Measuring the Disadvantaged Attainment Gap, is it Enough?

Talent is evenly spread in this country, but opportunity is not.

Conservative Party Manifesto, 2019 [1]

Introduction - The disadvantaged attainment gap in education is a well-documented and researched phenomena [2]–[4], highlighting the difference in academic achievement between children from disadvantaged backgrounds and their peers. A common metric used to identify this gap is comparing the % difference of children from disadvantaged and non-disadvantaged backgrounds achieving basic requirements in fundamental reading, comprehension, and numeracy subjects (such as English and Maths in the UK), henceforth we will use this definition for the ***attainment gap***. This powerful statistic, easy to understand for interested observers, is even used by political parties to gauge the success of their education policies. [1]

Is this simple metric sufficient, however? The intended purpose of narrowing the attainment gap is to create a level playing field of opportunity in life for children regardless of their parent's financial status, but does narrowing the gap of achievement in the most of basic of subjects achieve this? Surely a better standard would be to be to assess whether a child has the right grounding to work themselves out of their disadvantaged status. The Joseph Rowntree Foundation concluded that one key way out of poverty for disadvantaged children is the continuation of education [5], and UK government statistics consistently show that those who remain in education to graduate level are more likely to be employed and earn a higher salary than their non-graduate peers. [6] With this in mind does the basic requirement attainment gap serve its purpose to assess whether education policies are having the desired effect of creating an equal opportunity society?

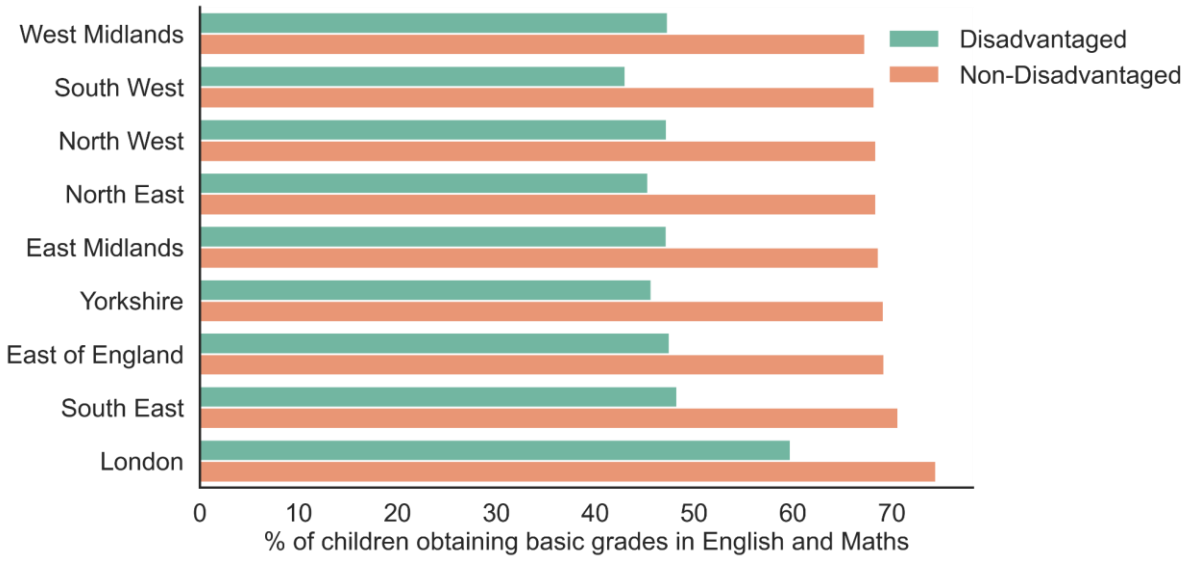

Figure 1: Rates of disadvantaged and non-disadvantaged children achieving standard grade 9-4 at Key Stage 4 in the basic subjects of English and Maths in England in the 2018/19 academic year, broken down by region.

Aim – The aim of this study will be to assess whether the commonly used metric of the basic requirement attainment gap is an indicator for whether disadvantaged children remain in education. Or more specifically, ***Is the attaiment gap correlated to the retainment gap?*** With the ***retainment gap*** defined as the % difference between disadvantaged and non-disadvanteged children remaining in Education after their secondary school exams.

Three major sets of stakeholders would be considered as the target for this report:

- Government agencies defining policies for disadvantaged children in schools
  - A reliable metric that accurately captures the results of a policies aim should be a key feature of any strategy to allow its effectiveness to be monitored

- Schools and governing academy trusts
  - As the often direct target of education policies they will want to ensure that any metrics used effectively monitor their performance

- Parents and a wider general public
  - Clear statistics identifying the success/failure of the policies around aiding disadvantaged children helps hold elected officals to account for the voting public

Data – To investigate this question we will require data on the % of students obtaining basic requirement qualifications and the % of students staying in full time education broken down into disadvantaged and non-disadvantaged sub-groups. Considered data will be for English schools only to simplify the data set and eliminate differences in data form other countries with differing social structures.

Basic requirement qualifications will be classed as obtaining a grade 9-4 in both English and Maths as Key Stage 4 level (KS4). This metric was chosen as it is the last stage where these basic subjects are mandatory for English students, with a grading boundary of 4 or higher chosen as the definition of a standard pass for the qualifications. [7] Retainment data will be classed as the % of students who remain in full time education for a period of 2 months after their KS4 examinations. This is chosen as it is the first point where a child is eligible to drop out of full-time education and discounts children who begin then immediately drop out of further studies from consideration. Disadvantaged children are identified as those who are eligible for free school meals which is a standard practice for these studies in the UK. [2], [3], [8]

Data for this report is obtained from the open access Gov.UK website containing the official UK statistics for all schools in England [9], collating data from local authorities, qualification bodies and the schools census for all English schools. [10] All data is taken from the 2018/19 school year as the latest 2019/20 data will be heavily distorted due to the global corona virus pandemic during this period. Being official UK statistics this data is considered as reliable, and while schools may have some incentive to hide performance by falsely reported figures, regular government led inspections are in place in the UK to also monitor performance and corroborate reported data. [11]

Analysis – Figure 1 shows the % figures for disadvantaged and non-disadvantaged children in the UK achieving basic requirement grades for the 2018/19 academic year. Typically the attainment gap is calculated by simply subtracting the % of disadvantaged children achieving the grades from the % of non-disadvantaged children to achieve an absolute % difference. This method has the potential to mask poor performance of some schools/regions however, as for example an absolute % difference of 5% in a school only achieving 30% of non-disadvantaged students obtaining basic requirement grades is far more significant than in a school where 70% of non-disadvantaged students obtain basic requirement grades. To compensate for this all % difference values for analysis have been normalised to generate relative % difference values using the following formula:

$$Relative\ \%\ Difference = \frac{Non\ Disadvantaged\ \% - Disadvantaged\ \%}{Non\ Disadvantaged\ \%}$$

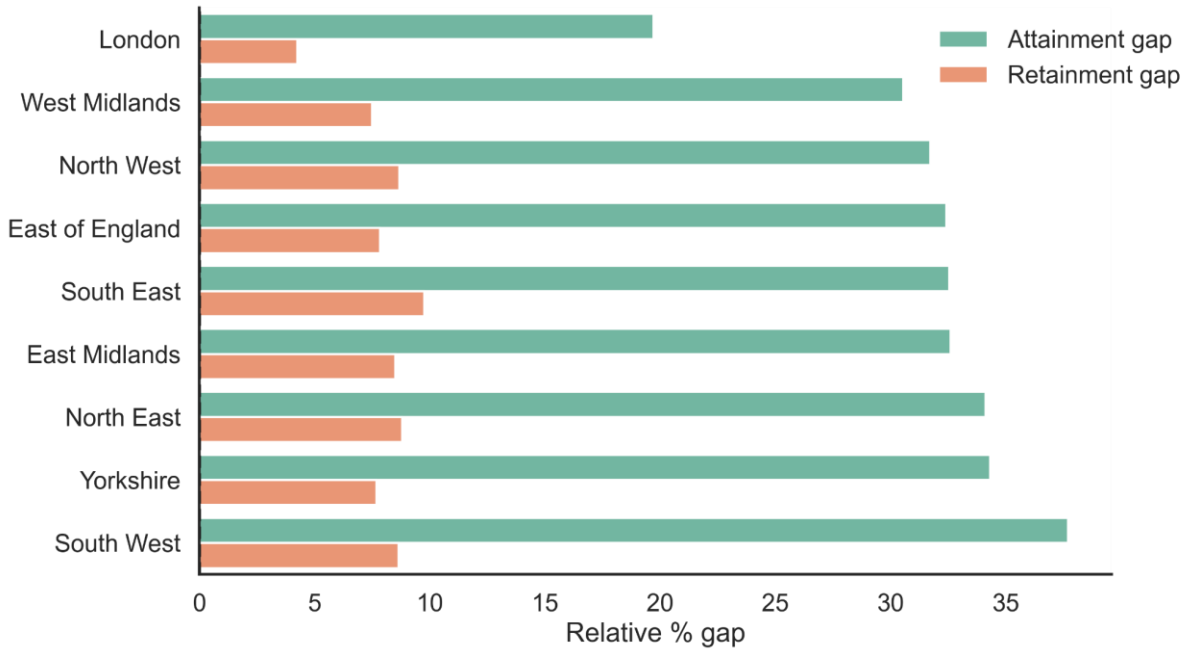

Figure 2: Relative attainment and retainment gap data between disadvantaged and non-disadvantaged students for schools in England for the 2018/19 academic year, broken down by region.

Figure 2 shows relative attainment and retainment gap data for schools by each region. Data is broken down by region to give a better idea of the variability in the metrics across the English regions. Immediate observations from the data show that the relative retainment gap is much smaller that the relative attainment gap across the UK, suggesting that not achieving the basic requirement subject grades is not a barrier to further education for at least a portion of disadvantaged children. Secondly we can see that the relative attainment and retainment gaps in London are significantly smaller than the rest of the UK regions. This "London Effect" is beyond the scope of this report but has been extensively researched. [8] Also it is noted that the ranking of the regional relative attainment gaps do not appear to correlate with the retainment gap (i.e. as the attainment gap increases we do not see the retainment gap increase). A simple observation at this level however is not sufficient to obtain a lack of correlation and further statistical testing must be performed to properly evaluate the data set.

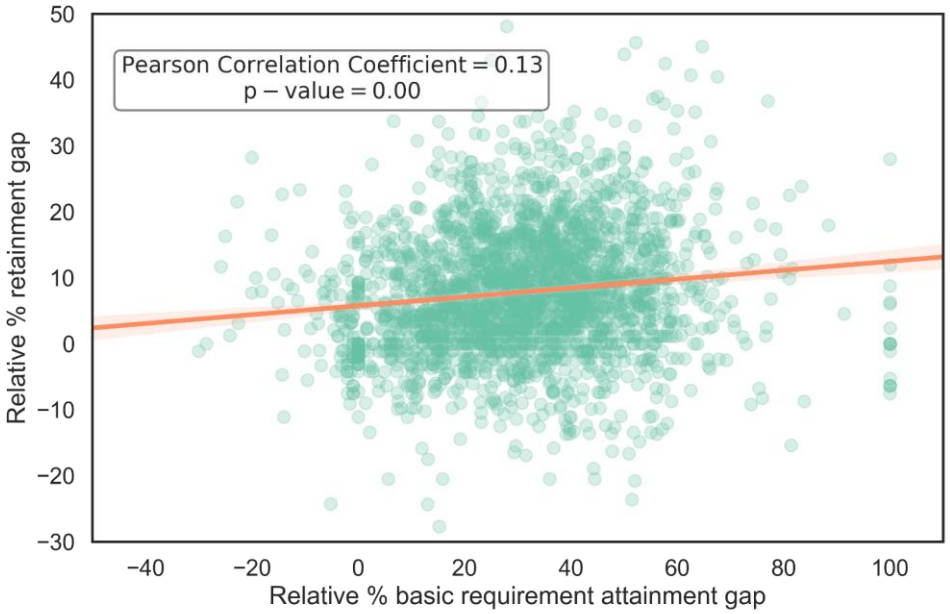

Figure 3: Relative % retainment gap plotted against the relative % basic requirement attainment gap for schools in England for the 2018/19 academic year with a line of best fit. Inset text box contains the summary statistics for the correlation between the variables.

Looking at the data at the regional level would only provide us with nine data points for a correlation analysis which would be insufficient for through analysis. In order to expand on this data set the schools can instead be looked at independently as shown in Figure 3. Here we can see that an individual school level there is little to no evidence of correlation between the retainment and the attainment gap with no obvious shape or visible trend to the data. A calculated Pearson Correlation Coefficient value of 0.13 indicates that there may be a small correlation between the two variables but the relationship would be very weak. [12] Furthermore Table 1 shows that when assessing individual schools at a regional level we also see similar results with very weak to no correlation values observed, additionally several of the regions also demonstrate high p-values for the statistical tests indicating that a null hypothesis of the correlation between the variables being 0 should be accepted.

Region	Pearson Correlation Coefficient	p-value
National	0.131	0.000
London	0.208	0.000
South East	0.203	0.000
West Midlands	0.134	0.024
Yorkshire	0.129	0.050
East Midlands	0.108	0.109
North East	0.011	0.907
South West	0.011	0.878
East of England	0.008	0.901
North West	-0.010	0.843

Table 1: Pearson Correlation Coefficients indicating the strength of correlation between the relative % retainment gap and the relative % attainment gap for schools in England for the 2018/19 academic year. p-values indicating the significance of the calculated coefficients are also shown.

Conclusion – We have demonstrated that for secondary schools in England for the 2018/19 academic year there is little to no correlation between the attainment gap and the retainment gap comparing the performance of schools for their disadvantaged students, at both a national and regional level. Additionally we have demonstrated that the relative retainment gap for disadvantaged students is far less prevalent than the attainment gap.

A recommendation from this report would be for government bodies introducing education policies and schools themselves to potentially reassess whether such a close focus of the attainment gap between disadvantaged and non-disadvantaged students is a worthwhile endeavour. Achieving parity between all students in basic subject is undoubtedly a noble goal and looks good in headlines for policy makers but as we have demonstrated the results appear to have no bearing on whether non-disadvantaged children remain in education at the same rate as their peers to improve their chances of working out of poverty. This is undoubtedly a very nuanced problem that bears more consideration than a brief report but a shifting of goals to metrics that actually have a bearing on future opportunities of disadvantaged children would be a better start to assessing the impact of such educational policies.

Further work is still required to improve the efficacy of this report. It is noted that the data is a snapshot of only one academic year, expanding the report to analyse data over several years would solidify the findings and eliminate the chance that the year in question is an anomaly. Also a more longitudinal study of students into later life, focussing on final educational level and resultant income would provide a much better picture of the effectiveness of closing the attainment gap on setting up disadvantaged children for later life. Such studies are very labour intensive however and naturally take many years to complete which provide significant barriers to their implementation.

References

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