

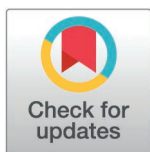
RESEARCH ARTICLE

Climate change and wealth: understanding and improving the carbon capability of the wealthiest people in the UK

Hettie Moorcroft^{1,2*}, Sam Hampton^{1,2}, Lorraine Whitmarsh¹

1 Department of Psychology, University of Bath, Bath, United Kingdom, **2** School of Geography and Environment, University of Oxford, Oxford, United Kingdom

* hettie Moorcroft@outlook.com



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Abstract

Climate change is a problem of equity. The richest 10% of the population account for over half of global emissions, but the impacts of climate change will affect them the least. There is growing recognition that for climate action to be effective and equitable, wealth-based emissions inequalities must be addressed. Indeed, doing so would not only facilitate a just transition to net-zero, but *accelerate* it. In this article, we apply the concept of carbon capability to investigate the role that wealthy people play in the context of climate change and explore opportunities for effective and equitable reductions in their emissions. We draw on a comprehensive, nationally representative survey of UK households with more than 300 measures and combine this with in-depth interviews with individuals defined as being amongst the wealthiest in the UK. Our findings indicate that besides their high consumption-based emissions, wealthy people possess several positive carbon capabilities compared to the rest of the population. These include the capacity to rapidly adopt low-carbon technologies, significant knowledge and awareness about climate change, and the ability to exert climate-positive influence amongst their social and professional networks. However, we also find little motivation amongst wealthy participants for reduced consumption, which they associate with lifestyle sacrifices and the loss of wellbeing. On this basis, we articulate how catalysing influence amongst wealthy people, associating low-carbon lifestyles with wellbeing, and promoting the adoption of low-carbon technologies can support emissions equity for net-zero. Using a carbon capability lens highlights how wealthy people contribute to climate change beyond their direct consumption behaviours, but also how existing capabilities may be leveraged for positive impact.

Author summary

Using survey data and in-depth interviews with wealthy individuals, this research finds that despite their high consumption-based emissions, wealthy people have significant potential to drive effective and equitable climate action. However, the group often lack the motivation to do so. This study therefore suggests interventions encouraging wealthy individuals to leverage their influence for emissions reduction, linking low-carbon lifestyles with wellbeing, and supporting the adoption of low-carbon technologies.

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1. Introduction

There is a strong consensus amongst academics and policymakers that urgent climate action is needed to preserve the Earth as a habitable planet [1]. However, there is far less clarity surrounding what this action should look like to achieve net-zero commitments [2]. The respective roles of individual and systemic change, and behavioural and technological change, have generated debate amongst a range of stakeholders in recent years [3–6]. Historically, climate policy has exhibited a strong emphasis on systemic and supply-side policies as the solution to emissions reduction [7], and there remains a distinct lack of consumption-based policies for emissions reduction across the OECD. Recently, however, there has been increasing recognition of the role played by individuals and communities in producing change through their behaviours, choices, and lifestyles. The UK's Climate Change Committee has estimated that 62% of the emissions reductions necessary to achieve net-zero by 2050 rely on some form of socio-behavioural change [8–10]. However, the degree of change required for net-zero is unevenly distributed across socio-demographic groups.

Increasing attention has been paid to the inequality of carbon emissions across income groups [11,12]. Global trends evidence an extreme disparity of emissions across income groups, with the richest 10% of the population accounting for over half of global emissions from 1990 to 2015 [13]. This global pattern is strongly reflected in the UK, where household emissions of the wealthiest 10% of the population are three times that of the poorest 10% [14]. An ongoing trend of plutonomy in the country suggests this emissions inequality can be expected to continue, if not accelerate, over the coming years [15]. This presents a pressing issue for a 'just transition' to net-zero, as those contributing the least to environmental change also have the fewest resources for resilience [16]. Such equity concerns have received the most academic and public attention as they exist globally, with various sources highlighting how 'developing' countries with low historic emissions contributions are experiencing the most extreme impacts of climatic change [17,18]. Yet, as with wealth distribution, these emissions trends are present at the national scale of the UK [19–21]. These must be carefully considered when formulating climate-related policies to avoid (re)producing injustices and vulnerabilities.

Addressing wealth-related emissions inequalities has the potential to not only facilitate a just transition to net-zero in the UK but to *accelerate* it. The disproportionate contributions of wealthy people to national carbon emissions means that targeted reductions for this group could expedite rates of decarbonisation in the UK [22]. This has been recognised at the global and national scale by numerous actors. For example, the United Nations definitively refer to wealth inequality and climate change as dual issues which must be tackled in tandem to effectively address the Sustainable Development Goals (SDGs) [23]. A UK-wide citizens' assembly on climate change similarly highlighted that effective net-zero solutions must address inequality and seek co-benefits [24]. Research has also highlighted wealthy people can influence emissions in addition to their impact as consumers [25]. For example, wealthy people act as role models when they define and demonstrate 'the good life' through carbon-intensive materials and activities, such as exotic holidays or expensive cars [26]. Identifying and addressing the social norms and discourses reproducing these ideals could contribute to rapid emissions reductions.

Despite widespread calls for climate policies targeting wealthy people, there has been little consensus on what this should or could look like. Consumption-based climate policies have been extensively discussed in academic literature, but examples of implementation are scarce. Examples include a frequent flyer levy [27], progressive energy pricing [28], and personal carbon allowances [29]. As it stands, excess consumption of energy, aviation, food, transport fuels, and other resources by high emitters remains largely untouched by climate policy across OECD countries, including the UK.

In the absence of policies for curbing excess consumption, it is necessary to explore alternative ways to address emissions inequality. In this paper, we use the concept of carbon capability (CC), a framework developed to highlight the need for individual *and* system change and suggest practical routes to support this change. CC foregrounds both the agency of individuals (preferences, motivations, behaviours), whilst also acknowledging the influence of wider social and structural factors in enabling and constraining low carbon choices [30,31]. Defined by Whitmarsh et al. (2011, p.59) as “the ability to make informed judgments and to take effective decisions regarding the use and management of carbon, through both individual behaviour change and collective action”, the concept synthesises multiple and complex components enabling or constraining emissions reduction. There have been several empirical applications of CC for emissions reduction to date [31,32]. However, none have explored its potential in addressing the specific wealth- and consumption-based policy deficits.

This study explores the research question: in what ways are wealthy people more or less carbon capable? Due to a relatively high concentration of wealthy people [33], above-average rates of consumption [34], and uncertainty surrounding consumption-based policies, the UK provides an appropriate research location within which to conduct this investigation. A mixed-methods approach combining quantitative survey data and qualitative interview data is used to investigate the carbon capability of the UK's wealthiest. The research finds three significant ways in which wealthy people are capable of making effective low-carbon decisions, and seven key limitations to this capability. The discussion outlines opportunities to ameliorate wealthy people's carbon capability, including those which seek to directly reduce the prevalence of high-emissions behaviours in the near future and those which aim to interrupt their social reproduction amongst the group moving forward. The research concludes that the concept of carbon capability can help to build the case for progressive, consumption-based climate interventions by policymakers and other actors.

2. Literature review

2.1. The rationale for climate policy targeting wealthy people

The compound issues of income inequality and climate change began gaining traction in the early 2000s [35,36] and continued throughout the 2010s [19,22]. Attention largely focused on low-income households experiencing fuel poverty or unattainable carbon price hikes [18,37], with some consideration paid to the double injustice created as those contributing the least to global environmental change also experience the most significant impacts on their wellbeing [16,19]. However, the latter body of work primarily considered entire developing countries as victims of this income inequality, as they suffered the most visible and extreme effects of climate change [17,18].

In 2020, Oxfam's report 'Confronting Carbon Inequality' drove a burst of media coverage about how the consumption patterns of the affluent fuel the climate crisis and place the most significant burdens of climate damage on poor and marginalised groups [13]. The declaration that the richest 10% of the population accounted for over half of global emissions from 1990–2015 found itself in many headlines, particularly by UK media outlets [38,39]. In the UK, social support networks were already fragile due to the austerity programme introduced following the 2008 Global Financial Crisis. These provisions of care suffered extreme damage when unsettled throughout multiple national lockdowns [40], establishing an existing public sensitivity to the increased burden felt by vulnerable groups during crises and the relative immunity of the affluent.

Academic publications reflect this increased focus on the role of wealthy people in securing climate (in)justice [41], with two key takeaways: the utility of a wealth lens in tackling nebulous

ideas of ‘excessive’ consumption, and the potential that this approach presents for an equitable *and* effective transition to net-zero. Firstly, academics have highlighted that ‘excess’ consumption is a “slippery and contested definition” [42] because different socio-spatial demographics require different amounts of goods, services, and energy to satisfy everyday needs. For example, those living in rural areas with substandard public transport provision and a higher likelihood of the need to commute long distances often rely more on private car use than those in urban areas. Reasonable annual mileage, therefore, cannot be easily defined. To incrementally tax individuals according to their private car emissions would be a serious issue of equity [43]. Indeed, many climate policies which attempt to tackle above average consumption using price mechanisms (such as carbon taxation) bear most heavily on low-income households [17,44].

The evident relationship between increased wealth and consumption patterns demonstrates a route to overcoming these issues. At both global and national (UK) scales, the wealthiest individuals produce highly disproportionate degrees of carbon emissions [45,46]. Evidence for such tendencies in the UK has heretofore focused on residential energy use [21], but current work shows the trend extends to a wide range of carbon-emitting consumption practices, such as flying and product consumption [42]. Indeed, transport-related emissions may account for up to 98% of the wealthiest people’s emissions contributions, although quantitative data on the emissions mix of the target group for this study is limited [47]. Whilst the boundaries of what counts as ‘sufficient’ are blurry, and complex to demarcate [48,49], it is clear that wealthy individuals produce more than their fair share of carbon emissions and provide a legitimate target for consumption-based climate policies.

Research also highlights the opportunity for rapid emissions reduction presented by the disproportionate emissions of the wealthy. For example, Simon et al. (2022) outline how a relative reduction (e.g., 20%) in emissions of high-income individuals represents a more significant absolute reduction in carbon emissions when compared to the rest of the population. This potential has been recognised by other actors at global and national scales. However, academics have critically linked these ideas to those of ‘sufficiency’ and ‘excess’, to establish wealth-focused intervention as a key route to effective *and* equitable decarbonisation. A higher degree of excess emissions means that wealthy people’s consumption can be targeted with the least risk of resulting insufficiency [25,26].

2.2. Carbon capability: Background, empirical applications, and potential

Attempts to produce behavioural and societal change for decarbonisation often fail to integrate the influences of both individual and systemic factors [50,51]. For example, assuming that individuals will behave rationally in response to structural change is frequently flawed, as complicating factors of an individual’s relationships, knowledge, skills, and motivation are disregarded [52]. Conversely, focusing only on changing what things *mean* to people can neglect the essential roles of infrastructure and accessibility in determining practices and habits [53]. It is crucial to understand individual change and systemic change as “two sides of the same coin” [54]. Paradoxically, systems change is needed to facilitate individual change, which is needed to enable effective systemic change [55].

The concept of carbon capability (CC) has garnered attention as a means of constructing climate policy which integrates the ‘two sides’ of the coin across a range of carbon-emitting practices and can be readily communicated to non-academic stakeholders. Whitmarsh et al. (2011) proposed three core dimensions of CC: decision-making by an individual, social practices, and broader engagements with structures and systems of provision. The group conducted a large-scale survey on public engagement with climate change in the UK to demonstrate how these aspects interact with one another to shape individuals’ CC. Wei et al. (2018) critiqued this model for a lack of attention to the deeper structural values of individuals

as the key differentiator of capability. Sampling urban residents in China, a five-dimensional framework of CC was proposed which emphasised the role of personal carbon-reduction values. Focusing on the CC of farmers in China, Guan et al. (2021) subsequently criticised this work for disregarding the role of influence and social norms in shaping and overriding personal structural values. Both Wei et al. (2018) and Guan et al. (2021) present valid critiques but neglect the important role of structural factors (such as low-carbon infrastructures) in their analyses. Additionally, Wei et al. (2018) present a very linear model of CC, which does not acknowledge that capability looks different between individuals and groups.

The model proposed by Whitmarsh et al. (2011) was later developed by Hampton & Whitmarsh (2024), retaining an emphasis on how individual and structural factors influence carbon capability, but referring more specifically to six domains: energy, food, transport, shopping, influence and citizenship (Fig 1).

This research operationalises Hampton and Whitmarsh's [56] updated framework, using this to design the empirical data collection (survey and interviews) for this study.

3. Methodology

3.1. Ethics statement

The initial distribution of surveys was approved by the Psychology Research Ethics Committee at the University of Bath with reference number 21-230. The distribution of further surveys and the conduction of interviews was approved by the Social Sciences and Humanities Interdivisional Research Ethics Committee at the University of Oxford with reference number SOGE1A2021-050. Written consent was obtained from all survey participants, with oral consent recorded and transcribed for all interview participants.

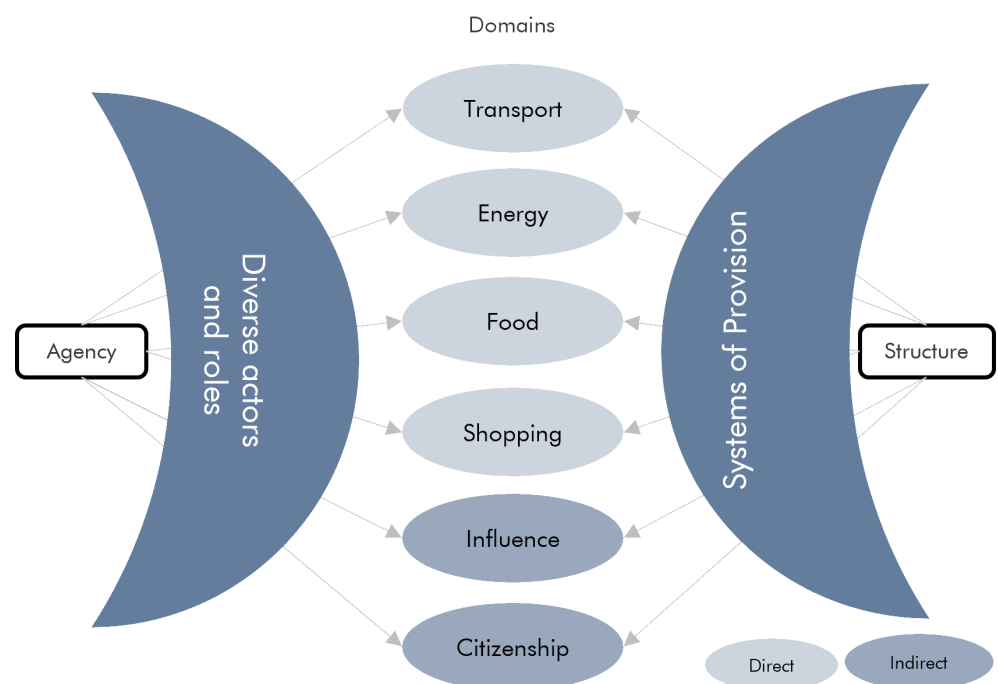


Fig 1. The three individual and structural dimensions of carbon capability, adapted from Hampton & Whitmarsh (2024).

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3.2. Defining the study group

There are many ways to define wealth, and all involve a series of complex value judgements about what matters [57]. Research reveals consistent patterns of excess consumption by the wealthiest 10% of people in the UK [14,58]. However, defining who counts as being in the top wealth-decile is not straightforward. Wealth is distinct from income because it includes assets such as home ownership, and investments, and can be difficult to measure using household surveys [59]. Using national income data for comparison alone is also problematic. Decile data only provides an average figure for the income of the wealthiest 10%, and the decile point (i.e., the 90th centile) is only available for equivalised household income [60].

As such, a more flexible approach to demarcating the wealthiest portion of the population was adopted in this study. The average gross household income for the top income-decile in 2021–22 [61] suggests that respondents indicating a household income of >£150,000 can be considered ‘wealthy’; the average, unequivalised figure for the top income decile in the UK was £182,169. However, respondents estimating their annual household income to be >£100,000 and who own both their home outright and ≥ 2 cars were also included in the analysis. The financial threshold was further lowered to £48,000 for retired individuals who met the latter two criteria. The average income for the wealthiest 10% of students differs from the national average so the financial threshold was also reduced for this group, to £33,000 (NSMS, personal communication, 9th March 2022).

This methodology is not comprehensive, as it does not account for assets such as participants’ specific savings and investment portfolios - which can significantly impact both wealth and personal carbon emissions. Nonetheless, considering the various complex definitions of wealth, this approach offers a robust foundation to explore the utility of a carbon capability framework.

3.3. Data collection and analysis

While a key strength of the CC approach is how it combines individual, social, and structural domains, studies using this framework have been relatively narrow in their choice of methods. All studies of carbon capability to date have used quantitative techniques, relying on survey data. However, mixed methods can help shed light on both individual and systemic factors. Large-scale, quantifiable data can provide insights into the prevalence and predictors of behaviours, while qualitative data helps to provide insights into the messy, sometimes irrational, and contradictory ways in which people think and act [62]. This study combines evidence from a wide-ranging survey of UK households, including a total of 345 measures, with in-depth interviews with wealthy people. The survey was designed to incorporate the six domains of low-carbon choice identified by Hampton & Whitmarsh [63] and builds on the updated CC framework to include questions about individual characteristics (e.g., attitudes, motivations), social norms, and engagement with broader structures and systems [56].

The survey was issued in April 2022 by market research company Dynata, using a sample which was representative of gender, age, education, ethnicity and region, according to census data [64]. The survey was issued online to participants who were paid for their responses, so it is acknowledged that this introduces an element of bias. Two attention checks were included in Wave 1 and one in Wave 2, and respondents failing any of these were flagged as unreliable and removed ($n = 283$). Further quality assurance conducted using SPSS identified three unreliable responses (e.g., ‘straight line’ answers to Likert-scale question-sets), resulting in 1001 verified responses. Unfortunately, our sample under-represented wealthier people, likely due to reasons documented elsewhere [65]. As such, a further 26 wealthy participants were recruited using personal and digital social networks (e.g., friends’ contacts, and LinkedIn profiles), as well as 9 other participants later classed as non-wealthy based on their survey responses. These participants completed the survey in May and June 2022.

Our sample of wealthy people ($n = 43$) represents less than 10% of the total sample size ($n = 1036$) and thus is a significant limitation of this study. However, based on previous publications collecting their own data to study wealthy people, a sample size of 43 is large for this group [42,47,66] and is adequate for this exploratory investigation with significance tests able to detect moderate/large effect sizes. *A priori* power analysis using G*Power version 3.1.9.7 shows that a sample of 27 is required to achieve 80% power for detecting a medium-large effect between two independent groups, at a significance criterion of $\alpha = .05$ [67].

SPSS (version 28.0) was used for statistical analysis. To test for differences between sample means from wealthy people ($n = 43$) and non-wealthy people ($n = 993$) for Likert-scale survey questions, independent t-tests were conducted. Two-tailed t-tests were used to ensure that no relationships were overlooked (level of significance 5%). Levene's Test for Equality of Variances was conducted to test for homogeneity of variance. Where $p \leq .05$, equal variances were not assumed and Welch's t-test was used, with degrees of freedom adjusted accordingly. Pearson's chi-squared test was used for the investigation of binary variables (level of significance 5%). Regression analyses were carried out to check whether income remained a significant predictor while controlling for other socio-demographic variables (age, gender, and education).

Sixteen wealthy participants were recruited for follow-up semi-structured interviews, which were conducted between May and July 2022. Interviewees included seven men and nine women aged 20–70 years old. Interviews lasted between 25 and 60 minutes, were transcribed using voice-to-text software, and thematically coded using NVivo with a bottom-up, inductive approach. Interviews focused on understanding in greater detail the motivations and challenges around adopting pro-environmental behaviours, including social norms, and peer and family expectations. Using the CC framework as a guide, wealthy participants were asked about their consumption practices, influence, and citizenship behaviours.

Supplementary materials include details about interview participants (S1 Appendix), composite variables (S2 Appendix), and statistical test results (S3–S5 Appendices).

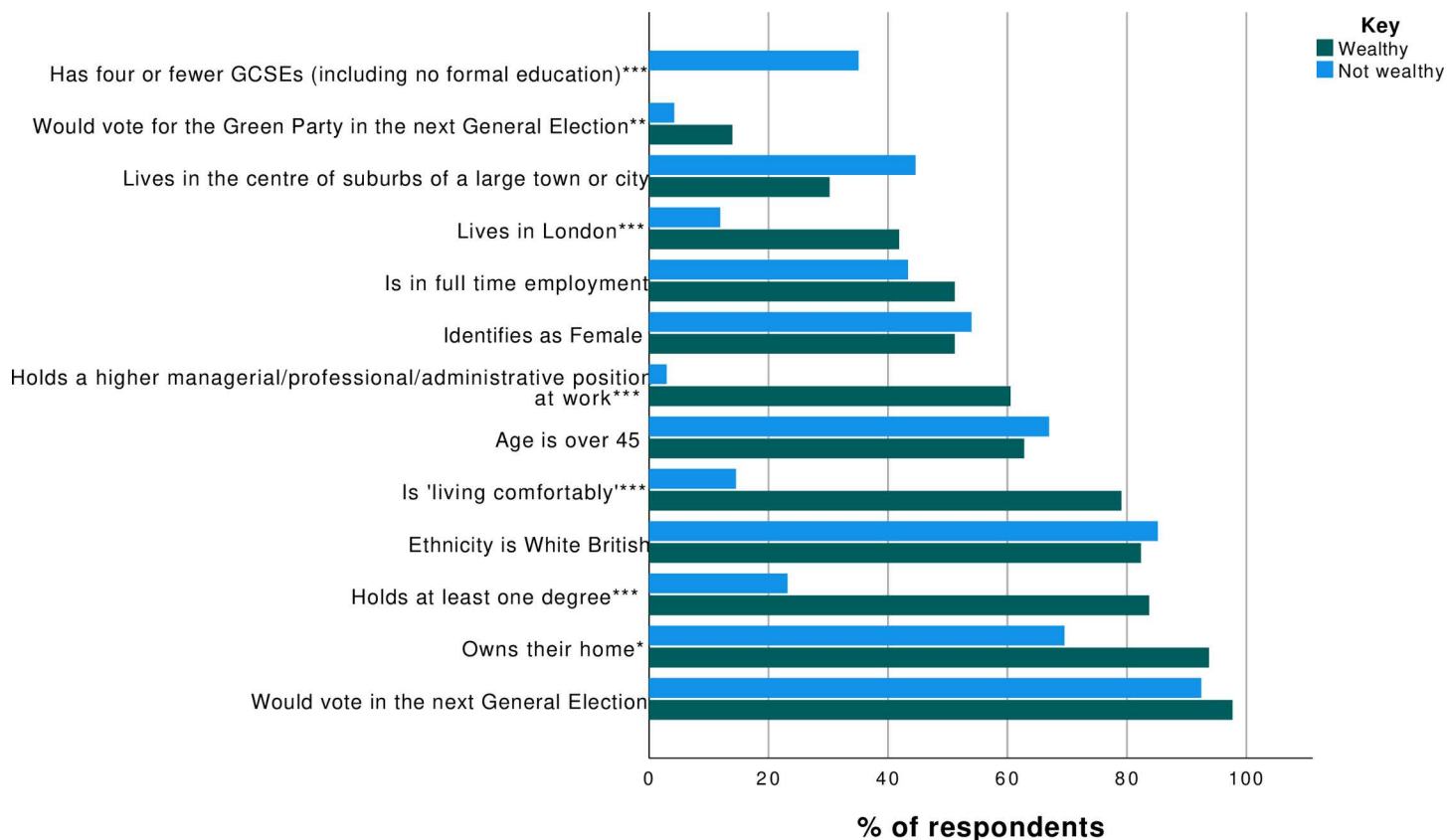
4. Findings

4.1. Socio-demographic characteristics of wealthy people

Survey data show no significant differences between wealthy and non-wealthy participants across several socio-demographic measures (see Fig 2). However, wealthy participants were significantly more likely to own their own homes and live in London. The group also displayed significantly higher educational backgrounds and workplace seniority than non-wealthy people, and when asked how they were managing financially, were significantly more likely to agree that they are 'living comfortably'.

4.2. Ways in which wealthy people are more carbon capable

4.2.1. Access to low-carbon alternatives. Wealthy people's financial resources provide increased access to low-carbon alternatives with high up-front costs. Fig 3 shows that a greater proportion of respondents in our wealthy sample had either already, were in the process of, or thinking about purchasing heat pumps, and electric vehicles. When transformed into binary variables, wealthy individuals were significantly more likely than non-wealthy individuals to either be in the process of purchasing or had already purchased a heat pump ($X^2(1, N = 1036) = 12.0, p < .001, \phi = .107$); or an electric vehicle (EV) ($X^2(1, N = 1036) = 63.6, p < .001, \phi = .248$). Regression analysis confirms that when controlling for gender, age, and education, income is the only significant predictor of heat pump ownership (Table 5.1 in S5 Appendix). A higher income also increases the likelihood of EV ownership (Table 5.2 in S5 Appendix), although this effect is not statistically significant.



Pearson's Chi-squared test conducted, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Fig 2. Demographic similarities and differences of wealthy and non-wealthy participants.

<https://doi.org/10.1371/journal.pclm.0000573.g002>

Interviewees demonstrated a relaxed attitude by wealthy participants toward green investments because of their financial resources:

"If you invest £10,000 in solar panels, and it goes wrong? Well, it's only ten-thousand pounds" (P7)

Wealthy participants also highlighted how their significantly higher home ownership may increase access to certain low-carbon alternatives compared to non-wealthy people:

"For a rental property... I don't think you'd be allowed to change things like the heating system ... and it doesn't make financial sense" (P11)

Interview data revealed a culture of rapid product replacement amongst wealthy people. Whilst this acts as a barrier to wealthy people's CC by encouraging patterns of excessive consumption (see 4.3.1), this also creates more frequent 'moments of change' in which wealthy people's access to low-carbon alternatives might be translated into action [68–70]. Participants reflected on the significance of this for increasing their uptake of many low-carbon alternatives:

"[Replacing the car] is something we're gonna do every few years anyway. So... part of that is we'll think about what's the most sensible, environmentally responsible thing to do." (P14)

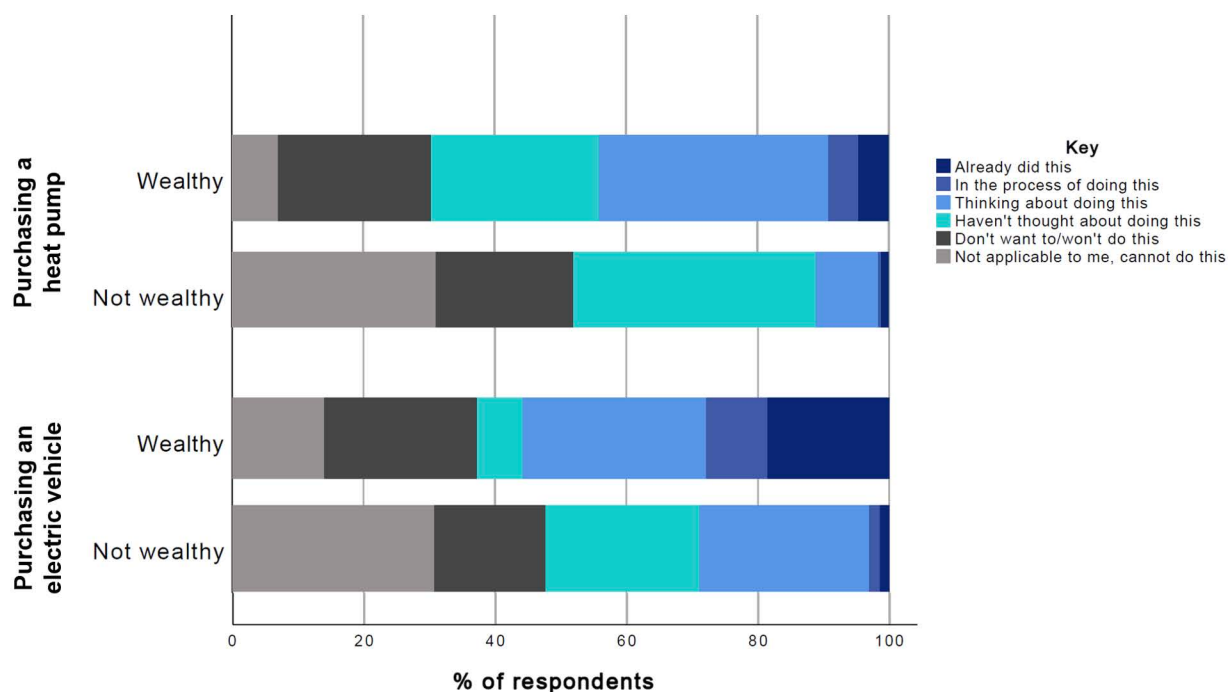


Fig 3. Uptake of heat pumps and electric vehicles amongst wealthy and non-wealthy people.

<https://doi.org/10.1371/journal.pclm.0000573.g003>

“My gas boiler was getting old, so I started looking around for green options to replace it with and I stumbled across this [heat pump]” (P15)

The adoption rates of different pro-environmental measures by wealthy people support this theory. Interview findings indicate that wealthy people generally replace their car(s) every 4–7 years, whilst they update their boilers only every 10–15. Almost 20% of wealthy people interviewed had switched to an EV, but <5% had switched to a heat pump (Fig 3).

4.2.2. Climate knowledge and understanding. Knowledge has been outlined as a key component of CC because it allows individuals to better assess the need for and efficacy of different actions for emissions reduction [32,71]. When asked to assess the severity of the threat posed by climate change for several groups, wealthy participants were significantly more likely to agree that climate change poses a serious threat to themselves and their families, their neighbourhood, the UK, and developing countries (wealthy: $M = 3.78$, $SD = 0.85$; not wealthy: $M = 3.37$, $SD = 0.97$; $t(1034) = 2.77$, $p = .006$), and to agree that climate change is a problem needing urgent action (wealthy: $M = 4.33$, $SD = 0.89$; not wealthy: $M = 3.90$, $SD = 1.08$; $t(1034) = 2.53$, $p = .012$) in comparison to non-wealthy participants. The group were also significantly more likely to agree that they are familiar with government policy on climate change (wealthy: $M = 4.74$, $SD = 1.53$; not wealthy: $M = 4.09$, $SD = 1.41$; $t(1034) = 2.99$, $p = .003$) and that they understand key terms related to climate change, including carbon footprint, net zero, and carbon offsetting (wealthy: $M = 4.20$, $SD = 0.78$; not wealthy: $M = 3.58$, $SD = 0.71$; $t(1034) = 5.57$, $p < .001$). Income remains a significant predictor of self-reported climate literacy when controlling for education, gender and age (Table 5.3 in S5 Appendix).

Interview data demonstrates confident and considered opinions on potential routes to achieving the UK's net-zero commitments by wealthy people:

"Governments respond to things that they think will change voting behaviour... so you need to make climate change a mainstream issue that people will change their voting behaviour about." (P13)

"The government has a very short-term horizon... the way they fixed the pensions problem was to have a bipartisan pensions commission... we need to institutionalise and take [climate change] out of the political cycle key policies in the same way." (P14)

Engagement with wider structures of environmental governance is another key facet of CC [71] and accepting and encouraging policies addressing climate change is crucial to supporting systemic change [72]. Our survey asked respondents to indicate the extent to which they supported 16 different climate policy proposals (with reliability analysis indicating consistency between items: $\alpha = 0.919$).

Survey findings show that wealthy people indicate greater support for all but one potential climate policy than non-wealthy people, and four of these differences were statistically significant (Fig 4). When controlling for other demographic variables, income is no longer a significant predictor of policy support (while gender and education are, see Table 5.4 in S5 Appendix). Nonetheless, interview data demonstrated a preference by wealthy people for policies to require pro-environmental behaviours rather than individual choice:

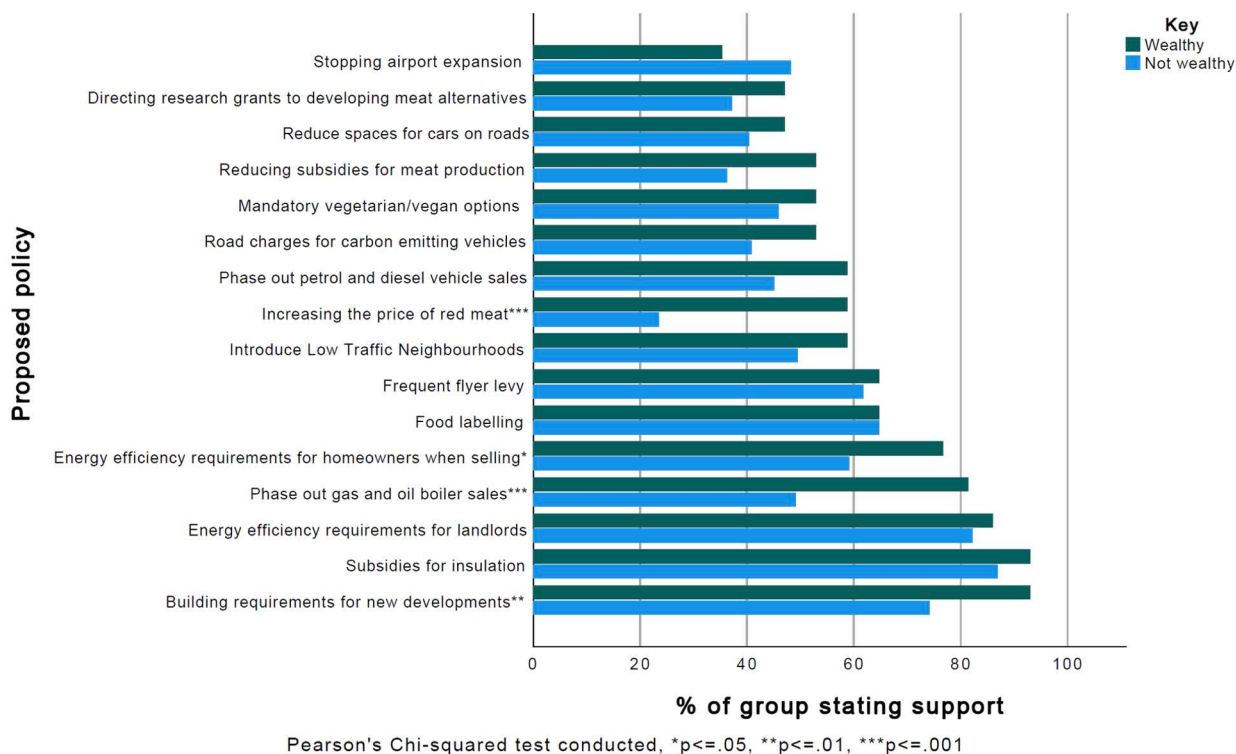


Fig 4. Support for 16 potential climate policies by wealthy and non-wealthy people. Policies listed include those which have already seen some implementation in the UK, and hypothetical interventions.

<https://doi.org/10.1371/journal.pclm.0000573.g004>

“I don’t mind how many regulations there are, I will completely go along with all of them... I’d rather that than have it all left up to individual choice...” (P3)

Several high-profile academics and NGOs have highlighted the importance of *talking* about climate change for raising awareness and galvanising public support for system change [73–75]. Survey analysis indicates that our wealthy participants were significantly more likely to have had a conversation about climate change in the past month than non-wealthy individuals ($X^2(1, N = 1036) = 10.9, p < .001, \phi = .102$). Further, regression analysis shows that income is the most significant predictor of increased discussion of environmental issues when other socio-demographic variables are controlled for (Table 5.5 in [S5 Appendix](#)).

4.2.3. Influence capabilities. The CC framework highlights carbon emitting practices as deeply social in their (re)production. Thus, the capacity to influence others to reduce their environmental impact is a critical aspect of effective action for emissions reduction by individuals. Our survey asked respondents to assess their degree of influence in two contexts. Firstly, when asked if they could influence decisions in their local area, wealthy participants ($M = 4.00, SD = 1.14$) were significantly more likely to agree this was true in comparison to non-wealthy people ($M = 2.84, SD = 1.48; t(999) = 3.20, p = .001$). When asked if they felt they could influence those around them to reduce their impact on climate change, our wealthy participants ($M = 6.30, SD = 3.96$) were also significantly more likely to agree than non-wealthy people ($M = 4.05, SD = 3.30; t(1034) = 4.34, p < .001$) (although in both instances, income is no longer a significant predictor of self-perceived influence when controlling for other demographic variables: Tables 5.6 and 5.7 in [S5 Appendix](#)). Of course, the nature of this influence can be multi-directional. Wealthy people’s influence can serve to normalise excessive consumption, or, their pro-environmental behaviours can have positive effects, such as in the case of rooftop solar on local adoption rates [76].

When asked about actions which would be effective in influencing others on climate change, wealthy participants were significantly more likely to agree that attempting to influence managers and leaders at work is an effective means of exerting influence (wealthy: $M = 4.74, SD = 1.63$; not wealthy: $M = 4.10, SD = 1.43; t(1034) = 2.88, p = .004$), although this becomes non-significant when controlling for other demographic factors (Table 5.8 in [S5 Appendix](#)). Wealthy people were also more likely to agree that they are either in the process of or have already acted to influence those at work ($X^2(1, N = 1035) = 43.0, p < .001, \phi = .204$), with income remaining a significant predictor (alongside education) of utilised workplace influence when controlling for other demographic variables (Table 5.9 in [S5 Appendix](#)). Our wealthy participants were more likely to hold senior positions at work (see [Fig 2](#)), which interview data suggest may affect their capacity for influence in the workplace:

“I think we can substantially cut down the amount of business travel we do... it’s something I’m looking at as CEO” (P1)

“I chair a major charitable foundation where we put a lot of money into projects to reduce the impact of climate change.” (P4)

4.3. Ways in which wealthy people are less carbon capable

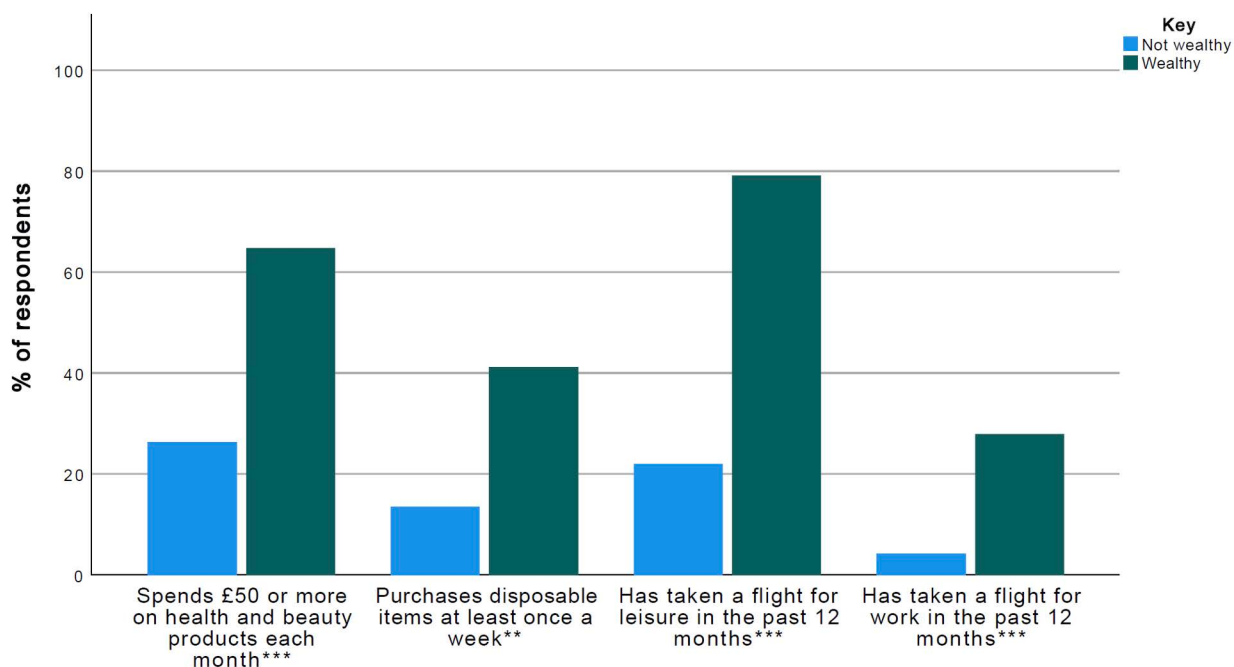
4.3.1. Higher consumption. Survey data show that wealthy people consume more than non-wealthy people for all key sources of emissions: food, energy, transport, and shopping. For example, [Fig 5](#) shows that wealthy people are significantly more likely to spend over £50 a

month on clothes and footwear ($X^2(1, N = 1001) = 49.1, p = <.001, \phi = .222$), with regression analysis showing income to be the only significant predictor of this behaviour (Table 5.10 in [S5 Appendix](#)). Wealthy participants were also significantly more likely to purchase disposable items at least once a week ($X^2(1, N = 1001) = 10.6, p = .001, \phi = .103$), although regression analysis shows that income is no longer a significant predictor when also controlling for gender, age, and education (Table 5.11 in [S5 Appendix](#)).

Interview data indicate that wealthy people are not concerned about ‘getting the most’ out of their purchases

“I enjoy spending the money that I earn...” (P9)

Reflecting wealthy people’s lack of support for stopping airport expansion (see [Fig 4](#)), the group were significantly more likely to report having flown for leisure ($X^2(1, N = 1036) = 73.0, p = <.001, \phi = .266$) and business ($X^2(1, N = 1036) = 46.8, p = <.001, \phi = .212$) in the past year (see [Fig 5](#)). Regression analysis shows that when other socio-demographic variables are controlled for, income remains the most significant predictor of participants having flown for leisure in the past year (Table 5.12 in [S5 Appendix](#)). Income is also a significant predictor of participants having flown for work in the past year (Table 5.13 in [S5 Appendix](#)), alongside gender and age. Moreover, wealthy people are more likely to be frequent flyers; 7% of our wealthy sample report flying for more than 40 hours in the past year. These habits were confirmed in several interviews:



Pearson's Chi-squared tests conducted, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Fig 5. Consumption habits of wealthy and non-wealthy participants.

<https://doi.org/10.1371/journal.pclm.0000573.g005>

“I’m going to Rome next Saturday, and a week on Monday... I’m travelling to the US twice in June to meet potential funders... we’re going to Malta for a bit of sun in two weeks... and we’re going to Asia over Christmas.” (P2)

This research did not seek to quantify participants’ carbon emissions, but existing evidence shows flying to be one of the most impactful carbon-emitting behaviours [77,78] and therefore a substantial limitation for wealthy people’s CC.

The only exception to these trends is related to attitudes towards vegan and vegetarian food. Our wealthy participants were significantly more likely than non-wealthy people to agree that vegetarian and vegan meals can be tasty (wealthy: $M = 5.63$, $SD = 1.31$; not wealthy: $M = 4.31$, $SD = 1.70$; $t(1034) = 5.03$, $p < .001$) and easy to make (wealthy: $M = 5.33$, $SD = 1.55$; not wealthy: $M = 4.36$, $SD = 1.67$; $t(1034) = 3.72$, $p < .001$), and significantly less likely to agree vegetarian meals are expensive to make (wealthy: $M = 2.84$, $SD = 1.69$; not wealthy: $M = 3.52$, $SD = 1.51$; $t(1034) = -2.92$, $p = .004$). However, regression analyses identified that other demographic variables are stronger predictors of these attitudes than income (Tables 5.14–5.16 in [S5 Appendix](#)). Additionally, while women and more educated people are more likely to be vegetarian, income does not predict this lifestyle choice (Table 5.17 in [S5 Appendix](#)).

4.3.2. Inelastic consumption demand. Survey data show wealthy people’s demand for a range of carbon emitting practices and behaviours is relatively inelastic. For example, wealthy people were significantly less likely to agree that their home energy use would be affected by rising costs ($M = 2.48$, $SD = 0.51$) compared to non-wealthy people ($M = 2.74$, $SD = 0.48$; $t(919) = -2.89$, $p = .004$), with income remaining the only significant predictor of this response when controlling for other demographic variables (Table 5.18 in [S5 Appendix](#)). Our wealthy participants were also significantly less likely than non-wealthy people to agree that they are worried about the issue (wealthy: $M = 4.42$, $SD = 1.89$; not wealthy: $M = 5.82$, $SD = 1.31$; $t(43.8) = -4.79$, $p < .001$) and regression analyses show that increased income is significantly associated with decreased concern about rising energy costs (Table 5.19 in [S5 Appendix](#)). Interview data demonstrate wealthy people’s insulation to the ongoing energy crisis in the UK:

“Our energy bill has gone from £1500 to £4500. Luckily, that doesn’t affect us.” (P2)

Wealthy people’s financial resources also produce relatively inelastic demand for carbon-intensive behaviours in indirect ways. For example, wealthy people have markedly higher global mobility than non-wealthy people, which can lock in aviation demand:

“I shall not see my grandchildren if I don’t fly. That’s not a sacrifice I’m personally prepared to make.” (P4)

“Because I studied in so many different countries... not all my friends are in one place. So to remain in touch, [flying] is a necessity for me” (P11)

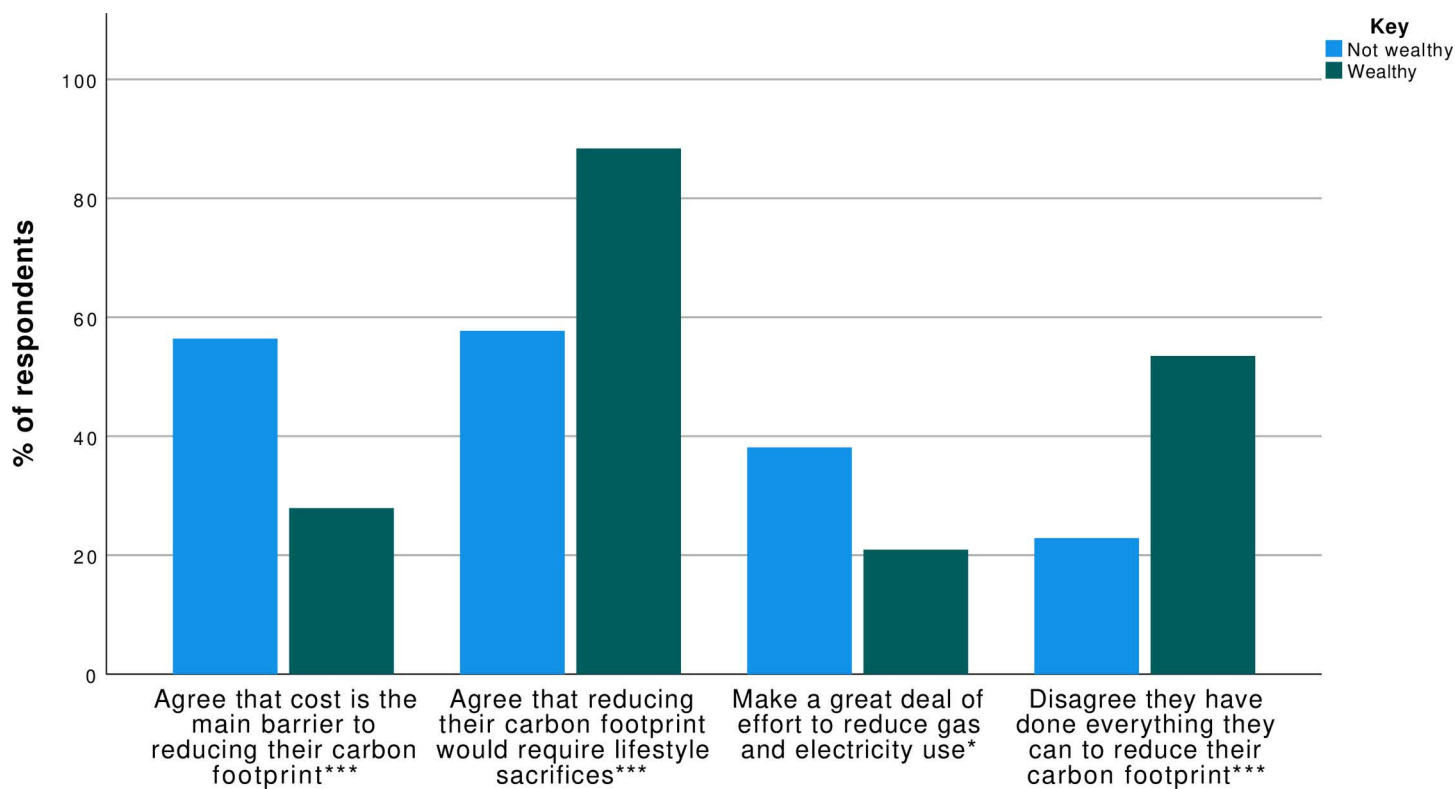
Although wealthy people described their global networks as a given, this is the exception amongst the general public, not the norm; 50% of the UK population does not participate in any air travel and 15% of the population accounts for 70% of all flights [79].

4.3.3. Reluctance for lifestyle sacrifices. Unsurprisingly, wealthy participants were significantly less likely to agree that cost is the main barrier to reducing their carbon footprint (wealthy: $M = 3.77$, $SD = 1.91$; not wealthy: $M = 4.79$, $SD = 1.34$; $t(43.8) = -3.46$, $p = .001$), and more likely to agree that doing so would involve lifestyle sacrifices

(wealthy: $M = 5.70$, $SD = 1.15$; not wealthy: $M = 4.75$, $SD = 1.18$; $t(1034) = 5.18$, $p < .001$) (Fig 6). Regression analysis shows that income remains the most significant predictor of these responses when controlling for other demographic variables (Tables 5.20 and 5.21 in S5 Appendix). These findings are reflected in data demonstrating that wealthy people were significantly less likely to agree that they make any effort to reduce gas and electricity use (wealthy: $M = 2.95$, $SD = 0.69$; not wealthy: $M = 3.21$, $SD = 0.73$; $t(1025) = -2.29$, $p = .022$), though regression analysis shows no demographic variables to have a significant effect (Table 5.22 in S5 Appendix).

Although wealthy people are aware of the need for lifestyle changes in response to the climate crisis, this has not translated into meaningful change. When asking participants if they had ‘done everything they can to reduce their carbon footprint’, we found wealthy people were significantly less likely to agree ($M = 3.70$, $SD = 1.36$) than non-wealthy people ($M = 4.27$, $SD = 1.67$; $t(1034) = -3.17$, $p < .001$), even when controlling for age, gender and education (Table 5.23 in S5 Appendix). Interview participants often discussed guilty feelings associated with knowing they had large footprints and could do more to reduce their impacts, but that guilt is not enough to drive behavioural changes:

“This is really bad, but I don’t see myself getting rid of my car. I know I don’t need it in London, so I feel guilty about it, but...” (P16)



Pearson's Chi-squared tests conducted, * $p < .05$, ** $p < .01$, *** $p < .001$

Fig 6. Attitudes towards reducing carbon footprints amongst wealthy and non-wealthy groups.

<https://doi.org/10.1371/journal.pclm.0000573.g006>

It is necessary to consider the factors reproducing associations of low-carbon living with the sacrifice by wealthy people to effectively address their emissions contributions and associated climate inequalities.

4.3.4. Association of over-consumption with wellbeing. Academics have emphasised that for appropriate consumption-based policy interventions, it is vital to consider the meanings of the consumption patterns in question, not simply the facilitating mechanisms [80]. It is not only financial resources driving over-consumption by wealthy people, but the desirability of these habits as produced and reinforced through social discourses [81]. Work on the role of status influence [25] and needs satisfaction escalation [26] has highlighted these processes as being particularly acute for the ways in which wealthy people define and pursue wellbeing.

Survey data show that when asked a series of questions about their personality (using the Portrait Values Questionnaire [82]) wealthy men and women were more likely to agree it is important for them to be rich (wealthy men: $M = 4.00$, $SD = 1.27$; non-wealthy men: $M = 2.48$, $SD = 1.31$; $t(460) = 3.81$, $p < .001$; wealthy women: $M = 4.50$, $SD = 1.23$; non-wealthy women: $M = 2.32$, $SD = 1.27$; $t(537) = 4.18$, $p < .001$), although when controlling for other variables, regression analyses find that age is a stronger predictor: younger people consider this significantly more important than older people (Tables 5.24 and 5.25 in [S5 Appendix](#)). Our wealthy participants were significantly more likely to agree that they desire luxury in their life (wealthy: $M = 4.51$, $SD = 1.64$; not wealthy: $M = 3.49$, $SD = 1.66$; $t(1034) = 3.96$, $p < .001$), and regression analysis demonstrates income to be the only significant predictor amongst the controlled socio-demographic variables for increased desires for luxury (Table 5.26 in [S5 Appendix](#)). These findings are supported by interview data:

“I don’t enjoy buying second-hand ... it doesn’t give me that dopamine hit of having made an expensive purchase” (P3)

Questionable applications of the word ‘need’ throughout interviews demonstrate escalations in needs satisfaction:

“When I needed a ball gown at short notice, I went straight to [an online fast fashion store]... I know they’re terrible, environmentally, but it’s just what I needed at the time.” (P5)

4.3.5. Underestimation of lifestyle impacts. Comprehension of personal carbon footprints is an important part of CC. Individuals who understand their carbon footprint are well-placed to make effective low-carbon changes and are more likely to feel motivated to do so because they understand the impact of taking such actions [83]. When asked about whether they always think about how their actions affect the environment, wealthy participants were significantly more likely to agree this was true (wealthy: $M = 5.05$, $SD = 1.38$; not wealthy: $M = 4.48$, $SD = 1.52$; $t(1034) = 2.41$, $p = .016$). However, regression analysis indicates that this is primarily predicted by education, and when controlling for educational attainment, income does not significantly predict this attitude (Table 5.27 in [S5 Appendix](#)). Interview findings reveal that wealthy participants were likely to underestimate the impacts of their behaviours:

“I don’t understand what my carbon footprint is... whether it’s the food I eat, the clothes I wear, the way in which I travel...” (P1)

“Besides my business travel [estimated 200–300 hours annually], I think our footprint is relatively small... we recycle...” (P9)

Only one participant exhibited an adequate grasp of their carbon footprint breakdown and relative emissions contributions:

“My flight to and from Rwanda probably makes up as much carbon as most people produce in a year” (P12)

Interview data suggest that being surrounded by other wealthy people encourages the normalisation of over-consumption and displacement from otherwise solid understandings of necessary climate action:

“Most people we know will travel abroad at least three times a year... so I wouldn’t be looking to us to reduce our travel because our footprint is relatively small” (P3)

Further, interview data also show that wealthy people’s awareness of the role played by large corporations and other countries in global emissions can contribute to feelings of disempowerment:

“The UK can set ambitious targets, but net impact will be determined by effective implementation of the Paris Accord... which I can’t see happening” (P4)

“[reducing my carbon footprint] is difficult to stomach when big companies are doing whatever they want... I’m just a drop in the bucket” (P10)

4.3.6. Use of influence for emissions escalation. Although wealthy people identify themselves as highly influential figures for emissions reduction, they exhibit somewhat limited use of this influence for emissions reduction outside of the workplace. Although the group talked more about climate change (see 4.2.2), they were *not* significantly more likely than non-wealthy people to agree that this was easy (Fig 7).

Interview data links this to feelings of relative under-education:

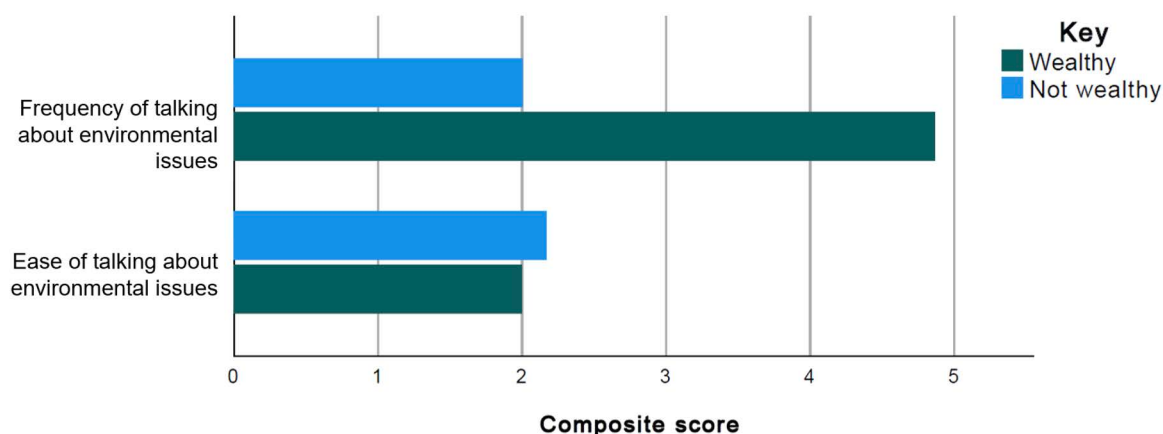


Fig 7. How frequently wealthy and non-wealthy people talk about environmental issues (including climate change), and how easy they report finding these conversations.

<https://doi.org/10.1371/journal.pclm.0000573.g007>

“I don’t have at my command the level of detailed and factual evidence that I would need to be persuasive” (P8)

As a result, wealthy people largely continue to lock in carbon intensive behaviours by normalising high-carbon practices. For example, wealthy people were significantly more likely to agree that people close to them fly regularly for leisure purposes (wealthy: $M = 4.91$, $SD = 1.97$; not wealthy: $M = 3.57$, $SD = 1.86$; $t(1034) = 4.59$, $p < .001$) and that those around them would disapprove if they stopped flying (wealthy: $M = 3.51$, $SD = 2.12$; not wealthy: $M = 2.69$, $SD = 1.63$; $t(44.2) = 2.51$, $p = .016$). Income remains the strongest predictor of these responses even when controlling for age, gender and education (Tables 5.28 and 5.29 in [S5 Appendix](#)).

Similarly, the group were significantly more likely to agree that people around them often buy things when they don’t need to (wealthy: $M = 3.26$, $SD = 1.48$; not wealthy: $M = 3.78$, $SD = 1.45$; $t(1034) = -2.31$, $p = .021$), and that they feel an expectation to always buy new products (wealthy: $M = 3.00$, $SD = 1.84$; not wealthy: $M = 2.41$, $SD = 1.52$; $t(1034) = 2.46$, $p = .014$). The exception, again, relates to food and diet. As well as eating less meat and having positive attitudes towards meat-free diets, survey results indicate that wealthy people’s family and friends are also more likely to follow a vegan or vegetarian diet (wealthy: $M = 3.56$, $SD = 1.75$; not wealthy: $M = 2.64$, $SD = 1.49$; $t(1034) = 3.95$, $p < .001$). However, regression analyses for all these bivariate tests demonstrate no significant relationship with income when controlling for other variables. Education, age and gender each have more explanatory power (Tables 5.30–5.32 in [S5 Appendix](#)).

4.3.7. Money rich, but time poor. All wealthy people interviewed expressed that a lack of disposable time limits their capacity to enact certain low-carbon changes:

“You can’t just suddenly go and fix your heating... it’s something I need time off work to do” (P2)

“There’s no way to cross the Atlantic without flying. I’m not Greta Thunberg- I don’t have enough time to cross it by boat.” (P10)

Survey data support these findings. We asked participants whether they would be willing to donate time or money to a local community project. Regression analyses (Tables 5.33 and 5.34 in [S5 Appendix](#)) show that education predicts a willingness to give both time and money; women are more likely to donate time; and wealthier people would prefer to donate money.

5. Discussion

Our research findings offer insight into the key factors supporting and limiting wealthy people’s capacity to make wise judgments about low-carbon choices and take effective measures. The CC framework highlights how wealthy people’s carbon capability is produced by a combination of individual lifestyles, social norms, and systems of provision. It also demonstrates that each of these elements must be addressed to mitigate the impacts of excess consumption and redress emissions inequality. This section discusses opportunities for improving wealthy people’s carbon capability. These include outcomes which would lead to direct emissions reduction and others which would help to normalise and embed low-carbon norms and accelerate the wider adoption of low-carbon technologies. We consider not only the key individual, social, and structural factors limiting the group’s CC, but also where existing capabilities might be harnessed to accelerate impact.

5.1. Catalysing influence

Our findings support existing research that has highlighted the significant influence that wealthy people have on social norms, including conspicuous consumption [25]. Wealthy individuals self-report higher levels of climate literacy than non-wealthy people and recognise their capacity to influence others. While they express willingness to use this influence for climate-positive outcomes in the workplace, they are reluctant to do so in other contexts. Despite being more likely to discuss climate change, influence amongst non-workplace networks is largely used to perpetuate and normalise carbon-intensive lifestyles rather than challenge them. Avoiding being perceived as hypocritical (both by themselves and others) is a likely driver of this reticence. This is unfortunate, as wealthy people's positive carbon capabilities offer significant potential to raise the profile of climate change in public discourse.

Further, whilst wealthy people exhibit a greater understanding of the urgency of addressing climate change, they largely fail to see their lifestyle choices as a significant contributor to the problem. It is critical to address this cognitive dissonance. Non-governmental organisations such as Oxfam have striven to raise awareness of emissions inequality in recent years [84], but there is a need to amplify these messages to increase pressure on wealthy people to use their unique carbon capabilities.

Shifting the narrative from one of blame to one of opportunity may be more constructive than inducing guilt and running the risk that wealthy people use their influence for climate delay [85]. Framing wealthy people as having the unique capability to accelerate climate action through their choices, behaviours, and social and professional influence could empower them to become agents of change. Approaches to doing so might include campaigns to communicate the direct impacts of certain high-frequency behaviours by wealthy people alongside accessible alternatives. For example, that taking the train instead of flying from London to Paris can reduce journey emissions by >90%.

5.2. Low-carbon wellbeing

Aligning the concept of wellness and wellbeing with climate-positive choices could further catalyse influence for emissions reduction amongst wealthy people. Our findings suggest that wealthy people associate low-carbon lifestyles with sacrifice and reduction, and consumption with wellbeing. However, findings also show a preference for low-carbon alternatives which are associated with affluence or improved health. Survey results indicate that wealthy people are more likely to eat low- or no-meat diets [86] and have positive attitudes towards vegetarianism and veganism, although gender and education are stronger predictors of diet attitudes and behaviours. Concerns for health and wellbeing can be leveraged to promote the benefits of electric vehicles for reducing particulate pollution [87] and even moving away from natural gas for cooking, which is associated with indoor air pollution [88]. Research has also shown that hyper-mobile lifestyles can have negative implications for physical and mental health, which could be utilised to shift perceptions of frequent flying, making it less desirable [89].

There are opportunities here for business leaders – many of whom are wealthy themselves – to highlight the health and environmental benefits of online meetings in their organisations where appropriate, reducing costs and emissions. Stakeholders in the wellness industry also play a key role. Higher income groups are the principal target for this sector (indeed, the 'wealth divide' has been identified and critiqued [90]), and there are opportunities to emphasise links between low-carbon choices and wellbeing. For example, public figures like Marie Kondo have popularised minimalism as a route to mental clarity and joy [91]; such ideals could be linked to environmental benefits to encourage reduced consumption of physical goods.

Similarly, building on evidence that personal wellbeing can be improved by spending time in nature [92], a recent study in the US found that wealthy people sought out nature and wilderness as a strategy for dealing with various tensions and predicaments they encounter, many of which relate to the (apparent) burden of wealth [93]. Another study found that travel journalism and the tourism industry have helped to promote nature-seeking, partly in response to increasing news coverage of climate impacts [94]. If wealthy people can be encouraged to choose local, eco-tourist destinations to connect with nature in place of international travel, the avoided emissions associated with aviation and other conspicuous consumption would be significant.

5.3. Low-carbon technologies

A further opportunity relates to the adoption of low-carbon technologies. Our findings indicate that wealthy people are amenable to using their money to invest in the latest technologies, especially where these require minimal changes to habits and behaviours. Early adopters of new technologies play an important role in helping drive cost reductions and can help to normalise their use.

Two notable examples from the UK are electric vehicles and heat pumps. Both face several barriers to widespread adoption. Each is more expensive than fossil-fuelled alternatives, and the public expresses reticence about vehicle range anxiety [95] and the effectiveness and disruption associated with replacing conventional gas boilers with heat pumps [96]. Less constrained by the up-front cost of these technologies, wealthy people represent a significant target market for their adoption. This is already the case with EVs, where manufacturers have prioritised luxury models in the technology's infancy, but heat pump manufacturers have yet to strategically target wealthier households. Another example is rooftop solar. Although no data are available for the UK on adoption by income decile, evidence from the US indicates that the wealthiest individuals are the largest adopters, although the relationship with income is not linear [76]. This technology has also been shown to have strong peer influence effects [97], especially amongst more affluent households.

The use of subsidies for promoting low-carbon technologies largely benefits wealthier people, and the implications for speed and justice in the energy transition are the subject of much debate [98]. However, support for low-carbon technologies does not only mean pricing mechanisms. Policy contexts which set a clear direction for emissions reductions are critical for supporting continued innovation and roll-out of low-carbon technologies. There have been increasingly mixed messages from the UK Government in this regard, such as the delayed deadline for the phase-out of new petrol and diesel vehicle sales from 2030 to 2035. As suggested by some participants, efforts should be made to protect existing climate legislation from political cycles. Any measures which urge wealthy people to invest in technologies such as EVs, heat pumps and rooftop solar are welcome, given their potential to accelerate diffusion, especially if early adopters are also encouraged to advocate their benefits within their social and professional networks.

6. Conclusions

This study has used a carbon capability framework to explore how wealthy people's emissions might be effectively reduced, using the UK as a case study. Research findings show that access to low-carbon alternatives, a good understanding and awareness of climate change, and recognition of their influence on others all contribute to wealthy people's carbon capability. However, the extent to which wealthy people can be considered carbon capable is limited by their higher levels of consumption, which are relatively inelastic. The group underestimate the

environmental impacts associated with their consumption and employ narratives to justify and normalise excessive consumption. Our wealthy participants also reported a perceived lack of disposable time with which to carry out low-carbon lifestyle changes. Combined, these traits create a reluctance to enact the necessary behavioural changes required to reduce the emissions contribution of the group: our sample of wealthy people neither desire nor feel motivated to enact truly low-carbon lifestyles.

Nonetheless, there are several opportunities to enhance wealthy people's carbon capability. These include fostering their unique social and professional influence for generating more widespread awareness of climate change impacts, and support for climate action. Highlighting the synergies between health and wellbeing, and low-carbon choices is one avenue worthy of exploration. Another is to capitalise on wealthy people's capacity to adopt relatively expensive low-carbon technologies, helping to drive cost reductions and normalise their use amongst the wider public.

At the start of this article, we highlighted the lack of progressive, consumption-based policies in the UK and much of the OECD. Despite public concern over emissions inequality [24], policies such as progressive energy pricing and personal carbon allowances currently lack sufficient public and political support in the UK. In the absence of policy, hard-lever interventions which could substantially reorientate systems of provision towards more equitable and climate-compatible outcomes in the near term, it is incumbent on other actors and stakeholders to promote the carbon capabilities of wealthy people. Researchers, climate activists and other non-governmental advocates have a key role to play in highlighting emissions inequalities and generating pressure on wealthy people to shoulder responsibility for their disproportionate contribution to global climate change. These actors should also not give up hope that progressive consumption-based policies are unachievable in the medium term. For instance, a majority of people in the UK express support for a frequent flyer levy [99]. The 'Overton Window' is rapidly changing with respect to climate change and there is a need to continue advocating for policymakers to explore wealth-based climate policy. We have highlighted the role of other specific actors such as leaders of the wellness industry, travel journalists and tourist operators in promoting low-carbon choices to wealthy people. Business leaders – many of whom are in the target group themselves – have a central role to play, modelling behaviours, setting organisational policy and investing in corporate sustainability initiatives.

This research is the first to apply CC to the study of wealthy people and has demonstrated the value of the framework for revealing a range of individual, social, and structural factors which 'lock-in' emissions-intensive norms amongst this group. A CC lens has uncovered ways in which wealthy people contribute to climate change beyond their direct consumption behaviours, both negatively and positively. Critically, the concept of CC also moves beyond lambasting wealthy people for their unfair contributions to global climate change to demonstrate how wealthy people can be uniquely and positively carbon capable. Contributing to a limited but growing discourse within academia and advocacy networks on emissions inequality, this represents a novel approach to understanding how the transition to net-zero might be accelerated not only by increasing wealthy people's CC but also by leveraging their existing capabilities.

There is substantial scope to add to this research by investigating the CC of wealthy people in other countries, including the 'Global South'. Social norms and systems of provision are context specific, as are public and political support for progressive interventions. This study is also the first study of CC to combine survey methods with in-depth interviews. We advocate for this approach in studying wealthy groups, given the difficulties of recruiting them to survey-based studies, but also because interviews revealed complex attitudes and sensibilities

amongst wealthy people towards climate change, including cognitive dissonance. Our sample of wealthy people was relatively small, yet we still detected significant effect sizes for many of the key measures of CC. Another limitation is that interviews were only conducted with wealthy people and so it remains unclear how much interview findings differ from non-wealthy people. Future work on group-wise differences should seek to include a comparison group in qualitative as well as quantitative data.

Supporting information

S1 Appendix. Participant details.
(DOCX)

S2 Appendix. Composite variables.
(DOCX)

S3 Appendix. Chi-squared tests.
(DOCX)

S4 Appendix. T-tests.
(DOCX)

S5 Appendix. Regression analyses.
(DOCX)

Author contributions

Conceptualization: Hettie Moorcroft, Sam Hampton.

Data curation: Hettie Moorcroft, Sam Hampton.

Formal analysis: Hettie Moorcroft.

Funding acquisition: Sam Hampton, Lorraine Whitmarsh.

Investigation: Hettie Moorcroft.

Methodology: Hettie Moorcroft.

Project administration: Hettie Moorcroft.

Supervision: Sam Hampton, Lorraine Whitmarsh.

Visualization: Hettie Moorcroft.

Writing – original draft: Hettie Moorcroft.

Writing – review & editing: Hettie Moorcroft, Sam Hampton, Lorraine Whitmarsh.

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