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Status Quo Bias Impedes Active Travel Policy by Changing the Process of Opinion Formation

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Abstract

This study demonstrates how status quo bias (SQB) acts as an obstacle to active travel policy. A pre-registered experiment was undertaken to measure the strength of SQB and to illuminate its likely causes. A large, nationally representative sample evaluated descriptions of a town layout designed to promote cycling and walking ahead of driving. Participants were randomised such that the (otherwise identical) layout was either planned or already in place. Those in the 'planned' condition gave lower evaluations, demonstrating strong SQB. The estimated effect size was stronger than the influence of being a cyclist or regular driver. SQB was unrelated to psychological scales measuring general resistance to change and loss aversion. Participants in the 'planned' condition also sought out different information about the town layout, immediately focussing on potential downsides – a behaviour consistent with some psychological theories of evaluation. The findings have implications for active travel policy and other pro-climate policies that require societal acceptance of change.

Keywords *(x6)*: active travel; cycling; Status Quo Bias; public opposition; climate policy

Summary

- There is strong evidence that SQB is a large barrier to public support for active travel policies
- The SQB effect does not appear to be explained by age, educational attainment, driving or cycling status or measures of loss aversion or general resistance to change
- There is no gender or regional difference in support of existing active travel layouts, but women and those in rural communities are less in favour of equivalent plans
- When evaluating planned active travel layouts, people care mostly about whether local communities were consulted and what the community thinks about the layout
- The information people seek out differs when layouts are planned compared to when they already exist. When evaluating plans people are drawn toward

potential negative information such as impacts on businesses and construction time

- Opinions become more positive after learning additional information, particularly when evaluating plans

Introduction

Mitigating climate change requires radical and rapid reductions in greenhouse gas emissions across multiple economic sectors (Schipper et. al, 2022). The transport sector contributes to one quarter of emissions in the EU (European Commission, 2020). Reducing car dependency in favour of active travel is hence at the core of the shift to healthier and more sustainable societies. Designing infrastructure to promote alternative modes of travel is particularly important in industrialised countries that contribute the greatest share of greenhouse gas emissions, meaning there are large potential gains from shifting towards more sustainable travel patterns. However, for these initiatives to be successful, obtaining public support is essential. It is hence vital for policymakers to pay attention to when and why people embrace, or resist, change. Resistance, unfortunately, is often the instinctive response: people tend to like things to stay as they are. In a seminal paper, Samuelson and Zeckhauser (1988) first reported experimental demonstrations of "status quo bias" (SQB). Merely indicating which of a set of options was currently in place biased people towards that option, even if they had no reason to think it good or bad. Over 30 years later, SQB has been recorded by hundreds of scientific papers across many research disciplines and subject domains (Godefroid et al., 2022).

The contribution of our study is to demonstrate the importance of this bias for active travel policy and to give insight into its causes. We also set out to provide a meaningful measure of the strength of SQB. While some of literature has recognised SQB as a potential impediment to different types of climate policy (Nilsson et al., 2016; Rabaa, Geisendorf and Wilken, 2022; Weber 2017), just one study has sought to measure its influence. Lang et al. (2021) found that people's maximum willingness to pay (WTP) extra on their electricity bills for an emissions trading scheme was more than two times lower than their minimum willingness to accept (WTA) lower bills to withdraw from the same scheme. Similar WTA-WTP gaps occur for monetary exchanges generally and may reflect more than a cognitive bias towards the status quo (Marzilli Ericson & Fuster, 2014). We set out instead to test how SQB affects support for pro-climate reforms that entail no monetary demands, comparing the strength of the bias against established vested interests. Our focus was active travel policy. This is an attractive domain for investigating SQB because the link to lower emissions is clear (Nieuwenhuijsen, 2020; Brand et al., 2021) yet the relevant infrastructural changes can face intense public opposition (Vreugdenhil & Williams, 2013; Field et al., 2018). We developed an experiment to measure SQB for infrastructure designed to promote walking and cycling ahead of driving, using a design that allowed us to make direct comparisons between the size of the bias and the effects associated with being a cyclist or motorist. These categories map to self-interested constituencies that active travel policymakers routinely pay attention to. Thus, if a cognitive bias has comparable effects on policy support, it requires attention too.

Our study also illuminates potential causes of SQB in active travel policy. This is important both to assess its legitimacy as a force that seemingly impedes necessary pro-climate reforms and to design ways to overcome the bias where it lacks legitimacy. Existing research into the causes of SQB (primarily with respect to technology adoption) has typically assumed that measured dislike of change is due to SQB and, further, that factors found to predict dislike (e.g., perceived threat, social norms) cause SQB (Balakrishnan et al., 2021, Fan et al., 2015, Hsieh, 2015, Khedhaouria et al., 2016, Kim & Kankanhalli, 2009, Klein et al., 2022, Li et al., 2016, Oschinsky et al., 2021, Putra et al., 2022). By contrast, our experimental design disentangles SQB from mere dislike of change. The experimental procedure then uses a novel behavioural measure to give insight into the psychological mechanisms of opinion formation.

There have been many potential explanations for SQB proposed. Samuelson and Zeckhauser described three categories: rational decision-making, psychological commitment, and cognitive misperceptions. Preferring the status quo can be considered rational (and arguably therefore not a bias) if it reflects *transition costs* and *uncertainty costs.* Regarding active travel policy, construction time and associated disruptions are *transition costs*. Low familiarity with active travel infrastructure and how successfully it works elsewhere imply *uncertainty costs*. Knowing that a town's design has endured could be considered a *justification for the current system*.

The second category, psychological commitments to prior choices, references *sunk costs, regret avoidance, social norms,* and desire for *control* (Samuelson & Zeckhauser, 1988). Maintaining the status quo appears to justify previous investments – sunk costs.

Thus, in a town developed to accommodate private cars, people may feel uncomfortable undoing previous investment. People might also refrain from switching from the status quo to avoid possible regret (Nicolle et al., 2011), especially since bad outcomes from active decisions can be experienced as worse than bad outcomes from passive decisions (Spranca et al., 1991; Ritov & Baron, 1992; Yeung et al., 2022). People may think the status quo corresponds to social norms, especially if there is vocal opposition to change, leading them to underestimate public support for reform (Mildenberger & Tingley, 2019). Lastly, if reform is viewed as 'imposed' by external actors, the psychological importance of causal agency over one's environment (Gecas, 1989) may lead people to resist as a way to wrest back agency. Opposition to active travel plans has been linked to perceived lack of control and meaningful consultation(Crane et al., 2016; Field et al., 2018), whereas support has been associated with local community involvement (Lawlor et al., 2023).

The final category of explanations views SQB as a cognitive error. When comparing alternatives, the status quo may serve as a reference point against which losses are weighed more heavily than gains (Samuelson & Zeckhauser, 1988) consistent with the general phenomenon of *loss aversion* (Kahneman et al., 1991). If so, those with most to lose, e.g., motorists, will be disproportionately opposed to active travel policies (Cradock et al., 2018; Rissel et al., 2018; Semple, 2021). Similarly, numeric evaluations (e.g., existing levels of traffic or cycling) can become *anchored* on the status quo (Samuelson & Zeckhauser, 1988).

For those who want change, this broad spectrum of potential causes of SQB is already challenging. However, there is another potential framework for understanding SQB. Query Theory was originally devised to explain the endowment effect (Johnson et al., 2007) and inter-temporal choice (Weber et al., 2007). As far as we know, while the theory has been applied to policy preferences based on political affiliation (Hardisty et al., 2011), it has not previously been linked to SQB for policy choices. According to Query Theory, evaluation is a process of memory retrieval determined by the questions individuals ask themselves, but where the first question tends to dominate. Thus, people can evaluate the same policy differently depending on how they encounter it. Faced with evaluating a planned change, evaluators might first ask themselves "What could go wrong?", while faced with the same change already in place, they might first ask themselves "What is good or bad about this?". If so, the result will be different evaluations; the process of opinion formation will be altered.

Alongside the previous explanations for SQB, this possibility led us to investigate not only how the status quo alters people's policy support, but also how it affects their search for subsequent information about the policy, indicating psychological mechanisms involved in opinion formation.

The Present Study: Experimental Investigation of SQB for Active Travel Policy

We tested how SQB influences support for the implementation of active travel infrastructure through a pre-registered online experiment. We experimentally manipulated the status of an active travel town layout to be either already in place (existing) or proposed as a change (planned). Our primary outcome was evaluations of the layout. This design allowed us to compare the strength of the bias to primary factors linked to self-interest, namely being a motorist or cyclist. Further, we explored drivers of SQB, firstly by fielding two psychological scales that measure general resistance to change and loss aversion, and secondly by recording participants' online behaviour. After the initial evaluation, participants could click to access additional information to inform their opinions. Options were designed to provide insights into possible psychological mechanisms outlined in Table 3. Our logic was that the information participants sought would be linked to the information retrieval process that informed their opinion. Hence, differences depending on whether the infrastructure was existing or planned would indicate psychological processes underpinning SQB.

Materials and Methods

The study was preregistered on the Open Science Framework. The preregistration, instrumentation, data, and code can be found in the online supplementary materials (https://osf.io/dsug8/).

Participants

Participants ($N = 800$) were recruited by a market research company[1] to take part in a 15-minute study on opinions about town designs. They were paid €3 for participating. The final sample of 800 was representative of the national population based on quota sampling of observable characteristics: 48% were men, mean age was 48 with a range from 18 to 82, 52% had a higher education degree, and 61% were employed, Table 1.

Over half of participants, 59% reported regularly driving ($n = 473$), 17% occasionally drove ($n = 132$), 5% rarely drove ($n = 40$), and 19% never drove ($n = 155$). In contrast only 7% reported regularly cycling ($n = 56$), 13% occasionally cycled ($n = 102$), 18% rarely cycled ($n = 143$), and 62% reported never cycling ($n = 499$).

The median completion time was 13.90 minutes. In total, 123 participants (15%) failed either of the two attention checks, although just 20 (2.5%) failed both. We opt to retain all participants for analyses but present robustness checks excluding attention check failures in the Supplementary Material.

Table 1. Socio-demographic breakdown of the sample

	N	%	pop %
Male	387	48.4	49%
Female	410	51.2	51%
Other (please specify)	1	0.1	-
Prefer not to say	2	0.2	-
< 39	278	34.8	40%
40-59	295	36.9	34%
60+	227	28.4	26%
Leinster	480	60	56%

[1] www.redclive.ie

Munster	206	25.8	27%
Connacht/ Ulster	114	14.2	17%
ABC1	367	45.9	44%
C2DEF	429	53.6	56%
Unsure	4	0.5	-
N	800	-	-

Prior to the main study we recruited 100 participants for a pilot study where they were asked to respond to open text responses following the experimental manipulations. The pilot served to test the vignette and ensure that no information of interest to participants was missing from the topics provided. Participants from the pilot were not included in the main analysis.

Experimental Manipulations

All participants read a brief description of a town: *Please imagine a mid-sized town in Ireland. On the main street there is a mix of shops, restaurants, office buildings, pubs and residential buildings. There is a local school and library close to the town centre. Families, students, business owners and retirees all live in the town.* Participants were then randomised by the software programme using balanced block randomisation into reading one of two versions of a vignette describing the layout in more detail. In the existing condition, participants (n = 395) read the following:

The town has a layout that makes it easy to walk and cycle to most places people need to go. Pedestrians and cyclists are prioritised over motor traffic. Instead of two-way car traffic on the main street, there is a one-way car lane with segregated lanes for cycling on each side. There are bike parking facilities outside most shops and businesses together with wide pavements for pedestrians. There are three disabled car parking spaces on the main street. The town square is open only to pedestrians and has benches, a fountain, and trees.

In the planned condition, participants (n = 405) read the following (differences from existing condition in underscore):

There is a proposal for a new layout of the town to make it easy for people to walk and cycle to most places they need to go. Pedestrians and cyclists would be prioritised over motor traffic. The plan is to change the main street, which currently has two-way car traffic, into a one-way car lane with segregated lanes for cycling on each side. Car parking spaces outside shops and businesses would be turned into bike parking facilities together with wide pavements for pedestrians. Three disabled parking spaces would remain on the main street. The town square would be pedestrianised with benches, a fountain, and trees.

Materials

We generated twelve topics deemed relevant for opinions about active travel infrastructure, based on the literature on drivers behind SQB as well as discussions with transport authorities about the types of concerns that are commonly raised (Table 3). The topics constituted two sets of six. The first set contained six topics about different outcomes/ impacts of the layout. The second set consisted of six topics related to the process around and context of the layout. These were designed to tap into different mechanisms behind Status Quo Bias. The two sets were presented to participants on separate pages. Each page displayed the six topics in boxes randomly positioned in a circle (Figure S6). Participants were instructed to select three topics from each set by clicking on them on their screens. They had to select three topics in the first set before seeing the second set. Once they had selected the six topics, they were asked to rank them according to which they would most want to read more about.

The three topics participants had ranked highest were shown to them on the following page. Participants could then click on each of the topics to reveal the detailed information underneath. The detailed information for each topic was designed to reflect what is accurate in general regarding active travel layouts (Table S9).

Topic headings and detailed information was identical for participants in both experimental conditions.

Table 2. Topics displayed to participants and theorised mechanism.

Topic	
Outcomes	
What are the effects on the local environment?	
What are the effects on community health?	
What are the effects on local businesses?	
What are the effects on traffic and parking?	
What are the effects on necessary services (e.g., emergency services, bin lorries)?	
What are the effects on people with disabilities and the elderly?	
Processes/ context	**SQB Mechanism**
What does the local community think of the layout?	**Psychological commitment:** Social norms
Who proposed the layout?	**Psychological commitment:** Trust/ Ingroup/ Control
Is this type of layout common in similar towns?	**Psychological commitment:** Social norms/ Fairness/ Regret aversion/ Risk aversion
What is the history of the town's layout?	**Psychological commitment:** Stood the test of time/ Implicit trust in system/ Sunk costs
Were locals consulted about the layout?	**Psychological commitment:** Fairness/ control
How long does it take to build this type of layout?	**Rational Decision making:** Transition cost

Measures

The following data were collected for all participants. Exact wording of questions is available in the instrumentation document in the online supplementary materials.

Initial evaluation: Participants were asked what they thought of the layout on 1 (Strongly dislike) - 7 (Strongly like) rating scales. Only the end points of the scale were labelled and hence this outcome variable is treated as an interval scale.

Selected topics: We recorded which topics participants selected from two sets of six. Participants could select three topics from each set resulting in six topics in total.

Ranking of topics: Participants were asked to rank the 6 topics they had selected according to which they would be most to least interested in reading more about. We recorded what rank each topic was given ranging from 6 (ranked top) - 1 (ranked bottom), topics not selected were coded as 0.

Reading of topics: We recorded which topics participants read by tracking which topics they clicked on to reveal additional information.

Final evaluation: Participants were asked what they thought of the layout now that they know a bit more on 1 (Strongly dislike) - 7 (Strongly like) rating scales.

Resistance to Change (RtC): We measured general resistance to change using the 19 item Resistance to Change scale (RtC, Oreg, S. 2003). Items are rated on 1 (Strongly disagree) -7 (Strongly agree) rating scales.

Loss Aversion: We measured loss aversion with the 7-item loss aversion scale developed by Li et al (2021). Items were rated on 1 (Strongly disagree) -7 (Strongly agree) rating scales.

Driving and Cycling frequency: We collected data on how often participants drove and cycled (Regularly, Occasionally, Rarely, Never). Following our pre-registration, we categorised drivers as those occasionally or regularly driving and non-drivers as those never or rarely driving. We categorised cyclers as those rarely, occasionally, or regularly cycling and non-cyclers as those never cycling. The reason for this categorisation was that we would otherwise risk ending up with small cell sizes for those with low levels of driving and those with high levels of cycling.

Additional transport behaviours: which they spent more time doing, how often they drive and cycle to work, university, and social trips, how many cars and bikes they own, what type of car they usually drive, whether they are happy with their current levels of cycling and driving, what modes of transport they generally engage in, and how much they enjoy their commute.

Vignette attention check: We asked participants to select which of the following was stated as the main motivation for the layout they read about: It was designed to make it easier for emergency services to gain access, **It was designed to make it easier to walk and cycle**, It was designed to make it easier for cars to find parking, It was designed to make it easier to drop children off at school.

RtC attention check: We asked participants to select "3" from a scale of 1-7 to indicate they have read the question.

Socio-demographics: We recorded data on age, gender, education, nationality (Irish or other), locality (region, county and urban or rural setting), number of people in household, whether they have children under the age of 18, number of children under the age of 18 living in their household, Socio-economic status, and Employment status.

Procedure

Participants took part online. After reading general study information and consenting to participate in the study, participants were informed that they would be asked about their opinions on a town layout. All participants read a brief description of a town and were then randomised into the two conditions where they could read further condition specific information about the town layout. Participants were not able to move on from this page within the first 30 seconds to ensure they read the information carefully.

After reading the descriptions, all participants were asked to rate how much they liked the layout on a 1(Strongly like)-7(Strongly dislike) rating scale. After having rated the layout, they were informed that they would be able to read more detailed information to inform their judgement. They were then presented with two sets of six topics related to the layout on separate pages (see Table 3). On each page participants were told that they would be asked to evaluate the layout a second time and to select three of the six topics that they most want to read more about. They had to select three topics in the first set before moving on to see the second set. The first set included outcome topics and the second set included the process/ context topics.

After having selected the two sets of three, the participants proceeded to the following page where they were shown a list of the six topics they had selected and were asked to rank them according to which they would most want to read more about. They were told that they would be able to read more detailed information about the topics they ranked highest. On the next page they were shown the three topics they had ranked highest and were told that they could click on each topic to reveal additional information underneath it. After this, they were asked to evaluate the layout again.

The study ended with questions about transport behaviour and socio demographics. The study complied with institutional ethics policy, including data protection procedures.

Hypotheses

The primary hypothesis tested in this study was *H1:*

> Participants who read about the active travel infrastructure described as the status quo will rate the layout more favourably in their initial evaluation than those who read about it described as a change.

In addition, following our pre-registration, we report exploratory analyses on:

> The role of loss aversion and resistance to change in explaining SQB.
>
> Differences in likelihood of topic selection and average ranking of topics between the conditions and depending on initial evaluation score.
>
> Evaluation change between the conditions.
>
> The association between reading of topics and changes to final evaluation.

Results

Demonstrating SQB

Participants read a vignette describing a town laid out to promote active travel. Depending on condition, the layout either existed or was planned, but was otherwise identical. Participants' initial evaluations were generally positive ($M = 5.07$, $SD = 1.69$)

but more so in the existing condition (*M* = 5.47, *SD* = 1.53) compared to the planned condition (*M* = 4.68, *SD* = 1.75). Figure 1 shows the two distributions of responses. The difference was highly statistically significant, $b = 0.78$, $SE = 0.12$, $t = 6.79$, $p < .001$, Cohen's $d = 0.48$). This result closely replicates a pilot study conducted with 100 participants ($M_{Existing} = 5.52$, $SD = 1.38$ vs. $M_{\text{Planned}} = 4.39$, $SD = 1.77$), $b = 1.07$, $SE = 0.32$, $t = 3.32$, $p = 0.001$. $d = 0.71$) and confirms a large SQB effect. From a policy perspective, the proportion of ratings that imply opposition to the layout (scores below 4) was below 10%[2] in the existing condition but almost 25% in the planned condition.

Table 1 presents an OLS model that controls for socio-demographic characteristics. Drivers (regular or occasional) gave lower ratings than non-drivers (never or rarely). By contrast, cyclists (who cycle at least some of the time) gave higher ratings than non-cyclists. Both coefficients are substantially smaller than the coefficient on the dummy variable for experimental condition.[3] No other socio-demographic variables predicted initial evaluations. Results are robust to attention-check (Model 2, Table S1), response time exclusions (Figure S1) and use of ordinal models (Model 3, Table S1).

Table 3. OLS model on initial evaluation of the layout between the conditions.

	b [95% CI]
Intercept	4.75*** [4.31, 5.20]
Existing Condition (ref = Planned)	0.78*** [0.56, 1.01]
Male	-0.15 [-0.38, 0.08]
Age	0.00 [-0.004, 0.01]
Rural	-0.15 [-0.40, 0.10]
Drives	-0.38** [-0.65, -0.11]
Cycles	0.49***

[2] Observed percentages reported throughout the text unless stated otherwise.

[3] Tests of coefficient equality: $F_{drives} = 40.88$, $p < .001$, $F_{cycles} = 2.89$, $p = 0.09$.

	[0.25, 0.73]
N	800

Note: ***p<.001, **p<.01, *p<.05, Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never.[4]

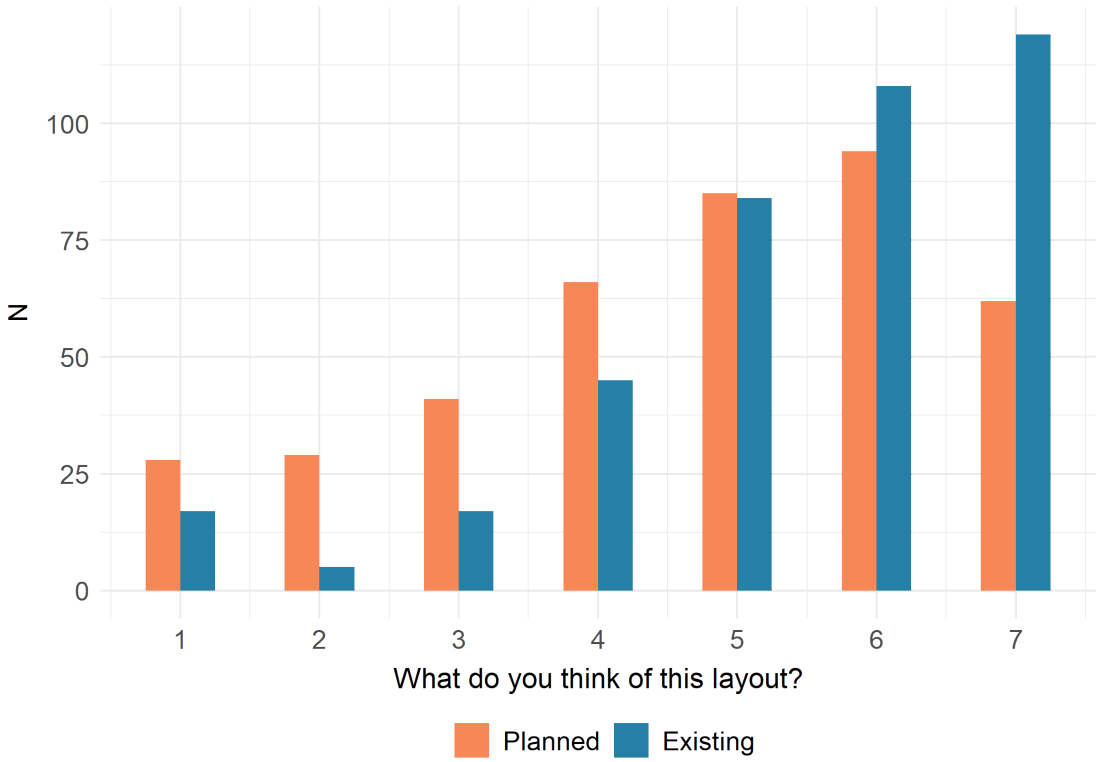

Figure 1. Distributions of initial evaluations for the two conditions.

Drivers of SQB

Table 2 shows relationships between evaluations and measures of Loss Aversion (*M* = 4.58, *SD* = 0.99) and Resistance to Change (RtC, *M* = 4.01, *SD* = 0.96), separately for each condition. RtC was negatively associated with ratings, while, surprisingly, Loss Aversion was *positively* associated with ratings. However, neither construct had a

[4] We also ran models with the variables for driving and cycling disaggregated into four categories, Table S2. Regular drivers liked the layout less -0.62*** [-0.92, -0.31] than those never driving, and those rarely cycling 0.46** [0.15, 0.77] and occasionally cycling 0.55** [0.20, 0.91] liked the layout more than those never cycling.

differential impact on evaluations between conditions, implying that neither caused the observed SQB effect. Similarly, neither driving frequency nor cycling frequency had a differential effect across conditions[5].

While men were less positive about the layout in the existing condition (M_{male} = 5.33, SD_{male} = 1.63 vs. M_{female} = 5.61, SD_{female} = 1.43), Model 2b, Table 4, there was no gender difference in the planned condition[6] (M_{male} = 4.77, SD_{male} = 1.77 vs. M_{female} = 4.61, SD_{female} = 1.73), Model 1b, Table 4. This suggest that while women are more supportive of the infrastructure in general, they appear to be less supportive of plans.

We also found a rural/ urban difference in liking the layout only when it is described as a plan, where those from a rural context were less supportive (M_{rural} = 5.33, SD_{rural} = 1.63 vs. M_{urban} = 5.61, SD_{urban} = 1.43), Model 1b, Table 4. Whereas there was no difference when it was already in place[7] (M_{rural} = 5.53, SD_{rural} = 1.47 vs. M_{urban} = 5.44, SD_{urban} = 1.57), Model 2b, Table 4.

Table 4. OLS Regression Models Predicting Initial Evaluation Score

	Model 1a Planned *b* [95% CI]	Model 2a Existing *b* [95% CI]	Model 1b Planned *b* [95% CI]	Model 2b Existing *b* [95% CI]
Intercept	4.47***	5.25***	4.83***	5.20***
	[3.60, 5.35]	[4.51, 5.98]	[3.68, 5.98]	[4.22, 6.17]
RtC	-0.28*	-0.34***	-0.33**	-0.32***
	[-0.51, -0.05]	[-0.53, -0.16]	[-0.56, -0.11]	[-0.51, -0.14]
LA	0.29**	0.35***	0.33**	0.33***
	[0.08, 0.50]	[0.17, 0.53]	[0.12, 0.54]	[0.15, 0.50]
Male			0.16	-0.36*

[5] Tests of coefficient equality: b_{LA} = 0.01, *SE* = 0.16, *z* = 0.05, *p* = .96, b_{RtC} = -0.01, *SE* = 0.15, *z* = -0.06, *p* = .95, b_{drives} = -0.24, *SE* = 0.27, *z* = -0.88, *p* = .38, *p* = .95, b_{cycles}= -0.03, *SE* = 0.24, *z* = -0.15, *p* = .88.

[6] Test of coefficient inequality: *b* = 0.52, *SE* = 0.24, *p* = .03

[7] Test of coefficient inequality: *b* = -0.56, *SE* = 0.25, *p* = .02

			[-0.18, 0.50]	[-0.66, -0.05]
Age			-0.001	0.005
			[-0.01, 0.01]	[-0.01, 0.01]
Rural			-0.42*	0.14
			[-0.79, -0.05]	[-0.18, 0.46]
Drives			-0.51*	-0.27
			[-0.90, -0.12]	[-0.63, 0.08]
Cycles			0.48**	0.52**
			[0.12, 0.84]	[0.20, 0.83]
N	405	395	405	395

Note: ***p<.001, **p<.01, *p<.05. RtC = Resistance to Change, LA = Loss Aversion. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never.

Differences in Information Search

After rating the layout, participants were invited to select six out of twelve information topics related to the layout. The most commonly selected were 'What the community thinks' (79%), and 'Whether the community had been consulted' (78%), followed by 'effects on traffic and parking' (65%). The three least selected topics were 'effects on health' (24%), the 'History of the town layout' (25%) and 'effects on the environment' (28%), Figure 2. There were significant differences in choices across conditions (see logistic regressions in Table S3[8]; Figure 3). Participants in the existing condition were more likely to select 'effects on health' (19% vs 29%, Estimate = 0.41, 95% *CI* = [0.06, 0.77]), 'effects on services' (61% vs 68%, Estimate = 0.32, 95% *CI* = [0.02, 0.62]), 'Who proposed the layout' (42% vs 50%, Estimate = 0.55, 95% *CI* = [0.25, 0.84]), and the 'History of the town' (21% vs 29%, Estimate = 0.37, 95% *CI* = [0.03, 0.70]). They were significantly less likely to select 'effects on businesses' (70% vs 55%, Estimate = -0.55, 95% *CI* = [-0.85, -0.25]) and 'Time taken to build the layout' (47% vs 37%, Estimate = -0.71, 95% *CI* = [-1.03, -0.40]), Figure 3. Importantly, these models control for participants' initial evaluation. This means that participants in the two conditions

[8] We also conducted randomisation tests to compare the pattern of differences found with what could be expected due to random variation (Figures S4 and S5).

sought different information regardless of how much they liked the town; differences were not due to attempts to justify initial evaluations. The change in framing led them to investigate different issues, implying a different psychological judgement process.

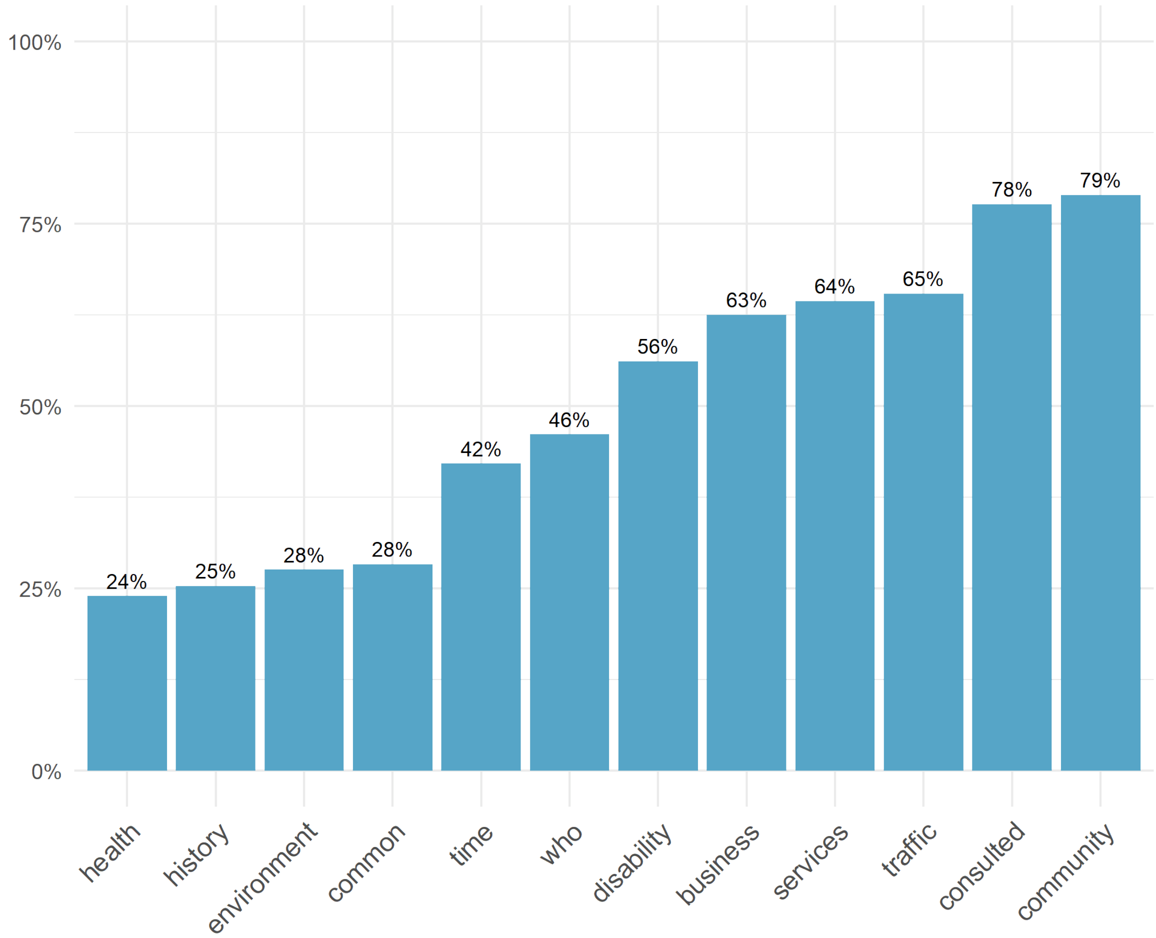

Figure 2. Proportion of participants selecting each topic.

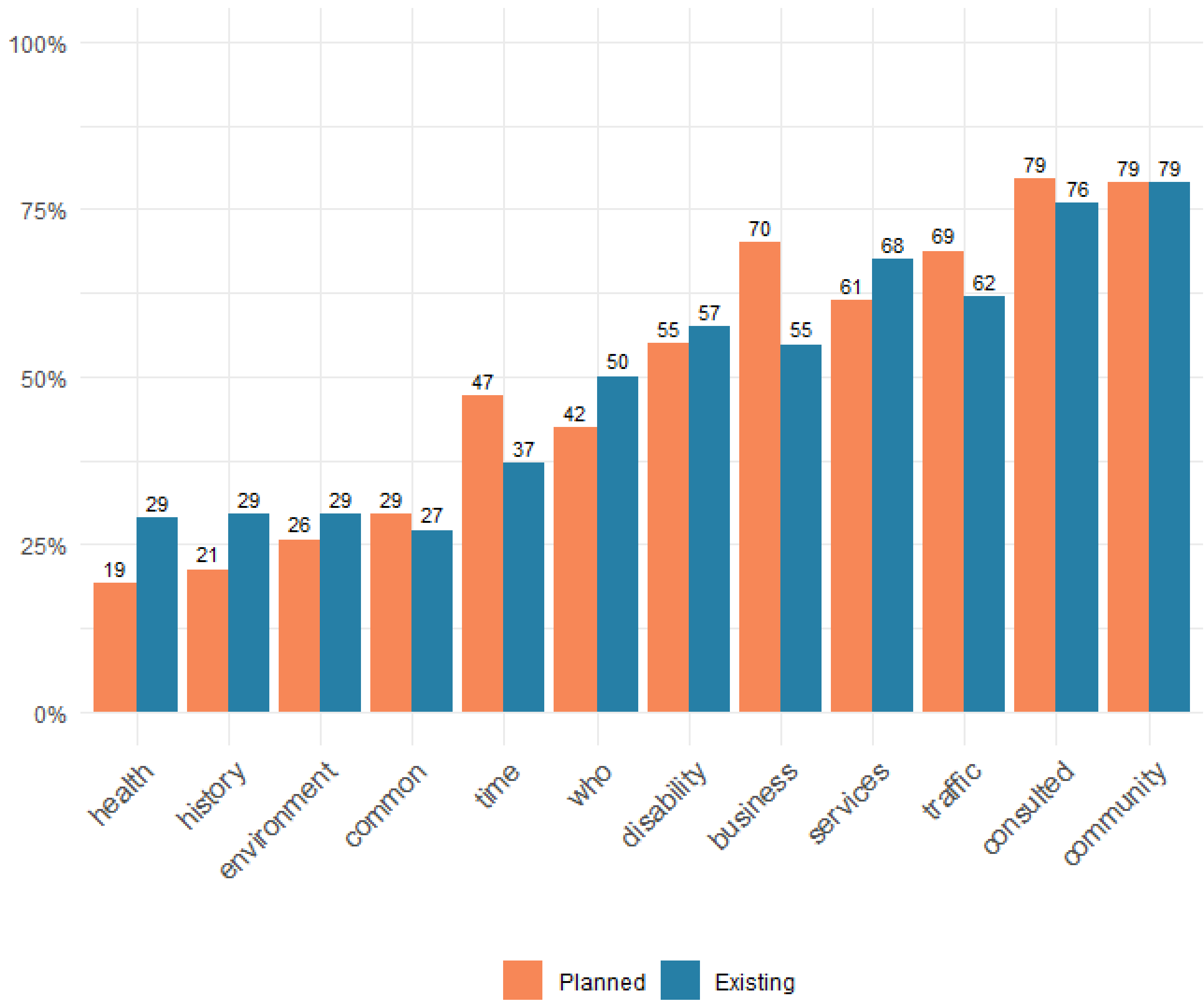

Figure 3. Differences in proportion of participants selecting each topic between the conditions.

After choosing six options, participants ranked them in order of how much they wanted to know more about each one. We transformed this ranking to a score ranging from 0 (= topic not selected) to 6 (=topic ranked highest) and compared across conditions. The pattern was similar to that for topic selections (Figure 4 and 5). Participants in the existing condition were less likely to give higher scores for Businesses (Estimate = -0.49, 95% *CI* = [-0.75, -0.23]) and Time (Estimate = -0.67, 95% *CI* = [-0.96, -0.38]) and less likely to giver higher scores to Services (Estimate = 0.35, 95% *CI* = [0.09, 0.61]), Health (Estimate = 0.46, 95% *CI* = [0.12, 0.81]) and Who proposed the layout

(Estimate = 0.43, 95% *CI* = [0.15, 0.71]) Figure 5. The full results of the ranking analysis are shown in Table S4, Figure 6, right panel.

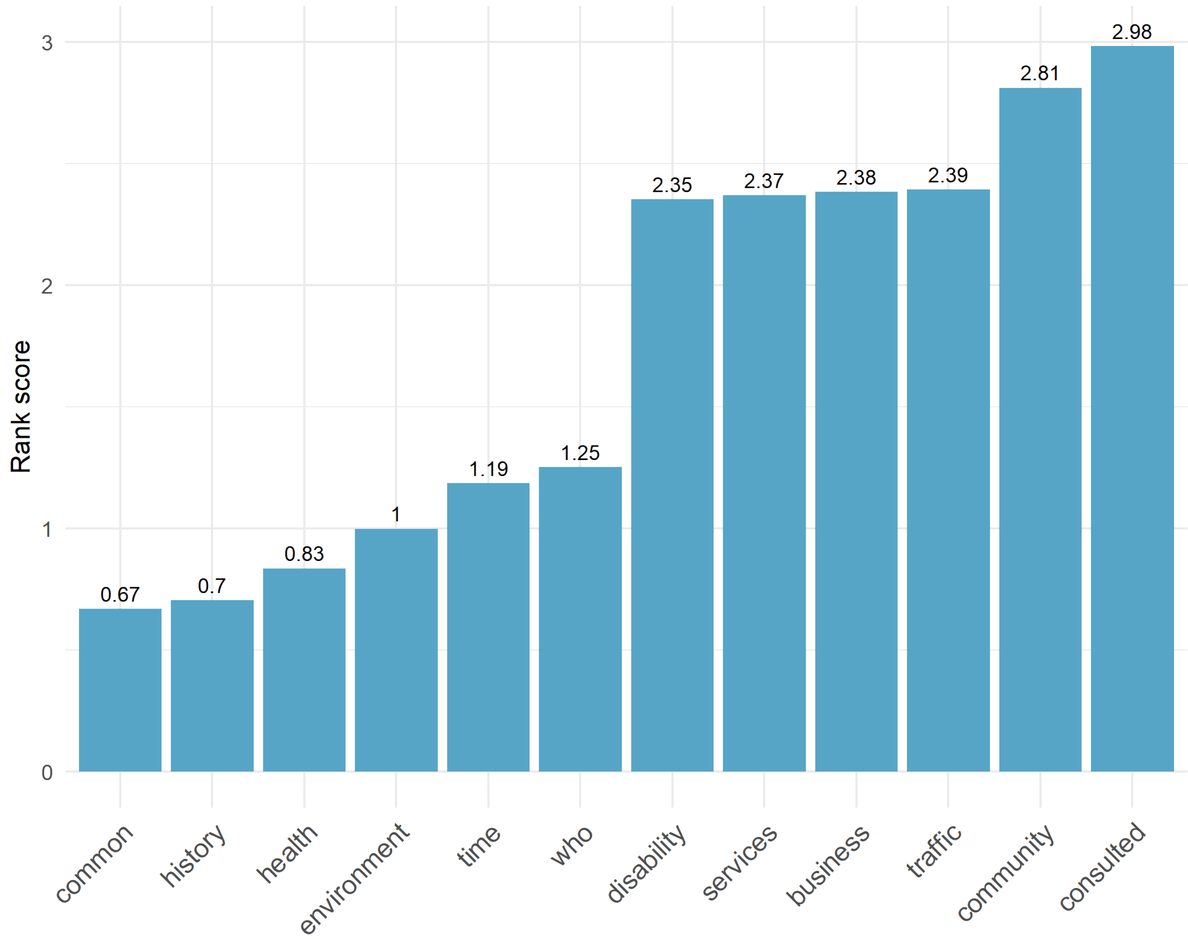

Figure 4. Average rank score (0 = not selected, 6 = ranked top) given for each topic.

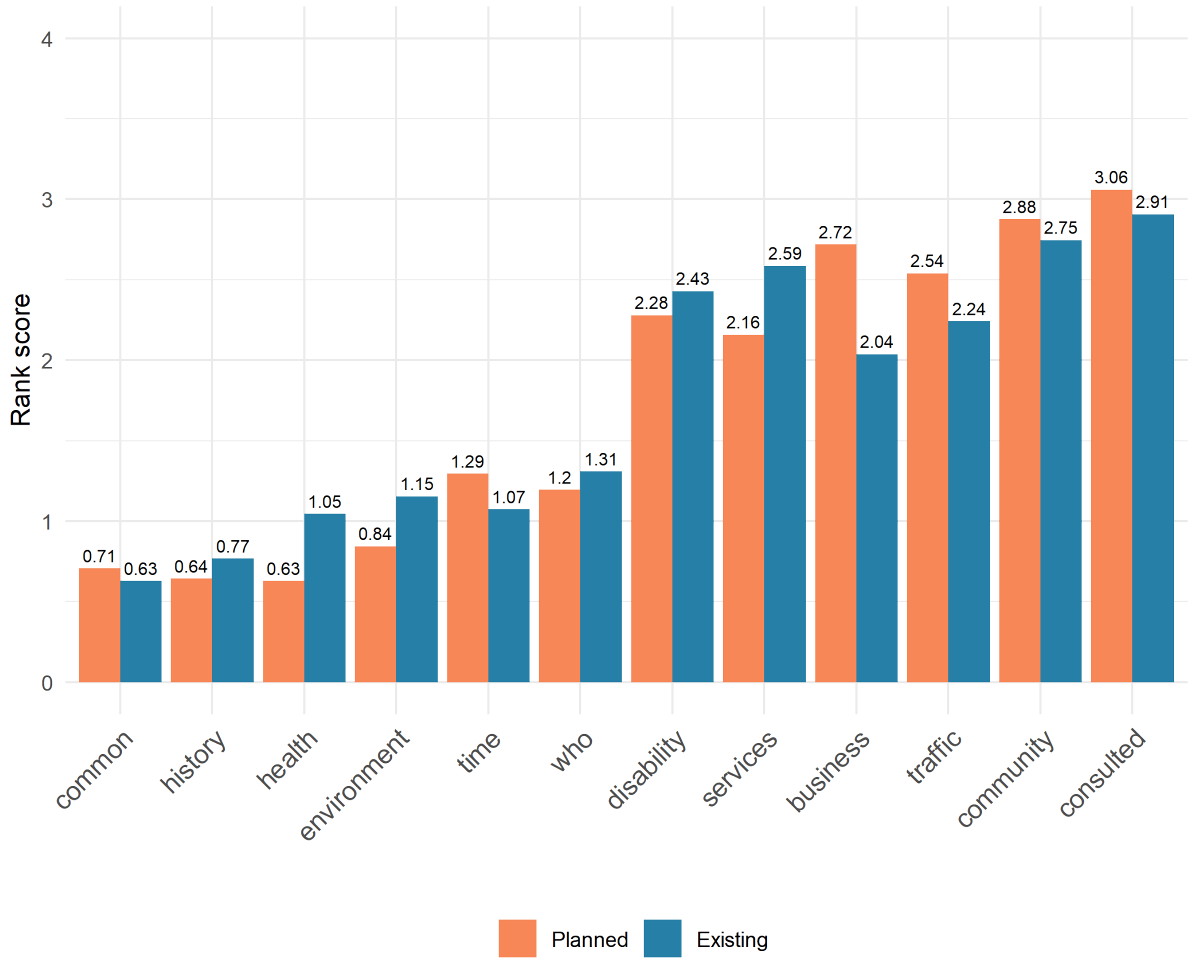

Figure 5. Differences in average rank score (0 = not selected, 6 = ranked top) given for each topic.

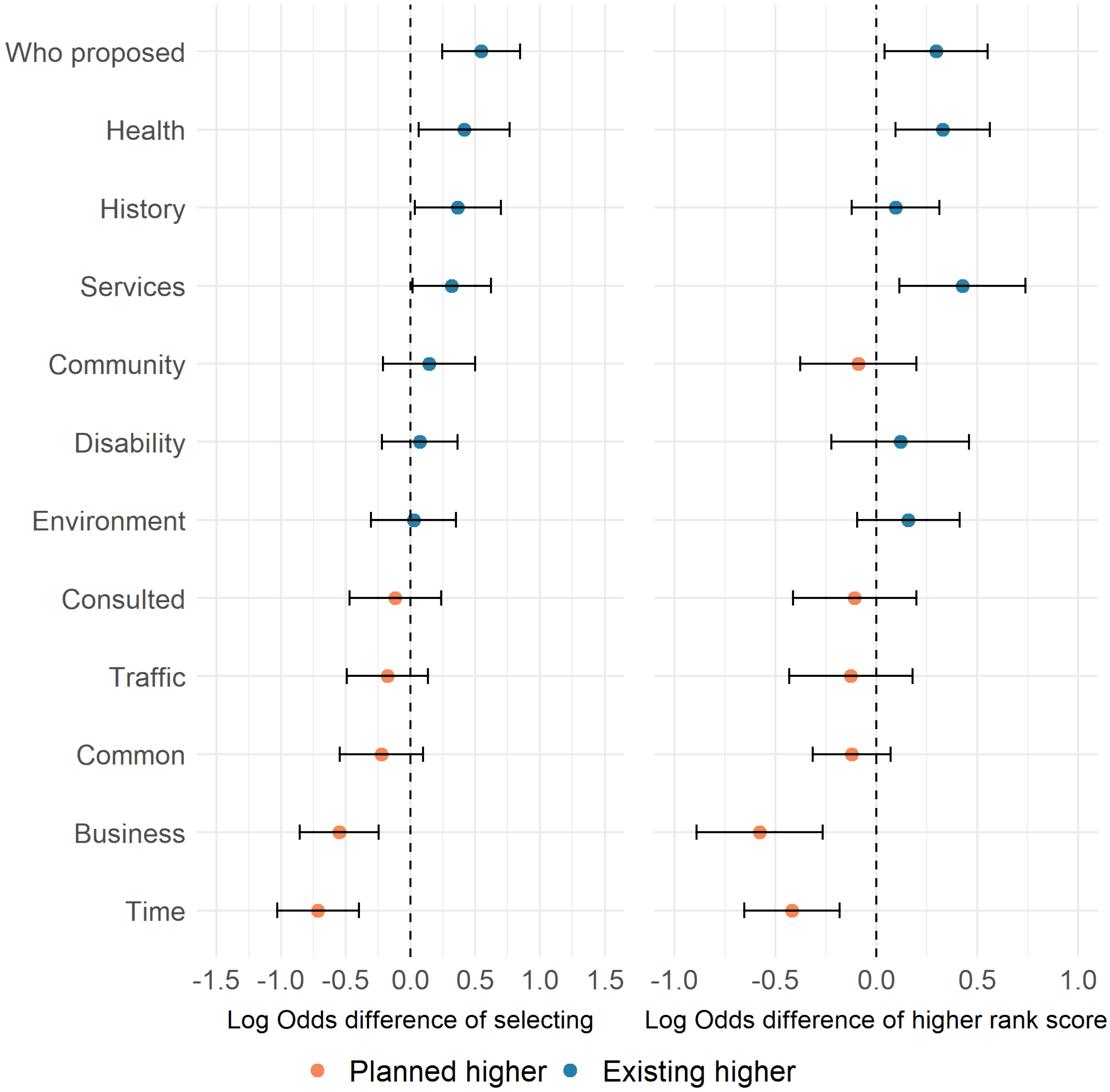

Figure 6. Differences in likelihood of selecting each topic (left) and rank score given to each topic (right) for the conditions.

Note: Plots depict coefficients from logistic regression models predicting likelihood of selecting each topic by condition (left) and ordered logistic regression models predicting rank score given to each topic (right). Error bars represent 95% CI. Models control for socio-democratic variables. See Table S3 and S4 for full models.

Evaluation change

After being invited to read about the three topics they ranked highest, participants evaluated the layout a second time. On average, ratings increased, but the increase was significantly larger in the planned condition than the existing condition ($b = 0.37$, 95% $CI = [0.21, 0.54]$, $SE = 0.08$, $t = 4.41$, $p < .001$, Figure 7, Table S7[9], Figure S2 for pooled distribution). For example, 40% in the planned condition increased ratings compared to 23% in the existing condition (Figure 8; 48% vs 33% when initial ratings of 1 and 7 are excluded, Figure S3). The higher ratings after learning additional detail again suggest that participants were not simply looking to justify their initial evaluations. Reading more detail about the plan may instead have reduced uncertainty and instilled reassurance.

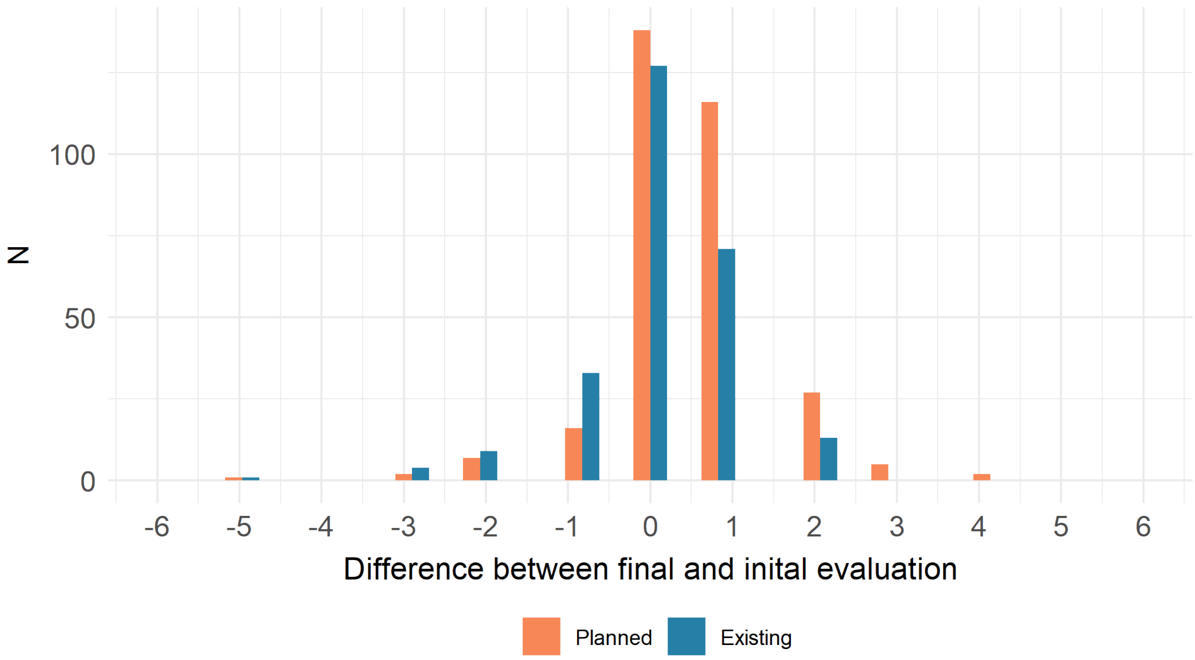

Figure 7. Evaluation change between the conditions.

Note: Figure excludes those who gave 1 or 7 for initial evaluation as they were not able to decrease or increase their score respectively.

[9] Model controls for socio-demographic covariates and excludes those that gave 1 or 7 for initial evaluation. See Table S8 for ordered logistic regressions on final evaluation predicted by initial evaluations. Proportional odds assumptions were satisfied for models restricted to 2-6 on initial evaluation, suggesting that changing from 2-3 is the same as 5-6 for these specifications, for example.

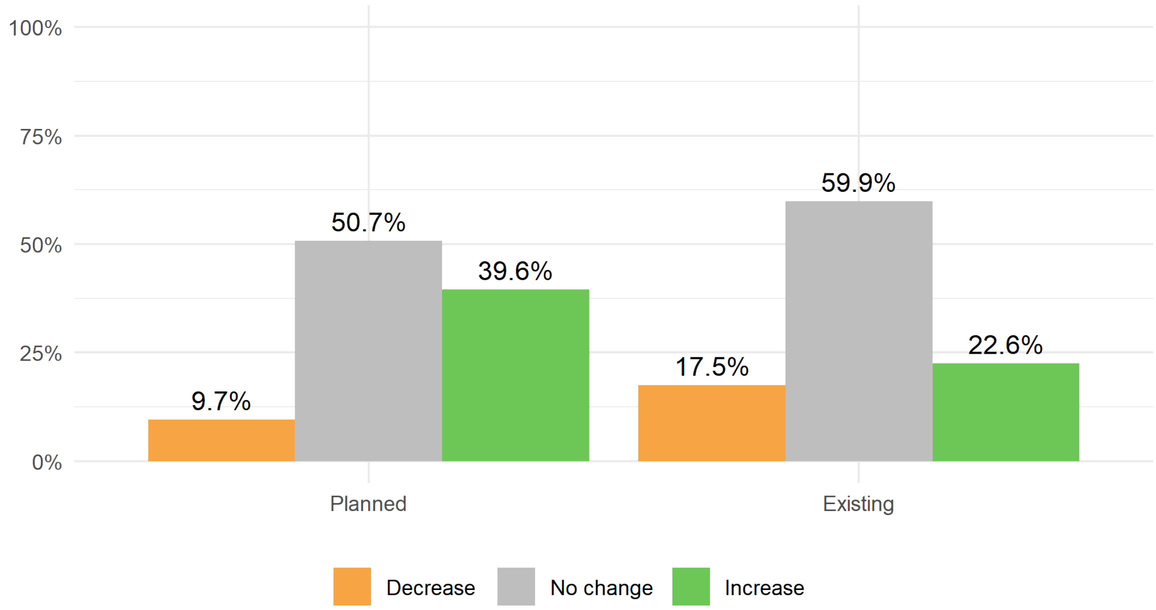

Figure 8. Proportion decreasing, not changing, and increasing their final evaluation compared to initial evaluation by condition.

Reading topics and final evaluations

Participants had the option to read about the three topics they had ranked highest. The top-rated topic was read 78% of the time, the second rated topic was read 77% of the time, and the third highest was read 74% of the time. Approximately 20% of the sample did not read any of the three topics (n = 163). We looked at the association between reading the different topics and final evaluations. We found that reading about the environment, b = 0.26, 95% CI = [0.07, 0.46], p < .01; services, b = 0.15, 95% CI = [0.01, 0.29], p < .05; community opinions, b = 0.34, 95% CI = [0.20, 0.47], p < .001; and whether the layout was common, b = 0.48, 95% CI = [0.19, 0.77], p< .01, was positively associated with final evaluation, whereas reading about who proposed the layout was negatively associated with final evaluation, b = -0.22, 95% CI = [-0.42, -0.03], p < .05, Figure 9 (left), Model 1, Table S5. The results remained when excluding participants who read none of their chosen topics (n = 163), except that the negative association with reading who proposed the layout no longer was significant, b = -0.15, 95% CI = [-0.40, 0.11], NS, Model 2, Table S5, Figure 9 (right),

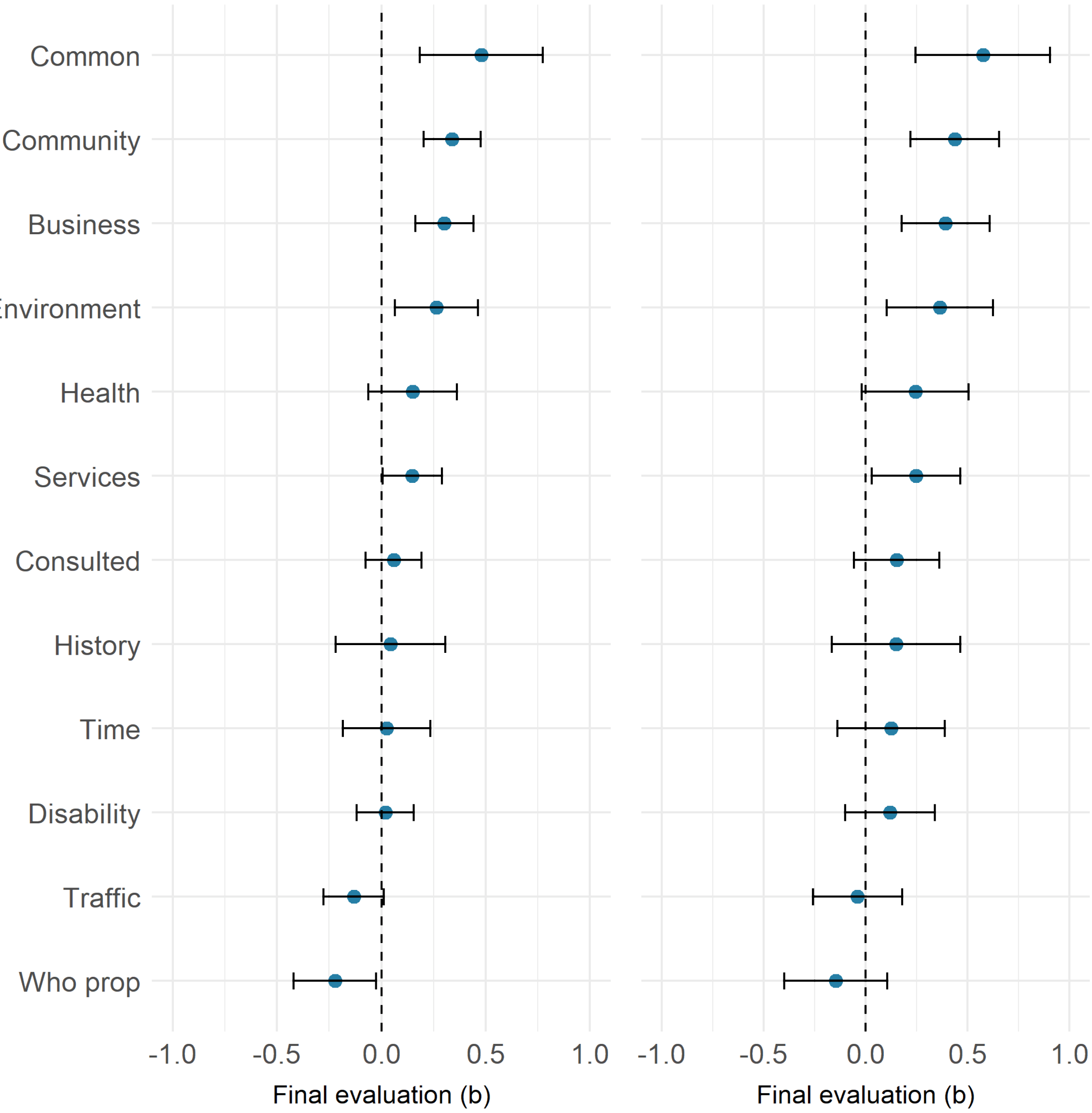

Figure 9. Associations with topics read and final evaluation for the full sample (left), and excluding 163 participants who read none of the topics (right).

Note: Points depict unstandardised beta coefficients from linear regression models predicting final evaluations by topic read, controlling for initial evaluation and socio-demographics. Error bars represent 95% CI. See Table S5 for full models.

We also looked specifically at how reading the topics affected final evaluations for the planned conditions (Figure 10). Reading about whether the layout was common, community opinion, and effects on services, business and the environment improved final evaluations.

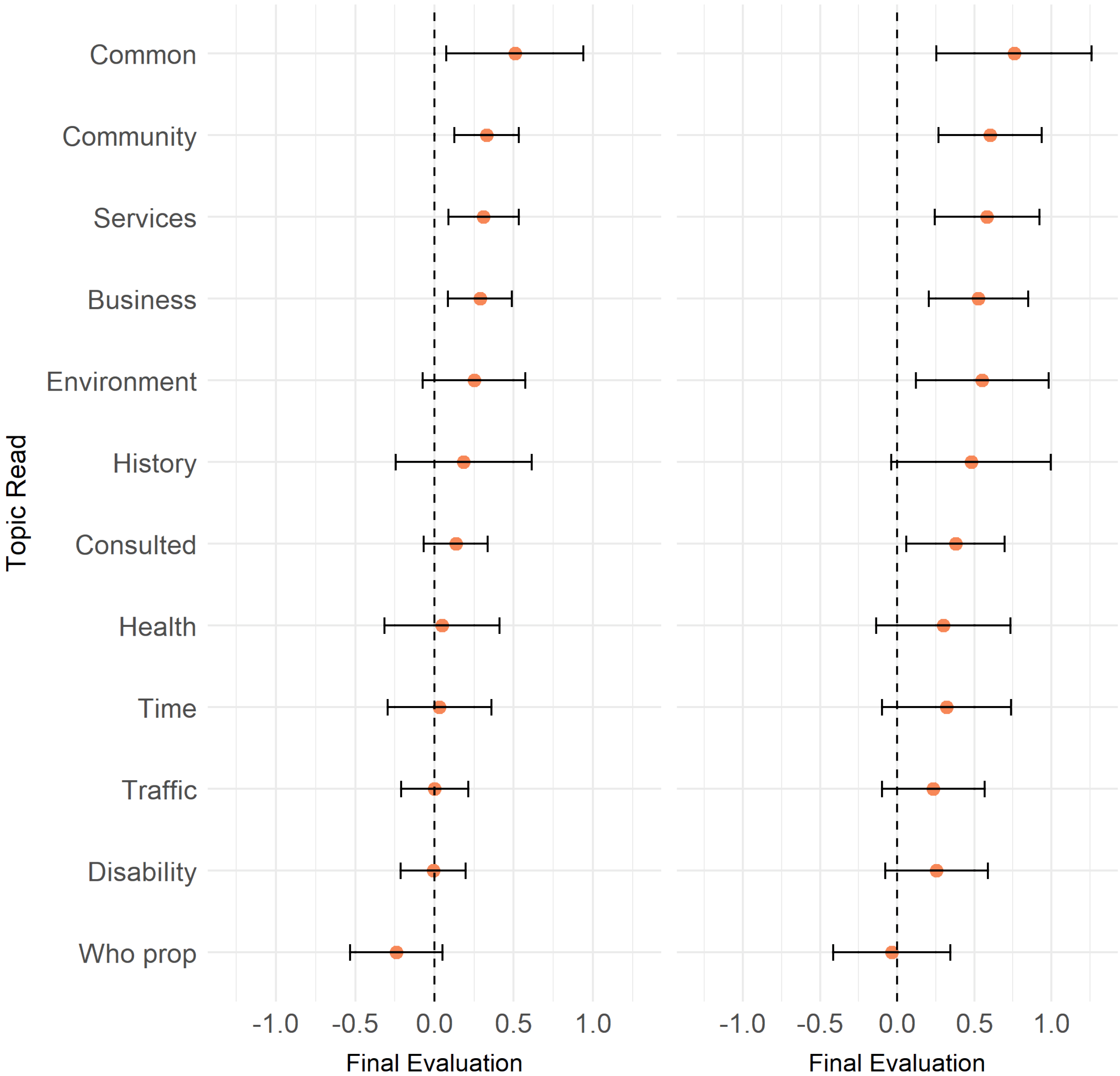

Figure 10. Associations with topics read and final evaluation for the planned condition. Full sample (left), and excluding 92 participants who read none of the topics (right).

Note: Points depict unstandardised beta coefficients from linear regression models predicting final evaluations by topic read in the planned condition, controlling for initial evaluation and socio-demographics. Error bars represent 95% CI. See Model 1a and Model 1b, Table S6 for full models.

Discussion

Public support is essential to achieve the transition toward more sustainable societies necessary to reduce car dependency and reach climate mitigation goals. Our results demonstrate how large SQB is as a barrier to change. We measured the effect of SQB on the popularity of town layouts designed to facilitate walking and cycling, comparing it with holding a vested interest (i.e., being a motorist or cyclist). SQB was the dominant factor.

Given this, it becomes essential to understand what drives SQB. Additional findings from our study provide novel insights and raise potential solutions.

The differences observed between conditions in what information participants sought suggest that SQB is embedded in the very psychological process of opinion formation. Participants were not simply seeking information to back up their first impression, because the differences remained when controlling for initial ratings. Rather, the pattern appears consistent with Query Theory: when evaluating the layout as a plan, people initially asked a different internal question. As if asking "What could go wrong here?", they looked for potential negatives, such as impacts on businesses and construction time. By contrast, those evaluating the existing layout were more inclined to look also for positives, as if asking "What are the pros and cons of this?". From this perspective, SQB acts like an inbuilt defence against the "law of unintended consequences" (Merton, 1936), as people instinctively interrogate purposive actions differently from mere evaluation of the relevant options.

One promising implication of this analysis stems from empirical work on Query Theory, which suggests that query order can be manipulated to negate the endowment effect (Johnson et al., 2007). Thus, a potential avenue for future research is to try to nullify SQB by explicitly asking people to first consider positive aspects of a plan, or negatives with the current system.

Ratings of the planned layout, on average, improved when participants encountered more information, especially in the planned condition. One pathway through which learning more information may lead to more positive evaluations is through uncertainty reduction. In this case, SQB may have manifested as participants initially looking for negatives but, having received reassurance on these, becoming more balanced in the pros and cons they considered. Future studies could examine the role of immediate reassurance in evaluating plans and how this links to individual uncertainty (or ambiguity) aversion.

The present study did not contain a measure of uncertainty aversion, but did record general measures of Resistance to Change and Loss Aversion. While both constructs were significantly associated with participants' ratings, these associations were consistent across conditions and hence not the source of the main SQB effect. This raises a broader question of whether studies that report relationships between these (or similar) measures and unwillingness to change are explaining drivers of SQB or drivers of general dislike (e.g., Li et al., 2016, Putra et al., 2022). SQB is not opposition toward specific changes, it is differential opposition when change is proposed compared to when it is already in place. This helps to explain the initially counterintuitive finding that people higher on the loss aversion scale were, in both conditions, more in favour of the layout to encourage active travel. It may be that the implied losses of continuing to prioritise cars outweighed any losses associated with the town layout. Of course, these findings assume the validity of the psychological scales that we employed. Future work might verify whether support for active travel initiatives is positively linked with behavioural measures of loss aversion.

Finally, the simple fact that community opinions and consultation processes emerged as the most sought-after information should not be overlooked. Social norms and fairness concerns are important for public attitudes toward climate policy (Alló & Loureiro, 2014; Bergquist et al., 2022). Policymakers can make conscious efforts to communicate these aspects to affected communities, for example by gathering and sharing public opinions of a policy. As well as responding to community concerns, this can avoid misconceptions of when authorities are acting for or against local interests.

With this paper we hope to draw attention to SQB as an underappreciated factor that can make active travel policy difficult to enact. Future research should seek to replicate these findings and test their generalisability to other countries and policy areas. Given the scale and speed of change required to fight climate change, it is important to investigate ways to mitigate biased thinking and enable constructive debates about how we can achieve change.

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Supplementary Materials

Tables

Table S1. OLS models on Initial evaluation of the layout between the conditions.

	Model 1	Model 2	Model 3
	OLS	OLS Exc. attention check	Ordered Logistic
	b [95% CI]	*b* [95% CI]	Log Odds [95% CI]
Intercept	4.75*** [4.31, 5.20]	4.67*** [4.19, 5.14]	
Existing	0.78*** [0.56, 1.01]	0.86*** [0.62, 1.10]	0.87*** [0.61, 1.12]
Male	-0.15 [-0.38, 0.08]	-0.11 [-0.36, 0.14]	-0.16 [-0.41, 0.10]
Age	0.003 [-0.004, 0.01]	0.004 [-0.005, 0.01]	0.005 [-0.003, 0.01]
Rural	-0.15 [-0.40, 0.10]	-0.18 [-0.45, 0.08]	-0.16 [-0.43, 0.11]
Drives	-0.38** [-0.65, -0.11]	-0.41** [-0.70, -0.12]	-0.43** [-0.73, -0.13]
Cycles	0.49*** [0.25, 0.73]	0.54*** [0.28, 0.80]	0.54*** [0.27, 0.80]
N	800	677	800

Note: ***p<.001, **p<.01, *p<.05, Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never.

Table S2. OLS models on Initial evaluation of the layout between the conditions, using the four category transport variables.

	b [95% CI]
Intercept	4.82*** [4.37, 5.27]
Existing	0.79*** [0.56, 1.01]
Male	-0.12 [-0.36, 0.11]
Age	0.004 [-0.004, 0.01]
Rural	-0.08 [-0.33, 0.17]
Driving Frequency (ref: Never)	
Rarely	-0.47 [-1.05, 0.10]
Occasionally	-0.10 [-0.48, 0.28]
Regularly	-0.62*** [-0.92, -0.31]
Cycling Frequency (ref: Never)	
Cycles Rarely	0.46** [0.15, 0.77]
Cycles Occasionally	0.55** [0.20, 0.91]
Cycles Regularly	0.38 [-0.08, 0.84]
N	800

Note: ***p<.001, **p<.01, *p<.05,

Table S3. Logistic regression models on likelihood of selecting each topic by condition.

Topic	Intercept	Existing	First eval	Male	Age	Rural	Drives	Cycles
Environment	-1.96*** [-2.79, -1.13]	0.02 [-0.31, 0.35]	0.26*** [0.14, 0.37]	0.26 [-0.07, 0.59]	-0.01 [-0.02, 0.003]	0.16 [-0.19, 0.52]	-0.43* [-0.80, -0.06]	0.38* [0.04, 0.72]
Health	-2.06*** [-2.97, -1.16]	0.41* [0.06, 0.77]	0.30*** [0.18, 0.43]	0.19 [-0.16, 0.54]	-0.01 [-0.02, 0.001]	-0.36 [-0.75, 0.04]	-0.72*** [-1.10, -0.34]	0.25 [-0.11, 0.62]
Business	1.23** [0.49, 1.97]	-0.55*** [-0.85, -0.25]	-0.18*** [-0.27, -0.08]	0.36* [0.05, 0.66]	0.002 [-0.01, 0.01]	0.12 [-0.20, 0.45]	0.26 [-0.09, 0.61]	-0.09 [-0.41, 0.23]
Traffic	1.78*** [1.00, 2.55]	-0.18 [-0.49, 0.13]	-0.20*** [-0.30, -0.10]	-0.26 [-0.57, 0.06]	-0.01 [-0.02, 0.001]	0.19 [-0.15, 0.53]	0.84*** [0.49, 1.19]	-0.21 [-0.53, 0.12]
Services	0.89* [0.17, 1.61]	0.32* [0.02, 0.62]	-0.07 [-0.16, 0.03]	-0.24 [-0.54, 0.06]	0.002 [-0.01, 0.01]	-0.35* [-0.67, -0.03]	0.09 [-0.26, 0.44]	-0.09 [-0.41, 0.22]
Disability	-0.53 [-1.22, 0.16]	0.07 [-0.22, 0.36]	0.03 [-0.06, 0.11]	-0.23 [-0.52, 0.06]	0.02*** [0.01, 0.03]	0.16 [-0.16, 0.47]	-0.18 [-0.52, 0.17]	-0.15 [-0.46, 0.16]
Community	2.13*** [1.24, 3.02]	0.14 [-0.21, 0.50]	-0.20*** [-0.31, -0.08]	0.02 [-0.33, 0.38]	0.003 [-0.01, 0.01]	0.36 [-0.03, 0.76]	-0.05 [-0.46, 0.36]	-0.20 [-0.57, 0.16]
Who proposed	0.80* [0.09, 1.50]	0.55*** [0.25, 0.84]	-0.28*** [-0.37, -0.19]	0.12 [-0.18, 0.41]	0.005 [-0.005, 0.01]	-0.02 [-0.33, 0.30]	-0.13 [-0.47, 0.22]	0.05 [-0.26, 0.37]

Common	-1.49*** [-2.28, -0.71]	-0.22 [-0.55, 0.10]	0.14** [0.04, 0.25]	-0.14 [-0.46, 0.18]	-0.005 [-0.02, 0.01]	0.07 [-0.27, 0.42]	0.12 [-0.26, 0.50]	0.28 [-0.05, 0.62]
History	-1.64*** [-2.45, -0.83]	0.37* [0.03, 0.70]	0.11* [0.01, 0.22]	-0.09 [-0.42, 0.24]	0.001 [-0.01, 0.01]	-0.08 [-0.44, 0.28]	-0.15 [-0.53, 0.23]	-0.21 [-0.57, 0.14]
Consulted	1.23** [0.37, 2.09]	-0.12 [-0.47, 0.23]	-0.16** [-0.27, -0.04]	0.01 [-0.34, 0.36]	0.02*** [0.01, 0.03]	-0.17 [-0.55, 0.21]	0.21 [-0.19, 0.61]	-0.56** [-0.92, -0.20]
Time	-0.95* [-1.70, -0.21]	-0.71*** [-1.03, -0.40]	0.34*** [0.24, 0.44]	0.11 [-0.20, 0.42]	-0.02*** [-0.03, -0.01]	-0.10 [-0.43, 0.23]	0.02 [-0.34, 0.38]	0.47** [0.15, 0.78]

Note: Log Odds and [95% CI] displayed. ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. All models run on 798 observations due to errors with the software resulting in missing data for two participants.

Table S4. Ordered Logistic Regressions of rank score given to each topic by condition.

Topic	Existing	First eval	Male	Age	Rural	Drives	Cycles	*N*
Environment	0.10 [-0.22, 0.42]	0.27*** [0.17, 0.38]	0.29 [-0.03, 0.61]	-0.01 [-0.02, 0.002]	0.17 [-0.18, 0.51]	-0.47* [-0.83, -0.11]	0.42* [0.09, 0.75]	798
Health	0.46** [0.12, 0.81]	0.28*** [0.16, 0.40]	0.10 [-0.24, 0.44]	-0.01 [-0.02, 0.001]	-0.31 [-0.70, 0.08]	-0.76*** [-1.13, -0.39]	0.30 [-0.05, 0.66]	798
Business	-0.49*** [-0.75, -0.23]	-0.13** [-0.20, -0.05]	0.27* [0.01, 0.53]	0.01 [-0.003, 0.01]	0.08 [-0.19, 0.35]	0.08 [-0.23, 0.38]	-0.09 [-0.36, 0.19]	798

Traffic	-0.12 [-0.37, 0.14]	-0.18*** [-0.26, -0.11]	-0.18 [-0.44, 0.08]	-0.01** [-0.02, -0.004]	0.14 [-0.13, 0.42]	0.81*** [0.50, 1.12]	-0.19 [-0.47, 0.08]	796
Services	0.35** [0.09, 0.61]	-0.01 [-0.08, 0.07]	-0.21 [-0.46, 0.05]	-0.002 [-0.01, 0.01]	-0.23 [-0.50, 0.04]	0.05 [-0.24, 0.35]	-0.13 [-0.40, 0.14]	796
Disability	0.10 [-0.16, 0.36]	0.02 [-0.06, 0.10]	-0.26 [-0.52, 0.01]	0.02*** [0.01, 0.02]	0.17 [-0.11, 0.45]	-0.21 [-0.52, 0.10]	-0.10 [-0.38, 0.17]	796
Community	-0.08 [-0.33, 0.17]	-0.05 [-0.12, 0.03]	-0.10 [-0.36, 0.15]	0.01 [-0.0002, 0.02]	0.40** [0.13, 0.67]	-0.08 [-0.38, 0.21]	-0.05 [-0.32, 0.22]	798
Who prop	0.43** [0.15, 0.71]	-0.28*** [-0.36, -0.20]	0.22 [-0.05, 0.49]	0.01 [-0.004, 0.01]	-0.13 [-0.42, 0.16]	-0.13 [-0.45, 0.19]	0.05 [-0.24, 0.34]	798
Common	-0.23 [-0.55, 0.08]	0.13** [0.03, 0.23]	-0.13 [-0.44, 0.18]	-0.01 [-0.02, 0.004]	0.04 [-0.30, 0.37]	0.12 [-0.25, 0.49]	0.30 [-0.03, 0.62]	798
History	0.31 [-0.02, 0.64]	0.10 [-0.01, 0.20]	-0.07 [-0.40, 0.26]	-0.0004 [-0.01, 0.01]	-0.08 [-0.43, 0.27]	-0.12 [-0.49, 0.25]	-0.17 [-0.52, 0.18]	796
Consulted	-0.12 [-0.37, 0.14]	-0.06 [-0.13, 0.01]	-0.04 [-0.30, 0.21]	0.02*** [0.01, 0.02]	-0.14 [-0.40, 0.13]	0.19 [-0.11, 0.48]	-0.22 [-0.49, 0.06]	796
Time	-0.67*** [-0.96, -0.38]	0.36*** [0.26, 0.46]	0.13 [-0.16, 0.42]	-0.03*** [-0.04, -0.02]	-0.08 [-0.39, 0.23]	0.06 [-0.27, 0.39]	0.49** [0.20, 0.78]	796

Note: Log Odds and [95% CI] displayed. ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. Models run on 798 due to errors with the software resulting in missing data for two participants. In addition, two participants had missing data for ranks given to some topics due to software errors leading to 796 observations.

Table S5. OLS models on associations between topics read and final evaluations.

	Model 1 Full sample *b* [95% CI]	Model 2 Robust model *b* [95% CI]
Intercept	1.12*** [0.78, 1.46]	0.93** [0.33, 1.52]
First evaluation	0.79*** [0.75, 0.83]	0.77*** [0.73, 0.82]
Male	-0.04 [-0.16, 0.09]	0.02 [-0.12, 0.16]
Age	-0.002 [-0.01, 0.003]	-0.002 [-0.01, 0.003]
Rural	0.02 [-0.11, 0.16]	0.01 [-0.14, 0.16]
Drives	-0.02 [-0.17, 0.13]	-0.03 [-0.20, 0.13]
Cycles	-0.03 [-0.16, 0.10]	-0.03 [-0.18, 0.11]
Environment	0.26** [0.07, 0.46]	0.36** [0.10, 0.62]
Health	0.15 [-0.06, 0.36]	0.24 [-0.02, 0.51]
Business	0.30*** [0.16, 0.44]	0.39*** [0.18, 0.61]
Traffic	-0.13 [-0.28, 0.01]	-0.04 [-0.26, 0.18]
Services	0.15* [0.01, 0.29]	0.25* [0.03, 0.46]
Disability	0.02 [-0.12, 0.16]	0.12 [-0.10, 0.34]
Community	0.34*** [0.20, 0.47]	0.44*** [0.22, 0.65]

Who prop	-0.22* [-0.42, -0.03]	-0.15 [-0.40, 0.11]
Common	0.48** [0.19, 0.77]	0.58*** [0.25, 0.91]
History	0.04 [-0.22, 0.31]	0.15 [-0.16, 0.47]
Consulted	0.06 [-0.08, 0.19]	0.15 [-0.06, 0.36]
Time	0.03 [-0.18, 0.23]	0.13 [-0.14, 0.39]
N	798	635

Note: ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. Robust model excludes participants who read none of the topics.

Table S6. OLS models on associations between topics read and final evaluations for each condition.

	Full sample		Robust models	
	Model 1a	Model 2a	Model 1b	Model 2b
	Planned	Existing	Planned	Existing
	b [95% CI]	b [95% CI]	b [95% CI]	b [95% CI]
Intercept	1.33*** [0.84, 1.81]	0.70** [0.21, 1.20]	0.67 [-0.22, 1.57]	0.84* [0.03, 1.64]
First eval	0.79*** [0.74, 0.85]	0.82*** [0.76, 0.88]	0.75*** [0.69, 0.82]	0.83*** [0.77, 0.89]
Male	-0.004 [-0.19, 0.18]	-0.07 [-0.25, 0.10]	0.14 [-0.07, 0.35]	-0.09 [-0.27, 0.10]
Age	-0.004 [-0.01, 0.002]	0.001 [-0.004, 0.01]	-0.004 [-0.01, 0.003]	0.001 [-0.01, 0.01]
Rural	-0.06 [-0.26, 0.15]	0.07 [-0.11, 0.25]	-0.05 [-0.29, 0.18]	0.01 [-0.18, 0.21]
Drives	-0.08 [-0.30, 0.14]	0.07 [-0.13, 0.27]	-0.07 [-0.32, 0.18]	0.03 [-0.19, 0.24]
Cycles	-0.10 [-0.30, 0.10]	0.02 [-0.17, 0.20]	-0.12 [-0.34, 0.11]	-0.004 [-0.20, 0.19]

Environment	0.25 [-0.07, 0.57]	0.28* [0.03, 0.52]	0.55* [0.12, 0.98]	0.24 [-0.07, 0.56]
Health	0.05 [-0.31, 0.41]	0.23 [-0.02, 0.49]	0.30 [-0.13, 0.73]	0.19 [-0.13, 0.51]
Business	0.29** [0.09, 0.49]	0.29** [0.10, 0.49]	0.53** [0.20, 0.85]	0.26 [-0.03, 0.54]
Traffic	0.001 [-0.21, 0.21]	-0.22* [-0.42, -0.02]	0.23 [-0.10, 0.56]	-0.25 [-0.54, 0.03]
Services	0.31** [0.09, 0.53]	0.05 [-0.13, 0.24]	0.58*** [0.24, 0.92]	0.02 [-0.26, 0.30]
Disability	-0.01 [-0.21, 0.20]	0.02 [-0.17, 0.20]	0.26 [-0.08, 0.59]	-0.01 [-0.30, 0.28]
Community	0.33** [0.13, 0.53]	0.33*** [0.14, 0.51]	0.60*** [0.27, 0.94]	0.30* [0.02, 0.58]
Who prop	-0.24 [-0.53, 0.05]	-0.16 [-0.43, 0.11]	-0.04 [-0.41, 0.34]	-0.19 [-0.52, 0.15]
Common	0.51* [0.08, 0.94]	0.43* [0.03, 0.83]	0.76** [0.26, 1.26]	0.39 [-0.04, 0.82]
History	0.18 [-0.24, 0.61]	-0.02 [-0.35, 0.30]	0.48 [-0.04, 0.99]	-0.07 [-0.45, 0.32]
Consulted	0.13 [-0.07, 0.33]	-0.02 [-0.20, 0.15]	0.38* [0.06, 0.70]	-0.06 [-0.33, 0.22]
Time	0.03 [-0.30, 0.36]	-0.01 [-0.27, 0.26]	0.32 [-0.10, 0.74]	-0.05 [-0.37, 0.28]
N	404	394	312	323

Note: ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. Robust model excludes participants who read none of their chosen topics.

Table S7. OLS Models on evaluation change by condition, excluding those giving 1 or 7 for their initial evaluation.

	Model 1	Model 2
	b [95% CI]	*b* [95% CI]
Intercept	0.11 [-0.01, 0.23]	0.19 [-0.14, 0.52]
Planned	0.37*** [0.21, 0.54]	0.37*** [0.21, 0.54]
Male		-0.03 [-0.20, 0.14]

Age		-0.002 [-0.01, 0.004]
Rural		-0.003 [-0.18, 0.17]
Drives		0.05 [-0.15, 0.24]
Cycles		-0.03 [-0.21, 0.14]
N	572	572

Note: ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. Model excludes participants who gave 1 or 7 for their initial evaluation.

Table S8. Ordered Logistic Regressions on final evaluation by condition.

	Full *Log Odds [95% CI]*	Reduced *Log Odds [95% CI]*	Full *Log Odds [95% CI]*	Reduced *Log Odds [95% CI]*

Planned	0.41** [0.13, 0.68]	0.55*** [0.23, 0.86]	0.40** [0.12, 0.67]	0.54*** [0.22, 0.85]
First eval	1.76*** [1.61, 1.91]	1.62*** [1.44, 1.81]	1.76*** [1.62, 1.91]	1.62*** [1.43, 1.81]
Male			-0.07 [-0.35, 0.20]	-0.10 [-0.42, 0.21]
Age			-0.005 [-0.01, 0.004]	-0.003 [-0.01, 0.01]
Rural			0.12 [-0.18, 0.41]	0.08 [-0.25, 0.41]
Drives			-0.07 [-0.40, 0.25]	-0.005 [-0.37, 0.36]
Cycles			0.02 [-0.27, 0.31]	0.11 [-0.22, 0.43]
N	798	572	798	572
Proportional Odds met	No	Yes	No	Yes

Note: ***p<.001, **p<.01, *p<.05. Drives = regularly or occasionally versus rarely or never. Cycles = At least rarely versus never. Reduced sample models excludes participants who gave 1 or 7 for their initial evaluation.

Figures

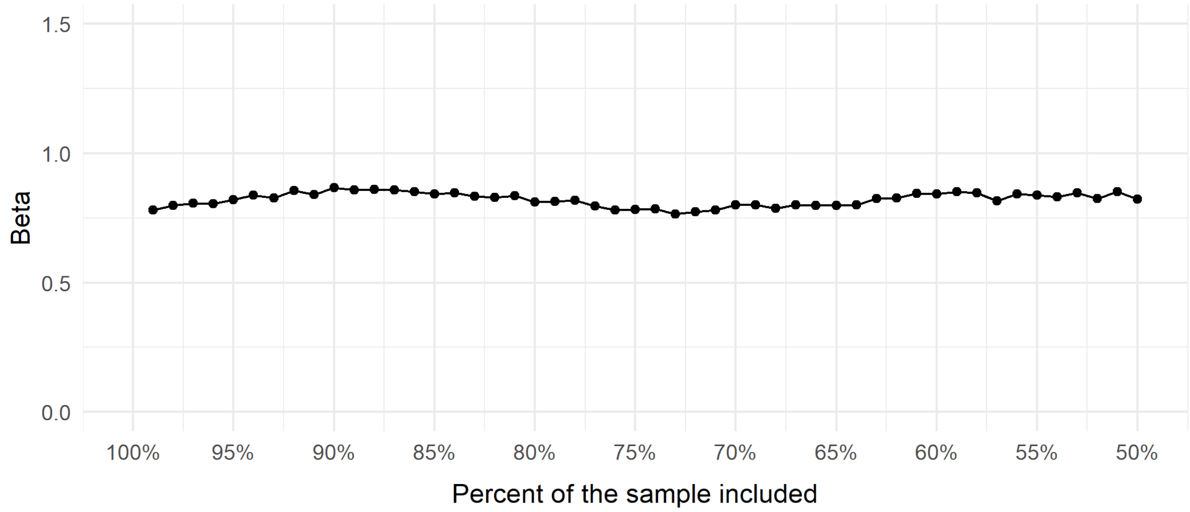

Figure S1 Beta coefficient change when modelling H1 and excluding different percentiles of the sample based on completion time.

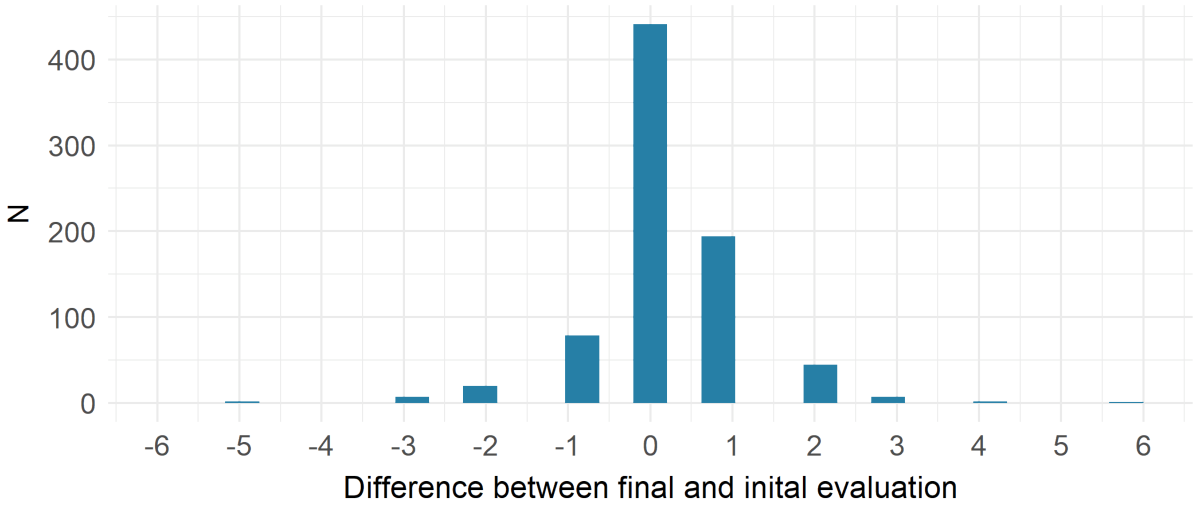

Figure S2. Distribution of evaluation difference (final – initial) for the full sample.

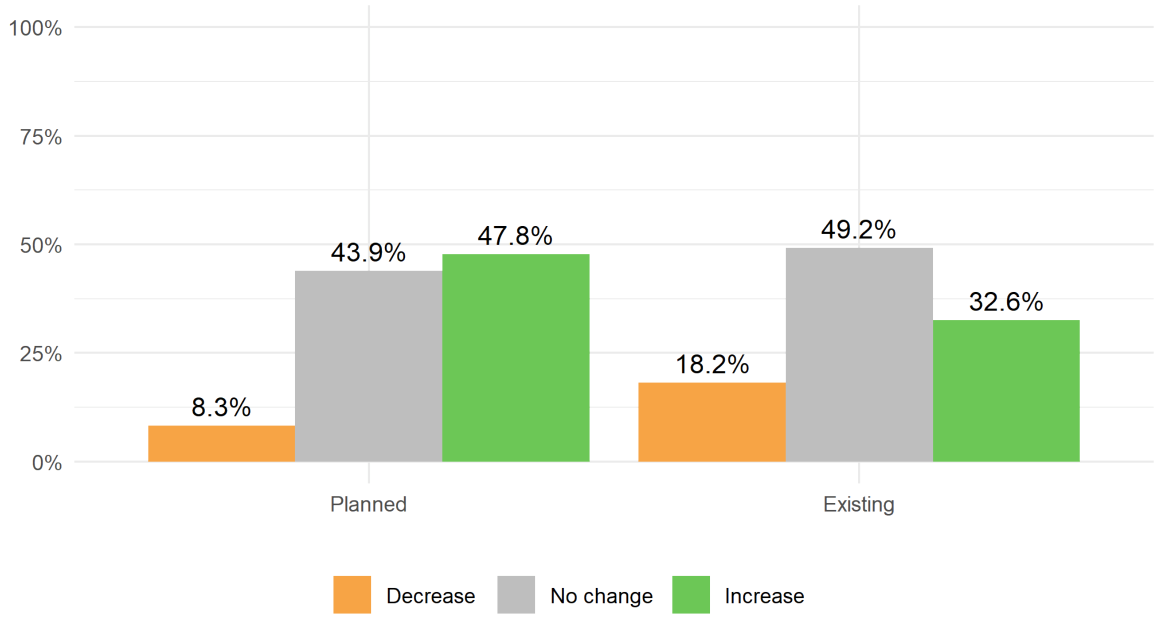

Figure S3. Proportion decreasing, not changing, and increasing their final evaluation compared to initial evaluation by condition, excluding those that initially gave a 1 or a 7.

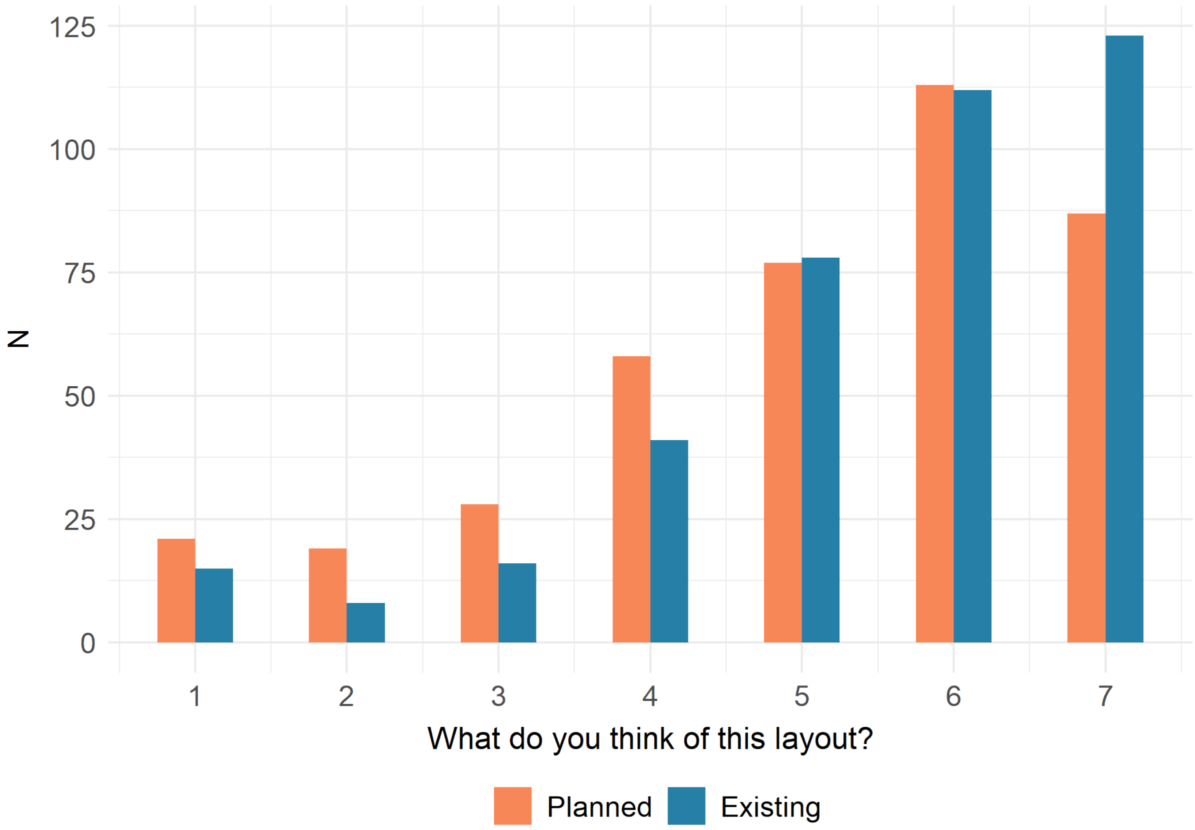

Figure S4. Distributions of final evaluations for the two conditions.

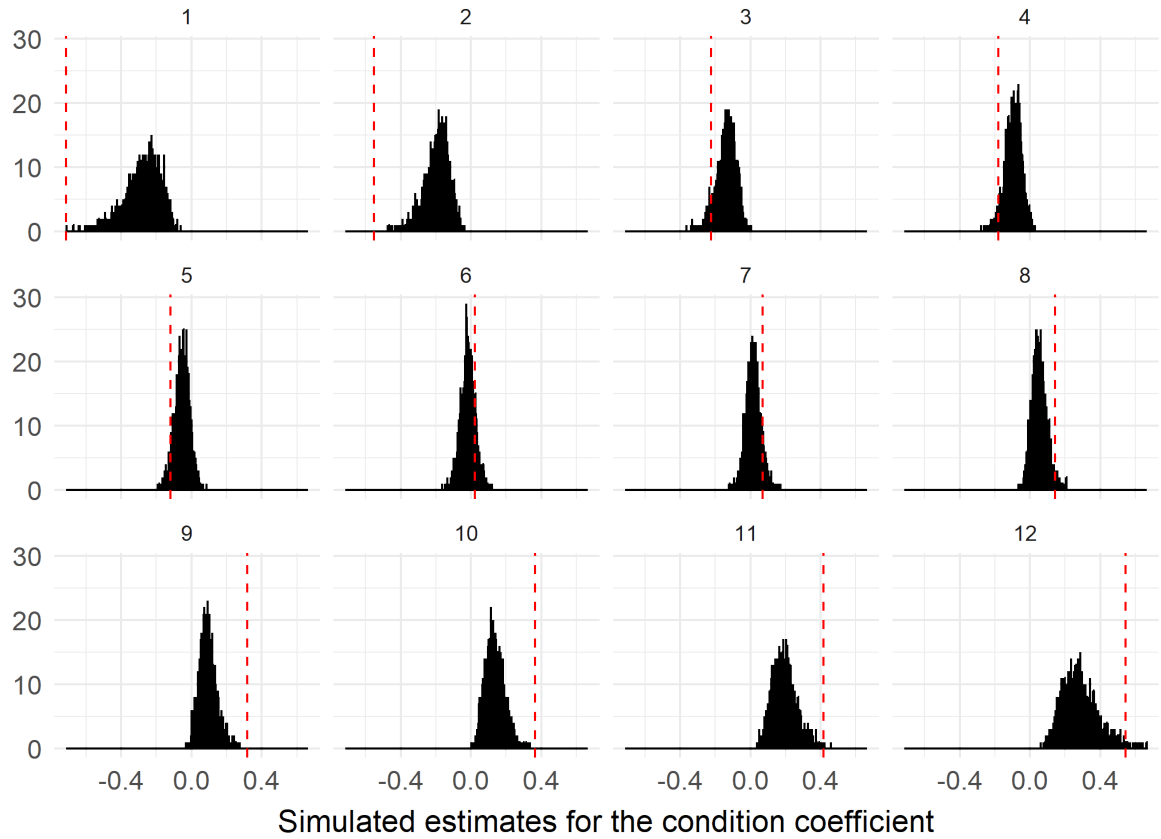

Figure S5 Distributions of simulated estimates for the Log Odds difference of topic selection between conditions using randomisation tests on 5000 iterations.

Note: For each iteration, estimates from the 12 models were categorised according to order ranging from smallest (1) to largest (12). Red lines represent observed betas from models in Table S3 ordered from smallest to largest. See https://osf.io/dsug8/ for simulation code.

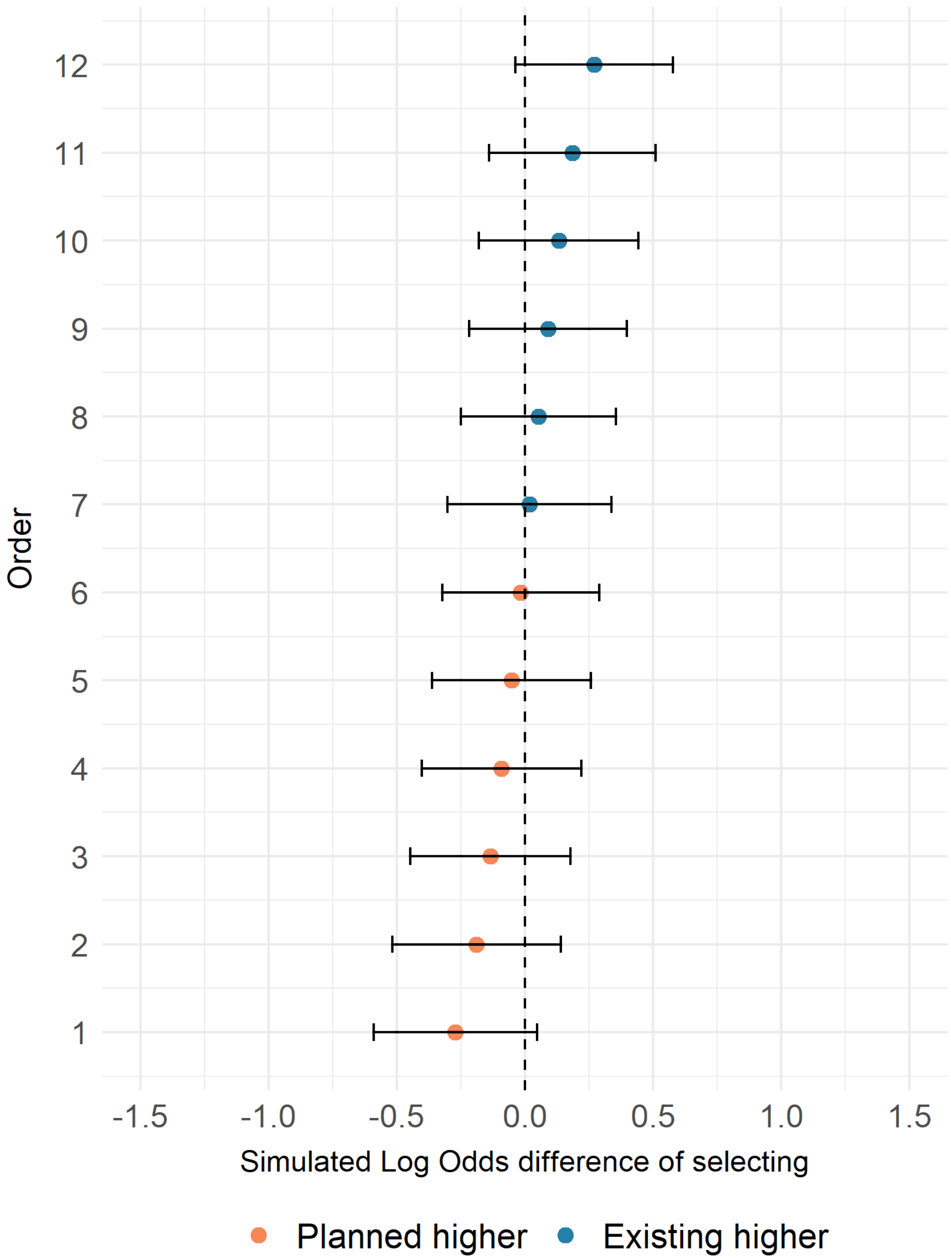

Figure S6 Simulated average estimates for the Log Odds difference of topic selection between conditions using randomisation tests on 5000 iterations.

Note: For each iteration, estimates from the 12 models were categorised according to order ranging from smallest (1) to largest (12). Points represent average estimates for the smallest (1) ranging to the largest (12) coefficients across the 5000 simulations. Error bars represent 95% CI. See https://osf.io/dsug8/ for simulation code.

Materials

Table S9. List of the 12 topics with detailed description.

Topic	Detailed Information	Mechanism
Outcomes		
What are the effects on the local environment?	This layout leads to environmental benefits such as reduced greenhouse gas emissions, less noise pollution, and less microparticles from road and tire wear.	Net benefits/ Expected outcomes
What are the effects on community health?	A more bike and walk-friendly layout can benefit community health, due to increased physical activity, less exposure to air pollution, and less risk of motor accidents.	Net benefits/ Expected outcomes
What are the effects on local businesses?	With shops and businesses being more accessible to pedestrians and cyclists, there is increased footfall. Research shows that customers who travel by foot or bike also pay more frequent visits compared to those arriving by car.	Net benefits/ Expected outcomes
What are the effects on traffic and parking?	This type of layout that makes it easier to walk or cycle. When more people cycle, there are fewer cars on the road and less risk of traffic congestion. General parking is available in car parks that are 5-10 minutes from the main street. This layout makes it harder for drivers to find parking on the main street.	Net benefits/ Expected outcomes/ Self-interest / LA
What are the effects on necessary services (e.g., emergency services, bin lorries)?	Necessary services are allowed to access pedestrian zones as needed (e.g. emergency vehicles) or during certain time slots (e.g. for deliveries).	Net benefits/ Expected outcomes
What are the effects on people	Layouts such as this with wider footpaths allow more room for those who need it, for example for people in wheelchairs. With less motor traffic,	Fairness/ Net benefit/

with disabilities and the elderly?	crossing the streets is safer for everyone. There are accessible car parking spaces close to the main street for those with relevant permits.	Expected outcomes
Processes/ context		
What does the local community think of the layout?	According to surveys, the majority of the local community supports the layout but some people are opposed to it.	Social norms
Who proposed the layout?	The layout was proposed by a team from the local council, made up of councillors, urban planners and engineers.	Trust/ Ingroup
Is this type of layout common in similar towns?	This type of layout is becoming increasingly common in towns similar to this one.	Social norms/ Fairness/ Regret/ Risk aversion
What is the history of the town's layout?	Like most towns in Ireland, the layout initially developed in a time before cars were common, when people travelled on foot, bicycle, and horseback instead. The town layout was repurposed for driving following the boom in car ownership from the 1970s on. Nowadays, some towns like this one have begun to try to make it easier for people to get around again without cars.	Stood the test of time/ Implicit trust in system/ Sunk costs
Were locals consulted about the layout?	The local community was invited to consultations before the plans were drawn up and again before planning permission was sought. Feedback was taken on board at every stage.	Fairness/ control
How long does it take to build this type of layout?	The construction time for this layout is typically 12-18 months. During this period, traffic is diverted from sections of the main street.	Transition cost

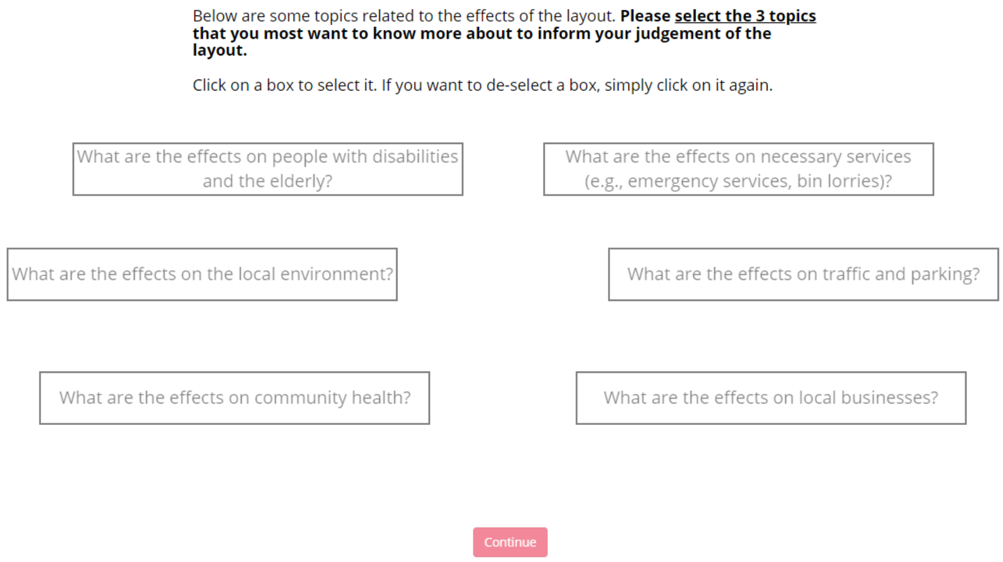

Figure S7. Page with the six outcome topics displayed to participants.