relationship with the state, through the organising framework and mechanisms of public policy.

The organising framework for delivering public services is driven by the relative emphasis placed on the individual or the institutions of state by the government of the day. Governments on the left of the political spectrum have a deeper belief in intrinsic motivation of the individual and the role that collaboration plays in bringing about the common good. For those on the right, behaviour is explained by rational action, driven by a competition between individuals. The third way politics

advocated by the Labour governments of 1997-2010 was an attempt to redefine the relationship between the individual and the state; to retain social justice at its core and integrate responsibility for individual action (Giddens, 1998).

For liberal egalitarians like John Rawls, individuals can be empowered, but not to the extent that it creates sub-optimal outcomes for others (Risse, 2003). A greater and potentially coercive role for the state can be justified if equality is promoted, and that equality is acceptable to everyone. This requires a social contract between the individuals and the state, acknowledging that there are constraints on individual liberty, but only for the benefit of the collective good.

The tension between individual choice and the common good is characterised by Gutmann (1999), in three depictions of the state: *family state, the state of families,* and the *state of individuals*. The Platonic notion of the *family state* describes a centralised education authority where the opportunity for parents to exercise autonomy over the education of their children is minimal. In the family state, individual liberty is sacrificed for the sake of equality. Gutmann, (2003) suggests this is rejected in liberal societies on the grounds that parents must contribute to the social reproduction of their children.

In contrast, *the state of families* rejects society's right to contribute to the education of children, promoting the absolute right of parents to pursue the best interests of their child as they see fit. The argument hinges on whether the rights of parents, as the guardians of the child's best interest, should have exclusive and fundamental human rights over them. To allow exclusive rights for parental choice, we are assuming that parents are effective proxy consumers for their children (Brighouse, 2000).

A core principle of Gutmann's democratic theory of education is her insistence that neither the state nor parents should have exclusive right over the direction of her child's education. The state of individuals theory balances the tension between state and individual rights by recognising children are members of the state as well as families.

Gutmann's (2003, p.134) reasoning in balancing the role of the state with that of parents is appealing, but it does not address the intractable problem of the tension of liberty and equality. Her arguments rest on the role of the state to secure individual participation in the democratic process through education, but she does so acknowledging that achieving equality of outcome is not a realistic aim. She asserts that the state's role is to 'take steps to avoid those inequalities that deprive children of educational attainment adequate to participate in the political process'.

4.2 A paternalistic state

Gutmann's approach, balances the procedural appeal of Sen, with a focus on the equality of outcomes focus akin to Rawlsian thinking. The case for a structured, paternalistic role for the state navigating between classical left and right political ideologies is developed further by Ben-Porath (2009), who mounts a robust defence of individual liberalism, but not without defining a significant

role for the state with a distributive focus of equality and social justice. It aims to balance the twin goals of equality and freedom, recognizing that there are legitimate limits to an individual's' freedom, when it impacts on the collective good.

The supremacy of autonomy expressed through individual choice in the design of public policies, in contrast to state interventionism, is considered to promote individuality and safeguard against the bland uniformity of standardised public services (Le Grand, 2006). Yet without attention to the state's role in facilitating opportunity, the emphasis on autonomy and freedom can lead to suboptimal outcomes for the whole of society. Instead, Ben-Porath suggests that autonomy and freedom should be considered only as preconditions for the pursuit of facilitating better opportunities, which must necessarily be orchestrated by the state.

Choice is often considered to be synonymous with liberty, depicted as a base value to enable self-realisation in a modern liberal state (Ben-Porath, 2009). Advocates of choice argue it offers equality of status, but often disregard the role that the state has in shaping the parameters of choice. Any curtailment of choice is often framed as a negative consequence of an overbearing, interventionist state, without necessarily understanding the crucial role that equality of opportunity must play in fulfilling the promise of choice as the mechanism to enable the pursuit of self-realisation (Ben-Porath, 2009). Without opportunities, freedom and autonomy are irrelevant; and without
opportunities to attend desirable schools, the freedom to choose is irrelevant. It makes no sense to say someone has the opportunity to do something if their chance of achieving it is zero (O'Neill, 1976). Freedom is required to take advantage of opportunities, but freedom without opportunities is no freedom at all. The individual and the state should not be considered at opposite ends of the spectrum, but instead in a state of symbiosis with the state opening up opportunities for the individual. Regulating opportunity and choice through constructing choice sets is not necessarily coercive as it does not automatically lead to the expansion of state power. A more sophisticated exercise of regulatory policy can facilitate efficient and empowering opportunities to exercise individual autonomy (Ben Porath 2009). This is the basis of a liberal conception of the legitimate role of the state and it is fundamental to the role to the process of school choice and pupil allocation.

4.3 Chapter summary and implications

The foundations from which Rawls established his theory of justice are based on the importance of holding in tension multiple conceptions of what it is to lead a good life. A cohesive community cannot be guaranteed if all participants are expected to comply with a comprehensive doctrine (Graham, 2007). Instead, 'reasonable pluralism' is the basis for individuals pursuing different conceptions of the good life within a framework that acknowledges the competing claims on freedom of choice and

equality of outcomes. This requires a balance to be struck between the scope for individual choice against a background of state intervention.

5 A framework of justice for school admissions

The theories of justice explored in the chapter 3 and the importance of the role of the state provide direction for establishing overarching principles of justice and can provide insight into the construction of policies. However, they do not deal with what Rawls (1999, p.10) calls 'local justice', his term for the principles of justice that apply to institutions and associations. The theories of justice of Rawls, Sen and Dworkin are concerned with the 'background social framework' to society; the basic structure of governance for individuals and associations (Rawls, 1999, p.10). In developing clear policies, the next step is to provide clarity on how freedom and equality are reflected in the mechanisms of how public services operate and policies are applied.

In attempting to construct a framework which deals with issues of justice in a school admissions context, this chapter will discuss four central questions arising from the preceding chapter's examination of the literature on justice, each of which will be examined in turn.

I. What does justice require for opportunities to be equal in school admissions: is it justifiable to prioritise disadvantaged pupils?

II. What role should parental autonomy and capability play in the process of how pupils are allocated to schools?

III. What constitutes a fair process for allocating pupils to schools?

IV. Can the distributive pattern of pupils and schools be justified by the processes and procedures that create it?

The questions are deliberately ordered, dealing with the issues as they would arise for policy reformers tasked with establishing a fair and equal process for school admissions. The chapter concludes by distilling the issues discussed into three principles which should govern the decision-making framework on all policies related to school admissions reforms.

5.1 What does justice require for opportunities to be equal in school admissions?

The principles of equality of opportunity in education is one that is not disputed in its broadest sense, until the focus centres on the allocation of finite resources where the positional dilemma invokes strong reactions, particularly when school places are seen to play such a deterministic role in the outcomes of education. Diminishing the variation in quality between schools would reduce the severity of the positional hierarchy (Gorard, 2019) however, it would not eradicate it, which is why equal opportunity to access the best schools remains an indeterminate problem. Equal access to a school of similar quality is a more feasible goal. O'Neill (1976) suggests that "opportunities are equal when the chances of those

who choose alike are not made different by any public obstacle" (p.289). This formulation of what equal opportunity entails suggests it is incumbent on the state to ensure equal opportunity both in process and outcome.

A non-discrimination requirement is formalized in the legal framework of society (Equality Act 2010). It recognises the importance of removing formal, legal and institutional barriers in order for an individual to pursue opportunities, but as Rawls exemplified in his articulation of justice as fairness, there is also a demand for a level playing field from the outset to provide the notion of equal chances to achieve a particular status or position. For some philosophers, the lack of formal or legal institutional barriers to equality of opportunity is a poor benchmark for measuring equality of opportunity (Segall, 2013).

Equal opportunity for school places beyond the local school was the premise of creating a quasi-market of choice in the 1988 Education Reform Act (Education Reform Act 1988, 1988). However, it is important to distinguish between a presented opportunity and the ability to take advantage of such opportunities (O'Neill, 1976). Declaring that a policy provides equal opportunity to attend good schools, is not the same as providing the infrastructure to enable all families regardless of location and circumstance to take advantage of such opportunities. The system provides an illusion of equal opportunity: all parents are free to express their preferences for school regardless of location or selection criteria, but the individual admissions criteria of each school will come into force when preferences are greater than available places. Thus, equality of opportunity in the provision of school places is complicated by the scarcity of school places in desirable schools. Therefore, a parent's preference list should be constructed with an understanding of the probability of admission into the school (Coldron, et. al, 2008).

Once individual admission criteria have been applied in oversubscribed circumstances, it becomes clear that the theory of equal opportunity through parental choice is not matched in reality. Consequently, it is important to distinguish between the *theoretical choice set* available to parents, and the *actual choice set*.

Theoretical choice is the premise for a market-based system; the assumption that all schools are open to applications for admission. The actual choice set is the range of options available to individual families once the conditions for admission have been satisfied. For example, admission to a selective school is conditional upon achieving the pass mark in the admissions test. Similarly, admission to non-selective schools often rests on the proximity rule, defined by geographical catchment areas. These conditions are complicated further by the probability of admission, determined by the priority of preference in individual schools' admission criteria. The process of school allocation therefore is a distinctive two-step process:

1. The choice of schools expressed by parents
2. The admission procedures allocating pupils to schools.

(Burgess & Briggs, 2004)

Choices are one factor that determine the probability of admission. Although expressing a preference through a choice system is a private decision, the allocation of schools is dependent upon the procedures contained within the second step. The ability to move into the catchment of the preferred school, or the opportunity to be admitted into a selective school constrain the reality of choice. Therefore, the current system of school allocation is sold politically by heralding the importance of the first step - parental choice. But it is the second step where the power resides. The drawing of catchment areas, and the existence of selection in admission procedures are instruments of the state, within the public sphere and therefore open to democratic debate and reform. For O'Neill (1976), these represent an impediment to social justice, and it is incumbent on the state to reduce impediments where possible.

Allocating school places in England encapsulates the tension between freedom and equality inherent in a liberal democratic state; to guarantee equal outcomes demanded by a Rawlsian focus on the distribution of primary goods would curtail individual freedom of choice. Parents naturally want the best for their own children, but the state's role is to balance legitimate parental partiality against the common good. The unique position of state institutions as the allocative agent in school admissions is that it is not swayed by the partiality of individuals. It can hold all legitimate claims at once by creating a process of school admissions governed by impartiality. The basic condition of the social contract requires this, and it is why Rawls' veil of ignorance is so appealing - it demands that the process is blind to individual cases.

For opportunities to be equal among all choosers, there needs to be a rebalancing of the freedom that some parents currently enjoy with their choice of schools, with the restricted freedom that others have. Each expression of choice to attend a school must be considered to be of equal value. For this to have meaning beyond the language of choice used in the current process, expressions of choice must be considered as *legitimate claims* to attend the school.

Claims are akin to rights, they cannot be freely traded or exchanged, and are considered inalienable insofar that the state guarantees them, enshrined as the foundation of the liberal democratic social contract. But what makes a claim legitimate? When individuals lay claim to receiving a good, the requirements of justice demand that the claims are assessed and the mechanism to allocate the goods determined by the relative strength of each claim (Stone, 2011).

The rights to a school place for your child is not disputed; it is part of the social contract with the state, but the right to a place at a specified school of choice is disputed only because arbitrary admissions criteria justifies it. For the system to be considered just, the principle of fair equality of opportunity must give parents the warrant to claim a place at *any* school of their choice.

When resources are finite (as they are with specific school places), the problem of indeterminacy arises. Indeterminacy arises only because claimants have equal claims on the resource in question (Stone, 2011). If rights or claims could be traded, then a market might prove to be a more

useful mechanism to distribute them, but the principle of equal opportunity requires all claims to be honoured to the greatest extent possible and therefore there is indeterminacy in how those opportunities are distributed (Stone, 2011).

In determining how those claims are honoured, the allocation of goods by an agent, (in this case *the opportunity* to attend a desirable school), must be deliberately manipulated to bring about a desired end. This allocative process must be understood as distinct from distributive justice. The latter is concerned with how things are divided up and who receives what, and may arise from a naturally occurring distributive pattern. By contrast, allocative justice involves an agent giving something and should be applied when an individual has a claim on the good. Distributive justice may be considered the more passive of the two, with allocative justice requiring more control.

Some goods are distributed without reference to claims on the premise that no overall personal benefit can be gained by accessing the good compared to not. For example, when deciding which factories should be fitted with anti-pollutant measures, it makes sense to allocate them to the dirtiest first. Provided that there are no individual benefits to the factory owners, no personal claim on the measures can be considered more legitimate than another (Stone, 2011). The removal of the most polluting factory benefits everyone, but when being allocated something has a personal benefit, the language of claims becomes more pertinent.

Honouring claims is only possible through impartiality in the process of allocation (Stone, 2011). Impartiality is the 'demand that we not favour some people over others in illegitimate ways' (Stone, 2011, p.79). The corollary of this is that there may be legitimate ways to favour some people, and in doing so, the claims for the good may be stronger than others. In these cases, there is no indeterminate problem in allocating the goods: the strongest claimants get it. In the case of claims on school places at specified schools, the method of choosing between equal claimants must be done without reason, because every child has an equal claim to a place at a school of their choice.

5.1.1 Should disadvantaged pupils have priority status in school admissions?

The argument of equal legitimate claims on school places needs to contend with the challenge that disadvantaged pupils have a stronger claim on educational resources than non-disadvantaged pupils. In financial terms, the assertion that a greater proportion of the education budget should be allocated to disadvantaged pupils is largely uncontested politically. Between 2000 and 2015, the rebalancing of finances towards disadvantaged pupils was clear through numerous funding streams (Sibieta, 2015). The Pupil Premium Grant guarantees an additional £1,300 per pupil in primary and £940 per pupil in secondary to advance the educational welfare of disadvantaged pupils in school. The question is whether that claim can be extended to school places and the positional advantage that gaining a place at particular schools bestows.

If FSM pupils have the strongest claims on school places, eligibility would come with a special status that would confer a guarantee of entry into a desirable school. On measures of allocative justice this would succeed in reversing the institutional disadvantage in school admissions, but it would not solve the inherent problem of the positional argument: for every advantage bestowed on one pupil, there is a corresponding disadvantage bestowed on another. With the advantages now accruing to disadvantaged pupils, the apparent unfairness in the outcomes may be justified by Rawls' Difference Principle, but not if it violates his first principle of liberty. If liberty is restricted to guarantee a certain outcome distribution, it does not satisfy his two principles of justice.

If the greater allocative justice for disadvantaged pupils does not compensate for the injustices done to those whose liberty has been restricted, it poses a significant challenge: how to improve access to desirable schools for disadvantaged pupils without violating liberty? One possible answer is to disregard the current construct of the disadvantage term itself. For practical reasons a simple binary measure of disadvantage can be useful: it is unambiguous for schools, it is aligned with other governmental measures of deprivation, and the data is easily calculated. Yet, the detrimental implication is that FSM status creates a cliff-edge between the two categories. Earning one pound over the £16,190 threshold disqualifies a family, even if they are no more advantaged in practical terms than the family that qualify. It is therefore morally arbitrary who is considered disadvantaged, making the positional dilemma much more acute.

5.1.2 Can the ends justify the means?

If society is concerned with the quality of education different groups of pupils receive, it makes sense to measure the outcomes of the issue in question. For example, a comparison of national disadvantaged pupil attainment versus non-disadvantaged pupil attainment shows a large disparity, which has driven educational policy making for a decade. In the case of school admissions, to guarantee that there are no systematic differences in school admission outcomes between children that choose alike, it would require significant manipulation of the process. The focus on outcomes-based interpretation of justice is only one interpretation of justice in this realm and it does not necessarily follow that justice has been violated if uneven outcomes are observed.

An alternative view would take equal opportunities to mean equal opportunity for admission and regard outcomes as a reflection of choices (O'Neill, 1976), particularly in the marketplace of school admissions, where parents are considered autonomous choosers, and it is not desirable, or possible, to guarantee equal outcomes for all. In this sense, inequalities may be justified on the grounds that it is beyond the legitimacy of the state to encroach on individual agency simply to guarantee equal outcomes across a population. To do so would not only be would be "economically extravagant and politically excruciating" but undermine the principle of liberty (O'Neill, 1976, p.286).

Yet, the distribution of outcomes (as measured by school place allocation), remains central to this thesis, so the question remains: how can more disadvantaged pupils attend selective schools without violating equality of opportunity and procedural fairness for non-disadvantaged pupils? Even if it was possible to guarantee equal educational opportunities for all children, frame school information appropriately and secure fair processes for school allocation, through the natural differences in the capacity of individuals to access school information, understand it and express choices with equal skill and knowledge, inequalities in outcomes will emerge.

This poses a problem for reforms which are aimed at increasing the numbers of disadvantaged pupils in more desirable schools. The obstacles in the way of improving outcomes, whether they are systemic, institutional, personal, or simply perceived obstacles, must be removed for outcomes to satisfy a standard, and the intensity of activity that is required to achieve those aims is likely to be a significant intrusion on individual liberty. This logical bind is the perennial problem in discussions concerning equality of educational opportunity (Jencks, 1988). However, two important questions need consideration here: how should justice be measured, and what is the unit at which it should be judged? The answer to these questions are fundamental to a coherent understanding of justice in school admissions, but they also prompt further questions on the purpose of redesigning the parameters of admissions: is the intention to advance justice for individual pupils, sub-groups or society as a whole? How the success of the framework is measured will be determined by which scale we regard as the focus. The issue if quotas again provides a useful illustration. The purpose of quotas is increased access to the best schools for less advantaged groups of pupils. It is a mathematical certainty that if places are reserved for disadvantaged pupils the outcomes for disadvantaged pupils will be greater than schools that did not have reserved places.

The limitation of this approach is that it unfairly affects individual pupils who may not be regarded as disadvantaged on official measures but will lose out in a zero-sum game of individual places reserved for pupils with specific characteristics. A paradox therefore exists at the centre of issues of justice in school admissions: to judge success on the intended group can adversely affect others. To advance justice for one reduces justice for another. This is particularly acute when the characteristics are morally arbitrary such as official definitions of disadvantage.

To overcome this paradox it is necessary to regard the process of school admissions as important as the end result (Sen, 2002). Engineering the end results to satisfy global measures of justice such as segregation scores, can warp the autonomy and freedom of individuals to pursue the own choices (Sen, 2009). In this respect, the framework of school admissions proposed in this study, moves away from the Rawlsian focus on end results, towards the Senian reasoning of prioritising process over outcome.

Giving all pupils equal claims on desirable school places is a principle of justice that circumvents this problem, but only if there is equality in the allocation mechanism. If all pupils are

considered equal in expressing a preference for a school place, and in the allocation process, arbitrary thresholds cease to be a problem.

The logic of equal legitimate claims for any specified school place regardless of status underpins the entire argument for reforming the allocation of school places in the current work. It makes it possible to reject the notion of prioritising disadvantaged pupils in school admissions framework, but still pursue the aim of having a fairer distribution of disadvantaged pupils attending desirable schools as an outcome. However, the logic is contentious in that risks undermining an often accepted notion of fairness - that society compensates for unfortunate social and economic circumstances beyond the control of the individual (Jencks, 1988). But as further discussion in this chapter will make clear, if equal claims is accepted as a fundamental principle in school admissions and there is fairness in the process of allocation, the distribution of school places can be justified.

The indeterminate problem is how to allocate school places when all pupils have equal claims on school places and justice demands that all claims are honoured to the greatest extent possible (Stone, 2011). This challenge is solved by focusing on the process of allocation.

5.2 What role should parental autonomy play in the process of admissions?

Equal opportunities to attend a desirable school, manifested as legitimate claims, is a fundamental pillar of a new school admissions framework outlined in this work, but a focus too heavily weighted on equal opportunities at the expense of the processes of choice would be denying a crucial aspect of justice. Judging opportunities by measuring outcomes, irrespective of the process by which they came about does not acknowledge the importance of human autonomy. Consider two different pupils attending the same school. Pupil A lives close to the school she attends. There is no feasible chance of her attending other schools further away because of priority catchment areas, even though she would like the opportunity to apply for another school. Pupil B has a statement of special educational need and therefore has the option to attend the school of his choice. Looking at the outcomes, both pupils have the same end state but the routes to get there are very different (Sen, 2009). If, given the choice, Pupil A decides that on balance the local school would serve her needs better, and *chooses* to attend rather than be forced through allocation, the freedom to make that choice has ensured that justice has been met more fully.

For luck egalitarians like Dworkin, the only thing that should reflect differences in the end results between two people is the choice itself - the thing that the person controls. All aspects outside the control of the individual are considered arbitrary (Stone, 2011). A thorough examination of this perspective might lead to concluding that every decision taken is outside of the control of the individual,

particularly if we are persuaded by the view that genetic predisposition, ability to exert effort are all ultimately shaped by social context to a degree.

But a more moderate reading of this argument is that human agency, expressed through autonomous action in the decision-making process is fundamental for realising justice.

This is a more comprehensive view of justice in that it argues for an assessment of both process and outcome to be considered, but it is complicated further by the fact that it is parents who are acting as proxy choosers for their children. It is not considered legitimate for the state to intervene in parent's own school choices simply to guarantee a more equitable distribution of outcomes.

Both the process of choice (parents expressing a preference) and the process of allocation (the mechanism employed by the agent), can facilitate justice but only if both the process of choosing and the procedure for allocating schools enable autonomy and freedom through a genuine expression of choice.

For critics of market mechanisms in public services, the emphasis on parental choice valorizes the process of choice (Ben-Porath, 2009). It prioritises the process of choice over the end result; an assumption that having more power of public services is valuable in and of itself (Risse, 2003). For Le Grand, (2003) and other proponents of choice, the relationship between the individual and the state is strengthened through the decision making process; in the act of choosing, individuals are empowered to act as 'queens' as opposed to passive 'pawns'. He suggests that our beliefs about human motivation drive our understanding of the role the state should play in our lives. How individuals respond to the public sphere is a result of individual motivation and the constraints of policies.

For Le Grand (2003), the value of the market is both in its agency to the individual and in the efficiency of delivery, but sociological critiques of school choice identify the potential of choice to reproduce and embed social divisions (Jonathan, 1990). Some of the literature on school choice identifies parents as analogous to consumers, suggesting choice is a repressive tool, used by governments to reproduce the hegemony of the political classes, benefitting these groups at the expense of the more marginalized (Gewirtz, 1998). Choice in public services naturally favours parents who have the time, money and ability to study the range of options and have the required transport to act on their choice. Consequently, it is middle class parents who are able to use their cultural capital to take advantage of the system and monopolize the good schools (Ball, Bowe, & Gewirtz, 1996). Contrary to the market purist's belief that the operation of the 'invisible hand' in the exchange of goods and services creates a division of labour that ultimately benefits all, Ranson (1988, p.15) believes it '*actively confirms and reinforces the pre-existing social order of wealth and privilege. The market is a crude mechanism of social selection.'*

As Tomlison, (1997) notes, there is a wider concern for society as a whole. If consumer choice becomes the organizing principle, democracy is threatened by the degree of stratification that arises when parents have the freedom to choose a school that reflects their social ideals. Segregation along socio-economic, ethnic or religious lines is inevitable aspects of school choice around the globe

(Tomlinson, 1997). Choice becomes problematic because parents do not choose schools in a social vacuum; their choice reflects the "perceived social realities" of their position (Jonathon, 1990, p.117).

Structured paternalists such as Ben-Porath regard the role of the state not as limiting, but as enabling individual choice through a political framework that facilities individual autonomy and freedom through opportunity. For choice to be feasible as a mechanism of public policy, autonomy, freedom and opportunity must all be present. The lack of one renders the framework impotent; the autonomy to discern and the freedom to act must be accompanied by the opportunity to take advantage of one's choices. Autonomy is the capacity to understand the options available and the judgement to act on them in accordance with individual preferences. This is only possible if the institutional political structure enables individuals to express their capacity.

Ben-Porath's three conditions for the realisation of choice should be considered interdependent, each necessary for the effective operation of public policy via choice mechanisms. The balances and priority among the three pillars represents a challenge for policy makers who are developing policies in a liberal democratic state. Ben-Porath suggests that the emphasis on autonomy and freedom have been prioritised at the expense of opportunity. Seen through this lens, state intervention through the design of public policy can enable marginalised groups to make better choices by facilitating deeper participation and opportunity for individuals at the same time as pursuing justice and civic equality (Viteritti, 2008).

However, perceived social realities emerge because individuals fear social demotion. This is the premise of sociological rational choice theory (SRCT). Its premise is built on the notion of 'branching points' within an educational journey (Breen & Goldthorpe, 1997). At each stage, decisions are made by pupils and parents as utility maximizing individuals where the rational desire for economic and social returns of education are unified across the social classes, but they are conditioned by the institutional structures that influence the decisions taken. Educational journeys begin at different starting points and begin to diverge between social classes as the incremental decisions are constrained and influenced by your social class and the threat of social demotion.

Bridge & Wilson (2014) argue that there is a single unifying strategy across all social classes in the education marketplace, one that is driven by the rational desire for economic and social returns from that education. The inequalities that emerge from all individuals behaving rationally is explained in SRCT by the fear of social demotion (Boudon, 1974). Boudon (1974) considers inequalities to be a consequence of the different effects of a rational strategy to achieve the level of education required to maintain your place in the class hierarchy. The theory appears to be ratified by the evidence from empirical research which identifies a growing attainment gap at each key stage of school. For Boudon, this pattern cannot be explained by the different values that working class and middle class parents have for their children, but by the influence of cultural capital on the children in their earliest years which acts as the initial benchmark in measuring the attainment gap. At each subsequent stage of schooling

the different levels of attainment that working class and middle-class pupils typically achieve influences the decisions made for each branching point – these are the secondary effects.

In the context of school admissions, SRCT suggests that the mechanisms of choice are not enough to produce desirable outcomes of parity between social groups. For there to be equal outcomes when similar pupils choose alike (O'Neill, 1976), there must be a reduction in the costs of educational decision making. Under the current system of school choice, individuals are punished if they make an ambitious choice of school but do not meet the criteria for prioritisation in the oversubscription criteria. Coldron et al's (2008) work, discussed in more detail in chapter 2, identify 5% of parents who do not rank their true preferences because of the chance, or perceived chance of admittance. Although decisions of where children attend school are personal, family decisions, often uniquely influenced by geographical, local and temporal factors, SRCT provides a theoretical framework that suggests choices are both influenced and constrained by the institutional infrastructure of choice mechanisms.

What then, is the legitimate role for the state in facilitating individual agency and balancing equality for all? The role that the state must play in enabling individual agency and balancing equity for all begins with facilitating a process of democratic deliberation to establish the fair terms of cooperation which all parents could subscribe to (Rawls, 1999). Deliberative democracy requires that the laws that exist and imposed upon one another are justified by citizens and their representatives through a process which involves constant discussion revision, amendment and justification (Gutmann & Thompson, 2004). In a liberal state where competing conceptions of the role of public and private endeavour struggle to find common ground, a deliberative approach aims to minimize disagreement by identifying reasonable grounds for establishing policy. This is most acute when the scarcity of resources provokes profound disagreement, yet political decision making must still be functional and legitimate (Gutmann & Thompson, 2004). For something as critically important as the education of the nation's children, a national conversation, in which all perspectives seek to understand opposing points of view, rather than dominate and triumph, is essential if the state is to wrest back a degree of control from the unchecked privileges of individual choice (Marquand, 2015).

5.3 Fairness in school admissions: the case for random allocation

The traditional liberal view on educational opportunity regarded effort and ability as private and the only illegitimate barrier considered to be preventing equal educational opportunities were ones that were publicly constructed. The influence of the social context and the evidence concerning framing of choice sets were given little credence. The revealed preferences of parents were regarded as the true preferences without regard for the bounded nature of the parameters (Kahneman & Tversky, 1973). The evidence emerging from behavioural economics has largely undermined this viewpoint (Kahneman,

2012). Apparently straightforward, rational decisions are influenced by social context and bounded choice sets often producing outcomes that subvert traditional economic models of rational choice theory (Ben-Porath, 2009). If the process of expressing a preference in school admissions is to be a genuine expression of choice, equal opportunities are not enough: information and support to facilitate better decision making are required. Sociological Rational Choice Theory informs how school admissions should be altered to take account of how the choices of parents can restrict opportunities for children to benefit from access to better schools (Bridge & Wilson, 2014). Yet even with additional inputs designed to minimize inequalities in the decision-making between socio-economic groups, the capacity of individuals to access school information, understand it and express choices with equal skill and knowledge will inevitably lead to unequal outcomes.

Choice, or more accurately, expressing a preference, plays an important part in the school admissions process. This enables individual autonomy, but without the opportunity to be take advantage of the choices expressed, the process is limited in its capacity to promote justice. The lack of agency for parents without the resources to move to a desirable school catchment immediately renders the process of choice obsolete. The state's role is to foster the conditions for both autonomy and opportunity to be present by removing barriers that prevent them.

What is clear from the evidence in the literature review and the preceding discussion is that freedom of choice is largely an illusion for many parents. Regarding all preferences as legitimate claims is the first step to rectifying that. The second step is to reform the allocation mechanism to avoid arbitrary determinants such as geographical proximity and rank score on a single test. Changing the rules of allocation would result in greater freedoms for a large number of parents whose means do not enable them to take advantage of the choice system as it currently stands. What then are the characteristics which must be present for a process to be fair in allocating to schools?

The answer lies in the process of random allocation of school places. The exact process will depend on the type of school in question and the local context, but before the detailed step by step process is described, it is important to establish the argument for random allocation and how it naturally emerges from the theories of justice described in the previous chapter.

Random lotteries possess a unique property which makes them perfectly suited to allocating school places: the absence of reason in decision-making (Stone, 2011). This creates a 'sanitizing effect' (Stone, 2011, p.36) which ensures that all reasons, good or bad, are removed from the decision-making process. On a first reading, the absence of reasoning in decision making, particularly with something as important as school place allocation, appears abhorrent. But random lotteries are not an *alternative* process of allocation, say to market forces or meritocracy; rather they are a method to resolve who should receive the good under particular conditions of indeterminacy. Lotteries emerge as an allocative tool only once the case has been established that all pupils have equal claims on the school places in question. In the process of a lottery, each participant has an equal probability of attaining the outcome;

this is the logical mechanism to use, but only when it has first been established that one child is not more deserving of a place than another.

Stone (2011) outlines four criteria for using lotteries:

1. **The goods in question cannot be split into smaller units without losing their value -** A school place is given in its entirety; there is no sense in giving half a school place.
2. **The units are interchangeable -** school places at the same school are of equal value. Being the first to be admitted has no reason to be preferred over being the last to be admitted; all places could be interchanged without anyone losing out.
3. **The claims are interchangeable -** Each pupil has one claim to a school place in each lottery. There is no sense in having two claims on one place in the same school.
4. **The strength of the claims are not interchangeable -** Claims may vary in strength but lotteries are employed when the strength of claims are equal between claimants.

Under what conditions are lotteries just? Stone (2011, p.53) outlines in his 'just lottery rule':

> *Under conditions of indeterminacy, if an agent must allocate a scarce homogenous lumpy good amongst a group of parties with homogenous claims, then that agent must do so using a fair lottery.*

The justification for using a lottery involves three competing conditions for solving indeterminacy: efficiency, equality and priority. The efficiency provision requires that claims must be honoured wherever possible and to the greatest extent possible without infringing on another's claim. When the good in question is scarce, honouring all claims can be problematic; not all may receive the good and have their claims satisfied. But where claims exist, they must be satisfied wherever possible (Stone, 2011). In order to do this, two additional conditions must be considered: priority and equality. Priority and equality demand that claims must be satisfied in accordance with their strength. The priority condition requires that the strongest claims are satisfied above the weaker ones. However, if the claims are of equal strength, the equality condition demands that they must be honoured to the same extent: like cases must be treated alike and unlike cases must be treated differently (Stone, 2011).

Priority and equality conditions ensure that no one person is sacrificed for the sake of another, simply to provide more value in the distribution. The result of this is that under circumstances of indeterminacy, no distribution can satisfy equality, priority and efficiency all at the same time (Stone, 2011). To break the indeterminate bind, justice demands that goods are allocated using impartial procedures. Impartiality only requires that goods are allocated according to the strength of their claims. Impartiality is required to be indifferent to illegitimate claims. To allocate between legitimate claims of alike pupils requires the process of random allocation.

Randomisation has a role to play only when there are indeterminate claims on places. Therefore, rather than consider random allocation as an alternative allocative mechanism to quotas or rank score, the case for legitimate, equal claims on school places must be established first, before using random allocation as a mechanism to break the indeterminate deadlock when two (or more) people equally satisfy the criteria for entry. The use of random allocation in cases of oversubscription for a finite number of school places would have a mitigating effect on the admissions criteria. This point can be well illustrated with grammar school admissions, using Gloucestershire as a case study.

5.4 Random allocation in Gloucestershire

There are multiple reasons put forward to justify the allocation of grammar school places, of which, meritocracy is the most prevalent. For proponents of meritocracy the argument is that selective schools exist to provide an elite education for children whose intelligence, as demonstrated on an admissions test, demands an education that allows them to develop their talents in a setting unrestricted by those less intellectually gifted. This clearly establishes the justification that selective school places should be allocated on intelligence, as opposed to say geographical proximity. Under this reasoning, the claims for school places are easier to settle: pupils who show greater intelligence should have priority over those who show less. If this is the publicly accepted reasoning on which grammar school places should be allocated, then random allocation does not offer an acceptable alternative, as its sanitizing effect for discerning between children is not required.

However, the use of random allocation in the four Gloucestershire grammar schools who specify its use in their admissions criteria, is partial and only used as a way to allocate places when other methods have been exhausted. It is used as a justifiable way to decide between two pupils who are alike in every other respect (for example, rank score, distance from school etc.), but only after other methods have been used higher up the criteria list, most notably rank score on a test. When two pupils are tied higher up the list arbitrary conditions are used to decide between them. For example, for two pupils with the same score, priority is given to the one who lives closest to the school or is eligible for the Pupil Premium. The conclusion appears an incoherent philosophical stance: schools accept lotteries as legitimate way of allocating places, but only when other criteria deemed to more acceptable have been exhausted. This undermines the unique property of random allocation – the indifference to illegitimate reasoning.

The case for equal legitimate claims on places must first be established before random allocation can be used as an allocative tool. In the case of grammar schools, an appeal to the evidence that suggests that the selection test is not a valid or reliable assessment of academic merit, as discussed in chapter 2. There is a very strong case not to allocate grammar school places on the basis of one test

(Allen & Treadaway, 2015; Coe et al., 2008; Harris & Rose, 2013). The pupils who are selected at 11 on account of their score in one test are not the ones who necessarily go on to achieve the highest grades (Allen, Bartley, & Nye, 2018). This raises the question as to the validity of the selection test: is it identifying those with the greatest academic potential? The reliability of it may also be questioned: would the distribution of rank scores be similar if the test was repeated? Given the inherent uncertainty of single tests, and the high stakes nature of the results, there is merit in considering the scores on the test as only being *indicative* of academic potential and considering everyone above a certain threshold as being legitimate candidates for a grammar school place. Taking this logic, the pool of candidates above the threshold score all have legitimate claims on a grammar school place. The only justifiable step to solve the indeterminate claims is to conduct a lottery with candidates who are above a threshold qualifying standard that is agreed to by all schools.

The logic of using a lottery may be compelling and justified through its appeal to allocating without regard for reason, but there is one major obstacle that the implementation of randomisation needs to contend with: the notion of alike pupils. A cornerstone of the reasoning discussed in chapter 3 has been the notion of alike pupils treated alike. This is the premise of equal legitimate claims on school places; no one has a superior claim to another's for a specified school place. But in all claims for school places there are reasons, characteristics and circumstances which do differentiate between pupils. There are dissimilar groups of pupils. For example, a child eligible for FSM is not like a non-FSM pupil. Lotteries for alike pupils is where the random allocation must take place. Random allocation of school places therefore becomes not just one lottery but several lotteries, each containing a subset of pupils. This ensures that when pupils are considered to have equal opportunities to gain a place in the school, they must be considered against other alike pupils.

5.5 Quotas

This argument appears to be a simple advocation for quotas. Their popularity as a policy tool for increasing proportions of disadvantaged pupils in desirable schools has grown in the last few years (School Adjudicators report 2018). Quotas is an example of a policy that is appealing because of its transparency, ease of implementation, and can guarantee a distributional outcome, yet on its own, it cannot be justified against the reasoned principles of equal opportunity and procedural fairness. Quotas are an explicit acknowledgement of the positional value that admission into a particular school provides over a place in another less desirable school. They provide an outcomes-focused solution to address the social, economic and developmental barriers that befall children growing up in poverty; a recognition that as a disadvantaged group, special provisions can be justified to ensure that opportunities are available for a proportion of children to experience the benefits of elite schools.

The desire for quotas is an acceptance of the need to manipulate the procedures of the schools' marketplace to ensure that those less empowered to navigate it are provided with additional opportunities to benefit from it. For those who have argued that the school choice agenda reinforces existing social divisions across educational settings, the policy of quotas concedes this by recognising the need to prioritise one group of pupils over another. The procedures for school allocation are weighted in favour of the disadvantaged and can therefore guarantee a distributional pattern that reflects the demographic characteristics of the local area. However, quotas are not Pareto efficient because they only advance the interests of the disadvantaged at the expense of the non-disadvantaged and, as had already been established, the arbitrary cut-off for disadvantaged definition creates a threshold which excludes those just missing out. A more beneficial state can be found if the utility of one person is advanced without any loss to another person (Binmore, 2007).

The requirement to admit more disadvantaged pupils to selective schools is a tacit admission that children from disadvantaged backgrounds should have more access to elite selective schools. Yet on its own, without further conditions it cannot be justified against reasoned principles of equality of opportunity and procedural fairness. Opportunities cannot be considered equal if the characteristic of one pupil which is arbitrarily constructed, such as free school meal eligibility, confers an advantage over another who does not possess that characteristic. In the process of trying to level the playing field for disadvantaged pupils through the use of quotas, an injustice is experienced by those who do not possess the arbitrary characteristic.

The argument I am making here is the exact opposite of that presented by Gloucestershire grammar schools: to meet the demands of justice random allocation must be used as the only fair way to determine places when equal legitimate claims are made on finite school places. Allocating on rank score, as discussed in Chapter 4, produces a hierarchy of privilege, with those with the most resource able to maximize their advantage. The appeal of lotteries is that they are conducted without reference to illegitimate reasons and therefore their sanitizing effect should be preference to the arbitrary methods of rank order currently employed.

5.6 The case against lotteries

It is important to consider the criticism of lotteries as a tool to advance justice. For luck egalitarians, lotteries violate many principles, on account that the distribution of opportunities is left to chance (Cohen, 2011; Segall, 2013) The morally arbitrariness of allocating school places by chance is considered to be unjust because differences in attainment of the good should reflect differences in choices and nothing else.

Other critics cite the incoherence of assuming that the chance of getting the good is equivalent as getting the good itself (Stone, 2011). Strictly speaking a lottery divides up the chance of getting the

good into ‘equal probabilistic units’ of getting the good (Stone, 2011, p.61), which on its own offers a weak justification for using lotteries. However, the probability of winning a school place in a lottery is mathematically greater than not being in a lottery and on this measure, the opportunity to attend is undeniably higher. Given the choice of using the existing system with its institutional barriers to admission, versus a lottery, it is hard to imagine parents currently excluded from the process not wanting a greater probability of entry.

If chance advances equality and can influence fairer outcomes, then it has a property that improves the status quo and should not be too readily dismissed. However, the probability of a certain outcome is not the basis for justification. Rather it is the process by which the good is allocated that justifies the lottery. The equal opportunity to make a legitimate claim on a school place, and to have those claims honoured in a transparent process that is impartial and free from illegitimate reasoning is at the core of a fair admissions process.

5.7 The principles of justice in school admissions

The previous section explored four fundamental challenges to establishing fairer school admissions in light of broader theories of justice. But for theories of justice to have practical application, they must be distilled into principles which can be applied in multiple contexts and provide strategic direction for policies.

The nature of a principle is that it provides the background justification for directing agents involved in allocating opportunities (Stone, 2011). A principle which enshrines racist or prejudicial language will produce policies which curtail freedom, whereas principles which emphasise equality will lead to policies which facilitate opportunity. Principles must be precise enough to provide the overarching framework or the embodiment of society’s values, but flexible enough for differences in policy interpretation. Both policies and principles provide instructions to state agents (or others) for making decisions, but whereas a policy gives little information on the reason why decisions are being made in that way, a principle has a depth of reason that brings a foundational justification (Stone, 2011). Justifying a policy with reference to a principal makes more sense than justifying a principle using a policy (Stone, 2011).

To take the example of the ongoing reforms to the National Health Service (NHS), it is rare that any new policy is implemented without referencing the foundational principles of the NHS (NHS, 2015):

- that it meets the needs of everyone
- that it be free at the point of delivery
- that it be based on clinical need, not ability to pay

Some policy reforms may be controversial and be judged on their likely success, but it is hard to think of any that would pass into law if it violated any of the founding principles.

A similar framework of principles is required for school admissions, ones which can underpin the formulation of policy and be used to evaluate new policies against. Any significant reform in school admissions that challenges the status quo should be justified in reference to a robust framework that can hold together competing claims of parents' freedom to choose, against the collective welfare and the demand for greater equality. It must be able to withstand the scrutiny and democratic deliberation which should underpin substantive reforms that affect how individuals use and interact with state-led institutions.

The School Admissions Code (Department for Education, 2014) goes someway to providing a foundational framework, not least because it has legal weight behind it. However, the code conflates two distinctly different purposes: providing principles for admissions and what those practices can and cannot look like in policy form. The language of principles is used throughout the document: 'reasonable' (p.10, 12, 13,); 'fair' (p.7,) and its regulatory power has been strengthened in a series of revisions between 1999 and 2009 which removed the power that schools had to choose parents and pupils through overt or covert admission criteria (Allen, Coldron, & West, 2012). The revisions banned schools requesting additional information, conducting parent interviews and using criteria that favoured the children of staff and governors. The new code has essentially made schools blind to the preferences of different pupils who apply to attend the school and the guaranteed independence of the process from the schools themselves has ensured that schools have less power to manipulate intakes, but the Code contains fifteen illegal practices which contain a number of inconsistencies that undermine its claim to be an ethical framework for admissions. For example, 1.9(j) disallows the use of giving 'priority to siblings of current or former pupils' in grammar schools, yet it does not forbid it in non-selective schools. Similarly, 1.9(f) disallows giving priority according to 'financial status', with the exception of the pupil premiums. For non-selective schools, priority status must be given to looked after children, but not in grammar schools (1.19, p.13). The case law referenced in the Code, refers to pupils not being discriminated against 'simply because they reside outside the local authority area in which the school is situated' (p.12). Yet the list states clearly which pupils should and should not be given priority status in oversubscription decisions.

The opacity of the Code is clouded further by non-statutory guidance such as the advice on 'Using the pupil premium, service premium or early years pupil premium in admission arrangements' (DfE, 2014, (b)). Paragraph 1 on page 4 states:

Ministers want to see high-performing schools admit a proportion of disadvantaged children that reflects the demographics of their local area. Disadvantaged children can lose out on a place at a

good school even though it may be close by. This priority is designed to encourage disadvantaged parents to increase their ambitions and consider schools they might not otherwise.

Great emphasis is placed on giving equal consideration to preferences before oversubscription criteria are applied but then contains a long list of illegal criteria once the legal maximum pupil numbers (Published Admission Number) is reached. The explicit message is that all preferences are considered equal until oversubscription, and then unequal treatment is justified. As the discussion in this chapter has made clear, fairness is a disputed term, particularly in relation to opportunities in education, but without accepted principles of reference there is no opportunity to interrogate against a background framework the reasons why random allocation may be used in oversubscribed schools, but not across an entire authority; or why looked after children must be prioritised in a lottery but not in selective school allocation. As it stands, the School Admissions Code provides very little guidance for admissions authorities trying to create a more equitable system.

It is clear then, that for any policy reforms in school admissions to be accepted by parents, as citizens of the state, they must appeal to the basic social contract that governs the relationship between the individual and the state and these must be accepted as far as is pragmatically possible under the conditions of a Rawlsian veil of ignorance. These are the principles which all parents, without the benefit of knowing the advantage of their position in school choice would be able to agree to and the different conceptions of justice that underpin the liberal democratic tradition.

Based on the discussion presented here, there are three principles which should underpin school admissions criteria:

I) Equal opportunity - Every child has a legitimate claim on a school of their choice. When a claim is made, opportunities for admission are equal.

II) Procedural fairness - a.) The procedure for choosing a school facilitates autonomy and freedom through a genuine expression of choice. b.) To decide between equal legitimate claims in school allocation, random allocation must be used to guarantee that places are not determined by arbitrary conditions.

III) Patterns of distribution - Inequalities in the distribution of school admissions can be justified if i.) equal opportunities for admission have been provided and ii.) procedural fairness in choosing and allocating schools have been satisfied.

Meeting the first principle is the fundamental obligation of the social contract. If equal opportunities to attend desirable schools can be guaranteed, a genuine preference can be expressed by parents. The principles are framed so as to enable local admissions authorities to determine which pupils it applies

to. Equality does not necessarily need to hold between all pupils, only between alike pupils. This provision allows the admissions authority to decide what constitutes equal legitimate claims. For example, the moral arbitrariness of FSM as an indicator has been discussed at length and suggests that prioritising pupils on this measure is unfair. There are other categories of pupils for whom prioritising would be considered morally legitimate, for example, children in care or those with statements of special educational needs. The Equality principle leaves room for local admissions authorities to determine the prioritisation of these groups and requires them only to treat pupils within these groups equally by recognising their claims as equally legitimate. This is the logic of alike pupils being treated alike and it is an important point to underscore because it suggests that there will not be a single lottery for school allocation, but potential a number of small lotteries drawn for different sub-groups of pupils. The individual characteristics of pupils will determine which lottery they enter. O'Neill (197, p.289) is clear that "opportunities are equal when the chances of those who choose alike are not made different by any public obstacle".

Which pupils should be considered alike adds an additional layer of complexity into the process and is not specified in the framework of principles because the requirement to admit pupils through random allocation is devolved to the local level. Random allocation, although a requirement for fairer admissions will be applied differently according to context. This is critical to prevent a blanket policy of random allocation specified being implemented without regard for the local demographics, residential patterns and school contexts (Wilson & Bridge, 2019). The specific determination of how it is used will be locally determined and will be shaped by the particular conditions evident in the system.

The second principle guarantees the autonomy for parents to discern their preferred school and the freedom to express their preference must be reciprocated in the allocation mechanism. Procedural fairness ensures that the process for choosing and allocating is not dependent upon arbitrary factors that impede opportunities to attend desirable schools. Choosing a school is meaningless if the allocation mechanism controlled by the state impedes your access. This shows why the principles are deliberately ordered. The provision for every parent to make a legitimate claim for a place at their desired school gives way to a genuine expression of choice between parents who have equal power in the marketplace.

If these provisions are secure, the patterns of inequality and segregation that may ensue, can be justified because the state has guaranteed equality of opportunity and the freedom to take advantage of them. The inequalities allowed here in the current framework take the lead of Sen and Dworkin, who suggest that the freedom to choose is central to any theory of justice and if other provisions can be guaranteed by the state, there is no reason to over engineer outcomes simply to satisfy a distributional outcome that has emerged through the consequence of free decisions by informed individuals. However, these provisions do not relieve the state of its obligations to take all reasonable steps necessary to reduce inequalities or the requirement to ensure schooling information is provided to support parents in making the right decisions for their children.

The third principle borrows heavily from Rawls' theory of justice in that it regards differences in outcomes between groups as legitimate if the other principles have been met. This is softer version of Dworkin's reasoning that once choices have been made, the distribution of outcomes can be justified. The framework proposed here takes more steps to safeguard against large disparities in outcomes by specifying two previous steps to guarantee both the rights of individuals to express a legitimate claim to any school place, as well as the obligation on the state to ensure there is a process to decide between claims in a fair manner.

Provided that these first two principles have been met, the outcomes are considered as legitimate. This may prove contentious with those who argue that the state is obliged to guarantee better outcomes for those who have been disadvantaged by economic and social circumstances. However, this is the key to balancing the tension between freedom and equality in a democratic state.

The deliberations of which pupils should be treated alike are necessary to return the debate on school admissions to the role that the state should have in facilitating opportunity, freedom and autonomy for its citizens in public service provision. What this does is allow the priority criteria in one overarching admissions authority to reflect the democratic appetite for whom it should treat equally. It provides flexibility within the framework to shape the allocation and distribution of different types of pupils to schools. Before the exact prioritisation has been decided through democratic means, the principles of school admissions must be agreed to. This approach takes its cue from John Rawls' veil of ignorance and the notion that the rules of the game are specified prior to it being played. The principles set the framework for discussion; they establish the parameters of free and equal citizens in school admissions, but it is the enactment of them at the local level which is the focus of deliberation. The scarcity of good school places creates uncertainty, but the deliberation can help those who do not get what they want, come to terms with the legitimacy of collective decisions (Gutmann & Thompson, 2004).

The deliberate ordering of principles draws from Rawls' approach in his theory of justice and also allows for inequalities if his principles of justice are met. The appeal of the framework is that is requires engagement through democratic deliberation in who should be treated equally and then what percentage of places should be allocated on those terms. The process unfolds in the following way:

1. The principles of the framework are statutory. The legislation is part of a wider raft of provisions for local authority oversight of the decision-making process and administration of school admissions.
2. All citizens agree the principles for applying the process.
3. Democratic decisions taken on which pupils should be considered alike and which pupils take priority in the oversubscription criteria.
4. Democratic decisions taken on the percentage of places that are allocated by random allocation.

The framework hands back the democratic deliberation to state agents to ensure the overarching admissions authority constructs the policies under the direction of the principles in line with the wishes of the local polity (Gutmann & Thompson, 2004). It provides flexibility within the framework to shape the allocation and distribution of different types of pupils to schools. The appeal of using random allocation to break the ties between legitimate claims of alike pupils is in the removal of arbitrary reason, but the extent to which it is used would be locally determined. A purest would argue that a Rawlsian foundation of fair equality of opportunity demands all places to be allocated in this way (Graham, 2007). After all, if the logic of randomisation as the only way to decide between equal legitimate claimants is accepted, it is incoherent not to use it for all pupils. However, pragmatic reform of school admissions is the focus here: a modest goal of improving the access to the best schools for disadvantaged pupils. The theory suggests that even a small percentage of places allocated by random allocation is fairer than the current system which imposes arbitrary oversubscription criteria. This exemplifies the difference between a principle and a policy. The principle of procedural fairness leaves space for the interpretation and the possibility of new mechanisms which satisfy the demands of this without prescribing the mechanisms to do so. For example, a local authority may decide that 100% of school places should be randomly allocated or they may decide that only 10% are randomly allocated. The determination of this is a local issue, decided by democratic deliberation under the guise of a comprehensive framework of justice. As Sen (2009) has forcibly argued, the long-promised virtues of market-based institutional choice does not justify closing down public reasoning and discussion: the importance of social institutions demands an ongoing interactive dialogue in the pursuit of justice.

5.8 Chapter summary and implications

A key contention of this chapter is the need to construct a framework of principles which emerge from the broad principles of justice outlined in chapter 3. Without these foundational values, it is not possible to judge the extent to which new admissions criteria, processes and procedures can be considered just. Common reference points which can be agreed upon through reasonable democratic deliberations provide the foundation from which policy reform can emerge. In constructing the framework presented in this chapter, Rawls, Sen and Dworkin provide insight into the specific nature of an admissions system that meets the demands of multiple theories of justice. The three principles which underpin the framework provide a comprehensive approach which balances the primary goods focus of Rawls, with the procedural appeal of Sen and Dworkin's emphasis on responsible choices.

How then can this framework be applied to the specific case study of Gloucestershire? To understand the extent to which the existing opportunities, processes and outcomes are aligned with the principles of justice, it requires a complete examination of the existing allocation procedures and an analysis of the data for Gloucestershire schools. A strong case was made for random allocation as a

procedure which can satisfy the principles of justice and an argument established for the rejection of quotas on the grounds that it uses measures that are arbitrarily constructed. The following chapter tests these assumptions using a number of simulations. It begins by outlining the specific research questions to be examined and the methodological considerations that emerge from them.

6 Testing the framework: a Gloucestershire case study

The approach adopted in this study so far has been to develop a case for reform admissions procedures in ways that can be morally justified, and which stem from established theories of justice which can then be applied in localized settings (Rawls, 1999). The previous chapter developed three principles under a framework of justice which should guide policy makers decision making. This chapter examines those principles with respect to Gloucestershire's secondary school system, using the local context as a case study to explore the implications of reform in light of the broader theoretical debates which the principles highlight. Gloucestershire's partially selection system, with its seven grammar schools, and the highly localized patterns of residential inequality which lead to highly popular schools with small catchment areas, offer a good test case to illuminate the pragmatic implications of a national framework, applied in a local context.

Recalling the research questions established in chapter 1, the focus of the thesis so far has on developing the discussion in order to provide answers to the first three research questions. Although some insight of the Gloucestershire context has been provided in chapter 2 and 5, the main aim of this chapter is to develop the discussion with regard to research questions 4 and 5. This empirical analysis undertaken in this chapter is largely quantitative and is derived from a National Pupil Database extract. Consequently, the discussion of methods is presented first, prior to the wider discussion.

The analysis presented in this chapter begins by presenting a series of graphs to show the distribution of disadvantaged pupils across Gloucestershire and the characteristics of the 39 secondary schools. Logistic regression analysis is presented to model the likelihood of disadvantaged pupils attending the most desirable schools. This is followed by a discursive analysis of Gloucestershire's systems and procedures for allocating pupils to schools, testing the logic of the principles developed in chapter 5. The final section of this chapter presents a series of simulated models of random allocation to one selective school, and one non-selective school, as feasibility cases for the logic developed in the principles. The aim of these simulations is to explore the practical policy implications of reforming school admissions in line with the principles developed in the framework.

6.1 Research Questions

The specific research questions of interest in this study were outlined in chapter 1:

Research question 1: What is the role of the state in determining where pupils go to school?
Research question 2: What is a fair process for allocating pupils to schools?
Research question 3: What are the principles that should guide reforms to school admissions?
Research question 4: What is the value of random allocation as a tool for improving access and equity in school admissions?

Research question 5: How can those principles be applied to the context of Gloucestershire's secondary school system?

6.2 Ethics

Ethical consent was granted for this study by the University of Bristol's School for Policy Studies ethical committee in December 2016. I undertook original analysis on a Tier 2 National Pupil Database extract provided by the Department for Education in 2017 containing anonymous reference codes for 6554 pupils with recorded GCSE outcomes in Gloucestershire secondary schools in the academic year 2014-15. The data and methodological approach in working with this data is described below. To comply with DfE data protection regulation the dataset was stored on a secure server at the university and accessed by only one computer. When presenting individual level data, it is aggregated to the school level and is shown without reference to output areas to prevent inadvertent identification.

6.3 Methods

Quantitative methodological approaches are employed making use of a Tier 2 National Pupil Database extract provided by the Department for Education. The dataset contains anonymous reference codes for 6554 pupils with recorded GCSE outcomes in Gloucestershire secondary schools in the academic year 2014-15. The dataset is linked to individual Tier 2 pupil characteristics such as gender, FSM eligibility and prior attainment. Each pupil observation contains the geographical location of home residence at the Output Area level. Output Area codes are the lowest geographical statistical unit provided by the Office of National Statistics, containing typically 150 households and an estimated number of four pupils per cohort. This is linked to the IDACI score for that locality. Pupils are also linked to school level factors such as school attended, pupil composition of the school. The dataset analysed in this study removed pupils not in mainstream education, including those attending special schools and pupil referral units.

Two different methodological approaches are employed:

1. A series of descriptive statistics are presented on where disadvantaged pupils go to school and the observed patterns of access to Gloucestershire's schools.
2. Using a series of logistic regressions, I identify the probability of pupils being assigned to particular schools based on their individual characteristics.

These methods provide the current picture of school assignment across the county as well as the likelihood of disadvantaged pupils attending the most desirable schools. The meaning of disadvantage

is critical to understanding the analysis presented. In this study, I classify disadvantage with respect to three variables: Free School Meal eligibility (FSM) during the last six years; the Income Deprivation Affecting Children Index (IDACI) scores of the pupil's home postcode; and the prior attainment score at primary school in Key Stage 2 SATS. These variables are employed in the logistic regression models to identify which pupils should be considered disadvantaged in the assignment process. The following section narrows down the meaning of disadvantage from a wide lens to help inform the current study.

6.3.1 Measuring disadvantage

Disadvantage is a relative term; it presupposes that there are pupils who, by their circumstances or by their characteristics, will experience more challenges in the education system relative to their peers. As discussed in Chapter 3, the definition of disadvantage is subjective, arbitrary and is liable to be influenced by the prevailing economic and political circumstances. This poses two significant challenges for the present study.

First, as was discussed in greater detail in chapter 5, where disadvantage is defined in arbitrary terms, such as a cut off point for free school meal eligibility, determining how effectively new conditions for school admissions advance justice is largely a function of how effectively one considers the definition of disadvantage to have captured the true nature of disadvantage. In methodological terms, the solution to the challenge is determined by the measures of disadvantage that are available in large administrative datasets. The two most widely used and accepted measures of disadvantage in England in educational terms are discussed at length below. They are:

1. Eligibility for Free School Meals (FSM)
2. Income Deprivation Affecting Children Index (IDACI)

Second, when the definition of disadvantage changes over time, its relationship to educational attainment also changes. For the dataset analysed in this study, the definition remained constant over time and therefore this has no current implications for the validity of the study.

The bespoke measure constructed by Crawford & Greaves, (2013) define educational disadvantage as comprising three spheres:

- A lack of material resources defined through housing tenure and income and benefit receipts
- Lack of educational resources including the educational level of parents, internet access at home and the confidence in understanding the education system.
- Disengagement with the system and low performance in the system. This includes pupils' attitude to school and their history of exclusions from school.

The variables defined in Crawford's study are not available in large datasets but they compare their own measure with data available in administrative datasets and find that their measure is most highly correlated with FSM-eligibility: over 80% of pupils are covered by their measure, compared with only 70% by taking the IDACI measure of a pupil's postcode.

6.3.2 Eligibility for Free School Meals

Free School Meal eligibility (FSM) is a binary measure of disadvantage: it captures in a single categorical variable if the pupil's household receives less than £16,190 in gross income per annum or is in receipt of means tested benefits (Hobbs & Vignoles, 2017).

FSM-eligibility has been used as a measure of disadvantage in education since the 1990s when schools were required to submit to the Department for Education the numbers of children claiming free school meals each year. The development of the National Pupil Database in 2003/4 merged pupil census data including FSM indicators, with individual pupil performance data to create a rich dataset that has enabled the identification of a FSM sub-group of pupils for analysis and research (Gorard, 2012).

However, Hobbs & Vignoles (2017) note that for a child to be flagged as FSM in the dataset, the parents must have made a claim, the local authority verified that claim and a free school meal provided for them. The distinction between *eligible for* and *claiming*, will underestimate the numbers of FSM-eligible pupils in the dataset, who simply aren't marked as such because they have not claimed. Gorard's (2012) analysis of 2007 KS4 data identifies 3.3% of pupils in state-maintained schools having missing FSM data. He suggests that this third group of pupils in state schools represent a super-deprived group of pupils, characterized by frequent movement between schools, taking non-traditional qualifications at KS4 and having very poor outcomes. Currently in the NPD, and in the dataset used in this study, this third group are classified as non-FSM.

Gorard (2018), suggests a more useful methodological approach is to construct a bespoke variable based on the length of time a pupil has been claiming FSM. Treadaway (Treadaway, 2014) provides a similar analysis in his work on the implications of long-term disadvantage.

The simple binary nature of FSM as a measure of disadvantage has pros and cons. There are other variables that correlate strongly with economic indicators of poverty, such as the home learning environment (HLE) and the mother's highest qualification, which may add additional explanatory power to a measure of disadvantage, but these are not routinely collected and current understandings of them are based on samples or cohort studies rather than full population collections (Sylva, Melhuish, Sammons, Siraj-blatchford, & Taggart, 2012: Gorard, 2012). Furthermore, FSM status has legal weight and avoids the subjective judgements required when placing different HLE scores onto a spectrum or an occupation into a particular category (Gorard, 2012).

The disadvantage of using FSM is that it is relatively poor at capturing elements of household income. Hobbs & Vignoles (2017) show that only 34% of children up taking FSM are in the lowest income households. They suggest that FSM eligibility does not capture the poorest households precisely because the receipt of means-tested benefits pushes the household income up the distribution scale. This means that FSM as a marker of poverty is probably more accurate before the receipt of means tested benefits than it is afterwards, but Crawford & Greaves, (2013) maintain that eligibility for FSM contains predictive information about a child's likely disadvantage that is not found in other socio-economic characteristics and therefore its validity in measuring disadvantage remains.

6.3.3 IDACI

The IDACI is a continuous variable that captures information about household income that is not possible to do with a binary measure like FSM eligibility. It provides a relative measure of disadvantage to differentiate between the two thirds of pupils not eligible for FSM and provides a localised measure of poverty. Inevitably, FSM is strongly correlated with the lowest three deciles of IDACI: 0.88 (Crawford & Greaves, 2013; Strand, 2014).

IDACI's weakness is that it is collected at a postcode level, and therefore captures the characteristics of a small area level, instead of the individual household (Crawford & Greaves, 2013) Small area data suffer from errors in variables bias and aggregation bias which decrease the specificity and reliability of the measure at the individual household and child level (Hobbs & Vignoles, 2017). However, as Crawford & Greaves (2012) have suggested, people who live close to each other have relatively similar characteristics so small area data can provide predictive power. Crawford & Greave's (2013) analysis of the relationship of different socioeconomic indicators to educational disadvantage confirmed that there is a strong correlation between area and individual characteristics, but the combination of the two provides slightly more predictive power of an individual's measure of educational disadvantage than each on their own.

In a study of health inequalities Smith, Hart, Watt, Hole, & Hawthorne, (1998) note that area based measures and individual measures contribute independently to measures of mortality. Differences are evident across geographical areas and the predictive power of socioeconomic status and area-based measures each provide additional predictive power. They demonstrate that mortality gradients exist between deprivation levels within social groups, but there is little evidence of different social groupings existing within deprivation areas. This suggests that there is a residential effect operating over and above the individual characteristics which should be taken into account in socio-spatial analysis beyond public health studies.

A major disadvantage of IDACI is that it suffers from a time-lag for the ten years between national census counts. Residential areas can become gentrified quickly and attract a new demographic, limiting the validity of relying on a measure of a population from an historic census.

Furthermore, IDACI's use of average educational attainment in the index means that there is a risk of using the same baseline measurement to the one being used as the outcome measure and the inevitably high correlation between the two risks a 'tautological analysis' of educational outcomes (Gorard, 2012).

The density plot in Figure 1 identifies the overlap between FSM eligibility and IDACI score of the pupil's home postcode in the dataset of Gloucestershire's Year 11 cohort in 2015-16. The x axis shows the IDACI scores of pupils in the dataset divided into two categories: FSM-eligible (TRUE) and non-FSM eligible (FALSE). Density plots provide a useful comparison of the shape of the relative distribution of two variables, but not the overall size (Wickham & Grolemund, 2016). The density of pupils at the lower end of the IDACI distribution highlights Gloucestershire Local Authority as an affluent area relative to others in England. Out of 152 local authorities, Gloucestershire was ranked 121 on the average IDACI score. It was 104 out of 152 in the proportion of Lower Super Output Areas in the lowest 10% of IDACI scores nationally (Department of Housing, 2015)

The most striking observation from Figure 1 is the distribution of FSM pupils across the range of IDACI scores. The heaviest concentrations of FSM pupils are living in the lowest IDACI postcodes, which is in line with expectations considering Gloucestershire's affluence. However, the plot also shows that the greatest proportion are living in affluent postcodes with low IDACI scores suggesting that the overall IDACI scores masks the existence of poorer families in the locality. At the opposite end of the distribution, the same is true: higher numbers of FSM pupils are living in poorer postcodes but the high IDACI scores mask the existence of non-FSM pupils in the locality.

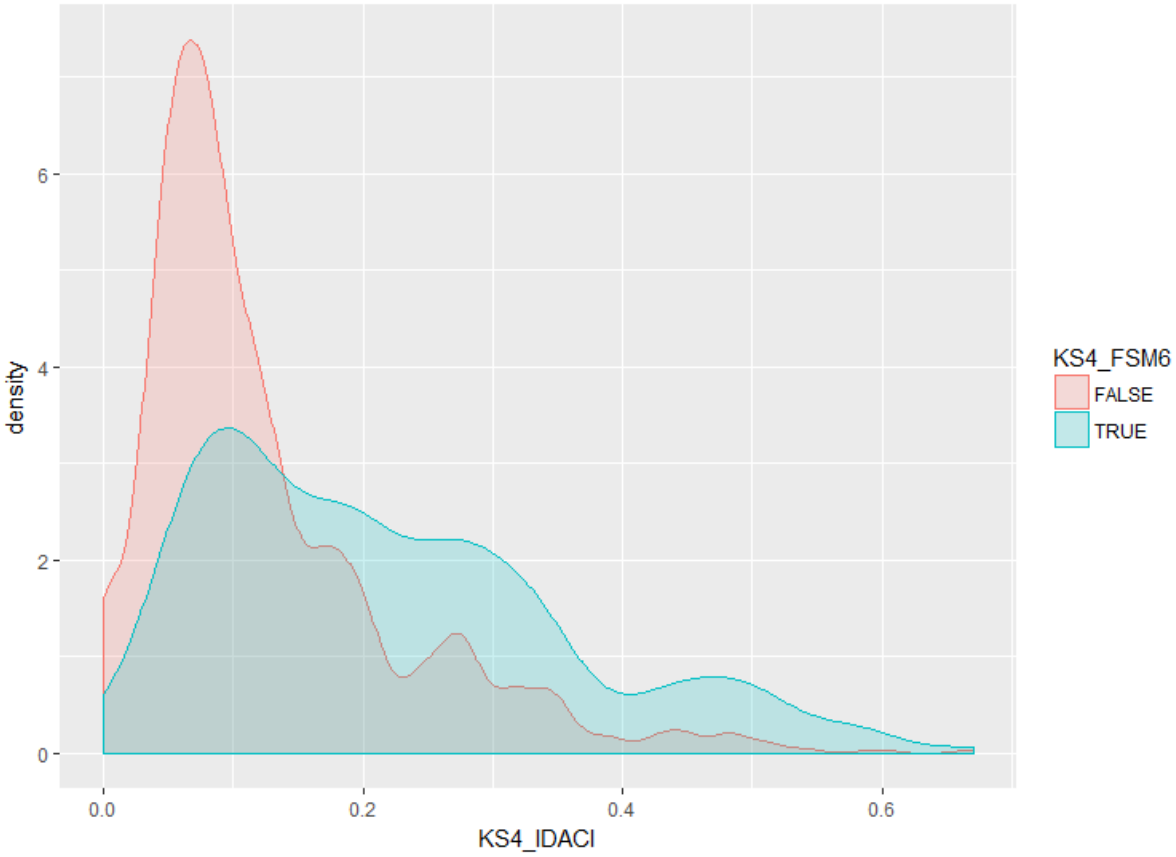

Figure 1: Density plot of Gloucestershire pupils' IDACI scores for FSM/non-FSM eligibility

6.3.4 Measuring the assignment of disadvantaged pupils

Segregation refers to the degree of separation that exists between two groups and is calculated by comparing the observed proportion of disadvantaged pupils in one unit, school or area, compared to the expected number (Allen & Vignoles, 2007). Measures of segregation can be categorized into two broad groups (Harris, 2015):

- Measures that calculate a probability of two people being chosen at random from a population having the same characteristics.
- Measures that describe the distribution of two population groups across an area and comparing the average difference.

For these reasons, Harris, (2015) suggests that the term segregation is misleading in the literature. It has negative associations but does not reveal if the segregation has been involuntary or has any underlying causes driven by different levels of resources and the ability to take advantage of those resources.

Harris et al., (2008) draw a distinction between polarization and segregation in the literature. They identify previous work by Taylor et al., (2001) as measuring segregation, characterized by the unevenness in distribution between units, compared to Gibson & Asthana's (2000) approach which is to look at the departures from the norms for particular sub-groupings. Segregation tends to focus on larger, aggregated geographical areas, whereas polarization refers to local measures of unevenness on smaller units, such as schools within an LA.

Harris et al., (2008) argue that many studies of school segregation suffer from using the wrong geographical unit of analysis. Choosing a measure should be related to the questions that the study is trying to answer. If the purpose is to differentiate between home and school segregation (also referred to as post-residential sorting (Allen, 2008) then the purpose must be to focus on the local markets of school attendance. Census areas and local population figures should not be used to derive estimates of expected levels of disadvantaged pupil attendance, as they are not congruous with school catchment areas (Harris et al., 2008).

Harris & Johnston's (2008) study is focused on the ethnic separation of pupils within the local markets. i.e. ethnically alike pupils who may disproportionately be attending different schools. They regard this as an issue of polarization.

6.3.5 Index of Dissimilarity (D)

The index of dissimilarity (D) is an unevenness measure to judge if disadvantaged pupils are distributed more evenly across schools under different conditions (Harris & Johnston, 2008). In the case of FSM-eligibility it is defined as the proportion of FSM pupils who would need to move for there to be an even distribution of, or fair share of FSM pupils, across all schools (Gorard & Taylor, 2002).

D can identify the movement of FSM pupils between schools, although the magnitude of the index change is determined by the proportions of FSM in the two schools. For example, if pupils move between two schools where both have more or less than their fair share of FSM pupils, the index is not capable of picking this up, but if the movement is of a pupil who moves from a higher than average FSM school to a lower than average FSM school, D is capable of picking this up (Allen & Vignoles, 2007).

6.4 The distribution of disadvantaged pupils in Gloucestershire

This section presents the results of an empirical analysis on the distribution of disadvantaged pupils in Gloucestershire schools. It also presents the results of logistic regression analysis on the likelihood of being admitted to selective schools based on disadvantaged characteristics.

Figures 2 and 3 show the Figure 2 shows the number and percentage of FSM eligible pupils in Gloucestershire's secondary schools. It demonstrates the local clustering of large proportions of disadvantaged pupils in a small number of schools.

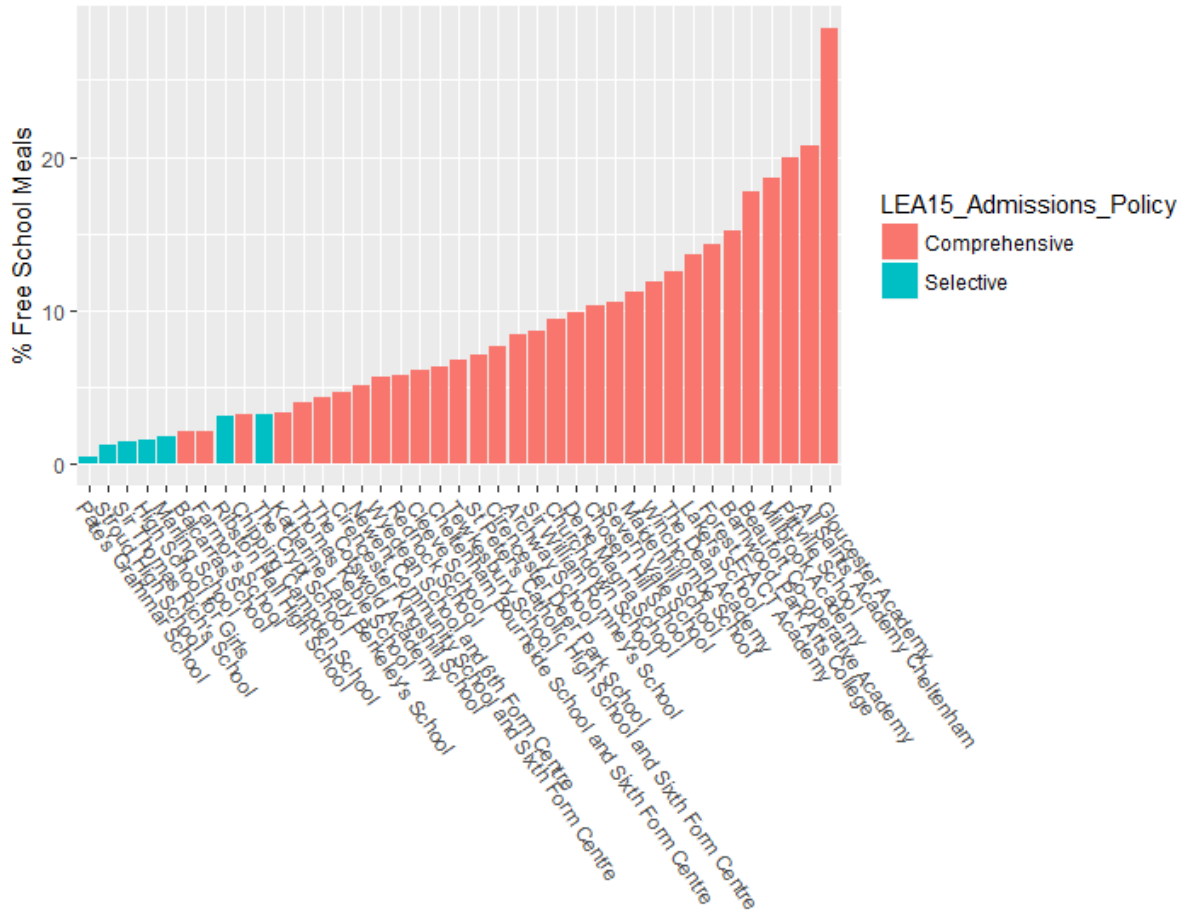

Figure 2: FSM-eligibility in Gloucestershire's secondary schools

Figure 3 is a box plot which shows the distribution of IDACI scores in each school and shows a similar pattern. The schools on the right hand side of the graph show a sharp increase in the average IDACI scores. The boxes capture the interquartile range of scores (25th to the 75th percentile) and the whiskers capture the 5th and 95th percentile. The individual outlier pupils who lie beyond these ranges are depicted as individual dots. The blue dots identify the mean IDACI score of each school. The graph is ranked by the mean IDACI scores, with low scores representing more affluent postcodes. It reveals an interesting underlying feature of pupil allocation to schools. As the mean IDACI score increases, the interquartile

range increases, meaning that those with the highest number of pupils from the poorest IDACI postcodes also have the largest catchment areas, therefore they draw from a larger area with a greater range of IDACI values. This reveals one of the key features of the English admissions system: the more popular the school, the smaller its catchment area. According to the allocation day statistics for the last five years Balcarras is the most popular non-selective school in Gloucestershire, with 689 preferences for 194 places in 2015 (Gloucestershire County Council, 2019). A smaller catchment area reduces the number of different IDACI scores in the intake.

Given this relatively even profile of FSM eligible pupils across different IDACI scores, the expectation would be to have FSM pupils distributed across schools and not clustered in a few schools.

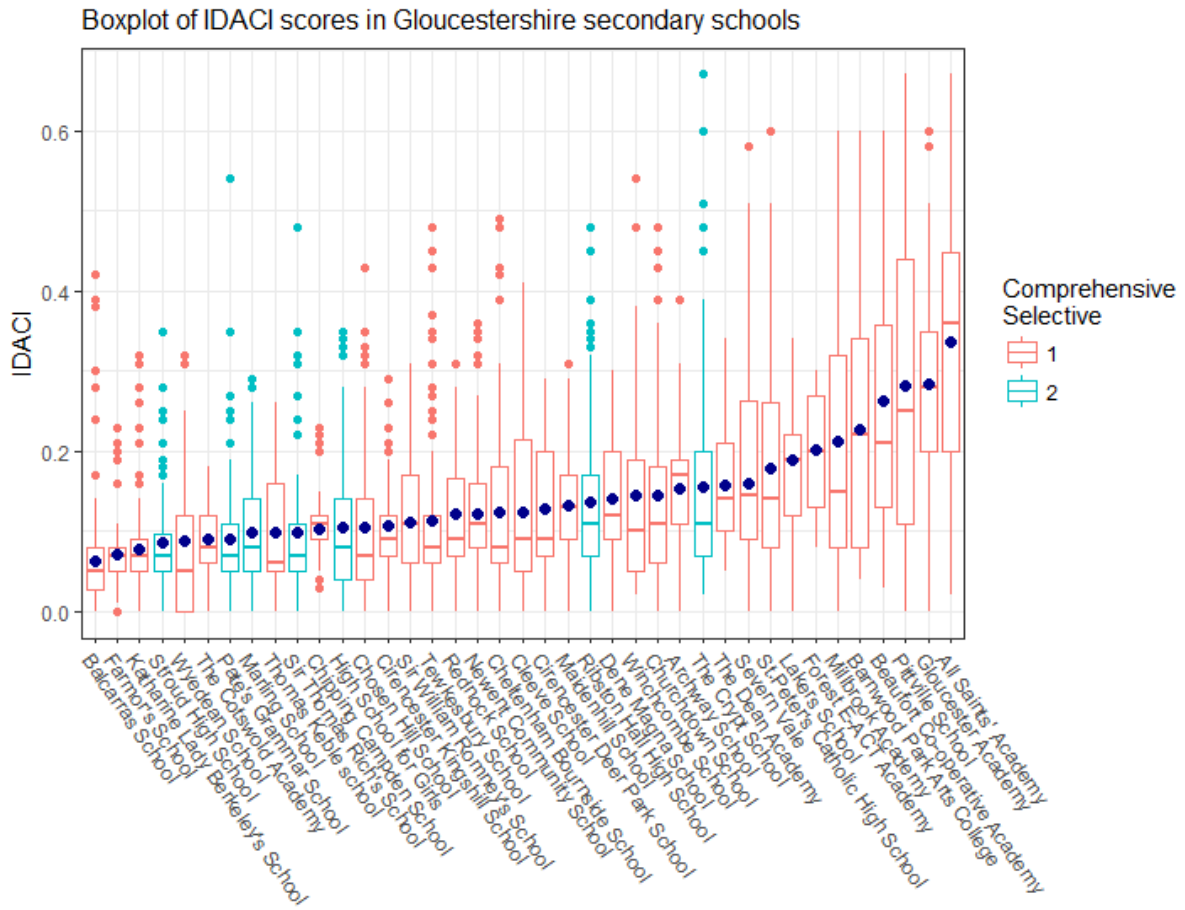

Figure 3: Boxplot of IDACI scores in Gloucestershire secondary schools

In Figures 2 and 3, the top three schools are the same, however the order is different. Gloucester academy has the highest percentage of pupils on free school meals but has a lower average IDACI score than All Saints Academy in Cheltenham. This could simply be a reflection of the exact location of the two schools with All Saints drawing its population primarily from one estate which is likely to have a small range of high IDACI scores. Gloucester Academy is more centrally located in the city of

Gloucester and may draw from a wider area with a wider range of IDACI scores. On both measures of disadvantage, FSM and IDACI, the low numbers of pupils in selective schools are evident.

An alternative way of examining the distribution of disadvantaged pupils is to look at broader categories such as attainment deciles. Figure 4 shows the attainment 8 (A8) deciles by FSM proportion exhibiting a negative downward trend: the higher the proportion of FSM pupils, the lower the A8 decile. Schools have been aggregated into categories according to the school A8 scores and then the proportions of FSM/non-FSM calculated for all schools in each decile. The pattern is unsurprising considering that the strong correlation between FSM status and low attainment scores. This graph then may not be depicting anything more than reflecting the types of pupils in the schools, but nevertheless shows the attendance of FSM pupils in lower performing schools.

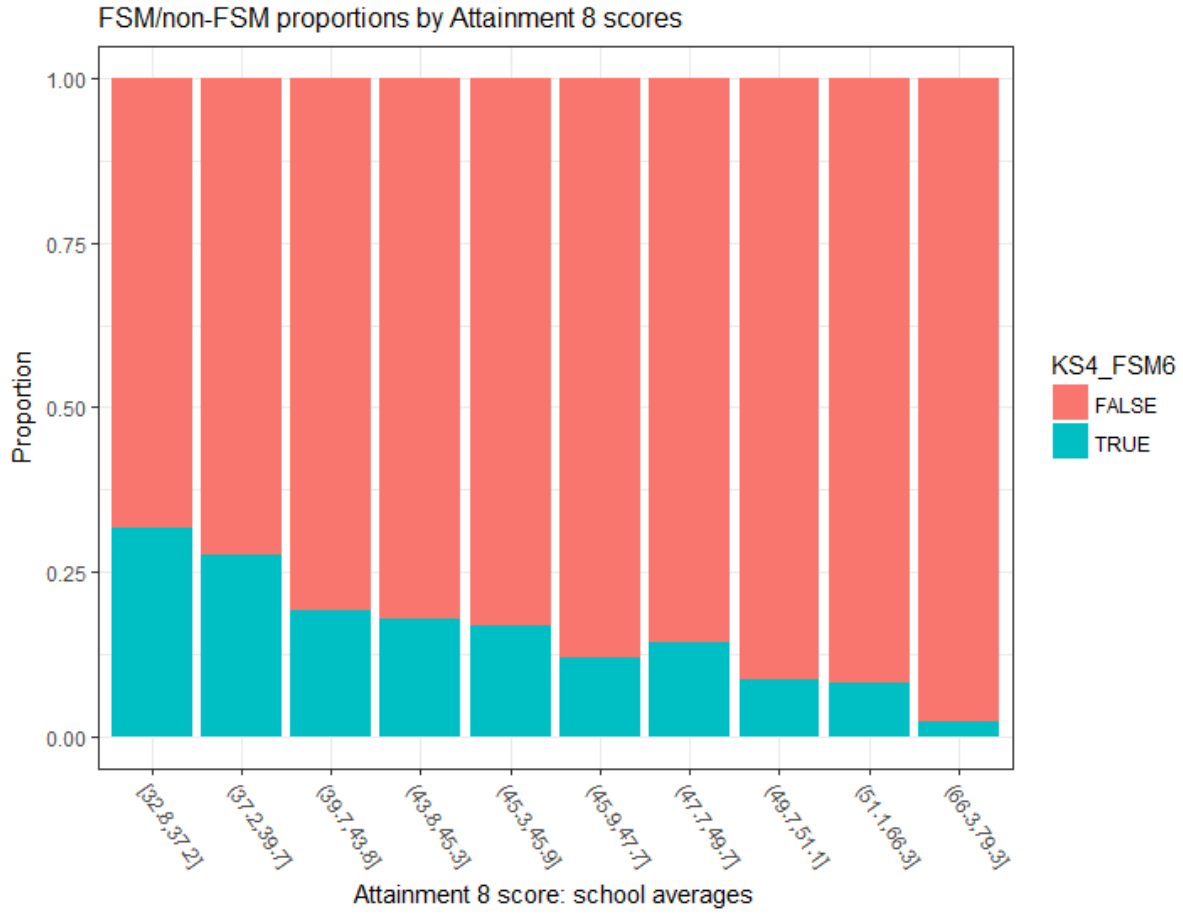

Figure 4: FSM/non-FSM proportions by Attainment 8 scores

Figure 5 is a boxplot of pupils and their Key Stage 2 Average Point Score (KS2 APS), with the mean score school depicted by the blue dot. It shows the expected pattern of high average scores for the selective schools and a much narrower interquartile range than comprehensive schools. There were 451 pupils in the dataset who did not have a KS2 score. These have been omitted from this graph.

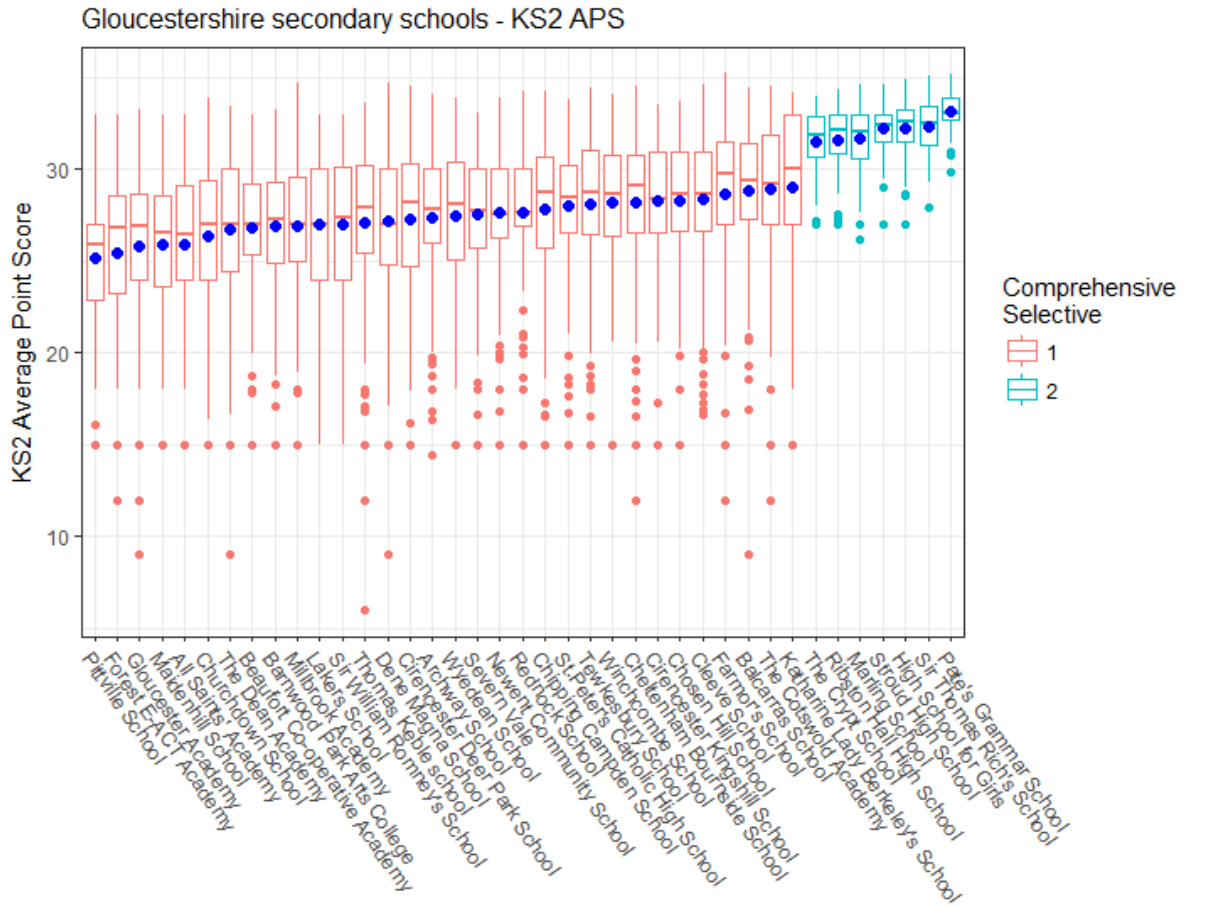

Figure 5: Gloucestershire's secondary schools by average Key Stage 2 Average Point Score

As the analysis becomes more fine-grained, the distribution of FSM pupils becomes more revealing. Figure 6 shows the individual pupils eligible for FSM in Gloucestershire's 7 grammar schools, plotted against the IDACI score of the home postcode. There are 759 pupils attending selective schools in the dataset; 23 of which are FSM. The numbers are small enough to see in the graph, symbolised by the larger dots. These figures represent 2.4% of the total FSM population, but only 0.4% of the total pupil population.

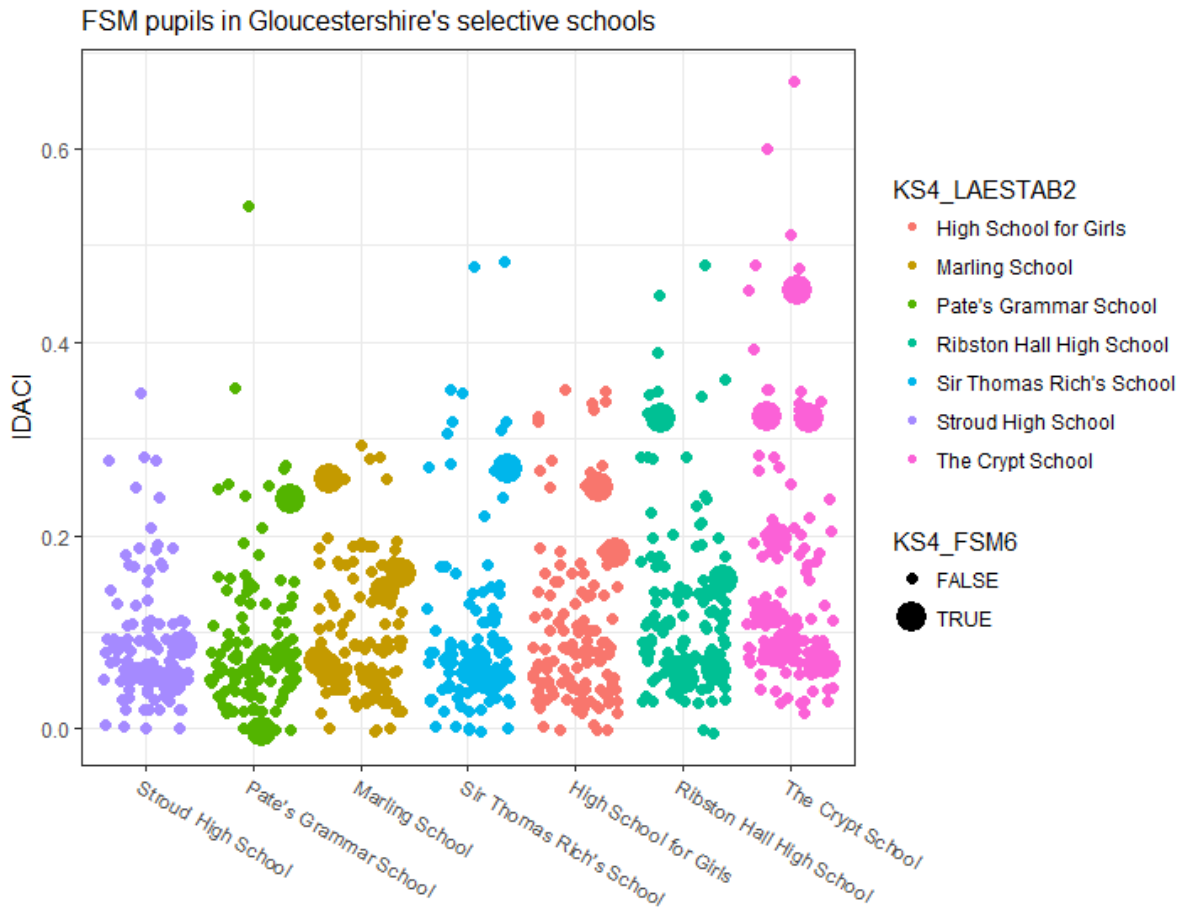

Figure 6: FSM pupils in Gloucestershire's selective schools by FSM-eligibility & IDACI score

The challenge of admitting more FSM pupils into selective schools is evident in Figure 7 which is a scatterplot of pupils in Gloucestershire's 2015 cohort, categorized by FSM/non-FSM and their KS2 sores. The sparsity of pupils in the higher percentile ranks shows the difficulty of identifying FSM-eligible pupils who will be able to reach the standard of entry to selective schools.

Figure 7: Scatterplot of Key Stage 2 Average Point Score by FSM eligibility

6.4.1 Logistic Regression Models

This section presents the probability of pupils being assigned to selective schools based on their individual characteristics. To understand the socio-economic factors and pupil level characteristics that predict the probability of admission to particular schools or types of schools, a number of methodological approaches can be adopted including spatial regression models, generalized linear models (GLM) or logistic regression models. Logistic regression is the preferred approach here where the outcome is a binary outcome that predicts the odds of event y happening (admission at a type of school) under particular conditions of *x* (predictor variables) (Kirkwood & Sterne, 2003). The individual characteristics associated with pupils, such as FSM or IDACI, can be deemed to be risk factors that can predict the probability of being assigned to a particular type of school based on a number of similar repeated observations in a population (Kirkwood & Sterne, 2003).The relationship between the response or outcome variable (school type attended) and the explanatory or predictor variables (risk factors) is the issue of interest here and can be depicted as a 2x2 contingency table: FSM/non-FSM and selective/non-selective attendance (Friendly & Meyer, 2016). The total number, *n*, is fixed at 6554 as the number in the dataset.

The odds is the chance of being assigned to the school of interest divided by the number who do not get assigned. The null hypothesis is that the predictor and outcome variables are independent of each other. Measures of association such as Odds Ratio quantify the strength of the relationship between the two variables and are the generally preferred of assessing binary variable outcomes (Kirkwood and Sterne, 2003). They are often converted into log odds or logit to provide an equivalent measure that varies additively around 0 and is fundamental transformation in the logistic regression equation discussed below (Friendley & Meyer, 2016).

The logistic regression equation is calculated as:

$$log\frac{Y_1}{1-Y_1} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e$$

Where:

$$Y = Attendance\ at\ a\ selective\ school$$
$$x_1 = Prior\ attainment\ at\ Key\ Stage\ 2$$
$$x_2 = Free\ School\ Meal\ eligibility$$
$$x_3 = IDACI\ Score\ of\ home\ address$$

Table 1 shows the output for three models, building from the basic output using X_1 as the explanatory variable and adding an additional variable each time.

The output of the first model shows the positive relationship between KS2 scores and the probability of being admitted to a selective school. The odds ratio indicates that for one unit increase in the KS2 scores, the odds of being admitted to a selective school will increase by exp(0.018224) 1.02 times. This is unsurprising given the academic nature of selection.

In Model 2, FSM eligibility is introduced as an additional explanatory variable. It has a strong negative association with attendance at selective schools. The odds ratio of 0.14 shows the extent of the impact of FSM eligibility in selective school attendance. Compared to non-FSM pupils, the chance of attending is 86% less likely. In model 3, the odds improve marginally to 0.17 for an FSM pupil once the additional variable of IDACI is take account of. In other words, by holding the KS2 prior attainment and IDACI scores constant, FSM eligibility has a slightly less negative association with selective school attendance. It is clear from X_3 of the power that neighbourhood deprivation has on selective school attendance: for every unit increase in the IDACI score, the odds ratio of attending a selective school is 0.09.

Table 1: Logistic regression outputs and Odds Ratios for selective school admission

Model 1	Estimate	Standard Error	P(>|z|)	Odds Ratio
Intercept	-2.389888	0.1436	<2e-16***	0.09
Prior att. at KS2	0.018224	0.005155	0.000408***	1.02
Model 2				
Intercept	-2.117333	0.138143	<2e-16***	0.12
Prior att. at KS2	0.014332	0.004928	0.00363**	1.01
FSM-eligible	-1.971977	0.206019	<2e-16***	0.14
Model 3				
Intercept	-1.835059	0.143809	<2e-16***	0.16
Prior att. at KS2	0.014219	0.004862	0.00345**	1.01
FSM-eligible	-1.785657	0.208183	<2e-16***	0.17
IDACI score	-2.737003	0.420446	1.73e-08***	0.09

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

6.4.2 Disadvantaged pupils in Gloucestershire – a summary

Using pupil level data from the 2015-16 Year 11 cohort, the empirical analysis presented in this section shows a clustering of disadvantaged pupils into a small number of schools, and the low admittance rates of disadvantaged pupils into selective schools. In the ten schools with the highest average IDACI scores, the range of IDACI scores demonstrates the pupil intake drawing from a wider and more deprived range of postcodes. By contrast, the ten schools with the lowest average IDACI scores have very narrow ranges. This pattern is confirmed by the individual pupils attending grammar schools clustered in the low IDACI scores. The logistic regression analysis confirms the significantly lower chance of selective school admission. The evidence presented here suggests that Gloucestershire's system reflects the patterns observed in the wider literature on disadvantaged pupils less likely to attend good schools. The important question for this study, discussed in the next section, is to what extent this pattern is brought about by the institutional procedures that operate school admissions.

6.5 Equality of opportunity and procedural fairness in Gloucestershire

As outlined in chapter 5, Principle I (equal opportunity) and Principle II (procedural fairness) are inextricably linked. To what extent do parents have equal opportunities to express a preference for the best schools and then benefit from procedural fairness in how those preferences are translated into assignment? This is the issue explored in this section, by analysing the published admissions policies for all 39 secondary schools in Gloucestershire, before proposing reforms which would bring the procedures closer to the principles of justice.

6.5.1 Oversubscription criteria: public obstacles preventing equal access

The most popular non-selective school in Gloucestershire from 2015-2018 is Balcarras, but the high levels of oversubscription in many of the schools suggests that many parents do not consider theoretical equality a limit to revealing their preferences even though many will know their chance of admission to the most popular schools is low (Gloucestershire County Council, 2019). However, the limitations of theoretical equality are clear when oversubscription criteria are required to decide a priority list of pupils to receive the places. Table 2 shows the top 3 criteria used to allocate pupils in non-selective schools under oversubscription conditions. The level of consistency is striking: out of 96 possible reasons, there are only seven reasons stated. Of these, which conditions may be considered arbitrary under the principles established? Catchment areas and geographical distance have already been discussed at length in the framework outlined in chapter 4 and their legitimacy questioned. Their popularity creates a number of 'honey-pot' schools which by their popularity produces ever decreasing catchment areas as parents buy houses closer to the school to guarantee admission. Siblings and children of staff members extend privileges already in existence. Medical conditions may be considered legitimate on the grounds that it overtly privileges physical disadvantage, or what Jencks (1988) would term as a form of humane justice.

Table 2: Oversubscription criteria for Gloucestershire's non-selective schools

Oversubscription Criterion (2018)	**No. of times specified in top 3 admissions criteria**
Sibling	29
Catchment priority	21
Geographical distance	15
Medical condition	11

Children of staff members	9
Random allocation	3
Church baptism	2

Note: It is a statutory obligation to admit pupils who are defined as Looked After or Previously Looked After, therefore, this table omits all reference to these as standard.

Table 3 shows the admission criteria for grammar schools in 2018. Percentile rank is incorporated into all of them as would be expected given the nature of selective schools. However, the higher priority of Pupil Premium in five out of seven appears to show an explicit expectation for admitting disadvantaged pupils, but this is misleading. The specific procedure outlined by *The High School for Girls* in Gloucester explicitly reserves a quota of school places for disadvantaged pupils and is as follows:

1. 15 places will be allocated to students who are registered for Pupil Premium at any point in the past six years, who achieve the qualifying standard and live in Gloucester City. The qualifying standard is defined as pupils who are within the top 150 scores on the admissions test.

2. 15 places will be allocated to students who are registered for Pupil Premium at any point in the past six years, who achieve the qualifying standard and live outside of Gloucester City. The qualifying standard is defined as pupils who are within the top 150 scores on the admissions test.

3. Admission for the remaining (approximately) 90 places is by rank order of scores after allocation of places for looked after children/previously looked after children and those children who are eligible for Pupil Premium. If 30 places are not filled by students on Pupil Premium, then they will be offered to students who have reached the qualifying standard in rank order.

(High School for Girls, Admissions Procedures 2019)

Table 3: Admission criteria for Gloucestershire's selective schools

School	Pupil Premium eligible (home city/town)	Pupil Premium (anywhere)	Pupil Premium (as tie breaker)	Percentile rank	Geographical distance (as tie breaker)	Children of staff members (as tie breaker)	Feeder School
Pates grammar		1st		2nd			
HSFG	1st	2nd		3rd			
Stroud High		1st		2nd	3rd		
Marling			2nd	1st			3rd
Ribston Hall		2nd		1st	3rd		
The Crypt			1st	3rd		2nd	
Sir Thomas Rich's		1st		2nd	3rd		

Note: It is a statutory obligation to admit pupils who are defined as Looked After or Previously Looked After, therefore, this table omits all reference to these as standard.

The system outlined by the HSFG admissions procedures still requires parents to enter their pupils for the test. Pupils whose parents have not entered them are automatically ruled out. Quotas do not rectify this injustice if they are not even in contention and therefore the first principle of equal opportunity is immediately violated. Pupils cannot make a legitimate claim on a school place if they have not sat the test.

The consequence of fulfilling the quotas of Pupil Premium pupils in this model would be to lower the level of segregation and improve the odds for admission for disadvantaged pupils. However, this requires them first to have sat the test and second, *if* they achieve one of the top 150 marks. As figure 7 indicates, the challenge of how few pupils eligible for FSM attain the high standards required for direct admission on rank score competing against non-FSM, suggests that this would not fulfill their quotas. This policy embodies the hypothesis that more disadvantaged pupils would be able to attend selective schools if places for reserved for them. It falls short because this analysis shows how few would attain marks in the top 150 to trigger the criterion for entry. The barrier is not reserving places; the barrier is in too few pupils sitting the test and attaining high enough marks to be considered. This same logic applies to the other four grammar schools prioritising Pupil Premium pupils.

The process of test rank order poses a number of significant problems for meeting the demands of justice laid out in the principle of equal opportunity. First, the opportunity to be considered for a place requires pre-planned action on behalf of parents in order for them to be entered to sit the test. This immediately disqualifies any pupil whose parents have not entered them for the test from making a

legitimate claim on a school place.[2] Opportunities for admission cannot be equal if all pupils do not have the requisite scores for consideration by the allocating agent. An optional selection test therefore is unjust; it relies on the motivation and competence of parents to enter their children.

The procedure of selecting the highest ranked pupils and moving down the list until all places are filled is susceptible to being closely correlated with pupils who have high levels of resources and support for the selection test. The competitive process established is one whereby those with the greatest resources have the best opportunities to achieve a school place. The skills measured in the selection test are not ones explicitly taught in school and therefore preparation for it requires time devoted to it outside school. This also relies on parental motivation and competence, but more crucially it provides a distinct advantage to those with the resources to pay for private tutoring (Sutton Trust, 2018).

In order to understand the impact that mandated quotas would have on levels of segregation within Gloucestershire, I randomly allocated FSM-eligible pupils who had scored above 30 on KS2 tests, to grammar schools so that each school admitted the quota of disadvantaged pupils in line with local area proportions. Under these conditions the index of dissimilarity score decreased from 0.29 under current rules, to 0.26 under quota rules. Table 4 compares this analysis with other studies that measure segregation in Gloucestershire over time.

Table 4: Disadvantaged pupil segregation estimates in Gloucestershire

Author(s)	Study	Year of analysis	Method	Gloucestershire segregation score
Fitz, J. Gorard, S. & Taylor, C. (2002)	School Admissions after the School Standards and Framework Act: Bringing the LEAs back in?	2000	D	0.31
Richardson, J. (2019)	Current study: analysis on current allocation	2015	D	0.29
Richardson, J. (2019)	Current study: modelling quotas in line with the LA average for FSM-eligible pupils	2015	D	0.26

The decrease in segregation is only marginal and is the consequence of the small number of selective schools. To make a significant impact on the segregation index, the quota rule would have to be applied across all schools, not just selective ones.

The suggestion discussed earlier to make the selection test compulsory for all pupils, would ensure that more pupils had the opportunity to make a legitimate claim. Nevertheless, by filling a quota by moving down the rank of test scores, it is still likely to be a reflection of the advantages experienced in test preparation rather than a justified order of deserving pupils based upon academic merit.

[2] Recall that this analysis does not suggest abolishing selective admissions tests, only reforming their operation to facilitate greater access for disadvantaged pupils.

If the aim of school admission reforms is to manipulate the distribution of FSM/non-FSM pupils across (selective) schools to produce a balanced population, then an argument can be made for quotas. However, as detailed in Chapter 4, the pattern of outcome distribution is only a partial requirement of the justice, and only then as a result of equal opportunities at the outset, coupled with procedural fairness. To focus solely on outcomes is to deny other crucial tenets of justice.

6.5.2 Equal opportunity for selective school admission

Parents are given the option to express a preference for five schools and this is understood to mean that the demand-led market in schools is functioning appropriately. The assumption inherent in this process is that choices equate to opportunities. This requires that chances are distributed evenly when similar choices are made (O'Neill, 1976). Expressing a preference for a school does not mean that the pupil has the opportunity to attend if the rules that govern admissions do not permit it. For two alike families that express a preference for the same school competing for one place, their chance of admission is determined by the criteria that exist in the event of oversubscription. For selective schools, the determining feature is the rank score on a test; for non-selective schools, it is the proximity from the school gate. The conflation of choice and opportunity undermines the current system. If a child has no chance of attending an oversubscribed school because he scores too far down the distribution, or lives outside the catchment area, then it is not correct to state that he has an opportunity to attend regardless of choice. If admission is predetermined by an external factor, he has no opportunity whatever his choice, therefore, it is not correct to regard choice in its current form as facilitating equal educational opportunity (O'Neill, 1976).

For the sociological critics of school choice, this is a good example of how school choice mechanisms can reproduce and exacerbate existing divisions based on wealth and privilege (Ranson, 1988). Choices are influenced through the social context, reinforcing real or perceived hierarchies. For sociological rational choice theorists, segregation naturally occurs through the choices individuals make at the point of decision making (Breen & Goldthorpe, 1997).

To overcome this, the first principle of equal opportunity requires replacing an optional test with a compulsory test for all Year 5 children. This ensures that the freedom to pursue a selective education is not curtailed for anyone, but it guarantees that all children, regardless of parental motivation can lay claim to a grammar school place should they meet the qualifying standard. From a Rawlsian perspective this ensures that children who are 'similarly motivated and endowed' are considered equals. Rawls is clear in his principles that certain requirements must be imposed for equality of opportunity to be achieved (Graham, 2007). A mandatory test is the natural first step to achieve this.

It may seem counterintuitive that a mandatory test must be guaranteed to ensure that equality of opportunity can be achieved, particularly given the strength of criticism against it in bipartite counties such as Buckinghamshire where the test is compulsory. Some of the arguments against it in

Buckinghamshire are premised on the injustice of coercing pupils into a test that segregates them into two types of school on the basis of one test with all the inherent unreliability of the results. The strength of those arguments notwithstanding, the situation in Gloucestershire should be judged differently on account that the results from the test do not determine the trajectory of the child into a selective or non-selective school. Compulsory tests in bipartite systems determine the routes of schooling, where there are only two schooling routes available. By contrast, in Gloucestershire, they would expand choice for those able to reach the qualifying standard. More pupils reaching the qualifying standard produces more options and therefore an expanded choice set. This is not an argument in favour of expanding selection in areas where it is not already in existence, but it is an argument in favour of expanding choices where tests are already in place but discriminate against poorer families. This is one mandatory reform that can ensure greater equity in access and more desirable schools.

A compulsory test is an example of how the state can facilitate greater opportunities through policy reform without limiting individual freedom or restricting choice. For the pupils who reach the qualifying standard in a compulsory test, but who had not been entered for the test when it was optional, it represents a significant expansion of choice.

It is important to caveat this proposal by recalling that this dataset does not contain information on the numbers of pupils who chose to enter the test and either failed to achieve the qualifying standard or did not gain a place at their preferred school. This means that there is no way to determine the proportion of disadvantaged pupils' parents who enter their children for the test or the entry rates for disadvantaged pupils. To assess the viability of alternative ways to admit pupils to selective schools rather than on rank score, it is necessary to construct a reasonable proxy for the qualifying standard using the existing data. This immediately suffers from the limitation that Key Stage 2 tests are not the basis on which pupils are selected for grammar schools and the available evidence on the complementarity between KS2 and selective tests is weak (ref).

6.5.3 Equal opportunity for non-selective school admission

Reforming catchment areas poses a distinctively different challenge to selective schools. A child's home address is the overwhelmingly prevailing factor in where they will go to school, regardless of expressed preferences (Allen & Burgess, 2004, 2011). In Table 2, all 32 non-selective schools use geographical proximity or catchment priority in the top three criteria for determining admission. As the literature in chapter 2 shows, this has the impact of inflating house prices in desirable school catchment areas, and driving a cycle of segregation and inequality as wealthier parents accrue the additional benefits of a higher attaining peer group and more effective schools (Gibbons & Machin, 2006; Gibbons, Machin, & Silva 2006).

Breaking or loosening the link between home address and school allocation is therefore the core of the problem. For parents not choosing the selective schooling route, there is no alternative but to be the subject to the dominance of proximity as an allocative mechanism. Therefore, the issue of reform is not niche, but one that affects 88% of parents who do not send their child to a selective school in the county. This guarantees that it is an overtly political problem demanding a solution that can be deemed acceptable to all parents. For this reason, the appeal to the foundational principles of justice are critical for the successful reform of catchment areas. Reforms must be premised on principles by which all could agree to without knowing their place in the system.

6.5.4 Equality and procedural fairness in Gloucestershire – a summary

The evidence presented in the first part of this chapter has focused on the uneven distribution of disadvantaged pupils in Gloucestershire's schools. Examination of the oversubscription criteria for school allocation in both selective and non-selective schools in the second part of the chapter has demonstrated how these publicly constructed policies create institutional obstacles which actively prevent poorer pupils from accessing the best schools. The following section presents a series of random simulations as evidence for remedying this situation.

6.6 Random allocation in Gloucestershire schools

This section presents the methods, results and discussion of a number of simulations, whereby pupils are randomly allocated to one selective and one non-selective school under different conditions.
Pates grammar school is used as the selective example, based on its place as having the highest KS2 APS on entry. Balcarras is chosen as the non-selective exemplar because it is the most popular school. These schools demonstrate the process; they show indicative outcomes from the reformed procedures rather than conclusive evidence of what would happen if the local admissions authorities were to make these changes. The process for manipulating the allocation of individual pupils to schools was undertaken in the R statistical software, using the tidyverse package.

6.6.1 Random allocation to selective schools

The process of randomly allocating pupils to Pates GS uses two conditions:

- The percentage of places open to random allocation

- The cut off score on Key Stage 2 tests which determines the size of the pool from which the lottery is conducted.

Table 5 shows the results of 9 different iterations of randomly allocating pupils to Pates Grammar School, each one changing the combination of the two conditions. The combination of conditions in each iteration demonstrate the extent to which the local population could decide, through democratic means, how elitist they want the selective schools to be. For example, allocating only 10% of places randomly and drawing from the pool of pupils who score at the 90th percentile or above on the test, would represent the most elite version of the process. Drawing pupils from lower percentile rank scores would naturally increase the size of the pool but would be less elite. The lower the percentile rank used, the larger the number of disadvantaged pupils likely to be contained within it.

In order to illustrate the process, the following worked example uses a rule of 10% of places randomly allocated to pupils who score above the 90th percentile score:

1. 10% of places at Pates grammar school equates to 12 places. A random sample of 12 pupils was drawn from the pupil population who scored above the 90th percentile rank. This was repeated 20 times to improve reliability in the estimate. Of the 240 places drawn in total from the 20 iterations, non-FSM pupils were drawn 226 times and FSM pupils 14 times. The large differences are unsurprising given the low numbers of FSM pupils scoring above the 90th percentile (see figure 7). Converting these probabilities into 12 FSM/non-FSM places produces average figures of 11.3 places going to non-FSM pupils and 0.7 places going to FSM.

2. Columns f and g show the replacement values after the random allocation. These are the differences in the simulations between the 10% of pupils currently at Pates, who are removed at random, and the 10% of pupils who are randomly allocated under the new conditions.

3. At the 90th percentile, the replacement value for FSM pupils is 0.5, meaning that for every 12 places removed from the existing Pates population and replaced with a pupil selected at random, an average of 0.5 places would go to a child eligible for FSM. Translated into the pupil population of 123, this produces a slight rise in the percentage of pupils eligible for FSM: 2% from 1.6%.

However, at the 50th percentile, the replacement value is 1.1, meaning that for every 12 places removed from the existing Pates population and replaced with a pupil selected at random, an average of 1.1 places would go to a child eligible for FSM. This adds an additional FSM pupil to the current total of 2 which produces percentage of 2.5% of pupils eligible for FSM at Pates. This is compared to 1.6% of pupils currently eligible for FSM at Pates.

By contrast, the loosest interpretation of a selective system conceived of here, is to allocate 50% of places randomly drawing from pupils who score in the top half of the distribution. This equates to 61 pupils. After 20 lottery draws, the average number of places allocated to FSM pupils under these conditions is 6.4 and the corresponding non-FSM figure is 54.65. 10.4% of the randomly allocated places go to FSM pupils which translates into a total FSM population of 5.8%. This is compared to the 1.6% under the existing conditions, although naturally considerably lower than if the mandated percentage under quota rules was enforced.

A number of other patterns stand out. When the lottery is drawn from the 90th percentile pool, the average number of pupils allocated to FSM pupils does not change much, even when the percentage of places that are randomly allocated increases: when 10% of places are random, only 0.7 goes to FSM pupils; 1.25 for 20% of places; and 2.6 places for 50% of places. By contrast, when the lottery is drawn from the 70th percentile pool, the percentage of places allocated to FSM pupils doubles from 0.9 at 10% to 2.3 for 20%. It more than doubles again to 5.5 places when 50% of places are open to random allocation.

Table 5: Estimates of random allocation of pupils to Pates' Grammar School

a	b	c	d		e	f	g	h
		Frequency of Non-FSM/FSM being drawn across 20 permutations	**Average no. of places allocated to Non-FSM/FSM pupils at Pates Grammar School across 20 permutations**		**Percentage of FSM pupils allocated in the random draw**	**Non-FSM replacement value^ with random allocations**	**FSM replacement value^ with random allocations**	**Percentage of pupils eligible for FSM**
10% of places open to random allocation (n = 12)								Current % = 1.6%
	Non-FSM	**FSM**	**Non-FSM**	**FSM**				
≥ 90th percentile	226	14	11.3	0.7	5.8%	11.5	0.5	2.0%
≥ 70th percentile	222	18	11.1	0.9	7.5%	11.3	0.7	2.2%
≥ 50th percentile	214	26	10.7	1.3	10.8%	10.9	1.1	2.5%
20% of places open to random allocation (n = 24)								
	Non-FSM	**FSM**	**Non-FSM**	**FSM**				
≥ 90th percentile	455	25	22.75	1.3	5.2%	23.2	0.8	2.3%
≥ 70th percentile	434	46	21.7	2.3	9.6%	22.2	1.8	3.1%
≥ 50th percentile	426	54	21.3	2.7	11.3%	21.8	2.2	3.4%

50% of places open to random allocation (n = 61)								
	Non-FSM	**FSM**	**Non-FSM**	**FSM**				
≥ 90th percentile	1158	52	57.9	2.6	4.3%	59.1	1.9	3.2%
≥ 70th percentile	1110	110	55.5	5.5	9.0%	56.7	4.3	5.1%
≥ 50th percentile	1093	127	54.65	6.4	10.5%	55.9	5.1	5.8%

When the lottery is conducted using the 50th percentile pool the pattern is similar. Both of these trends reflect the small number of FSM pupils from the higher percentile rank pools and demonstrates that random allocation alone will do little to shift the numbers of FSM pupils significantly, unless efforts are made to encourage more pupils to sit the test, as well as initiatives to improve their scores relative to their non-FSM peers. This is why the recommendation from the analysis on RQ 2 and RQ3 is for the test to be compulsory and communication efforts are made to incentives more parents to enter the lottery.

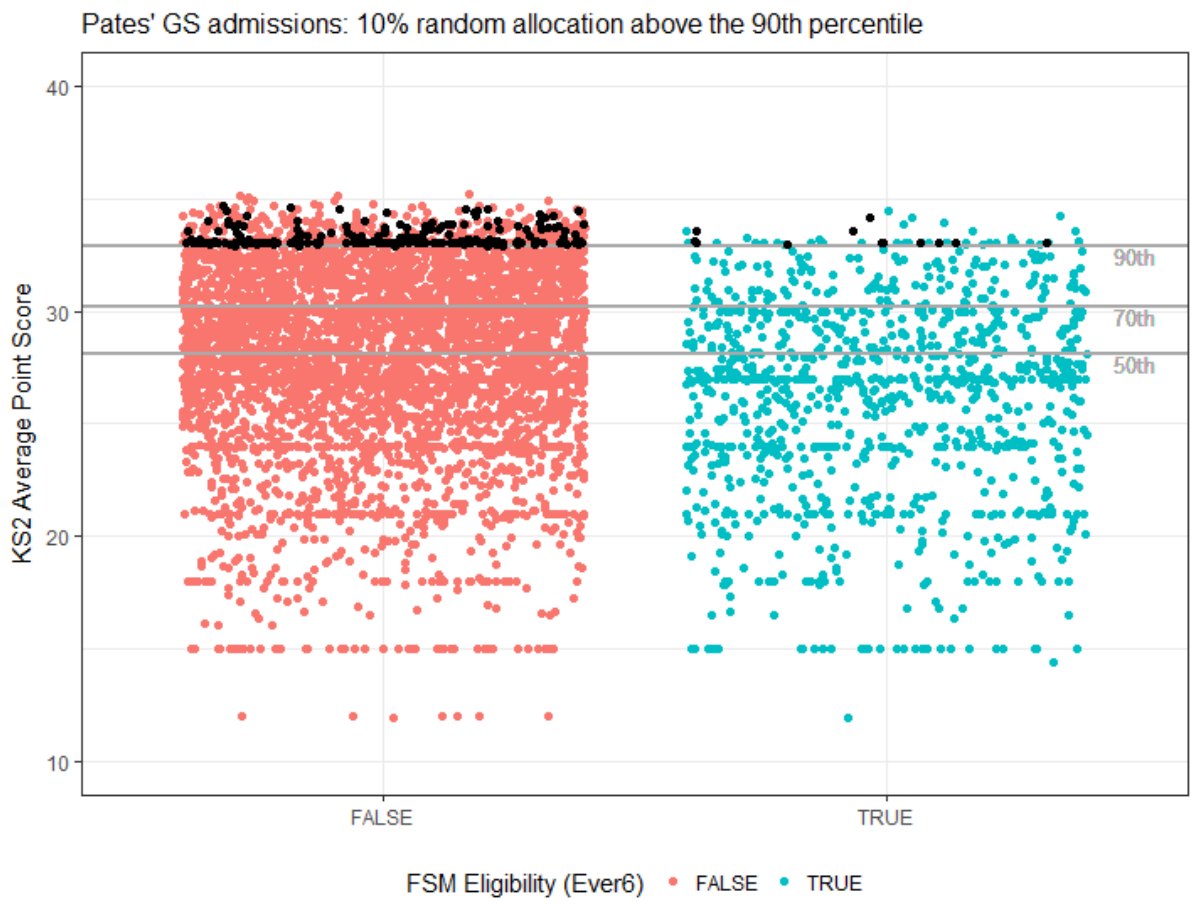

Figure 8: Random allocation to Pates' Grammar School: 10% random allocation above the 90th percentile

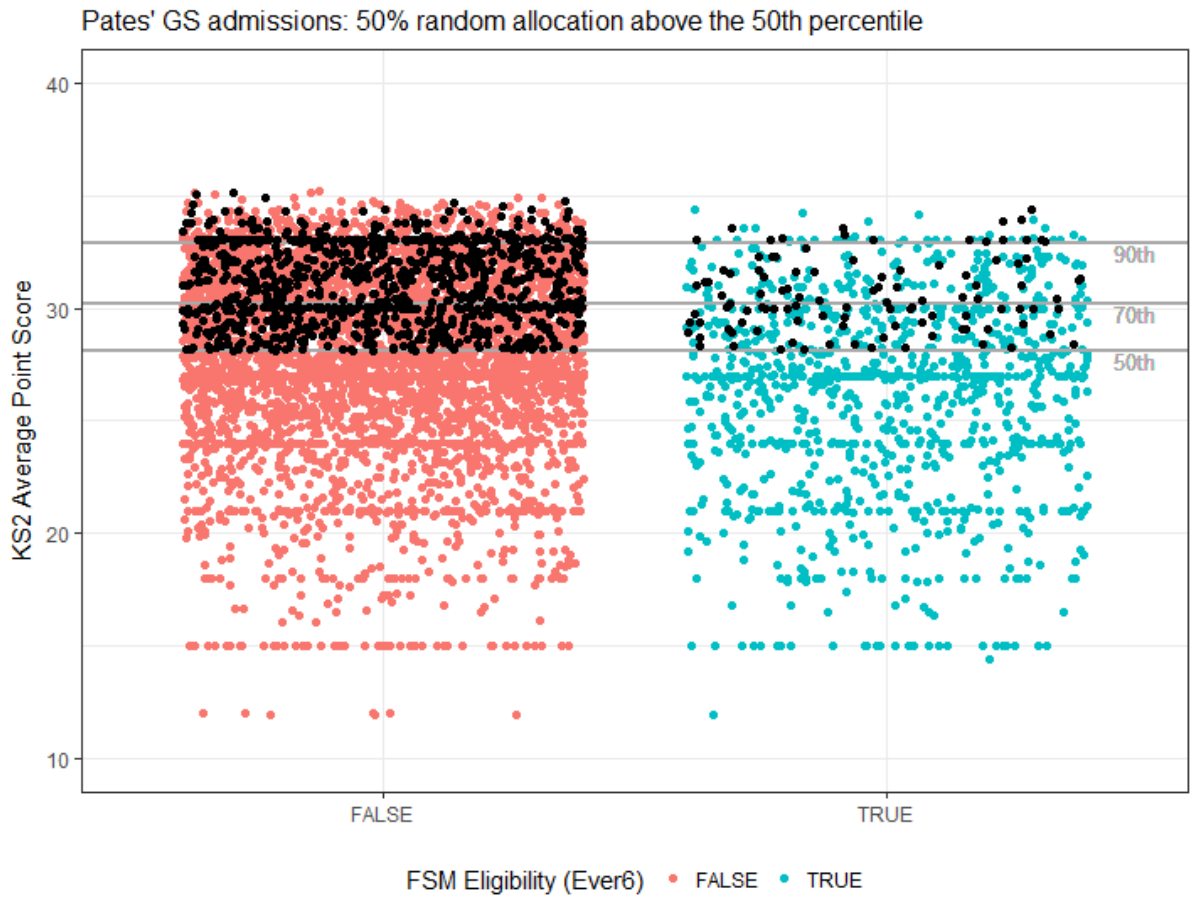

Figure 9: Random allocation to Pates' Grammar School: 50% random allocation above the 50th percentile

6.6.2 Random allocation to non-selective schools

For non-selective schools the power of random allocation is to reduce the link between catchment area and admissions. For parents who are currently excluded from the process by geographical proximity to the school, this represents a major advance in justice. For parents who live within the catchment area now have two opportunities to win a place: the first is to enter the lottery and to have their claim on the school place treated as an equal legitimate claim alongside all other lottery participants. If they do not win a place, then they can default to geographical proximity, assuming that it remains a criterion further down the list.

A stricter version of this process would be to exclude those families living within the catchment from entering the lottery, but this would violate the first principle of equal claims on any school. Although the double opportunity to attain a place at a desirable school may appear unjust, the fact that reducing the number of places allocated by geographical proximity by 20% and opening them up for all to make legitimate claims on, represents a significant step forward in relation to the principles of justice outlined.

Table 6: Estimates of random allocation of pupils to Balcarras school, Gloucestershire

a	b	c	d		e	f	g	h	i
	Frequency of Non-FSM/FSM allocation across 20 permutations		**Average no. of places allocated to Non-FSM/FSM pupils at Balcarras across 20 permutations**		**Ratio of places: Non-FSM/FSM Pupils**	**Percentage of FSM pupils allocated in the random draw**	**Non-FSM replacement value with random allocations**	**FSM replacement value with random allocations**	**Percentage of pupils eligible for FSM%**
	Non-FSM	**FSM**	**Non-FSM**	**FSM**					Current % = 6.5%
10% random allocation (20 places)	346	54	17	3	0.18	15%	18.4	1.6	7.3%
20% random allocation (40 places)	675	125	34	6	0.18	15%	36.8	3.2	8.1%
50% random allocation (100 places)	1669	331	83	17	0.20	17%	90	10	11.5%

The same process in calculating the random allocation and replacement values is followed for Balcarras. Balcarras has 13 FSM-eligible pupils which is 6.5% of the cohort. The probability of a non-FSM/FSM pupil being drawn at random from the pupil population is 0.93/0.07. On average, for 10% of places (20 places) removed to make space for 20 randomly allocated ones, it would produce a figure of 18.6 non-FSM and 1.4 FSM (non-FSM: 20x0.93 = 18.6, FSM: 20x0.07 = 1.4). To increase the number of FSM pupils under the 10% randomisation rule, the replacement value would need to be greater than 1.4. In table 6, the replacement value is 1.6, meaning that for every 20 places removed from the existing Balcarras population and replaced with a pupil selected at random, an average of 1.6 places would go to a child eligible for FSM. This adds an additional 2 FSM pupils (rounded) to the current total of 13 which produces percentage of 7.3% of pupils eligible for FSM at Balcarras. The visual depiction of this is illustrated in Figure 10 showing the distribution of the 400[3] pupils who have been allocated. It shows the allocation of pupils across the distribution of KS2 scores. Figure 11 shows a greater density of pupils being allocated at higher KS2 scores reflecting the overall distribution of pupil scores between the 40th and 70th percentiles. Unlike the Pates random allocations, the pool of pupils is the same in each simulation, therefore the percentage of places: FSM/non-FSM remains roughly constant at 10, 20 and 50% randomly allocated. The slight rise from 15% to 17% at 50% could be an aberration in the random allocations. As the number of permutations increases, a levelling out of these numbers would be expected.

On each of these simulations, the replacement value for FSM is greater than those displaced which produces an increased percentage of pupils compared to the existing percentage of 6.5%. In the case of 50% randomised, almost double the percentage of FSM pupils would be allocated to Balcarras.

[3] In the programme code, the pupils were replaced each time in the random draw, returning them to the pool of eligible pupils and effectively simulating a fresh random draw each time. The pupils who were drawn more than once across 20 permutations are only shown once in Figure 10-12 and therefore will number less than 400.

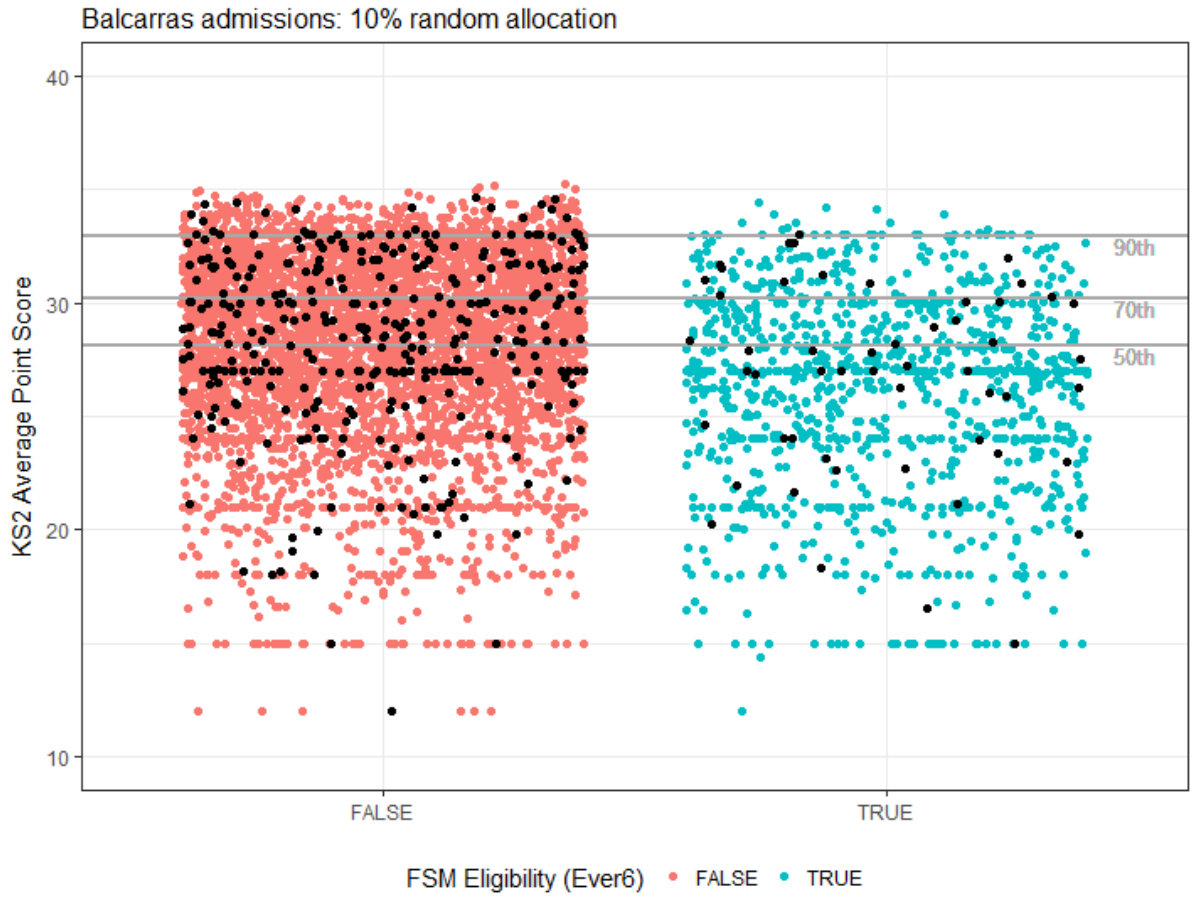

Figure 10: 10% of places randomly allocated to Balcarras

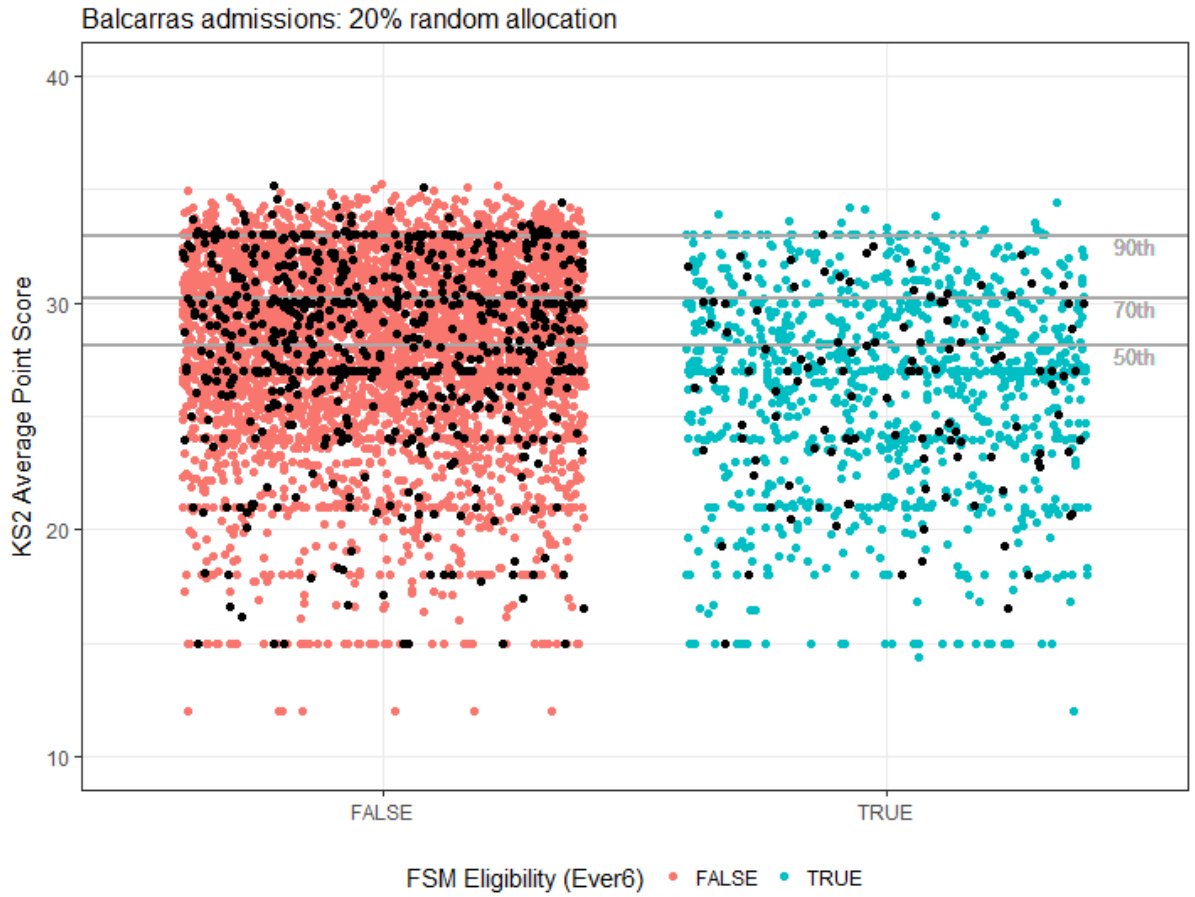

Figure 11: 20% of places randomly allocated to Balcarras

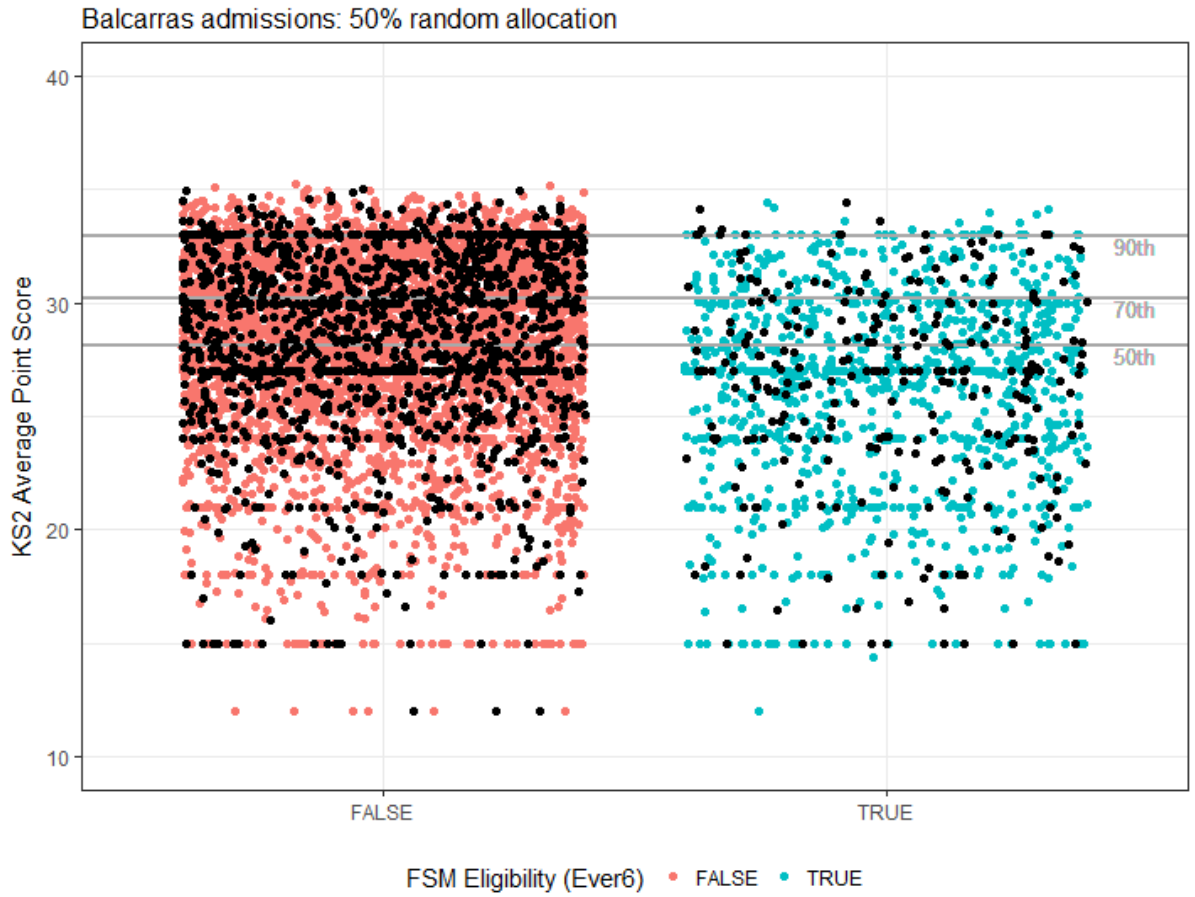

Figure 12: 50% of places randomly allocated to Balcarras

6.6.3 Random allocation in Gloucestershire – a summary

The random simulations presented here offer some evidence that the distributive outcomes would improve as a result of reforming allocative procedures in line with the first two principles of justice. The extent to which the number of FSM pupils increases in selective schools is sensitive to the percentile rank cut score that is used; by lowering the percentile rank cut score, the pool of FSM pupils expands, and the number of FSM pupils admitted to selective schools increases. In non-selective schools, cut scores are not used and the percentages of disadvantaged pupils admitted is significantly higher, even when only 10% of places are allocated using random allocation. For the two dominant types of schools in Gloucestershire, selective and non-selective, the results of these simulations provide tentative evidence that school admissions can be reformed to satisfy both the equality and procedural requirements of the framework, and produce a more equitable distribution of disadvantaged pupils across the county's secondary schools.

6.7 Chapter summary and implications

This chapter has tested the framework of school admissions developed in earlier chapters against the existing practices in Gloucestershire's secondary schools. A baseline analysis of how disadvantaged pupils are clustered in the county's schools show the high percentage of disadvantaged pupils in a small number of schools. This is mirrored with FSM and IDACI measures. The logistic regression analysis shows the very low odds ratios of FSM pupils being assigned to a grammar school, suggesting that there is significant systematic bias or institutional barriers inherent in the way that pupils are allocated to schools.

It is clear from the examination of admissions procedures and the random simulations undertaken, that for selective schools to be more just in their admissions practices, the very nature of selective schools must be debated. It is possible for Gloucestershire to retain the principle of selection for seven of its schools but instead of allocating places by test rank order it loosens the strict interpretation of selection and deliberately widens the pool from which it selects. Inadvertently this is tantamount to lowering the pass mark for all pupils and randomly selecting from within that pool. Similarly, for non-selective schools, randomly allocating even 10% of places and opening it up to a pool of FSM and non-FSM pupils improves the percentage of FSM pupils admitted. These results show the feasibility of these approaches as ways to increase the disadvantaged population in desirable schools without violating principles of justice.

7 Discussion

The overarching purpose of this study is to understand how the process for school allocation can be made more equitable, exploring the appropriate role of the state in determining where pupils go to school. The existing literature, explored in detail in chapter 2, demonstrates the complexity of the relationship between the socioeconomic characteristics of pupils, their home residence and the propensity for the school assignment mechanism to lead to segregated populations. Reforms aimed at improving this situation focus primarily on the policies required to improve the distribution of disadvantaged pupils in schools, rather than the underlying structure of decision making and allocative procedures. In offering a different approach to these policy challenges, this study began with the broadest lens on issues of justice, tracing the arguments of freedom and equality which form the common threads of different theories of justice in an attempt to establish overarching principles for a framework of reference for school admissions. The three philosophical perspectives examined, Rawls, Sen and Dworkin, offer contrasting perspectives on the issue of equality of opportunity and distributive justice, each of them instructive in informing how justice must be judged in multiple dimensions, but none of them sufficient on their own.

The three principles of school admissions developed in chapter 5, made a case for equality of opportunity and procedural fairness as the cornerstones for a just system and argued that the use of random allocation was the only mechanism by which the principles could be satisfied, but left the interpretation of how that requirement is implemented to the local polity, through a process of democratic deliberation. In chapter 6, the framework is tested in a case study of Gloucestershire schools, modelling the requirement to randomly allocate pupils under different conditions with different proportions. This chapter discusses those findings, with respect to the study's five research questions outlined in chapter 1:

Research question 1: What is the role of the state in determining where pupils go to school?
Research question 2: What is a fair process for allocating pupils to schools?
Research question 3: What are the principles that should guide reforms to school admissions?
Research question 4: What is the value of random allocation as a tool for improving access and equity in school admissions?
Research question 5: How can those principles be applied to the context of Gloucestershire's secondary school system?

Although research questions 1-3 can be categorized as theoretical, and 4-5 as empirical, I make no distinction between them in the discussion. The findings and implications from the application of the framework in Gloucestershire's school system are not easily extricated into discrete answers to those

research questions. Consequently, I discuss the findings as a whole, but conclude with a series of recommendations in answer to the first question - the role of the state in school allocation. Although these conclusions are compelling in their appeal for a more equitable system, and robust in their logic, there are risks in positing such a definitive answer to such a complex problem and therefore the limitations of my recommendations are explored in the concluding chapter.

7.1 A veil of ignorance for school admissions

Public debates about injustice or disadvantage are rarely conducted with reference to grand, academic theories. Instead, they emerge from protests about real world issues, argued from personal experience about the consequences of how policies impact upon individuals differently. The issue of school admissions, and the laws and policies that govern the allocation of pupils to schools, is one such case. They are deeply important and emotive issues for parents, driven to some degree by the legitimate partiality that they have for their own children, wanting the best education for them, but regarding the admission criteria which govern the most popular and oversubscribed schools as a barrier to opportunity. The established literature and the empirical analysis undertaken in the current work confirms this view – the arbitrarily constructed criteria create a system of privileged choice for those possessing the financial flexibility to take advantage of geographical proximity rules, or improve the chance of their children doing well on the grammar school test.

The exemplification of the tension between legitimate partiality and the common good is illustrated in the current work through the case study of Gloucestershire's secondary school process. The clustering of disadvantaged pupils within a small number of schools, quantitatively expressed as a dissimilarity score of 0.29 suggests a significantly segregated population. The existence of grammar schools, the prevalence of proximity in oversubscription criteria and the systematic bias against pupils who are disadvantaged calls into question the claims that parental choice facilities justice in the education system.

The analysis of the dataset used in this study demonstrates the dilemmas of the zero-sum nature of finite school places. Unlike true supply and demand markets, there is little option for desirable schools to expand, so admitting one pupil requires denying another. This is an inevitable feature of managed markets in the public sphere, but the opportunity gradient identified in the previous chapter demonstrates that when the difference between the best and the worst schools is so large, there are grave consequences for the pupils unable to access the best schools.

The principles are designed to be a form of Rawls' veil of ignorance. It creates a framework of equal standing before the state and has the effect of creating a system of admissions which does not create cliff-edge consequences. Parents would not want to risk the chance of knowing whether their children were capable of reaching the grammar school standard or were wealthy enough to be a house

in their catchment area of choice. It demands that the legitimate partiality of parental concern for their own children is balanced with the common welfare of other people's children. The arbiter of this balance must be the state. Such an approach, free from bias and partiality in pursuing our own vested interests, at the point at which the procedures and practices for admission are decided, is essential to the pursuit of justice.

How then, can Gloucestershire's procedures be reformed to satisfy the principles?

The purpose of the empirical work undertaken in the previous chapter was to test the framework using a case study of Gloucestershire secondary schools. Tables 2 and 3 summarise the most popular admission criteria, confirming the arbitrary nature of the main methods used. In the case of selective schools, the priority of Pupil Premium pupils in five out of the seven schools is irrelevant as the simulations in figures 8 and 8 demonstrate. Too few pupils meet the qualifying standard against in comparison to their non-Pupil Premium peers so the criterion defaults to the percentile rank in all seven cases. The simulations of randomly allocating pupils to selective schools demonstrate the futility of prioritizing pupil premium pupils without recognizing the need for other reforms to improve the access for disadvantaged pupils. In table *, the results show greater numbers of disadvantaged pupils are being allocated to selective schools as the threshold score is reduced, and the percentage of places open to random allocation increases. Although all simulations improve the percentage of FSM pupils in selective schools, they make only marginal differences. From the current percentage of 1.6% to 5.8% for the lowest threshold score and highest percentage of places. This falls way below the area average for FSM pupils of 19%.

The combination of the two reforms tested here: the percentage of places open to random allocation; and the cut-off rank used are instructive in identifying how adjustments to the mechanism of the process can produce better outcomes under a framework of justice, but they ultimately do little more than tinker at the edges of social mobility. Other reforms are necessary to support the central mechanism of lotteries. Compulsory tests is one such reform, removing the self-selecting nature of opting in to a test. Other ones, not explored here, but described elsewhere at length (Sutton Trust, 2019), include the role of private tutoring for disadvantaged pupils in test preparation, and a Year 5 test, similar to the banding test common in London schools.

7.2 The potential of random allocation to improve the school admissions system

As we have seen, randomly allocating from the all pupil group, without reference to disadvantage/FSM eligibility does little to widen access for disadvantaged pupils. Yet quotas on their own are inherently unjust for unfairly discriminating against one group of pupils or another. But the combination of the two policy mechanisms together can satisfy the equality principles and procedural fairness, and also guarantee the distributional outcomes that is demanded by Rawlsian interpretations

of justice. Fixed quotas of school places for pupils with specific characteristics such as FSM, decided by random allocation can resolve the logical bind of guaranteeing a distribution for an arbitrarily constructed group, without unfairly discriminating against other pupils not possessing that characteristic. Random allocation has the essential properties to satisfy the principles of equality and procedural fairness, but it is not sufficient to improve greater access for disadvantaged pupils unless quotas are used in conjunction with it.

Given the strength of the argument for the sanitizing effect of lotteries, a strong case could be made for 100% of places to be allocated by lottery, with specific quotas reserved for different sub categories of pupils. In this respect, alike pupils would be treated alike: all would have their legitimate claims on school places treated equally in the process. It would completely remove the link between residence and school allocation[4] and approximate a fair distribution of pupils from different socioeconomic backgrounds across schools. However, the very characteristic that justifies the use of lotteries - chance - produces considerable uncertainty in the process, which would contribute significantly to an already anxiety-inducing process for parents. This is a considerable implication that cannot be conveyed in quantitative terms by referring to an improved odds ratio, or reduced segregation score, but is one that should be considered as a holistic approach to applying conceptions of justice to school admissions.

Therefore, notwithstanding the logical justification of using random allocation in school admissions, it is important to recognise the limits on the application of chance in the process. Although the arguments may not carry the weight necessary to undermine the principle of lotteries in guaranteeing equality of opportunity to attend desirable schools, they do suggest that percentage of randomly allocated places should be balanced against other civic concerns.

Given these concerns it is important to underline the importance of democratic decision making in determining the percentage of places which should be allocated in the lottery. The range could be from 1-100% and the final agreed figure is one that is likely to be the focus of intense local debate. This is why the principles of admission should be flexible enough to adjust to reflect the democratic values of the society it is serving, but not so flexible that it prevents the application of its core reasoning of equality of opportunity, procedural fairness and justified distributional inequalities.

Principles of justice in school admissions can be outlined, as I have attempted to do here, but they are still interpreted in a local context and this can produce very different educational or social implications. In Gloucestershire, where the very existence of grammar schools is not threatened owing to their popularity among the majority of parents (YouGov, 2016), the requirement of random allocation in the framework, regardless of the extent to which it was employed, would disrupt the existing infrastructure of admissions, and demand that purposeful deliberations of reform were engaged in. The

[4] assuming that there would still be self-selection in which schools were expressed as preferences governed by reasonable travel distances.

particular issues in admissions for Gloucestershire schools are academic selection and geographical proximity, but in other localities, such as Liverpool for example, the limits of selection by faith would be challenged by this framework. The principles therefore, can be regarded as a national framework, applied locally, through a process of democratic deliberation.

7.3 Democratic deliberation and the role of the state

A central message being conveyed in this thesis is that for justice to be advanced in the sphere of education, *engaging in a process* of debate on the value of the principles is essential, not simply regarding them as a mandated protocol to follow. Regardless of the proportion of places allocated by lottery, the process of establishing lotteries for each school would provide the autonomy required for a genuine expression of choice, thereby enabling parents to reveal their true preferences. This in itself would reveal to policy makers the extent to which current allocation criteria distorts the preference forming. The purpose of these simulated models is not to advocate for one over another. Rather they illustrate the issues at stake and the compromises that must be debated if school admissions in Gloucestershire is to become more aligned with the principles of justice. For that to happen it is necessary that the principles are agreed to before the specific policy reform and the detail of implementation and is debated. If all parents can agree to the principles behind a 'veil of ignorance', then the variants of the models presented here are reserved for the next stage of democratic debate.

The state therefore, is essential in governing individual parental partiality with the common good. The last thirty years of legislative reform have emphasised the freedom of the individual by valorising the process of choice (Ben-Porath, 2009). The appeal of consumer choice as a mechanism to deliver public services is underpinned by the democratic ideals of freedom and autonomy, but in the marketplace of school admissions that has emerged since the 1988 reforms, that has been interpreted as requiring a diminished role for the state. This study has demonstrated the potential of admissions procedures to be used as instruments of the state in pursuing justice in the public sphere, without diminishing individual liberty. The rights of the individual remains, but the state ensures that all individual rights are equal with respect to school admissions, not unfairly balanced by arbitrary factors such as catchment area lines, parent prioritising or individual pupil characteristics. As Ben Porath (2009) has noted, a greater role for the state does not need to restrict opportunity or freedom, it can enhance it provided the appropriate framework and parameters are in place. If society's commitment to equal educational opportunity is to be realised, then it is incumbent on state institutions to adapt the parameters of allocative mechanisms to ensure that a market model is compatible with the principles of justice.

8 Conclusion

8.1 Findings

The central question of this study is how should pupils be allocated to schools? For which there is no satisfactory answer which can be given without reference to claims of individual parental freedom versus collective responsibility which are in constant tension in the liberal democratic state. They are rarely couched in these terms but that is at the heart of this issue: the right of one child to access education at a particular school, against the right of another.

It becomes clear when considering what equality of opportunity means in school admissions, is that it must go beyond theoretical choice and into the realm of equal and legitimate claims on school places. The argument has been made that the fulfilment of this aim is only possible through the absence of illegitimate reasoning in allocating pupils to schools. The policy process by which this is achieved is through random allocation, but this is only possible if the underlying philosophical reasoning has been explored in depth. The principles of admissions developed in this study takes elements of Rawls, Sen and Dworkin's theories of justice and attempts to weave them into a framework which can provide reference points for any new admissions reforms that may emerge from policy.

The justification for using lotteries arises from the removal of partiality in the process of deciding between equal and legitimate claims. The arguments against the use of single selection tests, catchment areas, priority distance and faith based admission on account of their moral arbitrariness, provides a space for the moral weight and impartiality of random allocation to come to the fore.

If a school system was being designed from scratch, I have argued that random allocation would be the option that produced the fairest distribution of pupils. This would equate to a full comprehensive system implemented in Gloucestershire and would satisfy Rawlsian conceptions of justice by exemplifying the veil of ignorance for prospective parents. But for Sen, this is precisely why Rawls' theories should be disregarded when considering real world issues. The veil of ignorance is a tool to help us conceptualize the theory of justice, but when it comes to the pragmatic issue of equality of opportunity in school admissions, reforms need not be perfectly designed, they need only be *more just* than the current situation (Sen 2009). The findings in this study concur with that aspiration. They suggest that random allocation is no panacea in fulfilling the promise of grammar schools as the engine of social mobility because they do little to improve the overall percentages of disadvantaged pupils attending. However, they do at least improve the status quo in terms of process of allocation and the percentage of disadvantaged pupils attending. In this regard, Rawls, Sen and Dworkin's principles are satisfied.

In developing three principles for school admissions, I have attempted to establish an overarching framework for the formulation of new policies. Its purpose is to provide enough direction

to influence the tone and nature of the policies without prescribing exact criteria for local admissions authorities to follow. The precise nature of the policies would be decided in local democratic debate, deliberating within the confines of the framework, established under an impartial veil. These are the parameters by which the state and the individual's rights can be balanced.

The information that is given to parents on schools, and how the choices are framed is part of that narrative and incumbent on the state to ensure that freedom to choose does not absolve society, or the state, of its obligation to design a decision making and allocative process that can facilitate opportunity and autonomy for all parents to produce a fair distribution of pupils across schools.

Despite the strong body of evidence pointing to a comprehensive system as the most equitable solution for selective and partial-selective regions of the country, the current study does not advocate for this. There has been little appetite to remove high-performing schools from the mix of schools on offer to parents and attempts to abolish priority catchment areas have also been unsuccessful.

Given the political constraints on establishing a comprehensive system in a selective county like Gloucestershire, the current study takes a more pragmatic approach, acknowledging the popularity of selective schools and the intractable foothold of catchment areas. The discussion and modelling have focused on how the admissions system can be altered within a framework of justice to distribute opportunities on a fair and equal basis without radically overhauling the mix of schools in existence. As Sen (2009) describes in his criticism of Rawls' work, the intention of policy makers should not be to establish a perfectly just society, but to make the world a little bit more just than the status quo.

What then has this study contributed to the field of school choice and social justice? In combining theoretical perspectives on justice with empirical analysis and modelling, this study straddles two competing philosophical traditions: naturalism and anti-naturalism. By analysing the patterns of distribution across Gloucestershire's schools, and predicting the chance of attendance based on individual characteristics, the approach is firmly rooted in the naturalist tradition in that it attempts to identify and explain the social inequalities that exist through individual rational actions (Baert, 2005). It has attempted to ground ideas and mechanisms for reforming school assignment procedures with theories of justice. I have argued that reforms should not take place without reference to principles by which they can be measured against. The simulations, using Gloucestershire pupil data, provide illustrative case studies to move beyond theoretical suppositions by identifying the issues that emerge when simulating the prioritisation of one pupil, or groups of pupils, over another.

8.2 Limitations and implications for further work

When parents express their preferences for schools, only a small percentage reveal their true preferences (Allen & Burgess, 2004). Most make assumptions based on the likelihood of gaining a place in the published admissions criteria (Coldron, et. al. 2008). Therefore, modelling alternative

school assignment mechanisms under different criteria presents an exogenous problem: the change in assignment mechanism for each school may cause a change in parental preferences (Allen, 2012). How can alternative school assignment mechanisms be modelled in the absence of true parental preference data? Without the models being presented to a 'live' set of parents, it is not possible to answer, therefore these models become theoretical model based on ex ante data. Allen (2012) reports a similar challenge in assigning pupils to their nearest school. The change in rules would almost certainly alter the housing market and therefore the distribution of which pupils attended which school. This represents a significant challenge to the assumptions in this study. I have assumed that parents will want to enter their children in to a lottery for a better school than their local catchment school, but there are many reasons why this might not be the case and in the lotteries conducted, they have not discriminated on geographical distance therefore there will be a number of unfeasible matches in the iterations produced. For example, a pupil living in Chipping Campden being allocated to Pates Grammar School, some 20 miles away. As the ratio of random places to proximity places increases, children will have to travel further distances to attend, generating more traffic congestion and increasing pollution levels. To improve the realism of the models, subsequent models refine the choice set to try and simulate with greater accuracy how disadvantaged parents would behave under different admissions rules, given geographical and economic constraints. For example, by restricting the choice set to within 5 miles of home postcode. Conducting simulations using the same procedures used in this work could be extended and the spatial implications of the new school admissions criteria mapped using R packages. Other implications include the provision of free transport for FSM-eligible pupils to attend a choice of three schools within six miles of their home (or up to 15 miles for faith schools) is particularly important for the facilitation of choice sets and needs to be considered in further work (Sutton Trust, 2012).

Second, the data from the Gloucestershire selection test would need to be accessed to identify how the interaction of pupil preferences for grammar schools correspond with the final allocation to schools. Similarly, the flaw in the random simulations is that the entire population of FSM pupils are included, regardless of whether they have sat the test or not. There are no available data on the numbers who sit the test by FSM eligibility therefore it is not possible to estimate the accuracy of the KS2 scores against the test. The figures presented in the simulation results are likely to be an overestimate of the numbers as it is fair to assume that only a small proportion of the FSM pupils in this dataset sat the selection test. This data is not publicly available and would need to be accessed under a freedom of information request or primary data could be collected using questionnaires from representative sample of parents whose children took the selection test. A longitudinal dataset could be constructed to follow decision making processes through to admission. This would be costly and time consuming but an important step in understanding how individual choice and preference interacts with the institutional processes of the state in school allocation.

This study has focused on two principal actors in the school marketplace: the individual family and the state. It has treated the school as a passive recipient of new pupils and has not considered the

threat that the current undersubscribed schools may feel in losing some of their pupil intake as parents enter the lotteries for other schools. The inelasticity in school places is currently a key barrier to implementing any reforms along these lines (Allen, 2007b).

Because the funding for schools is linked to the individual pupil numbers admitted, any reforms which threaten schools receiving fewer pupils than needed for viable financial operation, will be regarded as unfeasible. Further work would be needed to model different scenarios of funding elasticity linked to different numbers of pupils admitted depending on lottery outcomes. These might indicate the extent to which schools might be tempted to market aggressively and game the system to provide assurance on pupil place numbers. This is potentially missing a large part of the implications both in justice terms and practical considerations.

This study has outlined a framework of principles which would govern the allocation of pupils to schools based on fair procedures. With the foundation of principles in place, established in this study, the next stage is to understand the parents might behave under new admissions criteria, and the spatial implications of the reallocation patterns.

8.3 Concluding reflection

The two dominant political paradigms of the post-war era, social democracy and neoliberalism, both embody liberal democratic values, but the policies that are enacted rely on different theories of human motivation (Le Grand, 2006). For social democrats, the emphasis is on social justice and the collective welfare; for neoliberals, the focus is on the primacy of the individual (Le Grand, 2006). The boundary between individual autonomy and state action depends upon how different governments interpret it and this is reflected in the policies which enact their values. Unfettered choice, favoured by the right, can lead to inequality; too little choice, traditional of the left, is coercive. Typically, left of centre governments have advocated a more interventionist role for the state in education, whereas centre-right governments have regarded education to be an issue reserved for the private sphere, where individual preference takes primacy. Yet, the political response to the thorny issue of school admissions has ranged from one of strategic ignorance by the 1997 Labour government (Adonis, 2012) to indifference in the 2015-19 Conservative government (Department for Education, 2018) despite the compelling evidence on how current school admissions arrangements undermines social mobility.

This study has attempted to tackle the issue from a different angle, arguing for a framework underpinned by three principles to guide local level reform of school admissions. The framework deliberately acknowledges the difficulties of challenging the status quo but provides the opportunities for policy makers, under the guise of local democratic discussion, to make incremental reforms in an attempt to produce fairer procedures and a more equal distribution for poorer families. Through the use of random allocation is necessary in this aim, it is not sufficient for it to be considered a panacea for access and equity. Although the intention of this study was to focus on the systematic and institutional

barriers that contribute to the poor performance of this group of pupils at secondary school, perhaps the more important finding to emerge is the importance of not prioritising one group of pupils over another, in an effort to bring about desired outcomes. But by stating equal opportunities for all, the framework developed in this study avoids the contentious issue of moral arbitrariness in establishing definitions and benchmarks. By regarding all pupils as equal in their claims for admission to any school, and guaranteeing a process that facilitates freedom of choice and fair process of allocation, the state's role in school admissions has been enhanced without undermining the freedom of choice.

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