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Intensification or Diversification: Responses by Anti Health-Pass Entrepreneurs to French Government Announcements

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Abstract

We study the extent to which French entrepreneurs mobilized in an online collective action against the generalization of the health-pass policy in summer 2021. We document the dynamics of registrations on the website Animap.fr where entrepreneurs could claim they would not check the health-pass of their clients. We first note an over-representation of complementary and alternative medicine (CAM) practitioners among the mobilized people. We also suggest that professionals related to the touristic industry mobilized on the website. Second, we show that the government announcements led to an increase in the mobilization. However, they did not affect the diversity of the entrepreneurs joining the action. This lack of diversity may have restricted the pool of potential participants as well as limited the identification of the "public opinion" to the mobilization.

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1 Introduction

In July 2021, E. Macron the French *Président de la République* announced the expansion of the health-pass ("pass sanitaire") policy.[1] The document became mandatory in order to access many places such as restaurants, sports facilities, shops in large malls, or to travel between regions by the public transportation system.

While this new policy boosted the vaccination campaign, it also generated a series of protests that gathered between 150,000 and 250,000 demonstrators weekly. On top of those demonstrations, some small businesses decided not to enforce the law. As far as we know, there exist no official statistics on the number of controls and the percentage of recalcitrants. However, anecdotal evidence suggests that - while the policy was generally enforced - the health pass of clients was not always checked by professionals.[2] Few small business owners also claimed on social media or the internet that they would not enforce such a health-pass policy. In particular, the website *Animap.fr* created a directory for businesses that claimed they would not ask for the health pass of their clients. According to the website, more than 7,400 professionals registered.[3]

Who are those professionals? How did they react to E. Macron's speech? Did the speech enlarge the pool of protesters? As the vaccination against Covid-19 became a pillar of the public policies seeking to fight the pandemic, those questions are crucial. Indeed, the health-pass policy builds incentives schemes that push people to get vaccinated (people need the document to keep doing

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[1]The health-pass is a document that attests that an individual has been vaccinated against the Covid-19, that she recovered from the disease less than six months ago, or that she was tested negative against Covid-19 less than 24, 48, or 72 hours ago. In December 2021, J. Castex, the French *Prime Minister*, announced the transformation of the health-pass into a vaccine-pass: only a complete vaccination scheme will provide a valid pass.

[2]Newspaper articles (published late August) suggest that during the summer, 179,000 controls were realized by police, leading to 1,331 fees for not complying with the health pass regulation (that is 0.74% of the controls). Penalties can range from a EUR135 fine to six months in prison. See France Info (31/08/2021) https://www.francetvinfo.fr/sante/maladie/coronavirus/pass-sanitaire/pass-sanitaire-179000controles-et-1331verbalisations-depuis-la-mise-en-place-du-dispositif_4754939.html

[3]The number is the one displayed on the website on the 21st of January 2022.

some recreational activities), however as controls are realized by the professionals themselves, their participation is crucial in the success of the vaccination policy. Moreover, those professionals may have conflicting incentives: enforcing the health-pass policy implies that professionals could impede potential customers from accessing their facilities.

We investigate those questions using the registrations on the website *Animap.fr*. While it is one among the many websites where opponents to the health-pass policy discussed and organized, *Animap.fr* has the advantage to target professionals directly, to emphasize a single action (refusing to ask the health-pass of clients), and to have received some media coverage.[4] As such, the website allows us to study a mobilization by anti health-pass professionals.

We first document the types of professionals registered on the website and underline the critical presence of complementary and alternative medicine (CAM) practitioners. This is all the more interesting because the policy did not target CAM professionals who were not required to check the health-pass of their clients. This observation is however consistent with the long-noticed fact that CAM professionals are pillars of the anti-vaccination movements (as already remarked in Kaufman, 1967). Although they form the more numerous group, *Animap.fr* does not only gather CAM practitioners. We suggest that tourism may also have been an important mobilizing dimension as we find more registrants in *départements* that benefit from a developed touristic industry.[5] The share of professionals directly targeted by the measure is also (weakly) correlated to tourism.

Then, we turn to the study of the announcement of the generalization of the pass. We show

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[4]As an example: "Restaurants, commerces: les anti-passe sanitaire tentent d'agréger des lieux sans restrictions sur un site web", *Le Figaro*, 21/07/2021: https://www.lefigaro.fr/conso/restaurants-commerces-sur-animap-les-anti-passe-sanitaire-tentent-d-agreger-des-lieux-sans-restrictions-20210721 or "'Je suis prête à fermer mon restaurant !' : des commerçants refusent d'appliquer le pass sanitaire", *France Info*, 23/07/2021: https://www.francetvinfo.fr/sante/maladie/coronavirus/pass-sanitaire/je-suis-prete-a-fermer-mon-restaurant-des-commercants-refusent-d-appliquer-le-pass-sanitaire_4713225.html

[5]The *département* is a French administrative unit, sometimes compared to the U.S. county. It corresponds to the NUTS3 level of the nomenclature of territorial units for statistics in Europe.

that the number of registrations peaked in the days that followed E. Macron's speech (we measure approximately 170 additional registrations per day during the first week and 66-71 additional registrations during the second one). However, the effect was short-lived and we observe little effect after two weeks.

Despite this *intensification* of the movement, we show that the announcement and the subsequent street protests had negligible effects on the profiles of professionals registered on the website. While heterogeneous, they lacked diversity from the start and failed to attract people from other industries. Indeed, we observe no change in the likelihood that professionals work in the CAM industry. Similarly, we observe no change in the likelihood that professionals belong to the categories likely concerned by the policy. Those results are confirmed by another methodology – based on cosine similarity – that seeks to detect whether there is a global change (i.e. looking simultaneously at all categories) in the profiles of registrants.

The previous finding may explain the relative (apparent) failure of the mobilization.[6] The *number* and the *diversity* of people participating to a protest are important dimensions to its success (see: Tilly, 2004; Tilly and Tarrow, 2015; Wouters and Walgrave, 2017; Wouters, 2018). Diversity implies that a movement managed to recruit members in several groups and thus could potentially benefit from a large pool of other recruits. Moreover, diversity facilitates the identification of public opinion with the movement. Here, we show that the movement was not diverse to begin with and that it failed to diversify after the announcements of E. Macron.

Along similar lines and although this requires being cautious, our observations might also explain

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[6]GoogleTrend suggests that *Animap.fr* was rarely searched between September and December, 2021 when it experienced a short rebound. Moreover, another initiative "*Animap.Job.fr*" where anti-pass entrepreneurs and job seekers could post ads seem to have almost no activity. More generally, regarding the health-pass policy, polls published before the law was enacted suggested that most of the population agreed with the policy. See for instance: `https://www.ladepeche.fr/2021/08/05/covid-19-les-francais-largement-favorables-au-pass-sanitaire-9716053.php`.

why the rebound in the movement in January 2022 (due to the transformation of the health-pass into a vaccine-pass) gathered fewer protesters (around 100,000 people on the 8th of January and then half as many the following weekend). Professionals from the touristic industry likely have demobilized as the summer touristic season ended. In such a case, the social base of the movement would had been even more reduced.

Moreover, our findings have policy relevance: (a) it documents the type of professionals that may be reluctant to the health-pass policy. (b) It suggests that there might coexist several motives behind such a mobilization: on top of ideological motives, some professionals may have more direct economic incentives. (c) Finally, it suggests that despite the (large) number of protesters, the mobilization remained limited to specific groups and failed to diversify.

The article is organized as follow. In section 2, we review the literature and underline our main contributions. In section 3, we provide information on the health-pass policy and anti health-pass mobilizations. In section 4, we detail our data and we display descriptive elements on the entrepreneurs that registered on the website *Animap.fr*. In section 5, we study the effect of the generalization of the health-pass. In particular, we wonder whether the people that registered after the 12th of July resemble the first registrants. Finally, section 6 concludes.

2   Literature and main contributions

This article speaks to three strands of the literature: on protests and mobilization against policies, on the relationships between complementary and alternative medicine and vaccination and finally, on the policies implemented during the pandemic. We discuss each literature separately.

2.1 Protests, diversity, heterogeneity and reactions to governmental announcements

The literature on protests, social movements and contentious politics – as connected to the one on collective actions – has discussed the effect of heterogeneity (or diversity) of participants on their successes. Authors generally pinpoint the fact that an heterogeneous group could lack trust. In turn, this could impede collective actions. On the contrary, heterogeneous groups may have access to more diversified resources than homogeneous ones, which could be necessary for the success of actions. Similarly, the heterogeneity of groups may help solve the free-rider problem as individuals with more stakes could contribute to the action whatever the behavior of others. In turn, this may re-insure the other members of the group.[7] Regarding protests more specifically as (intuitively) suggested by Charles Tilly WUNC model (WUNC stands for *worthiness, unity, number and commitment* Tilly, 2004; Tilly and Tarrow, 2015) – and further tested by Wouters and Walgrave (2017) – the *number* of protesters is a critical criteria for politicians to react to protests.[8] This calls for attracting people from several groups into the protests in order to mobilize as many persons as possible. Wouters (2018) also adds the *diversity* dimension to the initial *WUNC* framework. Through an experiment, he shows that diversity of movements make it more appealing for the general public as more people can identify with the movement.

Scholars also discuss the fact that events serve as a signal during protests and social mobilizations. For instance, Sangnier and Zylberberg (2017) showed that after protests in Africa, people update their belief about the government, often leading to a decrease in trust (in the government

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[7]The literature is too long to be extensively cited. References include: Olson (1971); Heckathorn (1993); Varughese and Ostrom (2001); Ahn et al. (2003); Adhikari and Lovett (2006); Gavrilets (2015).

[8]Using rainfall as exogenous shocks on attendance, Madestam et al. (2013) also show that the number of protesters influences politicians. McAdam and Su (2002) somehow nuance the idea that number always matter. They show that congressmen and senators (in the US) discussed more about war issues after massive anti-war protests during the Vietnamese war, yet this led to more pro-war votes.

and institutions).[9] Government announcements (and policies) may also affect the emotions of individuals and their perceived fairness of public policies. In turn, this could led them to mobilize.[10]

Our work considers these two branches of the literature on protests. We study the extent to which announcements of a government (the extension of the health-pass) affected both the *number* and the *diversity* of participants involved in a mobilization against the health-pass policy. We show that although the number of participants increased, their diversity was unaffected.

2.2 CAM and vaccination

The role of CAM professionals in anti-vaccination movements has long been noticed. For instance, naturopaths and homeopaths were leading figures of the nascent US anti-vaccine movement during the nineteenth century (Kaufman, 1967).

That said, the exact relationship between CAM and hesitations toward vaccines is far from clear. If some studies found a correlation between non-compliance toward vaccination and obtaining information from alternative health practitioners (Chow et al., 2017),[11] several studies cast doubt on the causality of the relationship or its strength (Attwell et al., 2018; Bryden et al., 2018; Hornsey et al., 2020). For instance, Hornsey et al. (2020) suggest that trust in CAM plays a role but that it remains modest; distrust in conventional medicine is far more influential in vaccine hesitancy. This distrust in conventional medicine also appears in the interviews of CAM users realized by Attwell et al. (2018). Other studies such as Deml et al. (2019), show that CAM themselves do not always have anti-vaccine attitudes. Among the 17 professionals they interviewed, only two had clear anti-vaccine positions.

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[9]Battaglini (2016) discusses the extent to which protests can be used as signals by the government.

[10]For a model that explains protests as the consequence of (a feeling of) unfair treatment by the government, see Passarelli and Tabellini (2017).

[11]Such a correlation is also mentioned in the review by Yaqub et al. (2014).

Our work does not contradict those previous results; it nuances them. We pinpoint the massive presence of alternative medicine practitioners among those who registered on *Animap.fr*. Thus, our study clearly shows that CAM practitioners were crucial actors in the mobilization against the health-pass. While this is coherent with the rhetoric of "individual choice" used by CAM professionals (Deml et al., 2019), it recalls that many CAM practitioners do not hesitate to mobilize against incentives schemes in favor of vaccines. They could influence attitudes toward vaccination - not only (potentially) through direct interactions with patients but also - through contentious politics and collective actions.

2.3   Public policies during the Covid-19 pandemic

Finally, this paper also brings to the growing literature that studies the policies enacted during the pandemic and the reactions. Regarding the vaccination in general, Blondel et al. (2021) discuss why people could refuse to get vaccinated against Covid-19. They suggest that "rational" actors should accept the vaccine and therefore, cognitive behavioral biases must be mobilized to explain vaccine hesitancy. Regarding the compliance to the policy implemented during the pandemic (such as lockdowns), Bargain and Aminjonov (2020) also point out that non-compliance is mostly explained by a lack of trust in the government.

Regarding the health-pass policy in France *per se*, we are aware of only two studies. Miquel Oliu-Barton (2022) suggest that the policy was highly effective. It avoided 4,000 deaths and a decrease in GDP of approximately six billion euros. Ward (2022) is more nuanced. While they underline the success of the measure in terms of vaccination rates, they also suggest that the pass did not affect hesitancy itself. Moreover, they suggest that the incentives schemes created by the pass had less effect on the elderly, the group who faced the highest risks of serious illness.

We also analyze the effect of the health-pass but focus on anti pass mobilizations. Actually, and although we discuss anti-pass movements (and not refusal of the vaccination), we see our work as complementary to Blondel et al. (2021). While they highlight the role of behavioral biases, we highlight the fact ideological motivations (for instance, for CAM practitioners) and economic incentives (related to tourism) may help explaining the anti-pass movement. Thus, behavioral biases may interact with beliefs, preferences and incentives.[12]

More generally, as we underline the heterogeneity among professionals who refuse to apply the health-pass policy, we show that this movement resembles the other protests against the policies implemented during the pandemic. Kowalewski (2021) or Pressman and Choi-Fitzpatrick (2021) already pinpointed the fact that protesters had highly heterogeneous (religious, ideological or eco-nomical) motives when they opposed lock-downs.

3 The background

We use the expansion of the health-pass in France in order to study the reactions of opponents to such policy and their online behavior. We now describe the context of the policy.

3.1 Health-pass and governmental decisions

The health-pass is a document that attests either that (a) an individual has been tested negative to the Covid-19 or that (b) she is somehow protected against the disease. This could be the case

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[12]Our focus on CAM practitioners also echoes the finding on trust in Bargain and Aminjonov (2020). Indeed, as mentioned above, vaccine hesitancy is often related to a low level of trust in traditional medicine. In our sample, although this is not our main focus, we find qualitative evidence of a distrust in the traditional medical systems with remarks that vaccines are "genetical therapy" or did not have "regulatory studies" and therefore that we know nothing about dangerosity.

because an individual developed an immunity due to a previous contamination or got vaccinated.[13]

The health-pass has been implemented in France in May 2021. It was initially required only for a very limited number of events that gathered more than one thousand people, such as concerts or large public meetings. Interestingly, during the first parliamentary debates (in May, 2021), *députés* claimed that the health-pass would not be generalized and would be required only in those few cases.[14]

Nevertheless, on the 12th of July, after several days of consultations of medical authorities and discussions with political leaders, E. Macron announced that - due to the worsening of the pandemic situation (because of the delta variant) - the pass would become mandatory in many more places, such as restaurants or to travel through trains and airplanes between regions.[15] A brief legislative debate followed this declaration: the lower chamber (the *Assemblée Nationale*) voted the law on the 23th of July and the upper chamber (the *Sénat*) on the 25th of July. The law was then examined and approved by the *Conseil Constitutionel* on the 5th of August (the highest French judicial authority). Finally, the pass became mandatory on the 9th of August even though part of the expansion was already applied (since 21th of July).

As a matter of public health, the policy was likely a success. The number of first doses of vaccine delivered by week jumped to more than 2.5 million after the speech of E. Macron while it had felt below 1.5 million at the end of June.[16] As mentioned above, Oliu-Barton et al. (2022) find that the health-pass has prevented 4,000 deaths in France.

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[13]On January 2022, the "health-pass" should be transformed into a "vaccine-pass" whereby only a complete vaccination schedule will provide the pass.

[14]See for instance: Levée progressive des restrictions sanitaires : l'examen du projet de loi par les *députés* s'annonce animé, *Le Parisien*, 10/05/2021. https://www.leparisien.fr/politique/levee-progressive-des-restrictions-sanitaires-lexamen-du-projet-de-loi-par-les-deputes-sannonce-anime-10-05-2021-php

[15]Government website on the pass: https://www.gouvernement.fr/info-coronavirus/pass-sanitaire

[16]See the appendix for a graphical illustration.

Figure 1: Internet researches on side effects of vaccinations
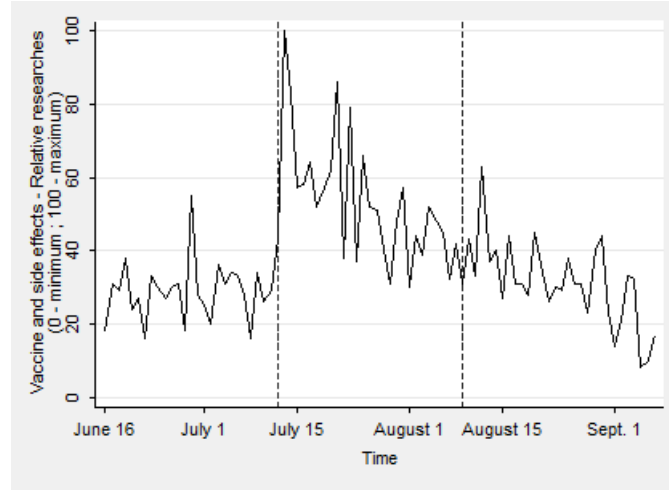
3.2 Protests against the Health Pass

We can also observe skeptical or anxious reactions after the announcement of the generalization of the pass with an increase in the number of internet searches on the side effects of vaccination (see figure 1).

The generalization of the pass also triggered reactions of both so-called "anti-vacc" (against vaccination) and "anti-pass" (against the health-pass) groups. It must be noted that the two movements do not necessarily overlap in theory. The anti-vaccination movement struggle against vaccination (or the one against covid-19) for various reasons (individual liberty, safety of vaccines, etc.).[17] The health-pass policy creates an incentive scheme that pushes people to get vaccinated. As such, it gathered opposition from people who refused to limit the liberty of non-vaccinated people.

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[17]According to Hoffman et al. (2019), the anti-vaccine movement was already heterogeneous before the pandemic. See also (Blume, 2006) who shows that the two arguments (safety of vaccines and liberty) were central in anti-vaccination movements throughout their history.

In many instances though the two movements are hard to distinguish as "anti-pass" groups may use "anti-vaccination" arguments and both groups emphasize individual liberty. The blurred border between anti-pass and anti-vacc sometimes appears for people registered on the website *Animap.fr* that we consider below.[18]

The action of both groups mostly consisted of protests organized every Saturday. Those protests were either self-organized or organized by groups close to (often far right) politicians. Demonstrators used various websites (*Animap.fr, Reinfocovid.fr, Tousantipass.fr*)[19] and social media (all the previous websites seem to have *Facebook, Twitter, Tik Tok* or *Telegram* accounts) in order to transmit - sometimes dubious - informations about the vaccines, the health-pass policy or merely to explain *where* and *when* to protest.

As shown in figure 2, protests gathered more than 150,000 persons every weeks in July and August, with a peak above 237,000 demonstrators on the 7th of August.[20] Figure 2 also reveals the online searches associated with the keyword "protest" between the beginning of July and the 9th of September. While they were virtually no search before the speech of E. Macron, we then observe peaks every Saturday. This may correspond to two phenomena: (a) people that seek to obtain information on *where* to protest and (b) people that wanted to learn *ex post* the number of

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[18]Several newspapers interviewed anti-vaccine and anti-pass people who often claim that vaccines may not be safe to use and that the pass restricts freedom. In some accounts, the overlapping between the two types of arguments may be observed. For an example of arguments by protesters (in French): France Info, *"On est empêchés de vivre" : ils expliquent pourquoi ils manifestent contre le pass sanitaire chaque samedi à Nice*, 14/08/2021. https://france3-regions.francetvinfo.fr/provence-alpes-cote-d-azur/alpes-maritimes/nice/on-est-empeches-de-vivre-ils-expliquent-pourquoi-ils-manifestent-contre-le-pass-sanitaire-chaque-samedi-a-nice-22 html Actu.fr, *Anti-pass sanitaire : "scandale", "piège insupportable"… Pourquoi ils manifestent*, 28/08/2021, https://actu.fr/societe/coronavirus/anti-pass-sanitaire-scandale-piege-insupportable-pourquoi-ils-manifestent_44459137.html. LCI, *Manifestations : pourquoi ils s'opposent au pass sanitaire*, 17/07/2021, https://www.lci.fr/societe/video-manifestations-pourquoi-ils-s-opposent-au-pass-sanitaire-2191727.html.

[19]The later website is linked to a far right politician. In general, the role of websites and social media on the transmission of anti-vaccination feelings and beliefs has long been noticed. For an example on the French web, see Nugier et al. (2018). See also Bean (2011).

[20]As mentioned above, meetings were also organized in January when the health-pass became a vaccination-pass. Through the article, we focus on the events of the summer. Moreover, we always report the number of demonstrators according to the French police. Demonstrators reported higher levels of participation.

Figure 2: Timing of the protests
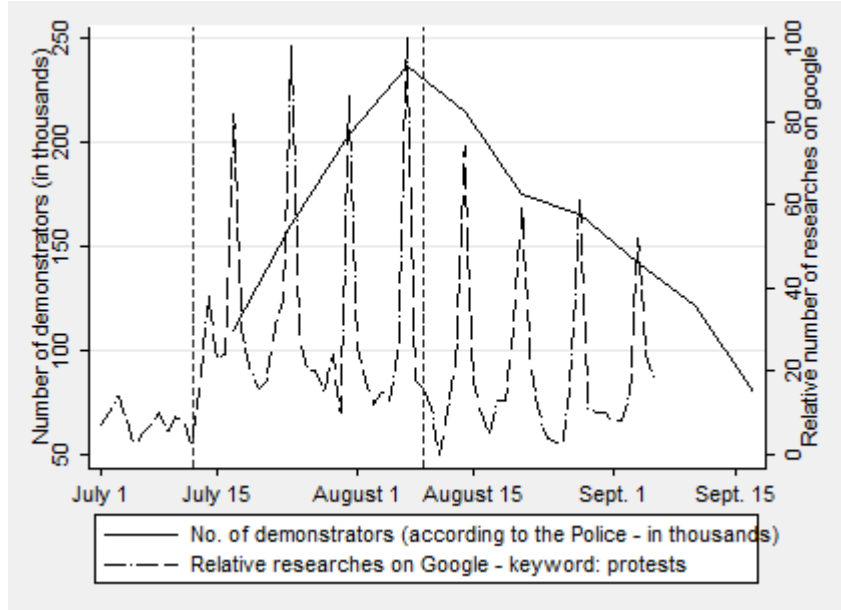
Source and notes: The graph shows the number of demonstrators (left axis). The number was obtained from newspapers. We report the estimation of the Police (demonstrators reported higher numbers). The relative searches for the keyword "protest" on Google in France (right axis) was obtained from www.GoogleTrend.com on the 9th of September 2021. It corresponds to the relative number of searches (the number of searches relative to the maximum number of searches). The two vertical dashed lines respectively correspond to the speech of E. Macron on the 12th of July and the expansion of the pass policy on 9th of August.

demonstrators.

3.3   Animap.fr

Among the websites used by the anti-pass mobilization, we focus on *Animap.fr*.[21] The website allows professionals to register if they commit not asking their clients whether they have a valid health pass (registration is free). In such a case, each firm can create an online page with a brief description and contact details (mail, address, etc.). According to the website, approximately 7,400

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[21]The website *Animap.fr* seems to belong to an European network and similar websites may be found in Belgium, Germany, Switzerland, etc. We focus on the French site.

professionals had registered in January 2022.[22] Entrepreneurs seem to used those pages as a tool to advertise their firms.

As far as we know, the website does not check whether professionals control or not the health pass of their clients. As we discuss below, the majority of the professionals registered seems not to be concerned by the obligation to request a health-pass from its customers. This is however not true for all firms and, for instance, there are restaurants among the firms. However, we find neither large companies (such as cinemas) nor chain stores. The registrations, therefore, seem to concern small businesses and self-employed individuals mainly.

We consider that registering on the website signals a strong anti-pass position. This could be positive for firms (if it attracts client) or costly because the firm may lose clients (who are pro-pass) or because it can expose firms to legal problems. Although we ignore whether it was the case, the registration on the website could increase the probability that the company will be confronted with a control by the authorities, a fortiori, of being sanctioned.[23]
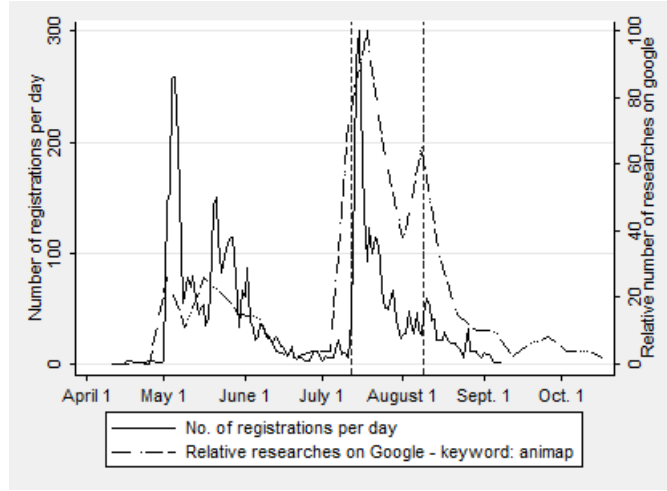
The history of the website is linked to the anti health-pass mobilization. Using an online search for the keyword "animap" and the registrations on the website, figure 3 shows that the website did not exist before May, 2021. After an intense activity in May, it reduced in June, before a huge increase following the announcements of E. Macron on the 12th of July when both researches on Google and registrations per day peaked. We also observe a smaller surge in online searches when the health-pass was officially enacted. However, this was followed only by a minor increase in registrations that seems significantly lower compared to the previous waves.

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[22]We suspect that this number includes duplicates and includes the pages that were subsequently deleted.

[23]We found online messages written by professionals who hesitated to register on *Animap.fr* because they feared to be remarked by the government. See for instance the comments of the following article: https://www.francesoir.fr/politique-france/animap-le-site-des-commercants-qui-ne-demandent-ni-test-ni-vaccin

Figure 3: History of the website - animap.fr

Source and notes: The graphs show the number of registration per day on *Animap.fr* (left axis). See the data section. The right axis provides the relative number of searches for the keyword "animap" on Google in France (right axis) that we obtained from www.GoogleTrend.com. It corresponds to the number of searches with respect to its maximum. The two vertical dashed lines respectively correspond to the speech of E. Macron on the 12th of July and the extension of the pass on the 9th of August.

4 Data and descriptive statistics on registrations

4.1 Source

Our primary source of data is the website *Animap.fr*. We used web scrapping techniques in order to recover the pages created by firms between the 16th of April and the 8th of September 2021.[24]

We did not collect personal information from registrants. We focus and recover the following elements: (a) the name of the firms, (b) the cities where they are active, (c) the category of firms, (d) the description of the firms written by the professionals (if any) and finally (e) the date when the pages have been created. Regarding the categories of professionals, *Animap.fr* created its own classification that contains 19 possibilities. We primarily use this categorization as often, we were not able to mach firms to categories provided by other taxonomy.

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[24]We used the package *scrapeR* available on the software R.

Figure 4: Animap.fr - the categories of professional
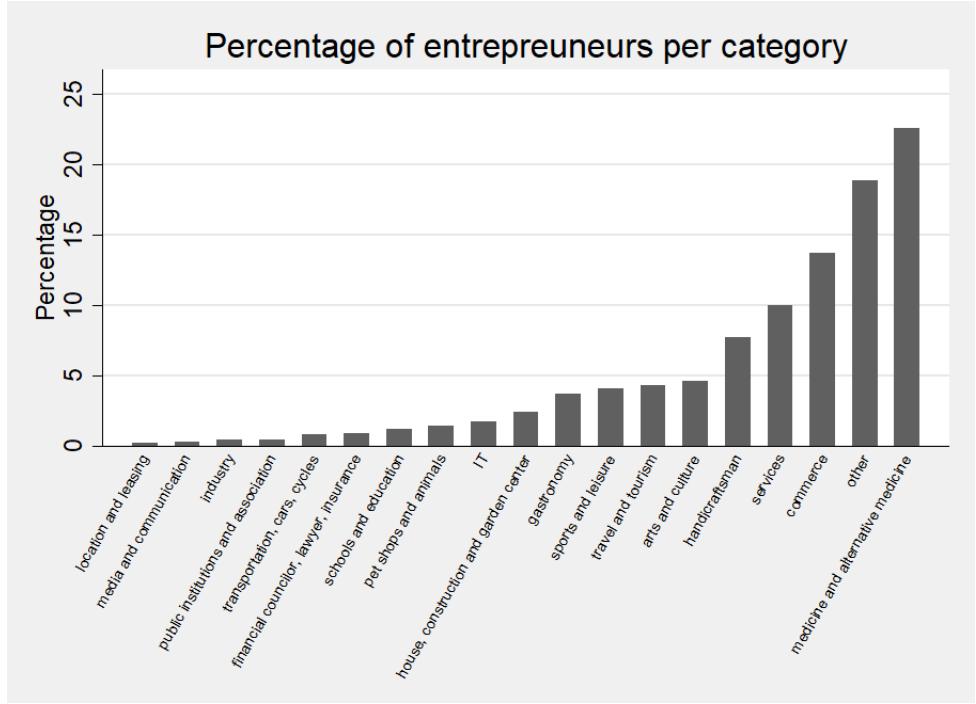
Notes: The graphs show the proportion of pages per category of professionals on *Animap.fr*. The the data section for more details.

4.2 *Animap.fr* - the categories of professional

We first investigate the categories of professional that registered on the website. Here, we use the profiles of 6,676 professionals that created a webpage on *Animap.fr* in metropolitan France.

In figure 4, we display the percentage of professional by categories (using the categories offered by the website). As one can see, 22.5% of professionals are related to the health industry. Among them, the vast majority of those professionals are related to the CAM sector (naturopaths, homeopaths, people providing energetic health care, etc.).

The previous percentage appears to be underestimated. Using the descriptions (available for 35.11% of firms), we find that 21.7% of the firms that did not register in the "health and medicine" category can be related to CAM practitioners. They often selected the category "other" or "service."

This observation - the massive presence of CAM - has policy relevance. We already mentioned the critical role played by complementary and alternative medicine practitioners in the history of the anti-vaccination movements (Kaufman, 1967). If scholars doubt that those professionals have a causal influence on vaccine hesitancy (Bryden et al., 2018) or that the growth of "anti-vaccine" movement explains decreasing trend in vaccination (Blume, 2006), we pinpoint that CAM professionals play a leading role on *Animap.fr*. Thus, they appear to be strongly mobilized against a policy that encourages vaccination. This recalls that attitude toward vaccinations are not (only) built through direct interactions between patients and health care providers. Those providers also engage in traditional (contentious) politics.

That said and although CAM professionals appear to form the largest group, this does not mean they form the sole. For instance, we find 3.76% of the professionals in the "gastronomy" industry (often, they are restaurateurs). Those professionals were targeted by the policy and had to check the passes of their clients. Similarly, if we add professionals from the categories that might be directly targeted (such as, "gastronomy", "sport and leisure", "travel and tourism" or "art and culture") we obtain approximately 17% of the registrants. Given that many of the professionals that faced a direct cost due to the policy may also have selected the loosely defined categories "services" and "others", we also observe a large group of professionals that could have economical reasons to oppose the pass on top of potential ideological ones. Registrations on *Animap.fr* therefore seems to corroborate the observation by Kowalewski (2021): protesters had multiple motives to oppose the policy (economical, ideological, religious, etc.).

Figure 5: Registrations per *départements*

Registrations on Animap.fr

No. registrations
(114,212]
(63,114]
(45,63]
(25,45]
[7,25]
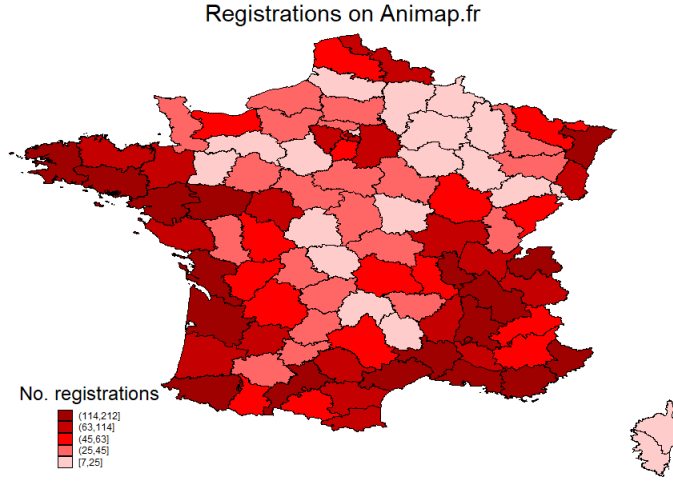
Source and notes: The map shows the number of registrations on *Animap.fr* per *département*. The data were obtained using web scrapping techniques. Our treatment. Remark: we only had data for the entire Corse (and not for the two *départements*). On this map, we considered that each *départements* in Corse had half of the registrations.

4.3 The geographical variation in mobilization

We now provide descriptive elements on the registrations on *Animap.fr*. As figure 3 already describes the dynamics of registrations, we focus on its geographical variation. The figure 5 depicts the number of registrations per *département*. It appears that *départements* near the Atlantic ocean as well as those near the Mediterranean sea had numerous registrations.

We further explore this geographic variation by employing cross-sectional regressions between the number of registrations and several characteristics of the *départements* (such as their population census, their unemployment rates and their standard of living).[25] In particular, we investigate the correlation between the importance of the touristic industry - measured by the number of nights people spent in touristic facilities in 2019 - and the number of registrations. The results of such an exercise can be observed in the first two columns of table 1. The variable that captures the touristic

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[25]We provide descriptive statistics of those variables in the appendix B (table A1).

activity of a *département* appears to out-weights all other factors in column (1). Column (2) shows

that it remains the case even if we control for whether the *départements* is a coastal one and

whether it belongs to the Parisian region. These two variables actually reinforce our interpretation

that seasonal tourism drive our results. While it is a major touristic area, the Parisian region is

associated to less registrations. Similarly, we find *even more* registrations in coastal *départements*

that might be especially concerned by the summer touristic season. Column (3) and (4) of table

Table 1: Cross sectional regressions

	(1) obs	(2) obs	(3) share health industry	(4) share concerned
Tourism				
Tourism - number of nights (log)	20.927***	16.431***	0.484	3.301*
	(6.677)	(6.131)	(1.673)	(1.917)
Controls				
Population (log)	15.984*	15.053*	2.863	-5.426***
	(8.540)	(7.959)	(1.780)	(1.869)
Unemployment rate (2019-T1)	1.500	2.514	-0.944	0.562
	(2.848)	(2.938)	(0.630)	(0.548)
Level of life (log)	45.192	194.165	-16.530	-10.653
	(124.153)	(134.888)	(19.126)	(17.058)
=1 if coastal *départment*		24.655**	0.568	-0.205
		(12.190)	(1.892)	(1.401)
= 1 if Parisian *région*		-57.223***	4.160	-0.975
		(17.579)	(3.425)	(3.891)
Obs	95	95	95	95
R^2	0.453	0.545	0.100	0.129

Sources: This table uses the number of registrations per day and per categories on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the number of registration per *département* in column (1) and (2). It is the percentage of professionals who selected the "health and medicine" category in column (3). In column (4), it is the percentage of professional who selected the categories that were the most affected by the policy. All columns provide the results of OLS regressions. Robust standard errors are provided in parenthesis.

1 repeat the same regression but now use the share of professionals in the health industry or the share of professionals that were likely directly affected by the policy ("Gastronomy", "art and culture", "travel and tourism" and "sports and leisure"). In those tables, it appears that (a) the share of professionals related to the health industry reacted little to tourism while (b) the effect of tourism is statistically significant on the share of other professionals.[26] We consider this as preliminary evidence that the logic of mobilization between the two groups differ. While CAM (and other professionals in the health industry) were primarily mobilized on *ideological grounds*, other professionals may have faced a mixed between *ideological* and *economical* ones.

Although we do not claim that the correlation between tourism and registrations on *Animap.fr* is causal, we believe this result must be highlighted. The fact that the touristic industry has been severely impacted by the pandemic has been widely documented.[27] The touristic industry, therefore, received some scholarly attention but existing studies seem to focus on strategies to get through the crisis (see for instance: Bulchand-Gidumal, 2022; Li et al., 2022). To the best of our knowledge, the link between the touristic industry and resistance to health-pass policy has not been discussed.

We therefore observe an heterogeneity in the profiles of registrants. Some having mostly *ideological* motives while others have both *ideological* and *economical* ones. Could this heterogeneity have undermined the mobilizations? For instance, because professionals had different claims or political objectives. Based on the few (28) firm's descriptions that contain the words "pass" or "vaccine," it appears that both CAM and other professionals often highlight "pro-choice" arguments. Among

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[26]The strength of the relationship should not be over-estimated as in some robustness checks the coefficient of the variable was close to, but not necessarily statistically significant. Moreover, the coefficient associated to coastal *départements* is not different from zero.

[27]In France, the *INSEE* wrote several reports on the impact of Covid-19 on tourism. See for instance: https://www.insee.fr/fr/information/4995541

those professionals, those with the most extreme positions (for instance, that associate the vac-cination to a crime against humanity or the pro vaccination individuals to a "Mafia") were both health care providers or other type of professionals (and even if those few professionals could not be related to the touristic industry).[28] Therefore, if we underline the difference between professionals that register because they *ideologically* oppose the health-pass (such as CAM) and those who had a *mix* between *ideological* and *economical* incentives (such as restaurateurs), we cannot conclude from our data that this led to a strong cleavage within the mobilization.

5   The expansion of the health-pass and the mobilization

We now study the effect of the announcements of E. Macron on the 12th of July.[29] We proceed in two steps. First, we provide estimates of the effect of those announcements on the number of registrations. Second, we analyze whether the new registrations resemble the early ones.

5.1   The effect of the announcement on the number of registrants

5.1.1   Method

As a starting point, we measure the extent to which the expansion of the health-pass policy on the 12th of July increased the number of registrations per day. In order to do so, we employ the

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[28]The two descriptions that we have in mind are:
https://animap.fr/eintrag/assistante-maternelle-agree/
and
https://animap.fr/eintrag/cabinet-d-osteopathie-2/.
[29]We focus on the announcements and not the subsequent legislative process nor the official implementation date of the health-pass as they appear only to have modest impacts.

following regression:

$$\text{Registration}_{dm} = \alpha_m + \gamma X + \sum_{w=1}^{4} \beta_w \text{WeekPost}_w + \epsilon_{dm} \qquad (1)$$

where d indicates the day and m the month. "Registration$_{dm}$" is therefore the number of regis-

trations on the website during a particular day of a given month. α_m is a set of month dummy

variables and "WeekPost$_w$" are four dummy variables that capture weeks after the announcement.

X is a vector of variables that seek to capture the dynamics of registrations. It consists in two

elements: (a) a fifth order polynomial of days (normalized at the value 0 on the 12th of July),

(b) day of weeks dummy variables. Finally, given the temporal nature of our data, we allow for

autocorrelation in the error term ϵ_{dm}.

The intuition of the previous regression is the following. In figure 3, it appears that the effect of

the announcement was likely positive and decreased over time. We therefore allowed for a different

effect of the announcements for four weeks. Then, we measure those effects considering that there

could be other (unobserved) factors that explain the dynamic of the registrations on the website.

We approximate this dynamic with the polynomial, the month effects and the day of the week

effect.[30]

5.1.2   Results

Table 2 provides the results of the above regression. In column (1), we consider the four variables

that capture the effect of the announcements, in column (2) we add the fifth order polynomial,

then we also added the day of week dummies in column (3) and the month fixed effects in column

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[30]In the appendix, we test alternative models. In particular, we test models that include a lag of the dependent
variable. As the dependent variable is an integer, we also tested counting models. Results remain qualitatively
similar.

Table 2: Regressions of announcements on registrations

	Number of registrations per day			
	(1) obs	(2) obs	(3) obs	(4) obs
Effect of announcements				
First week	145.552***	172.407***	173.044***	168.667***
	(34.617)	(36.234)	(32.447)	(30.818)
Second week	47.552***	69.427***	70.063***	71.055***
	(14.528)	(17.467)	(14.383)	(12.541)
Third week	2.981	19.485	19.957*	22.007**
	(9.772)	(13.034)	(11.142)	(10.900)
Fourth week	0.409	12.712	12.888	8.488
	(6.980)	(8.539)	(9.158)	(9.326)
Month dummies				✓
5th order polynomial		✓	✓	✓
Day of week effect			✓	✓
Obs	146	146	146	146
Lag	1	1	1	1

Sources and notes: This table uses the number of registrations per day on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the number of registrations per day. All columns provide the results of OLS regressions where we gradually add controls for the dynamics of the registrations on the website. Newey-West (HAC) standard errors are provided in parenthesis.

(4).

It appears in table 2 that the effect of the announcements disappears after 2 or 3 weeks. Moreover, the effect is more than halved between the first and the second week. It is again divided by three between the second and the third weeks. Whatever the strength of the reaction to E. Macron's speeches, it is hardly perceived by the end of July. This being said, the table confirms the intuition of figure 3 and we detect a huge increase in the number of registrations after the announcement of the expansion of the health pass policy. We observe between 146 and 173 additional registrations per day during the first week after the announcement. Similarly, we find an increase in the number of registrations per day that lies in 48 and 71 for the second week. For the third week, we estimate approximately 20 additional registrations per day and finally, less than 10 for the fourth one.

Although intuitive, the previous results support the literature suggesting that events (such as demonstrations or government announcements) serve as signals and lead people to revise their beliefs (Sangnier and Zylberberg, 2017; Passarelli and Tabellini, 2017). Here, we observe a clear increase in the number of registrations *after* E. Macron's speech while the expansion of the health-pass policy had already been discussed for several days by politicians and the medias. For example, we found statements by French Prime Minister J. Castex that the government was thinking about "possibly taking more coercive measures." Similarly, Health Minister O. Veran said that vaccination "provides 100 percent protection against lockdown." The government also consulted members of the National Assembly for advice on expanding the scope of the health passport.[31]

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[31]Among many examples, see for example: *Les Echos*, Macron dans une course de vitesse contre le variant Delta, 08/07/2021. *Le Monde*, Macron contraint de donner un nouveau tour de vis face au Delta, 10/07/2021. *Aujourd'hui en France*, Macron, retour à la case Covid, 09/07/2021. etc.

5.2 Do we observe a diversification in the profiles?

Although it provides us with estimates, the previous analysis mostly confirms what figure 3 already suggested: the expansion of the health-pass policy motivated people to mobilize against health-pass and to register on *Animap.fr.* We now analyze the profile of registrants. More precisely, we study whether the new registrants (after E. Macron's speech) resembles those that mobilized since May, 2021.

As mentioned in the introduction, the diversity of protesters matters at two different levels. On the one hand, the diversity of a mobilization allows the public opinion to identify with the movement (Wouters, 2018). On the other hand, in order to influence representatives, the number of participants is crucial (see Tilly, 2004; Tilly and Tarrow, 2015; Wouters and Walgrave, 2017). In turn, the *number* depends on the capacity to recruit people from different groups.

5.3 A first method

Answering such a question, however, raises a difficulty: we observe few of the characteristics of registrants except the "industry" and - if any - the descriptions of firms. Here, we focus on the self-declared industry. Using those categories, we can obtain a first (partial) idea on whether the expansion of the health-pass policy led to a diversification in the profiles. We employ the following analysis:

$$\text{Type}_{gid} = \alpha_g + \gamma_g X + \sum_{w=1}^{4} \beta_{wg} \text{WeekPost}_w + \epsilon_{gid} \tag{2}$$

where "Type$_{gid}$" is a dummy variable that takes the value 1 if individual i that registered on day d is of type g. Now, the variable X only contains a third order polynomial and the day of the week effects. "WeekPost" is defined as previously and capture the four weeks after the announcements

of E. Macron.

In the analysis, we primarily consider two possible types. First, we look at whether the professional works in the health industry (as CAM professional with a high probability). Second, we consider whether the professional was likely concerned by the measure (because he selected one of the categories "gastronomy", "sport and leisure", "travel and tourism" or "art and culture"). We consider that the first type is archetypal of professionals who (a) were not directly targeted by the policy and (b) may nonetheless have *ideological* reasons to oppose the health-pass. On the contrary, the second category may had to check the health-pass of their clients and therefore faced direct economic costs due to the measure.[32]

Finally, it should be noted that the above model is a linear probability one. Thus, the regression measures the changes in the likelihood that a professional belongs to the selected categories. In what follows, we also control our results using a logistic model. Moreover, in the appendix (table A4), we also check that the findings are not driven by our definitions or selections of categories.

5.4   Results - LPM and logistic model

In table 3, we observe little effects of the declarations of E. Macron. The coefficients that measure a variation in the likelihood that a professional belongs to one of the categories we consider are not statistically different from zero except for the last week.

We interpret this finding as evidence that the expansion of the health pass policy did not lead to a diversification of the professionals' profiles that registered on the website. The dominant category (CAM professionals) did not gain nor lose weight. We find a similar result for the categories of professionals that likely bears the most important cost due to the policy. Thus, while there were

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[32]As mentioned above, we do not claim that the second category had no ideological reasons to oppose the policy. We consider that *on top* of ideological reasons, they had economic incentives not to apply the policy.

Table 3: Announcements effects on categories of entrepreneurs

	Categories of professionals			
	(1) Health	(2) Health	(3) Concerned	(4) Concerned
main				
Effect of announcements				
First week	-0.017	-0.090	-0.007	-0.060
	(0.028)	(0.149)	(0.023)	(0.165)
Second week	-0.048	-0.270	0.006	0.042
	(0.031)	(0.170)	(0.026)	(0.187)
Third week	-0.055	-0.310	0.041	0.280
	(0.035)	(0.199)	(0.032)	(0.210)
Fourth week	-0.074**	-0.427**	0.078**	0.494**
	(0.033)	(0.197)	(0.033)	(0.197)
3rd order polynomial	✓	✓	✓	✓
Day of week effect	✓	✓	✓	✓
Model	LPM	Logit	LPM	Logit
Obs	6676	6676	6676	6676
R^2	0.002	0.002	0.003	0.004

Sources: This table uses the categories of entrepreneurs that registered on the website *Animap.fr*. See the data section for more details. *Notes*: The dependent variable is whether the entrepreneurs declared working in the health sector in column (1) and (2) or whether she work in the "gastronomy" industry (3) and (4). Columns provide the results of a linear probability or a logistic model. Robust standard errors are provided in parenthesis. For logistic models, the R2 is a pseudo-R2.

numerous new registrations in the week after the announcement, the new registrants resemble the previous ones and we observe no diversification in the profiles. The result for the fourth week may somehow nuance this finding as they are statistically different from zero. A possibility would be that the announcement first re-mobilized the historical actors of the movement. Then, the movement slightly enlarged to other groups which would have affected the probability that new registrants belong to some categories. This possibility is however to consider with caution as the result is sensitive to alternative definition in the categories.[33]

5.5   Is there an overall change?

5.5.1   Methodology

The above methodology may, however, be criticized on the ground that we focus on few (arbitrary) categories. We now consider an alternative methodology to ensure that we do not miss an overall change in the profiles. Our methodology uses cosine similarity and is implemented in several steps.[34]

To begin with, we consider the proportion of professionals in each of the 19 categories (available on the *Animap.fr*) at the beginning of June.[35] Those proportions describe the anti health-pass movement at its start. While we arbitrarily selected the first of June as the end of the "first wave" of registrations (and therefore use the profiles of registrants before this date as those of early registrants), using other dates has little effect on our results. Those proportions define a vector V_{start} (of dimension 1×19).

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[33]In the appendix, we show that we find no evidence of diversification if we use the descriptions of firms in order to decide whether professionals work in the "health" industry or if we consider only the "gastronomy" category (as restaurateurs were directly affected by the measure).

[34]The methodology is inspired by studies that seek to measure the diversification in the economic activity of regions (such as: Gao et al., 2021). Cosine similarity is also widely used in order to measure similarities between texts (as an example, see: Koffi, 2021).

[35]The proportion are depicted in the appendix in the figure A2.

Then, for each subsequent day, we created a similar vector V_d. It encodes the proportion of professionals in each category that registered on the website this day. Finally, for each day, we measure the cosine similarity between the vector V_{start} and V_d as follow:[36]

$$\phi_{start,d} = \frac{V_{start} \cdot V_d}{||V_{start}||^{1/2} \, ||V_d||^{1/2}}$$

$\phi_{start,d}$ takes the value 1 when the vectors V_d and V_{start} are the same. That is, when the proportions of professionals registered during day d in each category are exactly similar to those that registered in April and May. As $\phi_{start,d}$ moves toward 0, the proportions differ.

Using $\phi_{start,d}$, we can now analyze the extent to which the new registrations on a given day resemble those at the start of the movement. In order to do so, we employ the following regression:

$$\phi_{start,d} = \alpha_m + \gamma X + \sum_{w=1}^{4} \beta_w \text{WeekPost}_w + \epsilon_{dm} \tag{3}$$

where all variables are similar to those used in the regression (1). However, we droped the observations before the first of June (as they are used to define V_{start}). An important remark is that the "cosine similarity" may not be defined when we observe no registration during a particular day. This creates a difficulty regarding the correction of autocorrelation in the standard errors. In the main regression, we therefore employ robust standard errors. In the appendix, we show that if we restrict the sample in order to avoid "missing days" (and therefore are able to correct for autocorrelation), we obtain similar results.

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[36]In the formula below, . indicates the inner product and || the Euclidian norm.

5.5.2 Results

The result of the analysis may be observed in table 4, where once more we introduce the variables one at the time. In column (1), we consider the four variables that capture the effect of the announcement, in column (2) we add the fifth order polynomial. Then we add the day of week dummies in column (3) and the month fixed effects in column (4).

Table 4: The effect of the announcement and similarity to early registrations

	The dependent variable is the cosine similarity			
	(1) cosine_sim	(2) cosine_sim	(3) cosine_sim	(4) cosine_sim
Effect of announcements				
First week	0.205***	0.212***	0.217***	0.209***
	(0.025)	(0.054)	(0.055)	(0.055)
Second week	0.184***	0.136**	0.142**	0.120*
	(0.026)	(0.057)	(0.058)	(0.071)
Third week	0.130***	0.028	0.033	0.019
	(0.026)	(0.055)	(0.056)	(0.071)
Fourth week	0.146***	0.006	0.009	0.051
	(0.030)	(0.047)	(0.045)	(0.047)
Month FE				✓
5th order polynomial		✓	✓	✓
Day of week effect	No	No	Yes	Yes
Obs	94	94	94	94
R^2	0.182	0.489	0.532	0.554

Sources: This table uses the number of registrations per day and per categories on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the cosine similarity between the professional that registered at date d and those that registered before June. All columns provide the results of OLS regressions where we gradually add controls for the dynamics of the registrations on the website. Robust standard errors are provided in parenthesis.

In this table, all the estimates for the two first weeks are positive and statistically different from zero. Thus, the expansion of the health-pass policy *increased* the similarity between the new and

first registrants.

The positiveness of the estimates must not be thought of as a puzzling result. Our measure of similarity compares the proportion of professionals registered in each category during day d to those registered before June. As shown in figure 3, at the beginning of July we observe few registrations on the website. Therefore, the proportions are computed with few observations during those days. Consequently slight variations in the registrations could severely affect the proportions in a given category and therefore, impact the measure of similarity. Thus, the positive estimates should be interpreted as the fact that before the 12th, the profiles of registrants could have differed from the early registrants.[37]

Figure 6 provides a way to visualize the previous finding. We plotted the measure of cosine similarity between new and early registrations. Then, we use a local polynomial of order 5 to fit the data. As it appears, the cosine similarity remains high during all the period we consider. At each date, the proportions of new registrations in each category of professionals are relatively similar to those that occurred prior June. Nevertheless, the similarity slightly decreases at the end of June (with few outliers in the data). Then, the similarity increases around the 12th of July and remains at high levels at least until mid-August.

Thus, it appears that the announcement of the expansion of the health-pass did not lead to a diversification of the registrations on *Animap.fr*. If any, the professionals that registered after the 12th of July resemble *more* to the first professionals that registered than those who did just before the 12th.

As we explained before, we believed this impacted the mobilization. The protesters on *Animap.fr* failed to attract new types of persons. This limited the pool of new potential participants

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[37]In the appendix, we replicate this analysis using only the days where at least 10 persons registered on *Animap.fr* and there we observe little change in the profile of registrants through the entire period.

Figure 6: Cosine Similarity
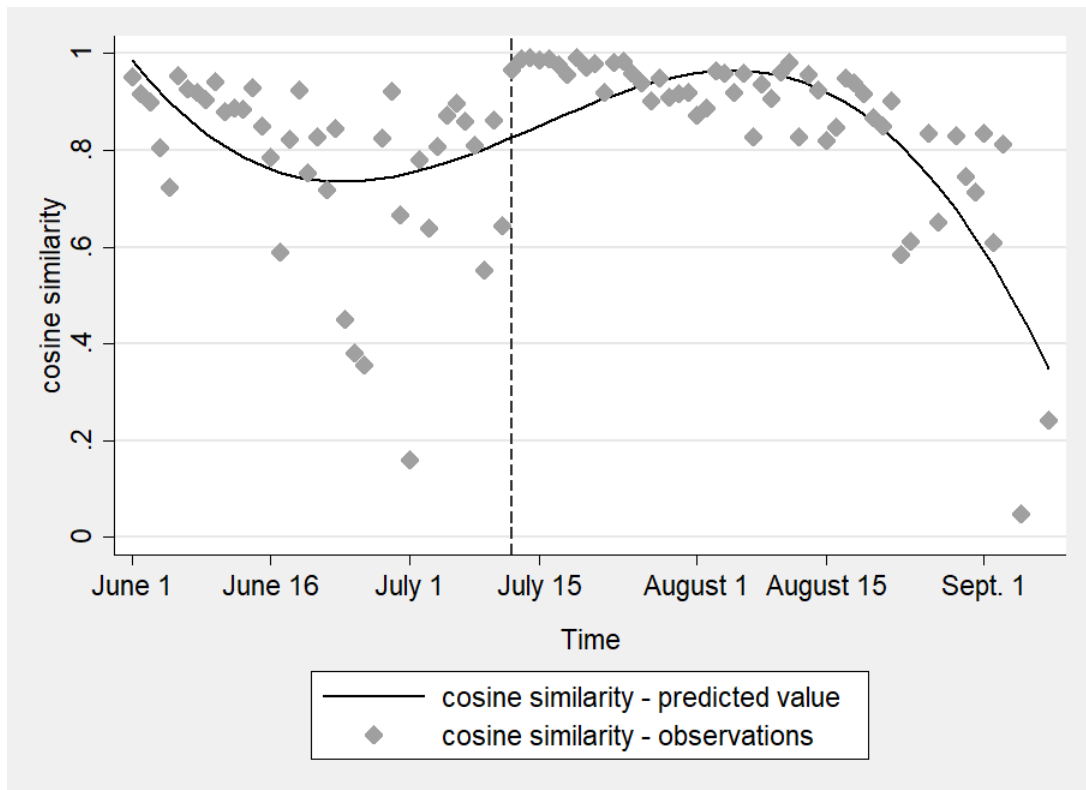
Source: This graph uses data from the open data of the French government. It shows the number of first doses delivered per week before and after the government extended the "Health Pass". The two dashed lines respectively correspond to the speech of E. Macron on the 12th of July and the extension of the pass on August, 9. The data are available at: https://www.data.gouv.fr/fr/datasets/donnees-relatives-aux-personnes-vaccinees-contre-la-covid-19-1/

to the collective actions. In turn, this may (partially) explain why the surge in registrations was short-termed: the movement did not attract people from other categories which limited the pool of potential registrants. Moreover, as the participants were selected from a few categories of entrepreneurs and a few industries, this may have impeded the public opinion to identify with action. On top of not participating directly, the public may have failed to sympathize with the movement.

6   Conclusion

In this article, we study the registrations on an anti health-pass website *Animap.fr* that was created in April, 2021. This website allowed entrepreneurs to claim that they would not ask for the health-pass of their clients. In particular, we analyze the dynamics of registrations following the announcements of E. Macron on the 12th of July.

We underline two main results. We find many registrations of CAM practitioners who form the largest group on the website. However, the registrants do not reduce to CAM professionals and some - such as restaurateurs or other professionals that were more directly targeted by the policy - were also present. Moreover, we find more registrations in *départements* that benefit from an important touristic industry. Thus, the registrations likely answered two different logics (that may have partially overlapped). Some professionals had *ideological* motives (e.g, the pass restricts liberty) and others had economical motives (e.g, the pass endangers businesses). This highlights the heterogeneity within the anti-pass movement and calls for a nuanced approach to such a movement. If governments rely on professionals when they build incentives schemes to increase the vaccination (e.g, the health-pass policy), they should identify professionals who will be reluctant for *ideological* reasons and those that are reluctant for *economical* reasons. Public policies seeking to help the

economically motivated professionals (e.g. subventions, tax credit, etc.) or arguments that recall that alternative health policies (such as lock-down) are worse for businesses may be sufficient to obtain the support of the vast majority of such professionals. On the contrary, *ideologically* motivated professionals may oppose the incentives schemes whatever the policy implemented to soft their economic burden.

Second, we highlight the crucial surge in registrations after the announcement by the French *Président* of the generalization of the health-pass policy. This surge has some relevance for the study of social movements. It shows that events (such as the government's announcements) are signals during which individuals revise their prior beliefs. Indeed, the expansion of the health pass hardly came as a surprise. Yet, altough it could have been anticipated, it is only *after* the announcement that we observe a surge in mobilization. Moreover, we suggest that despite it increases the *number* of participants in the mobilization, the announcement did not lead to a diversification of the profiles of the entrepreneurs who joined the action. In turn, this reveals some of the weakness of the mobilization. (a) Despite the mobilization increased, protesters were recruited only in a small part of the population. The pool of potential recruits was therefore limited. (b) The lack of diversity in the profile of registrants likely reduced the ability of the public opinion to identify (and therefore sympathize) with the anti-pass mobilization.

Our analysis may also explain *a posterior* the relative success of the health-pass policy. It appears that the groups of entrepreneurs that were pivotal in the enforcement of the policy (restaurateurs, bar owners, etc.) were not the main opponents to the policy: CAM professionals were. Opponents did mobilize after the announcements but the surge in mobilization ran out of steam quickly and failed to diffuse within the population.

Finally, our analysis underline the important mobilization of alternative medicine professionals

in the anti-pass movements. The role of those professionals in anti-vaccination movements has been noticed for a long time (Kaufman, 1967) even if their causal influences on vaccination decision have been questioned (Bryden et al., 2018; Hornsey et al., 2020). In all cases, it is not doubtful that those professionals have been important actors in resisting the health-pass policy. It calls for future researches and for a better assessment of the externalities (either positive or negative) generated by such an industry and - if needed - to reinforce its regulation.

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A Descriptive statistics on the number of first doses of vaccines delivered per week

Figure A1 displays the number of first doses of vaccines delivered per week in France. It shows that the announcement of E. Macron on the generalization of the health-pass were effective.

Figure A1: First doses per week (in thousands)
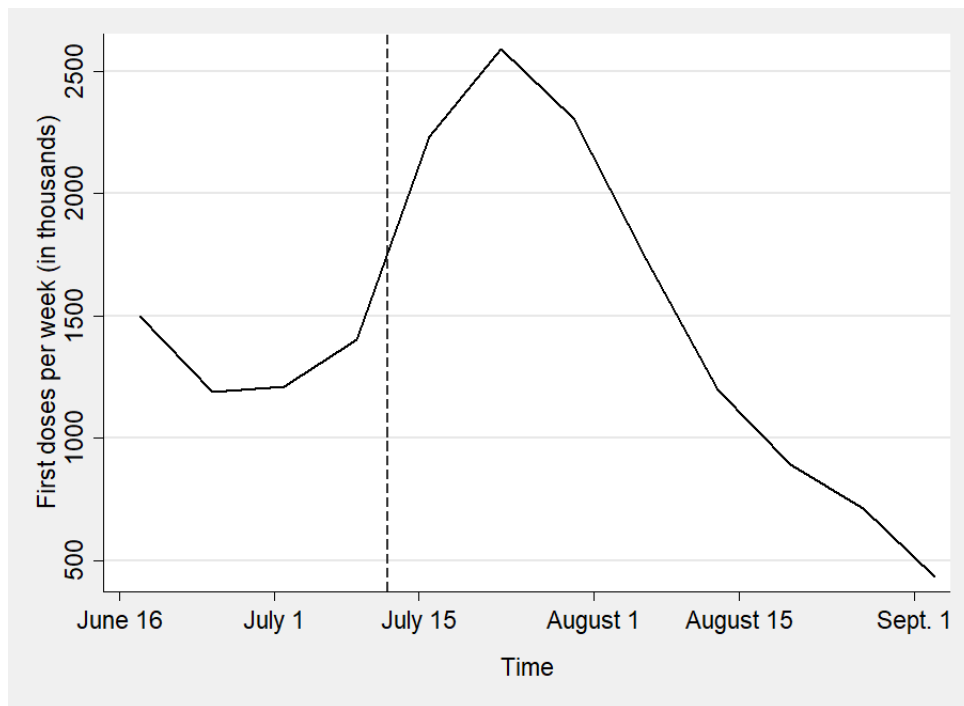
40

B Descriptive statistics at the *département* level and regressions at the *département* level

In the table A1, we provide descriptive statistics on the number of registrations by *département* (and the total number of registrations). We also provide descriptive statistics on the variable used in section 4.3 where we study the geographic variation in the mobilization. In particular, we use the census population of *départements* (in 2018), their unemployment rate during the first trimester of 2019 (before the pandemic started) and the median "standard of living" of households in 2017 (as a measure of the wealth of their population).[38] Finally, we consider the number of nights that people spent in touristic facilities in the *département* in 2019. This variable provides our primary information regarding the importance of the touristic industry in the *département*.

Table A1: Descriptive statistics at the *département* level

	mean	sd	count
Registration			
Registration on Animap.fr	70.27	51.284	95
Total registrations	6676.00	0.000	95
Tourism			
Tourism - number of nights	2259.38	4136.868	95
Tourism - number of nights (log)	7.14	1.036	95
Departement controls			
Population (in thousand)	682.57	516.497	95
Population (log)	13.16	0.759	95
Unemployment rate (2019-T1)	8.38	1.680	95
Level of life (in thousand)	20.79	1.619	95
Level of life (log)	9.94	0.073	95

Sources: This table uses the number of registrations per day and per categories on the website *Animap.fr*. See the data section for more details on the data.

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[38]The standard of living measures the wealth of the household divided by a number increasing with the size of the household and the age of its members.

# C   Descriptive statistics on the first wave of registration

In the main text, we analyze whether the announcement of the expansion of the health-pass had an impact on registrations on *Animap.fr* and whether this affected the diversity of profiles of professionals. Thus, we compare the profiles of persons that registered after the 12th of July to those that registered before.

Here, we provide descriptive statistics on the profile of those that registered on the website before the first of June; based on figure 3, we arbitrary selected this date in order to delimitate the first wave of registration but we have checked beforehand that taking other dates into account does not significantly affect the results.

On this date, we counted 3,078 different pages. 33.82% of them have written a description, although it is often a basic explanation of what the company does. More interestingly, we used the informed category of professionals and plotted them in Figure A2. This is where the high percentage of professionals working in the health industry appears. Two items should be noted, however: (a) *Nearly all* professionals are CAM practitioners (naturopathy, energy healing, Chinese medicine, etc.), (b) the percentage (22%) is underestimated because many CAM practitioners selected other categories (such as "services" or "other").

At least 21% of the professionals who (i) wrote a description and (ii) did not select the "health and medicine" category seem to be CAM practitioners. To obtain this figure, we simply detected keywords (such as naturopath, osteopath, etc.) in the descriptions. This percentage increases further if we also count professionals such as yoga teachers who - although not providing health care - often suggest that they could improve the health of their clients.

Figure A2: Animap.fr - pages on the first of June
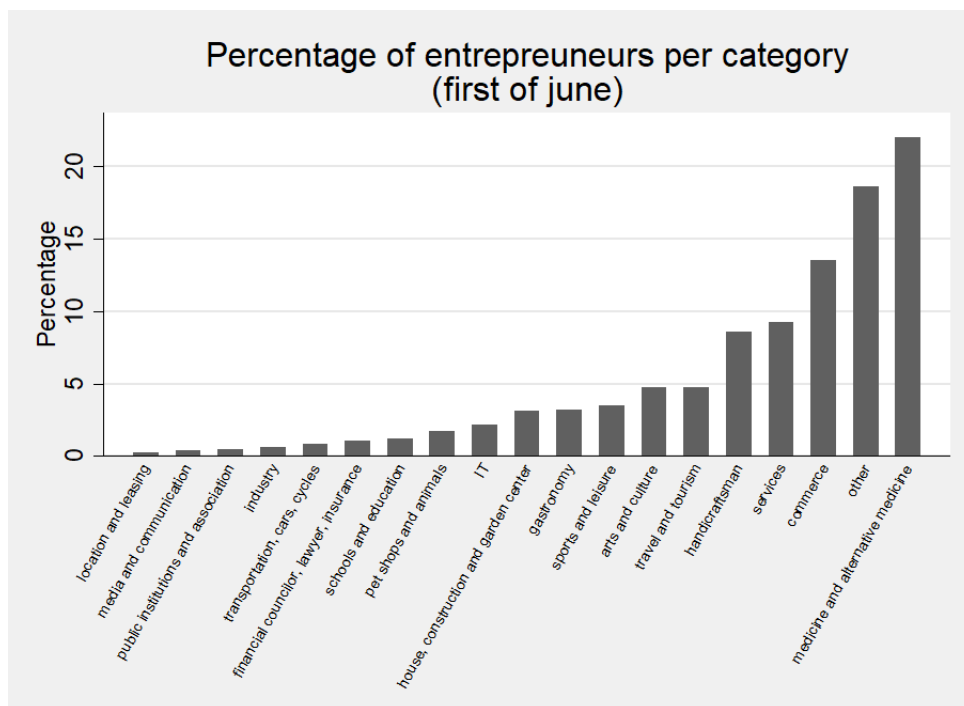
Source: The graphs show the proportion of pages per category of professionals on *Animap.fr*

D The effect of the announcements on the number of registrants - supplimentary tables

In the main text, when we estimate the effect of the announcement of E. Macron, we use the Newey-West standard errors in order to control for the autocorrelation in our data. In table A2 we re-estimate the above model with several modifications: (a) we allow for a higher order of autocorrelation in the standard errors (column 1) or (b) assume no autocorrelation (column 2). Then, (c) we include the lag term of the dependent variable (column 2, 3 and 4). In the columns that include a lag term, the results remain coherent with our previous estimates. Indeed, the *instantaneous effect* of the announcement consists of only 75 additional registrations for the first week and 22 for the second week. However, as the model allows for dynamic effect (through the lag term), the *long term effects* are respectively 183 and 56. Those effects are close from the previous non-dynamic estimates.[39]

In the main text, we use simple linear regression models in order to estimate the effect of the announcement of the expansion of the health-pass on the number of registrants on *Animap.fr*. While this has the advantage of simplicity, a potential concern deals with the nature of the data that takes value in the set of positive integers. This can be observed in the table A3.

In order to insure the robustness of our results, we therefore re-estimate the model on the effect of the registrations using both Poisson and Negative binomial counting models. The results of such an exercise may be observed in table A3.[40]

The table also suggests a strong effect of the announcements but that the effect strongly decreases over-time. Here we obtain a statistically significant effect for the third and fourth weeks. As the marginal effects are not easily readable through the table, we also predicted the number of registrations using the estimates. Then, we computed the average predicted number of registrations during the week before the announcement and then in the weeks after the announcements of E. Macron. The model (2) predicts 170.4 additional registrations during the first week after the announcements with respect to the pre-announcement period, 72.4 during the second week, 27.8 during the third week and 25.2 during the fourth week. Model (4) predicts respectively 167.8, 72.4, 27 and 25.3 extra-registrations during the four weeks. Those numbers are comparable to those of table 2, although once more, the effect on the third and fourth weeks are slightly more pronounced.

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[39]If ρ is the coefficient associated with the lag of the dependent variable, the long term effect associated to a coefficient β is: $\frac{\beta}{1-\rho}$

[40]We used the glm command in Stata in order to estimate those models while considering autocorrelation concerns in the distribution.

Table A2: Regressions of announcements on registrations

	Number of registrations per day			
	(1) obs	(2) obs	(3) obs	(4) obs
Effect of announcements				
First week	168.667***	75.012***	75.012**	75.012**
	(31.095)	(28.510)	(33.268)	(34.362)
Second week	71.055***	22.370*	22.370*	22.370*
	(13.694)	(12.449)	(12.517)	(11.953)
Third week	22.007*	7.180	7.180	7.180
	(11.464)	(7.163)	(7.498)	(7.523)
Fourth week	8.488	4.186	4.186	4.186
	(9.223)	(6.644)	(6.462)	(5.717)
lag				
lag of the registrations		0.587***	0.587***	0.587***
		(0.120)	(0.108)	(0.091)
Month dummies	✓	✓	✓	✓
5th order polynomial	✓	✓	✓	✓
Day of week effect	✓	✓	✓	✓
Obs	146	145	145	145
Lag	2	.	1	2

Sources: This table uses the number of registrations per day on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the number of registrations per day. All columns provide the results of OLS regressions where we gradually add controls for the dynamics of the registrations on the website. Newey-West (HAC) standard errors are provided in parenthesis.

Figure A3: Density of registrations - animap.fr
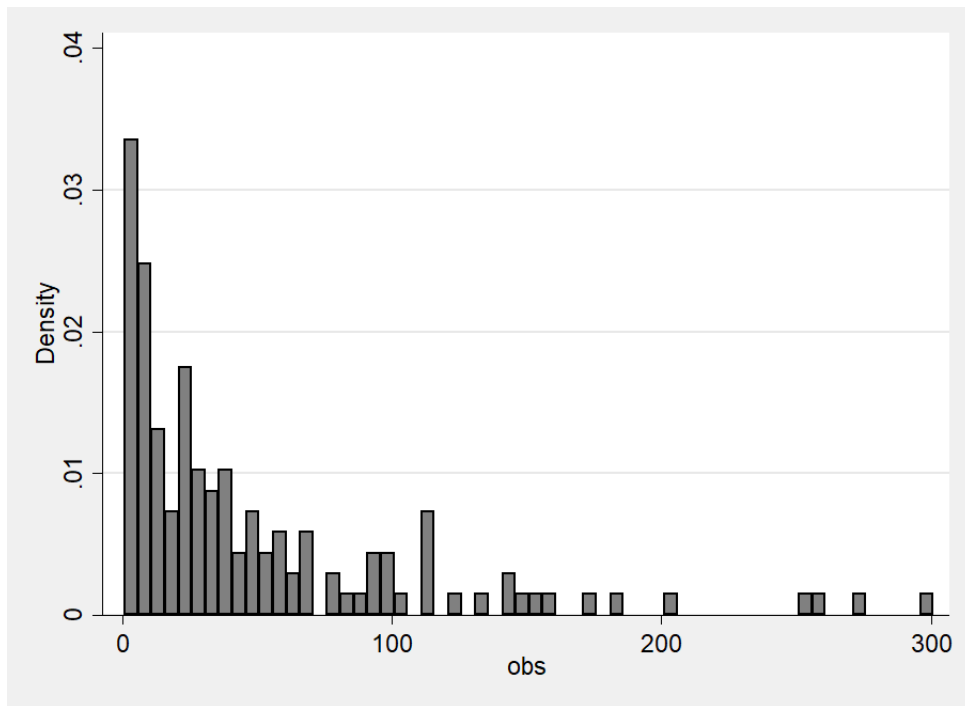
Source: The histogram depicts the density of the variable "registrations per day."

Table A3: The effect of the announcements on the number of registration - counting model

	Registrations per day			
	(1) obs	(2) obs	(3) obs	(4) obs
obs				
Effect of announcements				
First week	2.500***	2.923***	2.814***	2.799***
	(0.293)	(0.314)	(0.268)	(0.261)
Second week	1.448***	2.060***	1.736***	1.837***
	(0.290)	(0.328)	(0.260)	(0.263)
Third week	0.426	1.003***	0.606**	0.763***
	(0.265)	(0.318)	(0.257)	(0.242)
Fourth week	0.193	0.544**	0.260	0.545***
	(0.200)	(0.249)	(0.178)	(0.193)
Month dummy		✓		✓
5th order polynomial	✓	✓	✓	✓
Day of week effect	✓	✓	✓	✓
Model	Poisson	Poisson	NB	NB
Obs	146	146	146	146
Lag	1	1	1	1

Sources: This table uses the number of registrations per day on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is number of registrations per day. Columns (1) and (2) use a Poisson counting model while the columns (3) and (4) use a negative binomial model. Newey-West standard errors are provided in parenthesis.

Announcements and the diversity of entrepreneurs - Supplementary tables

In the main text, we measure whether the probability to find a professional of the health industry or a restaurateur vary after the announcements of E. Macron. The first category is not directly targeted by the policy but - as it contains CAM - is over-represented in the movement. The second category was directly targeted by the health-pass.

In table A4 we repeated the same analysis but use alternative ways to define the type of professionals we analyze. In columns (1) and (2), we use the descriptions of the firms on *Animap.fr*. We detectected 37 keywords related to health, CAM or close activities.[41] We use the presence of those words in the description in order to infer they were opposed to the pass for ideological motives.

Then, in column (3) and (4) we consider the categories that had relatively high chances to be affected by the policy. This include "gastronomy and restaurants", "travel and tourism", "art and culture" and "sports and leisure."

As in the main text, we observe little changes in the probability to find professionals in those categories after the speech of E. Macron.

In the main text, when we measure the cosine similarity between early registrants and the others, we observe an increase in (cosine) similarity after the 12th of July. We explained that this was due to the very few registrations observed in the weeks before the 12th of July.

Here, we replicate the analysis using only the days where we observe a minimum of 10 registrations. This is done in table A5. In this table, most of the estimates are not statistically different from zero. This once more implies that the announcement of E. Macron did not lead to a diversification in the profile of protesters.

Similarly, in the main text, we explain that (due to the impossibility to compute the cosine similarity when we observe no registration), the temporal nature of the data might be complex to accommodate. In particular, we cannot control for autocorrelation in the standard errors. In table A6, we employ several method to take this issue into account. In column (1) and (2) we add a lag of the dependent variable (in column (2), we further restrict the sample to days with at least 9 observations). A re-insuring fact is that the lag variable is not statistically significant. Then, in column (3) and (4), we restrict the sample to the series of days (between the 28 of June and the 25 of August) where the serie is complete. This does not affect the findings.

---

[41] We include keywords for "Yoga", "Aikido", "Shiatsu", "Reiki" "Qi gong" "Tai chi" and "Meditation". While they are not CAM practitioners, in the descriptions they often claimed those practises were means to improve the health of their clients.

Table A4: Announcements effects on categories of entrepreneurs

	Categories of professionals			
	(1)	(2)	(3)	(4)
	Health 2	Health 2	Restaurants	Restaurants
main				
Effect of announcements				
First week	0.036	0.154	-0.013	-0.310
	(0.051)	(0.219)	(0.012)	(0.283)
Second week	-0.011	-0.051	-0.011	-0.264
	(0.057)	(0.247)	(0.014)	(0.325)
Third week	0.107	0.443	0.008	0.136
	(0.069)	(0.286)	(0.018)	(0.348)
Fourth week	-0.051	-0.232	-0.000	-0.018
	(0.063)	(0.286)	(0.018)	(0.356)
3rd order polynomial	✓	✓	✓	✓
Day of week effect	✓	✓	✓	✓
Model	LPM	Logit	LPM	Logit
Obs	2344	2344	6676	6676
R^2	0.005	0.004	0.003	0.007

Sources: This table uses the categories of entrepreneurs that registered on the website *Animap.fr* and their descritpions. See the data section for more details. *Notes*: In columns (1) and (2) we use as dependent variable whether we could infer from its description that the professional work in the health industry (by detecting keywords such as "naturopath", "homeopath", etc.). The sample is therefore limited to entrepreneurs that wrote a description. In columns (3) and (4) we consider all the categories of professionals that faced a high risk of being targeted by the health pass (tourism, gastronomy, etc.). Columns provide the results of a linear probability or a logistic model. Robust standard errors are provided in parenthesis. For logistic models, the R2 is a pseudo-R2.

Table A5: The effect of the announcement and similarity to early registrations

	The dependent variable is the cosine similarity			
	(1)	(2)	(3)	(4)
	cosine_sim	cosine_sim	cosine_sim	cosine_sim
Effect of announcements				
First week	0.115***	0.086	0.104	0.098
	(0.016)	(0.081)	(0.084)	(0.085)
Second week	0.094***	0.024	0.041	0.014
	(0.018)	(0.084)	(0.089)	(0.090)
Third week	0.040**	-0.053	-0.041	-0.069
	(0.018)	(0.075)	(0.079)	(0.081)
Fourth week	0.056**	-0.028	-0.023	-0.026
	(0.023)	(0.054)	(0.056)	(0.060)
Month FE				✓
5th order polynomial		✓	✓	✓
Day of week effect	No	No	Yes	Yes
Obs	69	69	69	69
R^2	0.237	0.359	0.449	0.475

Sources: This table uses the number of registrations per day and per categories on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the cosine similarity between the professional that registered at date d and those that registered before June. All columns provide the results of OLS regressions where we gradually add controls for the dynamics of the registrations on the website. Robust standard errors are provided in parenthesis.

Table A6: The effect of the announcement and similarity to early registrations

	The dependent variable is the cosine similarity			
	(1)	(2)	(3)	(4)
	cosine_sim	cosine_sim	cosine_sim	cosine_sim
Effect of announcements				
First week	0.070	0.190**	0.119	0.228*
	(0.081)	(0.087)	(0.094)	(0.135)
Second week	-0.059	0.113	0.116	0.246
	(0.103)	(0.082)	(0.108)	(0.157)
Third week	-0.154	-0.000	0.078	0.155
	(0.099)	(0.068)	(0.081)	(0.113)
Fourth week	-0.084	0.012	0.071	0.102
	(0.066)	(0.050)	(0.055)	(0.072)
lag				
lag of the cosine	0.189	-0.311		-0.297
	(0.181)	(0.271)		(0.199)
Month FE	✓	✓	✓	✓
5th order polynomial	✓	✓	✓	✓
Day of week effect	✓	✓	✓	✓
Obs	88	65	58	57
R^2	0.557	0.530	.	.

Sources: This table uses the number of registrations per day and per categories on the website *Animap.fr*. See the data section for more details on the data. *Notes*: The dependent variable is the cosine similarity between the professional that registered at date d and those that registered before June. All columns provide the results of OLS regressions where we gradually add controls for the dynamics of the registrations on the website. Robust standard errors are provided in parenthesis.

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