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Parental Attitudes and Beliefs about Vaccines: Unexpected Effects of a Hepatitis B Vaccination Campaign*

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Abstract

We evaluate the impact of a French vaccination campaign against Hepatitis B (HB) in 1994. Using a regression discontinuity design, we show that this campaign created an exogenous shock on vaccination behavior, increasing the vaccination rate for children aged 11 and above. We also show that this vaccination scheme led to a decline in the knowledge about HB transmission modes, as well as public confusion about the target population. But our most important result is a drop in measles, mumps, and rubella (MMR) vaccination rate and an increase in the belief that measles is a benign disease. We interpret these results as a salience effect: the focus on HB vaccination may lead to a decrease in the beliefs that other vaccines are as important. We find that the decrease in MMR vaccination is mostly due to high-educated parents who are more likely to substitute MMR with HB for their children, and could have been influenced by their family doctor. The effect on MMR vaccination was relatively unexpected and may imply a negative externality. Measles is an extremely contagious disease. If the vaccination rate falls, the disease will spread further, raising the question of the net effect of the HB vaccination campaign on the well-being of the population. Overall, it shows the necessity - but also the difficulty- to evaluate the effects of a public policy as a whole, taking into account all potential side effects but also unexpected adverse effects.

JEL Codes: I10, I12, J18
Keywords: *vaccination campaign, hepatitis B, measles, mumps, rubella, spillover effects, regression discontinuity design, sharp design*

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INTRODUCTION

Vaccination is an individual choice or a parent's decision for her child. However, this choice generates positive collective externalities. An individual who gets vaccinated against an infectious disease, not only decreases her likelihood of being infected, but also decreases the likelihood of others becoming infected. This choice may also be affected by vaccination choices of others. As vaccination reduces transmission of an infectious disease, it can provide an incentive for individuals to be free-riders, i.e. to benefit from the vaccination of others while avoiding the costs of vaccination. For them, there is no monetary cost, no wasted time to be vaccinated, no side effects, i.e. no adverse effects related to the injection of the vaccine. Overall, this means that the cost-benefit ratio at the individual level may be different from the cost-benefit ratio at the collective level.

In order to eradicate an infectious disease, 80 to 95% of the population (depending on the disease considered) has to be vaccinated. For public policymakers, implementing a vaccination campaign is one way to increase vaccination coverage and to fight an infectious disease. However, they need to anticipate the reactions of the population to a vaccination campaign. If no one wants to be vaccinated, the disease continues to spread. On the contrary, if individuals react positively to the campaign and decide to vaccinate themselves, it can slow down the propagation of the disease. The information provided during the campaign may also influence individuals' beliefs about vaccination and modify individuals' perception of vaccination in general. Therefore, we could expect positive spillover effects of the campaign onto other vaccines and an increase in knowledge about the diseases.

Our paper focuses on Hepatitis B (HB). HB is an infectious disease leading to chronic disease with a risk of death from cirrhosis and liver cancer. The HB virus is transmitted through sexual relations and blood, or at birth from the mother to the child (Wright and Lau, 1993). Given these transmission modes, the risk to contract HB is not linear across age groups: it is low during childhood, a peak is reached for the 20-29 years old group, after which the risk decreases (Nauche, 2001). The transmission among drug users or via sexual relations are the most frequent modes of transmission. Once an individual contracts HB, no treatment can be administered to recover from the disease. HB is a widespread world disease: two billions people have been or are infected worldwide and approximately 350 millions have chronic HB. In France, endemicity is quite low: chronic HB is estimated to affect about 0.65% of adults aged 18 to 80 (prevalence), i.e. about 280,000 individuals (Meffre et al., 2006).

Following recommendations made by the World Health Organization to increase vaccination rates, the French government launched a major vaccination campaign against HB in 1994, that was implemented in two steps.

First, in June 1994, the French government subsidized and launched a major communication campaign against HB, mainly directed towards young people, through TV and radio commercials and the distribution of leaflets. It aimed at increasing knowledge about HB.

Second, from September 1994 on, free vaccination was offered to pupils in middle and high school, ie. to pupils aged 11 and above. This measure therefore created an exogenous shock on vaccination behavior. We examine the effects of the 1994 vaccination campaign on parental attitudes and beliefs about vaccines and parental understanding of the campaign.

We use data from the 1995 Health Barometer, collected by the French National Public Health Agency, to analyze the effects of child eligibility to the free vaccination campaign, capturing both the effects of the information campaign and the effects of the free vaccination scheme. Apart from its effect on HB vaccination, it is expected that the vaccination campaign, while delivering positive messages and underlining the benefits of the vaccine, may also improve confidence in vaccination in general, thus encouraging parents to vaccinate their children against other diseases, like the Measles, Mumps and Rubella (MMR). It may also improve knowledge about vaccination (eg. the modes of transmission of HB).

Our data show a strong discontinuity in HB vaccination rates at the age of 11, which corresponds to the age at which pupils usually start middle school. The probability of being vaccinated against HB is approximately 40 percentage points higher for children aged 11 and above than for children below this threshold. The free vaccination scheme therefore led to a higher level of immunization among children. Moreover, we find that parents whose child was exposed to the vaccination scheme (ie. whose child was older than 11 in 1995) have less knowledge about the modes of transmission, and are confused about the targeted population. An even more striking result is that the HB vaccination campaign had a strong impact on MMR vaccination, which decreased by about 13 percentage points.

The paper proceeds as follows. Section 1 provides an overview of the literature on the impact of vaccination campaigns or polemics on vaccination behaviors, and specifies our contribution to the literature. Section 2 describes in more detail the 1994 vaccination campaign. The empirical strategy is presented in Section 3. Section 4 presents the data and some descriptive statistics. Section 5 reports on the main results, as well as some robustness checks and potential mechanisms that may drive our results. Section 6 presents the final discussion and concludes.

1 PREVIOUS LITERATURE

Several recent studies focus on individual reactions to vaccination campaigns, that take the form of information campaigns or mandatory vaccination campaigns. Both have proved to be very effective at increasing vaccination rates against the disease targeted. Lawler (2017) compares different states in the US, characterized by different hepatitis A (HA) policies: vaccination can be mandatory or only recommended. The author shows that both policies are highly effective at increasing vaccination rates and decreasing the incidence of the disease. Individuals facing the mandatory campaign immediately increase their vaccination rate while the recommendation campaign have a more gradual effect that continues to increase for up to 4 years following implementation. Abrevaya and Mulligan (2011) focus on a vaccination campaign in the US: some states implemented a policy that forced children to get specific vaccines in order to start daycare or school. The authors show a strong and immediate causal effect of this campaign on vaccination rates, a peak of which is reached two years after the implementation of the policy. However, the causal impact decreases six years after the adoption of the vaccination policy.

Vaccination campaigns can also lead to positive spillovers. The literature indicates that they can have beneficial effects beyond their intended effect on vaccination against the targeted disease. Moghtaderi and Dor (2016) study the impact of a recommendation campaign for vaccination against Human Papillomavirus (HPV) in the US. Using a fuzzy regression discontinuity design, they show that women who have been vaccinated against HPV are more likely to do screening tests, possibly due to increased awareness of the benefits of prevention. Carpenter and Lawler (2019) show the direct and spillover effects of state requirements for middle school pupils having a tetanus, diphtheria, and pertussis (TDP) vaccination before starting middle school. These mandates increased TDP vaccination adherence by 13 pp and reduced pertussis morbidity in the whole population by 32 percent. They also document cross-vaccine spillovers: the mandates increased adolescent vaccination for meningococcal disease, HPV initiation and HPV completion. Spillover effects are higher for children from low socio-economic households, who initially have a lower vaccination rate in the absence of the mandate. Similarly, Bütikofer and Salvanes (2020) find a beneficial effect of a Norwegian tuberculosis testing and vaccination campaign on health and socioeconomic inequalities. This public campaign implemented in 1948 drastically reduced the tuberculosis propagation. The children from a low socioeconomic background benefited more from this campaign, leading to a reduction in socioeconomic inequalities in adulthood.

Whatever the kind of campaign implemented, the information role is essential for vaccination acceptance of the population. Chamoux (2006) evaluates the impact of influenza vaccination campaigns for health professionals in France, combining both information (letters, prevention meetings) and vaccination schedules (at work). This campaign had a strong impact : vaccination rates were 2.6 times greater than the previous year. Bruneau et al. (2001) implemented an experiment to promote HB vaccination coverage in Montreal. Like France, Montreal has implemented a universal vaccination program for all primary school students since 1994. However, the vaccination coverage against HB is low. The experiment consisted in encouraging teachers to give informative lectures in classes on HB and to warn parents and students about the dangers of the disease. As a result, 38% of the students had received at least one dose of vaccine six months after the introduction of the campaign. The study shows that the main reasons for non-vaccination were due to lack of information or no access to the vaccination site.

Finally, recent studies underline the effects of a controversy on the vaccination take-up. Anderberg et al. (2011) study the MMR controversy in the UK (that there may be a link between autism and getting vaccinated against MMR). They show that vaccination against the MMR declined as soon as the controversy broke out, dropping by over 5 pp in 5 years, before increasing again. Moreover, the uptake rate of the MMR vaccine declined faster in areas where a larger share of parents is educated. In other words, more educated parents respond more quickly to information. They also find spillover effects: a decline in the uptake of other uncontroversial childhood vaccines. Chang (2018) studies the same MMR controversy in the US and finds results in line with those of Anderberg et al. (2011). There was an immediate decline in MMR vaccination rate, negative spillovers onto other vaccines and more educated individuals responding more to the controversy (either by stopping vaccination for other diseases, or by delaying it). However, unlike Anderberg et al. (2011), the author does not find any reaction in vaccination behaviours once the potential correlation between MMR vaccination and autism was refuted.

In this paper, we focus on individuals' reactions to the 1994 HB vaccination campaign in France. We observe a strong causal impact of the campaign on HB vaccination adhesion. We also document potential spillover effects of the campaign onto other vaccines. However contrary to the positive spillover effects always observed in literature, we find negative spillover effects on another vaccine, the MMR. We also focus on several outcomes that may explain our results and that, to our knowledge, have not yet been studied in the literature: parental understanding of the campaign and parental beliefs about vaccines. Moreover, we investigate the mechanisms which could drive our results. In the following section, we describe the HB vaccination campaign implemented in France in 1994.

2 THE HB VACCINATION CAMPAIGN

The HB vaccine was created in France in 1976 by P. Maupas (see Figure A1 in the Appendix). France was one of the first countries worldwide to deliver the HB vaccine, in 1981. One year later, this vaccination was recommended for health professionals. In 1992, the World Health Assembly of WHO ratified the proposal for universal vaccination against HB, regardless the level of HB endemicity in the country. In countries like France where the endemicity is lower than 2%[1], WHO recommended the vaccination of all teenagers besides the vaccination of newborns. The objective was to reach a 80% coverage of the population in order to eradicate the disease.

Therefore, in France, in July 1994, the Health Minister announced a massive and national vaccination campaign to eradicate HB, which was implemented in two steps.

First, in June 1994, the French government subsidized and launched a major communication campaign, mainly directed towards young people, through TV and radio commercials, ad inserts, billboards and the distribution of leaflets. A youth radio station, using a promotion truck for HB vaccination, was present in the major French cities. This campaign advertised the seriousness of the disease, the modes of transmission and the necessity to get preventive vaccination in teenage years. Unfortunately, there was misinformation during this campaign. In particular, the prevalence of the disease was overestimated and information about the modes of transmission were incorrect, saliva being wrongly listed as one of them (Nauche, 2001). This period also coincides with the explosion of the debates about AIDS. Given that the modes of transmission are similar and that the target population is the same (drug users, teenagers), there may have been some confusion among individuals, assimilation between the two diseases and therefore an overestimation on the risk and danger of contracting HB[2].

Second, from September 1994 onwards, a free vaccination campaign was launched jointly by the Ministry of Health and the Ministry of Education for all pupils enrolled in middle and high school (therefore aged 11 and above). This second part of the campaign had been announced in June. Explanatory letters were first sent to parents, informing them about the health risks incurred by their non-vaccinated children, and about the implementation of a free vaccination campaign at their child's middle or high school. Meetings at school were also organized by school doctors and school nurses, to answer questions parents and pupils had. This was then

[1] It was estimated to be between 0.1% and 0.5% before the generalized vaccination coverage (Inserm, 1997)

[2] For example, one leaflet was entitled "Hepatitis B/AIDS: we're fighting the same battle!".

an "opt-out" policy: parents had to justify their opposition to vaccination at school[3]. For those who accepted to get their child vaccinated, the three injections of the vaccine were administrated in all French middle and high schools between January and July 1995, for children aged 11 and above (Brice, 1996). The injections were planned to be made at school but parents also had the possibility to have it done independently, during a GP's or pediatrician consultation. However, there were financial incentives to have their children vaccinated at school: it was free at school, but payable when the injection was done during the family doctor's consultation. Only 65% of the price of the vaccine, the injection and the doctor's visit were reimbursed by the public health insurance; the remaining 35% (co-payments) and potential supplements were covered by parents or through private complementary health insurance. As a consequence, in 1995, among pupils aged 11 and more and vaccinated against HB, only 21% had been vaccinated by their family doctor, while 79% had been vaccinated at school (Brice, 1996). Finally, in January 1995, the HB vaccine was included in the vaccination schedule of children (see Figure A1 in the Appendix), but it was not mandatory.

However, soon after the launch of the campaign, the HB vaccine was held responsible for causing multiple sclerosis, leading to a huge controversy regarding the effectiveness of the vaccine. The first French scientific article about central nervous system demyelination potentially caused by HB was published in June 1995 (Kaplanski et al., 1995)[4]. Access to this information was restricted to the scientific community but articles in the press, that broadcasted this finding, were published from 1996 onwards[5]. Consequently, following the precautionary principle, the vaccination campaign was interrupted in schools in September 1998; it lasted only 4 academic years.

3 EMPIRICAL STRATEGY: REGRESSION DISCONTINUITY IN A SHARP DESIGN

In order to estimate the causal effect of the 1994 vaccination campaign on various outcomes, we use a regression discontinuity approach in a sharp design. More precisely, our identifying strategy exploits the sharp discontinuity in the probability of eligibility to the vaccination campaign at the age of 11. Specifically, we use local linear regressions (Hahn et al., 2001; Imbens and Lemieux, 2008). It amounts to selecting the observations within a bandwidth on

[3]Reasons for opposition to vaccination at school were usually: i) an opposition to vaccination in general; ii) the decision to make the injection during a visit to the family doctor; iii) the child is already vaccinated.

[4]The very first scientific article was written by a Belgium team (Herroelen et al. (1991)).

[5]The first television news that mentionned the potential link between HB and multiple sclerosis was broadcast on the 13th of December 1996 (source: National Audiovisual Institute).

either side of the cut-off (age 11) and estimating the effect of eligibility to the campaign on Y_i (several outcomes that will be described later), as the effect of the dummy $\mathbb{1}_{A_i \geq 11}$ on Y_i in the following equation:

$$Y_i = a_0 + a_1 \mathbb{1}_{A_i \geq 11} + a_2 f(A_i - 11) + u_i \tag{1}$$

A_i is the age of the child in 1995 and a_1 identifies the causal effect of the 1994 vaccination campaign on different outcomes. As the vaccination campaign was implemented in two steps, a_1 measures the impact of both the communication campaign and the eligibility to the free vaccination scheme, whose own effect cannot be distinguished. Indeed, one may think that the *communication* campaign was nationwide and affected the whole population, without any apparent difference between the treated and untreated households. However, we think that households with children aged 11 and more may have paid more attention to this campaign, because i) their children were directly targeted by the campaign; ii) the implementation of a vaccination campaign at school had been announced since the beginning of the communication campaign. Therefore, they may have been more interested by the campaign and may react differently. As a consequence, we suppose that the impact of both steps of the campaign are confounded in a_1.[6]

In specification (1), $f(A_i-11)$ is a very flexible function of the distance to the cut-off (A_i-11), which is continuous at the age of 11. We estimate equation (1) using a local linear function of age for $f(A_i-11)$. In that case, $f(A_i-11)$ is defined as $(A_i-11)\mathbb{1}_{A_i \geq 11}$ and $(A_i-11)\mathbb{1}_{A_i<11}$. We also use a local linear spline function of age or a local quadratic function of age. The running variable, the age of the eldest child A_i, being discrete, we must assume that the function $f(A_i - 11)$ is correctly specified to identify the effect of the treatment.We thus performed Goodness-of-fit (GoF) tests, that are reported in all tables of results (Lee and Card, 2008; Lemieux and Milligan, 2008). To choose the best specification, we rely on the AIC criterion and choose the specification which returns the lowest AIC.

Regressions are performed using a bandwidth of 5 years around the reform: we restrict the sample to children aged between 6 and 15 years old. Robustness checks, using larger or smaller bandwidths are presented in the Appendix. As mentioned in Cattaneo et al. (2019), as our running variable is discrete, a more formal procedure of window selection is no longer needed.

Finally, following Lee and Card (2008), standard errors are clustered by age of the child.

In order to estimate the *causal* effect of the campaign, the expectations of the potential

[6]Note that we do not estimate regression discontinuity in a fuzzy design (ie. the 2nd step that would estimate the impact of an increase in HB vaccination rate on several other outcomes). We do not want to impose that changes in the outcomes only result from a change in vaccination against HB.

outcomes conditional on A are to be continuous:

$$E(Y_{ik}|A_i = a) \text{ is continuous in } a = 11, \text{ for } k = 1, 0. \tag{2}$$

Because this hypothesis is not testable, we first checked that variables related to the outcomes (eg. gender, age and level of education of the head of household, percentage of married couples, size of the household, rural/urban location) are continuously distributed at the age of 11 (see Figures A2 in the Appendix).

Second, a_1 and treatment status $E_i(a)$ (i.e. eligibility to the free vaccination campaign) are assumed to be locally jointly independent of the age of the eldest child:

$$a_1, E_i(a) \perp\!\!\!\perp A_i \text{ close to } A_i = 11. \tag{3}$$

This condition implies that children and their parents do not have perfect control on the age at which children go to middle school: they cannot manipulate the age threshold in order to benefit from the vaccination campaign. This is very likely to be the case. Indeed, teachers are the most likely to have control on this (they ask children to repeat a grade or skip a year), even if parents can oppose to it. Moreover, making children skip a year in order to benefit from the campaign seems very implausible, even impossible in our case. And even if it was the case, the vaccination campaign has been announced in June, when decisions to skip a year had already been taken. We analyzed formally this possibility by testing the continuity in the number of children of each age, as is usually done in regression discontinuity designs (McCrary, 2008). We do not find evidence of manipulation: this variable is continuously distributed before and after the age of 11 (see Figure A3 in the Appendix).

4 THE DATA

4.1 The 1995 Health Barometer

The regression discontinuity design is applied to data from the 1995 Health Barometer, a periodic national survey, representative of the French population and collected by the French National Public Health Agency[7]. Data collection took place in November and December 1995, approximately one year after the beginning of the vaccination campaign and before the polemic

[7] The survey was conducted by telephone. As a result, some individuals - such as the homeless, people without a hand-line, or people in hospital - could not be included in the survey

about potential side effects of the HB vaccine[8]. For each household, the data set contains information on parents and all children still living at home. In addition to the usual socio-demographic characteristics (age, gender, profession, education of each member of the household, ...), the survey contains detailed information on health status, access to health care and vaccination behavior (for different vaccines) of parents and their children.

The initial database contains 1993 households. We exclude households who are childless. We end-up with a sample containing 764 households with 1370 children. For the econometric analysis, we need to distinguish households exposed to the campaign from those who were not, ie. treated and untreated parents/children.

For outcomes relating to parents' vaccination rate or parents' beliefs and understanding of the campaign, ie. all outcomes defined at the parent level, we only keep one observation per household, the one of the head of household (the parent who filled in the questionnaire). Given the timing of the reform, a parent whose eldest child was 11 years old or more in 1995 is defined as treated, while a parent whose eldest child was 10 and below is defined as untreated.[9] The treatment groups are only defined according to the age of the eldest child in order to avoid a parent with several children to be both treated and untreated[10]. In this case, the estimated effect would be unclear. This final sample is composed of 764 observations, with 386 treated parents and 378 untreated parents. For outcomes defined at the child level, and relating to children vaccination rates, treated and untreated groups are defined at the child level.[11] Children aged 11 and more in 1995 are defined as treated, while those aged 10 and below are defined as untreated. The sample is composed of 1,370 observations, with 518 treated children and 852 untreated children.

4.2 Descriptive statistics

Table 1 provides descriptive statistics on the whole sample and for both the treated and untreated households.[12] It first reports variables that relate to the head of the household (i.e. to the one who filled in the questionnaire). The average age of the respondent is approximately 38. Unsurprisingly, parents whose eldest child is older than 11 (treated group) are significantly older (approximately 4 years older) than parents whose eldest child is younger than 10 (untreated). However, our estimates are valid as soon as the age of the respondent is continuous at

[8]Our data were also collected before the polemic about the potential link between autism and MMR, that broke out in 1998. More generally, to our knowledge, no polemic on vaccination had ever broken out.

[9]Note that the database does not contain the children age in months or the date of birth so we cannot be more precise in the definition of treated and untreated households.

[10]It would be the case if some of the children are more than 11 while some others are less than 10 in 1995.

[11]We also test the sensitivity of our results to the use of a sample only composed of the eldest child.

[12]There are no variables characterizing the child, except their age and immunization status towards 2 diseases, MMR and HB.

Table 1: Comparison of treated and untreated groups, using a bandwidth of 5 years around the 11 years old threshold

	(1) Whole sample Mean	(2) Untreated Mean	(3) Treated Mean	(4) T-test b
Socio-demographic characteristics				
Head of household:				
Male	0.39	0.36	0.38	0.02
Age	37.40	35.97	40.63	4.66***
Age at child birth	27.62	27.91	27.48	-0.43
French nationality	0.95	0.98	0.95	-0.03
No religion	0.24	0.25	0.24	-0.00
Do not practice religion	0.39	0.39	0.38	-0.02
Occasionally practice religion	0.30	0.29	0.29	0.00
Regularly practice religion	0.07	0.07	0.08	0.01
High school diploma and more	0.41	0.43	0.34	-0.08
Chronic diseases	0.22	0.18	0.25	0.07
Farmer	0.03	0.04	0.02	-0.02
Craftsman	0.03	0.02	0.04	0.02
Executive	0.13	0.09	0.12	0.03
Intermediate occupation	0.27	0.37	0.22	-0.16***
Employee	0.17	0.15	0.22	0.08
Blue collar worker	0.34	0.31	0.35	0.04
Pensioner	0.01	0.00	0.02	0.02
Other profession	0.01	0.02	0.01	-0.02
Household:				
Large cities (>200,000 inhab.)	0.33	0.29	0.32	0.03
Small cities (2,000-200,000 inhab.)	0.37	0.35	0.37	0.02
Rural area	0.30	0.36	0.31	-0.06
Equivalised income>1,500€	0.70	0.73	0.68	-0.06
Married	0.89	0.91	0.85	-0.06
Single	0.03	0.03	0.01	-0.02
Separated	0.08	0.06	0.14	0.07*
One child	0.44	0.27	0.35	0.08
Two children	0.39	0.50	0.40	-0.09
Three children	0.14	0.20	0.19	-0.01
Four children and more	0.03	0.02	0.05	0.02
Outcomes				
HB vaccination:				
Child HB vaccination	0.52	0.25	0.77	0.52***
Parent HB vaccination	0.32	0.38	0.29	-0.09
Parent's understanding of the campaign:				
Vaccination for newborns	0.55	0.57	0.52	-0.05
Vaccination for middle school children	0.90	0.90	0.92	0.02
Vaccination for the whole population	0.82	0.84	0.79	-0.04
Correct knowledge about HB contamination	0.25	0.23	0.23	-0.00
HB is transmissible by saliva	0.40	0.32	0.45	0.13**
Don't know how HB is transmitted	0.35	0.42	0.31	-0.11*
HB is a serious illness	0.78	0.74	0.80	0.06
MMR vaccination:				
Child MMR vaccination	0.85	0.93	0.80	-0.13***
MMR is a begnin illness	0.35	0.31	0.36	0.06
Non vaccination against MMR is risky	0.66	0.69	0.64	-0.05
Number of obs. (parent/children)	764/1370	171/392	242/444	

Note: ***Statistically significant at the 0.1% level; ** at the 1% level; * at the 5% level. The number of observations per variable may vary according to the number of missing values. The number of non-missing observations used for each variable are presented in tables A1 and A2 in the appendix. In the last line of the table, we report the highest possible number of parents/children observed in each group (treated, untreated and the whole sample). Column (1) computes the mean for the entire sample. Figures in columns (2) and (3) are computed using a bandwith of 5 years around the 11 years old threshold. Column (2) computes the mean for the sample of untreated parents (for socio-demographic characteristics and outcomes relating to parents beliefs and vaccination behaviours) or for the sample of untreated children (for children vaccination outcomes). Column (3) computes the mean for the sample of treated parents (for socio-demographic characteristics and outcomes relating to parents beliefs and vaccination behaviours) or for the sample of treated children (for children vaccination outcomes). Column (4) reports the coefficient and significance level of the test for equal means.
Source: Health Barometer 1995.

Table 2: Full definition of the outcomes

Outcome	Question	Answer	Values
HB vaccination:			
1. Child HB vaccination	Is your under-18 child vaccinated against HB?	Yes/No	1/0
2. Parent HB vaccination	Are you vaccinated against HB ?	Yes/No	1/0
Parent's understanding of the campaign:			
3. HB vaccination for newborns	Do you think newborns should be vaccinated against HB?	Yes/No	1/0
4. HB vaccination for middle school pupils	Do you think middle school pupils should be vaccinated against HB?	Yes/No	1/0
5. HB vaccination for the whole population	Do you think the whole population should be vaccinated against HB?	Yes/No	1/0
6. Correct knowledge about HB contamination	How do you get HB?	Sexual relations Blood	1
		Saliva Sweat Do not know	0
7. Saliva	Is HB transmissible by saliva ?	Yes/No	1/0
8. Don't know	Do you know how HB is transmissible ?	No/Yes	1/0
9. HB is a serious illness	Is HB a serious illness?	Yes/No	1/0
MMR vaccination:			
10. MMR child vaccination	Have you ever vaccinated your 1-16 years old child against MMR?	Yes/No	1/0
11. MMR is a benign illness	Do you think MMR is a benign illness?	Yes/No	1/0
12. Non MMR vaccination is risky	Not vaccinating your child against MMR is risky	Yes/No	1/0

the 11 years old threshold. This is the case, as shown in Figure A2b in the Appendix. Moreover, age at birth of the child is not significantly different between treated and non treated groups. Approximately 40% of the respondents are men; this proportion is the same on both sides of the discontinuity threshold.[13] Approximately 95% of the respondents hold the French nationality and this proportion is also the same on both sides of the discontinuity threshold. The remaining socio-demographic characteristics of the respondents (chronic disease, education, religion) do not significantly differ between the treated and untreated groups. Note however that one variable significantly differs between both groups: the proportion of respondents belonging to the intermediate occupation category. This proportion is significantly lower in the treated group (22% versus 37%). We will discuss later the potential impact of this difference on our results.

For variables that relate to the entire household (such as the marital status, the location and the number of children), we do not observe any significant difference between treated and untreated groups. This is confirmed by Figure A2 in the Appendix.

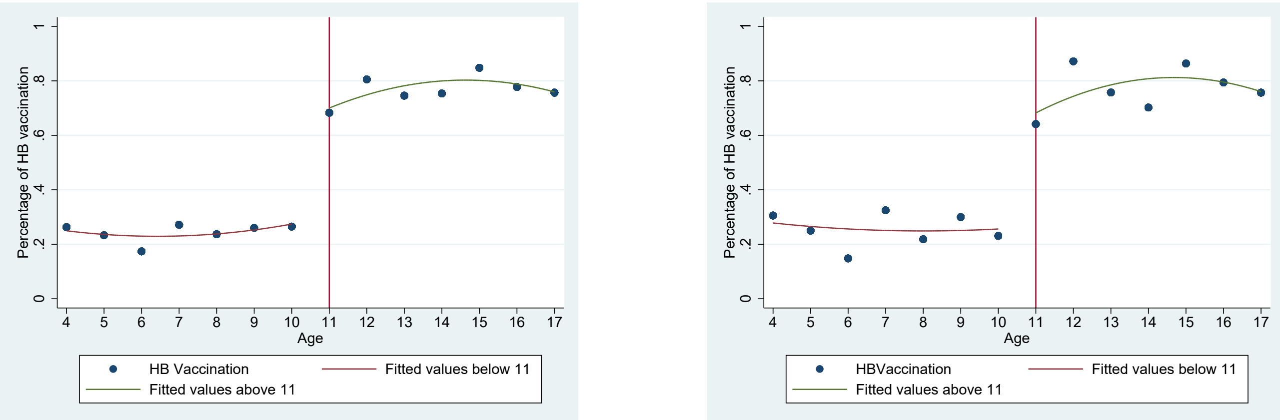
The second part of Table 1 provides some statistics on the outcomes that will be used in the analysis, both at the child's level or at their parent's level (see Table 2 for the description of these outcomes). Table 1 shows that treated children are 52 percentage points more likely to be vaccinated against HB than untreated children. They are also 13 percentage points less likely to be vaccinated against MMR. Treated parents are more likely to list saliva as a mode of transmission (+13 pp) and less likely to be aware of the transmission modes (-11 pp). For the other outcomes, such as parental HB vaccination, listing the correct modes of transmission, beliefs that newborns, middle-school children and the whole population should be vaccinated against HB, or beliefs that not being vaccinated against MMR is risky, HB is a serious disease and MMR is benign, no significant difference is observed between the treated and untreated parents.

4.3 Graphical evidence

Before presenting the results of the econometric analysis, we provide some graphical evidence on the impact of the eligibility to the vaccination campaign against HB. We first observe a huge impact of the campaign on the probability to be vaccinated against HB. Indeed, Figure 1a (resp. Figure 1b) show the HB vaccination rate according to the age of the child (resp. the age of the eldest child of the household). They show a large discontinuity at the age of 11 in 1995. About 70% of children aged 11 or more were vaccinated against HB, while this proportion is

[13] This proportion is much smaller than the proportion of men in the whole population. This could bias our results if mothers are more aware than fathers of their child's vaccinations. However our estimates are valid as soon as there is continuity in the proportion of mothers around the discontinuity threshold, which is the case (60% - see Figure A2a in the Appendix).

only 30% for pupils aged below 10. The vaccination campaign targeted children in middle and high school. This discontinuity at the age of 11 is consistent with figures of the starting age in middle school: 97% of children are 11 or more when starting middle school (65% are 11 years old, 24% are 12 and 8% are 13). Only 3% are under 10 (Brice, 1996). This explains the discontinuity at age 11 and over. The campaign targeted pupils starting middle school but also all pupils in middle and high school who had never been vaccinated. This explains why the rate of HB vaccination remains high until the age of 17. This illustrates a better immunization coverage against hepatitis B thanks to the campaign.



(a) Child HB vaccination rate, by age of the child (Sample: all children; N=1370)

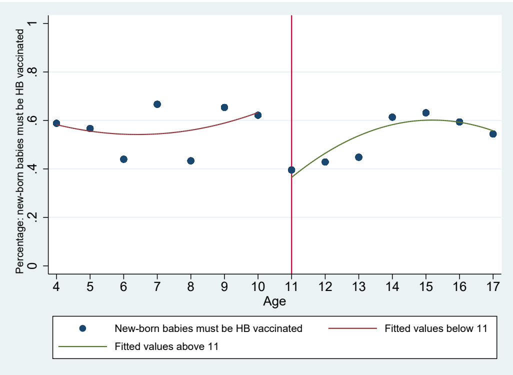
(b) Child HB vaccination rate, by age of the eldest child (Sample: eldest child of the household; N=764)

Figure 1: HB vaccination

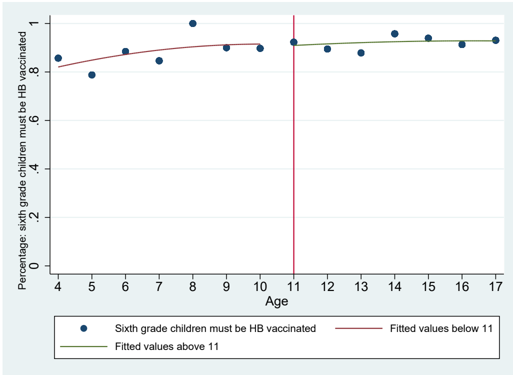
The proportion of individuals who believe that newborns and the whole population should be vaccinated against HB decreases at the 11 year-old threshold (see Figures 2a and 2c). In addition, parents of treated pupils report a poorer knowledge of HB transmission modes (see Figure 2d and Figures A5a, A5b in Appendix).

Finally, Figure 3a (resp. 3b) shows the MMR vaccination rate according to the age of the child (resp. the age of the eldest child of the household). Again, there is a discontinuity around the threshold. Below 11 year-old, approximately 90% of children are vaccinated against MMR; this is the case of only 80% of children aged 11 and more. This figure illustrates a possible negative spillover effect of the vaccination campaign against HB on MMR vaccination. Parents may have changed their attitude towards MMR vaccination. They are also less likely to believe that not being vaccinated for MMR is risky (64% against 69% - see Figure A6b in Appendix).

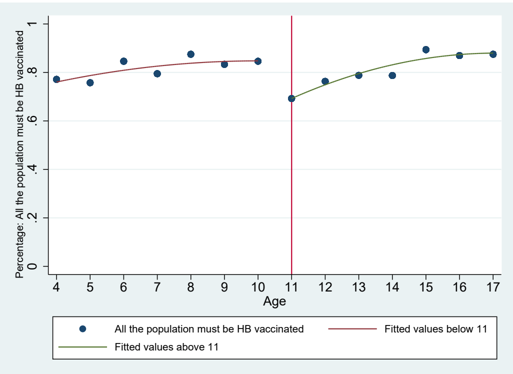
In order to evaluate the causal impact of the HB vaccination campaign on these outcomes, results of the econometric analysis are presented in the next section.



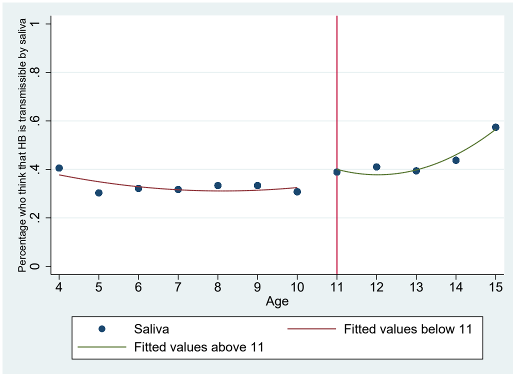
(a) Vaccination for newborns, by age of the eldest child



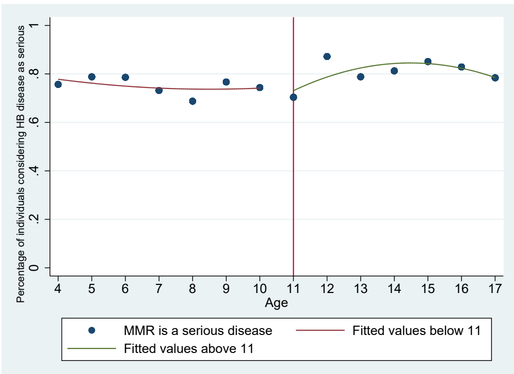
(b) Vaccination for middle school pupils, by age of the eldest child



(c) Vaccination for the whole population, by age of the eldest child

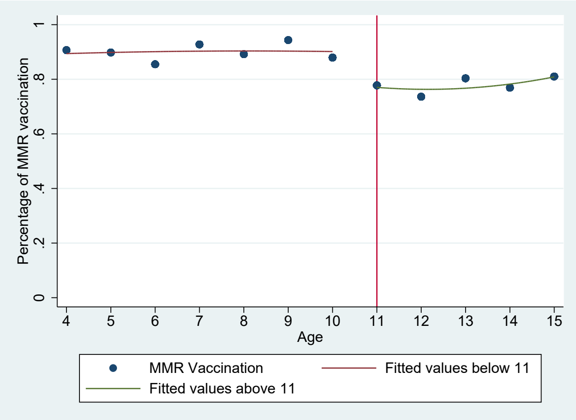


(d) Believe that HB is transmissible by saliva

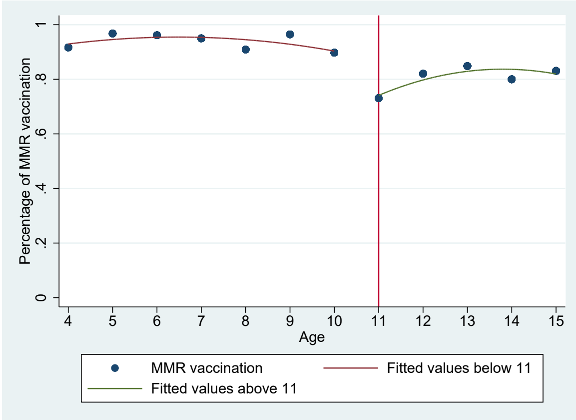


(e) HB is a serious illness, by age of the eldest child

Figure 2: Parent's understanding of the campaign (Sample: eldest child of the household; N=764)



(a) Child MMR vaccination, by age of the child (Sample: all children; N=1370)



(b) Child MMR vaccination, by age of the eldest child (Sample: eldest child of the household; N=764)

Note: There is no information on MMR vaccination for children aged 16 and 17 in the survey (see Table 2).

Figure 3: MMR vaccination

5 RESULTS

5.1 Main results

In our regressions, we consider several outcomes divided into three categories. First, outcomes that concern HB vaccination behaviors. They include both HB vaccination for the children and parent's. Second, outcomes that show parent's understanding of the 1994 campaign, i.e. their knowledge about the target population for HB vaccination (HB vaccination is necessary for the newborns, for middle school pupils or for the whole population), their knowledge of HB transmission modes (listing of the correct modes of transmission, listing saliva as one of them, having no idea about the modes of transmission), and their belief that HB is a serious illness. Thirdly, outcomes that describe MMR vaccination. They include MMR vaccination of the child, parent's belief that MMR is a begnin illness, and that non vaccination against MMR is risky.

Tables 3, 4 and 5 show the results of the estimates of equation (1), using a linear function of age (upper part of the tables) or a linear spline function of age (bottom part of the tables) and a bandwidth of 5 years around the age of 11, ie. estimates are performed for children aged 6 to 15 years old[14]. P-values of the Goodness of fit test that the trends are correctly specified are reported. Estimates in bold are those obtained using the best trend specification, according to the AIC criteria; these are the results that we comment in the text.

[14]Full tables of results, that use different bandwidths, different local functions of age and include, or not, control variables, are presented in tables A13 to A14 in the Appendix.

5.2 Impact of the campaign on attitudes regarding HB vaccination

We find a strong impact of the vaccination campaign on HB vaccination (see Table 3). This result is obtained on the sample of all children (column 1) and on the sample containing only observations on the eldest child (column 2). There is a strong increase in the immunization coverage due to the vaccination campaign: while 23% (resp. 25% on the restricted sample) of children below 11 are HB vaccinated, this probability significantly increases by 42 percentage points for children above 11, concerned by the school vaccination scheme. While the campaign was effective in increasing vaccination rates, it can be noted that it is still below the immunization rate of the population targeted by the campaign: 65% (resp. 67%) of children above 11 are now vaccinated against HB, while the government had planned a 80% vaccination rate[15].

This result is robust whatever the specification (local linear, local linear spline, local quadratic), the bandwidth used, and the use of control variables (see Tables A13 to A18 in the Appendix). We find no impact of the distance to the threshold on the probability of being HB vaccinated: the coefficients of the trends before and after the age of 11 are never significant, meaning that there is no difference in the vaccination rate per age, to the left or to the right of the discontinuity (see Tables A13 and A15 in Appendix for example).

The vaccination campaign did not have any impact on parental HB vaccination. Thus, the HB vaccination campaign didn't have any positive spillover effect across ages. Parents whose eldest child is older than 11 are no more vaccinated against HB than the other parents (see Table 3).

5.3 Parent's understanding of the campaign

We also observe a decrease in the knowledge about the HB transmission modes for treated households (see Table 4), i.e. those with a child older than 11 (-21 pp). This means that they listed wrong modes of transmission more often than parents with younger children[16]. More precisely, they more often listed saliva as a mode of transmission than untreated households (+5 pp). These results can arise from the disclosure of contradictory or erroneous information during the communication campaign. The Prime Minister claimed that HB could be transmitted through saliva, and this information was widely spread by the medias. This was then refuted by some scientists but there were lots of contradictory debates during this period. Parents belonging to treated households could have paid more attention to the debates and may have

[15] 0.65=0.23+0.42 (resp. 0.67 = 0.25+0.42), see Table 3).

[16] Recall that this variable equal 1 if and only if the parent listed blood *and* sexual relations as modes of transmission, but 0 if the parent adds saliva to this list or if he lists only 1 out of the 2 modes of transmission.

been more confused than other parents by this contradictory information. What is striking is the very high percentage of parents who ignore the transmission modes: 42%. The effectiveness of the reform in informing the whole population should thus be questioned.

Table 4 also shows that there is no difference in the belief that HB is serious around the age threshold: about 74% of the parents think this is the case. The communication campaign of June 1994 therefore affected both treated and untreated parents identically by providing information that was understood in the same way by all parents. It also means that the additional campaign implemented at school and that specifically affected treated parents did not have any impact on their beliefs about the seriousness of the disease.

Finally, Table 4 shows that there is a non-significant impact of the campaign on the probability to believe that middle school pupils should be HB vaccinated. This means that the whole population, whatever their children's ages, was aware that the campaign was first directed at middle-school children. But parents of middle-school children may have focused their attention too much on the necessity of teenage vaccination. Indeed, we observe a negative impact of the vaccination campaign on the probability to believe that the newborns and the whole population should be HB vaccinated.[17] However, following the WHO recommendations, the campaign also aimed at promoting vaccination for the newborns, in order to reach a coverage of the whole population a few decades later.[18] The fact that individuals with children aged 11 and older are less likely than individuals with younger children to believe that newborns and the whole population should be vaccinated means that they probably assimilated an incomplete information. The additional information given to them at school, which targeted the teenagers only, could have made them misinterpret the first information campaign (of June 1994).

5.4 Impact of the campaign on MMR vaccination

Our more striking and unexpected result can be found in Table 5. While the literature usually finds positive effects of a vaccination campaign onto other vaccines, we find a negative spillover effect on MMR, another child vaccine. This result confirms the graphical evidence of Figure 3b and suggest a direct effect of the HB vaccination campaign on MMR vaccination (-15 pp for the sample composed of all children; -13 pp for the sample composed of the eldest child only) for a bandwidth of 5 years around the age threshold (see Table 5). This result is robust whatever the specification (local linear, local linear spline, local quadratic), the bandwidth used, and the

[17] One cannot rule out the fact that parents of children aged more than 11 may think that newborns do not need to be vaccinated against HB because they will be vaccinated later as teenagers.

[18] As mentioned in Section 4, the HB vaccine was included in the French vaccination schedule of newborns and children in January 1995.

use of control variables (see Table A27 in the Appendix).

How can we interpret this negative effect? Figure A7 in the Appendix can help explaining it. At that time, MMR vaccination was not mandatory: it was only included in the recommended immunization schedule (see Figure A1 in the Appendix). The MMR vaccination is usually considered as an infantile vaccination: the first injection of the MMR vaccine has to be administered at the age of 1 and the second one between 16 and 18 months. However, in practice, the injection can be given at any age between 0 and 16 (as well as during adulthood for all individuals previously not vaccinated). Some data show that for children born before 1990, only 40% of them had already been vaccinated at the age of 4 (INVS, Institut de Veille Sanitaire, 2003). It means that, at that time, vaccination against MMR is both an infantile and a teenager vaccination. There has been a continuous evolution of the vaccination coverage against measles, across birth cohorts (see Figure A7): those born in 1984 (treated) are 60% to be vaccinated at the age of 6, while 80% of those born in 1987 (untreated) are vaccinated at 6 years old. There is therefore a catch-up over time; however there is no discontinuity in this catch-up.[19] Due to the hepatitis B campaign, this catch-up stopped for the teenagers who were vaccinated against hepatitis B in 1995, explaining the 13 pp difference in vaccination rates against MMR between treated and untreated children.

Table 3 shows that the negative impact of the campaign on MMR vaccination rates is fully consistent with the fact that treated individuals are less likely to believe that it is risky not to vaccinate their child against MMR (between -13 and -16 pp). They are also more likely to report that MMR is benign (+20 to +27 pp).

Section 5.6 aims at explaining potential mechanisms that drive the negative spillover of the HB campaign on MMR vaccination. But, before that, the next section checks the robustness of our results.

Note that these estimates are obtained without the use of control variables, because i) there is continuity of the characteristics around the threshold so that their inclusion should not have any effect on the estimates; and ii) some control variables have missing values, which would reduce the size of the sample used for the estimates. However, given control variables are hardly ever significant, very similar results are obtained when these variables are added.[20] In Table 1, we observed that our treated and untreated groups differ significantly in terms of distribution per one occupation: the percentage of household whose head has an "intermediate

[19] This catch-up is due to the entry in the immunization schedule of the MMR (1986).

[20] Control variables used for the estimates are the following: respondent's gender, age, level of education, profession, marital status and number of children. The others were excluded as they were never significant. Results can be found in Tables A13 to A18 in the Appendix, for the vaccination against HB outcome.

Table 3: RD estimates using a bandwidth of 5 years around the threshold of 11 years old – Attitudes about HB vaccination

	All children HB vaccination (1)	Eldest child HB vaccination (2)	Parent HB vaccination (3)
		Local Linear	
$\mathbb{1}_{A_i \geq 11}$	**0.42*** **	**0.42*** **	**-0.00**
se	**(0.037)**	**(0.081)**	**(0.078)**
AIC	**843.62**	**464.26**	**545.05**
pv GoF	**0.99**	**0.93**	**0.99**
		Local Linear Spline	
$\mathbb{1}_{A_i \geq 11}$	0.45***	0.49***	0.08
se	(0.043)	(0.091)	(0.057)
AIC	844.84	464.638	545.80
pv GoF	0.86	0.62	0.99
N	743	406	409
Untreated Mean	0.23	0.25	0.38

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level. Results obtained for children aged between 6 and 15 years old. For local linear estimates, we control for linear trends of age, continuous at the age of 11: $(A_i - 11)\mathbb{1}_{A_i \geq 11}$ and $(A_i - 11)\mathbb{1}_{A_i < 11}$. For local linear splines estimates, we control for $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < 3) + 3((A_i - 11) \geq 3)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - 3)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -3) - 3((A_i - 11) < -3)]$; $LS4 = ((A_i - 11) < -3)(A_i - 11 + 3)$; $AIC = N \ln(\hat{\sigma}_\epsilon^2) + 2p$. Results in bold are those with the best trend specification, according to the AIC criteria. pv GOF gives the p-value of the Goodness of Fit test that the trends are correctly specified (Lee and Card, 2008).
Source: Health Barometer 1995. Sample restricted to the eldest child of the household in columns 2 and 3.

Table 4: RD estimates using a bandwith of 5 years around the threshold of 11 years old – Parent's understanding of the campaign

	HB contamination knowledge			**Seriousness of the disease**	**The target population is...**		
	Correct Answers (1)	Saliva (2)	Don't know (3)	HB is serious (4)	Newborns (5)	Middle school pupils (6)	The whole population (7)
				Local Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.15***	**0.05***	**0.03**	**0.02**	**-0.28*** **	-0.022	**-0.16*** **
s.e.	(0.040)	**(0.03)**	**(0.11)**	**(0.05)**	**(0.05)**	(0.03)	**(0.02)**
AIC	464.02	**578.65**	**563.18**	**447.17**	**527.79**	118.99	**386.32**
pv GoF	0.99	**0.99**	**0.98**	**0.99**	**0.98**	0.98	**0.99**
				Local Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	**-0.21*** **	0.09***	0.14	-0.04	-0.32***	**0.05**	-0.13***
s.e.	**(0.016)**	(0.01)	(0.09)	(0.05)	(0.08)	**(0.03)**	(0.02)
AIC	**462.23**	579.07	563.25	448.53	529.54	**118.65**	387.77
pv GoF	**0.99**	0.99	0.95	0.93	0.82	**0.84**	0.98
N	413	413	413	411	367	402	402
Untreated Mean	0.23	0.32	0.42	0.74	0.57	0.90	0.84

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level. Results obtained for children aged between 6 and 15 years old. For local linear estimates, we control for linear trends of age, continuous at the age of 11: $(A_i - 11)\mathbb{1}_{A_i \geq 11}$ and $(A_i - 11)\mathbb{1}_{A_i < 11}$. For local linear splines estimates, we control for $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < 3) + 3((A_i - 11) \geq 3)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - 3)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -3) - 3((A_i - 11) < -3)]$; $LS4 = ((A_i - 11) < -3)(A_i - 11 + 3)$; $AIC = N \ln(\hat{\sigma}_\epsilon^2) + 2p$. Results in bold are those with the best trend specification, according to the AIC criteria. pv GOF gives the p-value of the Goodness of Fit test that the trends are correctly specified (Lee and Card, 2008).
Source: Health Barometer 1995. Sample restricted to the eldest child of the household.

Table 5: RD estimates using a bandwith of 5 years around the threshold of 11 years old – Vaccination and beliefs about MMR

	MMR vaccination		**Seriousness of the disease**	
	All Children	Eldest Child	MMR is benign	non MMR vacc. is risky
	(1)	(2)	(3)	(4)
	Local Linear			
$\mathbb{1}_{A_i \geq 11}$	**-0.15*** **	**-0.13*** **	**0.20** **	-0.17*
s.e.	**(0.04)**	**(0.03)**	**(0.10)**	(0.07)
AIC	**589.48**	**286.49**	**549.82**	554.64
pv GoF	**0.74**	**0.99**	**0.89**	0.88
	Local Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.11***	-0.15***	0.27**	**-0.12***
s.e.	(0.03)	(0.04)	(0.11)	**(0.07)**
AIC	590.57	288.37	551.70	**545.11**
pv GoF	0.94	0.99	0.52	**0.67**
N	733	400	407	411
Untreated Mean	0.86	0.93	0.31	0.69

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level. Results obtained for children aged between 6 and 15 years old. For local linear estimates, we control for linear trends of age, continuous at the age of 11: $(A_i - 11)\mathbb{1}_{A_i \geq 11}$ and $(A_i - 11)\mathbb{1}_{A_i < 11}$. For local linear splines estimates, we control for $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < 3) + 3((A_i - 11) \geq 3)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - 3)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -3) - 3((A_i - 11) < -3)]$; $LS4 = ((A_i - 11) < -3)(A_i - 11 + 3)$; $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$. Results in bold are those with the best trend specification, according to the AIC criteria. pv GOF gives the p-value of the Goodness of Fit test that the trends are correctly specified (Lee and Card, 2008).
Source: Health Barometer 1995. Sample restricted to the eldest child of the household in columns 2, 3 and 4.

occupation" is lower for treated than for untreated individuals. However, we think our results are not much affected by this difference. Indeed, children belonging to households whose head has an intermediate occupation are somewhat less vaccinated against HB (see table A13, A15 or A17 in the Appendix). Therefore, the effect of the campaign on HB vaccination that we measure is probably a bit over-estimated. But the estimated effect we obtain is so huge that, even if the true effect is smaller, it still remains large. Moreover, estimates including all control variables show that the "intermediate occupation" dummy is rarely significant, and when it is significant (such as for trust in MMR vaccine), it is negative. This means that, overall, we probably under-estimate the true effects of the campaign: these effects could be larger.

We cannot go very deeply in order to test whether there would be an heterogeneous effect of the treatment across sub-groups: we only measure an average local treatment effect. Indeed, the number of observations per sub-groups (low versus highly educated households; small versus large households for example) is too small to perform a robust econometric analysis[21]. However, in Section 5.6, we will investigate the heterogeneity between sub-groups in more details.

[21] Note also that we cannot split the sample according to the sex of the child: this variable is not available in the dataset.

5.5 Robustness checks

This section focuses on checking the robustness of our main result: the lower probability of being vaccinated against the MMR for children elligible to the HB vaccination campaign.

5.5.1 Use of another bandwidth

Our main results are obtained using a bandwidth of 5 years around the age threshold. Tables A13 to A29 in the Appendix provide estimates using a bandwidth of 4 (estimates are obtained on households whose child is between 7 and 14 years old) or a bandwidth of 6 (estimates are obtained on households whose child is between 5 and 16 years old). Our main results are maintained. Children aged more than 11, who were exposed to the vaccination campaign, experience a 13 to 15 percentage points reduction in their probability of getting vaccinated against MMR (see Table A27 in Appendix). A similar significant decrease in knowledge about the modes of transmission of HB is observed. The only difference observed is a significant increase in the belief that teenagers should be vaccinated for treated individuals.

5.5.2 Placebo tests using the Health Barometer 1992

We use the 1992 Health Barometer data to check two hypotheses: i) is this discontinuity in the MMR vaccination rate an "age effect", ie. is such a discontinuity usually found at the age of 11 ?; ii) is this discontinuity a "cohort effect", ie. is it specific to the cohort of individuals born in 1984 (aged 11 and more in 1995)? Unfortunately, the 1992 Health Barometer does not contain any question on HB vaccination, parent's HB vaccination, knowledge about the modes of transmission of the disease, etc. MMR vaccination for children is the only common variable between the 2 datasets so our robustness analysis can only be performed on this outcome[22].

First, the discontinuity at the age of 11 could result from an age effect. We therefore test whether there is a discontinuity in the MMR vaccination rate at the age of 11 in 1992. Indeed, the discontinuity observed at the age of 11 in 1995 could result from an "entry in middle school" effect more than an effect of the campaign[23]. We find a positive effect, significant at the 5% level, meaning that the MMR vaccination rate increases for pupils who start middle school in 1992 (top of Table 6). This confirms that the negative effect we find in 1995 is due to the 1994 vaccination campaign and that we probably underestimate it, since there is a positive effect at middle school entry in 1992 (see Table A30 in the Appendix for more details).

[22]As in the main analysis, we only selected households composed of at least one child, and kept information about all children of the household.

[23]Note that there is no other reform in the health care sector during this period, that could explain the decrease in MMR vaccination at the age of 11

Second, the discontinuity at the age of 11 in 1995 could result from a cohort effect. As the 1995 Health Barometer is a cross section, the age effect cannot be distinguished from the cohort effect. We therefore test if there is a discontinuity at the age of 8 in 1992, ie. a discontinuity between children aged 8 and more in 1992 (i.e. from cohorts 1984 and older) and children aged 8 and below in 1992 (i.e. cohorts 1985 and younger). We find no significant decrease in MMR vaccination rate (bottom of Table 6). The vaccination rate is the same around the 8 threshold. Therefore, our estimated effect in 1995 cannot be attributed to a cohort effect (see Table A31 in the Appendix for more details).

Table 6: Placebo tests: RD estimates for MMR vaccination using 1992 and 2000 Health Barometers (Bandwidth=5)

Vaccination	All children MMR vaccination 1992 Health Barometer (1)	All children MMR vaccination 2000 Health Barometer (2)
	Local Linear	
$\mathbb{1}_{A_i \geq 11}$	0.13	-0.01
s.e.	(0.09)	(0.01)
AIC	471,80	1030.55
pv GoF	0.97	0.99
	Local Linear Spline	
$\mathbb{1}_{A_i \geq 11}$	**0.18****	**-0.02**
s.e.	**(0.08)**	**(0.01)**
AIC	**469.63**	**1029.83**
pv GoF	**0.89**	**0.85**
N	407	3866
Untreated Mean	0.79	0.95
	Local Linear	
$\mathbb{1}_{A_i \geq 8}$	-0,07	
s.e.	(0,05)	
AIC	530.17	
pv GoF	0.40	
	Local Linear Spline	
$\mathbb{1}_{A_i \geq 8}$	**0.05**	
s.e.	**(0.04)**	
AIC	**527.54**	
pv GoF	**0.26**	
N	513	
Untreated Mean	0.85	

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **Statistically significant at the 5% level; *Statistically significant at the 10% level. Results obtained with a bandwith of 5 years around 11 (top of the Table) or 8 (bottom of the Table). For local linear estimates, we control for linear trends of age, continuous at the age of 11: $(A_i - 11)\mathbb{1}_{A_i \geq 11}$ and $(A_i - 11)\mathbb{1}_{A_i < 11}$. For local linear splines estimates, we control for $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < 3) + 3((A_i - 11) \geq 3)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - 3)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -3) - 3((A_i - 11) < -3)]$; $LS4 = ((A_i - 11) < -3)(A_i - 11 + 3)$; $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$. pv GOF gives the p-value of the Goodness of Fit test that the trends are correctly specified (Lee and Card, 2008).
Source: Health Barometer 1992 and Health Barometer 2000. Sample composed of all children of the household.

5.5.3 Placebo test using the Health Barometer 2000

We also use the Health Barometer 2000 in order to check again if there is an age effect, ie. if a discontinuity is observed at the age of 11 for the MMR vaccination rate, which is, again, the only variable in common with the Health Barometer 1995.[24] Table 6 shows that this outcome is continuous at the 11 years old threshold (see column 2). Consequently, this confirms the robustness check produced with the Health Barometer 1992: the shock observed in the 1995 database is indeed exogenous and due to the vaccination campaign. The age of 11 does not correspond to a specific age at which parents decide to vaccinate less their children for MMR (see Table A32 in the Appendix for more details).

Note that we cannot use this additional database in order to analyze the behaviour of pupils who were affected by the 1995 vaccination campaign. Indeed, those children, born in 1984, were 16 in 2000 and the question on the MMR vaccination was only asked for children aged 15 and less. However, in terms of magnitude, we observe in the Health Barometer 2000 that only 80% of pupils aged 15 in 2000 (ie. aged 10 in 1995) are vaccinated against the MMR but 95% of those between 11 and 14 years old in 2000 (ie. aged 6 to 9 in 1995) were vaccinated against the MMR. This shows that: i) the decrease in the MMR vaccination has only been temporary, the MMR vaccination increased again as soon as the campaign stopped; ii) this is not the case for cohorts affected by the campaign. For them, there is a long-lasting effect of the campaign: vaccination coverage against the MMR did not increase between their 11 and 16 years old.

5.6 Mechanisms

In this section, we investigate the potential mechanisms that may lead to the negative spillover effect of the campaign on MMR vaccination rates. First, we check whether both vaccines are substitutes, ie. if this is the same parents who increase HB vaccination and decrease MMR vaccination. Then, four potential mechanisms can be raised to explain this substitution: i) a "number of injections" effect; ii) a price effect; iii) the influence of doctors; iv) a salience effect. In order to give some insight on the respective role of these mechanisms, we perform a graphical analysis, confirmed by estimates using a bandwidth of 5. However, results obtained on sub-groups of children are sometimes not significant because of our small sample size[25].

5.6.1 Are HB and MMR vaccines substitutes for some parents?

First, we need to investigate whether there is a substitution between MMR and HB vaccines[26]. To do that, we check whether this is the same parents who both increase HB vaccination and decrease MMR vaccination of their children. Indeed, this decrease in MMR vaccination rates

[24] This is very surprising to have no question on HB vaccination, since the Health Barometer 2000 survey was conducted just after the polemic about potential side effects of the HB vaccine.

[25] Tables of results are not reported in the text but they are available upon request

[26] Both vaccines cannot be perfect substitutes as HB vaccination increases by 42 pp but MMR vaccination decreases by only 13 pp.

could result from parents who refused to comply with the free vaccination scheme and who also chose not to vaccinate their children against MMR. Figure 4 first shows that that there is no significant difference around the age threshold between parents who refuse any vaccination in general (who do not vaccinate their children neither for HB nor for MMR). This proportion is stable and rather low around the threshold age as shown in Figure 4d. Figure 4 also shows that the total effect of the campaign on HB vaccination rates observed in Figure 1b can be broken up into the effect observed on 2 populations: those who are vaccinated against HB and MMR (Figure 4a) and those who are vaccinated against HB but not against MMR (Figure 4c). Figure 4c shows that among the untreated, no one was vaccinated for HB without being vaccinated for MMR. However, there is a significant jump at the age of 11 (+11 pp, significant at the 1% level): the percentage of children vaccinated against HB but not against MMR is 11 pp higher among the treated than among the untreated. We find here a very close coefficient to the one obtained in Table 5 (a decrease in MMR vaccination of about -13 pp for the treated). Therefore, for about 11% of the treated population, there is a substitution between the 2 vaccines.

This substitution effect is higher for high-educated parents (i.e. who hold the high-school leaving diploma, i.e. the *baccalaureat*). Figure 5 shows that the jump at the age of 11 is higher for high-educated parents (+12 pp, but not significant) than for low-educated ones.[27] Even if the total HB vaccination increase is constant between high and low educated parents, the decrease in MMR vaccination is mostly due to high-educated individuals who are more likely to substitute MMR for HB. The literature often finds that educated parents react more strongly to vaccination campaigns than less-educated ones (Anderberg et al., 2011). Better educated parents must have concentrated more on HB vaccination rather than MMR.

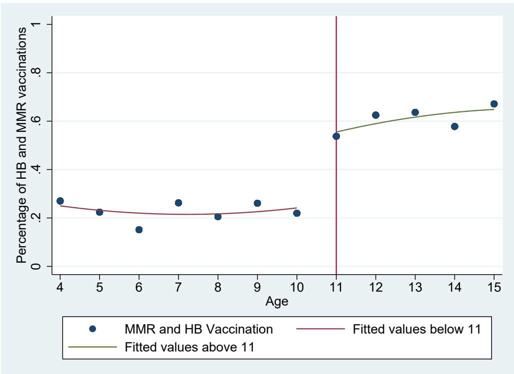
5.6.2 A number of injections effect

This substitution may be driven by a "number of injections" effect. Those households may be reluctant to administer both vaccines to their children the same year, especially because their children already received 3 HB injections during the year. We would have liked to confirm our hypothesis testing the impact of HB vaccination on other vaccines; but individuals were not asked about other vaccines in this survey.

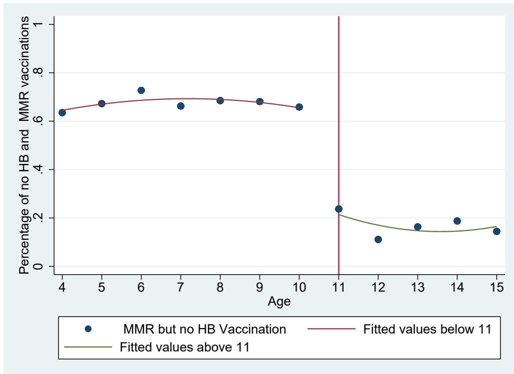
5.6.3 A Price effect

The negative effect we obtain on MMR vaccination rates could be the result of a price effect. Because HB and MMR vaccines are substitutes, the relative cost of the MMR vaccine increased

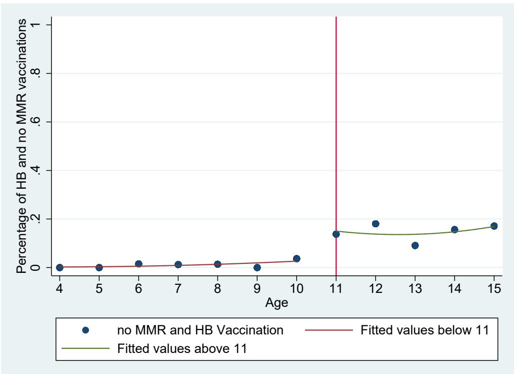
[27] Results available upon request.



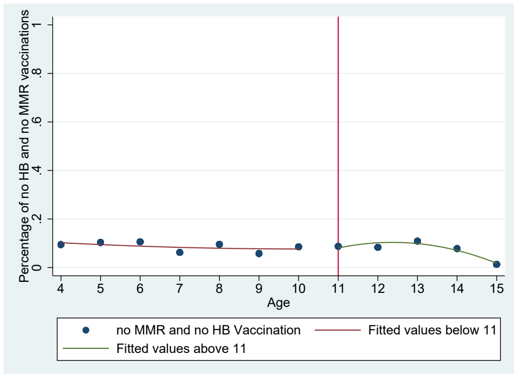
(a) % of children vaccinated against HB and MMR



(b) % of children vaccinated against MMR but not against HB



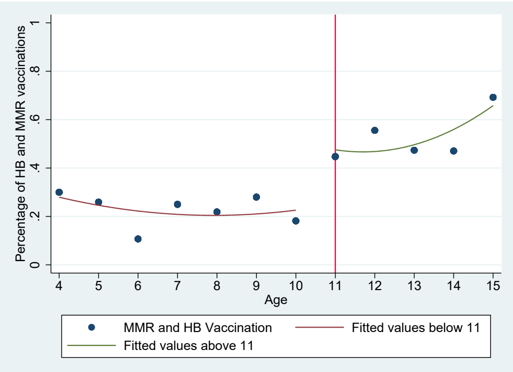
(c) % of children vaccinated against HB but not against MMR



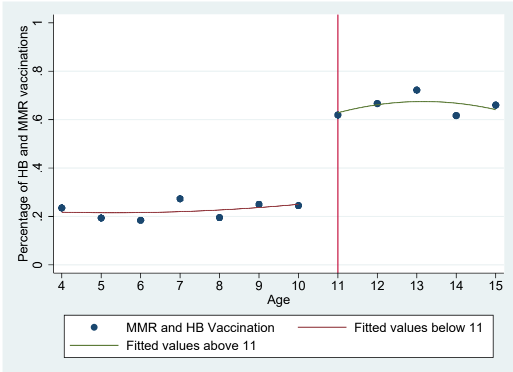
(d) % of children who are not vaccinated against HB and MMR

Figure 4: Substitution effect between the MMR and HB vaccines

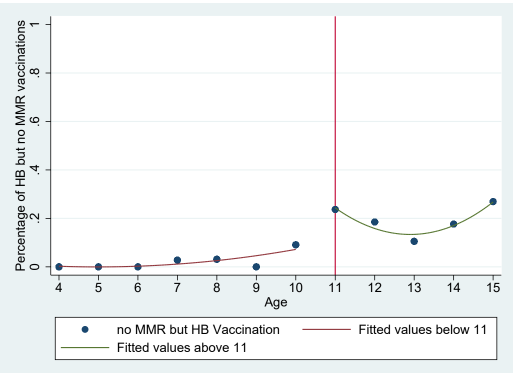
with the campaign, compared to the cost of the HB vaccine (becoming 0€). Indeed, the MMR vaccine is not free (it became free in 1999 only, INPES (2008)) and, on top of the price of the vaccine, parents have to pay the cost of the doctor's visit. In order to test whether this hypothesis can drive our results, we divided our sample according to the income level of the household: a monthly income higher than 1500€ versus a monthly income lower than 1500€. If the decrease results from a price effect, the poorest households should react more strongly. However, we find the opposite. The substitution effect is higher for wealthier individuals: +15pp, significant at the 5% level (see Figure 6c) versus 0 for the low-income individuals (see Figure 6d). Thus, the price effect explanation seems negligible.



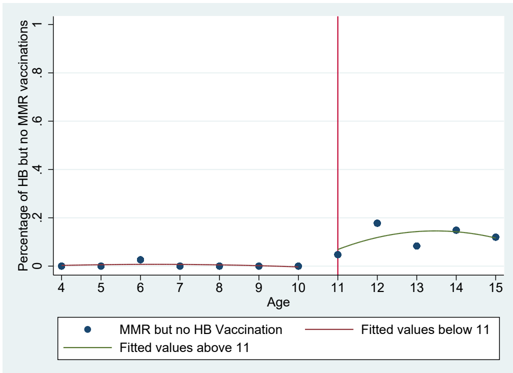
(a) % of children vaccinated against HB and MMR with parents with at least high school diploma



(b) % of children vaccinated against HB and MMR with parents with less than high school diploma



(c) % of children vaccinated against HB but not against MMR with parents with at least high school diploma

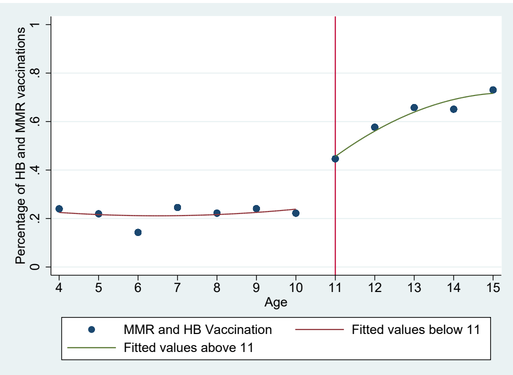


(d) % of children vaccinated against HB but not against MMR with parents with less than high school diploma

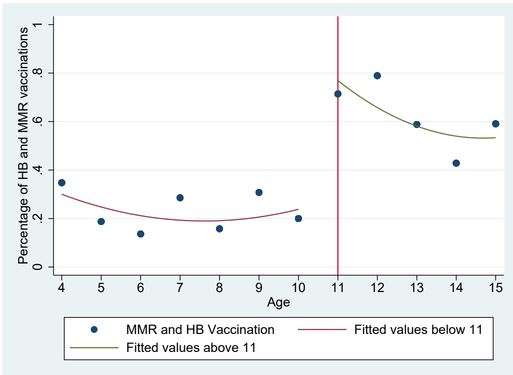
Figure 5: Substitution effect between MMR and HB vaccines according to the level of education

5.6.4 Physicians' beliefs and their influence on parental decisions

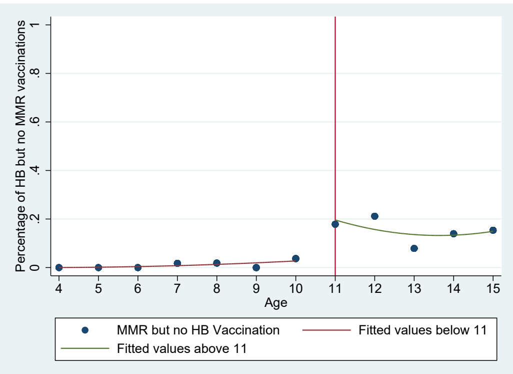
The substitution may also result from medical advice. Parents' attitudes could be driven by physicians' beliefs and practices. We therefore analyze the role of general practitioners during the campaign, using the 1994 Physicians Barometer. In this survey, there is information on



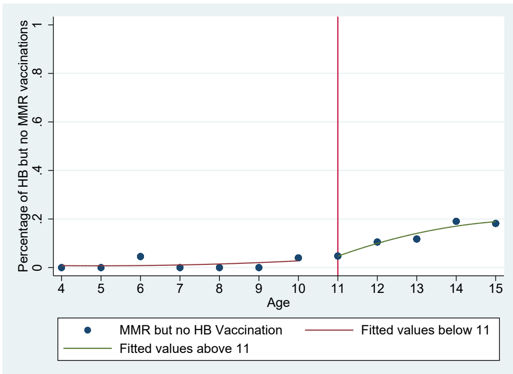
(a) % of children vaccinated against HB and MMR for households with equivalised income higher than 1500€



(b) % of children vaccinated against HB and MMR for households with equivalised income lower than 1500€



(c) % of children vaccinated against HB but not against MMR for households with equivalised income higher than 1500€



(d) % of children vaccinated against HB but not against MMR for households with equivalised income lower than 1500€

Figure 6: Substitution effect between MMR and HB vaccines according to the level of income of the household

physicians' beliefs about the target population for HB and MMR vaccines. Answers given by doctors are summarized in Table 7. We find that 17.5% of the physicians were very favorable to the HB vaccination for newborns, 64.6% for middle school children, 85% for teenagers and 41.7% for the whole population. Like treated parents, physicians are more focused on teenage vaccination against HB.

What about their beliefs on the MMR vaccination? Table 7 shows that physicians favour MMR vaccination for newborns: 83% of them propose the MMR vaccine to newborns systematically; only 40% of them propose the second injection of the MMR vaccine to children aged 2-16 years old and 59% propose both injections to children aged 2-16. They are focused on MMR for newborns and on HB for teenagers[28]. Doctors, who are supposed to be more knowledgeable about the vaccination campaign, could have focused parents' attention on the necessity for pupils to be HB vaccinated and could have omitted, during a consultation, to advise parents to get their children vaccinated for both MMR and HB.

Table 7: Physicians beliefs during the 1995 campaign

	%
HB vaccination	
Very favorable to HB vaccination for...	
newborns	17.47
middle school pupils (*6e* in France)	64.56
teenagers	85.29
the whole population	41.66
MMR vaccination	
Do you offer systematically MMR vaccination to...	
newborns	83.32
children aged 2 to 16 (2nd injection)	39.88
children aged 2 to 16 (both injections)	59.13
Number of obs.	1013

Source: 1994 Physicians Barometer.

5.6.5 Salience effect

Finally, this effect on the MMR could be the result of a salience effect. Individuals focused their attention on HB vaccination, neglecting the risk of MMR diseases for their children. This may be interpreted as the existence of a "salience effect". Following Taylor and Thompson (1982), "salience refers to the phenomenon that when one's attention is differentially directed to one portion of the environment rather than to others, the information contained in that portion will receive disproportionate weighting in subsequent judgments". Psychologists view salience detection as a key attentional mechanism enabling individuals to focus their cognitive resources on a subset of the available sensory data (Bordalo et al., 2012), i.e. the salience

[28]Unfortunately, we are unable to compare our results with those of other waves of the Physicians Barometer; we cannot check whether their opinion about the target population for each vaccine was different before the campaign.

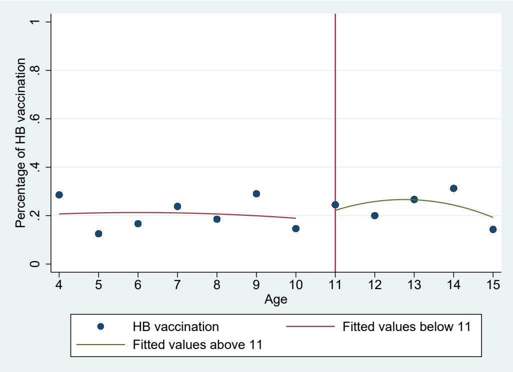
effect refers to elements which individuals are most drawn to and will focus their attention on. This salience effect theory has also been investigated in economics, introduced into theoretical models that explain individuals' choice of consumption (see for example Bordalo et al. (2012) and Bordalo et al. (2013)). In our case, because the MMR vaccine is recommended, but not mandatory, parents may believe that MMR vaccination is not as essential as HB vaccination. If MMR vaccination was so important, there would have been more information on it and a free vaccination campaign. Note that this salience effect may of course be driven by physicians, whose target population for MMR is mostly newborns. The salience effect can also be noticed when one look at the answer given to questions about the target population for HB vaccination. Parents of middle-school children have mostly focused their attention on the necessity of teenage vaccination against HB: they are less likely to believe that newborns and the whole population should be vaccinated against HB.

In order to check whether our salience effect hypothesis is plausible, we analyzed the behaviour of parents regarding their younger children: Do treated parents vaccinate their youngest children more for HB? Do they also vaccinate them less for MMR? We can only perform a graphical analysis, as our sample size is too small for the econometric analysis. We observe (see Figure 7a), that treated parents do not vaccinate their younger children more for HB than untreated parents. Being untreated parents, they probably assume vaccination will be done at school later. However, for treated parents, Figure 7b shows a decrease in the probability to vaccinate their younger children for MMR. This result is consistent with the salience hypothesis: because no campaign is implemented for the MMR vaccine, MMR vaccination is not required, neither for my elder nor my younger children.

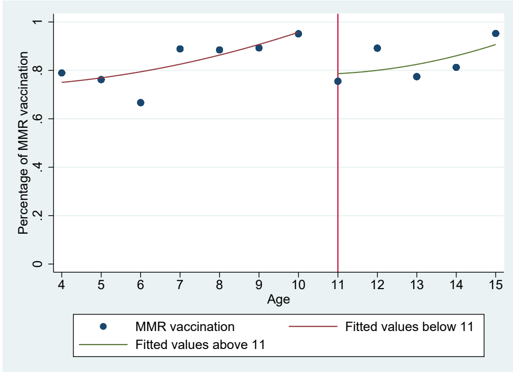
This is however difficult to distinguish the salience effect from the number of injections effect. Among brothers and sisters of treated children, there is no increase in HB vaccination but there is a decrease in MMR vaccination. This means that, for them, the salience effect hypothesis is more plausible than the number of injections hypothesis. But for treated children, both effects may be confounded. The existence of a salience effect is very likely (erroneous beliefs about the target population, more beliefs that MMR is begign, ...) but it does not exclude a number of injections effect.

6 DISCUSSION AND CONCLUSION

In July 1994, the French government launched a major campaign against HB, via TV and radio spots, distribution of leaflets, followed by a free vaccination scheme against HB in middle and



(a) % of siblings vaccinated against HB according to the age of the eldest



(b) % of siblings vaccinated against MMR according to the age of the eldest

Figure 7: Impact on the HB and MMR vaccination for the siblings

high schools from September 1994 on. In this paper, we measure the effect of the vaccination campaign against HB on HB vaccination for pupils aged 11 and more, and on other outcomes such as MMR vaccination, as well as parents' beliefs and attitudes about vaccinations.

The estimates reveal a strong impact of the campaign on children vaccination rates. Being 11 and above increases the probability of being exposed to the HB school vaccination scheme. This leads to a 40 to 60 percentage points increase in the probability to be vaccinated against HB. We also find a strong negative and unexpected effect of this campaign on MMR vaccination rates. Vaccination against the MMR decreases by 13 to 15 pp and this result is robust to several specifications. It cannot be attributed to an age or a cohort effect and our robustness checks make us confident that this decrease is a causal effect of the vaccination campaign against HB. Moreover, this negative impact on MMR is consistent with estimates obtained on other outcomes: treated parents are less likely to believe that not being vaccinated against MMR is risky and that MMR is a serious disease. Our preferred interpretation is a salience effect and may concern information transmission. Following Taylor and Thompson (1982), "salience refers to the phenomenon that when one's attention is differentially directed to one portion of the environment rather than to others, the information contained in that portion will receive disproportionate weighting in subsequent judgments". Treated individuals (those who have a child older than 11) focused their attention on the information provided on HB. Consequently, they neglected the risk of MMR for their children. They may have perceived the MMR vaccine as less important than the HB vaccine, as the MMR vaccine was only recommended (but not mandatory), was not free, and no vaccination campaign had been implemented. Overall, the focus on HB vaccination may lead to a decrease in vaccination for non-mandatory vaccines and to a decrease in the probability to believe that the other vaccines are important. This salience

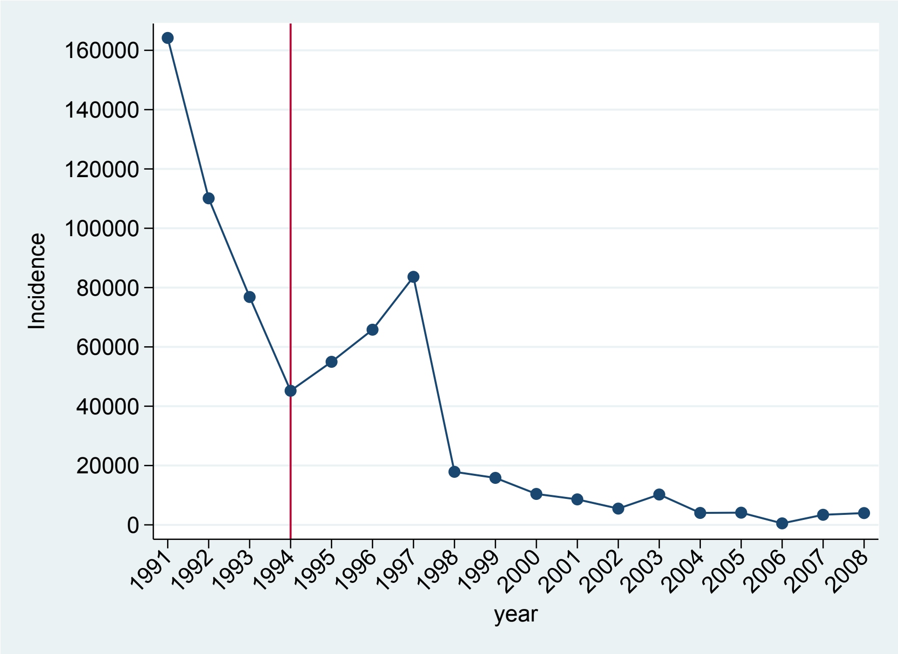


Figure 8: Evolution of measles incidence (*Réseau Sentinelles*)

phenomenon is also perceptible as we observe that treated parents (with children aged 11 and more) are less likely to believe that newborns and the whole population should be vaccinated. They focused their attention on teenagers only, their population of interest, and assimilated an incomplete information about the whole population of interest for vaccination against HB. Finally, we find that there is a decrease in the knowledge about the modes of transmission of HB for treated households. This can be the result of the disclosure of contradictory information during the campaign, to which treated households have paid more attention.

The negative effect on MMR vaccination was relatively unexpected and may imply a negative externality. Measles is an extremely contagious, potentially dangerous, disease. With a vaccination coverage exceeding 95%, measles would be eradicated (Christie and Gay, 2011). On the contrary, a decline in vaccine coverage will lead to increasingly large outbreaks of measles, and finally, the reappearance of measles as an endemic disease (Jansen et al., 2003). Thus, if the vaccination rate falls, the disease will spread further, raising the question of the net effect of the HB vaccination campaign on the well-being of the population. Without any causal interpretation, Figure 8, built using data from public health agency, shows a worrying increase in measles incidence between 1994 and 1997 in France, which could be the result of the decrease in MMR vaccination observed around the years of the HB campaign.

To conclude, during the 1994 vaccination campaign, people focused their attention on HB vaccination, which turns out to be detrimental to the MMR vaccination, or potentially, other vaccines. A vaccination package may be a good option to avoid the salience effects. Overall, it also shows the necessity - but also the difficulty - to evaluate the effects of a public policy as a whole, taking into account all potential side effects but also unexpected adverse effects.

References

Abrevaya, J. and K. Mulligan (2011): "Effectiveness of state-level vaccination mandates: Evidence from the varicella vaccine," *Journal of Health Economics*, 30, 966–976.

Anderberg, D., A. Chevalier, and J. Wadsworth (2011): "Anatomy of a Health Scare: Education, Income and the MMR Controversy in the UK," *Journal of Health Economics*, 30, 515–530.

Bordalo, P., N. Gennaioli, and A. Shleifer (2012): "Salience Theory of Choice Under Risk," *The Quarterly Journal of Economics*, 127, 1243–1285.

——— (2013): "Salience and Consumer Choices," *Journal of Political Economy*, 121, 803–835.

Brice, J. (1996): "La promotion de la vaccination contre l'hépatite B dans les collèges (1994-1996)," *Santé Publique*, 363–373.

Bruneau, A., N. Haley, and L. Valiquette (2001): "Évaluation d'une campagne de promotion de la vaccination contre l'hépatite B chez les adolescents de la région de Montréal-Centre en milieu scolaire," *Canadian Journal of Public Health / Revue Canadienne de Sante Publique*, 92, 348–352.

Bütikofer, A. and K. G. Salvanes (2020): "Disease Control and Inequality Reduction: Evidence from a Tuberculosis Testing and Vaccination Campaign," *The Review of Economic Studies*, 87, 2087–2125.

Carpenter, C. S. and E. C. Lawler (2019): "Direct and Spillover Effects of Middle School Vaccination Requirements," *American Economic Journal: Economic Policy*, 11(1), 95–125.

Cattaneo, M. D., N. Idrobo, and R. Titiunik (2019): *A practical introduction to regression discontinuity designs: Foundations*, Cambridge University Press.

Chamoux, A. (2006): "Impact study of an active antiflu vaccination programme on the Clermont-Ferrand Teaching Hospital staff," *Medecine et maladies infectieuses*, 36, 144–150.

Chang, L. V. (2018): "Information, education, and health behaviors: Evidence from the MMR vaccine autism controversy," *Health Economics*, 27, 1043–1062.

Christie, A. S. and A. Gay (2011): "The Measles Initiative: moving toward measles eradication," *The Journal of Infectious Diseases*, 204, S14–S17.

Hahn, J., P. Todd, and W. V. der Klaauw (2001): "Identification and estimation of treatment effects with a regression-discontinuity design," *Econometrica*, 69, 201–209.

Herroelen, L., J. De Keyser, G. Ebinger, et al. (1991): "Central-nervous-system demyelination after immunisation with recombinant hepatitis B vaccine," *The Lancet*, 338, 1174–5.

Imbens, G. and T. Lemieux (2008): "Regression discontinuity designs: A guide to practice," *Journal of Econometrics*, 142, 615–635.

Inserm (1997): "Hépatites virales: dépistage, prévention, traitement," Tech. rep., Inserm.

INVS, Institut de Veille Sanitaire (2003): "Rapport Surveillance de la rougeole en France. Bilan et évolution en vue de l'élimination de la maladie," Tech. rep., INVS.

Jansen, V. A., N. Stollenwerk, H. J. Jensen, M. Ramsay, W. Edmunds, and C. Rhodes (2003): "Measles outbreaks in a population with declining vaccine uptake," *Science*, 301, 804–804.

Kaplanski, G., F. Retornaz, J. Durand, and J. Soubeyrand (1995): "Central nervous system demyelination after vaccination against hepatitis B and HLA haplotype." *Journal of Neurology, Neurosurgery and Psychiatry*, 58, 758.

Lawler, E. C. (2017): "Effectiveness of vaccination recommendations versus mandates: Evidence from the hepatitis A vaccine," *Journal of Health Economics*, 52, 45–62.

Lee, D. and D. Card (2008): "Regression discontinuity inference with specification error," *Journal of Econometrics*, 142, 655–674.

Lemieux, T. and K. Milligan (2008): "Incentive effects of social assistance: A regression discontinuity approach," *Journal of Econometrics*, 142, 807–828.

McCrary, J. (2008): "Manipulation of the running variable in the regression discontinuity design: A density test," *Journal of econometrics*, 142, 698–714.

Meffre, C., Y. Le Strat, E. Delarocque-Astagneau, D. Antona, and J. Desenclos (2006): "Prévalence des hépatites B et C en France en 2004," *InVS, Saint-Maurice.*

Moghtaderi, A. and A. Dor (2016): "Immunization and Moral Hazard: The HPV Vaccine and Uptake of Cancer Screening," Tech. rep., National Bureau of Economic Research.

Nauche, P. (2001): "Rapport sur la campagne de vaccination de masse contre l'hépatite B," Tech. rep., Assemblée Nationale.

Taylor, S. E. and S. C. Thompson (1982): "Stalking the elusive" vividness" effect." *Psychological Review*, 89, 155.

Wright, T. L. and J. Y. Lau (1993): "Clinical aspects of hepatitis B virus infection," *The Lancet*, 342, 1340–1344.

Appendix

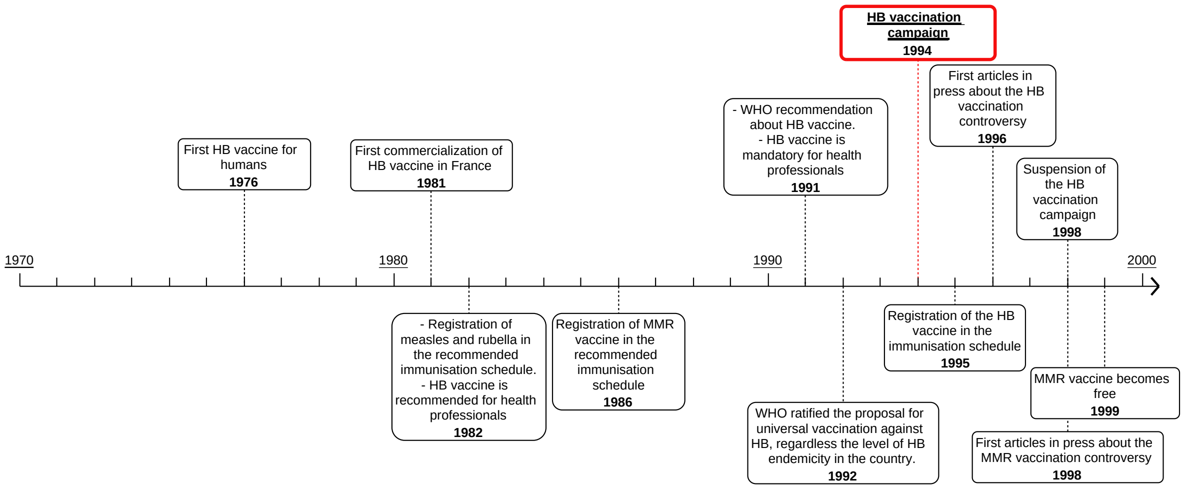
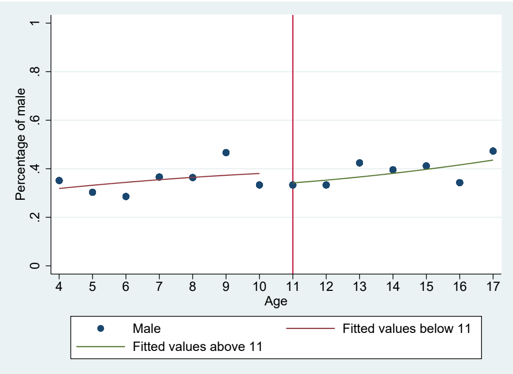
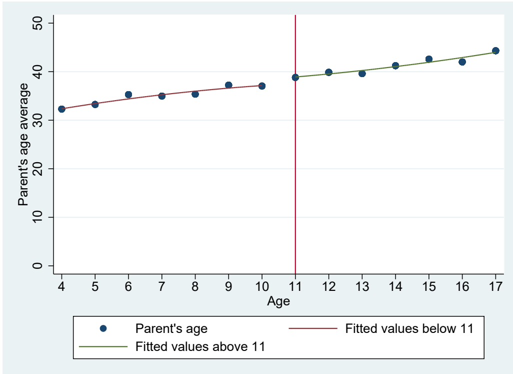


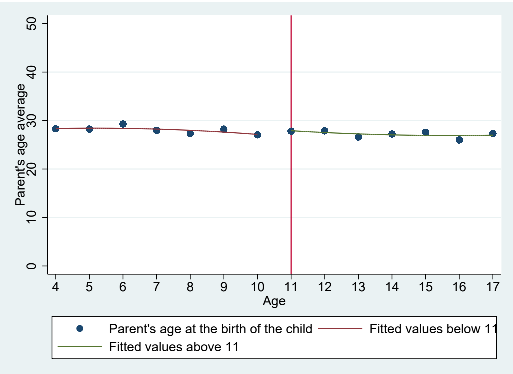
Figure A1: Chronological overview of vaccination policies regarding MMR and HB in France



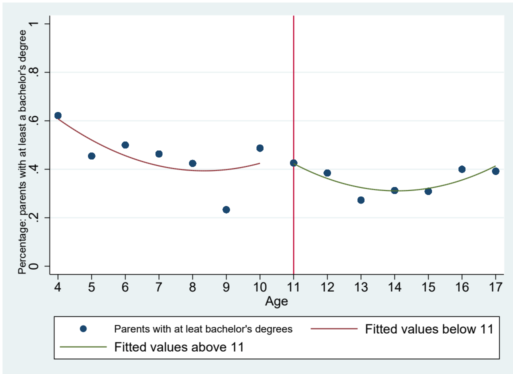
(a) % of head of household who are men



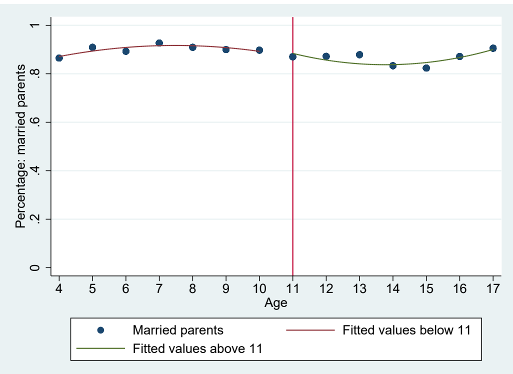
(b) Average age of the head of household



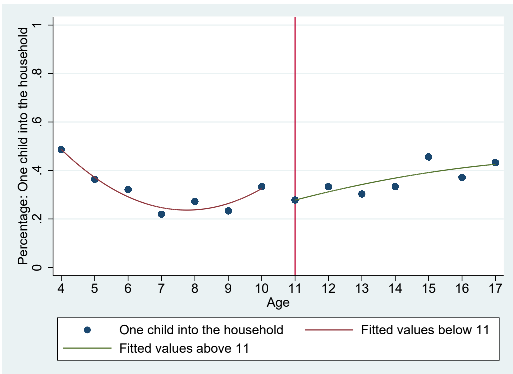
(c) Average age of the head of household at child birth



(d) % of head of household who hold a high school diploma at least



(e) % of married couples



(f) % of households with at least one child

Figure A2: Socio-demographic characteristics of the household

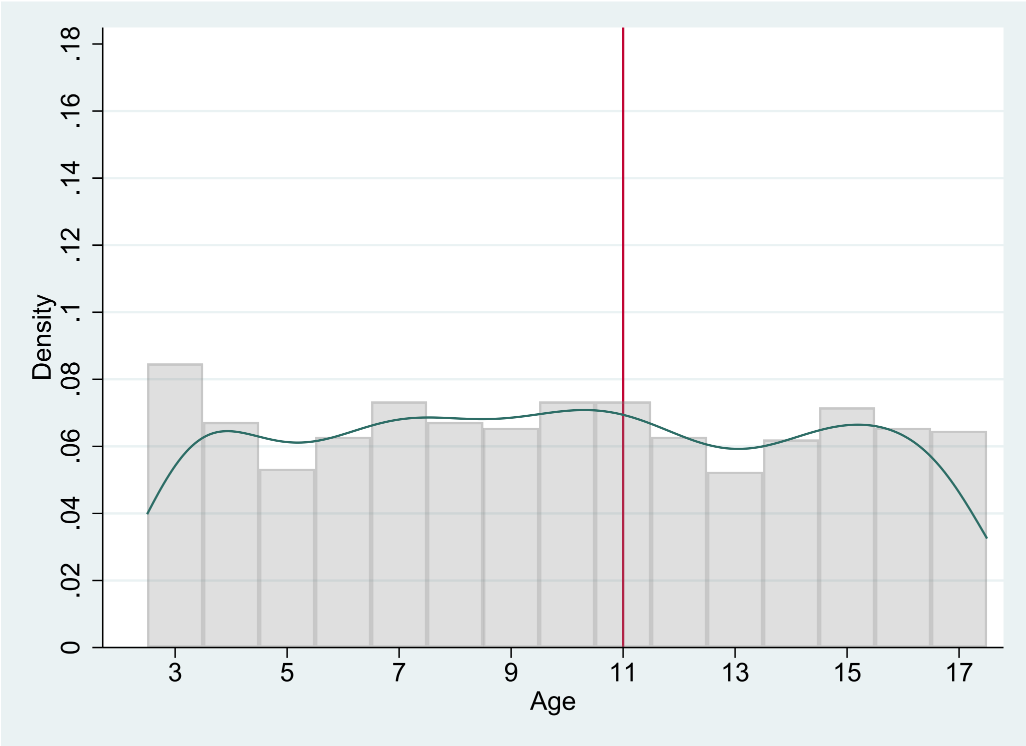


Figure A3: Density of the number of children per age

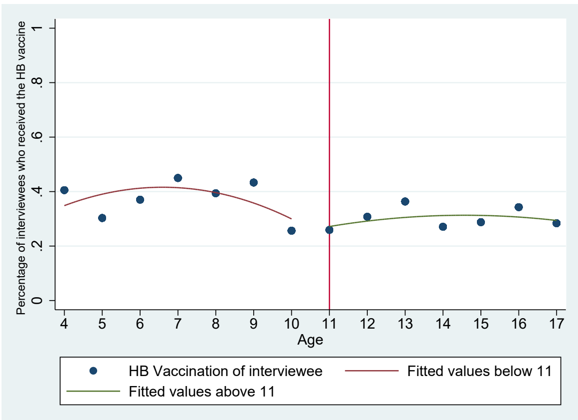
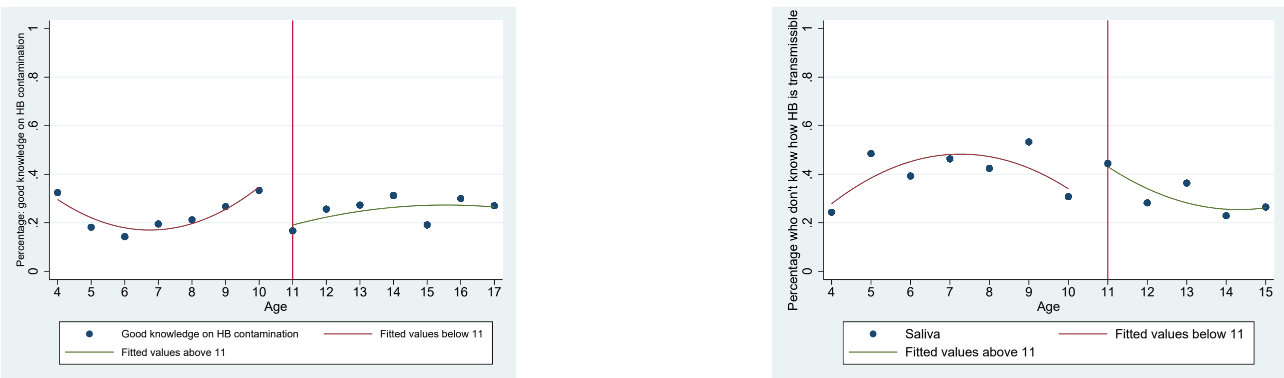


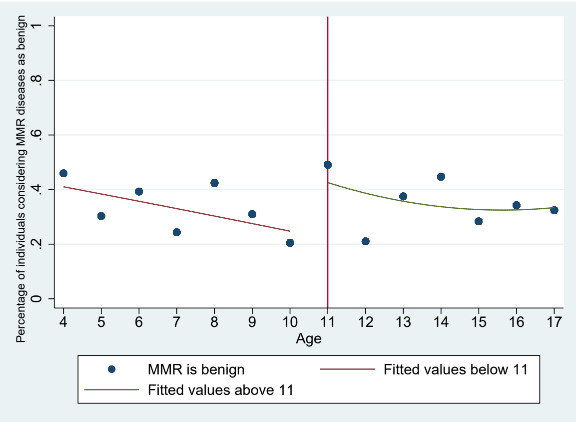
Figure A4: Parent vaccination rate against HB, by age of the eldest child



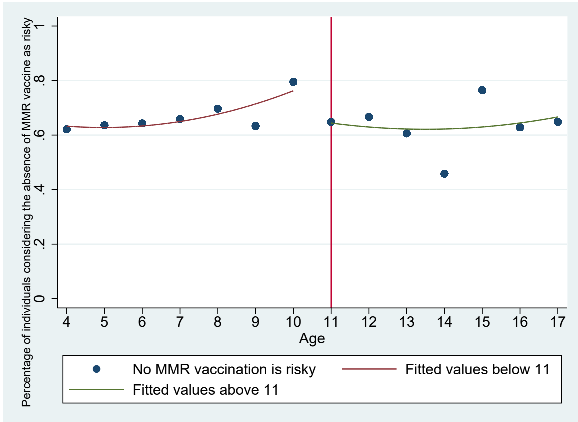
(a) Right answer about HB contamination

(b) Don't know how HB is transmitted

Figure A5: Parent's understanding of the campaign



(a) MMR is a benign illness, by age of the eldest child



(b) Non MMR vaccination is risky, by age of the eldest child

Figure A6: Beliefs about MMR vaccination

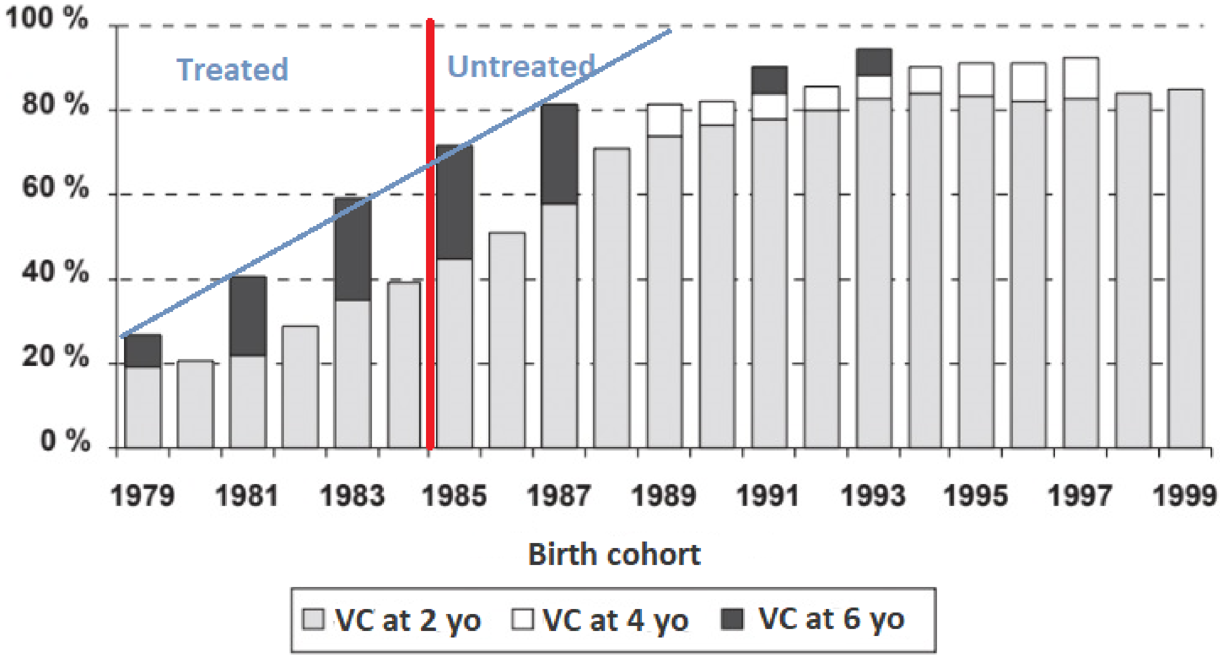


Figure A7: Vaccination coverage (VC) against measles by birth cohort, at the age of 2, 4 and 6 years old (adapted from (INVS, Institut de Veille Sanitaire, 2003))

Table A1: Number of observations available in the sample composed of all children, for each variable in the whole sample and for the treated and untreated groups (using a bandwidth of 5 years around the reform)

	(1) Whole sample Nb.obs	(2) Untreated Nb.obs	(3) Treated Nb.obs
Socio-demographic characteristics			
Head of Household:			
Male	1370	392	444
Age	1370	392	444
Age at child birth	1370	392	444
French nationality	1370	392	444
No religion	1370	392	444
Do not practice religion	1370	392	444
Occasionally practice religion	1370	392	444
Regularly practice religion	1370	392	444
High school diploma and more	1370	392	444
Chronic diseases	1369	392	443
Farmer	1370	392	444
Craftsman	1370	392	444
Executive	1370	392	444
Intermediate occupation	1370	392	444
Employee	1370	392	444
Blue collar worker	1370	392	444
Pensioner	1370	392	444
Other profession	1370	392	444
Household:			
Urban	1370	392	444
Rural	1370	392	444
Equivalised income>1,500€	1370	392	444
Married	1370	392	444
Single	1370	392	444
Separate	1370	392	444
One child	1370	392	444
Two children	1370	392	444
Three children	1370	392	444
Four children and more	1370	392	444
Outcomes			
HB vaccination:			
Child vaccination against HB	1337	382	433
Parents' HB vaccination	1357	388	441
Parent's understanding of the campaign			
Vaccination for newborn	1244	354	400
Vaccination for middle school children	1340	382	437
Vaccination for the whole population	1340	382	437
Correct knowledge about HB contamination	1370	392	444
HB is transmissible by saliva	1370	392	444
Don't know how HB is transmitted	1370	392	444
HB is a serious illness	1367	391	443
MMR vaccination:			
Child vaccination against MMR	1125	380	353
MMR is a begnin illness	1357	387	439
Non vaccination against MMR is risky	1367	391	443

Note: We include all possible observations for each outcome to maximize sample size. Column (1) reports the number of observations within the entire sample of children. Columns (2) and (3) report, respectively, the number of observations for children aged between 6 and 10 years old and for children whose eldest child is between 11 and 15 years old.
Source: Health Barometer 1995.

Table A2: Number of observations available in the sample composed of the eldest child only, for each variable in the whole sample and for the treated and untreated groups (using a bandwidth of 5 years around the reform)

	(1) Whole sample Nb.obs	(2) Untreated Nb.obs	(3) Treated Nb.obs
Socio-demographic characteristics			
Head of Household:			
Male	764	171	242
Age	764	171	242
Age at child birth	764	171	242
French nationality	764	171	242
No religion	764	171	242
Do not practice religion	764	171	242
Occasionally practice religion	764	171	242
Regularly practice religion	764	171	242
High school diploma and more	764	171	242
Chronic diseases	763	171	241
Farmer	764	171	242
Craftsman	764	171	242
Executive	764	171	242
Intermediate occupation	764	171	242
Employee	764	171	242
Blue collar worker	764	171	242
Pensioner	764	171	242
Other profession	764	171	242
Household:			
Urban	764	171	242
Rural	764	171	242
Equivalised income>1,500€	749	166	237
Married	764	171	242
Single	764	171	242
Separate	764	171	242
One child	764	171	242
Two children	764	171	242
Three children	764	171	242
Four children and more	764	171	242
Outcomes			
HB vaccination:			
Child vaccination against HB	748	168	238
Parents' HB vaccination	757	169	240
Parent's understanding of the campaign			
Vaccination for newborn	692	154	213
Vaccination for middle school children	744	166	236
Vaccination for the whole population	744	166	236
Correct knowledge about HB contamination	764	171	242
HB is transmissible by saliva	764	171	242
Don't know how HB is transmitted	764	171	242
HB is a serious illness	762	170	241
MMR vaccination:			
Child vaccination against MMR	576	166	234
MMR is a begnin illness	758	170	237
Non vaccination against MMR is risky	764	171	242

Note: We include all possible observations for each outcome to maximize sample size. Column (1) reports the number of observations within the entire sample. Columns (2) and (3) report, respectively, the number of observations for households whose eldest child is between 6 and 10 years old and for households whose eldest child is between 11 and 15 years old.
Source: Health Barometer 1995.

Table A3: Continuity in the characteristics: Sharp Regression Discontinuity with y=father

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: father			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.015	-0.043	-0.071	-0.056
	(0.046)	(0.063)	(0.070)	(0.064)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.011	-0.002	0.015	0.017
	(0.008)	(0.017)	(0.018)	(0.013)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.016*	0.026***	0.021***	0.006
	(0.008)	(0.006)	(0.003)	(0.008)
R^2	0.004	0.002	0.004	0.002
AIC	1038.750	445.999	578.384	716.478
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.071	0.030	-0.011	-0.023
	(0.079)	(0.057)	(0.057)	(0.057)
LS1	0.018**	0.042***	0.026***	0.031***
	(0.006)	(0.011)	(0.006)	(0.008)
LS2	0.014	-0.010	0.003	-0.033**
	(0.016)	(0.021)	(0.017)	(0.013)
LS3	0.028	-0.061	-0.022	-0.016
	(0.029)	(0.041)	(0.026)	(0.021)
LS4	-0.018*	0.064	0.056*	0.037**
	(0.009)	(0.042)	(0.026)	(0.014)
R^2	0.005	0.005	0.005	0.005
AIC	1042.032	447.264	579.725	718.970
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.118	0.106	0.072	-0.009
	(0.088)	(0.089)	(0.051)	(0.061)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.059*	-0.158	-0.121**	-0.047
	(0.029)	(0.103)	(0.050)	(0.032)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.011	0.042	0.041*	0.064***
	(0.017)	(0.038)	(0.020)	(0.013)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.006**	-0.031	-0.023**	-0.009*
	(0.002)	(0.021)	(0.009)	(0.004)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.001	-0.006	-0.005	-0.012***
	(0.003)	(0.013)	(0.005)	(0.003)
R^2	0.009	0.004	0.006	0.005
AIC	1039.490	449.382	581.244	718.860
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A4: Continuity in the characteristics: Sharp Regression Discontinuity with y=age of the head of household

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: age of the head of household			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.199	0.732	0.949*	0.903*
	(0.437)	(0.450)	(0.447)	(0.447)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.905***	0.787***	0.595***	0.723***
	(0.068)	(0.110)	(0.127)	(0.114)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.850***	0.725***	0.911***	0.724***
	(0.100)	(0.095)	(0.075)	(0.112)
R^2	0.400	0.100	0.151	0.197
AIC	4671.721	2067.605	2677.626	3308.887
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.894*	1.463**	0.560	0.691
	(0.486)	(0.430)	(0.530)	(0.504)
LS1	0.748***	0.447**	0.725***	0.879***
	(0.127)	(0.166)	(0.094)	(0.131)
LS2	0.946***	1.358***	1.568***	0.480*
	(0.191)	(0.301)	(0.287)	(0.242)
LS3	0.644**	0.322	0.914***	0.749***
	(0.232)	(0.289)	(0.188)	(0.220)
LS4	0.953***	0.852**	0.236	0.707***
	(0.092)	(0.292)	(0.202)	(0.218)
R^2	0.400	0.101	0.153	0.197
AIC	4675.356	2069.011	2678.944	3312.624
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.747	1.452	0.433	1.027**
	(0.597)	(0.922)	(0.665)	(0.467)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.738**	0.147	1.304*	0.465
	(0.258)	(1.066)	(0.578)	(0.379)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.581*	0.375	0.266	1.074***
	(0.275)	(0.587)	(0.299)	(0.344)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.015	-0.128	0.121	-0.037
	(0.021)	(0.213)	(0.102)	(0.056)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.044	0.117	0.159*	-0.069
	(0.044)	(0.193)	(0.077)	(0.070)
R^2	0.400	0.100	0.153	0.197
AIC	4675.292	2071.486	2680.993	3312.566
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A5: Continuity in the characteristics: Sharp Regression Discontinuity with y=high school diploma or more

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: high school diploma or more			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.059	0.027	0.037	-0.002
	(0.079)	(0.128)	(0.123)	(0.109)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.004	-0.008	-0.020	-0.015
	(0.011)	(0.035)	(0.029)	(0.021)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.001	-0.043***	-0.029***	-0.008
	(0.009)	(0.010)	(0.006)	(0.013)
R^2	0.008	0.010	0.014	0.007
AIC	1046.731	446.789	576.348	725.475
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.025	-0.149	-0.037	-0.015
	(0.130)	(0.094)	(0.108)	(0.112)
LS1	-0.044***	-0.074***	-0.043***	-0.049***
	(0.007)	(0.009)	(0.010)	(0.011)
LS2	0.040***	0.026	0.021	0.057***
	(0.010)	(0.016)	(0.028)	(0.018)
LS3	-0.018	0.131	0.030	0.016
	(0.042)	(0.070)	(0.042)	(0.038)
LS4	-0.002	-0.152*	-0.076	-0.035
	(0.011)	(0.071)	(0.042)	(0.024)
R^2	0.012	0.021	0.017	0.013
AIC	1047.642	445.114	576.854	726.351
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.102	-0.304*	-0.141	-0.013
	(0.144)	(0.154)	(0.107)	(0.125)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.056	0.346*	0.162	0.039
	(0.049)	(0.180)	(0.096)	(0.067)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.073***	-0.099**	-0.088***	-0.105***
	(0.011)	(0.041)	(0.023)	(0.013)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.005	0.071*	0.031	0.008
	(0.004)	(0.036)	(0.017)	(0.009)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.012***	0.019	0.015**	0.019***
	(0.002)	(0.013)	(0.006)	(0.003)
R^2	0.014	0.020	0.020	0.014
AIC	1046.100	447.501	577.798	726.040
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A6: Continuity in the characteristics: Sharp Regression Discontinuity for y=craftsman

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: craftsman			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.001	-0.005	-0.014	0.002
	(0.021)	(0.023)	(0.020)	(0.023)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.001	0.003	0.005**	0.001
	(0.001)	(0.003)	(0.002)	(0.003)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.004	0.003	0.008	0.003
	(0.004)	(0.015)	(0.006)	(0.005)
R^2	0.006	0.001	0.007	0.003
AIC	-551.936	-267.268	-296.607	-369.999
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.015	-0.042**	-0.015	-0.020
	(0.023)	(0.015)	(0.025)	(0.023)
LS1	0.006	0.046***	0.003	0.007
	(0.012)	(0.001)	(0.015)	(0.014)
LS2	0.003	-0.093***	0.025	-0.003
	(0.011)	(0.003)	(0.034)	(0.020)
LS3	0.008	0.012	0.008	0.011*
	(0.005)	(0.011)	(0.007)	(0.005)
LS4	-0.000	-0.006	0.002	-0.005
	(0.002)	(0.011)	(0.008)	(0.004)
R^2	0.006	0.031	0.008	0.004
AIC	-548.141	-274.870	-294.985	-366.562
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.009	-0.055*	-0.020	-0.034*
	(0.019)	(0.026)	(0.021)	(0.018)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.003	0.026	0.002	0.018
	(0.005)	(0.030)	(0.018)	(0.011)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.013	0.107***	0.030	0.029
	(0.016)	(0.022)	(0.036)	(0.025)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.000	0.005	-0.001	0.002
	(0.001)	(0.006)	(0.003)	(0.002)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.001	-0.035***	-0.005	-0.005
	(0.003)	(0.007)	(0.008)	(0.005)
R^2	0.006	0.028	0.009	0.007
AIC	-548.341	-271.750	-293.323	-368.069
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A7: Continuity in the characteristics: Sharp Regression Discontinuity for y=executive

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: executive			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.020	0.051	0.044	0.062
	(0.039)	(0.035)	(0.034)	(0.042)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	-0.003	-0.000	0.003	-0.016
	(0.004)	(0.017)	(0.007)	(0.011)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.013*	-0.010	-0.010*	0.009
	(0.006)	(0.009)	(0.005)	(0.011)
R^2	0.008	0.004	0.004	0.006
AIC	494.594	170.727	207.038	337.266
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.101**	0.163**	0.116**	0.091
	(0.040)	(0.065)	(0.039)	(0.051)
LS1	-0.015	-0.028	-0.010	-0.019
	(0.011)	(0.021)	(0.008)	(0.013)
LS2	0.039***	0.031	-0.008	0.053**
	(0.010)	(0.038)	(0.024)	(0.019)
LS3	-0.025	-0.068	-0.038	-0.015
	(0.024)	(0.045)	(0.021)	(0.035)
LS4	0.001	0.061	0.050*	-0.016
	(0.007)	(0.045)	(0.026)	(0.031)
R^2	0.012	0.010	0.009	0.012
AIC	495.564	170.761	207.160	338.609
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.079*	0.210*	0.128*	0.035
	(0.040)	(0.098)	(0.066)	(0.067)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	-0.015	-0.162	-0.072	0.035
	(0.020)	(0.113)	(0.070)	(0.060)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.031*	-0.013	-0.012	-0.054**
	(0.016)	(0.064)	(0.034)	(0.023)
$\mathbb{1}_{A_i < 11}(A_i - 11)^2$	-0.001	-0.032	-0.013	0.007
	(0.002)	(0.023)	(0.012)	(0.009)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.007**	0.001	0.001	0.013**
	(0.003)	(0.021)	(0.009)	(0.004)
R^2	0.011	0.009	0.006	0.013
AIC	496.136	173.223	210.238	337.835
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A8: Continuity in the characteristics: Sharp Regression Discontinuity for y=intermediate occupation

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: intermediate occupation			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.165**	-0.024	-0.065	-0.164**
	(0.058)	(0.073)	(0.058)	(0.073)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.011*	-0.055**	-0.036*	0.007
	(0.006)	(0.021)	(0.017)	(0.024)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.004	0.004	0.007	0.008
	(0.006)	(0.022)	(0.009)	(0.007)
R^2	0.013	0.040	0.034	0.018
AIC	496.136	173.223	210.238	337.835
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.059	-0.144***	-0.062	-0.022
	(0.072)	(0.009)	(0.061)	(0.085)
LS1	0.008	-0.060***	0.004	0.005
	(0.015)	(0.000)	(0.022)	(0.018)
LS2	-0.001	0.150***	0.016	0.012
	(0.014)	(0.001)	(0.052)	(0.025)
LS3	-0.040	0.055***	-0.036	-0.068
	(0.035)	(0.007)	(0.023)	(0.043)
LS4	0.021*	-0.135***	-0.036	0.055
	(0.010)	(0.007)	(0.032)	(0.036)
R^2	0.015	0.053	0.034	0.024
AIC	889.401	387.323	509.143	627.619
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.129*	-0.213***	-0.026	0.096
	(0.067)	(0.036)	(0.086)	(0.115)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.007	0.181***	-0.047	-0.180**
	(0.038)	(0.041)	(0.073)	(0.075)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.003	-0.148***	-0.053	-0.020
	(0.023)	(0.037)	(0.048)	(0.035)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.002	0.047***	-0.002	-0.027**
	(0.003)	(0.008)	(0.012)	(0.010)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.000	0.051***	0.015	0.005
	(0.004)	(0.012)	(0.011)	(0.007)
R^2	0.013	0.051	0.036	0.028
AIC	890.737	389.852	510.412	625.181
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A9: Continuity in the characteristics: Sharp Regression Discontinuity for y=employee

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: employee			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.075*	0.089	0.084	0.128**
	(0.043)	(0.054)	(0.052)	(0.053)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	0.001	-0.012	-0.014	-0.026**
	(0.006)	(0.013)	(0.010)	(0.011)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.012	0.006	0.015	0.003
	(0.009)	(0.010)	(0.009)	(0.008)
R^2	0.005	0.008	0.012	0.008
AIC	670.120	293.757	404.118	513.974
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.100	0.025	0.069	0.057
	(0.067)	(0.040)	(0.049)	(0.050)
LS1	0.023	-0.010	0.006	0.015
	(0.016)	(0.016)	(0.010)	(0.012)
LS2	-0.046***	0.042	0.048***	-0.016
	(0.013)	(0.029)	(0.013)	(0.012)
LS3	-0.031	0.041	-0.000	0.006
	(0.022)	(0.027)	(0.016)	(0.016)
LS4	0.006	-0.062*	-0.029	-0.046***
	(0.007)	(0.027)	(0.016)	(0.012)
R^2	0.010	0.011	0.013	0.010
AIC	669.881	294.794	405.749	516.964
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.130	-0.018	0.046	0.021
	(0.076)	(0.062)	(0.045)	(0.046)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	-0.053**	0.116	0.039	0.047*
	(0.024)	(0.072)	(0.039)	(0.021)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.051*	-0.061*	-0.034*	0.023
	(0.025)	(0.031)	(0.017)	(0.023)
$\mathbb{1}_{A_i < 11}(A_i - 11)^2$	-0.005**	0.026	0.009	0.011***
	(0.002)	(0.014)	(0.007)	(0.003)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.010**	0.023*	0.012**	-0.004
	(0.004)	(0.010)	(0.004)	(0.004)
R^2	0.014	0.012	0.015	0.011
AIC	667.300	296.515	407.215	516.815
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A10: Continuity in the characteristics: Sharp Regression Discontinuity for y=blue collar worker

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: blue collar worker			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.101	-0.100	-0.022	0.014
	(0.074)	(0.102)	(0.080)	(0.066)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.014	0.063*	0.034	0.020
	(0.010)	(0.030)	(0.025)	(0.014)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.011	0.004	-0.019*	-0.022***
	(0.008)	(0.011)	(0.009)	(0.006)
R^2	0.005	0.016	0.008	0.007
AIC	999.470	430.578	554.492	683.129
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.089	0.087*	-0.057	-0.064
	(0.106)	(0.045)	(0.086)	(0.094)
LS1	-0.016	0.036	0.004	-0.003
	(0.012)	(0.020)	(0.011)	(0.008)
LS2	-0.007	-0.069*	-0.100**	-0.053***
	(0.019)	(0.036)	(0.033)	(0.017)
LS3	0.076*	-0.083**	0.042	0.051
	(0.041)	(0.029)	(0.034)	(0.039)
LS4	-0.031**	0.178***	0.025	0.001
	(0.011)	(0.029)	(0.044)	(0.020)
R^2	0.011	0.027	0.011	0.009
AIC	999.316	428.912	555.411	686.001
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.068	0.208**	-0.085	-0.104
	(0.081)	(0.086)	(0.127)	(0.120)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.078**	-0.262**	0.060	0.090
	(0.028)	(0.099)	(0.107)	(0.078)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.028	0.043	0.059	0.022
	(0.024)	(0.069)	(0.035)	(0.023)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.008***	-0.065**	0.004	0.010
	(0.002)	(0.020)	(0.018)	(0.010)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.003	-0.013	-0.019*	-0.009
	(0.004)	(0.023)	(0.009)	(0.005)
R^2	0.013	0.025	0.011	0.010
AIC	997.323	431.751	557.312	685.794
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A11: Continuity in the characteristics: Sharp Regression Discontinuity for y=married household

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: married household			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.036*	-0.007	-0.018	-0.032***
	(0.019)	(0.008)	(0.011)	(0.009)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.003	-0.010***	-0.003	-0.002
	(0.003)	(0.002)	(0.004)	(0.002)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.003	-0.011*	-0.013***	-0.004
	(0.005)	(0.005)	(0.002)	(0.005)
R^2	0.006	0.007	0.009	0.006
AIC	404.996	185.204	264.934	323.836
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.017	-0.030***	-0.007	-0.006
	(0.015)	(0.003)	(0.010)	(0.011)
LS1	-0.018***	0.004***	-0.011*	-0.016***
	(0.006)	(0.001)	(0.005)	(0.005)
LS2	0.023***	-0.044***	-0.022	0.014
	(0.006)	(0.001)	(0.012)	(0.008)
LS3	0.001	0.001	-0.011*	-0.010*
	(0.008)	(0.002)	(0.005)	(0.004)
LS4	-0.004	-0.015***	0.006	0.003
	(0.005)	(0.002)	(0.007)	(0.003)
R^2	0.008	0.008	0.009	0.007
AIC	407.187	186.919	266.853	327.319
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.045	-0.035***	0.004	0.000
	(0.026)	(0.003)	(0.015)	(0.015)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.016	0.009***	-0.030**	-0.017
	(0.011)	(0.001)	(0.013)	(0.009)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.034***	0.023*	0.005	-0.026*
	(0.011)	(0.011)	(0.010)	(0.014)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.002	0.004***	-0.005*	-0.002
	(0.001)	(0.000)	(0.002)	(0.001)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.006***	-0.011**	-0.005*	0.004
	(0.002)	(0.003)	(0.002)	(0.003)
R^2	0.009	0.007	0.009	0.007
AIC	406.611	188.974	268.719	327.446
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A12: Continuity in the characteristics: Sharp Regression Discontinuity for y=one child in the household

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: one child in the household			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.231*	-0.057	-0.033	0.023
	(0.110)	(0.034)	(0.053)	(0.057)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.074***	0.032***	0.009	-0.008
	(0.018)	(0.008)	(0.017)	(0.014)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.025***	0.015**	0.039***	0.025**
	(0.004)	(0.004)	(0.009)	(0.009)
R^2	0.106	0.006	0.016	0.011
AIC	976.789	404.784	543.138	687.707
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.153***	-0.070	-0.074*	-0.087**
	(0.046)	(0.046)	(0.039)	(0.038)
LS1	0.029*	0.016	0.015***	0.030*
	(0.014)	(0.011)	(0.004)	(0.015)
LS2	0.020	0.013	0.122***	0.017
	(0.012)	(0.020)	(0.007)	(0.024)
LS3	0.101**	0.042	0.044*	0.049*
	(0.035)	(0.033)	(0.022)	(0.023)
LS4	-0.106***	-0.001	-0.031	-0.043**
	(0.016)	(0.034)	(0.027)	(0.015)
R^2	0.126	0.006	0.020	0.014
AIC	964.581	406.877	543.391	690.172
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.141***	-0.116*	-0.154***	-0.149***
	(0.024)	(0.060)	(0.044)	(0.031)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.110***	0.085	0.139***	0.115***
	(0.009)	(0.070)	(0.043)	(0.025)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.036	0.037	-0.020	0.046
	(0.024)	(0.027)	(0.024)	(0.030)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.017***	0.011	0.022**	0.018***
	(0.001)	(0.014)	(0.007)	(0.004)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.002	-0.007	0.015**	-0.004
	(0.004)	(0.009)	(0.006)	(0.006)
R^2	0.136	0.007	0.020	0.015
AIC	955.843	408.659	545.389	689.602
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column reports estimates obtained on the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 years old (bandwidth of 5) or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A13: Sharp Regression Discontinuity on all children: Local linear estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.474***	0.466***	0.461***	0.454***	0.419***	0.419***	0.444***	0.438***
	(0.039)	(0.042)	(0.041)	(0.050)	(0.037)	(0.045)	(0.037)	(0.044)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.004	0.009**	0.000	0.004	0.016	0.019	0.011*	0.016**
	(0.004)	(0.004)	(0.005)	(0.008)	(0.009)	(0.010)	(0.006)	(0.005)
$\mathbb{1}_{A_i \geq 11}(A_i-11)$	0.010	0.011	0.017	0.022	0.029**	0.028**	0.019	0.017
	(0.009)	(0.009)	(0.015)	(0.017)	(0.011)	(0.010)	(0.011)	(0.011)
male		-0.005		-0.014		-0.016		-0.000
		(0.025)		(0.042)		(0.033)		(0.030)
parents' age		-0.004*		-0.006		-0.004		-0.005
		(0.002)		(0.003)		(0.003)		(0.003)
h. school dipl.		-0.025		-0.045**		-0.029		-0.041
		(0.028)		(0.017)		(0.023)		(0.028)
social category (reference: employee)								
farmer		-0.213***		-0.182**		-0.195***		-0.193***
		(0.043)		(0.064)		(0.051)		(0.057)
craftsman		-0.012		-0.094		-0.075		-0.072
		(0.128)		(0.195)		(0.165)		(0.147)
executive		-0.106**		-0.059		-0.073		-0.102
		(0.049)		(0.075)		(0.066)		(0.060)
int. prof.		-0.081**		-0.076*		-0.078**		-0.100**
		(0.036)		(0.038)		(0.030)		(0.036)
blue collar worker		-0.115**		-0.133**		-0.126**		-0.165***
		(0.045)		(0.050)		(0.042)		(0.046)
pensioner		-0.249		0.014		-0.204		-0.188
		(0.196)		(0.192)		(0.244)		(0.215)
other profession		-0.097		-0.363***		-0.197		-0.230
		(0.102)		(0.103)		(0.157)		(0.144)
marital status (reference: married)								
single		-0.147		0.030		-0.091		-0.188
		(0.109)		(0.298)		(0.257)		(0.189)
separate		-0.009		-0.020		-0.007		-0.024
		(0.037)		(0.048)		(0.041)		(0.040)
nb of children (reference: one child)								
2		-0.050**		-0.040		-0.053		-0.074**
		(0.022)		(0.040)		(0.034)		(0.030)
3		-0.090**		-0.065		-0.077		-0.109*
		(0.039)		(0.058)		(0.053)		(0.050)
4 and +		-0.052		-0.090		-0.074		-0.105*
		(0.039)		(0.055)		(0.048)		(0.048)
R^2	0.270	0.286	0.236	0.256	0.279	0.293	0.280	0.302
AIC	1508.145	1503.151	711.006	701.797	843.619	838.422	990.081	977.233
N	1337	1337	595	595	743	743	875	875

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A14: Sharp Regression Discontinuity on the eldest child sample: Local linear estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.467***	0.503***	0.506**	0.474***	0.424***	0.413***	0.446***	0.423***
	(0.073)	(0.083)	(0.083)	(0.120)	(0.081)	(0.103)	(0.072)	(0.089)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	0.001	0.011	-0.022*	-0.018	0.008	0.012	0.004	0.015
	(0.007)	(0.009)	(0.010)	(0.019)	(0.021)	(0.023)	(0.010)	(0.011)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.012	0.013	0.012	0.024	0.034	0.033	0.023	0.021
	(0.014)	(0.014)	(0.032)	(0.033)	(0.020)	(0.019)	(0.017)	(0.015)
male		-0.025		-0.026		-0.015		-0.005
		(0.038)		(0.070)		(0.053)		(0.048)
parents' age		-0.003		-0.006		-0.004		-0.005
		(0.003)		(0.004)		(0.004)		(0.004)
h. school dipl.		-0.007		-0.040		-0.018		-0.043
		(0.042)		(0.051)		(0.046)		(0.051)
social category (reference: employee)								
farmer		-0.198***		-0.155		-0.189*		-0.186*
		(0.068)		(0.114)		(0.098)		(0.096)
craftsman		-0.041		-0.074		-0.039		-0.034
		(0.146)		(0.234)		(0.182)		(0.146)
executive		-0.098		0.059		0.014		-0.075
		(0.069)		(0.121)		(0.105)		(0.097)
int. prof.		-0.101**		-0.115		-0.112		-0.126*
		(0.046)		(0.091)		(0.068)		(0.061)
blue collar worker		-0.137**		-0.148		-0.152**		-0.197***
		(0.052)		(0.086)		(0.063)		(0.060)
pensioner		-0.276		0.009		-0.221		-0.210
		(0.212)		(0.250)		(0.276)		(0.246)
other profession		-0.119		-0.469***		-0.211		-0.226
		(0.142)		(0.121)		(0.215)		(0.216)
marital status (reference: married)								
single		-0.149		0.193		0.005		-0.152
		(0.117)		(0.285)		(0.260)		(0.204)
separate		-0.059		-0.070		-0.024		-0.069
		(0.059)		(0.073)		(0.065)		(0.066)
nb of children (reference: one child)								
2		-0.067**		-0.103**		-0.109**		-0.126***
		(0.031)		(0.037)		(0.035)		(0.034)
3		-0.120*		-0.083		-0.099		-0.122
		(0.063)		(0.094)		(0.085)		(0.073)
4 and +		-0.144*		-0.202		-0.144		-0.177
		(0.082)		(0.170)		(0.122)		(0.103)
R^2	0.267	0.286	0.214	0.255	0.271	0.296	0.272	0.302
AIC	860.151	867.156	386.073	375.607	464.264	460.105	572.547	565.253
N	748	748	313	313	406	406	506	506

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A15: Sharp Regression Discontinuity on all children: Local Linear Spline estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.434***	0.438***	0.418***	0.406***	0.453***	0.449***	0.440***	0.436***
	(0.037)	(0.045)	(0.033)	(0.045)	(0.043)	(0.053)	(0.038)	(0.049)
LS1	0.029	0.026	0.037	0.048*	0.017	0.018	0.026	0.025
	(0.018)	(0.017)	(0.024)	(0.024)	(0.015)	(0.017)	(0.017)	(0.018)
LS2	-0.009	-0.005	-0.029	-0.040	0.076***	0.070**	0.006	0.003
	(0.014)	(0.014)	(0.041)	(0.039)	(0.019)	(0.024)	(0.022)	(0.024)
LS3	0.012	0.014	0.021*	0.025	0.003	0.007	0.009	0.012
	(0.011)	(0.013)	(0.009)	(0.018)	(0.013)	(0.017)	(0.010)	(0.014)
LS4	0.003	0.008	-0.019*	-0.017	0.030	0.031	0.012	0.018
	(0.005)	(0.005)	(0.009)	(0.021)	(0.016)	(0.021)	(0.010)	(0.011)
male		-0.006		-0.013		-0.016		-0.001
		(0.026)		(0.042)		(0.033)		(0.031)
parents' age		-0.004*		-0.006		-0.004		-0.005
		(0.002)		(0.003)		(0.003)		(0.003)
h. school dipl.		-0.024		-0.046**		-0.030		-0.040
		(0.028)		(0.017)		(0.023)		(0.028)
social category (reference: employee)								
farmer		-0.212***		-0.183**		-0.195***		-0.193***
		(0.043)		(0.064)		(0.051)		(0.057)
craftsman		-0.011		-0.105		-0.075		-0.072
		(0.129)		(0.200)		(0.164)		(0.148)
executive		-0.105**		-0.059		-0.073		-0.101
		(0.048)		(0.077)		(0.065)		(0.060)
int. prof.		-0.081**		-0.076*		-0.077**		-0.101**
		(0.036)		(0.037)		(0.029)		(0.036)
blue collar		-0.114**		-0.135**		-0.125**		-0.166***
		(0.045)		(0.051)		(0.042)		(0.046)
pensioner		-0.246		0.003		-0.206		-0.185
		(0.195)		(0.193)		(0.244)		(0.216)
other profession		-0.098		-0.364***		-0.197		-0.232
		(0.102)		(0.103)		(0.157)		(0.143)
marital status (reference: married)								
single		-0.146		0.030		-0.092		-0.184
		(0.109)		(0.299)		(0.261)		(0.192)
separate		-0.011		-0.021		-0.006		-0.025
		(0.037)		(0.049)		(0.040)		(0.039)
nb of children (reference: one child)								
2		-0.050**		-0.040		-0.053		-0.075**
		(0.022)		(0.040)		(0.035)		(0.030)
3		-0.090**		-0.068		-0.074		-0.109*
		(0.039)		(0.059)		(0.053)		(0.050)
4 and +		-0.053		-0.091		-0.071		-0.107*
		(0.039)		(0.055)		(0.048)		(0.049)
R^2	0.270	0.287	0.237	0.257	0.280	0.294	0.281	0.302
AIC	1510.937	1502.402	712.406	700.790	844.841	837.803	993.916	977.013
N	1337	1337	595	595	743	743	875	875

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A16: Sharp Regression Discontinuity on the eldest child sample: Local Linear Spline estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.470***	0.459***	0.425***	0.395**	0.492***	0.475***	0.474***	0.460***
	(0.079)	(0.101)	(0.079)	(0.114)	(0.092)	(0.125)	(0.084)	(0.111)
LS1	0.032	0.028	0.071	0.084*	0.012	0.014	0.024	0.023
	(0.033)	(0.032)	(0.043)	(0.037)	(0.031)	(0.034)	(0.033)	(0.033)
LS2	-0.007	-0.001	-0.124	-0.116	0.113**	0.101*	0.020	0.018
	(0.026)	(0.025)	(0.078)	(0.064)	(0.045)	(0.051)	(0.037)	(0.037)
LS3	-0.011	-0.004	0.007	0.012	-0.020	-0.015	-0.012	-0.006
	(0.023)	(0.029)	(0.045)	(0.067)	(0.034)	(0.044)	(0.027)	(0.036)
LS4	0.003	0.014	-0.034	-0.028	0.039	0.040	0.014	0.029
	(0.010)	(0.013)	(0.045)	(0.073)	(0.044)	(0.054)	(0.020)	(0.025)
male		-0.025		-0.027		-0.015		-0.005
		(0.039)		(0.070)		(0.054)		(0.050)
parents' age		-0.003		-0.005		-0.004		-0.005
		(0.003)		(0.004)		(0.004)		(0.004)
h. school dipl.		-0.005		-0.038		-0.018		-0.042
		(0.043)		(0.048)		(0.045)		(0.051)
social category (reference: employee)								
farmer		-0.194**		-0.168		-0.192*		-0.188*
		(0.069)		(0.112)		(0.100)		(0.099)
craftsman		-0.037		-0.126		-0.039		-0.034
		(0.148)		(0.240)		(0.180)		(0.146)
executive		-0.095		0.061		0.012		-0.076
		(0.070)		(0.124)		(0.102)		(0.098)
int. prof.		-0.100**		-0.110		-0.112		-0.128*
		(0.047)		(0.091)		(0.066)		(0.060)
blue collar		-0.134**		-0.151		-0.148**		-0.197***
		(0.053)		(0.087)		(0.063)		(0.060)
pensioner		-0.272		-0.027		-0.224		-0.210
		(0.210)		(0.251)		(0.277)		(0.248)
other profession		-0.118		-0.453***		-0.206		-0.224
		(0.142)		(0.124)		(0.219)		(0.217)
marital status (reference: married)								
single		-0.145		0.200		0.006		-0.145
		(0.118)		(0.284)		(0.264)		(0.208)
separate		-0.063		-0.070		-0.023		-0.071
		(0.057)		(0.075)		(0.064)		(0.064)
nb of children (reference: one child)								
2		-0.070**		-0.095**		-0.110**		-0.128***
		(0.033)		(0.036)		(0.037)		(0.035)
3		-0.121*		-0.084		-0.093		-0.122
		(0.063)		(0.095)		(0.084)		(0.073)
4 and +		-0.146*		-0.186		-0.135		-0.177
		(0.083)		(0.168)		(0.131)		(0.110)
R^2	0.268	0.286	0.220	0.260	0.274	0.298	0.272	0.302
AIC	863.223	866.545	385.886	373.390	464.638	458.825	576.400	564.995
N	748	748	313	313	406	406	506	506

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_{\epsilon}) + 2p$
Source: Health Barometer 1995.

Table A17: Sharp Regression Discontinuity on all children: Local quadratic estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.436***	0.443***	0.384***	0.370***	0.480***	0.478***	0.425***	0.428***
	(0.070)	(0.071)	(0.024)	(0.047)	(0.046)	(0.053)	(0.038)	(0.044)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	0.005	0.006	0.050*	0.057	-0.037	-0.037	0.009	0.005
	(0.021)	(0.021)	(0.023)	(0.047)	(0.033)	(0.040)	(0.025)	(0.029)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.056	0.050	0.109**	0.129**	0.030	0.038	0.054*	0.057*
	(0.034)	(0.034)	(0.045)	(0.039)	(0.037)	(0.038)	(0.026)	(0.027)
$\mathbb{1}_{A_i < 11}(A_i - 11)^2$	0.000	-0.000	0.010*	0.011	-0.009	-0.009	-0.000	-0.002
	(0.002)	(0.002)	(0.005)	(0.010)	(0.005)	(0.007)	(0.003)	(0.004)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.008	-0.007	-0.031*	-0.036**	-0.000	-0.003	-0.007	-0.008
	(0.006)	(0.006)	(0.015)	(0.013)	(0.009)	(0.009)	(0.005)	(0.005)
male		-0.005		-0.012		-0.018		-0.002
		(0.025)		(0.041)		(0.033)		(0.031)
parents' age		-0.004*		-0.006		-0.004		-0.005
		(0.003)		(0.003)		(0.003)		(0.003)
h. school dipl.		-0.024		-0.045**		-0.028		-0.039
		(0.026)		(0.017)		(0.023)		(0.028)
social category (reference: employee)								
farmer		-0.211***		-0.183**		-0.196***		-0.193***
		(0.049)		(0.064)		(0.052)		(0.058)
craftsman		-0.010		-0.110		-0.076		-0.075
		(0.100)		(0.201)		(0.165)		(0.149)
executive		-0.104**		-0.060		-0.075		-0.100
		(0.043)		(0.078)		(0.065)		(0.060)
intermediate profession		-0.081**		-0.077*		-0.079**		-0.101**
		(0.036)		(0.038)		(0.030)		(0.036)
blue collar		-0.114***		-0.136**		-0.127**		-0.167***
		(0.035)		(0.051)		(0.042)		(0.046)
pensioner		-0.247		-0.009		-0.207		-0.185
		(0.204)		(0.198)		(0.242)		(0.215)
other profession		-0.098		-0.362***		-0.200		-0.235
		(0.098)		(0.101)		(0.157)		(0.144)
marital status (reference: married)								
single		-0.146*		0.031		-0.084		-0.181
		(0.086)		(0.299)		(0.258)		(0.191)
separate		-0.012		-0.022		-0.008		-0.026
		(0.049)		(0.049)		(0.041)		(0.040)
nb of children (reference: one child)								
two children		-0.052*		-0.041		-0.056		-0.076**
		(0.030)		(0.040)		(0.035)		(0.030)
three children		-0.091**		-0.070		-0.078		-0.111**
		(0.036)		(0.059)		(0.052)		(0.050)
4 children and +		-0.054		-0.091		-0.072		-0.108**
		(0.053)		(0.055)		(0.048)		(0.048)
R^2	0.271	0.287	0.238	0.258	0.279	0.294	0.281	0.303
AIC	1510.063	1509.593	713.425	699.699	847.143	837.864	993.331	976.209
N	1337	1337	595	595	743	743	875	875

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$

Source: Health Barometer 1995.

Table A18: Sharp Regression Discontinuity on the eldest child sample: Local quadratic estimates

	All		Bandwidth=4		Bandwidth=5		Bandwidth=6	
	Dependent variable: hepatitis B vaccination							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
$\mathbb{1}_{A_i \geq 11}$	0.464***	0.461***	0.393***	0.366**	0.562***	0.559***	0.470***	0.473***
	(0.062)	(0.078)	(0.089)	(0.140)	(0.095)	(0.128)	(0.080)	(0.103)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	-0.020	-0.016	0.028	0.033	-0.121	-0.128	-0.034	-0.043
	(0.018)	(0.020)	(0.102)	(0.162)	(0.079)	(0.101)	(0.051)	(0.062)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.070*	0.062	0.234**	0.250***	0.047	0.057	0.065	0.064
	(0.038)	(0.037)	(0.074)	(0.057)	(0.075)	(0.075)	(0.053)	(0.052)
$\mathbb{1}_{A_i < 11}(A_i - 11)^2$	-0.002	-0.002	0.010	0.010	-0.022	-0.024	-0.006	-0.009
	(0.002)	(0.002)	(0.020)	(0.033)	(0.013)	(0.017)	(0.007)	(0.009)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.010	-0.008	-0.074**	-0.076***	-0.003	-0.006	-0.008	-0.008
	(0.006)	(0.006)	(0.024)	(0.019)	(0.018)	(0.018)	(0.010)	(0.010)
male		-0.024		-0.026		-0.019		-0.007
		(0.039)		(0.068)		(0.054)		(0.050)
parents' age		-0.004		-0.005		-0.004		-0.006
		(0.003)		(0.004)		(0.004)		(0.004)
h. school dipl.		-0.005		-0.035		-0.013		-0.039
		(0.043)		(0.046)		(0.044)		(0.051)
social category (reference: employee)								
farmer		-0.193**		-0.182		-0.194*		-0.189*
		(0.069)		(0.108)		(0.096)		(0.099)
craftsman		-0.035		-0.145		-0.045		-0.040
		(0.148)		(0.239)		(0.184)		(0.147)
executive		-0.091		0.054		0.007		-0.072
		(0.070)		(0.125)		(0.102)		(0.098)
intermediate profession		-0.097*		-0.112		-0.115		-0.128*
		(0.047)		(0.091)		(0.066)		(0.060)
blue collar		-0.132**		-0.152		-0.152**		-0.198***
		(0.052)		(0.086)		(0.063)		(0.060)
pensioner		-0.272		-0.059		-0.228		-0.207
		(0.208)		(0.264)		(0.273)		(0.247)
other profession		-0.116		-0.446***		-0.206		-0.227
		(0.141)		(0.122)		(0.225)		(0.218)
marital status (reference: married)								
single		-0.145		0.213		0.020		-0.136
		(0.118)		(0.281)		(0.258)		(0.206)
separate		-0.066		-0.073		-0.028		-0.075
		(0.057)		(0.077)		(0.065)		(0.065)
nb of children (reference: one child)								
two children		-0.075**		-0.092**		-0.114**		-0.129***
		(0.032)		(0.038)		(0.036)		(0.035)
three children		-0.123*		-0.084		-0.100		-0.124
		(0.063)		(0.095)		(0.083)		(0.074)
4 children and +		-0.147*		-0.177		-0.138		-0.182
		(0.080)		(0.167)		(0.124)		(0.105)
R^2	0.270	0.288	0.227	0.266	0.273	0.299	0.274	0.304
AIC	861.274	864.658	385.225	370.636	467.008	458.547	575.572	563.959
N	748	748	313	313	406	406	506	506

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Columns 1 and 2 report estimates performed on the whole sample of children. Columns 3 and 4 report estimates obtained using children between 7 and 14 years old (bandwidth of 4). Columns 5 and 6 report estimates obtained using children between 6 and 15 years old (bandwidth of 5). Columns 7 and 8 report estimates obtained using children between 5 and 16 years old (bandwidth of 6). Columns 1, 3, 5 and 7 report estimates without control variables while columns 2, 4, 6 and 8 include them. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A19: Sharp Regression Discontinuity: parental vaccination against HB

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: Parental vaccination against HB			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.08	0.04	-0.00	-0.07
	(0.07)	(0.06)	(0.08)	(0.09)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.00	-0.06***	-0.03	-0.01
	(0.01)	(0.02)	(0.02)	(0.02)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.00	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.00	0.02	0.01	0.01
AIC	972.41	423.43	545.05	684.11
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.06	0.07	0.08	0.09
	(0.06)	(0.06)	(0.06)	(0.06)
LS1	0.01	0.05***	0.01	0.00
	(0.01)	(0.00)	(0.01)	(0.01)
LS2	-0.00	-0.09***	-0.02	0.02
	(0.01)	(0.00)	(0.04)	(0.02)
LS3	-0.07**	-0.09*	-0.08**	-0.09***
	(0.02)	(0.05)	(0.03)	(0.03)
LS4	0.02	0.02	0.03	0.04**
	(0.01)	(0.05)	(0.03)	(0.02)
R^2	0.01	0.02	0.01	0.01
AIC	973.84	424.18	545.80	684.97
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.04	0.16*	0.17***	0.16***
	(0.10)	(0.08)	(0.05)	(0.04)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.02	-0.20*	-0.21***	-0.18***
	(0.04)	(0.09)	(0.05)	(0.02)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.02	0.11***	0.05	0.01
	(0.02)	(0.03)	(0.03)	(0.03)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.00	-0.03	-0.03***	-0.03***
	(0.00)	(0.02)	(0.01)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.00	-0.03***	-0.01	0.00
	(0.00)	(0.01)	(0.01)	(0.01)
R^2	0.00	0.02	0.02	0.01
AIC	975.61	425.98	546.66	684.23
N	732	316	409	512

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A20: Sharp Regression Discontinuity: correct answers about contamination modes of HB

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: HB contamination knowledge			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.029	-0.189***	-0.153***	-0.134***
	(0.057)	(0.021)	(0.040)	(0.039)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.002	0.047***	0.046***	0.033***
	(0.007)	(0.005)	(0.003)	(0.008)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.012*	0.046***	0.008	0.015
	(0.006)	(0.006)	(0.018)	(0.010)
R^2	0.002	0.016	0.010	0.010
AIC	867.48	371.11	464.02	586.74
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.227***	-0.21***	-0.207***	-0.207***
	(0.030)	(0.01)	(0.016)	(0.024)
LS1	0.028	0.06***	0.046***	0.029
	(0.018)	(0.01)	(0.006)	(0.017)
LS2	-0.003	0.03	-0.129***	-0.008
	(0.013)	(0.02)	(0.008)	(0.025)
LS3	0.080***	0.06***	0.057***	0.064***
	(0.013)	(0.01)	(0.003)	(0.004)
LS4	-0.017***	0.01	0.032***	0.014*
	(0.004)	(0.01)	(0.005)	(0.007)
R^2	0.008	0.02	0.019	0.012
AIC	866.84	372.94	462.23	589.75
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.183***	-0.261***	-0.237***	-0.235***
	(0.045)	(0.008)	(0.016)	(0.027)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.066***	0.109***	0.073***	0.097***
	(0.021)	(0.008)	(0.013)	(0.010)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.036	0.086***	0.131***	0.044
	(0.032)	(0.018)	(0.022)	(0.036)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.006***	0.013***	0.005*	0.009***
	(0.002)	(0.002)	(0.002)	(0.001)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.004	-0.013*	-0.030***	-0.006
	(0.005)	(0.006)	(0.005)	(0.007)
R^2	0.008	0.017	0.019	0.012
AIC	867.18	374.83	464.46	589.74
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A21: Sharp Regression Discontinuity: HB is transmissible by saliva

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: HB is transmissible by saliva			
	b/se	b/se	b/se	b/se
		Linear		
$\mathbb{1}_{A_i \geq 11}$	0.14**	0.07***	0.05*	0.06**
	(0.05)	(0.01)	(0.03)	(0.02)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.01	-0.00	-0.00	0.00
	(0.01)	(0.00)	(0.00)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.01	0.01***	0.04***	0.03**
	(0.01)	(0.00)	(0.01)	(0.01)
R^2	0.01	0.01	0.03	0.03
AIC	1040.76	442.91	578.65	724.13
		Linear Spline		
$\mathbb{1}_{A_i \geq 11}$	0.05	0.11***	0.09***	0.08***
	(0.03)	(0.01)	(0.01)	(0.01)
LS1	0.05*	0.00	0.01***	0.03*
	(0.02)	(0.00)	(0.00)	(0.02)
LS2	-0.03	0.04***	0.14***	0.02
	(0.03)	(0.01)	(0.01)	(0.03)
LS3	0.01	-0.02***	-0.01***	-0.01***
	(0.02)	(0.00)	(0.00)	(0.00)
LS4	-0.02	0.02***	0.01**	0.01***
	(0.02)	(0.00)	(0.00)	(0.00)
R^2	0.02	0.01	0.03	0.03
AIC	1041.92	444.79	579.07	728.02
		Quadratic		
$\mathbb{1}_{A_i \geq 11}$	-0.00	0.13***	0.11***	0.08***
	(0.06)	(0.00)	(0.02)	(0.02)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.03	-0.06***	-0.03**	-0.02**
	(0.03)	(0.00)	(0.01)	(0.01)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.09**	-0.00	-0.04**	0.04
	(0.04)	(0.02)	(0.02)	(0.03)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.00	-0.01***	-0.00**	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.01**	0.00	0.02***	-0.00
	(0.01)	(0.01)	(0.00)	(0.01)
R^2	0.02	0.01	0.03	0.03
AIC	1040.07	446.82	581.31	727.97
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A22: Sharp Regression Discontinuity: Don't know how HB is transmitted

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: Don't know how HB is transmitted			
	b/se	b/se	b/se	b/se
			Linear	
$\mathbb{1}_{A_i \geq 11}$	-0.06	0.09	0.03	0.02
	(0.08)	(0.09)	(0.11)	(0.09)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.00	-0.04	-0.02	-0.02
	(0.01)	(0.02)	(0.03)	(0.02)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.02*	-0.06***	-0.04**	-0.03**
	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.02	0.03	0.02	0.03
AIC	998.42	439.67	563.18	695.37
			Linear Spline	
$\mathbb{1}_{A_i \geq 11}$	0.12	0.19*	0.14	0.12
	(0.09)	(0.09)	(0.09)	(0.09)
LS1	-0.06***	-0.05	-0.06***	-0.06***
	(0.01)	(0.03)	(0.01)	(0.01)
LS2	0.02**	-0.09	0.03	0.01
	(0.01)	(0.06)	(0.02)	(0.01)
LS3	-0.05*	-0.11	-0.07*	-0.06*
	(0.03)	(0.06)	(0.04)	(0.03)
LS4	0.02	0.07	0.04	0.00
	(0.01)	(0.07)	(0.04)	(0.02)
R^2	0.02	0.03	0.03	0.03
AIC	997.96	440.74	563.25	697.56
			Quadratic	
$\mathbb{1}_{A_i \geq 11}$	0.06	0.32**	0.27***	0.15
	(0.11)	(0.13)	(0.07)	(0.09)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.03	-0.26	-0.20**	-0.09*
	(0.04)	(0.15)	(0.07)	(0.05)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.09***	-0.09	-0.11**	-0.09***
	(0.02)	(0.08)	(0.05)	(0.02)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.00	-0.04	-0.03**	-0.01
	(0.00)	(0.03)	(0.01)	(0.01)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.01***	0.01	0.02	0.01**
	(0.00)	(0.03)	(0.01)	(0.01)
R^2	0.02	0.03	0.03	0.03
AIC	998.83	442.36	564.28	697.56
N	739	317	413	516

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A23: Sharp Regression Discontinuity: HB is a serious disease

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: HB is a serious illness			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.04	-0.01	0.02	0.04
	(0.06)	(0.05)	(0.05)	(0.05)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.00	0.01	-0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.01	0.03	0.03*	0.02
	(0.01)	(0.02)	(0.01)	(0.01)
R^2	0.01	0.01	0.01	0.01
AIC	796.22	362.16	447.17	545.38
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.02	-0.04	-0.04	-0.04
	(0.05)	(0.05)	(0.05)	(0.05)
LS1	0.04*	0.05	0.03	0.03*
	(0.02)	(0.03)	(0.02)	(0.02)
LS2	-0.02	-0.03	0.02	-0.00
	(0.01)	(0.06)	(0.02)	(0.01)
LS3	0.01	0.02	0.03**	0.03**
	(0.02)	(0.03)	(0.01)	(0.01)
LS4	-0.01	-0.00	-0.04***	-0.03***
	(0.01)	(0.03)	(0.01)	(0.01)
R^2	0.01	0.01	0.01	0.01
AIC	798.43	363.68	448.53	548.29
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.01	-0.07	-0.09*	-0.06
	(0.05)	(0.06)	(0.05)	(0.04)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.00	0.04	0.07*	0.04**
	(0.02)	(0.07)	(0.03)	(0.02)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.07***	0.14*	0.07	0.06**
	(0.02)	(0.07)	(0.04)	(0.02)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.00	0.01	0.01*	0.01**
	(0.00)	(0.01)	(0.01)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.01***	-0.04	-0.01	-0.01*
	(0.00)	(0.02)	(0.01)	(0.00)
R^2	0.01	0.01	0.01	0.01
AIC	797.69	364.73	450.24	547.96
N	737	316	411	514

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}_{\epsilon}^2) + 2p$
Source: Health Barometer 1995.

Table A24: Sharp Regression Discontinuity: vaccination for newborns

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: vaccination for newborn babies			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.188***	-0.233***	-0.277***	-0.228***
	(0.062)	(0.054)	(0.049)	(0.051)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.011	0.004	0.029	0.017
	(0.008)	(0.030)	(0.022)	(0.012)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.031***	0.069***	0.065***	0.048***
	(0.010)	(0.014)	(0.005)	(0.008)
R^2	0.011	0.030	0.029	0.021
AIC	965.94	412.08	527.79	663.15
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.309***	-0.38***	-0.321***	-0.328***
	(0.064)	(0.11)	(0.078)	(0.074)
LS1	0.081***	0.03***	0.069***	0.075***
	(0.011)	(0.00)	(0.014)	(0.011)
LS2	-0.016	0.16***	0.050	0.006
	(0.011)	(0.00)	(0.033)	(0.015)
LS3	0.038	0.12	0.052	0.056
	(0.041)	(0.08)	(0.054)	(0.049)
LS4	0.006	-0.10	0.002	-0.008
	(0.015)	(0.09)	(0.070)	(0.032)
R^2	0.016	0.04	0.029	0.024
AIC	966.15	411.65	529.54	665.52
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.231***	-0.467**	-0.240	-0.309**
	(0.062)	(0.180)	(0.144)	(0.102)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.001	0.273	0.004	0.058
	(0.027)	(0.212)	(0.153)	(0.097)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.113***	-0.027	0.043	0.094**
	(0.022)	(0.029)	(0.035)	(0.031)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.001	0.054	-0.004	0.006
	(0.002)	(0.043)	(0.026)	(0.014)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.013***	0.032**	0.005	-0.009
	(0.003)	(0.010)	(0.008)	(0.006)
R^2	0.016	0.037	0.029	0.022
AIC	966.66	413.91	531.69	666.37
N	669	285	367	461

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}_\epsilon^2) + 2p$
Source: Health Barometer 1995.

Table A25: Sharp Regression Discontinuity: middle school pupils vaccination

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: Middle school pupils vaccination			
	b/se	b/se	b/se	b/se
		Linear		
$\mathbb{1}_{A_i \geq 11}$	-0.010	-0.021	-0.022	-0.044
	(0.033)	(0.040)	(0.032)	(0.045)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.009**	0.007	0.008	0.021*
	(0.004)	(0.020)	(0.009)	(0.010)
$\mathbb{1}_{A_i \geq 11}(A_i-11)$	0.003	0.009	0.009*	0.003
	(0.002)	(0.011)	(0.005)	(0.004)
R^2	0.010	0.002	0.003	0.010
AIC	310.24	102.38	118.99	188.03
		Linear Spline		
$\mathbb{1}_{A_i \geq 11}$	0.015	0.12*	0.050	0.048
	(0.036)	(0.06)	(0.036)	(0.035)
LS1	0.010	-0.02***	0.009	0.011
	(0.008)	(0.00)	(0.011)	(0.009)
LS2	-0.003	0.08***	0.008	-0.010
	(0.008)	(0.00)	(0.026)	(0.011)
LS3	-0.007	-0.08	-0.034	-0.034
	(0.024)	(0.04)	(0.022)	(0.021)
LS4	0.011	0.08	0.056*	0.056***
	(0.008)	(0.04)	(0.029)	(0.013)
R^2	0.011	0.02	0.009	0.018
AIC	313.77	100.11	118.65	188.06
		Quadratic		
$\mathbb{1}_{A_i \geq 11}$	-0.024	0.195*	0.073	0.061
	(0.039)	(0.091)	(0.071)	(0.051)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.014	-0.192	-0.067	-0.064
	(0.017)	(0.106)	(0.075)	(0.050)
$\mathbb{1}_{A_i \geq 11}(A_i-11)$	0.007	-0.069***	-0.017	0.010
	(0.013)	(0.015)	(0.024)	(0.020)
$\mathbb{1}_{A_i<11}(A_i-11)^2$	0.000	-0.040	-0.013	-0.012
	(0.002)	(0.021)	(0.013)	(0.007)
$\mathbb{1}_{A_i \geq 11}(A_i-11)^2$	-0.001	0.026***	0.006	-0.001
	(0.002)	(0.005)	(0.006)	(0.004)
R^2	0.010	0.015	0.007	0.015
AIC	314.17	102.14	121.67	189.59
N	720	310	402	504

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i-11)((A_i-11) < c) + c((A_i-11) \geq c)]$; $LS2 = ((A_i-11) \geq 0)(A_i-11-c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i-11)(A_i-11 \geq -c) - c((A_i-11) < -c)]$; $LS4 = ((A_i-11) < -c)(A_i-11+c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A26: Sharp Regression Discontinuity: population vaccination

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: population vaccination			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.129***	-0.159***	-0.157***	-0.167***
	(0.035)	(0.022)	(0.015)	(0.023)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.007	0.012	0.005	0.014**
	(0.008)	(0.009)	(0.006)	(0.006)
$\mathbb{1}_{A_i \geq 11}(A_i-11)$	0.031***	0.031***	0.045***	0.037***
	(0.005)	(0.007)	(0.006)	(0.006)
R^2	0.015	0.015	0.021	0.020
AIC	672.96	325.71	386.32	473.69
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	-0.11**	-0.117***	-0.132***	-0.130***
	(0.026)	(0.03)	(0.025)	(0.021)
LS1	0.044***	0.05***	0.031***	0.040***
	(0.013)	(0.01)	(0.007)	(0.012)
LS2	0.019	-0.01	0.092***	0.033*
	(0.012)	(0.01)	(0.014)	(0.017)
LS3	0.011	-0.03	-0.003	-0.007
	(0.018)	(0.02)	(0.015)	(0.011)
LS4	0.006	0.04	0.014	0.028***
	(0.012)	(0.02)	(0.020)	(0.009)
R^2	0.016	0.02	0.023	0.020
AIC	676.52	327.26	387.77	477.34
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	-0.205***	-0.089*	-0.151***	-0.130***
	(0.038)	(0.046)	(0.043)	(0.030)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.033	-0.074	0.008	-0.023
	(0.021)	(0.053)	(0.042)	(0.027)
$\mathbb{1}_{A_i \geq 11}(A_i-11)$	0.061***	0.085***	0.025	0.054**
	(0.017)	(0.004)	(0.024)	(0.020)
$\mathbb{1}_{A_i<11}(A_i-11)^2$	0.002	-0.017	0.000	-0.005
	(0.002)	(0.011)	(0.007)	(0.004)
$\mathbb{1}_{A_i \geq 11}(A_i-11)^2$	-0.005*	-0.018***	0.005	-0.003
	(0.003)	(0.001)	(0.005)	(0.004)
R^2	0.017	0.017	0.022	0.021
AIC	675.44	329.13	390.22	477.27
N	720	310	402	504

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i-11)((A_i-11)<c)+c((A_i-11)\geq c)]$; $LS2 = ((A_i-11)\geq 0)(A_i-11-c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i-11)(A_i-11 \geq -c)-c((A_i-11)<-c)]$; $LS4 = ((A_i-11)<-c)(A_i-11+c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N\ln(\hat{\sigma}^2_\epsilon)+2p$
Source: Health Barometer 1995.

Table A27: Sharp Regression Discontinuity: Children MMR vaccination

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: children MMR vaccination			
	b/se	b/se	b/se	b/se
		Linear		
$\mathbb{1}_{A_i \geq 11}$	-0.251***	-0.140***	-0.134***	-0.136***
	(0.078)	(0.036)	(0.035)	(0.034)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	0.023	-0.012*	-0.012**	-0.012**
	(0.017)	(0.006)	(0.005)	(0.004)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.019**	0.024	0.019**	0.019**
	(0.008)	(0.015)	(0.008)	(0.008)
R^2	0.037	0.041	0.039	0.045
AIC	426.71	228.00	286.49	284.69
		Linear Spline		
$\mathbb{1}_{A_i \geq 11}$	-0.087	-0.16***	-0.146***	-0.144***
	(0.050)	(0.04)	(0.039)	(0.038)
LS1	0.024	0.06***	0.024	0.024
	(0.014)	(0.01)	(0.014)	(0.014)
LS2	-0.000	-0.06***	-0.000	-0.000
	(0.029)	(0.01)	(0.029)	(0.029)
LS3	-0.055	-0.02	-0.008	-0.010
	(0.033)	(0.03)	(0.012)	(0.011)
LS4	0.037	0.00	-0.017	-0.013
	(0.023)	(0.03)	(0.013)	(0.008)
R^2	0.047	0.05	0.039	0.045
AIC	422.93	228.62	288.37	286.58
		Quadratic		
$\mathbb{1}_{A_i \geq 11}$	-0.039	-0.144**	-0.150***	-0.151***
	(0.059)	(0.055)	(0.033)	(0.026)
$\mathbb{1}_{A_i < 11}(A_i - 11)$	-0.096***	-0.037	-0.018	-0.017
	(0.032)	(0.065)	(0.032)	(0.016)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.070***	0.127***	0.070**	0.070**
	(0.023)	(0.003)	(0.024)	(0.023)
$\mathbb{1}_{A_i < 11}(A_i - 11)^2$	-0.011**	-0.005	-0.001	-0.001
	(0.004)	(0.013)	(0.006)	(0.002)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.012**	-0.034***	-0.012**	-0.012**
	(0.005)	(0.001)	(0.005)	(0.005)
R^2	0.068	0.046	0.041	0.047
AIC	411.66	230.33	289.62	287.77
N	576	309	400	431

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i < 11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_\epsilon^2) + 2p$

Source: Health Barometer 1995.

Table A28: Sharp Regression Discontinuity: MMR is benign

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: MMR benign			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	0.14	0.16	0.20*	0.16
	(0.09)	(0.12)	(0.10)	(0.10)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.01	-0.02	-0.03	-0.02
	(0.01)	(0.03)	(0.02)	(0.01)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.01	-0.00	-0.03	-0.02
	(0.01)	(0.04)	(0.02)	(0.02)
R^2	0.01	0.01	0.01	0.01
AIC	995.21	425.65	549.82	687.55
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.26**	0.41***	0.27**	0.27**
	(0.10)	(0.08)	(0.11)	(0.10)
LS1	-0.02	-0.08	-0.00	-0.02
	(0.04)	(0.06)	(0.04)	(0.04)
LS2	-0.01	0.16	-0.11*	-0.02
	(0.02)	(0.10)	(0.05)	(0.04)
LS3	-0.07*	-0.16***	-0.08**	-0.08**
	(0.03)	(0.03)	(0.03)	(0.03)
LS4	-0.00	0.13***	0.03	0.02
	(0.01)	(0.03)	(0.05)	(0.02)
R^2	0.01	0.03	0.02	0.01
AIC	997.81	421.24	549.71	689.79
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.23**	0.59***	0.31**	0.30**
	(0.09)	(0.08)	(0.13)	(0.11)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.05	-0.39***	-0.11	-0.11
	(0.03)	(0.09)	(0.11)	(0.08)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.04	-0.28**	-0.06	-0.06
	(0.04)	(0.10)	(0.09)	(0.06)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.00	-0.07***	-0.01	-0.01
	(0.00)	(0.02)	(0.02)	(0.01)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.00	0.09**	0.01	0.01
	(0.01)	(0.03)	(0.02)	(0.01)
R^2	0.01	0.04	0.01	0.01
AIC	998.01	419.91	553.22	689.94
N	733	312	407	510

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A29: Sharp Regression Discontinuity: MMR non-vaccination is risky

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: MMR non-vaccination is risky			
	b/se	b/se	b/se	b/se
		Linear		
$\mathbb{1}_{A_i \geq 11}$	-0.087	-0.111	-0.164**	-0.142**
	(0.061)	(0.067)	(0.067)	(0.062)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.006	0.037*	0.031**	0.025**
	(0.008)	(0.016)	(0.013)	(0.011)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.004	-0.062***	0.011	0.004
	(0.005)	(0.017)	(0.029)	(0.012)
R^2	0.003	0.029	0.007	0.005
AIC	1000.02	432.75	559.44	702.07
		Linear Spline		
$\mathbb{1}_{A_i \geq 11}$	-0.160**	-0.18**	-0.133*	-0.148**
	(0.058)	(0.07)	(0.063)	(0.059)
LS1	-0.024	-0.02	-0.062***	-0.033
	(0.038)	(0.01)	(0.017)	(0.036)
LS2	0.030	-0.16***	0.271***	0.064
	(0.036)	(0.02)	(0.034)	(0.055)
LS3	0.056**	0.07	0.050**	0.050**
	(0.020)	(0.05)	(0.022)	(0.020)
LS4	-0.003	-0.03	0.009	0.009
	(0.009)	(0.05)	(0.022)	(0.012)
R^2	0.006	0.03	0.033	0.011
AIC	1001.45	431.10	550.55	703.34
		Quadratic		
$\mathbb{1}_{A_i \geq 11}$	-0.13*	-0.26**	-0.17*	-0.18**
	(0.07)	(0.10)	(0.08)	(0.06)
$\mathbb{1}_{A_i<11}(A_i - 11)$	0.04	0.16	0.09	0.07**
	(0.03)	(0.12)	(0.06)	(0.03)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.02	0.06***	-0.16	-0.04
	(0.06)	(0.00)	(0.09)	(0.08)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	0.00	0.02	0.01	0.01
	(0.00)	(0.02)	(0.01)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	0.00	-0.04***	0.04*	0.01
	(0.01)	(0.00)	(0.02)	(0.01)
R^2	0.00	0.04	0.02	0.01
AIC	998.48	432.64	552.92	700.35
N	737	316	411	514

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N \ln(\hat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A30: Sharp Regression Discontinuity using Health Barometer 1992 with a threshold at 11 years old

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: MMR vaccination for the eldest child in 1992			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 11}$	-0.05	0.13	0.13	0.05
	(0.10)	(0.09)	(0.09)	(0.09)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.01	-0.08**	-0.06***	-0.04*
	(0.02)	(0.03)	(0.02)	(0.02)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	-0.02	0.02	-0.02	0.00
	(0.03)	(0.02)	(0.03)	(0.03)
R^2	0.02	0.02	0.04	0.03
AIC	765.76	384.49	471.80	542.14
	Linear Spline			
$\mathbb{1}_{A_i \geq 11}$	0.22***	0.38***	0.36***	0.20**
	(0.07)	(0.02)	(0.03)	(0.08)
LS1	-0.01	-0.03*	0.00	-0.01
	(0.02)	(0.01)	(0.04)	(0.03)
LS2	-0.08	0.14***	-0.06	0.02
	(0.09)	(0.02)	(0.05)	(0.10)
LS3	-0.14***	-0.24***	-0.22***	-0.11***
	(0.03)	(0.01)	(0.02)	(0.03)
LS4	0.01	-0.00	-0.03**	-0.01**
	(0.02)	(0.01)	(0.01)	(0.02)
R^2	0.04	0.04	0.05	0.04
AIC	755.33	379.98	469.83	542.52
	Quadratic			
$\mathbb{1}_{A_i \geq 11}$	0.19**	0.40***	0.25***	0.28***
	(0.08)	(0.08)	(0.07)	(0.07)
$\mathbb{1}_{A_i<11}(A_i - 11)$	-0.13***	-0.32**	-0.19***	-0.19***
	(0.03)	(0.10)	(0.05)	(0.03)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)$	0.03	-0.06	0.05	-0.04
	(0.06)	(0.05)	(0.06)	(0.06)
$\mathbb{1}_{A_i<11}(A_i - 11)^2$	-0.01***	-0.05**	-0.02**	-0.02***
	(0.00)	(0.02)	(0.01)	(0.00)
$\mathbb{1}_{A_i \geq 11}(A_i - 11)^2$	-0.01	0.03	-0.02	0.01
	(0.01)	(0.02)	(0.01)	(0.01)
R^2	0.05	0.03	0.05	0.04
AIC	748.99	385.68	473.22	540.93
N	693	314	407	477

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 11}[(A_i - 11)((A_i - 11) < c) + c((A_i - 11) \geq c)]$; $LS2 = ((A_i - 11) \geq 0)(A_i - 11 - c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i - 11)(A_i - 11 \geq -c) - c((A_i - 11) < -c)]$; $LS4 = ((A_i - 11) < -c)(A_i - 11 + c)$, with c=3 for the whole sample and a bandwidth of 6, c=2 for bandwidths of 4 and 5, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}_{\epsilon}^2) + 2p$
Source: Health Barometer 1995.

Table A31: Sharp Regression Discontinuity using Health Barometer 1992 with a threshold at 8 years old

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: MMR vaccination for the eldest child in 1992			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i \geq 8}$	-0.15	-0.04	-0.07	-0.04
	(0.09)	(0.07)	(0.07)	(0.07)
$\mathbb{1}_{A_i < 8}(A_i - 8)$	0.02	-0.01	-0.00	-0.01
	(0.03)	(0.02)	(0.02)	(0.01)
$\mathbb{1}_{A_i \geq 8}(A_i - 8)$	-0.02	-0.05	-0.03	-0.03
	(0.02)	(0.04)	(0.03)	(0.02)
R^2	0.03	0.04	0.03	0.04
AIC	755.81	430.12	530.18	580.03
	Linear Spline			
$\mathbb{1}_{A_i \geq 8}$	-0.02	0.04	0.05	-0.07
	(0.10)	(0.15)	(0.15)	(0.09)
LS1	-0.04	-0.11**	-0.10**	-0.04
	(0.03)	(0.05)	(0.04)	(0.04)
LS2	-0.01		0.09	0.05 0.00
	(0.03)	(0.12)	(0.03)	(0.06)
LS3	-0.03	-0.04	-0.05	0.01
	(0.04)	(0.08)	(0.08)	(0.03)
LS4	0.04	0.00	0.01	-0.02
	(0.04)	(0.02)	(0.02)	(0.02)
R^2	0.04	0.04	0.04	0.04
AIC	757.28	430.57	529.54	583.12
	Quadratic			
$\mathbb{1}_{A_i \geq 8}$	0.06	-0.01	0.01	-0.07
	(0.13)	(0.18)	(0.12)	(0.10)
$\mathbb{1}_{A_i < 8}(A_i - 8)$	-0.10	-0.01	-0.04	0.02
	(0.08)	(0.15)	(0.09)	(0.06)
$\mathbb{1}_{A_i \geq 8}(A_i - 8)$	-0.03	-0.14	-0.12	-0.08
	(0.04)	(0.12)	(0.08)	(0.07)
$\mathbb{1}_{A_i < 8}(A_i - 8)^2$	-0.01	-0.00	-0.01	0.00
	(0.01)	(0.03)	(0.01)	(0.01)
$\mathbb{1}_{A_i \geq 8}(A_i - 8)^2$	0.00	0.03	0.02	0.01
	(0.01)	(0.04)	(0.02)	(0.01)
R^2	0.04	0.04	0.04	0.05
AIC	753.91	433.07	531.70	582.68
N	693	424	513	580

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i \geq 8}[(A_i - 8)((A_i - 8) < c) + c((A_i - 8) \geq c)]$; $LS2 = ((A_i - 8) \geq 0)(A_i - 8 - c)$; $LS3 = \mathbb{1}_{A_i < 8}[(A_i - 8)(A_i - 8 \geq -c) - c((A_i - 8) < -c)]$; $LS4 = ((A_i - 8) < -c)(A_i - 8 + c)$, with c=3 for the whole sample and a bandwidth of 6, c=2 for bandwidths of 4 and 5, due to a smaller sample size. $AIC = N \ln(\widehat{\sigma}^2_\epsilon) + 2p$
Source: Health Barometer 1995.

Table A32: Sharp Regression Discontinuity using Health Barometer 2000 with a threshold at 11 years old

	All	Bandwidth=4	Bandwidth=5	Bandwidth=6
	(1)	(2)	(3)	(4)
	Dependent variable: MMR vaccination for the eldest child in 1992			
	b/se	b/se	b/se	b/se
	Linear			
$\mathbb{1}_{A_i\geq 11}$	0.07*	0.02	0.02	0.08
	(0.04)	(0.02)	(0.02)	(0.06)
$\mathbb{1}_{A_i<11}(A_i-11)$	0.01	-0.01	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
$\mathbb{1}_{A_i\geq 11}(A_i-11)$	-0.10***	-0.00	-0.02***	-0.08
	(0.02)	(0.01)	(0.01)	(0.05)
R^2	0.34	0.00	0.01	0.11
AIC	5159.56	458.76	965.62	2443.88
	Linear Spline			
$\mathbb{1}_{A_i\geq 11}$	0.05	0.04	0.02	0.01
	(0.03)	(0.04)	(0.03)	(0.03)
LS1	-0.03	-0.01	-0.00	0.01
	(0.03)	(0.01)	(0.01)	(0.01)
LS2	-0.13***	0.01	-0.09***	-0.24*
	(0.02)	(0.02)	(0.02)	(0.12)
LS3	-0.02	-0.02	-0.01	-0.01
	(0.01)	(0.02)	(0.01)	(0.01)
LS4	0.02**	0.00	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.35	0.00	0.01	0.16
AIC	5038.15	461.00	956.13	2175.06
	Quadratic			
$\mathbb{1}_{A_i\geq 11}$	0.10*	0.03	0.03	0.01
	(0.05)	(0.05)	(0.04)	(0.04)
$\mathbb{1}_{A_i<11}(A_i-11)$	-0.03**	-0.02	-0.02	-0.03
	(0.01)	(0.04)	(0.02)	(0.02)
$\mathbb{1}_{A_i\geq 11}(A_i-11)$	-0.06	-0.01	0.02	0.12
	(0.06)	(0.02)	(0.01)	(0.08)
$\mathbb{1}_{A_i<11}(A_i-11)^2$	-0.00***	-0.00	-0.00	-0.00
	(0.00)	(0.01)	(0.00)	(0.00)
$\mathbb{1}_{A_i\geq 11}(A_i-11)^2$	-0.00	0.00	-0.01***	-0.04
	(0.01)	(0.01)	(0.00)	(0.02)
R^2	0.34	0.00	0.01	0.16
AIC	5108.96	462.35	960.24	2191.44
N	7147	3318	4067	4836

Note: Standard errors in parentheses, clustered by age of the child. ***Statistically significant at the 1% level; **significant at the 5% level; *significant at the 10% level. Regressions are performed without any control variable. The first column corresponds to the whole sample. Column 2 reports estimates obtained using households whose eldest child is between 7 and 14 years old (bandwidth of 4). Respectively, columns 3 and 4 report the results for households whose eldest child is between 6 and 15 (bandwidth of 5) years old or between 5 and 16 years old (bandwidth of 6). For the linear spline specification the variables are defined as follows: $LS1 = \mathbb{1}_{A_i\geq 11}[(A_i-11)((A_i-11)<c)+c((A_i-11)\geq c)]$; $LS2 = ((A_i-11)\geq 0)(A_i-11-c)$; $LS3 = \mathbb{1}_{A_i<11}[(A_i-11)(A_i-11\geq -c)-c((A_i-11)<-c)]$; $LS4 = ((A_i-11)<-c)(A_i-11+c)$, with c=3 for the whole sample and bandwidths of 5 and 6, c=2 for bandwidth of 4, due to a smaller sample size. $AIC = N\ln(\widehat{\sigma}^2_\epsilon)+2p$
Source: Health Barometer 1995.