Understanding drivers of support for English city-region devolution: a case study of the Liverpool City Region

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Accepted: 29 November 2021 / Published online: 11 January 2022 © The Author(s), under exclusive licence to Springer Nature Limited 2021

Abstract
Metro mayors heading a combined authority represent the most recent innovation in English devolution. City-region devolution has been a key way in which successive Conservative governments have sought to boost local economic growth against a background of local authority austerity, and now form a part of the Johnson government’s ‘levelling up’ agenda. However, the perspective of voters is often overlooked in these debates. City-region devolution is a top-down innovation, with a focus on city-region economics rather than democratic renewal or engagement, and there is so far very little academic literature on identifying the drivers of public support for mayoral combined authorities. This study draws on survey responses of voters in the Liverpool City Region and explores a number of potential drivers of support for the Liverpool City Region combined authority, including party support, English, British and European identity, left–right and other value positions, and the role of place in driving support. It finds that support for devolution to the Liverpool City Region is driven by whether one lives in the centre or periphery of the city region, support for the Labour Party, left-wing, socially liberal and European identities, as well as being female and older. This paper also lays the groundwork for further research into drivers of public support for city-region devolution in England.

Keywords English devolution · City-region devolution · Metro mayors · Combined authorities · Merseyside

Introduction

Combined authorities, and the metro mayors that head them, are the most recent innovation in English devolution. Although initially implemented in a haphazard and piecemeal manner these new bodies have gained increasing purchase within England’s body politic, with various metro mayors becoming household names.
in their own localities and, in some cases, beyond (Sandford 2019, pp. 108–109). The quality of individuals attracted to the role has also been impressive. The current metro mayor for the West Midlands, Andy Street, was managing director of John Lewis, one the UK’s most-loved department stores, whilst the current Greater Manchester metro mayor, Andy Burnham, is a former cabinet minister and often touted as a potential next leader of the Labour Party. Centre for Cities, an independent think tank specialising in urban policy, has declared the metro mayor programme a success (Breach 2021). The Johnson government seems to agree and is seeking ways to expand the role to non-metropolitan areas via county deals (Johnson 2021).

Despite the fact that around 12 million people in England live under metro mayors (Uberoi 2021), empirical analyses of the drivers of voter support for city-region devolution have largely been ignored within the nascent academic literature on the topic. Questions around who supports the position of metro mayors, and why, have been bypassed in favour of elite-level analyses focused on why combined authorities were established (Roberts 2020), the processes by which deals are produced (Gains 2015; Tomaney 2016; Sandford 2017), and whether the bodies are likely to be successful based on the government’s own rationale (Mycock 2016; Hambleton 2020). Later studies have aimed to assess the impact of mayors on local leadership and economic outcomes (Giovannini 2021; Hambleton et al. 2021). Like the process of English devolution itself the academic focus is on elite-level relationships, taking a top-down perspective and often sidelining voters.

A combined authority is a “legal entity covering two or more local authority areas”, and a metro mayor is the directly elected politician who acts as the leader and chair of the authority (Uberoi 2021, p. 4). Whilst all metro mayors lead a combined authority, not all combined authorities have a metro mayor. The legal basis for creating combined authorities is the Local Democracy, Economic Development and Construction Act 2009, with Greater Manchester Combined Authority the first to be established, in 2011. Metro mayors, however, were not legislated for until the Cities and Local Government Devolution Act 2016, some five years after the first combined authority was created. The first metro mayoral elections were held in 2017, and six metro mayors were elected. Turnout averaged 28%, which is typically lower than local authority elections and much lower than elections to the devolved administrations in Scotland and Wales. The second set of elections, held in 2021, saw a higher level of turnout, perhaps suggesting a greater awareness of the position among the public. As of September 2021, of the ten currently-existing combined authorities only the North East Combined Authority lacked a metro mayor. Thus, the term ‘mayoral combined authorities’ (MCAs) will be used throughout this article as shorthand.

The purpose of this article is to explore the drivers of support for city-region devolution within England, specifically within the context of the Liverpool City Region. Using an original dataset this article examines the extent to which local and national identities, geography, economic and social values, and party politics help explain whether people support the devolved institution or not. The next section will outline the literature on metro mayors, and will be followed by hypotheses generation. The data and methods section will describe the original dataset in more detail and will be followed by an analysis comprising of a series of regression models. The
discussion will bring together the different strands of this analysis and end by posing a series of questions for further quantitative research into support for devolved institutions in England.

**Literature review**

MCAs are the latest answer to the question of English devolution, pushed as one way to address England’s “long and deep-seated history of centralism” (Bailey and Wood 2017, p. 937). Directly-elected mayors were seen (by both New Labour and Conservative policy-makers) as a fix for “persistent problems of weak local leadership and bureaucratic inertia”, supposedly endemic in local government (Fenwick and Elcock 2014b). One of the supposed advantages of the metro mayor position was that would be “a high profile, visible presence that would drive agencies across the public, private and third sector to work strategically together to boost local economic growth” (Roberts 2020, p. 998). Indeed, studies have found that mayors can make faster decisions and do promote coordinated, joined-up and strategic thinking, as well as tending to be more outward-looking (i.e. will have a more national or international perspective than council leaders) (Fenwick and Elcock 2014a, pp. 591–592; Headlam and Hepburn 2017b). Mayors were also seen to be more accountable, insofar as they were directly elected and so the public knew who to hold to account come election time (Gains 2015, pp. 427–428), and would provide a greater sense of urgency to city-region government compared to the (largely voluntary, and thus broadly unaccountable) partnership boards that previously existed (Hoole 2018, pp. 173, 180–181). Finally, as noted by Giovannini, “Party political considerations played a role too, and the creation of metro mayors was linked to attempts on the part of the Conservatives to make inroads into traditional Labour heartlands, especially in the North” (Giovannini 2021, p. 2).

Directly elected mayors for local authorities in England and Wales were given a legislative basis by the Local Government Act 2000, subject to a local referendum. The Local Government and Public Involvement in Health Act 2007 removed the requirement for a referendum, and allowed a council to adopt a mayor by resolution (which only Leicester and Liverpool city councils have done). The Localism Act 2011 allowed for a referendum on abolishing the mayoral position. In total, only 15 of the 355 local authorities in England and Wales currently have an elected mayor, with a further three having adopted and subsequently abolished the mayoral model. Of the 54 referenda on establishing a mayor, 37 rejected the idea. There have been no mayors in Wales (Sandford 2021).

This leads scholars like Fenwick to claim that by “most reasonable criteria, the post of directly elected executive mayor in England must be judged a policy failure” (Fenwick and Johnston 2020, p. 15). In the case of Bristol, many local elites, civic leaders, and academics lauded the impact of the mayor on local governance but it seems nobody told the public: Bristol City Council’s own Quality of Life survey found that the percent of people who feel an elected mayor is improving the leadership of the city had fallen, from 37.8% in 2017 to 23.2% in 2019, and among deprived voters from 20% in 2018 to 17% in 2019. It is worth noting, however, that
this rebounded to 35% of voters in 2020—perhaps attributable to coronavirus support during the pandemic—but fell further to 22% among the 10% most deprived areas within Bristol (Bristol City Council 2020, pp. 2–3; 2021, pp. 2–3; Open Data Bristol 2021). Despite this, even at its peak fewer than four in ten Bristol residents believed the local mayor provided value for money.

Despite the limited appetite for the mayoral system of governance across local authorities, and despite the fact that there is no legal requirement for a combined authority to be headed by a directly-elected mayor, the former Chancellor of the Exchequer, George Osborne, made having a metro mayor a requirement for agreeing a devolution deal (Giovannini 2021, p. 2). This was based on the perceived positive impact of the position of the mayor of London (the phrase a ‘Boris in every town’ was common (Bailey and Wood 2017, p. 974)) alongside a broader belief that metro mayors “enhance regional political capital and governance, encourage greater democratic accountability and instil citizen affiliation with new combined authorities through recognisable personal rather than party-driven leadership” (Mycock 2016, pp. 541–542).

The key unit for English devolution is not the ‘great city’, but the city-region: something geographically less than a region, yet more than the current units of local government (Fenwick 2015, p. 9). Rather than having political coherence or a shared local identity, each city-region was to have a combined authority covering a ‘functional economic area’, although this concept can be vague: as Fenwick notes “it may denote travel-to-work areas or more sophisticated definitions of areas of economic activity” (Fenwick 2015, p. 9). Regardless, functional economic geography is the key factor underlying whether an area makes progress in establishing a combined authority, alongside a “common sense of purpose between the local authorities” and “a history of joint working between partners leading to sound working relationships” (Murphie 2019, p. 97).

One perceived strength of the directly-elected local authority mayor is that, by virtue of their council-wide mandate, they are generally perceived as ‘leader of the place’, rather than ‘leader of the council’, which grants them significant political legitimacy in the eyes of other stakeholders (Hambleton 2017, p. 250; Roberts 2020). Mayors are seen as speaking for a community with a shared identity, “as avatars who embody abstract concepts of ideologies of place, community and politics that are both territorial and relational” (Jayne 2011). As such, unlike councillors, who represent specific areas within a place, or MPs who tend to be elected on their party affiliations, local authority mayors can position themselves above the party political fray and are bolstered by a single mandate and the ability to claim they represent a specific demos.

This, however, does not necessarily apply to MCAs, where the focus on economic geographies means the concept of ‘place’ is often much less cohesive and as a result the electorate of the metro mayor may not represent a single people or demos, but rather a number of different demoi holding different identities. This can lead to tensions during the formation of city regions. For example, in the case of the Sheffield City Region, the government’s labeling of Sheffield as ‘core’ gave other constituent authorities the sense that they were peripheral, and fed into a sense of “Sheffield seeming to always take the bulk of everything on offer” (Hoole and Hincks
Understanding drivers of support for English city-region... 2020). Similarly, Headlam notes how some elites in the Liverpool City Region were concerned that the devolution to the LCR MCA represented “Liverpool-ing sovereignty” (Headlam and Hepburn 2017a, p. 79)—the then-MP for Southport. Liberal Democrat John Pugh, complained that the combined authority would exclude peripheral areas: “All voices—those of Southport, Sefton, the Wirral and St Helens—should be heard. It is not simply all about Liverpool” (Pugh 2015). The Economist noted how a lack of shared identity scuppered devolution to a combined Derbyshire and Nottinghamshire authority where “local politicians found it hard to relate to a regional authority to which they held no natural allegiance” (The Economist 2017).

In assessing the impact of metro mayors after their first full term in office, Giovannini notes how successful metro mayors have been able to “‘harness the power of place’ and use it as leverage to generate support from the grassroots and lobby the centre”, whereas “incumbent mayors who lost their seats at the elections were not able either to bargain with the centre and across local networks, or to project themselves as ‘champions’ of their localities” (Giovannini 2021, pp. 3–4, 10–11). In Greater Manchester, for instance, Giovannini claims that Andy Burnham “managed to ingrain a sense of place, belonging and identity within the Greater Manchester city region—a largely artificial territorial scale with diverse historical and cultural roots” (Giovannini 2021, p. 10). This is disputed by Roberts, who notes “Even Greater Manchester was described as having an ‘emerging’ identity, despite its worker bee symbol having become more commonplace” (Roberts 2020, p. 1001). While metro-mayors may excel at branding, this is not the same as developing a shared city-region identity.

It might be assumed from the above that the lack of a city-region demos and the general failure of metro mayors to build a shared city-region identity would undermine the legitimacy of city-region devolution. However, although the process of establishing city-region devolution cannot be described as democratic—as noted above, it was an elite-driven process, lacking any meaningful public engagement or support (Giovannini 2021, p. 2; see also Cox 2016, p. 570; Blunkett et al. 2016, p. 562; Bailey and Wood 2017, p. 974)—once established city-region devolution does have a strong claim to democratic legitimacy, combining both direct and indirect forms of legitimacy. The fact that the metro mayor is subject to a city-region-wide public vote is a clear source of direct input legitimacy, and the fact that the combined authority cabinet is made up of the leaders of constituent councils is a good example of indirect input legitimacy (Scharpf 1999). Scholars have shown how multi-level governance structures in other countries rely on ‘borrowed’ legitimacy from constituent municipalities, which also applies to the case the combined authority (Gendźwiłł and Lackowska 2018).

Furthermore, polling by Savanta ComRes shows public support for expanding the remit of city-region government: “83 per cent of voters across the metro mayor geographies and Greater London want them to have more power over at least one policy area” (Breach 2021), although just 74% were aware their city region has an elected mayor or is about to elect a mayor, and it was only in Greater Manchester and Greater London where more than half of respondents are able to correctly name the mayor of their city (63% and 60% respectively). On average, only 33% of...
residents could correctly name the incumbent metro mayor (Centre for Cities 2021). This is hardly a ringing endorsement of the cut-through of metro mayors, but it is higher than the 15% of people who said they knew the name of their local council leader, and the 8% who actually could name them in a 2012 poll (Institute for Government 2012). Unfortunately, the polling did not explicitly ask whether respondents supported or opposed the position of metro mayor itself, only whether they would vote in metro mayor elections (Savanta ComRes 2020).

A 2018 YouGov poll of 20,081 English adults asked respondents if they would support or oppose a combined authority in their area: 48% would support one compared to 19% who would not (YouGov 2018). This is not quite the same as asking those who already live under a combined authority whether they support it in its current form, nor does the poll explore the drivers of support for these institutions. As such, there is a significant lacuna in the literature surrounding whether the public actually support the establishment of metro mayors, and what drives this support. It is this lacuna this paper will move on to fill.

**Hypotheses**

Embedded in the concept of the city region is a centre and its periphery. In the case of Liverpool City Region, Liverpool is the centre (both politically and geographically) and the periphery is comprised of Knowsley, St Helens, Sefton, Wirral and Halton. Turnout in the 2017 metro mayoral election was highest in Liverpool (28.6%) and lowest in Halton (20.5%) (BBC 2017). Whilst polling showed the proportion of people likely to vote in the 2021 mayoral election was highest in Liverpool than in the periphery of the city region (Savanta ComRes 2020), the actual election saw Liverpool with the fourth highest turnout, at 19%, following Wirral (22%), St Helens (21%), and Sefton (20%) (Uberoi 2021). If we use turnout as a proxy for support the picture is mixed in terms of higher levels of support in the centre than the periphery. This leads to the first hypothesis:

**H1** Those who live in the centre of the city region will be more likely to support the position of metro mayor than those who live on the periphery.

The prioritisation of economic geography over local identity within the city-region devolution project was noted above. The Liverpool City Region provides a good case study of the importance of local identities, given the strong political salience of Scouseness and its relationship with voting behaviour Jeffery (2021b). As Tonge noted when the city region was being established, “St Helens is also very reluctant—they don’t feel that they are Scousers and they don’t want to be part of a Liverpool City Region” (Long 2017). This leads to the second hypothesis:

**H2** Those who have a stronger sense of Scouse identity will be more likely to support the position of metro mayor than those who do not.
Relatedly, it might be expected that, given the dominance of Labour across the city region (Wilks-Heeg 2019) that voters for other parties would be less likely to support the metro mayor position than Labour voters. Despite being a Conservative policy the Wirral Conservatives opposed devolution (Murphy 2015), as did the Merseyside Greens (Mersey Greens 2020), and the 2017 Liberal Democrat mayoral candidate stood on a platform of holding a referendum on the position of metro mayor (Liverpool Liberal Democrats 2017). This party-political posturing leads to hypothesis three:

**H3** Labour supporters are more likely to support the position of metro mayor than those who support other parties.

Those who are satisfied with democracy in Liverpool will be more likely to support the status quo of maintaining the metro mayor position. However, it could also be argued that those who are strongly dissatisfied with democracy in the United Kingdom will be more likely to support devolution to city regions, as a challenge to the status quo. This leads to hypothesis 4a and 4b:

**H4a** Those who are satisfied with democracy in Liverpool will be more likely to support the position of metro mayor than those who are dissatisfied.

**H4b** Those who are dissatisfied with democracy in the UK will be more likely to support the position of metro mayor than those who are satisfied.

Whilst studies examining support for local authority mayors found no relationship between either left–right or authoritarian-libertarian values and support for a directly elected mayor (Seyd et al. 2018), there is a positive correlation between support for greater devolution to the Scottish and Welsh parliaments among Scottish/Welsh left-wing voters, whilst in England it is right-wing voters who are more likely to want an English parliament or English independence. When it comes to authoritarian-libertarian values, the British Election Study shows libertarian voters in Scotland and Wales favour more powers for their respective parliaments, but in England it is the reverse, with authoritarian voters wanting more powers for England. Furthermore, English voters who hold more populist values are more likely to want to see an English parliament (British Election Study 2020). A measure for views towards equal opportunities for minority groups has also be included, as a proxy for social liberalism. This leads to three new hypotheses:

**H5a** Those with more left-wing values are more likely to support the position of metro mayor than those who hold more right-wing values.

**H5b** Those with more libertarian values are more likely to support the position of metro mayor than those who hold more authoritarian values.
**H5c** Those with more populist values are more likely to support the position of metro mayor than those who do not hold populist values.

Finally, we consider the role of national identities. A 2018 YouGov poll of 20,081 English adults found that among respondents who identified as ‘English not British’ 45% would support a combined authority (compared to 23% who would oppose, and 32% who responded with ‘don’t know’). This compared to 51% support among those who saw themselves as ‘British not English’ (with just 20% opposed and 28% who said ‘don’t know’) (YouGov 2018, p. 38). Also included is a measure for Europeanness, in order to compare with English and British identity, although a relationship between European identity and support for the metro mayor position is not suggested by the literature. YouGov, however, found that respondents who voted to remain in the European Union in 2016 were more likely to support a combined authority for their area than those who voted to leave (52 to 47% respectively). This leads to two new hypotheses:

**H6a** Those with a stronger sense of Englishness will be less likely to support the position of metro mayor than those who do not.

**H6b** Those with a stronger sense of Britishness will be more likely to support the position of metro mayor than those who do not.

**Data and methodology**

The unit of analysis for this study is the Liverpool City Region combined authority, which was first established in April 2014 and comprises six local authorities: Knowsley, Liverpool, Sefton, St Helens and Wirral, all in the ceremonial county of Merseyside, and Halton in the ceremonial county of Cheshire. All six councils are headed by the Labour Party. Since May 2017 the combined authority has been led by a metro mayor, Labour’s Steve Rotheram, and like all metro mayors he is elected via the alternative vote system—however, in both 2017 and 2021 Rotheram won a majority in the first round (59% in 2017 and 58% in 2021). Thus the combined authority is considered ‘safe’ for Labour.

The data for this study came from polling commissioned by the author and conducted by Panelbase. The sample size was 616 responses across Merseyside—not the Liverpool City Region—and as such the borough of Halton is not included in this study. This does restrict the usefulness of the data and the strength and validity of the conclusions that can be drawn to some extent, although it is worth noting that according to the 2020 ONS population estimates Halton comprised just 8.3% of the population of the city region (Office for National Statistics 2021). As such, this omission should not have too much of an influence on the overall findings.

Once entries with missing data are removed, the dataset has 562 respondents. Given Merseyside has a population of 1.4 million, this sample size gives us a margin
of error of 4.1%. Where possible the question and answer structure was modeled on the British Election Study to ensure the questions were appropriately framed and were not leading, and also allowed for direct comparison.

In order to test our hypotheses a series of logistic regressions will be presented. The dependent variable is a dummy variable, where 1 represents the response “The Liverpool City Region combined authority, with a metro mayor, is a good idea” (299 of 562 responses—53.2%) and 0 represents the responses “The Liverpool City Region combined authority, with a metro mayor, is a good idea, but my area should not be included in it” (137—24.4%) and “The Liverpool City Region combined authority, with a metro mayor, is a bad idea and should be abolished” (126—22.4%). Combined, we have 299 positive responses (53%) to 263 negative responses (47%).

A number of socio-demographic control variables will also be included in each model: gender, age, socio-economic group and income. The 2018 YouGov poll showed a higher level of support for combined authorities among males than females (51% approving compared to 45% respectively) and among ABC1 voters compared to C2DE voters (50% to 45% support respectively) but no clear pattern relationship for age (YouGov 2018).

In terms of our independent variable, Scouse, English, British and European identity are measured by asking respondents to place themselves on a seven-point scale with 1 being “not at all” and 7 being “very strongly”. Respondents’ geographic location—i.e. the local authority they lived in—was generated via their postcodes. Satisfaction with democracy was gauged by asking “On the whole, how satisfied or dissatisfied are you with the way that democracy works in the UK as a whole/Liverpool”, with responses from “Very dissatisfied”, “A little dissatisfied”, “Fairly satisfied” and “Very satisfied”. We measured left–right, libertarian-authoritarian and populist values and views towards equal opportunities using the question sets from the British Election Study, and then combined them to form four scales. Finally, support for Labour was gathered by asking respondents to rank parties based on how likely they were to vote for them in a general election, thus creating a continuous variable. The variable was rescaled so 8 was the highest ranking and 1 was the lowest, in order to make the regression tables more intuitive.

Analysis

Table 1 shows the output for regression models exploring the first four hypotheses, including demographic control variables. As for all regression models in this study, all independent continuous variables have been scaled so each coefficient represents the impact of one standard deviation increase of the variable on the likelihood of supporting the position of metro mayor.

On the face of it we find support for all of the hypotheses. Those who live in Liverpool are more likely to support the metro mayor than those who live in the other Merseyside council areas, and if we run a separate regression model with local authority as a categorical variable we see statistically significant lower levels of support in Sefton, St. Helens and Wirral, but not Knowsley. Those with a stronger sense of being Scouse are more likely to support the position of metro mayor than those
who do not, and those who rank the Labour party more highly are more likely to support the metro mayor position. Satisfaction with democracy in Liverpool is positively correlated with support for the metro mayor whilst satisfaction with democracy in the UK as a whole is negative correlated with support for the office.

We can use the Akaike information criterion (AIC) to explore which of these hypotheses provides a better fit of the data. Since a lower AIC shows a better model fit it is clear that party-political concerns—i.e. how highly someone ranks the Labour Party—provides the best fit. This perhaps hints at the importance of party politics in explaining support for the metro mayor position.

Moving to hypothesis five, as shown in Table 2, we see that being more left wing, less authoritarian (or more libertarian) and less likely to think measures of equality have gone too far are all correlated with greater support for the metro mayor position when considered individually. In a multivariate model, however, only our right-left
and equality measures remain statistically significant, albeit both in the expected direction. Thus we find consistent support for H5a, but not H5b or H5c. Interestingly, it is still the case that the Labour ranking model provides the best model fit for the data based on AIC, although out of the models presented in Table 2 it is actually the model including views on equal opportunities which fits the data best—rather than the other, theoretically derived, independent variables.

Table 3 shows that the more English a respondent feels the more likely they are to be opposed to the metro mayor position, corresponding with YouGov’s findings outlined above. There is no statistically significant relationship for Britishness. Interestingly, we see that Europeanness is positively correlated with support for the metro mayor position (and as we see below, this relationship holds even when controlling for both Englishness and Britishness).

Why might this be? In the case of Englishness, it may be that because the identity is typically correlated with a form of cultural conservatism which may be opposed to constitutional meddling—although previous studies find that English
identifiers have greater “support for separate English political institutions” (Ford and Sobolewska 2018). However, for those with the strongest sense of Englishness it might be that their preferred level of devolution would be to the nation of England, rather than to city-regions. It might also be that Englishness is correlated with Conservative support—although the relationship is maintained when we control for how a respondent ranks the Conservative Party.

What is perhaps even more interesting is the strong positive correlation between feeling more European and support for the metro mayor position. In the combined model for hypothesis six we see that only the European identity remains statistically significant, and the model’s fit, as measured by both the AIC and the pseudo $R^2$ remains unchanged, suggesting that including Europeanness on its own is just as good a predictor as including all identities.

In a separate analysis, not presented here, we also find an interaction effect between Europeanness and local authority: the effect of European identity is much stronger among respondents within Liverpool than those in other local authorities in Merseyside. This is confirmed when we run two separate models, one for those within Liverpool and one for those outside of Liverpool. In the

### Table 3 Logistic regression output exploring hypotheses 6a and 6b

|                | H6a       | H6b       | Europeanness | Combined model |
|----------------|-----------|-----------|--------------|----------------|
| Intercept      | 0.31      | 0.28      | 0.30         | **0.35***       |
|                | (0.16)    | (0.16)    | (0.16)       | (0.17)          |
| Male           | −0.63***  | −0.60**   | −0.57**      | −0.63***        |
|                | (0.19)    | (0.19)    | (0.18)       | (0.19)          |
| Age            | 0.07      | 0.06      | 0.11         | 0.13            |
|                | (0.09)    | (0.09)    | (0.09)       | (0.09)          |
| ABC1           | 0.10      | 0.13      | 0.08         | 0.04            |
|                | (0.19)    | (0.19)    | (0.20)       | (0.20)          |
| Income         | 0.11      | 0.11      | 0.08         | 0.08            |
|                | (0.10)    | (0.09)    | (0.10)       | (0.10)          |
| English identity | −0.22*   |           | −0.19        |                |
|                | (0.09)    |           | (0.12)       |                |
| British identity | −0.10    |           | 0.00         |                |
|                | (0.09)    |           | (0.12)       |                |
| European identity |          |           | **0.40****   | **0.38****      |
|                |           |           | (0.09)       | (0.09)          |
| $N$            | 562       | 562       | 562          | 562             |
| AIC            | 770.96    | 775.94    | 757.16       | 757.05          |
| BIC            | 796.95    | 801.93    | 783.15       | 791.70          |
| Pseudo $R^2$   | 0.04      | 0.03      | 0.07         | 0.08            |

All continuous predictors are mean-centered and scaled by 1 standard deviation

Bold values indicates statistical significance

***$p<0.001$; **$p<0.01$; *$p<0.05$
Liverpool model European identity is statistically significant and positively correlated with support for the combined authority and metro mayor, while in the latter model there is no statistically significant relationship. Thus, we see the impact of Europeanness modulated through the centre-periphery divide.

Finally, Table 4 shows the full regression model with all variables in, and a model generated via stepwise selection with the aim to produce the model with the lowest AIC value, i.e. the model that best fits the data. Seven out of the seventeen variables were dropped by the stepwise algorithm, suggesting that they did not increase the fit of the model and instead contributed to overfitting. The full model has an AIC of 721 compared to an AIC of 710 for stepwise regression, suggesting that the latter model has a better fit with the data, and in all cases all variables act in the expected direction.

The first interesting point of note is that it is geography, not identity, that seems to matter in determining support for the metro mayor position: Scouseness is not statistically significant but being resident in Liverpool is. We see that party politics also plays a role: despite being a creation of the Conservatives, there remains a positive correlation between ranking Labour highly and supporting the metro mayor position—and it is also the case that the more left-wing an individual is the more likely they are to support the position. Both of these could be explained by the fact that the position is held by a Labour politician (indeed, Jeremy Corbyn’s former PPS), and that is not likely to change in the near- or medium-term.

In this model, we find no evidence that support for metro mayors is driven by views on democracy in the UK as a whole, nor that it is influenced by one’s authoritarian-libertarian or populist views. Interestingly, however, we see that one’s position on equality does remain statistically significant—those who think that attempts to give equal opportunities for gays and lesbians, women and ethnic minorities have gone too far are less likely to support the metro mayor position than those who do not think this. British identity remains statistically insignificant, and unlike in Table 3 we now find that, when controlling for other variables, Englishness is also statistically insignificant when it comes to explaining support for the MCA. European identity, however, does remain significant. The causal pathway for this relationship is not obvious, but it could be to do with more European-identifying citizens being anti-Conservative, and seeing the Liverpool City Region’s metro mayor as a remain-supporting site of opposition to the Conservative government. Similarly, the causal relationship could work through the fact that it is voters in Liverpool who are more likely to identify as European, compared to voters in other boroughs. However, the relationship between Europeanness and support for the MCA is maintained when we control for how a respondent ranks the Conservative Party and whether they reside in Liverpool. One final theory is that voters who feel more European, and thus have a greater affinity to the EU, are more supportive of power being dispersed across many levels, rather than being concentrated in the nation-state, and thus would be more likely to support MCAs.

Interestingly, in both our full and stepwise models we find that gender acts in the opposite direction suggested by YouGov’s (2018) polling—men are less likely to support the MCA compared to women, when controlling for all other factors in the regression model. Similarly, unlike YouGov’s polling we find no relationship
### Table 4  Logistic regression output for the full model and the stepwise regression model

|                  | Full model         | Stepwise model        |
|------------------|--------------------|-----------------------|
| Intercept        | − 0.00 (0.22)      | − 0.05 (0.17)         |
| Male             | − 0.51* (0.21)     | − 0.48* (0.20)        |
| Age              | 0.33** (0.11)      | 0.33** (0.11)         |
| ABC1             | 0.02 (0.21)        |                       |
| Income           | 0.17 (0.11)        | 0.18 (0.10)           |
| Liverpool resident | 0.49* (0.23)   | 0.56** (0.21)         |
| Scouseness       | 0.03 (0.11)        |                       |
| Rank labour      | 0.34** (0.11)      | 0.35*** (0.11)        |
| Satisfaction with democracy (Liverpool) | 0.26* (0.11) | 0.20* (0.10)         |
| Satisfaction with democracy (UK) | − 0.11 (0.12) |                       |
| More left-wing   | 0.24* (0.12)       | 0.24* (0.10)          |
| More authoritarian | 0.03 (0.12)      |                       |
| More populist    | − 0.07 (0.12)      |                       |
| Equality (gone too far) | − 0.26* (0.11) | − 0.28** (0.10)       |
| English identity | − 0.09 (0.13)      |                       |
| British identity | − 0.00 (0.13)      |                       |
| European identity | 0.28** (0.10)  | 0.29** (0.10)         |
| \(N\)            | 562                | 562                   |
| AIC              | 721.80             | 710.16                |
| BIC              | 795.44             | 753.47                |
| Pseudo \(R^2\)   | 0.20               | 0.19                  |

All continuous predictors are mean-centered and scaled by 1 standard deviation

Bold values indicates statistical significance

\(*\*\*\ p < 0.001; \*\*\ p < 0.01; \*\ p < 0.05\)
between socio-economic group and support for the MCA but we do find a positive relationship between age and support: the older one is, the more likely they are to support the MCA.

Discussion

This paper has identified key drivers of support for the Liverpool City Region combined authority and metro mayor. This study has shown how, in the case of Liverpool, support for devolved level of government is not necessarily related to a sense of local identity, as suggested by scholars like Roberts (2020), but rather by geographical position: support is greater in the centre of the city region—Liverpool—than in the periphery. This provides a tension with the findings from Bristol, which found that “effective local leaders are able to connect to place-based feelings of loyalty and civic identity” (Hambleton 2019, p. 277) and represents a political challenge for the Liverpool City Region metro mayor Steve Rotheram.

One interesting dynamic of support for the metro mayor position is the fact that many of the statistically significant variables are related to political values and identity: voters who are left-wing and more supportive of further equal opportunities, and who more strongly identify as European are more likely to support the position of metro mayor, as are voters who are more supportive of the Labour Party. Indeed, in both the full model and the stepwise model the variable of support for Labour is the most important. This party-political dynamic is interesting insofar as it suggests that the drivers of support for metro mayors may vary across the country: it does not seem likely that a Labour voter in the Tees Valley or the West Midlands—areas where the Conservatives overperformed in the metro mayor elections relative to their traditional levels of support in those areas—would be as supportive of the position than they are in the Labour-dominated Liverpool or Greater Manchester city regions. This finding is also interesting because the role of party-political support for MCAs is rarely mentioned in the literature.

This finding also presents a potential issue for support for metro mayors in the Liverpool City Region. Although Liverpool, and the wider city region, is currently a very safe Labour area, this was not always the case (Jeffery 2017), and the Conservatives still perform well in some areas of Merseyside (Jeffery 2021a). This, coupled with the Green Party providing a challenge to Labour’s left flank in some parts of Merseyside (Hamilton 2021), could see Labour dominance eventually threatened. For instance, after the Labour candidate came first with just 38% of the vote in 2021 the Liverpool mayoral election, the contest went to a second-round of counting for the first time since the position was established. This was generally attributed to outrage over former Labour mayor Joe Anderson recent arrest on suspicion of bribery and witness intimidation, but it does show that support for Labour is not as completely rock solid as first appears. It is unclear what would happen to public support for Liverpool’s combined authority and metro mayor if support for Labour dropped.

Furthermore, the importance of respondents’ European identity and views on equal opportunities also presents a conundrum for those researching support for metro mayors, since it is not immediately clear why views on equal opportunities
or Europeanness would be important while other factors that actually have a basis in the literature, such as Englishness or holding populist beliefs, are not found to be important.

One area so far unmentioned is the relative importance of age and gender. Men are less likely to support the metro mayoral position, the reasons for which are unclear, and this relationship holds across all models presented here. Older voters are more likely to support the position of metro mayor, which is interesting because older voters are more likely to remember Merseyside being part of Lancashire, rather than its own county.

To conclude, this study has shown that the process of city-region devolution is not supported by a ‘demos’, a people bound by a common identity (in this case a Scouse identity), but rather based on geographic, party-political and ideological factors. Perhaps this should come as no surprise: as noted throughout this article, the city-region devolution project was always an elite-level process, driven by central government with sympathetic ministers negotiating with cash-strapped council leaders. The goal was not to nation-build on a local level, nor to represent pre-existing political communities (as was the case with devolution to Scotland and Wales), but rather to promote economic growth in functional economic geographies and create figures who could, as the Economist puts it, “work with local authorities rather than replacing them, would knock heads together, cajoling local politicians to set aside turf wars and sort out problems affecting all of them” (The Economist 2021).

This case study of the Liverpool City Region presents a starting point for further research, which might consider the following questions:

1. To what extent are local and national identities important in shaping support for MCAs?
2. To what extent do we see divides between the centre and periphery in explaining support for MCAs?
3. To what extent are drivers of support consistent between city regions and to what extent do they differ? This is especially important given our findings vis-a-vis the role of Labour support on overall support for the Liverpool MCA.

Although the progress on devolution deals to metropolitan areas seems to have stalled, the concept of county deals—potentially with their own county mayors—and the bipartisan support for further devolution within England means that understanding the drivers support for these institutions will remain an important task for academics.
References

Academic Sources

Bailey, D., and M. Wood. 2017. The metagovernance of English devolution. Local Government Studies 43 (6): 966–991. https://doi.org/10.1080/03003930.2017.1359165.

BBC. 2017. Elections 2017 results: Tories win four new mayors. BBC News. https://www.bbc.com/news/election-2017-39817224.

Blunkett, D., M. Flinders, and B. Prosser. 2016. Devolution, evolution, revolution … democracy? What’s really happening to English local governance? The Political Quarterly 87 (4): 553–564. https://doi.org/10.1111/1467-923X.12282.

Breath, A. 2021. The metro mayors are a success—Now they need more responsibilities. Centre for Cities. https://www.centreforcities.org/blog/the-metro-mayors-are-a-success-now-they-need-more-responsibilities/.

Bristol City Council. 2020. Bristol Quality of Life survey 2019/20, 1–26. Bristol: Bristol City Council.

Bristol City Council. 2021. Bristol Quality of Life survey 2020/21, 1–18. Bristol: Bristol City Council.

British Election Study. 2020. British Election Study Combined Wave 1–20 Internet Panel. British Election Study. https://www.britishelectionstudy.com/data-object/british-election-study-combined-wave-1-20-internet-panel/.

Centre for Cities. 2021. What do the public think about devolution and the metro mayors? Centre for Cities. https://www.centreforcities.org/data/what-do-the-public-think-about-devolution-and-the-metro-mayors/.

Cox, E. 2016. Devolution in England—Is the genie out of the lamp? The Political Quarterly 87 (4): 565–571. https://doi.org/10.1111/1467-923X.12290.

Fenwick, J. 2015. The problem of sub-national governance in England. Public Money & Management 35 (1): 7–14. https://doi.org/10.1080/09540962.2015.986859.

Fenwick, J., and H. Elcock. 2014a. Elected mayors: Leading locally? Local Government Studies 40 (4): 581–599. https://doi.org/10.1080/03003930.2013.836492.

Fenwick, J. and H. Elcock. 2014b. Has the introduction of directly elected mayors advanced or detracted from democratic innovation in English local government? Democratic Audit. https://www.democraticaudit.com/2014/03/06/has-the-introduction-of-directly-elected-mayors-advanced-or-detracted-from-democratic-innovation-in-english-local-government/.

Fenwick, J., and L. Johnston. 2020. Leading the combined authorities in England: A new future for elected mayors? Public Money & Management 40 (1): 14–20. https://doi.org/10.1080/09540962.2019.1622344.

Ford, R., and M. Sobolewska. 2018. ‘UKIP, Brexit and the disruptive political potential of English national identity. In Governing England: English identity and institutions in a changing United Kingdom, ed. M. Kenny, I. McLean, and A. Paun, 159–186. London: British Academy. https://doi.org/10.5871/bacad/9780197266465.003.0008.

Gains, F. 2015. Metro mayors: Devolution, democracy and the importance of getting the “Devo Manc” design right. Representation 51 (4): 425–437. https://doi.org/10.1080/00344893.2016.1165511.

Gendźwiłł, A., and M. Lackowska. 2018. A borrowed mandate? Democratic legitimacy of inter-municipal entities: A comparative analysis. In Inter-municipal cooperation in Europe, ed. F. Teles and P. Swianiewicz, 57–77. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-62819-6_4.

Giovannini, A. 2021. ‘The 2021 metro mayors elections: Localism rebooted? The Political Quarterly. https://doi.org/10.1111/1467-923X.13036.

Hambleton, R. 2017. Directly elected mayors: A route to progressive urban leadership? In Directly elected mayors in urban governance: Impact and practice, ed. D. Sweeting, 243–264. First: Bristol University Press. https://doi.org/10.2307/j.ctt1t89hzf.

Hambleton, R. 2019. The new civic leadership: Place and the co-creation of public innovation. Public Money & Management 39 (4): 271–279. https://doi.org/10.1080/09540962.2019.1592908.

Hambleton, R. 2020. Debate: Researching directly elected mayors key questions to address. Public Money & Management 40 (1): 3–4. https://doi.org/10.1080/09540962.2019.1658998.
Hambleton, R., D. Sweeting, and T. Oliver. 2021. Place, power and leadership: Insights from mayoral governance and leadership innovation in Bristol. UK: Leadership. https://doi.org/10.1177/17427150211028122.

Hamilton, C. 2021. Elections 2021: Is Merseyside seeing a Green revolution? BBC News. https://www.bbc.com/news/uk-england-merseyside-57157410.

Headlam, N., and P. Hepburn. 2017a. Directly elected mayors: Necessary but not sufficient to transform places? The case of Liverpool. In Directly elected mayors in urban governance: Impact and practice, ed. D. Sweeting, 69–84. First: Bristol University Press. https://doi.org/10.2307/j.ctt1t89hzf.

Headlam, N., and P. Hepburn. 2017b. What a difference a Mayor makes. A case study of the Liverpool Mayoral model. Local Government Studies 43 (5): 731–751. https://doi.org/10.1080/03003930.2017.1333429.

Hoole, C. 2018. Leadership and governance in a city-regional context: A case study of doncaster. PhD thesis. University of Sheffield.

Hoole, C., and S. Hincks. 2020. Performing the city-region: Imagineering, devolution and the search for legitimacy. Environment and Planning A: Economy and Space 52 (8): 1583–1601. https://doi.org/10.1177/0308518X20921207.

Institute for Government. 2012. New national poll reveals local council leaders are unknown to citizens and the majority would prefer an elected mayor. The Institute for Government. https://www.instituteforgovernment.org.uk/news/latest/new-national-poll-reveals-local-council-leaders-are-unknown-citizens-and-majority-would.

Jayne, M. 2011. From actor to avatar: The place of mayors in theories of urban governance: The place of mayors in theories of urban governance. Geography Compass 5 (11): 801–810. https://doi.org/10.1111/j.1749-8198.2011.00452.x.

Jeffery, D. 2017. The strange death of Tory Liverpool: Conservative electoral decline in Liverpool, 1945–1996. British Politics 12 (3): 386–407. https://doi.org/10.1057/s41293-016-0032-6.

Jeffery, D. 2021a. Merseyside Local Election Results Project (1945–2020). https://doi.org/10.5281/zenodo.5596726.

Jeffery, D. 2021b. The myth of ‘Scouse not English’—Scouse identity: History, mystery, and political relevance today. YouTube. https://www.youtube.com/watch?v=0H3Mw-mM-QY.

Johnson, B. 2021. The Prime Minister’s levelling up speech. GOV.UK. https://www.gov.uk/government/speeches/the-prime-ministers-levelling-up-speech-15-july-2021.

Liverpool Liberal Democrats. 2017. Manifesto for Mayor of the Liverpool City Region. Liverpool Liberal Democrats. https://www.liverliddems.org.uk/manifesto_launch_for_the_2017_mayoral_elections.

Long, C. 2017. Liverpool City Region: What does it mean for its people?. BBC News. https://www.bbc.com/news/uk-england-merseyside-39645055.

Mersey Greens. 2020). LCR devolution. Mersey Greens. https://web.archive.org/web/20200813004342/https://mersey.greenparty.org.uk/lcr-devolution.html.

Murphie, A. 2019. In perspective: Setting up new combined authorities in England: A National Audit Office assessment. Local Economy: The Journal of the Local Economy Policy Unit 34 (2): 94–105. https://doi.org/10.1177/0269094219840603.

Murphy, L. 2015. Wirral Tories to demand city region press ahead with Metro Mayor plans. Liverpool Echo. http://www.liverpoolecho.co.uk/news/liverpool-news/wirral-tories-demand-city-region-9514480.

Mycock, A. 2016. The politics of England. The Political Quarterly 87 (4): 534–545. https://doi.org/10.1111/1467-923X.12283.

Office for National Statistics. 2021. Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland. Office for National Statistics. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland.

Open Data Bristol. 2021. Quality of Life 2020–21 Open Data Bristol. Quality of Life in Bristol 2020–2021. https://opendata.bristol.gov.uk/pages/quality_of_life_results_202021/ward-view#bristol-trend-view.

Pugh, J. 2015. The Government’s approach to “Metro Mayors” amounts to imposition rather than devolution. Democratic Audit. https://www.democraticaudit.com/2015/06/15/the-governments-approach-to-metro-mayors-amounts-to-imposition-rather-than-devolution/.

Roberts, J. 2020. The leadership of place and people in the new English combined authorities. Local Government Studies 46 (6): 995–1014. https://doi.org/10.1080/03003930.2020.1719076.
Understanding drivers of support for English city-region…

Sandford, M. 2017. Signing up to devolution: The prevalence of contract over governance in English devolution policy. Regional &amp; Federal Studies 27 (1): 63–82. https://doi.org/10.1080/13597566.2016.1254625.

Sandford, M. 2019. Money talks: The finances of English Combined Authorities. Local Economy: The Journal of the Local Economy Policy Unit 34 (2): 106–122. https://doi.org/10.1177/0269094219839609.

Sandford, M. 2021. Directly-elected mayors. Briefing {{Paper}} 05000. House of Commons: House of Commons Library, p. 16.

Savanta ComRes. 2020. Centre for Cities—City Region Research. Savanta Comres. https://comresglobal.com/polls/centre-for-cities-city-region-research/.

Scharpf, F. 1999. Governing in Europe: Effective and democratic? Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198295457.001.0001.

Seyd, B., J. Curtice, and J. Rose. 2018. How might reform of the political system appeal to discontented citizens? The British Journal of Politics and International Relations 20 (2): 263–284. https://doi.org/10.1177/1369148817736189.

The Economist. 2017. Reaching a dead end. The Economist. https://www.economist.com/britain/2017/03/04/reaching-a-dead-end.

The Economist. 2021. Two Conservative mayors have very different ideas about cities. The Economist. http://www.economist.com/britain/2021/04/08/two-conservative-mayors-have-very-different-ideas-about-cities.

Tomaney, J. 2016. Limits of devolution: Localism, economics and post-democracy. The Political Quarterly 87 (4): 546–552. https://doi.org/10.1111/1467-923X.12280.

Uberoi, E. 2021. Combined authority mayoral elections in May 2021. Briefing {{Paper}} CBP9237. House of Commons: House of Commons Library, p. 22.

Wilks-Heeg, S. 2019. Safe labour suburbia? The changing politics of the Merseyside Suburbs. The Political Quarterly 90 (1): 53–63. https://doi.org/10.1111/1467-923X.12528.

YouGov. 2018. YouGov/BBC survey results. https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/re4ybugrnl/BBC_EnglishIdentity_March18_Results_for_website.pdf.

R Packages

Francois, R. 2020. bibtex: Bibtex Parser. R package version 0.4.2.3. https://github.com/romainfrancois/bibtex.

Gohel, D. 2021. flextable: Functions for Tabular Reporting. R package version 0.6.9. https://CRAN.R-project.org/package=flextable.

Henry, L. and H. Wickham. 2020. purrr: Functional Programming Tools. R package version 0.3.4. https://CRAN.R-project.org/package=purrr.

Hugh-Jones, D. 2021. huxtable: Easily Create and Style Tables for LaTeX, HTML and Other Formats. R package version 5.4.0. https://hughjonesd.github.io/huxtable/.

Kaplan, J. 2020. fastDummies: Fast Creation of Dummy (Binary) Columns and Rows from Categorical Variables. R package version 1.6.3. https://CRAN.R-project.org/package=fastDummies.

Lüdecke, D., M.S. Ben-Shachar, I. Patil, et al. 2020. Extracting, computing and exploring the parameters of statistical models using R. Journal of Open Source Software. https://doi.org/10.21105/joss.02445.

Lüdecke, D., M.S. Ben-Shachar, I. Patil, et al. 2021a. performance: An R package for assessment, comparison and testing of statistical models. Journal of Open Source Software. https://doi.org/10.21105/joss.03139.

Lüdecke, D., D. Makowski, M.S. Ben-Shachar, et al. 2021b. parameters: Processing of Model Parameters. R package version 0.15.0. https://easystats.github.io/parameters/.

Lüdecke, D., D. Makowski, M.S. Ben-Shachar, et al. 2021c. performance: Assessment of Regression Models Performance. R package version 0.8.0. https://easystats.github.io/performance/.

Long, J.A. 2021a. Interactions: Comprehensive, user-friendly toolkit for probing interactions. R package version 1.1.5. https://interactions.jacob-long.com.

Long, J.A. 2021b. jtools: Analysis and Presentation of Ssocial Scientific Data. R package version 2.1.4. https://jtools.jacob-long.com.

Müller, K. and H. Wickham. 2021. tibble: simple data frames. R package version 3.1.5. https://CRAN.R-project.org/package=tibble.
McLean, M.W. 2014. Straightforward bibliography management in R using the RefManager Package. arXiv: 1403.2036 [cs.DL]. https://arxiv.org/abs/1403.2036.

McLean, M.W. 2017. RefManageR: Import and manage BibTeX and BibLaTeX references in R. The Journal of Open Source Software. https://doi.org/10.21105/joss.00338.

McLean, M.W. 2020. RefManageR: Straightforward BibTeX and BibLaTeX bibliography management. R package version 1.3.0. https://github.com/ropensci/RefManageR/.

R Core Team. 2021. R: A language and environment for statistical computing. Vienna: R Foundation for Statistical Computing. https://www.R-project.org/.

Sjoberg, D.D., M. Curry, J. Larmarange, et al. 2021a. gtssummary: Presentation-ready data summary and analytic result tables. R package version 1.5.0. https://CRAN.R-project.org/package=gtssummary.

Sjoberg, D.D., K. Whiting, M. Curry, et al. 2021b. Reproducible summary tables with the gtssummary package. The R Journal 13 (1): 570–580. https://doi.org/10.32614/RJ-2021-053.

Wickham, H. 2016. ggplot2: Elegant graphics for data analysis. New York: Springer. ISBN: 978-3-319-24277-4. https://ggplot2.tidyverse.org.

Wickham, H. 2019. stringr: Simple, consistent wrappers for common string operations. R package version 1.4.0. https://CRAN.R-project.org/package=stringr.

Wickham, H. 2021a. forcats: Tools for working with categorical variables (factors). R package version 0.5.1. https://CRAN.R-project.org/package=forcats.

Wickham, H. 2021b. tidyr: Tidy Messy data. R package version 1.1.4. https://CRAN.R-project.org/package=tidyrr.

Wickham, H. 2021c. tidyverse: Easily install and load the tidyverse. R package version 1.3.1. https://CRAN.R-project.org/package=tidyverse.

Wickham, H., M. Averick, J. Bryan, et al. 2019. Welcome to the tidyverse. Journal of Open Source Software 4 (43): 1686. https://doi.org/10.21105/joss.01686.

Wickham, H., W. Chang, L. Henry, et al. 2021a. ggplot2: Create elegant data visualisations using the grammar of graphics. R package version 3.3.5. https://CRAN.R-project.org/package=ggplot2.

Wickham, H., R. FranÃ§ois, L. Henry, et al. 2021b. dplyr: A grammar of data manipulation. R package version 1.0.7. https://CRAN.R-project.org/package=dplyr.

Wickham, H. and J. Hester. 2021. readr: Read rectangular text data. R package version 2.0.2. https://CRAN.R-project.org/package=readr.

Xie, Y. 2016. bookdown: Authoring books and technical documents with R markdown. ISBN 978-1138700109. Boca Raton, FL: Chapman and Hall/CRC. https://bookdown.org/yihui/bookdown.

Xie, Y. 2021. bookdown: Authoring books and technical documents with R markdown. R package version 0.24. https://CRAN.R-project.org/package=bookdown.

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