

# **The ‘Beeching Axe’ and Electoral Support in Britain<sup>1</sup>**

Alejandro Quiroz Flores and Paul Whiteley  
aquiroy@essex.ac.uk; whiteley@essex.ac.uk

Department of Government

University of Essex

Wivenhoe Park

Colchester

CO4 3SQ

Corresponding Author: Alejandro Quiroz Flores

## **Abstract**

Policy implementation has important electoral effects, but there is often a problem in determining if policy changes drive electoral behaviour or if the process works in reverse. To address this issue we exploit a unique natural experiment in Britain: the closure of thousands of train stations, known as the *Beeching Cuts*, on the eve of General Election of 1964. We use several statistical methods to show that policy implementation was unaffected by partisan considerations and therefore it can be regarded as an exogenous intervention. An individual level model of voting intentions from the first British Election Study conducted in 1963, and an aggregate model of party vote shares in the General Election of 1964 show that the closures significantly changed voting support for the Conservative party. The 1964 election was very competitive and the closures clearly contributed to the defeat of the incumbent government after 13 years of uninterrupted rule.

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## Introduction

Public policies have electoral effects; for example, there is a wealth of research on economic voting which indicates that voters reward incumbent governments for economic prosperity and punish them for economic failure (Lewis-Beck, 1988; Nannestad and Paldam, 1994; Van der Brug et al., 2007; Duch and Stevenson, 2008; Whiteley et al., 2013). In Britain this research goes back a long way (Goodhart and Bhansali, 1970; Miller and Mackie, 1973). More recent work shows that public service delivery in relation to issues such as health, education and transport, together with lower rates of crime and personal insecurity also bring electoral rewards (Stokes, 1963, 1992; Clarke et al. 2004, 2009). These policy outcomes have effects both across time and across space (Johnston, Pattie, and Allsop, 1988; Pattie, Seyd, and Whiteley, 2004).

In common with research in social science, however, there is a problem identifying if variations in policy delivery drive electoral support, or if the process works in reverse, with anticipated electoral effects driving policy-making. In this paper we examine a policy with a significant geographical impact on transport in Britain in the 1960s, the *Beeching Axe* of the railway network. In this one-off event, thousands of train stations across the country were permanently closed in order to reduce the massive operating losses of the dilapidated network. The closures took place on the eve of the highly competitive General Election of 1964, and thus present us with a unique opportunity to identify the effect of exogenous policy-making on voting behaviour. Specifically, we show that policies which are not normally very salient in influencing voting behaviour nonetheless have electoral effects, and as we demonstrate below the flow of causation runs one way.

We challenge anecdotal evidence that suggests that the infamous cuts of 1963-1964 were uniformly disliked and suggest that they were in fact a spatial or divisive issue in

electoral politics (Downs, 1957). As we point out below, spatial issues are those which divide the electorate and citizens support a party which comes closest to their own preferences on these issues. At the same time the cuts were also a valence issue for those who were directly affected by the policy. Valence issues are those over which there is widespread agreement about what should be done, but divisions arise over which party is best at delivering policy goals (Stokes, 1963). In constituencies where the cuts took place, electors were losing a local public service making it more of a valence issue for them and so many sought to punish the government that had taken away this service.

We develop three distinct hypotheses based on these ideas and test them using the first British Election Study (BES) survey conducted in 1963 (Butler and Stokes, 1969); this is the only wave in the history of the BES that explored this policy issue. Moreover, we matched the BES data with a new database of the geographical location of 1,220 station closures in England and Wales to identify BES respondents directly affected by the cuts in order to model voting behaviour in the 1964 election. We find that the station closures produced a loss of political support for the Conservative government. The effects are subsequently confirmed with an aggregate analysis of constituency voting across Britain showing that the vote share of the Conservatives was reduced by the *Beeching Axe*. Since the 1964 General Election was highly competitive—the 1964 election gave Labour 317 seats, only 13 more seats than the Conservatives obtained—we argue that the *Beeching Cuts* made a decisive contribution to the defeat of the incumbent government, which was replaced by a Labour government after 13 years of uninterrupted rule.

The paper is organized as follows. We first present an overview of the *Beeching Axe*. Although this is a policy that has produced controversy for the last 50 years in Britain, it is surprisingly not well understood. The paper then presents a theoretical framework and moves on to discuss the empirical strategy. There we present estimation results for two classes of

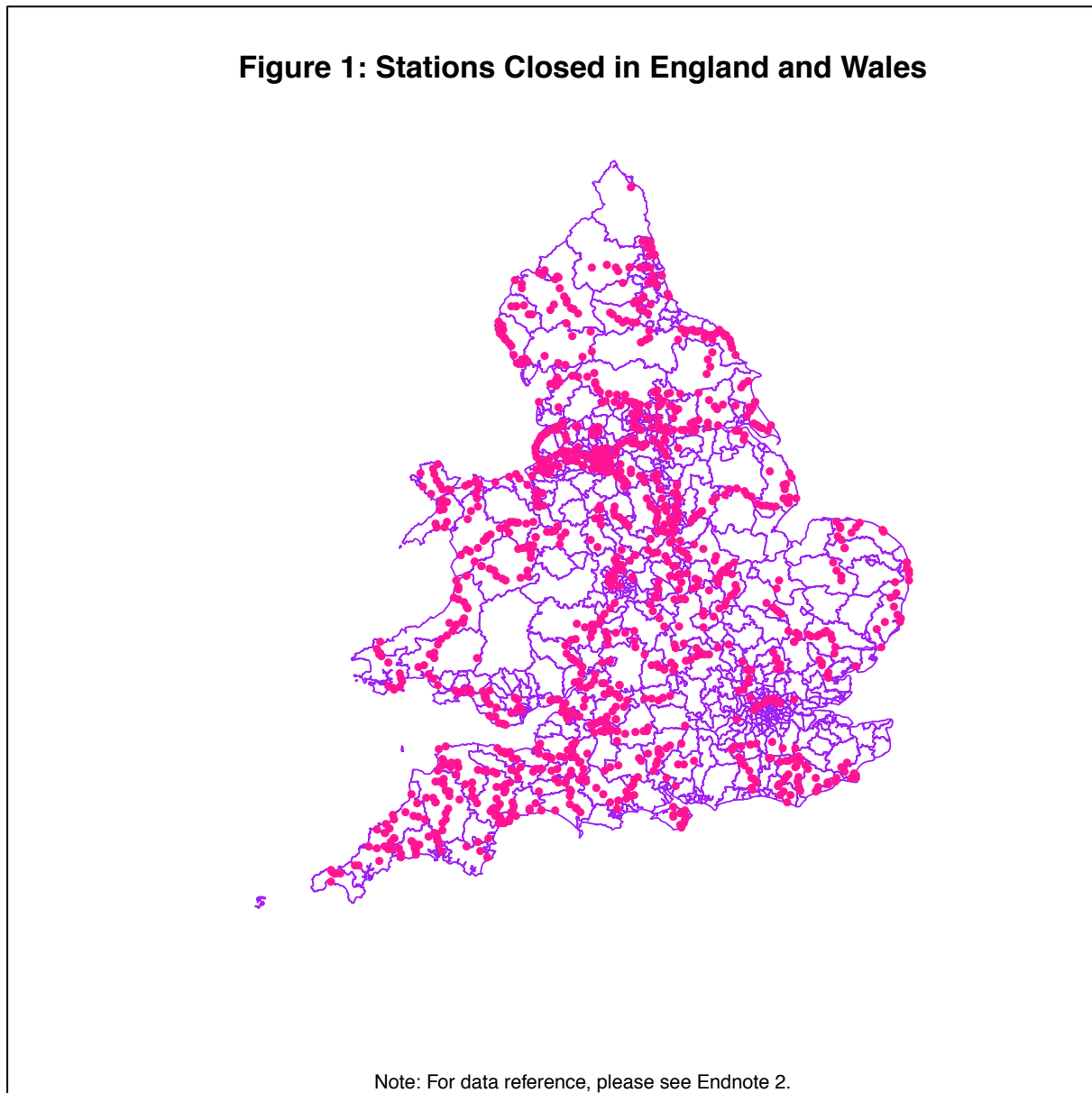
models: the first set explores voting intentions in 1963 while the second set investigates party vote share in the General Election of 1964. We conclude with a brief discussion on the unique character of the station closures and their role in identifying voting behaviour on the eve of competitive elections.

### **The Beeching Axe and the British General Election of 1964**

In the early 1960s, the Conservative government commissioned a report on the state of the national rail network. The network was already in a poor condition in the early 1950s after years of under-investment and a *Modernization Plan of 1954-1955* was supposed to renovate it. However, the commissioned report, entitled *The Reshaping of British Railways* (British Railways Board, 1963), concluded that the most serious problem for the network was not renovation but rather operating losses, which in 1961 amounted to £86.9 million pounds, equivalent to £1.7 billion pounds at current prices. The Report, popularly known as the *Beeching Report*, after Dr. Richard Beeching, Chairman of the British Railways Board, traced the cause of the financial losses to the limited use of many stations. An analysis of receipts demonstrated that approximately 3,500 stations contributed two per cent of the network's income while 34 stations accounted for 26 per cent of the income (British Railways Board, 1963, p. 11).

In order to reshape the network, the Report proposed a plan that consisted of 15 steps, including the closure of two thirds of stations across Great Britain. Specifically, "The number of stations and halts which will be closed is 2,363, including 435 under consideration before the Report appeared. Of these, 235 have already been closed. Services will be completely withdrawn from about 5,000 route miles." (British Railways Board, 1963, p. 97). Figure 1 presents a map of the closures across England and Wales.<sup>1</sup>

**Figure 1: Stations Closed in England and Wales.**



According to Patmore (1965), there were three different types of lines affected by the cuts. First, there were rural branches no longer feeding traffic to the main lines and these had been losing money since they were first laid down. The second type of closures affected routes that were feeding stagnant regions whose traffic had changed considerably. Finally, the cuts ended duplicate stations produced by competition between railway companies before

nationalisation had occurred. Other cuts affected halts and stations that served private estates or even stops that served pubs such as *Trouble House Halt*.

The large majority of the closures took place just months before the General Election of 1964, which gave little time to Conservative incumbents to ameliorate the consequences of the closures at the local level before voters turned to the polls. Never again did the British public witness such an enormous change to the national rail network, and anecdotal evidence suggests that the closures were widely disliked. Nevertheless, the British Election Study of 1963 indicates that a significant proportion of voters did support the policy. What explains the voters' mixed feelings about the policy? To what extent did these feelings have an effect on voting intentions? These are key questions because the closures took place just months before the very competitive General Election of 1964. By the time the votes were counted, Labour claimed 44.1 per cent of the votes while the Conservatives' share was 43.4 per cent; the conservative share of the vote had fallen by six per cent, its largest drop since 1945 (Butler and King, 1965).

The answers to these questions cannot be separated from the political climate of the time. To begin with, the Conservatives had experienced falling popularity for a number of reasons (Butler and King, 1965), including an unpopular wage freeze introduced in 1961 and a sluggish economy. By 1962-1963, the Conservatives were haemorrhaging parliamentary seats in by-elections. Two events further contributed to the decline of Conservative popularity: the *Profumo* affair and the abolition of Resale Price Maintenance.

The *Profumo* affair is relatively well known; John Profumo, the Defence minister in the Conservative government, denied rumours in the press that he was having an affair with a young model, Christine Keeler, to the House of Commons. He subsequently admitted the relationship in the House and so had to resign. This was a major scandal because Ms. Keeler

was also in a relationship with Yvegeny Ivanov, the Soviet naval attaché at the time, thereby opening up the minister to blackmail. For a full discussion of this scandal see Parris (1996). The scandal weakened the Prime Minister, Harold Macmillan, who resigned due to ill health soon after. Macmillan was replaced by Sir Alec Douglas-Home, an aristocrat who was viewed as an outdated Victorian figure by many people, and the Labour leader Harold Wilson used this to full advantage. Wilson ran a very effective election campaign in 1964 emphasizing the importance of science and technology in modernizing Britain and calling for the removal of outdated attitudes and practices (Butler and King, 1965).

The abolition of Resale Price Maintenance (RPM) further weakened the Conservative party. The policy effectively eliminated price competition by preventing supermarkets from buying products at discounted rates from producers and selling them at lower prices. The abolition was designed to increase market competition in the High street and to benefit consumers at the expense of small retailers, many of whom were Conservative party supporters. According to Findley (2001), the Conservative government's success in abolishing this policy "succeeded in splitting the party, upsetting a large section of Conservative support, and delaying the date of the general election. Because of it, the Prime Minister had lost his most important electoral advantage: the ability to choose a date which best suits him and which wrong-foots his opponents. This was to have a crucial effect upon the electoral fortunes of the Conservative party in 1964."

### **Theoretical Framework: Modelling the Effects of the Beeching Axe**

To model the effects of the railway closures on voting behaviour we need to anchor the analysis in the context of well-defined models of electoral choice. The two dominant models in the literature are the spatial model, originally associated with the work of Downs (1957; see also Enelow and Hinich, 1984; Merrill and Grofman, 1999; Adams et al., 2005), and the

valence model introduced by Donald Stokes (Stokes, 1963, 1992; see also Clarke et al., 2004, 2009; Whiteley et al., 2013). The spatial model has been elaborated in different ways but retains the core assumption that position issues which involve disagreements among the voters over policy goals are the key factor which explains electoral choice. Here, voters' preferences over divisive issues are taken as a given because the theory inherited the assumption that tastes, or in this case policy objectives, are determined exogenously by outside factors, a legacy from neo-classical economics (Hotelling, 1929; Blaug, 1962). In fact experimental evidence suggests that this is a poor representation of reality but it is nonetheless the standard assumption in spatial modelling (see Sanders et al., 2011). As we shall see below the Beeching Axe was a salient position issue at the time since the voters were divided over the necessity for the cuts.

As mentioned above, the valence model in contrast focuses on issues over which there is widespread agreement on policy goals among both parties and voters. In this case disagreements occur over which party is best able to deliver on these agreed objectives. The most important valence issue is the economy, since almost everyone wants vigorous, sustainable economic growth coupled with low rates of unemployment and inflation and there is little support for stagnation and unemployment. The quality of public services such as health, education and transport are also valence issues, with individuals preferring high quality to low quality services. Given this, the key idea is that the electorate will support a party or a government which appears most likely to deliver these policies.

Valence theory can be viewed as a generalisation of economic voting and assumes that policy delivery influences attitudes to issues. Successful delivery of services valued by voters will strengthen their support for a party or leader, and unsuccessful delivery will have the opposite effect. This means that support for the ruling Conservative party is likely to be



reduced if voters are personally affected by station closures and the Labour and Liberal parties could benefit from this by acquiring extra support.

In the present context, we argue that public attitudes to the closure programme was a spatial issue, since the evidence shows it divided the public in 1963. The first ever British Election Study survey of that year asked interviewees if they had heard of the Beeching plan and some 90 per cent indicated that they had. Some 46 per cent of them supported the planned cuts with 35 per cent opposed and the remaining 19 per cent having mixed views or not knowing. This meant that the policy was far from being universally disliked by voters. Two subsequent open ended questions asked respondents to indicate the advantages and disadvantages of the planned cuts as they saw them. Some 43 per cent of respondents living in constituencies unaffected by the cuts had positive things to say about the policy, compared with only 39 per cent in constituencies affected. This indicates, not surprisingly, that individuals affected were significantly less enthusiastic about the policy than the rest of the population. They were bearing the costs of the policy while society as a whole received the benefits in terms of savings in public spending. This suggests that valence considerations to a significant extent drive spatial considerations on this issue.

To underscore this argument while the Beeching Axe was a spatial issue across the entire electorate, in constituencies directly affected by the loss of a public service, it was more of a valence issue. The spatial character of the issue was transformed into a valence issues when people were faced with the loss of a public service which in an era of limited car ownership would have adversely affected some of them.

More generally the evidence suggests that valence issues typically dominate the political agenda in Britain and in other democracies when it comes to explaining electoral choice (Clarke et al., 2004, 2009; Clarke, Kornberg and Scotto, 2009; Lewis-Beck, Nadeau

and Bélanger, 2011; Clarke and Whitten, 2013; Ho et al., 2013; Whiteley et al., 2013).

Spatial issues are also important but they tend to be less so compared with valence issues in models of voting behaviour. This discussion leads us to formulate three hypotheses, based on spatial and valence theory. The first which is based on spatial theory is that:

*(1) Opponents of the Beeching Axe are less likely to support the Conservative party who introduced it, but not necessarily more likely to support Labour and the Liberals since these parties gave no undertaking to change the policy.*

The Labour position on the cuts was set out in its manifesto for the 1964 general election. It stated that “The Government’s policy of breaking up road and rail freight co-ordination, of denationalising road haulage and finally of axing rail services under the Beeching Plan, have made things worse.” (Labour Party, 1964). Thus Labour complained about the policy, but crucially gave no undertaking to reverse it. Moreover, after the party was elected to government in 1964 it did not change the policy. As far as the Liberal party was concerned it took no position on station closures in its 1964 general election manifesto, so opponents of the cuts had no alternative party to turn to if they wanted to support a change in the policy.

The second hypothesis based on valence theory is that:

*(2) Voters directly affected by the cuts at the local level are less likely to support the Conservative party and more likely to support the Labour and Liberal parties since the quality of their public services were being reduced.*

This hypothesis can be regarded as an extension of the ‘reward-punishment’ model of economic voting and the mechanism is simply that voters punish an incumbent party for a poor performance by switching to a rival (Key, 1968; Lewis-Beck, 1988; Norpoth et al., 1991, Van der Brug et al., 2007). Unlike spatial theory, valence theory is not future-

orientated and does not rely on specific policy commitments to motivate the voters. Rather it focuses on voter's judgements of the past performance of the parties in relation to all of the salient valence issues, including the economy and the quality of public services like transport (Whiteley et al., 2013; Lewis-Beck, Nadeau and Foucault, 2013). Thus a rival party does not have to commit to reversing the Beeching Axe to attract support, merely to appear to be a better overall alternative at delivering what the voters want, which would include reversing the cuts for many of those directly affected by them.

The third hypothesis links spatial and valence issue perceptions and provides a theoretical grounding for spatial attitudes to this issue, which as the earlier discussion indicates are not explained in the spatial model:

*(3) Spatial attitudes to the Beeching Axe are driven, in part, by valence attitudes to the cuts among those directly affected by them.*

There is a long established distinction in this literature between egocentric and sociotropic evaluations of policy performance (Kinder and Kieweit, 1981; Lewis-Beck, 1988). The former relates to voter judgements about their own personal financial circumstances and the latter to their evaluations of the state of the national economy. The mechanism at play here are egocentric evaluations of the losses associated with the Beeching cuts experienced by individuals living in locations affected by the plan. Our hypothesis is that egocentric valence evaluations of the cuts drive spatial evaluations of the issue but the latter are also influenced by parties and leaders (see Sanders et al., 2011). Thus the personal circumstances of individual voters are the source of attitudes to this issue, but the party cues acting as heuristics allow voters to make spatial judgements about the policy, which is particularly important for those unaffected by the cuts.

In the next section we examine the specification of a voting model to test these hypotheses.

## **Data and Methods**

In this section we present the data and the empirical strategy to investigate the impact of the Beeching Axe. For robustness purposes, we proceed in two steps. First, we explore the effect of the cuts at the individual level by modelling voting intentions in 1963 (Butler and Stokes, 1969). Second, we explore the effect of the closures at the aggregate level by modelling party vote share by constituencies in the General Election of 1964. These two approaches share two key independent variables— attitudes to Beeching plan and the number of stations closed in each constituency where the respondent lives. The following paragraphs describe how we used data on the geographic location of the station closures to create the latter variable, and discuss the exogenous character of the station closures.

The data collection involved using a list of 1,927 closures as reported in ‘Section 5, Passenger Stations and Halts to be Closed,’ of *The Reshaping of British Railways* (British Railways Board, 1963). The closures took place across Britain as a whole but the paper focuses on England and Wales because there is a lack of data for predictor variables in Scotland during this period. The report only identifies the name of the stations to be closed and lacks information about the stations’ specific location. To overcome this problem, each station closure was assigned geographically to the town it served, and subsequently the closure/town was assigned to a constituency.<sup>2</sup> The dataset used for estimation consists of 498 constituencies with their respective number of station closures. The total number of closures in the dataset for England and Wales was 1,053. This is captured by the variable *Closed Stations*, which has a mean of 2.11 and a variance of 13.1.

The fact that models of electoral behaviour involve complex reciprocal relationships has been a key theme in recent research on economic voting (Nannestad and Paldam, 1994; Duch and Stevenson, 2008; Fraile and Lewis-Beck, 2014). This might lead to endogeneity, which in turn causes biased estimates (Greene, 2003). We argue that station closures were clearly exogenous to voting intentions, and this is true for a number of reasons. Firstly, evidence from the 1963 British Election Study survey shows that 46.3 per cent of Conservative voters lived in constituencies unaffected by station closures as did 46.5 per cent of Labour voters and 45.2 per cent of Liberals. Clearly, if station closures had been influenced by political considerations then the government would have ensured that Labour and Liberal constituencies were disproportionately affected by them and their own constituencies protected.

However, there is a counter argument to this which states that station closures could be endogenous in marginal constituencies if not in all constituencies (Ward, 1998; Ward and John, 1999, 2001; McGillivray, 2004). If this is correct, then the Conservative government in 1964 would have closed fewer stations in its own marginal seats and even fewer stations in the marginal seats held by Labour on the grounds that the latter were electoral targets. An empirical analysis of the number of station closures presented in our supplementary materials shows that marginality did not influence closures, even when different definitions of marginality are taken into consideration.

Based on this, we take the closure of stations as a natural experiment at the constituency level. Applied empirical research often explores these natural experiments with well-known difference-in-difference (DD) models (see Bechtel and Hainmueller, 2011; Scheve and Stasavage, 2012). These models are identified by the parallel trends assumption, which simply states that in the absence of the treatment (e.g. a station closure), the expected values of the dependent variable across control and treatment groups would follow parallel

trends over time. In the section that covers the aggregate analysis of vote share, we show that the parallel trends assumption is adequately met, which provides additional support to our claim of exogenous station closures.

### **Individual-level Analysis: Voting Intentions in 1963**

The 1963 BES survey was in the field a year before the general election and it included a question about public attitudes to the Beeching cuts (Butler and Stokes, 1969). This is the only survey in the history of the BES that explored this issue and therefore it gives us a unique opportunity to explore the effect of the cuts on voting intentions.

There is evidence of partisan influences on attitudes to the cuts with 57 per cent of Conservative identifiers supporting the cuts (29 per cent opposed) and 37 per cent of Labour identifiers supporting them (41 per cent opposed). The Liberal identifiers were rather like the Conservatives with 51 per cent supporting and 31 per cent opposing. This suggests that Conservatives were more likely to support their government on this issue. Clearly, in modelling the relationship between attitudes to the cuts and voting intentions, it is necessary to control for the partisan attachments of respondents.<sup>3</sup>

It is also necessary to control for public evaluations of the three key political leaders, Harold Macmillan, the Conservative Prime Minister; Harold Wilson, the Labour leader; and Joe Grimond, the Liberal leader. The leadership scores consisted of the number of positive traits cited minus the number of negative traits in response to questions about these leaders. Summary statistics of the control variables are included in our supplementary materials. Partisan attachments and leader images primarily play the role of affect *heuristics* in the valence model.<sup>4</sup> Voters have few incentives to invest time and effort in learning the details of the policies proposed by the political parties, and at the same time they recognise their limitations in obtaining and processing relevant information about issues. Accordingly, they

use cognitive and affective shortcuts in decision-making (Popkin, 1991; Sniderman, Brody, and Tetlock, 1991; Lupia and McCubbins, 1998; Lupia, McCubbins, and Popkin, 2000).

Paul Slovic and his collaborators introduced the idea of an ‘affect’ heuristic, arguing that emotional responses occur ‘rapidly and automatically’ in decision-making (2007: 1333). This makes them a lot easier to process than cognitive judgements about the content, credibility and effectiveness of policy promises (see also Marcus, Neuman and MacKuen, 2000). Similarly Gigerenzer suggests that a ‘fast and frugal’ heuristic which voters can use for judging political parties is to evaluate the honesty, competence and likeability of their leaders (Gigerenzer, 2008). If a leader appears to have such positive traits then it suggests that his party is likely to deliver positive outcomes. Similarly voters can ask themselves if they think a party has done a good job or a bad job in delivering valence issues in the past. This is the underling driver of partisanship, which can be seen as a ‘running tally’ of retrospective evaluations of party performance with more distant performances being discounted in comparison with the more recent ones (see Fiorina, 1981).

The survey of 1963 describes voting intentions of respondents and shows that Labour was comfortably ahead at the time with just over 45 per cent of vote intentions compared with the Conservative’s 33 per cent, and the Liberals 13 per cent. As mentioned earlier, this was a bad year politically for the Conservatives with the Profumo scandal hitting the headlines, the Prime Minister facing illness which prompted him to step down in October, and a general feeling among the public that after thirteen years in power the Conservative government had run out of steam (see Butler and King, 1965). Voting intentions are the dependent variable in the subsequent modelling.

In addition to attitudes to the Beeching cuts other issue perceptions were included in the modelling. Firstly, respondents were asked an open ended question about which issue

facing the country was most important to them. Dummy variables were subsequently created to measure which party the respondent thought was most likely to solve this issue. These issues were quite diverse, but tended to focus on valence or performance questions. The key valence variable relating to economic evaluations was measured using a question about the effects of the government's handling of the economy over the previous year on their own financial circumstances, making it an egocentric economic evaluations variable (Kinder and Kiewiet, 1981; Kiewiet, 1983; Fraile and Lewis-Beck, 2014).

Table 1 contains the multinomial logistic regressions of the vote intention models for the Conservatives, Labour and Liberals with non-voters being the reference category. Table 1 shows clearly that opposition to the Beeching cuts among the public reduced support for the Conservatives, controlling for all the other variables. At the same time such opposition did not appear to influence Labour or Liberal voting intentions. This is consistent with the idea that the Conservatives were punished by the electorate for their position on this spatial issue but the Opposition parties were not rewarded since as we pointed out earlier, they did not commit to reversing the cuts. This evidence supports hypothesis (1).

In relation to the number of stations closed in constituencies, this variable had a positive impact on Labour and Liberal voting which is consistent with hypothesis (2), indicating that those directly affected were more likely to switch to another party even if it did not formally commit to changing the policy. This is a standard retrospective egocentric response to a policy change in the valence model and involves considerably less effort than is required in the spatial model which involves voters evaluating the credibility of future policy commitments by rival parties. Further exploration of any interactions between station closures and attitudes to the cuts revealed no significant non-linear interactions between these measures.<sup>5</sup>



The other variables in the models behaved largely as expected. If a respondent chose a party as the best one for handling their most important issue, that boosted support for that party. In the case of the Conservative model the belief that the party could best deal with the respondent's most important issue increased support for the party, but a belief that Labour could best do this reduced support. For the other parties this belief boosted support for the party concerned, but it did not appear to affect support for the other parties.

**Table 1: Multinomial Model of Vote Intentions in 1963.**

<b>Predictors</b>	<b>Conservatives</b>	<b>Labour</b>	<b>Liberal</b>
Conservatives Most Important Issue	0.67* (0.38)	-0.90* (0.51)	0.41 (0.48)
Labour Most Important Issue	0.40 (0.33)	1.23*** (0.27)	0.31 (0.36)
Liberals Most Important Issue	0.17 (0.79)	1.12 (0.76)	2.93*** (0.68)
Conservative Partisanship	1.71*** (0.17)	0.05 (0.21)	0.29 (0.21)
Labour Partisanship	-0.01 (0.24)	1.56*** (0.16)	0.09 (0.24)
Liberal Partisanship	0.34 (0.30)	-1.23** (0.59)	1.66*** (0.24)
Personal Retrospective Economic Evaluations	0.35** (0.18)	0.31* (0.17)	0.13 (0.20)
Evaluations of Macmillan	0.22** (0.09)	-0.11 (1.1)	-0.03 (0.10)
Evaluations of Wilson	-0.17 (0.12)	0.28** (0.12)	0.04 (0.13)
Evaluations of Grimond	0.00 (0.15)	-0.15 (0.15)	-0.01 (0.16)
<b>Oppose Beeching Cuts</b>	<b>-0.30** (0.15)</b>	<b>-0.14 (0.14)</b>	<b>-0.19 (0.16)</b>
<b>Number of Stations Closed in Constituency</b>	<b>0.07 (0.05)</b>	<b>0.09** (0.04)</b>	<b>0.09* (0.04)</b>
Male	-0.44 (0.27)	-0.17 (0.25)	-0.54* (0.30)
Age	0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)
Education	0.08 (0.11)	-0.03 (0.12)	0.13 (0.12)
Income	0.10** (0.05)	-0.03 (0.05)	0.03 (0.06)

Constant	-2.00** (0.84)	-0.71 (0.81)	-1.05 (0.93)
Log-likelihood		-767.73	
<b>Pseudo R Square</b>		<b>0.60</b>	

Source: British Election Study 1963 survey, N=1595, standard errors in parenthesis.

This was a period during which partisan attachments in the electorate were very strong (Butler and Stokes, 1969), and the partisanship variables had the biggest impacts on voting intentions in the modelling. Conservative partisanship had a highly significant impact on Conservative vote intentions but no impact on Labour or Liberal vote intentions. Labour partisanship had a similar effect in influencing votes for the party, but not for the others. Liberal partisanship was the exception, since in this case it had a positive impact on Liberal voting intentions and a negative impact on Labour vote intentions. This suggests that party competition between the Liberals and Labour was quite strong at the time.

In relation to leadership evaluations, positive scores for Harold Macmillan boosted support for the Conservatives and positive scores for Harold Wilson did the same for Labour. In contrast positive scores for the Liberal leader, Joe Grimond had no influence of voting for any of the parties. Equally, there was no evidence that positive scores for the Conservative leader influenced Labour voting or that scores for the Labour leader influenced Conservative voting. The signs on the rival party coefficients were generally negative even though they were not significant, and so this is consistent with the idea that a popular rival party leader had the potential to reduce support for a party.

Hypothesis (3) implies that the number of stations closed in each constituency was clearly exogenous to vote intentions when the other controls are in place. The distribution of station closures indicates that almost 53 per cent of respondents lived in constituencies affected by the cuts. Indeed some 3 per cent of them lived in constituencies where a total of

12 stations were closed, making the effects at the local level considerable. The latter were largely rural constituencies spread over a wide area, but overall the closures had the potential to make life more difficult for many people at a time when car ownership was much more limited than it is today.

**Table 2: Ordered Logit Model of Attitudes to the Beeching Cuts 1963.**

<b>Predictors</b>	<b>Estimates</b>
<b>Number of Stations Closed in Constituency</b>	0.04** (0.02)
Conservative Partisanship	-0.12*** (0.06)
Labour Partisanship	0.16*** (0.05)
Liberal Partisanship	-0.06 (0.09)
Personal Retrospective Economic Evaluations	-0.10 (0.07)
Evaluations of Macmillan	-0.12*** (0.04)
Evaluations of Wilson	-0.02 (0.05)
Evaluations of Grimond	-0.14** (0.06)
Male	-0.81*** (0.11)
Education	-0.13*** (0.05)
Age	0.01* (0.003)
Income	-0.09*** (0.02)
<b>Pseudo R Square</b>	<b>0.07</b>

Note: Data is clustered by constituencies with robust standard errors, standard errors in parenthesis. The coding of the dependent variable is 1 = support the cuts; 2 = mixed attitudes or don't know; 3 = oppose the cuts.

We test hypothesis (3) by estimating an ordered logit model of attitudes to the cuts using the Beeching variable, which is a predictor in Table 1. The specification includes the

number of stations closed in the respondent's constituency together with controls for party and leadership cues. The results of this exercise appear in Table 2, which shows that the number of stations closed has an independent effect on attitudes to the cuts, controlling for everything else. The more stations closed in a respondent's constituency the greater the probability that they opposed the cuts. The control variables show that Conservative partisans and voters with positive evaluations of Prime Minister Harold Macmillan were more likely to support cuts, whereas Labour partisans were less likely to do so. Interestingly enough evaluations of the Labour leader, Harold Wilson, did not influence attitudes to the cuts, whereas evaluations of the Liberal leader did, with his supporters more likely to support cuts. In addition, males, the highly educated and the affluent were more likely to support cuts, but older voters were less likely to do so. At that time the affluent and educated were more likely to have access to cars and therefore less likely to feel the impact of the cuts at the local level. These results are consistent with hypothesis (3).

### **Aggregate Analysis: Party Vote Shares in the General Election of 1964**

In this section we explore party vote shares in British constituencies for the 1964 General Election. Constituency covariates have frequently been used for modelling voting behaviour at the aggregate level (Berrington, 1965; Cain, 1978; Miller, 1978; Johnston, 1981; McAllister and Studlar, 1992; Rossiter, Johnston, and Pattie, 1997a, 1997b). There is, however, something of a problem measuring such covariates in 1964 because of the lack of data. In order to overcome this obstacle, we obtained covariates for Local Government Districts (LGD), found their geographical centroids, and then assigned them to constituencies. In the early 1960s there were some 1,300 local government districts in England and Wales. Using the procedure just described, the paper assigned 1,275 LGDs to

their respective constituencies. When constituencies consisted of several LGDs, we took the mean value of the variables.<sup>6</sup>

The vote share of the Conservative party is the dependent variable, and the key independent variable is the number of stations closed by constituency. Our dataset consists of 498 constituencies with their respective number of station closures, although data availability reduced estimation samples to 418 constituencies for the 1964 election.

We control for several covariates suggested in this literature. In particular, we consider the variables used in Berrington's empirical study of the 1964 election (1965). First, we account for different occupational groups; the variable (*Boss*) is the percentage of males in groups 1 and 2, that is, employers and managers in large and small establishments. In order to account for the potential effect of the abolition of Retail Price Maintenance, we also estimate the models with a breakdown of the variable *Boss*. The variable (*Boss Large*) is the percentage of males in group 1: employers and managers in large establishments. The variable (*Boss Small*) is the percentage of males in group 2: employers and managers in small establishments. According to Miller (1978), the proportion of employers and managers is an excellent predictor of vote choice at the constituency level. The variable (*Professional*) is the percentage of males in groups 3 and 4: professional workers self-employed and employed requiring a university degree. The variable (*Workers*) is the percentage of males in groups 5 to 11 and 15: manual and non-manual workers, including agricultural workers. The variable (*Farmers*) is the percentage of males in groups 13 and 14: employers and managers in farms.

Following Berrington's analysis of the 1964 election, we also control for the marginality of constituencies (*Marginal*), which is a dummy variable scoring one if the Conservative majority over Labour was 12 per cent or less of the two-party vote in 1959 or if the Labour majority over the Conservatives was 8 per cent or less of the two-party vote in

1959.<sup>7</sup> Additionally, we account for the effect of (*Region*); we divide England and Wales into nine regions: London, the South East, the South West, the Midlands, the East, the North West, the North, York, and Wales. Each region is a dummy variable. The omitted category is the North West.

Berrington (1965) also argues that the movement of population may also determine political support. Hence, the model includes variables designed to capture this; (*Expanding*) is a dummy variable equal to one if the electorate in a constituency grew by 10 per cent or more between 1959 and 1964, otherwise it is coded as zero. (*Declining*) is a dummy variable equal to one if the electorate in a constituency declined by 10 per cent or more between 1959 and 1964, otherwise zero.<sup>8</sup> Overcrowding is captured by the percentage of persons living at more than 1.5 persons per room (*Housing*). A measure of poverty at the local level is provided by the variable (*Premature Deaths*), which is the infant mortality rate for babies under 4 weeks of age relative to all births in 1964. We also control for ( $\ln(\text{Population})$ ), which is the natural logarithm plus one of total population.<sup>9</sup> Summary statistics are included in the paper's supplementary materials.

**Table 3: Conservative Share of the Vote in 1964.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Share 1959	Share 1959	Share 1964	Share 1964	Share 1964	Share 1964
Treatment Dummy 50	-0.022		-0.002			
	(0.01)		(0.01)			
Closed Stations		-0.002		-0.003*	-0.003*	-0.003*
		(0.00)		(0.00)	(0.00)	(0.00)
Marginal			0.028***	0.028***	0.028***	0.029***
			(0.01)	(0.01)	(0.01)	(0.01)
Boss			0.488**	0.506**	0.506**	
			(0.21)	(0.21)	(0.21)	
Professiona l			-0.778**	-0.829**	-0.829***	-0.514
			(0.32)	(0.35)	(0.31)	(0.34)
Workers			-0.728***	-0.728***	-0.728***	-0.691***
			(0.12)	(0.11)	(0.12)	(0.12)
Farmers			-0.304	-0.154	-0.154	-0.131
			(0.22)	(0.20)	(0.26)	(0.25)
Premature Deaths			-1.164	-1.276	-1.276	-1.108
			(1.06)	(1.01)	(1.06)	(1.03)
ln(Populati on)			0.013	0.012**	0.012	0.013
			(0.01)	(0.01)	(0.01)	(0.01)
Housing			-0.003	-0.003	-0.003	-0.003
			(0.00)	(0.00)	(0.00)	(0.00)
Expanding			0.034***	0.032***	0.032***	0.032***
			(0.01)	(0.01)	(0.01)	(0.01)
Declining			0.054	0.055*	0.055	0.054
			(0.04)	(0.03)	(0.04)	(0.04)
London			-0.046***	-0.045**	-0.045***	-0.050***
			(0.01)	(0.02)	(0.01)	(0.01)
South East			0.002	0.002	0.002	0.002
			(0.01)	(0.01)	(0.01)	(0.01)
South West			-0.040**	-0.035*	-0.035**	-0.037**
			(0.02)	(0.02)	(0.02)	(0.02)
Midlands			0.014	0.015	0.015	0.015
			(0.02)	(0.01)	(0.02)	(0.02)
East			-0.019	-0.021	-0.021	-0.023
			(0.02)	(0.02)	(0.02)	(0.02)
North			0.008	0.012	0.012	0.014
			(0.02)	(0.02)	(0.02)	(0.02)
York			-0.015	-0.013	-0.013	-0.014

			(0.02)	(0.02)	(0.02)	(0.02)
Wales			-0.130***	-0.129***	-0.129***	-0.132***
			(0.02)	(0.02)	(0.02)	(0.02)
Boss Large						-0.104
						(0.41)
Boss Small						0.838***
						(0.27)
Intercept	0.501***	0.494***	0.881***	0.888***	0.888***	0.846***
	(0.02)	(0.01)	(0.12)	(0.11)	(0.12)	(0.12)
Observations	496	496	418	418	418	418
R <sup>2</sup>	0.007	0.003	0.533	0.537	0.537	0.540
Clusters	59	59	59		59	59
Unit: Electoral district. DV: Conservative Share of the Vote. Standard errors in parenthesis.						

Table 3 contains linear regression models of the Conservative vote at the constituency level in both 1959 and 1964. All models have standard errors clustered on the county, with the exception of model 4. Model 1 addresses the issue of parallel trends discussed earlier; it presents a placebo regression where the Conservative share of the votes in the election in 1959 (*Conservative Share 1959*) depends on a treatment variable (*Treatment Dummy 50*). Recall that the 1,053 stations were closed in England and Wales. The mean number of closures by constituency is 2.11, with a variance of 13.1, and a median of 1.0; 250 constituencies experienced at least one station closure while 248 experienced none. The variable *Treatment Dummy 50* is equal to one if the number of station closures in a constituency is larger or equal than the median number of station closures. Otherwise, it is equal to zero.<sup>10</sup> If the parallel trends assumption holds, station closures should not determine vote shares in 1959—if they do, it could be the case that closures were implemented in particular constituencies possibly for political reasons. However, it can be seen that, not surprisingly, the closures did not have an effect on the Conservative vote share in the 1959 general election.



Model 2 in Table 3 presents another placebo regression where *Conservative Share 1959* depends on the variable *Closed Stations*, which is the actual number of closures by constituency. If the parallel trends assumption is met, the effect of these treatment variables on the Conservative share of the votes in 1959 should also be zero, as described above. The estimates in Table 3 show that the assumption holds for both the treatment dummy and the number of closed stations—both variables are statistically equal to zero when the dependent variable is the Conservative vote share in 1959. This further justifies regarding the Beeching cuts as an exogenous intervention in British politics.

Model 3 in Table 3 uses the Conservative share of the votes in 1964 as the dependent variable and includes all the predictors described earlier. However, instead of using the number of closures of models 4-6, it uses the variable *Treatment Dummy 50* of model 1. Models 4 to 6 explore the effect of the number of closures. Models 4 and 5 share the same specification, but the former does not cluster the standard errors on the county. Model 6 breaks down the variable *Boss* into the variables *Boss Large* and *Boss Small* as described before in order to account for the potential effect of the abolition of Retail Price Maintenance. Although the estimates show that the dummy variable version of station closures does not have a statistically significant effect on the Conservative share of the vote in 1964, the estimates for the effect of the number of closures clearly and consistently show that the electorate punished the incumbent government for the implementation of the policy, as we predicted in Hypotheses 1 and 2.<sup>11</sup>

In a simulation of the Conservative share of the vote in 1964 according to Model 5 in a non-marginal constituency in the South East where all continuous covariates are held at their mean, we find that for zero closures the vote share is .448 with a standard error of .008 while for five closures the share is reduced to .435 with a standard error of .009. In other

words, *five closed stations reduce the Conservative share of the vote by approximately one per cent at the constituency level, all else equal*. Although this difference may seem relatively small —nine constituencies were won by Labour by a margin below one per cent— the fact is that this was one of the closest elections in post-war Britain: the 1964 election gave Labour 317 seats, only 13 more seats than the Conservatives obtained. In this close electoral battle, the Beeching Cuts made a crucial difference.

To further illustrate the effect of the closures, consider the constituencies of Derby North and Wolverhampton South East in the Midlands. Both constituencies were marginal seats, had similar population size, and comparable rates of Conservative support in a Labour stronghold area.<sup>12</sup> Five stations were closed in Derby North while only one was closed in Wolverhampton South East. While Conservative support in Wolverhampton South East remained relatively constant between 1959 and 1964, the Conservative share of the vote in Derby North dropped from 47.2 per cent in 1959 to 34.6 per cent. In line with our argument, this indicates that the closures had a serious negative effect on Conservative support.

## **Conclusions**

This paper shows that a one-off intervention in transport policies known as the Beeching Axe had a significant impact on voting intentions and also on the outcome of the 1964 General Election in Britain. The empirical tests show that this intervention was not influenced by political considerations at the time, other than the desire of the then incumbent Conservative government to save money by reducing the size of the railway network. Thus the cuts can be regarded as an exogenous intervention in the political process. As mentioned before, there is a problem identifying if variations in policy delivery drive electoral support, or if the process works in reverse, with anticipated electoral effects driving policy-making. In this light, the exogenous stations closures help us to identify the effect of policy implementation on voting

behaviour; this is a technique that has proven to be very helpful in understanding, for instance, retrospective voting (e.g. Bechtel and Hainmueller 2011; Gasper and Reeves 2011).

The issue of transport policies is usually not very salient in elections which tend to be dominated by the big domestic issues of the economy, health care and immigration (Clarke et al., 2004; 2009). But such was the magnitude and timing of the cuts that they directly influenced the outcome of the general election at that time. Given that the 1964 general election was very close, producing a Labour government with a majority of only four seats, arguably the Beeching cuts were a key factor explaining the end of a Conservative government that had lasted since 1951. The Conservative government was clearly very unwise implementing such large scale changes to transport in Britain just prior to a general election.

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## Notes

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<sup>1</sup> The Report closed both individual stations and entire train lines. The closure of an entire line is more severe. However, the paper focuses on station closures because they can be easily assigned to parliamentary constituencies while train lines present a methodological problem of a different magnitude.

<sup>2</sup> Assigning closed train stations to constituencies is easy if there is a computer *shapefile* with the digitized boundaries of the seats. Unfortunately, the oldest digitized boundary files are available only for the boundaries of Scotland and Wales in 1981, and the boundaries of England in 1983. Hence, we assigned the closures to the constituencies in Wales in 1981 and England in 1983. *These Welsh and English constituencies were then matched to their respective 1964 constituencies* with a list provided by D. F. L. Dorling in his study of British General Election Results, 1955-1992 (1993). The shapefiles were obtained from the 1981 Census Boundary Derived Datasets: “This work is based on data provided through EDINA UKBORDERS with the support of the ESRC and JISC and uses boundary material which is copyright of the Crown.”

<sup>3</sup> In relation to the partisanship variables, the highest score went to strong partisans and the lowest to weak partisans in a three category measure.

<sup>4</sup> We would like to thank an anonymous reviewer for suggesting a clarification on affect heuristics.

<sup>5</sup> We tested an interaction in the model between attitudes to the Beeching Axe and the number of stations closed and no significant effects were identified. Note that this was estimated by incorporating the full interaction effects based on the cross-partial derivative of the expected value of the dependent variable and not just the marginal effect of the interaction term (See Norton, Wang and Ai, 2004).

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<sup>6</sup> The means of the variables are not weighted. However, we replicated our main analyses presented in Table 3 using the weighted means of the variables and found even stronger evidence in favour of our hypotheses. These additional estimation results are presented in our Supplementary Material. We would like to thank an anonymous reviewer for this suggestion.

<sup>7</sup> This may be an arbitrary definition of marginality, but since this is the definition used by the only empirical study of the 1964 election, we also use it for consistency purposes. However, we replicated our main analyses of Table 3 using four additional definitions of marginality based on different cut points as well as on the absolute value and squared difference in votes in the two party vote (Clarke et al. 2004). Our substantive results remain unchanged. We would like to thank an anonymous reviewer for this suggestion. In addition, our analyses of the exogeneity of the cuts in our Supplementary Material use alternative definitions of marginality and results remained unchanged there as well. We do not include Conservative share of the vote for 1959 to avoid problems of non-stationarity and solutions that might distract attention from our interest on the effect of the cuts.

<sup>8</sup> The definition of an expanding electorate was taken from Berrington's analysis (1965), which was also applied to a declining electorate. However, we replicated our main analyses of Table 3 using a stricter different definition of expanding and declining electorates and our substantive results about station closures remained unchanged. We would like to thank an anonymous reviewer for this suggestion.

<sup>9</sup> The variables on occupation were obtained from the Socio-Economic Group Statistics from the 1961 Census, Table: SOC\\_1961\\_EW. The variables on housing were obtained from the Housing Statistics (persons per room) from the 1961 Census, Table: HOUS\\_1961\\_EW. The variables on mortality were obtained from the Annual Birth and Death Statistics for Local Government Districts in England and Wales, 1911-74, year 1964, Table: MORT\\_LGD.

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These tables are available at the Great Britain Historical Database (GBH DB), and they are located at the Historical Censuses Collections (CHCC) in the History Data Service (HDS).

<sup>10</sup> The paper tested for the effect of other treatment dummy variables on the Conservative share of the vote in 1959. These alternative treatment dummy variables have thresholds set at the 75<sup>th</sup>, 90<sup>th</sup>, and the 95<sup>th</sup> percentile of the number of closed stations. The parallel trends assumption is also met with these treatment variables.

<sup>11</sup> It is interesting that the closure of stations as a dummy variable does not have an effect on vote share. The paper also tested different versions of Model 3 using alternative treatment dummy variables with thresholds set at the 75<sup>th</sup>, 90<sup>th</sup>, and the 95<sup>th</sup> percentile of the number of closed stations. None of these dummy variables had an effect on the Conservative share of the vote in 1964. The paper also estimated other versions of Model 5 using different functional forms for the number of closed stations, including its natural logarithm and the cubic polynomial. These functional forms do not have an effect on the Conservative share of the vote. The effect only takes place when the count variable of stations is used. This effect is always significant. It is also important to note that results not presented here but available in the computer code available for replication, show that station closures reduce the Conservative share of the vote even when the two constituencies with the largest number of closures are dropped from the analysis. These are Devon West and Torridge, and Cornwall North with 20 and 19 closed stations respectively.

<sup>12</sup> Derby North had a population of 32,425 and a boss rate (i.e. employers and managers in large and small establishments) of .05. Wolverhampton South East had a population of 32,605 and also a boss rate of .05. It is worth noting that the Liberal Party obtained 12.5 per cent of the vote share in Derby North, while Labor support remain constant between 1959 and 1964; this suggests that Conservative votes probably went to the Liberals.