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Preaching to the converted? Socially unequal reception of a bike repair subsidy in France

Matthieu Adam [a,*], David Sayagh [b], Thomas Buhler [c]

[a] CNRS, UMR 5600 EVS, ENS de Lyon, F-69007, Lyon, France
[b] Faculty of Sports Sciences, Complexity Innovation Motor and Sports Activities (CIAMS), Paris-Saclay University, France
[c] UMR ThéMA/CNRS, Université de Franche-Comté, France

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ABSTRACT

Various pro-cycling policies emerged around the world with the outbreak of the Covid-19 pandemic. France experimented with a €50 bike repair subsidy. Our questionnaire survey (n = 7343) focuses on beneficiaries' sociological profiles. Despite its success in quantitative terms, the repair subsidy benefited more regular cyclists—who cycle daily—and people who are confident cycling in urban areas. Women were more likely to benefit than men, and people in low-income households more than those in high-income households. Because these populations are usually underrepresented among cyclists in France, the scheme may appear to have reduced inequities in cycling. However, the scheme could have reached out more to the low-income population who were largely unaware of it. This selectivity is partly explained by awareness of the subsidy, which is lower among the younger and the less educated part of the population. Our survey shows that the scheme is selective primarily because of its design. It would have been necessary to accompany it with measures specifically designed for vulnerable groups.

1. Introduction

> Coming out of lockdown is the right time to illustrate that cycling is a mode of transport in its own right […] the coming weeks hold out an opportunity for many French people, whether or not they are already cyclists, to choose cycling to get to work or to make local trips.
>
> Elisabeth Borne, French Minister of Ecological Transition and Solidarity, April 29, 2020

This excerpt is from the announcement of a national plan to facilitate cycling after the first Covid-19 lockdown in France (March 17–May 10, 2020).

In France, as elsewhere, the Covid-19 crisis put cycling at the center of public policy concerns about daily commuting (Büchel et al., 2022). During France's first lockdown, public institutions (central government and some local authorities) were quick to present the bicycle as the solution to both social distancing and congestion caused by the expected modal shift from public transport to private cars (Morio and Raimbault, 2021).

To encourage people to cycle when coming out of the first lockdown, France's Ministry of Ecological Transition introduced the *Coup de Pouce Vélo* scheme. Available from the beginning of May 2020 to the end of May 2021, this national scheme included three measures: (1) a 60%-funding of removable parking projects for public structures, (2) a free individual training to become proficient in daily urban cycling, and (3) a financial incentive for bike repairs to facilitate a modal shift towards cycling. This particular bike repair incentive (*Coup de pouce vélo réparation*) covered up to €50 of the cost of repairs (with no advance payment and no minimum purchase) by a registered agent under the scheme (independent bicycle repairers, sports stores, etc.).

As the introductory quotation makes clear, the scheme was open to all and was not designed to correct inequalities (of gender, age, or income) among cyclists. Daily commuting schemes in France with no conditions as to the income or age of beneficiaries, type of bicycle, or geographical location, and designed explicitly to encourage a modal shift towards cycling are rare indeed.

Among the many national and local pro-bike policies implemented around the world during the first 18 months of the Covid-19 crisis, the repair subsidy seems to be specific to France (Büchel et al., 2022). To our knowledge, only a few scientific articles exist on financial incentive

* Corresponding author.
E-mail addresses: matthieu.adam@ens-lyon.fr (M. Adam), david.sayagh@universite-paris-saclay.fr (D. Sayagh), thomas.buhler@univ-fcomte.fr (T. Buhler).

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schemes for bicycle repair (Garrott et al., 2023). However, a comparable "Fix Your Bike Voucher Scheme" was launched in the UK in July 2020.[1] Closed on 21 December 2021, the scheme provisioned 400,000 £50-vouchers although 500,000 vouchers were initially budgeted and available. The University of Westminster has launched a survey to evaluate the scheme but no results have yet been published.[2]

There is therefore no research on the effects (or otherwise) of an individual's social profile in respect of (1) their propensity to be informed of such incentives and (2) their willingness and capacity to actually take them up.

Research on financial incentives beyond the single example of daily cycling emphasizes the importance of the social profile of individuals (age, norms of the social group to which they belong, cultural capital) in their propensity to take up a particular type of financial incentive (Graf et al., 2021; Sproten and Schwieren, 2015). Thus, we question here the relevance of the social profile of individuals in terms of their propensity to know about and participate in the bike repair initiative. Or to put it another way: Does this policy for changing mobility behavior tend to favor certain categories of the population (and if so, which ones)?

Garrott et al. (2023) studied the effects of several types of financial incentive, including a free bicycle maintenance service and a "voucher" scheme for the purchase of walking or cycling equipment. The results indicate that making it easier (less effort) to obtain financial incentives increases their use, but that increasing the value of the incentives has no additional impact on their use. They further suggest that incentives worked by encouraging existing intentions, raising awareness of alternative modes of transport and, to a lesser extent, reducing costs. They have helped create new leisure travel behaviors, but more often than not to subsidize existing trips.

Finally, they encourage us to look at travel modes rather than physical leisure practices (insofar as utility and leisure practices tend to intertwine); to question the fairness of these schemes; and to consider the influence of contextual factors.

The purpose of this article is to document the potential social effects of such a policy: while the *Coup de pouce vélo* is presented as a universal scheme (direct subsidy without selection by income or other social parameters), we wanted to know which audiences it actually reached. The aim is to contribute to critical knowledge about city cycling, and in particular about class-based and gendered inequalities in practices, in order to help define the conditions for a socially just mobility transition.

1.1. Many types of incentive whose social effects are rarely measured

Since the 2000s, a range of incentives for daily cycling have emerged in many countries. The literature suggests that positive financial incentives can go a long way to promoting walking and cycling. These incentives include (1) "traditional" financial incentives that help with buying a bicycle (Fyhri et al., 2016) (2) providing bicycles free-of-charge (Fitch et al., 2022; Hemmingsson et al., 2009; Martin et al., 2012); (3) encouraging people to use bicycles more for their daily trips for health and economic reasons (Ciccone et al., 2021); (4) financial rewards for distances cycled (de Kruijf et al., 2018; Finkelstein et al., 2008); and (5) free training courses for adults to take up daily cycling (Mundler and Rérat, 2018).

For all of these types of incentives, the observed impacts are most often focused on the frequency of cycling (before and after) or distances traveled, or even the benefits in terms of lower pollutant emissions, congestion, and personal health (de Kruijf et al., 2018). To our knowledge, there is little research on their social effects and the potentially selective nature of such incentives. For example, although gender differences in the take-up of incentives are identified (e.g., Ciccone et al., 2021) no findings have been made or discussed in terms of gender inequalities. A rare counter example involves research on the implementation of discounted subscriptions to bike-sharing systems in the United States among populations of color and/or on low incomes (McNeil et al., 2018) where these populations are pre-identified as less likely than others to use these services. This work found that these populations, who are particularly unlikely to have relatives having used such a system, are both the most discouraged by the cost of these devices (and the fear of unexpected fees) and the least informed about the benefits they are entitled to. This raises issues of inequity, since those who do sign up are particularly likely to report that the discounted rate was very important in their decision, and they use the system as frequently as others (McNeil et al., 2018).

While there is no research on incentives to help people repair their bicycles, the literature has highlighted strong gender inequalities in bicycle mechanics skills. While men are in most countries encouraged to take ownership of their bikes mechanically by repairing or modifying them themselves, women rarely acquire these skills in the family sphere and are often excluded from bike mechanics spaces (Abord de Chatillon, 2021).

The literature linking equity and mobility has been abundant over the last two decades. It is common to distinguish horizontal equity, which refers to an equal distribution of investments, resources and service levels among all social groups, regardless of individual needs and constraints (Litman, 2018) from vertical equity, which recognizes social heterogeneity, admitting that specific groups in society do not have the same opportunities (resources, capacities, skills, access to information and services, etc.) and should therefore be provisioned differently to ensure social inclusion (Cunha and Silva, 2023a). There is a strong consensus about equity in cycling, revealing that advantaged social groups are more likely to benefit from cycling-related investments than disadvantaged segments (Cunha and Silva, 2023b).

We also can distinguish social and spatial equity. From a social perspective, vulnerable or disadvantaged populations are targeted. Social equity in transport is generally analyzed in terms of socio-demographic criteria such as income, gender, age and sometimes race. The spatial perspective differs. Rather than exploring who benefits more or less from a transport policy or project, it's a question of determining where inequalities are occurring (Lee et al., 2017).

Our results and discussion therefore focus on two main factors of social (in)equity: social inequalities in knowledge of and access to the scheme, and the way in which the gender gap in beneficiary profiles can be analyzed.

1.2. The context of the €50 bike repair incentive

The *Coup de Pouce Vélo* scheme was launched in April 2020 and first implemented on May 11, 2020, with a budget of €60 million, including €20 million for the repair subsidy. Given the massive demand (particularly for the *Coup de pouce réparation* measure we focus on here), the government decided to quadruple the repair budget (to €80 million), and to extend the scheme until March 31, 2021.

The *Coup de Pouce Vélo* scheme was validated and promoted by the French government, but it was actually designed and implemented by the *Fédération nationale des Usagers de la Bicyclette* (FUB), a federation of numerous bicycle promotion associations, that is, the main organization promoting daily cycling in France, and its partner ROZO, a private energy performance consulting firm. Moreover, the scheme was not financed by direct taxes or a proper Ministry budget, but by energy saving certificates (CEE), a market-based tool by which energy supply companies finance actions to reduce energy consumption to compensate for their pollutant emissions (Vine and Hamrin, 2008).

The scheme included three separate measures. First, *Coup de pouce réparation*, what we call the repair subsidy in this paper: a €50 subsidy to individuals to help them have their bicycles serviced. Second, a free session (per person) of training to become proficient in daily urban

[1] https://www.gov.uk/guidance/fix-your-bike-voucher-scheme-apply-for-a-voucher.

[2] https://blog.westminster.ac.uk/ata/fix-your-bike-evaluation/.

cycling, called "get back in the saddle" (*Coup de pouce remise en selle*). Third, *Coup de pouce stationnement*, the funding of 60% of removable parking projects[3] for selected institutions (local authorities, railway stations, educational institutions, social landlords). Explicitly designed to encourage a modal shift from the car, the scheme was intended to encourage people to cycle. Its three measures correspond to three essential conditions to practice cycling (Adam et al., 2022): having a bicycle in working order, being confident riding it, and a welcoming environment.

The repair subsidy was the program's flagship measure, both the most publicized and the one that benefited the most people. In all 1,707,930 bike repairs were funded, 15,044 temporary parking lots installed, and 5904 people participated in a get-back-in-the-saddle session (OpinionWay, 2021). To benefit from the repair subsidy, cyclists had to entrust their bike to a registered repairer. To do so, they were invited to connect to a web-platform listing accredited professionals,[4] but it was also possible to go directly to a repairer in the hope they were registered. The scheme was introduced at a time when France has 16.6 million adult bicycles owned and used, and 40% of them are considered to be in poor condition (Ministère de la Transition Ecologique et de la Cohésion des Territoires, 2021). The average cost of a professional repair in France was estimated at €113 (Whitwham-Philgea et al., 2021).

According to a survey of 10,000 people conducted by OpinionWay (2021) (commissioned by ROZO and FUB) in October 2020, 97% of the beneficiaries who responded to the survey were satisfied with the *Coup de pouce vélo* scheme. However, this survey places little emphasis on the social profile of the beneficiaries.

We therefore study this incentive to identify a possible effect of people's social profile on their propensity to know about and use this type of subsidy. This paper aims to discuss the social effects of these measures: Who benefited? How were they received? To what extent did they limit or alternatively amplify existing inequalities?

We conducted a national survey of 7343 respondents aged over 18 years a few months after the incentives ended. Respondents included people who had and had not taken up the repair incentive, but all of them had used a bicycle at least twice in a French city in the previous two years.

After presenting the methodology and the sample of respondents, we conduct a series of regression model analyses to understand the key (social) determinants of awareness, use, and opinion about this incentive.

2. Materials and methods

2.1. An online questionnaire

To identify the socio-spatial effects of the subsidy, we conducted a web-questionnaire survey of the potential beneficiaries (n = 7343). The questionnaire was self-administered between May and October 2021. It was addressed to any adult who had cycled at least twice during the previous two years, in order to include a variety of practices and experiences (*i.e.* not to address regular cyclists only, remembering the modal share of cycling in France is about 3%). The questionnaire was disseminated through social networks, mailshots of professionals and associations, press articles (following a press release drafted for the purpose), circulation campaigns and flyer distribution in the street during cycling events (bike fairs, exhibitions, etc.). The questionnaire was nationwide in order to get answers from cities (where the majority of regular cyclists in France live) but also from smaller towns and rural areas.

The questionnaire consisted of five main parts, using rather classical question typologies (multiple choice, binary questions, Likert scales, open questions) and concerned:

- respondents' personal experience of cycling (representations, practices) and, more broadly, with daily mobility;
- possible changes in daily mobility practices in relation to the Covid crisis;
- repair subsidy (awareness of the subsidy, take-up or not, and reasons for take-up or not);
- the social profile (gender, age, social class, occupation, income, access to a motorized or non-motorized vehicle, to a public transport pass) and geographical profile (place of residence and work, type of residence);
- a space for free expression on the topics covered by the questionnaire.

Data were analyzed using logistic regressions. These are multinomial regressions based on a step-by-step top-down selection procedure of the explanatory categories of the model. The calculations were performed on RStudio using the *JLutils* package. We reduced the number of categories by grouping certain variables. This made the regression model statistically more robust while not precluding reference to the bivariate statistics performed with all the categories to gain in analytical refinement. We also use descriptive statistics and additional comments by some of the respondents in answer to an open question (n = 1594) about any changes in their cycling habits.

2.2. Descriptive statistics

The overall sample (n = 7343) can be described with the following sociological characteristics (see Table 1).

Despite our efforts to reach a diverse audience, the sample is largely composed of upper-middle class urban dwellers and regular utility cyclists. This subject is more likely to be of interest to these people and therefore more likely to lead them to complete a self-administered questionnaire of this kind. Self-administration selects people who are comfortable with the written word and with digital tools, and therefore of a higher social class (Bandilla et al., 2003). Two factors are also a direct consequence of the mode of administration and dissemination: the age of respondents is relatively low, working people and people living in dense urban areas are largely overrepresented.

These differences do not, however, invalidate the capacity of our sample to reveal the social and geographical inequalities reflected in the take-up of this incentive. Comparing the composition of our sample with statistical data on daily cycling in France reveals that it conforms to and sometimes amplifies the usual findings. The categories of age, qualification, home district population density, and socio-occupational categories over-represented in the sample correspond systematically to those with the highest modal shares of cycling for commuting trips for work or education (Tallet, 2017). Furthermore, in terms of gender, our sample is consistent with the figures of 61.5% men and 41.5% women among those who regularly commute by bicycle (ibid.). Thus, we find a gender gap that is consistent with what studies on cycling in most low-cycling countries show (Carroll et al., 2020).

The repair subsidy studied was not subject to any longitudinal monitoring of beneficiaries by the organization financing the scheme. Only the results of a non-academic survey were circulated in an aggregated manner and without details other than gender and age for the social profiles of the beneficiaries (OpinionWay, 2021). That said, the survey results corroborate the relevance of our sample in geographical terms, since 57% of the beneficiaries live in cities of more than 100,000 inhabitants. Because of the absence of a reference population—both for the subsidy studied and for the population that cycled at least twice in the past two years in France (not to mention that studies on leisure and utility practices are often separate)—no statistica@l adjustments could be made.

The large numbers of repair subsidy recipients (n = 1786 or 24.3%)

[3] With a ceiling of 150 euros before tax per slot.
[4] www.coupdepoucevelo.fr.

Table 1
Main characteristics of the sample.

Gender	Male: 58.6% Female: 40.3% Non-binary: 1.1%
Socio-occupational categories	In employment: 84.6% Executives and higher intellectual professions: 56.1% Intermediate occupations and clerical workers: 25.1% Manual workers: 1.3% Students: 8.4% Retired: 4.6%
Degree	Master's degree or Doctorate: 64% Bachelor's degree (3 or 4 years higher education): 19.6% Technical university diploma (2 years higher education): 9.1% High school diploma (or less): 1.1%
Age	18–24 years: 9% 25–34 years: 29.6% 35–44 years: 27.6% 45–54 years: 18.4% 55–64 years: 10.7% More than 65 years: 4.6%
Areas	Lyon: 21.48% Montpellier: 11.61% Paris: 9.83% Grenoble: 5.48% Rennes: 4.89% Other locations: 35.2%
Population density of the area of residence[1]	High density (urban areas): 83.8% Intermediate density (suburban areas): 9.8% Low density (populated rural areas): 6.1% Very low density (isolated rural areas): 0.3%
Commuting mode[2]	Standard bike: 53.1% E-bike: 12.7% Car (as driver): 11.2% Car (as passenger): 1% Walking: 8.4% Public transport: 6.6%
Frequency of remote working since the outbreak of the Covid pandemic[7]	Every day or almost every day: 27.3% At least once a week: 69.6% Never: 7.11%
Subsidy take-up	Aware of repair subsidy: 84.8% Took up repair subsidy: 24.3% Percentage of people aware of the subsidy who took it up: 28.8%

[1] Respondents entered their post code. This variable is based on density indicators proposed by the French national statistics office (INSEE).
[2] Main transport mode declared for commuting since the Covid-19 outbreak.
[3] Declared frequency since the outbreak.

allowed for a quantitative analysis and logistic regressions.

3. An unevenly known and used incentive

3.1. A widely known repair subsidy, especially among older, educated, regular cyclists

Before asking respondents if they had benefited from the repair subsidy, we asked them if they were aware of it. Some 84.8% of our sample knew of it (see Table 1).

Those most likely to have heard about the repair subsidy live in densely-populated areas, are aged 55–64 years old, have spent 5 years or more in higher education, cycle frequently, feel confident on a bike (in urban areas), have increased their walking frequency, have increased their e-bike frequency, and are encouraged to cycle more for fear of being infected by the virus (see Table 2).

Conversely, those least likely to have known about the subsidy reside in sparsely-populated areas, are aged 18–24 years old, are students, never ride a bike, do not feel confident on a bike, and have an educational level of less than or equal to a high-school leaving diploma.

We also asked our respondents who were aware of the subsidy how they learnt of it. The sources are varied, but the primary ones are the traditional general media: newspapers (22%), radio (15.3%), television (10%). Word of mouth (16.1%) was also a significant source of information. This was followed by bicycle promotion associations (8.2%), specialized media (6.6%) and, to a lesser extent, local newsletters (3.7%), bicycle dealers (2.9%), or self-repair shops (2.4%).

Table 2
Logistic regression "knowledge of repair subsidy".

Characteristic	OR[1]	95% CI[1]	p-value
Age categories (years)			0.006
18–24	–	–	
25–34	1.42	1.02, 1.98	0.036
35–44	1.70	1.18, 2.44	0.004
45–54	1.68	1.14, 2.48	0.009
55–64	2.35	1.53, 3.64	<0.001
65 and +	1.74	0.66, 4.97	0.3
Type of housing			0.10
Apartment	–	–	
Single-family house	1.19	0.97, 1.47	0.10
Population density (area of residence)			<0.001
High density (urban)	–	–	
Intermediate density (suburban)	0.76	0.58, 1.00	0.048
Low density (populated and isolated rural)	0.55	0.40, 0.75	<0.001
Degree			0.072
Master's degree or Doctorate	–	–	
Bachelor's degree (3 or 4 years higher education)	0.86	0.69, 1.07	0.2
Technical university diploma (2 years higher education) or less	0.75	0.59, 0.97	0.024
Cycling use frequency			<0.001
Never	–	–	
Less than 1 day/week	1.14	0.89, 1.46	0.3
1–4 days/week	2.34	1.82, 3.00	<0.001
Every day or almost everyday	4.86	3.66, 6.49	<0.001
Socio-occupational categories			<0.001
Other active people (manual workers, clerical workers, etc.)	–	–	
Executives and higher intellectual professions	0.98	0.79, 1.21	0.8
Students	0.34	0.24, 0.49	<0.001
Unemployed	0.67	0.50, 0.91	0.011
Retired	1.63	0.58, 4.48	0.4
"I am confident on a bike"			0.030
Disagree	–	–	
Neither agree, nor disagree	1.61	1.03, 2.53	0.036
Agree	1.61	1.13, 2.27	0.007
Change in walking frequency (compared with "before Covid")			0.002
Unchanged	–	–	
Decreased	0.93	0.73, 1.18	0.5
Increased	0.73	0.61, 0.87	<0.001
Change in the frequency of use of an e-bike (compared with "before Covid")			<0.001
Unchanged	–	–	
Decreased	1.34	0.95, 1.93	0.11
Increased	1.70	1.32, 2.22	<0.001
"Fear of the virus motivates me to cycle more"			0.039
Disagree	–	–	
Neither agree, nor disagree	1.12	0.92, 1.37	0.3
Agree	1.28	1.06, 1.55	0.011

[1] OR = Odds Ratio, CI = Confidence Interval.

3.2. A subsidy that mainly benefits regular cyclists in urban centers and women

Some 24.3% of the respondents in our panel benefited from the repair subsidy, i.e. 28.8% of those who were aware of it. The statistics presented below and in Table 4 should be compared with this second number.

Table 3
Logistic regression "take-up of the repair subsidy".

Characteristic	OR[1]	95% CI[1]	p-value
Gender			<0.001
Male	–	–	
Female	1.30	1.14, 1.48	<0.001
Age categories (years)			0.2
18–24	–	–	
25–34	1.35	0.99, 1.85	0.058
35–44	1.49	1.09, 2.06	0.014
45–54	1.36	0.98, 1.91	0.071
55–64	1.22	0.84, 1.78	0.3
65 and +	1.29	0.82, 2.03	0.3
Type of housing			0.074
Apartment	–	–	
Single-family house	1.15	0.99, 1.35	0.074
Study areas			0.001
Other	–	–	
Lyon metropolitan area	1.11	0.94, 1.32	0.2
Paris metropolitan area	0.79	0.67, 0.94	0.006
Household income			0.10
More than €5000/month	–	–	
€3000–5000/month	1.05	0.89, 1.25	0.6
€1500–3000/month	1.23	1.01, 1.48	0.035
Less than €1500/month.	1.29	0.98, 1.69	0.065
Degree			0.014
Master's degree or Doctorate	–	–	
Bachelor's degree (3 or 4 years higher education)	1.20	1.01, 1.42	0.039
Technical university diploma (2 years higher education) or less	0.85	0.69, 1.05	0.13
Cycling use frequency			<0.001
Never	–	–	
Less than 1 day/week	1.37	1.03, 1.82	0.030
1–4 days/week	1.59	1.24, 2.04	<0.001
Every day or almost everyday	2.36	1.85, 3.04	<0.001
"I am confident on a bike in urban areas"			<0.001
Disagree	–	–	
Neither agree, nor disagree	1.34	0.71, 2.63	0.4
Agree	2.50	1.48, 4.54	0.001
"Exercising motivates me to cycle more"			0.069
Disagree	–	–	
Neither agree, nor disagree	1.69	0.98, 3.01	0.066
Agree	1.75	1.08, 2.95	0.028

[1] OR = Odds Ratio, CI = Confidence Interval.

All things being equal, the people most likely to have benefited from the subsidy are regular cyclists who say they are "confident on a bike in urban areas" (see Table 3). This is the case for 36.4% of people who say they cycle every day or almost every day and 27% of those who cycle 3 or 4 days a week, but much less so for occasional cyclists (less than 1 day/week 22.8%), and even less for very occasional cyclists (respondents that said they "never" cycle: 18.9%).

The subsidy benefited more to of those respondents who said they were completely "confident cycling in urban areas" (29.8%) rather than those who said they were not confident (10.6%). Recipients of this aid were also more likely to report that the idea of exercising encouraged them to cycle more. As for socio-economic factors, people who are particularly likely to have benefited from the repair subsidy are more often women (31.2% versus 27.4% of men) and people with 3 or 4 years of higher education (32.4%). People on low incomes (less than €1500/month for the household) or moderate incomes (€1500–3000/month) are slightly more likely to have benefited (31% and 30.6% respectively) than those on high incomes (more than €5000/month: 27%). Geographically, living in the Lyon metropolitan area has a rather favorable influence (29%), as opposed to living in the Paris metropolitan area (25.2%). This may be partly because inhabitants of the Ile-de-France Region generally encountered more difficulties in finding a bicycle repairer during the period under study than in other French cities (OpinionWay, 2021).

We asked respondents who were aware of the subsidy but did not take it up why they did not take them up. Some 67.7% of respondents felt that they did not need the repair; 32.6% answered that the subsidy was too low; 27.3% of respondents felt that the system was too complex. Respondents not confident cycling were more likely to find the system complex: this is the case for 31.8% of them.

In addition, it should be noted that many regular cyclists who have their bikes regularly serviced by a professional discovered the scheme was available when they took their bikes to their usual bike shop. Some of them, most of them among the wealthiest, claim to have benefited from the scheme with scruples, believing that they did not really need financial assistance.

> It was the store that services our bikes that offered it; they said "Take advantage of it", so initially, I almost had some qualms, and then I said to myself: "Well, why not?", so yes, I took advantage of it. It was a good offer. I saved €50, but I would have had my bike serviced anyway. (Man, retired executive, 66 years old).

The beneficiaries of the subsidy judge it very positively: 96% found it helpful. However, quite a few found the amount of aid insufficient for proper maintenance: 4.9% said they "strongly disagreed" and 25.5% "disagreed" with the statement that "the subsidy was sufficient to service their bike" (while 13% answered "neither agree nor disagree"). The effect on practices seems to be moderate: only 31.2% declared that the subsidy encouraged them to cycle more.

3.3. Key determinants that acquire more meaning when combined with gender and income

Regarding the profiles that took up the repair subsidy, the highest odds ratios are for cycling frequency and cycling confidence. The effects of these two main explanatory variables can be refined when combined with two social variables: gender and income. Comparing these different variables reveals what conditioned the take-up of the repair subsidy.

Generally women feel less confident (in urban areas) on a bicycle than men (95.1% of men said they were confident, compared to 84.5% of women), which corroborates the results of the OpinionWay survey (2021). But we go further showing that people who feel confident on a bicycle took up the subsidy more than others, including women. Women who feel confident on a bike are particularly likely to have taken up the subsidy: 33.5% of those who feel confident took up the subsidy versus only 9.5% of those not confident (see Table 4). Similarly, while women cycle less than men, the people who cycle most are those who benefit the most from the subsidy, including women.

Similarly, while it is observed that the richest people are particularly likely to be confident cycling (in urban areas) we find paradoxically that the poorest are overrepresented among the beneficiaries. Some 93.3% of those whose household income exceeds €5000/month say they are confident on a bicycle, against 86.8% of those whose household income is less than €1500/month. The poor who are confident cycling are more likely to have benefited from the subsidy than the poor who are not confident. Among the panel members of a household on an income of less than €1500€/month, 32.7% of those who feel confident cycling are beneficiaries of the subsidy compared to 6.9% of those who do not feel confident.

Also, awareness of the measure varies with income level and frequency of practice. While they take it up more than other categories when they are aware of it, the less affluent respondents are the least likely to be aware of the repair subsidy: below €1500/month, 27.3% of individuals are unaware, 14.2% between €1500 and €3000/month, 13% between €3000 and €5000/month, and 8.8% above €5000/month.

Income and cycling frequency go together: the lowest incomes are those for whom the effect of the practice is strongest on take-up or not (see Table 5). Conversely, being poor and not cycling has a very negative impact on awareness of the scheme: when the household income is less

Table 4
Take-up by income and cycling frequency (among respondents aware of the scheme).

Cycling use frequency	Men	Women	Confident women cyclists	Non-confident women cyclists	All respondents
Never	17.4%	20.5%	24.7%	5.8%	18.9%
Less than 1 day/week	20.3%	26.1%	30.4%	9.1%	22.9%
1 to 4 days/week	24.7%	31.4%	32.7%	14.2%	27%
Every day or almost everyday	34.4%	41%	40.7%	20%	36.4%
All respondents	27.4%	31.2%	33.5%	9.5%	28.8%

Table 5
Take-up by income and cycling fluency (among respondents aware of the scheme).

"You know how to ride a bike well enough to be able to ride it safely in the city"	Household income				All respondents
	Less than €1500/ month	€1500 –€3000/ month	€3000–€5000/ month	More than €5000/ month	
Disagree\1	6.9%	15.6%	8.5%	14.3%	10.5%
Neither agree nor disagree\1	19.4%	15.8%	16.8%	26%	18.3%
Agree\1	32.7%	31.7%	29.3%	27.3%	29.8%
All answers\1	31%	30.6%	28.1%	27%	28.8%

than €1500/month and the respondent is a very occasional cyclist, they have respectively 42.6% and 43.8% chance of not knowing about the repair subsidy (as against 13.2% of the poorest who are daily cyclists).

It may seem paradoxical that the less well-off, though less likely to know about the subsidy and more likely to find it too complex, are particularly likely to have taken it up, especially as this population seems particularly concerned by having given up on the idea of benefiting from the subsidy for fear of being "ripped off". These paradoxes suggest that, with targeted communication aimed at the underprivileged, they would have benefited far more.

In addition to these aspects, as several respondents testified, owning only one bike, which is more common among the less affluent and among women, deterred some daily cyclists from taking advantage of the subsidy for fear of having their bike tied up when they would have needed it.

> I use it on a daily basis. I tried to work out when I could drop it off, when I wouldn't need the bike too badly, and when I could pick it up again. Because I already had to have my bike repaired a few years back, and I was without it for a week […] I didn't find a time when I would need my bike less. (Woman, 40 years old, clerical worker)

In summary, although women and the least affluent categories took up the subsidy more, these populations are no exception to the overall observation: the more you cycle and the more confident you are on a bicycle, the more likely you are to be aware of and to have benefited from the repair subsidy.

4. Discussion

4.1. Universal measures selective by design and unequal access to information

The incentive analyzed here has been successful in quantitative terms, since the number of beneficiaries has largely exceeded the initial expectations of the organizations providing it (FUB and Rozo). The *Coup de pouce vélo* scheme was launched for an expected 300,000 beneficiaries for the repair subsidy and finally reached many more since 1.7 million bicycles were thus repaired (OpinionWay, 2021). As Abord de Chatillon (2022) has shown, the French make usually relatively little use of professional repairers. While their bikes are generally in poorer condition than those of Australians, only 30% of them go to a professional if they have a mechanical problem, compared with 50% of Australians. In this sense, we can say that the measure is interesting in that it sends people to repairers who play a decisive role in the socialization of bike maintenance are socializing agents for maintenance and secondarily for of cyclist mobility.

The first finding of our survey is that, regardless of any social variable, the more confident one feels on a bicycle and the more regularly one rides a bicycle, the more likely one is to have been aware of the repair subsidy and to have taken advantage of it. The title of our paper, *Preaching to the converted* sums up the fact that a policy that was meant to encourage newcomers to take up cycling actually benefitted experienced cyclists most.

In an age of disposability and hyper-productivism (Denis and Pontille, 2022) the approach can be considered as positive insofar as it encourages maintenance rather than acquisition. In the same way, we need to be able to envisage that the effectiveness of a transport policy can be based on maintaining existing sustainable transport practices (Bruno and Nikolaeva, 2020). In this sense, the fact that the scheme benefits mainly habitual cyclists can be interpreted positively.

Conversely, although this was not one of the explicit objectives of the scheme, we show that the repair subsidy reached two groups that are generally in a minority when it comes to cycling: women and the least affluent respondents. Thus, while the scheme was not designed for this purpose, it may have helped to reduce inequalities among cyclists by reaching populations that were particularly in need.

This first analysis leads to a discussion of the effect of policy construction on the social profiles of beneficiaries. The subsidy analyzed here was initially intended to be accessible to everyone since: (1) no income or other social criteria were required, and (2) it was designed to provide a direct subsidy to individuals at the time of payment (and not a tax credit, for example). It was aimed a priori at the same public according to a "universal" consideration: any cyclist or potential cyclist. However, there is a strong selection of beneficiaries, with the primary criterion of being familiar with cycling. It seems that two factors are at issue: the design of the measures and the way they are communicated to the potential target groups.

The only condition for benefiting from the repair subsidy was to have a bicycle needing servicing or repair and to go through a registered repairer. The first consequence of this owner-directed policy is that it is quite logical that regular cyclists felt concerned by the information on the repair subsidy and then more often report knowing about it and having benefited from it. The requirement to own a bicycle and to go through an accredited repairer also explains why beneficiaries are more likely to live in dense urban areas, where bicycle use is more widespread even if ownership is lower (Ministère de la Transition Ecologique et de la Cohésion des Territoires, 2021) and where it is easier to find a registered repairer. The fact that this policy was implemented by FUB, a bicycle promotion association, is probably not trivial here. This certainly allowed the association to increase its visibility in the French press during this period on cycling-related topics (Buhler et al., 2023). But in the meantime, it probably had an effect on the scheme's audience.

Regular cyclists are the "traditional" audiences of this type of association. They are therefore the ones it is most likely to be able to reach through its communication and action methods.

In addition to being an owner, a little administrative work was expected of the applicants, who were invited to go online to (1) identify an accredited repairer (2) go to the *Coup de pouce* platform to pre-register, (3) fill in a form with personal information and information about the bike to be serviced, (4) check the confirmation email and the supporting documents to be provided on the day of the repair (telephone number, proof of identity), (5) optionally book the appointment with the accredited repairer via the platform. This may have put off the least determined potential beneficiaries, but also the populations with least cultural capital (Granjon, 2022).

The second consequence of this owner-directed policy could have come from the fact that bicycle ownership is socially selective in France: 32% of French households own at least one bicycle (in 2019), this is the case for 41% of households with an income per consumption unit of more than €2500/month, but for only 21% when it is less than €1000 (Ministère de la Transition Ecologique et de la Cohésion des Territoires, 2021). This could have led to the fact that the rich benefit more than the less well-off, but this is not what our results show. This suggests that the "free without advance" nature of the scheme is effective in limiting inequalities in practice between the less and the more well-off populations.

The information channels used to publicize the subsidy also seem to have an effect. Even before the desire, the need, or the material possibility of having recourse to it, knowing about the existence of aid is a minimal prerequisite. It appears that certain categories of population are much less aware of subsidy packages than others: the lower one is on the social scale and the younger one is, the less one knows about them. There is therefore an effect of social selection through information and, without targeted campaigns aimed at these categories, they remain partly unaware of the subsidies.

That is why the case of low-income households is particularly compelling. Our results show that they benefited "in spite of everything": in spite of the fact that they were less aware of the scheme than the better-off, that they were less likely to own their own bicycle, and that they are generally less at ease with the administrative procedures. This argues for financial policies of this type, but also for better-designed communication strategies, as the relative failure to disseminate them suggests that the potential for reducing inequality is greater.

A French survey showed that cost was the main obstacle to having one's bike repaired by a professional mechanic (ADEME and Harris Interactive, 2020). As Abord de Chatillon (2022) shows, in France, both the general condition and the quality of maintenance (poor people's bikes often get "tricky repairs") decrease with cyclists' income. Poor people's bikes are therefore the most likely to need repair by a professional mechanic. The scheme is therefore egalitarian, since it compensates for unequal access to bicycle repairers. However, the fact that the €50 fee is well below the average cost of a repair (€113 (Whitwham-Philgea et al., 2021)) only partially removes the financial barrier to access. Especially as the unknown price is also a reason for non-maintenance among low-income people (Abord de Chatillon, 2022), a barrier that the scheme does not really address.

The effects of policy design (type of bicycle, material possibility of benefiting from the subsidy) and of access to information are probably cumulative. Our results show that, unless they target the most vulnerable populations, financial incentives are socially selective. This calls for better publicized, simplified and, above all, more equitable schemes according to income and geographical area.

The finding that people in low-income households (below €1500/month) are particularly likely to be unaware of the repair subsidy to which they are entitled corroborates the findings of McNeil et al. (2018). Offering a certain amount of money is not enough to ensure that those who need it most benefit from the policies. The information has to come in and there has to be a need or opportunity to spend it. People only apply for the repair subsidy if they own a bike and feel confident enough to ride it safely.

Finally, these findings as well as the observation that the most affluent have sometimes benefited from the scheme without having sought it out (and sometimes even with scruples) suggest a problem of bicycle inequity (McNeil et al., 2018; Rebolloso McCullough et al., 2019). Our findings perhaps encourage income-related subsidies with the aim of improving vertical equity (Litman, 2018). But the problem isn't that simple. Given that individuals from the underprivileged classes are particularly likely to be discouraged by administrative procedures (Granjon, 2022), it seems that the relative simplicity of applying (no need to put together a file justifying low income levels, etc.) has greatly facilitated their use of the scheme. Taking this into account, while recognizing social heterogeneity, and the fact that these populations do not have the same opportunities and should therefore be provisioned differently, the option of granting financial assistance from the outset to people receiving minimum social benefits could perhaps be considered.

4.2. *Women and the repair subsidy: toward reduced gender inequalities?*

While cycling is more of a male activity in France, as in most countries of the global north (Carroll et al., 2020), women benefited more than men from the repair subsidy, despite the fact that men and women were equally aware of it. The measure may therefore have led to a slight compensation of this gender inequality in practice.

Various factors may explain this result. First, women are more likely to have cycled more as a result of the health crisis: 39.3% report an increase in utilitarian cycling, compared with 30.8% of men, and 34% compared with 31.2% for leisure cycling (Adam et al., 2023). It is therefore likely more women than men felt the need to have their bikes serviced and seized the opportunity. This is confirmed by the fact that women are slightly more likely (32.4%) than men (30.4%) to report that the subsidy led them to cycle more. This result is corroborated by the OpinionWay survey (OpinionWay, 2021), which also shows that many more men (5%) than women (1%) took advantage of the measure to resell a repaired, unused bicycle. The fact that women are more concerned than men by bicycle safety issues – as shown by Aldred et al. (2017) with regard to the choice of protected traffic lanes or Abord de Chatillon (2022) with regard to their repair concerns – suggests that women may have seen the subsidy as an opportunity to improve the safety of their bicycles.

> [The repair subsidy] is great, especially for women. It's a liberation. (Woman, 53 years old, clerical worker).

Second, this greater uptake of the repair subsidy is partly a consequence of prior inequalities in bicycle use and maintenance. First, women's bikes are more likely to need maintenance or repair. Women have older bikes: in France "61.5% [of women] have a bike that is more than 5 years old compared to 53.4% of men, and 34.8% of men have a bike that is between 2 and 5 years old (27.8% of women)" (Observatoire des mobilités actives, 2013: 8). Moreover, according to a survey in Lyon, men's bicycles are in better condition on average than women's, a finding related to the fact that in the context of sports or leisure activities, men are significantly more likely to own a bicycle in a very good or excellent state-of-repair (50% of men, 32% of women) (Abord de Chatillon, 2021). Finally, women report being less skilled at repairing their bikes themselves (ibid.). Our survey corroborates this work. Female respondents generally consider their bicycles to be in poor repair: 83.7% of men consider their bicycles to be in good or very good repair, 78% of women. Above all, women say they are less competent to carry out a simple repair: 19.1% of women say they are very competent to carry out a simple repair (puncture, brake adjustment), against 64.8% of men. As a comment, some men said they did not want to take up the subsidy because they repair their bikes themselves.

> I did not take up the bike repair subsidy because I do my own repairs and the parts-only purchase option was not possible. (Man, 41 years old, clerical worker).

It seems, therefore, that the repair subsidy may have compensated somewhat for the inequalities in access to cycling between men and women. Providing financial support for bicycle repair and maintenance allows women to cycle in better material conditions. This type of policy would then be likely to make women—temporarily—less dependent on their own skills or those of their companions. However, in the long term, this type of scheme does not allow them to make up for their lack of mechanical skills and therefore contributes to their dependence on others in this area. Finally, the subsidy does not help to counteract the reproduction of the gender order, and it may well reinforce gender roles and stereotypes that women are not skilled in mechanics.

Comments emphasizing the emancipatory nature of the scheme were mostly made by middle-class or working-class women. The same is true of comments calling for an increase in the amount of financial assistance and/or for a permanent, free repair scheme for people in precarious situations.

> It would be necessary to provide free bicycle repairs for people in precarious situations or in financial difficulty. (Woman, age not given, clerical worker)

> [It would be necessary to] perpetuate the bike repair subsidy and increase the coverage amount (€70 to €100). (Woman, 25 years old, clerical worker)

In the open-ended questions of the questionnaire, other types of criticism of the scheme mainly concerned women with a high level of educational capital. Some regret that the scheme has not enabled them to learn how to carry out certain repairs themselves. Others deplore the fact that the scheme contributes to the uberization of the bicycle repair market.

> Before the 50€ subsidy, I had my bike repaired by a work-integration association. But it wasn't eligible for the *Coup de pouce*. So I went through a mobile repair service, which probably doesn't respect the rights of its workers. I regret that this scheme is contributing to the Uberization of the profession. (Woman, 35 years old, executive)

These data strongly suggest the relevance of encouraging financial aids for self-repair while facilitating women's access to workshops, not least to avoid participating in the reproduction of skills inequalities between women and men.

More generally, our findings echo those of Aldred et al. (2016): increasing the number of cyclists is not enough to create an inclusive cycling culture, which implies precisely targeting policies at currently under-represented groups.

5. Conclusion

Our survey shows that the repair subsidy introduced in France during the first 18 months of the Covid-19 pandemic was unevenly known and used.

While the measure might be considered egalitarian in the sense that it treated everyone equally, its equitability is questionable in the sense that it does not recognize social heterogeneity, admitting that specific groups in society do not have the same opportunities (resources, skills, access to information, etc.) and should therefore be provisioned differently (Litman, 2018; Cunha et Silva, 2023a). Besides, the poorest were less aware of it, while the richest sometimes benefited from it without seeking it (and sometimes even with scruples).

The repair subsidy, which was fairly well known, was familiar to regular and experienced cyclists, benefited regular cyclists in urban centers more than episodic cyclists on the outskirts, and was more often taken up by women than men. The challenge is undoubtedly to be able to reach even more people who are less concerned by cycling, so that the promotion of cycling is not systematically aimed at the same social categories and people who are already users.

In order to design a more (mainly vertical) equitable policy, it is necessary to be able to reach all populations by setting up specific information campaigns aimed at more fragile audiences or those cut off from traditional information channels. Examples of bicycle schools that target women from working-class neighborhoods (Mundler and Rérat, 2018) or policies aimed at migrant populations (Welsch, 2022), as well as community initiatives in certain racialized and working-class neighborhoods (Sheller, 2018) prove that this can bear fruit and that there is no determinism condemning cycling policies to address only the most privileged populations. With this in mind, and given our findings on use from low-income households, there is a case for even more effective financial policies to reduce inequality. The fact that cycling fluency is a determining factor also implies that, prior to this type of subsidy, it is necessary to develop policies that address this aspect. This includes the development of lifelong cycling training. Certain associations run bicycle schools for children and adults, but participation remains relatively low, as shown by the moderate success of the *Coup de pouce vélo* bicycle training program.

Finally, our survey raises questions about the limitations of the indicator "to benefit or not to benefit from a financial incentive" for judging changes in socio-spatial inequalities. It is difficult to conclude that a greater proportion of beneficiaries in a disadvantaged category automatically leads to a reduction in inequalities. In terms of gender, for example, reducing inequalities between men and women in respect of cycling in no way implies reducing inequalities between men and women in general. While women benefitted statistically more from the repair subsidy, it is likely that it helped to reproduce the distribution of traditional gender roles and even reinforced the gender gap by helping to legitimize the fact that women are naturally less able to repair their bicycles.

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Authors' contributions

The authors confirm their contribution to the paper as follows. M. Adam, D. Sayagh, T. Buhler: Conceptualization, methodology, statistical analysis, investigation, writing-original draft preparation, writing-review, and editing.

Declarations of interest

None.

Data availability

The authors do not have permission to share data.

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