Place-Based Policies: Opportunity for Deprived Schools or Zone-and-Shame Effect?*

Manon Garrouste† Miren Lafourcade‡

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Abstract

Even though place-based policies involve large public transfers toward low-income neighborhoods, they may also backfire by stigmatizing the targeted areas. This paper appeals to the quasi-experimental discontinuity in a French reform that redrew the zoning map of subsidized neighborhoods on the basis of a sharp poverty cut-off to assess the “net" effect of place-based policies on school outcomes. Using a difference-in-differences approach, we find strong evidence of stigma from policy designation, as public middle schools located in neighborhoods below the poverty cut-off saw a significant decrease in their post-reform pupil enrollment compared to their counterfactual analogues in unlabeled areas lying just above the threshold. This "zone-and-shame" effect is immediate, it persists up to five years after the reform, and it is triggered by the reactions of parents from all socioeconomic backgrounds, who started avoiding public schools in labeled areas and shifted to those in unlabeled areas or, only for wealthy parents, to private schools. There is also evidence of a short-lived decrease in pupils' test-scores associated with this spatial resorting. We uncover, on the contrary, only weak evidence of stigma reversion after an area loses its designation, suggesting hysteresis in bad reputations conveyed by policy labeling.

JEL codes: I24, I28, R23, R58.

Keywords: School enrollment, Students performance, Territorial stigma, Urban segregation, Spatial sorting.

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†Univ. Lille, CNRS, IESEG School of Management, UMR 9221 - LEM - Lille Économie Management, F-59000 Lille, France. E-mail: manon.garrouste@univ-lille.fr.

‡Corresponding author. Université Paris-Saclay (RITM), Paris School of Economics and CEPR; E-mail: miren.lafourcade@universite-paris-saclay.fr. Postal address: 54 Bd Desgranges, 92330 Sceaux Cedex, France.

1 Introduction

Policy-makers worldwide have implemented place-based policies for over forty years to address socioeconomic disparities across urban neighborhoods, which are particularly marked in dense metropolitan areas. In Mainland France, these policies currently target 1,300 so-called "priority" neighborhoods, or equivalently 8% of the French population (4.9 million people). Policy makers often leverage housing rehabilitation and enterprise zone policies to support these struggling areas. But in France, they also provide them with public subsidies for education, as pupils residing in the targeted neighborhoods can benefit from child tutoring, personalized care, or group programs to help them perform better at school.

Even though place-based policies funnel potentially-large public transfers to low-income urban neighborhoods, there is a growing recognition that their effectiveness may be limited by unintentional adverse effects. This paper focuses on one of these, commonly referred to by Sociologists as "territorial stigmatization" (Wacquant et al., 2014), but that is often overlooked by Economists. In France, "priority" neighborhoods suffer from the continued projection of negative images in the media (Magat et al., 2018; Guisse and Müller, 2019; ONPV, 2022), as sadly recorded by the 'no-go-zones' wrong qualification used by a Fox-News journalist in 2015.[1] Anecdotal evidence also suggests that local representatives and school headmasters often deplore the flight of middle/upper-class families from schools located in these neighborhoods (Dieusaert, 2018; Ville & Banlieue, 2016).

In this paper, we examine whether labeling neighborhoods in order to make them eligible for place-based subsidies affects spatial sorting and urban segregation, which we analyze through the lens of school enrollment and school attainment. Place-based policies may improve school outcomes if children living in the targeted neighborhoods benefit from extra-resources helping them better perform at school. However, they may also harm the reputation of schools located there, if the policy label conveys a negative image of the designated neighborhoods. The effect of place-based policies on school outcomes is thus ambiguous, and whether the policy gains will be reversed by territorial stigma is ultimately an empirical question. We here address this issue, which has potentially substantial implications for social segregation at school and children's educational outcomes.

There is considerable empirical evidence that neighborhood attributes determine children's life-time opportunities (Chyn and Katz, 2021). However, identifying the changes in opportunities arising from residential sorting and neighborhood attributes remains particularly challenging (Cutler and Glaeser, 1997; Sharkey, 2016; Caetano and Macartney, 2021). For social scientists primarily interested in education outcomes, the issue is even more salient, given that pupils' assignment to public schools is most-often based on a catchment area system, as is the case in France. As parents are partially constrained by a legal map of school districts, residential sorting and social segregation at school reinforce each other (Monarrez, ming; Boutchenik et al., 2020): families strategically choose where to live taking into account the quality and reputation of schools, which in return capitalizes into housing prices (Bayer

[1] See among many others: https://www.washingtonpost.com, or https://www.foxnews.com.

et al., 2007; Fack and Grenet, 2010; Gibbons et al., 2013; Schwartz et al., 2014; Collins and Kaplan, 2017).

We overcome this econometric challenge by exploiting the quasi-natural experiment provided by a French reform that redrew the map of urban neighborhoods eligible for place-based subsidies on the basis of a sharp poverty cut-off that was not predictable nor manipulable by individuals. Some neighborhoods that were not previously targeted by the policy now qualified, as they had median income below the poverty cut-off; equally, others that were previously subsidized were no longer eligible as their median income was above this threshold. As such, without any concomitant change in school catchment areas, some schools "entered" or "exited" policy treatment. This reform provides a unique opportunity for a causal identification of the impact of French place-based policies on school outcomes. It allows us to tackle two econometric issues that are commonly associated with the evaluation of place-based policies. First, as policy (dis-)qualification targeted the most- (least-) deprived neighborhoods, which are more (less) likely to host pupils with difficult backgrounds and thus to be avoided by parents,[2] we use school fixed effects to control for selection into treatment. Doing so, we can control for key confounding factors such as residential sorting across neighborhoods. We also control for many pupil and family characteristics, as well as for time-varying measures of school resources and urban environment. Second, we appeal to the discontinuity design of the reform to construct credible counterfactual groups. As the reform was based on a non-manipulable income cut-off, we can see whether schools in neighborhoods lying below (above) the threshold witnessed significant changes in pupil enrollment after entering (exiting) zoning compared to schools in neighborhoods on the other side of the threshold.

We find strong evidence of stigma from policy designation, as public middle schools in newly-labeled neighborhoods saw an immediate and significant 4 pp post-reform drop in pupil enrollment compared to their counterfactual analogues in never-designated areas lying just above the poverty threshold. This "zone-and-shame" effect persists up to five years after the reform. We show that it was triggered by the reactions of parents from all socioeconomic backgrounds. Low-SES parents have shifted to public middle schools outside the policy zoning, while High-SES parents were more likely to opt for private schools. We also find a marginally significant and short-lived decrease in pupils' test-scores, suggesting that the re-sorting across schools driven by neighborhood labeling may have temporarily offset any positive effect from the policy. We uncover, on the contrary, only weak evidence of stigma reversion after an area loses its designation, and only for Low-SES families, suggesting hysteresis in bad reputations.

In addition to these contributions, we add to the extensive literature showing that place-based policies have only few positive effects on residents' outcomes, especially in France (Malgouyres and Py, 2016; Lafourcade and Mayneris, 2017).[3] We first expand the focus to

[2]There is evidence in France that pupils living in deprived neighborhoods have poorer academic outcomes than other pupils on average (Baccaïni et al., 2014; Bressoux et al., 2016; ONPV, 2019; Cour des Comptes, 2020; Alivon, 2021).

[3]See Section 2 for a detailed review of the French empirical evidence.

education outcomes, which helps fill an overlooked, although policy-important, gap in this literature. Most papers evaluating place-based policies have focused on Enterprize Zones (hereafter EZ), as these are the most-widespread urban policy across the world.[4] EZ policies aim to attract businesses to deprived neighborhoods via lower taxes conditional on firm location. However, their effectiveness in reviving low-income neighborhoods is mixed (Neumark and Simpson, 2015; Ehrlich and Overman, 2020). They often attract low-productive establishments or businesses that would have (been) located elsewhere absent the program, thereby generating potentially-large windfall effects or negative externalities for untargeted neighborhoods (Bondonio and Engberg, 2000; Hanson and Rohlin, 2013; Ehrlich and Seidel, 2018; Einiö and Overman, 2020). The effects of EZ policies on residents depend on the adjustment of labor supply to firm location in the targeted areas (Kline, 2010; Kline and Moretti, 2014; Austin et al., 2018). If the new labor demand is met by the local labor force, EZs yield a substantial rise in employment and earnings for residents (Ham et al., 2011; Busso et al., 2013; Criscuolo et al., 2019; Bartik, 2020). Otherwise, they do not reduce local unemployment much (Gibbons et al., 2021; Freedman et al., 2021; Czurylo, 2023), and the composition effects triggered by the arrival of more-employable residents lie behind a large part of any such drop (Freedman, 2012), suggesting the benefits of the policy are captured by an initially untargeted population (Reynolds and Rohlin, 2015; Freedman, 2015). Consistently with this gentrification rationale, EZ policies capitalize in real estate markets especially if the treated neighborhoods cannot quickly adjust their supply of commercial and residential property (Hanson, 2009; Freedman, 2013; Ehrlich and Seidel, 2018; Kitchens and Wallace, 2022), unless the home buyers believe they will not generate major neighborhood changes (Albanese et al., 2021; Chen et al., 2022).

Much less is known about the causal impact of place-based urban policies on residents' education, as the most-prominent existing work considers spatial variations in neighborhood and school attributes via children's moves. For instance, Gould et al. (2004) and Gould et al. (2011) exploit variations in living conditions experienced by Ethiopian and Yemenite communities brought to Israel, and show that children who were placed in more-favorable schooling or urban environments experienced better education outcomes in adulthood. Äslund et al. (2011) build on a similar quasi-experimental refugee-placement policy in Sweden to show that child migrants who arrived at a young age in neighborhoods with a larger share of highly-educated adults from their own ethnicity perform better at school. The MTO experiment and housing demolition quasi-experiments in the U.S. also suggest that moving to a higher-income neighborhood prior to adolescence can yield dramatic improvements in educational outcomes (Chetty et al., 2016), and later economic opportunities (Chetty and Hendren, 2018a,b; Chyn, 2018). Baum-Snow et al. (2019) is one exception in this respect, as they appeal to quasi-random variation in skill-specific labor demand shocks that hit U.S. urban census tracts to analyze how neighborhood attributes affect the education outcomes of children who stay put. However, regardless of whether they focus on child movers or stayers, all of the previous contributions provide only indirect evidence that place-based policies affect

[4] Notorious examples include the Federal Empowerment Zones and Enterprise Communities, State Enterprise Zones and Opportunity Zones programs in the U.S., or the Local Employment Growth Initiatives in the UK.

educational gaps, as they do not establish whether labeling and/or treating neighborhoods actually changes the school outcomes of incumbent students.

Our work is also related to a body of mixed evidence on the impact of place-based affirmative action aiming to increase the enrollment of disadvantaged children at better schools. For instance, Guyon (2022) finds that closing down schools located in deprived neighborhoods and reallocating students close-by reduces the probability that the most-disadvantaged moved students drop out after middle school. By way of contrast, Behaghel et al. (2017) show that moving disadvantaged adolescents to boarding schools only benefits the initially-strongest students, and only once they have adapted to their new school. In Angrist and Lang (2004), Abdulkadiroğlu et al. (2014), Dobbie and Fryer (2014) and Angrist et al. (2023), attending a school with high-achieving peers has little impact on the academic outcomes of students from deprived neighborhoods. Initially-weaker applicants from low-income neighborhoods may even suffer a short-term reduction in their well-being and self-esteem, due to their worse relative ranking in selective schools (Behaghel et al., 2017; Barrow et al., 2020).

This paper is also connected to the body of U.S. evidence showing that there are positive impacts of extra-resources to schools on test scores or educational attainment (Card and Payne, 2002; Papke, 2005; Jackson et al., 2015, 2021) and later earnings (Lafortune et al., 2018; Schmick and Shertzer, 2019), and that marginal spending impacts are more pronounced for economically disadvantaged populations (Jackson and Mackevicius, 2021), although they depend on how resources are actually used (Handel and Hanushek, 2022). The evidence for Europe is more mixed, as students in low-income neighborhoods do seem to reap benefits from extra-resources to schools in the UK (Machin et al., 2004, 2010), but not in Romania (Munteanu, 2022) nor in France (Bénabou et al., 2009; Beffy and Davezies, 2013; Feigenberg et al., 2019; Benhenda and Grenet, 2020). Furthermore, policies aiming at compensating deprived schools could even be counterproductive if schools invest in less-efficient teaching methods (Leuven et al., 2007), or if middle-class families self-select out of the targeted schools (Davezies and Garrouste, 2020).

Last, our work is more-closely related to a burgeoning literature showing that 'redlining' or 'labeling' neighborhoods may have detrimental effects on the educational attainment of children living there (Fishback et al., 2020; Aaronson et al., 2021, 2023; Domínguez et al., 2023), or may stigmatize their parents in various ways, for instance by discriminating against them on the labor market (Petit et al., 2020), depreciating the value of their housing (Koster and van Ommeren, 2022; Chareyron et al., 2022; Andersson et al., 2023) or reducing their economic transactions (Besbris et al., 2014).

We are different from such previous work in a number of ways, however. We first appeal to exhaustive longitudinal administrative data from multiple cohorts of students over a decade, which we combine with rich geo-coded information on middle schools and neighborhoods to investigate school-outcome responses to policy labeling *and* treatment. The second novelty comes from our econometric strategy that combines a discontinuity design with panel techniques to avoid confounding the impact of policy designation with neighborhood or school-composition effects. Last, in contrast to most previous contributions, we show that living in a treated neighborhood affects children not only through mechanisms involving school resources and peer networks, but also via potential changes in the perception of school quality. As such, policy designation seems to influence parental beliefs and perceived educational returns in a very similar way to the public display of information on school scores in the media (Friesen et al., 2012; Koning and van der Wiel, 2013).

The remainder of the paper is organized as follows. Section 2 introduces the institutional context and describes the reform we use to evaluate the causal impact of neighborhood labeling on school outcomes. Section 3 presents the empirical framework and the data. Section 4 outlines the average treatment effects on school enrollment. Section 5 explores heterogeneous effects across various dimensions, including parental socioeconomic status and occupation. Section 6 checks the robustness of our point estimates. Section 7 investigates the impact of place designation on pupils' performance. Last, Section 8 concludes.

2 The French institutional background

Spatial inequalities in French cities have risen dramatically over the past four decades, and their consequences in terms of segregation, exclusion and juvenile delinquency or violence, have underlined the need for innovative political responses. French urban policy has primarily aimed to reduce the vulnerability of low-income neighborhoods. It is cross-ministerial and addresses multiple domains, including education and early childhood, employment preservation and job creation, housing rehabilitation and urban renewal, health, social cohesion, security and the prevention of delinquency. Policy consists in both the enhancement of ordinary-law policies in treated areas, and the use of specific measures such as tax rebates and additional public support for the local urban fabric and population.

From their inception in the late 1970's, place-based urban policies in France have been enforced via a variety of zoning systems and eligibility rules for public subsidies within the spatial perimeters covered by these policies. In this section, we briefly document the history of the French urban zoning system up to the reform that we will analyze: the Lamy Law for cities and urban cohesion, which was passed in February 2014.[5]

2.1 Place-based urban policies in France

The surge in repeated urban riots in the 1970's, 1980's and 1990's underlined the distress of the young urban unemployed, and prompted French politicians to launch a comprehensive set of policies directed to the most deprived urban neighborhoods in 1996.[6] This program resulted in a three-tier zoning system of urban neighborhoods classified upon an increasing deprivation status: 751 Tier-1 zones, among which 416 Tier-2 zones, among which 100 Tier-3 zones. Tier-1 zones were selected as urban neighborhoods with a derelict housing stock

[5] *Loi n°2014-173 du 21 février 2014 de programmation pour la ville et la cohésion urbaine*.

[6] The most-notable concomitant programs around the world include the Social City program in Germany, the Big City program in the Netherlands, the National Strategy for Neighborhood Renewal in Great Britain and the HOPE IV program in the US.

and a low ratio of jobs-to-residents. Tier-2 zones were identified by ranking Tier-1 zones on a multi-dimensional deprivation index,[7] and they became EZ. Finally, Tier-3 zones were picked up among the most deprived Tier-2 zones to benefit from an even larger spectrum of tax credits, and payroll exemptions conditional on local-hiring requirement. In 2007, the program expanded to cover 1,750 additional Tier-4 neighborhoods experiencing unemployment, violence or housing difficulties. Urban Social Cohesion Contracts were signed between the central and local authorities in charge of almost all subsidized neighborhoods (i.e. a total of about 2,500 zones), committing them to concerted action to improve residents' daily lives.

All four-tier zones were made eligible to education programs specifically designed to fight the school failure and dropout of disadvantaged children living in these zones, through extra-resources managed by local authorities. In particular, the *Programme de Réussite Educative* or PRE (Educational Success Program) dedicated approximately €100 Mn per year to child tutoring, child homework help, and early detection of child eyesight problems or learning difficulties in the targeted zones.[8]

2.2 The 2014 reform to the French urban zoning system

By juxtaposing these zoning systems, French public authorities combined a regulatory approach based on automatic qualification (in EZ), with a contractual approach generating potential, but not automatic, benefits (non-EZ), with the two approaches not necessarily being applied to the same urban areas. As certain neighborhoods were selected upon common criteria but not treated uniformly, the institutional design of the French urban policy is particularly adapted to causal identification. The evidence points to mixed effects. Relative to Tier-2 areas, Tier-3 zones were particularly successful in attracting businesses and creating jobs in the targeted neighborhoods, but most establishments that settled there could not survive (Givord et al., 2018) or relocated back quickly (Givord et al., 2013; Mayer et al., 2015) after the full-exemption period of tax rebates (i.e. 5 years). The decrease of local unemployment triggered by the policy was therefore only short-lived (Gobillon et al., 2012). Moreover, the early benefits of the policy largely accrued to the non-resident workforce, before more stringent local hiring requirements were imposed to the firms (Charnoz, 2018). The mitigated success of the French EZ program is partly explained by its strong heterogeneous effects across treated neighborhoods, as those benefiting from greater centrality or better transport connections were more likely to attract new permanent businesses (Briant et al., 2015), or to experience an increase in housing values (Chareyron et al., 2022).

Unsurprisingly in view of the low effectiveness of this EZ policy, the French Audit Court ended up criticizing the dilution of public resources over too many zones (Cour des Comptes, 2012). In an effort to improve the cost-effectiveness and public understanding of the policy, and to harmonize the legal and contractual zoning systems, the then French Minister of Ur-

[7] This index was calculated by combining the size of the local population, the local unemployment rate, the proportion of residents with no qualifications, the share of young residents, and the local tax base.

[8] See Demangeclaude (2018) for a detailed presentation of the PRE and Bressoux et al. (2016) for an evaluation of its impact on children's well-being and cognitive skills.

ban Affairs, François Lamy, undertook a complete overhaul of the program in 2014. Zoning systems that had accumulated over the past decades were replaced by a single tighter urban-zoning scheme in order to target public support on areas concentrating the most distressed populations, i.e. approximately 1,300 neighborhoods in Mainland France (and another 214 neighborhoods in French overseas territories) that were called "Priority" neighborhoods (*Quartiers Prioritaires* or QP thereafter). A unique poverty criterion was used to identify those neighborhoods: median income below 60% of a reference income calculated as a weighted average of the nationwide and citywide median incomes per consumption unit.[9] Let I_{FR} denote the median income per consumption unit in mainland France and I_{UU} its counterpart in a given urban unit, neither of which are manipulable by local authorities.[10] The reference income I_R was then:

- For urban units between 10,000 and 5 million inhabitants: $I_R = 0.7 \times I_{FR} + 0.3 \times I_{UU}$;
- For urban units over 5 million inhabitants (i.e. Paris):[11] $I_R = 0.3 \times I_{FR} + 0.7 \times I_{UU}$.

The detection of poverty clusters was then based on a very disaggregated scan (200-meter squares) of France, and on the calculation of the median taxable income declared by residents housed in each square.[12] All contiguous squares with their median below 60% of the reference income I_R were amalgamated to form a single unbroken zone of at least 1,000 inhabitants, so-called 'QP'. QP final boundaries generally followed the street map, and were sometimes adjusted marginally at the request of local authorities, as long as the boundary changes complied with the poverty cut-off. The new zoning system is illustrated in Figure 1 for the Paris region (the QP are the dark grey areas, and the other green areas refer to the old zoning systems).

It is worth noting that around 85% of "Priority" neighborhoods overlapped with Tier-3 and Tier-2 areas. However, the phasing out of the former EZ program was very progressive, since tax rebates were designed to last up to 14 years after the firm installation. Therefore, the Lamy reform has barely changed job opportunities, which is the reason why we focus on education rather than on labor market outcomes. This treatment hysteresis however implies that the 2014 reform may have had a larger impact in newly-labeled than in disqualified neighborhoods, a conjecture for which we will find support in our empirical analysis below.

Importantly, the reform provided residents with the opportunity to engage in the underlying political process, as citizens' councils were set up to help develop the State-City contracts. Moreover, it was accompanied by the launching of a dedicated web-search engine to disseminate precise information on the policy zoning, and to help people to locate any address within

[9]The French Statistical Administration calculates consumption units as follows: the first adult in a household counts for 1, other adults (age 14 or over) for 0.5, and children under 14 for 0.3.

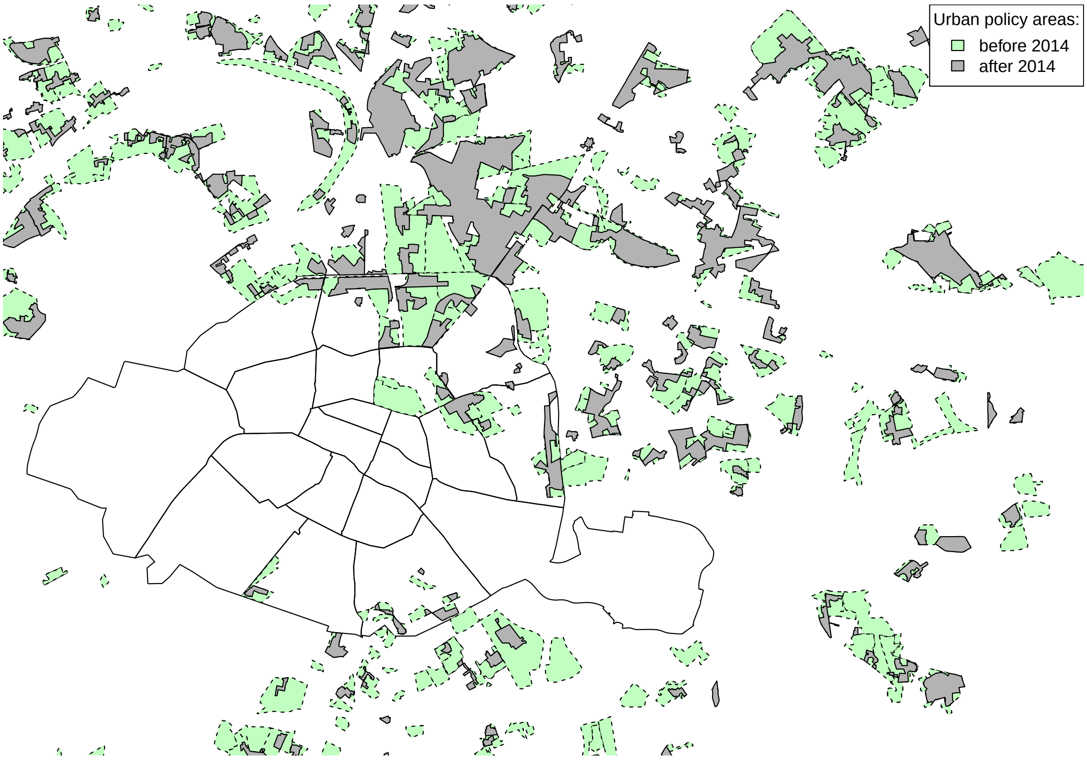
[10]In France, an urban unit is a municipality (or a group of adjacent municipalities) with over 2000 inhabitants forming a single unbroken spread of built-development (i.e. no buildings separated by more than 200 meters).

[11]For urban units above 5 million inhabitants, i.e. Paris, more weight is put on the local median income, as it is significantly higher than the national median income (€22,048, against €19,218 in Mainland France).

[12]The data used by the government for this calculation (*Revenus fiscaux et sociaux localisés des ménages 2011*) come from income-tax declarations compiled by the French National Institute for Economic Studies (Insee, herafter), and refer to gross income (i.e. before redistribution) in 2011.

the (old and new) policy zoning (see Figure B1 in Appendix B). The Lamy law was enacted on the 21st of February 2014 and the web search engine launched by then. The empowerment and information of residents in the roll-out of the reform therefore provided parents with the opportunity to adapt several months before the starting of the 2014-2015 school-year.

Figure 1 – Old and new urban policy zoning systems in the Paris region



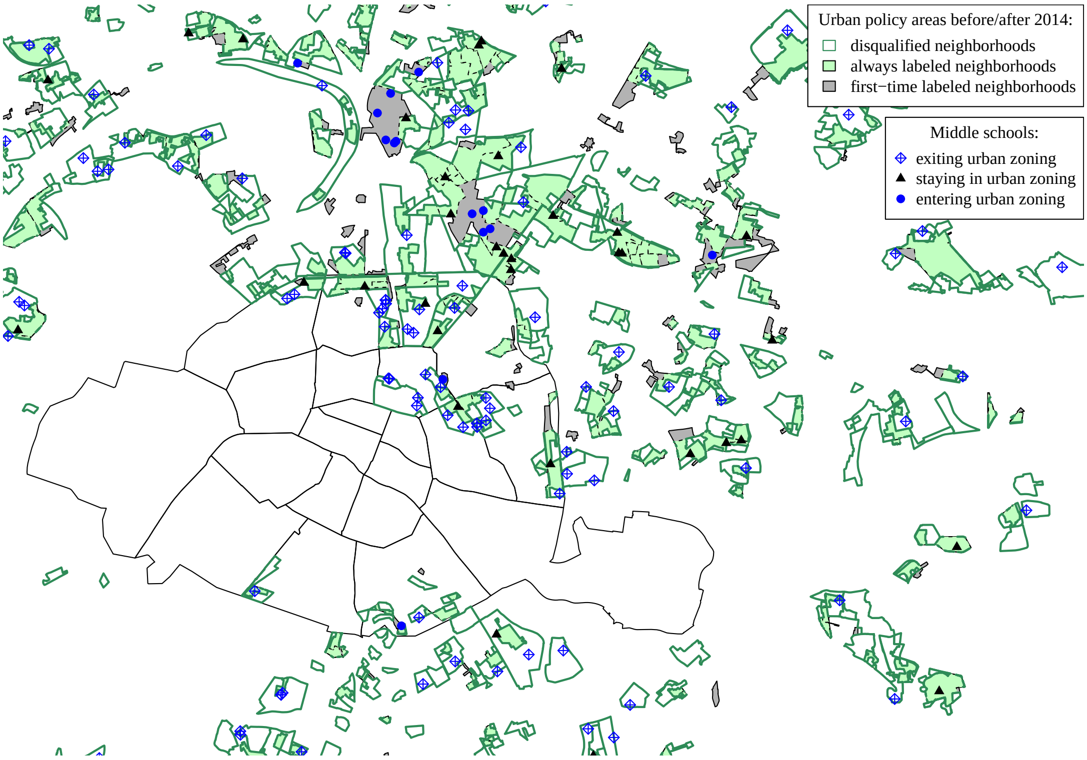
Source: Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET).
Note: The boundaries of Parisian *arrondissements* appear in black. *New urban zoning*: Priority neighborhoods (QP) in dark grey. *Former urban zoning systems*: in light green.

2.3 An illustration of the reshuffling of middle schools driven by the reform

The Lamy reform provides a unique opportunity to exploit boundary changes in urban zoning to estimate the impact of policy designation on school choices, social segregation at school, and test scores. Following the reform, some formerly-labeled neighborhoods now did not qualify for support as their median income was above 60% of the reference income, whereas some previously untreated neighborhoods now became eligible as their median income was below this threshold. As a result, without any change in school catchment areas at the time of the reform, schools in the newly-subsidized neighborhoods "entered" into the policy zoning, whereas those in no-longer-subsidized neighborhoods "exited".

Figure 2 illustrates the large reshuffling of public middle schools brought by the Lamy reform in the Paris region, which includes many deprived neighborhoods covered by the policy. But the reshuffling was also relatively-substantial in many other French cities. We will below exploit these spatio-temporal shifts all over France to quantify the causal effect of neighborhood designation and disqualification on school enrollment and attainment.

Figure 2 – The 2014 urban policy reform in the Paris region



Sources: Base centrale des établissements (DEPP - Ministère de l'Éducation), shapefiles from the French Ministry of Urban Affairs (ANCT-CGET).

Note: The boundaries of Parisian *arrondissements* appear in black. Hollow green (resp. filled gray) polygons represent neighborhoods that "exited" ("entered") policy zoning, and filled green polygons those that had and continue to have policy-coverage. Hollow blue diamonds (solid blue circles) represent middle schools that "exited" ("entered") policy coverage, and solid black triangles those that had and continue to have policy-coverage.

2.4 Pupil assignment to middle schools in France

This paper focuses on middle schools, and more specifically on pupils entering 6^{th} grade for the first time (i.e. pupils aged about 11-12) over the 2010-2019 period. Education is compulsory in France for children aged 6 to 16, with five years of education in primary schools, followed by four years of lower secondary education in middle schools and then three years of higher secondary education in high schools. Middle-school choice is a key decision for families for at least two reasons. First, children change school between primary and lower secondary education, and the type of schooling changes from a single class with only one teacher in primary school to a number of classes with different teachers and class subjects in middle school. Second, lower secondary education has a substantial influence on pupils' education paths, as it conditions the choice between a vocational and an academic track later on.

As in many other countries, child allocation to public schools in France is based on catchment areas, in which pupils are assigned to one single public school according to their parents' address.[13] French public schools charge no tuition fees and have to accept all pupils, regardless of their family background, previous academic performance or special learning needs. Most pupils go to their catchment-area school, which is the default rule. However, parents can ask to enroll their child in another public school. As long as the maximum capacity of that school is not attained after accepting all of its default pupils, dispensations can be granted by the academy director, primarily to students with disabilities, with merit- or social-based scholarships, with specific medical needs, with a sibling already enrolled in the requested school, who wish to follow a particular curriculum in that school (music, sport or foreign-language tracks for instance), or who live very close to it. Families can also opt for the private sector, which is not subject to the catchment area system. Most private schools are publicly-funded and follow the same national curriculum as public schools (except for religious instruction, as most private schools are Catholic). Private schools charge fees, which are low on average in France as compared to other countries, so that the private sector is rather affordable for many families. The share of pupils in private-sector lower secondary education is then relatively high in France (at over 20%, see Table C1 in Appendix C).

The middle-school choice procedure starts in March. Elementary-school headmasters inform parents about their catchment-area middle-school, and families are then requested to either accept or refuse the default school. If they refuse, they can opt for a private school or ask for a derogation to enroll their kid at a unique other public middle school. In mid-June, the academy director decides whether or not to grant dispensations. Families are then informed about their middle school assignment by the end of June.

2.5 School-based compensatory education policies in France

In France, disadvantaged schools can also benefit from specific compensatory education programs (school-based policies) overseen by the Ministry of education, and that are decoupled from the urban zoning system (place-based policies) and hence, independent of school location.

One important aspect of the Lamy reform was that the place-based policy and school-based compensatory education schemes were nested through a new eligibility criterion for benefiting from school-based compensatory programs, based on the share of pupils living in a QP.[14] In practice, this interdependence requires an estimation strategy that controls for whether the middle schools benefited also from compensatory education schemes, in order to identify the separate impacts of place-based and school-based policies. In the following, we will therefore carefully control for schools' compensatory education status (that can evolve over time) to distinguish the effects of place-based and school-based policies.

[13] See Musset (2012) for a review of school-choice systems in OECD countries.

[14] The other eligibility criteria include the share of pupils from low socioeconomic backgrounds, with public scholarships, and who have repeated a year when entering 6th grade.

3 Empirical framework and data

Our first goal is to identify the causal effect of place-based policies on student enrollment, which is a measure of demand and revealed preference for schools exposed to differentiated neighborhood attributes. As the correlation between school choice and place-based policies is likely confounded by residential sorting, we use the discontinuity design from the Lamy reform in a local difference-in-differences approach and (two-way fixed effects) panel techniques to control for selection into treatment. We exploit the fact that, post-reform, schools in neighborhoods with median incomes below (above) the reference income "entered" ("exited") the policy zoning, while schools in counterfactual neighborhoods with median incomes above (below) the reference income remained untargeted (targeted) by the policy. As illustrated in Figure 2 for the Paris region, we therefore split public middle schools in four categories: (i) those outside the old urban zoning pre-reform but inside the new urban zoning post-reform ("entrant" schools), (ii) those inside the old urban zoning pre-reform but outside the new urban zoning post-reform ("exiting" schools), (iii) those inside both urban zonings (pre- and post-reform), and (iv) those outside both urban zonings (pre- and post-reform). Assuming that school "entry" or "exit" is independent of families' preferences for schools once we control for school heterogeneity, we can use the boundary changes from the reform to recover the causal effect of place-based policies on school outcomes.

For pupil i assigned to catchment-area school d in school-year t, let Y_{idt} denote in turn a dummy for being enrolled at her catchment-area school, at another public school, and at a private school. Our two treatment variables are defined as follows: T_d^{entry} is a dummy variable for the catchment-area school d being in a neighborhood that had never been labeled pre-reform, but turned to be labeled post-reform, and T_d^{exit} a dummy variable for d being in a neighborhood that was labeled pre-reform, but no-longer labeled post-reform. We then estimate the following two-way fixed effects linear-probability models:

$$Y_{idt} = \alpha_1 + \beta_1 T_d^{entry} \times \mathbb{1}_{t \geq 2014} + X_{it}\gamma_1 + Z_{dt}\delta_1 + \mu_d + \mu_t + \epsilon_{idt}, \tag{1}$$

$$Y_{idt} = \alpha_2 + \beta_2 T_d^{exit} \times \mathbb{1}_{t \geq 2014} + X_{it}\gamma_2 + Z_{dt}\delta_2 + \mu_d + \mu_t + \varepsilon_{idt}, \tag{2}$$

where X_{it} is a vector of observed pupil characteristics, μ_t a year fixed effect, and $\epsilon_{idt}/\varepsilon_{idt}$ the error terms. Although we control for key observables at the pupil level, these estimates may well still be biased by unobserved factors such as school quality in the catchment area. We address this concern via the catchment-area school fixed effect μ_d, and a vector of time-varying characteristics observed for this school and its local environment, Z_{dt}. In particular, Z_{dt} includes school d's compensatory education status, that captures any change in resources that may come from school-based policies, on top of place-based policies.

The β_1 (respectively β_2) parameter provides the causal impact of the policy on pupils' enrollment in schools located in entrant (outgoing) neighborhoods, relative to schools in counterfactual neighborhoods, under the assumption that enrollment in both types of neighborhoods would have followed the same trend without the reform. β_1 and β_2 can be either positive or negative. Parents in low-income neighborhoods may expect the policy to provide additional resources that will help their children to perform better at school. On the contrary, policy-designation may convey a negative image of the labeled neighborhoods, that can be used by parents to reassess school quality in the presence of informational frictions. The "net" average treatment effect on school enrollment is hence theoretically ambiguous. If β_1 is negative for the catchment-area school choice, then, on average, the benefits of the policy are more than offset by territorial stigmatization. By analogy, if families re-evaluate school quality upwards after neighborhood disqualification, and if this appraisal overcomes the loss of public subsidies, β_2 should be positive.

The "net" effect of the policy on school enrollment is also potentially heterogeneous across families. If parents were imperfectly informed about school quality in their catchment area, they may readjust their school preferences after policy designation. We thus may expect that (i) high-SES families react more than low-SES families, as changing school is less costly for them, and (ii) well-informed families (for instance, teachers) will react differently from other parents.

To evaluate whether policy designation has persistent effects over our period of analysis (2010-2019), and to test for the common-trend assumption needed for our difference-in-difference framework, we also adopt a linear panel event-study design, and estimate the two complementary specifications:

$$Y_{idt} = \sum_{k=2010}^{2019} \beta_{1k} T_d^{entry} \times \mathbb{1}_{t=k} + X_{it}\sigma_1 + Z_{dt}\lambda_1 + \mu_d + \mu_t + \epsilon_{idt}, \quad (3)$$

$$Y_{idt} = \sum_{k=2010}^{2019} \beta_{2k} T_d^{exit} \times \mathbb{1}_{t=k} + X_{it}\sigma_2 + Z_{dt}\lambda_2 + \mu_d + \mu_t + \varepsilon_{idt}, \quad (4)$$

where coefficients β_{1k} and β_{2k} now measure the effects of school entry and exit in year k.

3.1 Counterfactual neighborhoods

To evaluate the impact of the French place-based policy, we could simply compare school enrollment in first-time labeled vs never labeled neighborhoods, and in formerly labeled vs no-longer labeled neighborhoods, pre- and post-reform. However, as the common-trend assumption may not hold for those 2×2 groups even with controls for school fixed effects and other time-specific confounders, we restrict the two control groups to plausibly-good counterfactual neighborhoods. To select these counterfactual neighborhoods, we exploit the discontinuity design of the Lamy reform (and the square-grid used to implement it), and compare school enrollment in labeled and unlabeled neighborhoods lying on both sides of the poverty cut-off. For incoming (i.e. first-time labeled) neighborhoods, we select all census tracts intersecting squares with a median income just above (i.e. 60 to 70% of) the reference income.[15]

[15] We choose a 10 pp window in line with Quantin and Sala (2018), who show no significant pre-trends for neighborhoods in this range over 2007-2012. As their outcomes of interest were the median income and employment rate, and not school enrollment, Figure D1 in Appendix D shows similarly-good balancing tests for our datasets.

Among these tracts we exclude those intersecting a formerly-labeled neighborhood (because they had been previously targeted) and those intersecting a newly-labeled one (so that the control units are not contaminated by policy spillovers). We end up with 216 counterfactual public middle schools scattered all over France (located, by construction, in never-labeled neighborhoods) that are very similar to public schools in first-time labeled neighborhoods. The selection of counterfactual neighborhoods is illustrated on Figure 3 for the Paris region.

We take an analogous approach for outgoing (i.e. disqualified) neighborhoods. Control schools are those in formerly- and still-labeled areas with a median income just below (50 to 60% of) the reference income (201 public middle schools). They are compared to schools in outgoing neighborhoods not too far from the poverty cut-off (60 to 70% of the reference income) to have comparable treated and control groups (see Figure D2 in Appendix D for the comparative statistics).

Our estimation strategy then consists in comparing school enrollment at both treated and counterfactual schools in neighborhoods within a 10 percentage points (pp afterwards) window around the poverty cut-off, pre- and post-reform.

3.2 Data and descriptive statistics

We take exhaustive administrative data from various sources, described in turn from the lowest to the highest spatial granularity. We first use the *Bases centrales scolarité* (BCS hereafter) from the statistical service of the French Ministry of Education (DEPP-ADISP), which provide repeated cross-sections of the universe of pupils enrolled in French schools from 2010 to 2019. We focus on pupils entering middle school (6^{th} grade) every year. We were also provided with restricted access to geo-coded data on all pupils entering 6^{th} grade in September of 2011, 2013, 2015 and 2017, which we use for robustness checks.[16] We have information of each pupil's gender, country of birth, age and the occupation of the reference parent, which we aggregate to five Socio-Economic Statuses (Very High, High, Medium, Low and Unknown SES).[17]

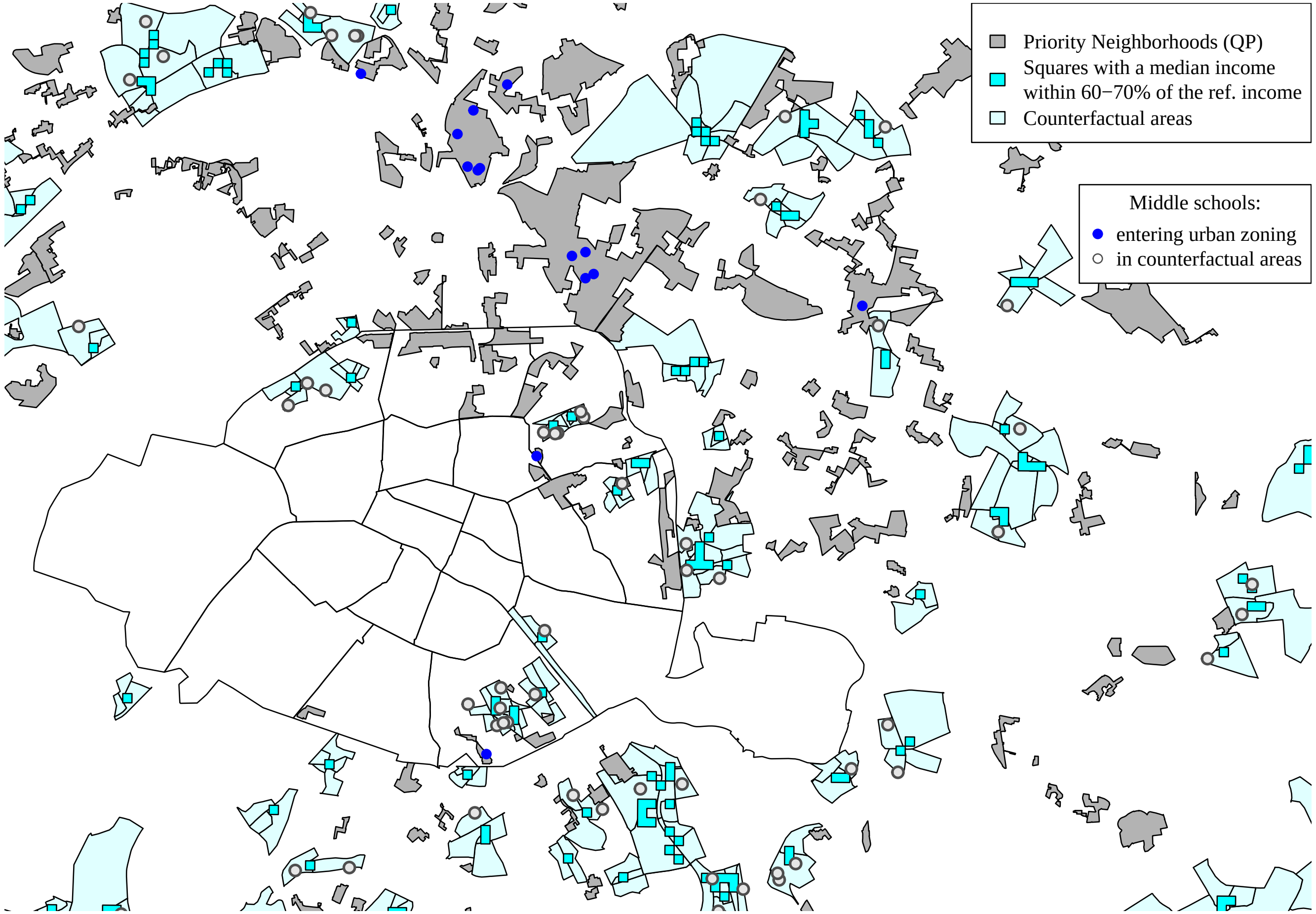
Each pupil is observed only one year, but our dataset reports the school of enrollment for both the current and preceding years. For pupils entering lower secondary education, we can thus identify the primary school and the middle school of enrollment upon entering 6^{th} grade. Since we do not have a precise delineation of school districts over the whole of France, we define the catchment-area school as the public middle school closest to either the pupil's primary school (BCS data, see Figure E1 in Appendix E), or the pupil's address (geo-coded data).[18] We also know whether these schools are private or public, whether they benefit from compensatory resources each year, and whether they are located in a treated neighborhood.

[16] Unfortunately, the home address of pupils was geo-coded only in odd years, so that we cannot identify school catchment areas on an annual basis from these data.

[17] Very High SES includes business managers, engineers, executives from the private and public sectors, independent/creative professions, white-collars, and teachers. High SES covers intermediate professions, technicians, clergy and retired executives/intermediate professions. Medium SES includes farmers, craftsmen, shopkeepers, public or private employees, police officers or military personnel, and retired farmers/craftsmen/traders/managers. Low SES covers blue-collars, students, and the unemployed/unoccupied. Last, SES is unknown for pupils with missing parental occupation. We do not drop this last category, which covers 4% of our sample, as this would reduce statistical power.

[18] Section 6 checks whether our results could be driven by measurement error from this assignment.

Figure 3 – First-time-treated and never-treated public middle schools in the Paris region



Source: Base Centrale des Établissements (DEPP - Ministère de l'Éducation), Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET), and authors' calculations based on Quantin and Sala (2018).

Notes: The dark-grey areas refer to the new policy zoning (QP), and the blue dots to middle schools "entering" this zoning. The turquoise blue squares are poverty clusters with a median income just above (60% to 70% of) the reference income. The light-blue areas are the counterfactual census tracts, and the grey circles indicate control middle schools in those tracts.

To take into account the schooling options that likely compete with the catchment-area school each year, we calculate various time-varying indicators such as the number of private schools within a given radius (2, 5 or 7km) from the pupil's primary school, or in the urban unit to which it belongs.[19]

We also draw from the online application *Aide au Pilotage et à l'Auto-évaluation des Établissements* (APAE), the share of pupils who pass the *Diplôme National du Brevet* (DNB hereafter) in each middle school. The DNB is a secondary education exam taken at the end of lower secondary education in France. It consists in standardized tests in French, Mathematics, and History-Geography, and it also accounts for students' scores during 9th grade. The average pass rate is about 84% over 2010-2019, but less than 80% for middle schools located in neighborhoods targeted by the urban policy, against more than 86% for other schools.

We complement the pupil and school data with various Geographical Information Systems from the *Agence nationale de la cohésion des territoires* (ANCT-CGET, French Ministry of Urban Affairs) providing the delineation of all the neighborhoods treated by urban policy pre- and post-reform (i.e. former urban policy zones and QP). Last, the Insee gave us access to confidential income data at the grid-square level used for constructing QPs. We combine these with open data published at the Census Tract and Urban Unit levels to calculate the poverty cut-offs used for neighborhood policy designation, and to construct our set of counterfactual neighborhoods.

We end up with around 7.5 million 6th graders in 6,831 middle schools over the 2010-2019 period.[20] On average, over half (54%) of these students are enrolled at their catchment-area school, 24% at another public school, and 22% at a private school. Among this population, 715,511 students are treated (i.e. assigned to middle-schools located in urban neighborhoods affected by the 2014 reform) and 675,273 form the control group (i.e. they are assigned to middle-schools located in counterfactual neighborhoods). Among the treated students, 29,374 are assigned to neighborhoods receiving a policy label for the first time, and 686,137 to neighborhoods that saw their label removed. Further descriptive statistics appear in Table C1 in Appendix C.

Figures D1 and D2 in Appendix D provide school-composition comparisons in the treated and counterfactual neighborhoods. As expected, pupils assigned to schools in neighborhoods entering or exiting the policy scheme are more disadvantaged than the overall pupil population. They come less often from High SES families, and are less often born French citizens. Our counterfactual groups of pupils are more comparable to the treated groups than the overall population, and even though some differences persist these will be entirely picked up by catchment-area school fixed effects. The only threat to our estimation strategy would then be non-parallel trends in the social composition of the treated and control schools pre-reform. To rule out the possibility that we wrongly attribute to the urban policy a factor that actually reflects pre-trends, Section 4 will present falsification tests drawn from an event-study design

[19]These thresholds were chosen using clear criteria: 5km and 7km are the sample median and average distances between the pupil's primary school and her closest private middle school, and 2km is the average distance between the pupil's primary school and her closest public middle school.

[20]French overseas territories are excluded.

as well as a further robustness check with treatment-group specific linear trends.

4 Average Treatment Effects

This section presents the average treatment effects from our local difference-in-differences models, exploiting the discontinuity design of the 2014 reform to increase the likelihood of parallel trends prior to the treatment (re-)assignment of neighborhoods.

4.1 Entry into policy zoning and pupil enrollment in middle-schools

The results from the linear-probability model used to assess the impact of neighborhood labeling on school enrollment (i.e. Equation (1)) appear in Table 1. Unsurprisingly, and regardless of the changes in policy zoning, pupils from High socioeconomic backgrounds are more likely to attend private schools than are those from a Medium socioeconomic background, while more-disadvantaged pupils are more likely to be enrolled in public schools, and among those schools in their catchment-area school.[21] The probability of going to a public school is higher for older pupils, who are more likely to be behind in their education. Conversely, the probability of going to a private school is higher for both French and male pupils. Greater private-schooling options in the catchment area raise the likelihood of parents opting for a private school, instead of another public school.[22] By way of contrast, compensatory education status has no discernible impact on school enrollment, as very few schools experience a time-change in their compensatory education status over the period.

Turning to our treatment variable for entry, as shown in column (1), after the 2014 reform, public schools in newly-labeled neighborhoods experienced a significant 3.5 pp drop in pupil enrollment on average, relative to public schools in similar (but never-labeled) counterfactual neighborhoods. As such, policy designation seems to have produced a negative image of neighborhoods labeled for the first time, and so downgraded parents' perceptions of school quality. Columns (2) and (3) show that the parents who avoided their catchment-area school switched their children to other public schools (+4.1 pp), rather than to private schools (where the coefficient is insignificant). Note that we cluster standard errors at the catchment-area school level, even though treatment is at the neighborhood level, as most neighborhoods have only one public middle school. Clustering by neighborhood does not change the significance of our point estimates.[23]

Figure 4 displays the impact of policy designation on school enrollment, allowing the treatment effect to vary over time.[24] The "zone-and-shame" effect triggered by neighborhood

[21] Recall that the BCS data do not always provide information on parental occupation (this is missing for 4% of the sample), which is why Table 1 includes an "unknown" SES category. The point estimate for this category is very similar to that for Low SES. In Section 5, which considers heterogeneity by SES, we will combine these two categories, as well as Very-High and High SES, which also attract similar point estimates.

[22] As noted above in Section 3.2, we have calculated various time-varying indicators of the schooling options available in catchment areas. Even though significance changes slightly across indicators, our point estimates are remarkably stable across specifications. As our key findings continue to hold with alternative metrics, we hereafter stick with the number of private middle schools within a 5 km radius of the primary school, as this is the indicator with the greatest spatio-time variability.

[23] Results available upon request.

[24] The estimation results are displayed in Table F1 of Appendix F.

Table 1 – "Entry" into policy zoning and pupil enrollment

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.035**	0.041***	-0.006
	(0.015)	(0.015)	(0.008)
SES (ref.=Medium)			
Very High SES	-0.069***	-0.017***	0.086***
	(0.007)	(0.006)	(0.007)
High SES	-0.016***	-0.009**	0.025***
	(0.006)	(0.004)	(0.006)
Low SES	0.096***	0.023***	-0.120***
	(0.006)	(0.005)	(0.006)
Unknown SES	0.082***	0.041***	-0.123***
	(0.017)	(0.013)	(0.010)
Male	-0.011***	0.006***	0.005**
	(0.002)	(0.002)	(0.002)
French	-0.068***	-0.014	0.083***
	(0.010)	(0.010)	(0.009)
Age	0.011***	0.028***	-0.039***
	(0.004)	(0.003)	(0.004)
CA School in comp. educ. prog.	0.009	-0.005	-0.004
	(0.013)	(0.011)	(0.012)
No. Private Schools within 5km	0.061***	-0.075***	0.014**
	(0.013)	(0.013)	(0.007)
R^2	0.166	0.123	0.187
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
Year FE	✓	✓	✓
School FE	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. For the sake of clarity, we do not list the intercept.

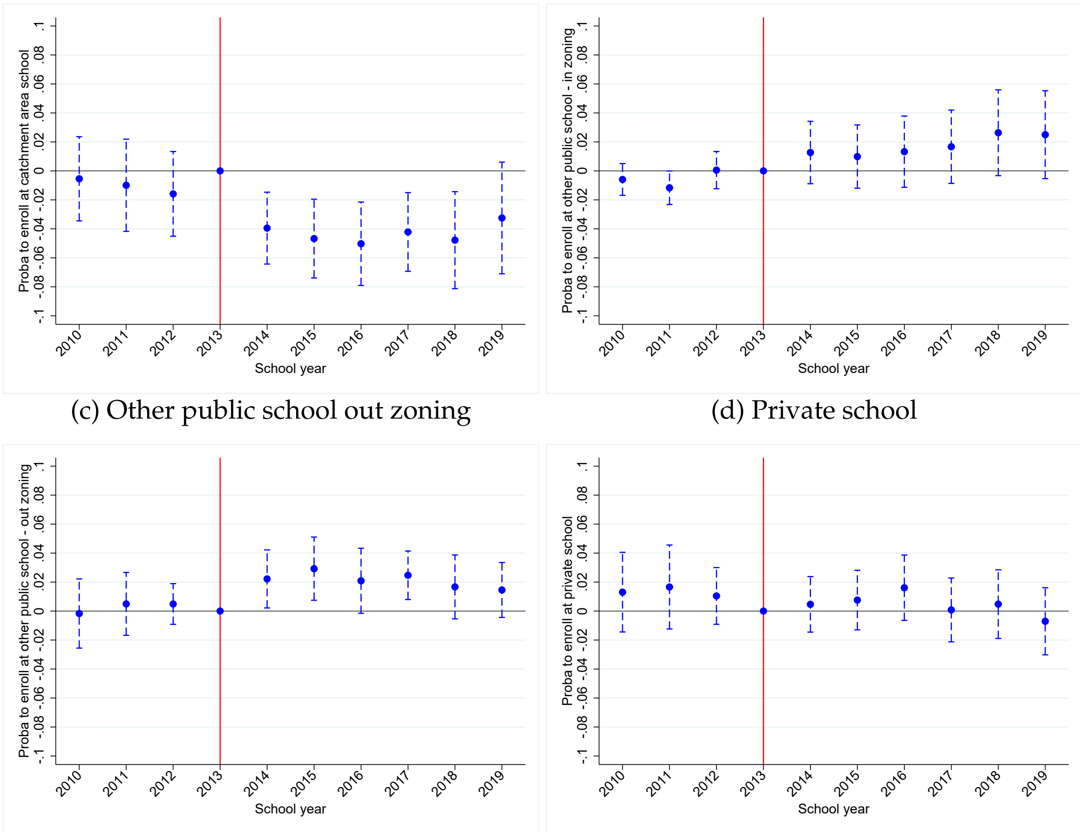
labeling is a 4 pp immediate decrease in the probability for parents to enroll their kid at a newly-labeled catchment-area school, and this penalty then persists over five years after the reform (see Panel a), suggesting that policy labeling has stigmatized schools located in the designated neighborhoods in a perennial way. As the 6^{th}-grade cohorts consist of about 150 pupils per catchment area on average, a 4 pp drop in the enrollment probability corresponds to six fewer pupils per school and per year in first-time labeled neighborhoods relative to their analogues in counterfactual never-labeled neighborhoods.

Figure 4 also shows that neighborhood labeling spurred parents to shift significantly to other public schools outside the policy zoning (+2.2 pp higher enrollment in 2014, 2.9 pp in 2015, 2.1 pp in 2016, and 2.5 pp in 2017: see Panel c and Table F1 column 3), and not to other public schools in the zoning (see Panel b and column 2 of Table F1). This is consistent with

Figure 4 – “Entry” into policy zoning and pupil enrollment by year
Probability to enroll at:

(a) Catchment-Area school (b) Other public school in zoning

(c) Other public school out zoning (d) Private school



Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l’Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Note: The X-axis displays school years (2013 is the reference). The Y-axis displays the $\hat{\beta}_{1k}$ drawn from estimating equation (3), with 95% confidence intervals. Standard errors are clustered at the catchment-area-school level. Controls = catchment-area (CA) school fixed effects, year dummies, pupils’ characteristics (SES, gender, age and citizenship), CA school time-varying controls (a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil’s primary school).

parents using the negative signal conveyed by the new policy label to re-gauge school quality quickly post-reform for all treated areas, and not only their catchment-area.

A further way of testing the common-trend assumption is to see whether policy changes occurred pre-reform. Figure 4 and Table F1 show that the pre-reform “fake” treatment is not significantly different from zero before 2014, which provides strong support to the validity of our entry-counterfactual group.

4.2 Exit from policy zoning and pupil enrollment in middle-schools

We carry out a symmetric analysis of the causal impact of the policy on de-zoned areas. Table 2 and Figure 5 list the coefficients from estimating Equations (2) and (4). We find a less significant and much smaller impact of the reform on public middle schools in outgoing neighborhoods that are not too far above the poverty cut-off.[25]

[25]Results by year are displayed in Table F2 of Appendix F.

Table 2 – "Exit" from policy zoning and pupil enrollment

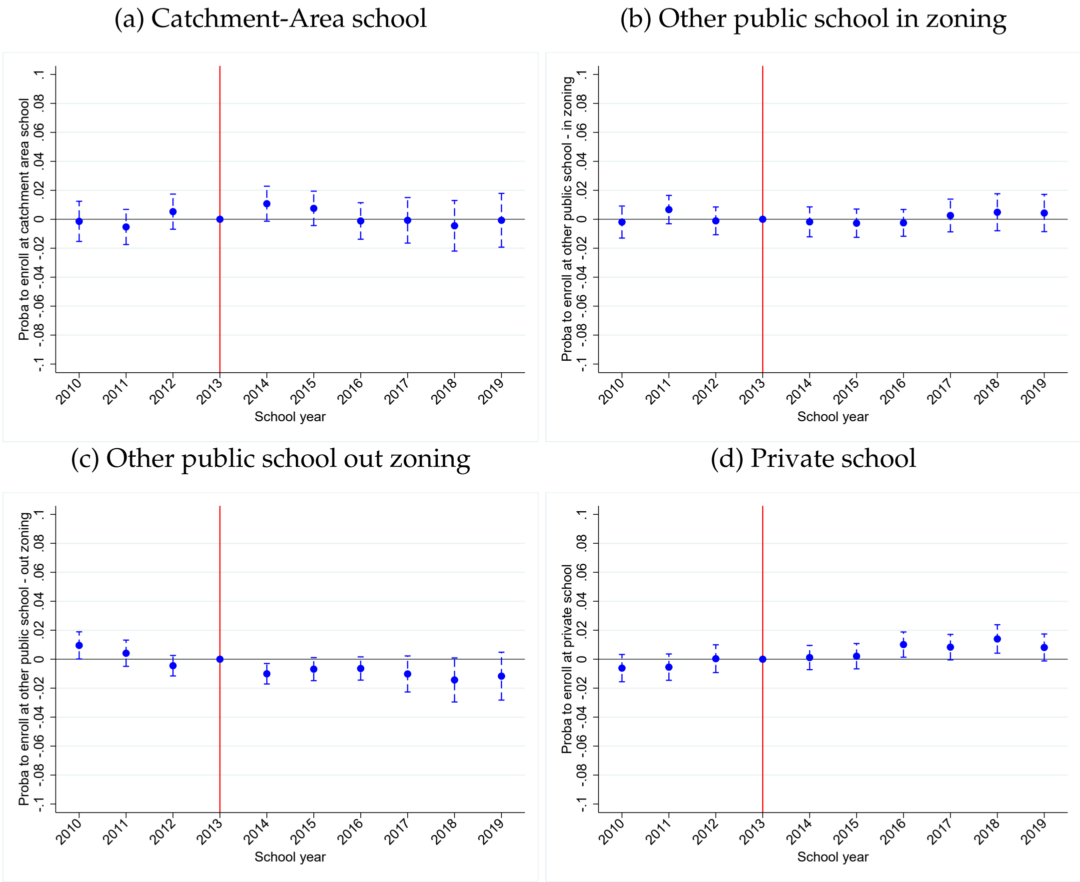
	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{exit}	0.002	-0.012**	0.010***
	(0.005)	(0.005)	(0.003)
SES (ref.=Medium)			
Very High SES	-0.114***	-0.010*	0.124***
	(0.006)	(0.005)	(0.006)
High SES	-0.037***	0.002	0.034***
	(0.004)	(0.004)	(0.004)
Low SES	0.122***	0.003	-0.125***
	(0.005)	(0.004)	(0.004)
Unknown SES	0.096***	0.033***	-0.129***
	(0.010)	(0.009)	(0.007)
Male	-0.010***	0.008***	0.002*
	(0.001)	(0.001)	(0.001)
French	-0.068***	0.007	0.061***
	(0.006)	(0.006)	(0.004)
Age	0.027***	0.026***	-0.053***
	(0.002)	(0.002)	(0.002)
CA School in comp. educ. prog.	0.010	-0.009	-0.001
	(0.006)	(0.007)	(0.005)
No. Private Schools within 5km	0.029***	-0.027***	-0.002
	(0.006)	(0.005)	(0.004)
R^2	0.167	0.114	0.211
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Year FE	✓	✓	✓
School FE	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Panel (a) of Figure 5 suggests that policy disqualification only marginally raised the probability that parents in de-zoned neighborhoods choose their catchment-area school relative to parents in counterfactual still-labeled neighborhoods. Symmetrically to entry, the benefits for public middle schools in de-zoned neighborhoods came at the expense of public schools outside the policy zoning, which experienced a significant drop in enrollment after 2014 (see panel c of Figure 5 and column 3 of Table F2). The small revival in the attraction of public middle schools was nevertheless only short-lived: +1.1 pp immediately post-reform, or equivalently two more pupils per cohort (see panel a of Figure 5 and column 1 of Table F2). It was moreover counterbalanced in the aftermath of the reform to the benefit of the pri-

Figure 5 – "Exit" from policy zoning and pupil enrollment by year
Probability to enroll at:



Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Note: The X-axis displays school years (2013 is the reference). The Y-axis displays the $\hat{\beta}_{2k}$ drawn from estimating equation (4). 95% confidence intervals are represented. Standard errors are clustered at the catchment-area-school level. Controls = catchment-area (CA) school fixed effects, year dummies, pupils' characteristics (SES, gender, age and citizenship), CA school time-varying controls (a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school).

vate sector (+1pp in 2016, +0.8 in 2017, +1.4 pp in 2018 and +0.8 pp in 2019: column 4 of Table F2), explaining the overall insignificant average impact of neighborhood de-zoning on the catchment-area school choice (+0.2 pp: column 1 of Table 2), and its significantly positive average impact on private-school choice (+1 pp: column 3 of Table 2). These more-mixed results for areas exiting zoning are unsurprising in light of the reform design described in Section 2. Disqualified neighborhoods only gradually exited from the former program, and had been treated long prior to de-zoning, which may have prevented any drastic reassessment of school quality, despite de-zoning.

4.3 Additional pre-trends tests

To definitely rule out pre-treatment differences in trends that would threaten our difference-in-differences strategy, we add treatment-group specific linear time-trends to specifications (3) and (4). Figures 6 and 7 show that our results stay strongly robust (see the related estimates in Tables G1 and G2 of Appendix G).

Figure 6 – "Entry" into policy zoning and pupil enrollment - By year with treatment-group specific linear time-trends

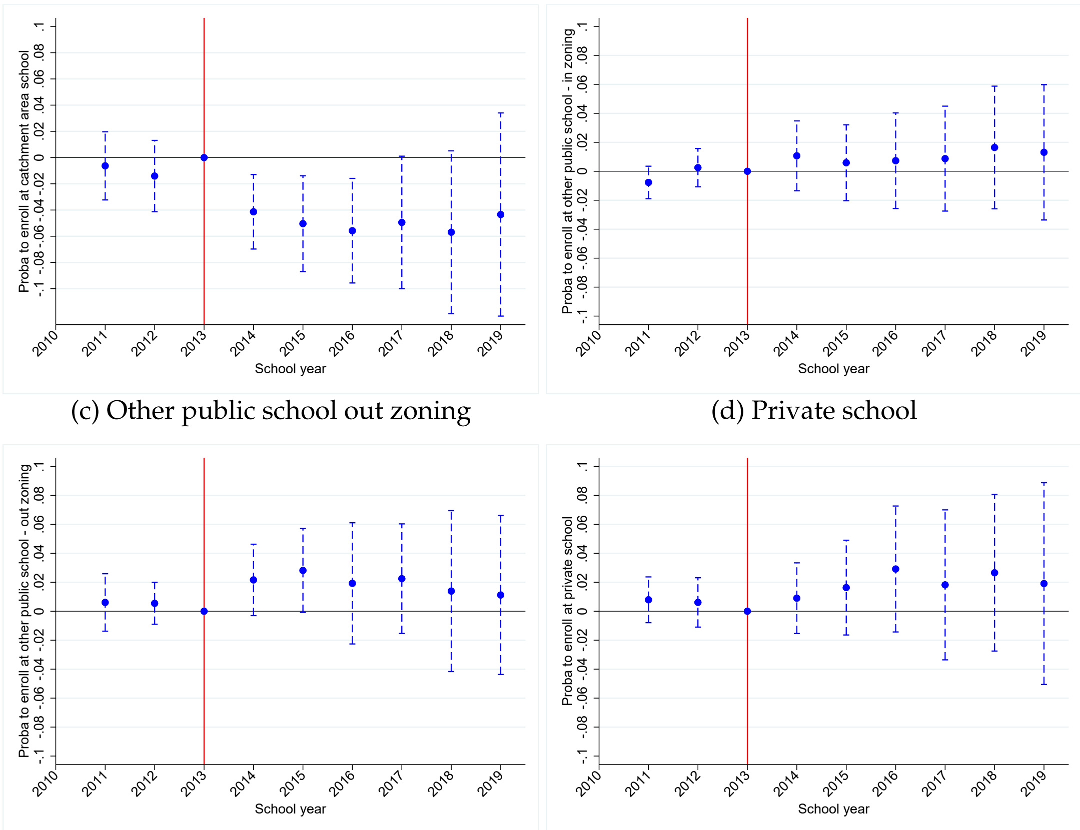
Probability to enroll at:

(a) Catchment-Area school

(b) Other public school in zoning

(c) Other public school out zoning

(d) Private school



Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Note: The X-axis displays school years (2013 is the reference). The Y-axis displays the $\hat{\beta}_{1k}$ drawn from estimating equation (3) with treatment-group specific linear time-trends (resulting in dropping the 2010 year-dummy). 95% confidence intervals are represented. Standard errors are clustered at the catchment-area-school level. Controls = catchment-area (CA) school fixed effects, year dummies, pupils' characteristics (SES, gender, age and citizenship), CA school time-varying controls (a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school).

4.4 Sorting across schools or moving to a different neighborhood?

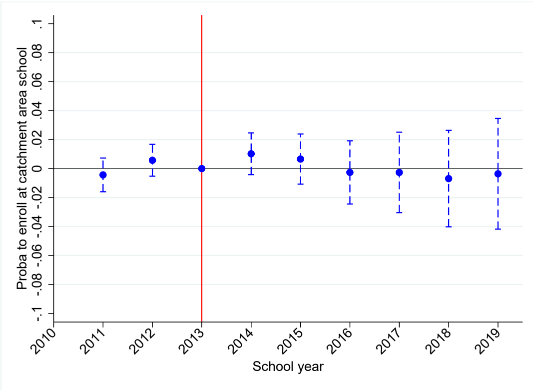
We have not so far identified whether the policy effects reflect parental re-sorting across schools or across neighborhoods. As noted in Section 2, parents in France can bypass the legal map of school catchment-areas in three ways: moving house to be assigned to a "better" (or perceived as such) default public school, opting for a private school (in 22% of the cases in France, as shown in Table C1), or requesting a derogation to enroll their child outside their catchment area (on average, 24% of the cases in France over 2010-2019, as shown in Table C1).

Most households in the neighborhoods targeted by the French urban policy live in social

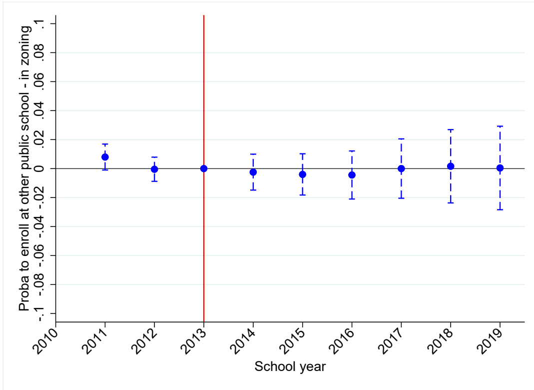
Figure 7 – "Exit" from policy zoning and pupil enrollment - By year with treatment-group specific linear time-trends

Probability to enroll at:

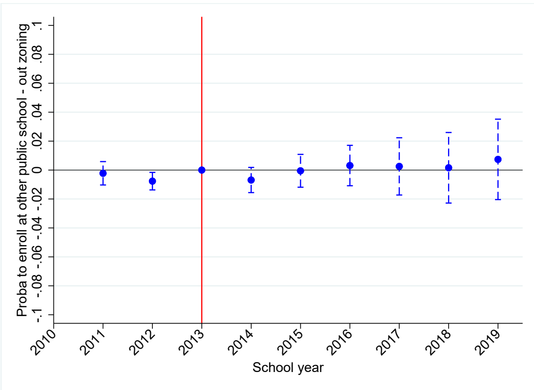
(a) Catchment-Area school



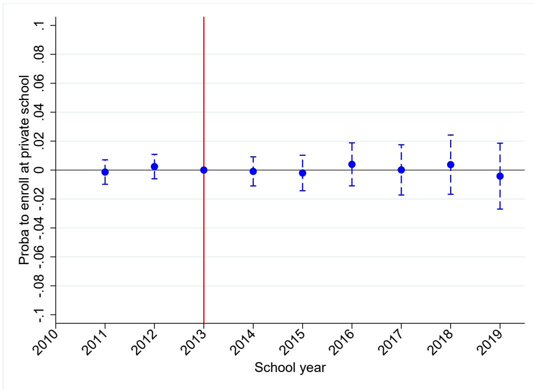
(b) Other public school in zoning



(c) Other public school out zoning



(d) Private school



Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Note: The X-axis displays school years (2013 is the reference). The Y-axis displays the $\hat{\beta}_{2k}$ drawn from estimating equation (4) with treatment-group specific linear time-trends (resulting in dropping the 2010 year-dummy). 95% confidence intervals are represented. Standard errors are clustered at the catchment-area-school level. Controls = catchment-area (CA) school fixed effects, year dummies, pupils' characteristics (SES, gender, age and citizenship), CA school time-varying controls (a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school).

housing, and are thus less mobile on average than households in better-off neighborhoods.[26] In addition, the eligibility criterion used for neighborhood selection could not have been predicted by individuals, as there were no publicly-available local income data allowing them to calculate the poverty threshold. We therefore conjecture that parents were unlikely to plan a rapid house move either just before or after the reform's announcement, even though they might have been participating in citizens' councils involved in the reform process.

Figure 8 provides strong support for this conjecture. There are no significant differences over time in the average number of pupils assigned to public middle schools affected by the reform,[27] either for those entering the new urban zoning (panel a) or those leaving it (panel

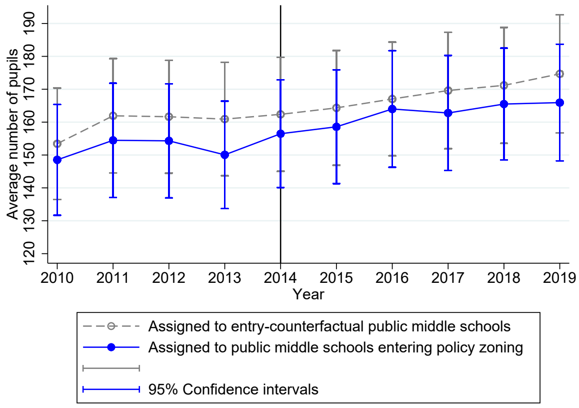
[26] According to Sala (2018), 74% of QP residents live in social housing, as against 16% in other neighborhoods in the same urban unit.

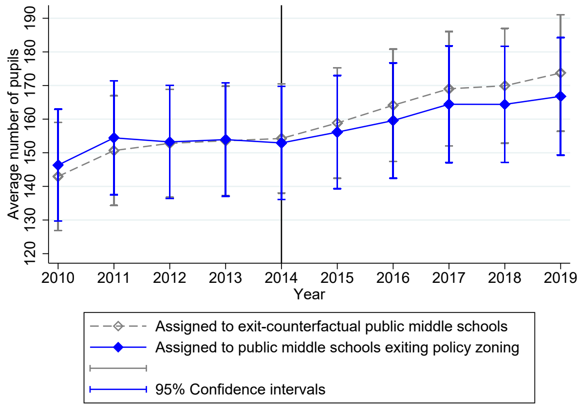
[27] In other words, the population within catchment areas is stable over time.

b), and their control schools. As we find no evidence of "Tiebout flight" post-reform, we conclude that parents did not move to a different neighborhood in response to the reform, and therefore re-sorted across schools rather than across neighborhoods, by asking for more (entry) or fewer (exit) opt-out derogations to not enroll their children in their catchment-area.

Figure 8 – Average number of pupils assigned to treated and counterfactual schools in:

a) Incoming & entry-counterfactual neighborhoods b) Outgoing & exit-counterfactual neighborhoods





Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

As middle-school avoidance does not reflect moving or residential resorting, it is important to note that school stigma from neighborhood labeling was probably greatly reduced by the catchment-area rule, as derogations are granted only if the schools requested have sufficient capacity. If the number of requests exceeds the school's capacity, the exceptions are granted only in very specific cases, such as disabilities, low family-income, sibling reunion, unusual tracks, or medical care provided close to the requested school. Derogations for most other motives may therefore have been refused, especially given the school-capacity constraints that are likely in populated urban neighborhoods.[28] As there is evidence that well-meaning education policies lead to more segregation and worse outcomes when households can re-sort freely (Laverde, 2022; Park and Hahm, 2023), the French catchment-area system may well have considerably mitigated school stigmatization: the 4 pp yearly drop in school enrollment incurred from neighborhood labeling is thus very likely to be a lower-bound estimate of the stigma burden carried out by public middle schools in designated areas.

5 Heterogeneous Treatment Effects

This section raises the question of whether the reform has had differential effects on school choices by a number of characteristics: family background, potential information held by the parents, pupil gender, and catchment-area school characteristics (such as extra-resources from compensatory education programs, or the vicinity of competing private schools).

[28]Unfortunately, data on the success rate of dispensation requests are not available over the period 2010-2019. For 2009, Fack and Grenet (2012) report an average satisfaction rate of 73.4% for all 6$^{\text{th}}$ graders, and of 71.5% for 6$^{\text{th}}$ graders enrolled in priority education schemes.

5.1 Heterogeneity by Socioeconomic Status

We first ask whether the responses to re-zoning are different in families from different socioeconomic backgrounds, as High-SES parents or parents in particular occupations (such as teachers) are less financially constrained and face less informational frictions, or have better knowledge about school quality. We first re-code parental occupation into three broad categories: High, Medium and Low SES,[29] and estimate the most-conservative augmented versions of Equations (1) and (2) in a triple-difference approach, where all of our explanatory variables are interacted with occupation.

Table 3 – Re-zoning and pupil enrollment by SES

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.036*	-0.000	0.036**
	(0.019)	(0.019)	(0.016)
SES (ref.=High)			
Medium SES × T^{entry}	-0.002	0.029	-0.027
	(0.016)	(0.020)	(0.018)
Low SES × T^{entry}	-0.013	0.048**	-0.035*
	(0.021)	(0.019)	(0.021)
R^2	0.180	0.136	0.207
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
T^{exit}	-0.003	-0.001	0.004
	(0.010)	(0.010)	(0.008)
SES (ref.=High)			
Medium SES × T^{exit}	0.010	-0.014	0.004
	(0.009)	(0.009)	(0.009)
Low SES × T^{exit}	0.021**	-0.010	-0.011
	(0.009)	(0.010)	(0.008)
R^2	0.186	0.133	0.237
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

[29] We aggregate Very High and High SES, as well as Low and Unknown SES, as Section 4 exhibited similar school-enrollment patterns and point estimates in these combined categories.

The top panel of Table 3 shows that zoning entry caused a "rich flight" to the private sector, as High-SES parents (the reference category in Table 3) increased their probability of private-school choice by 3.6 pp relative to High-SES parents living in counterfactual unlabeled neighborhoods, post-reform. While the second row of this panel shows that there is no difference between Medium- and High-SES parents (with all of the estimated coefficients being insignificant), in the third row Low- and High-SES parents do behave differently. In the top panel of Table 3, the probability of shifting to another public (private) school after entry into zoning is 4.8 pp (3.5 pp) larger (lower) for Low- than for High-SES parents. In the bottom panel, the probability to choose the catchment-area school following de-zoning is 2.1 pp higher for Low- than for High-SES parents, in line with the former re-adjusting their school-quality beliefs post-reform more than the latter.

Table 4 – Re-zoning and the enrollment of teachers' children

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.041***	0.036**	0.005
	(0.013)	(0.016)	(0.011)
SES (ref.=Non-Teachers)			
Teachers × T^{entry}	0.059**	-0.061**	0.001
	(0.025)	(0.027)	(0.018)
R^2	0.153	0.123	0.155
No. obs	384,476	384,476	384,476
No. clusters	235	235	235
T^{exit}	0.011*	-0.010*	-0.001
	(0.006)	(0.006)	(0.004)
SES (ref.=Non-Teachers)			
Teachers × T^{exit}	-0.018	0.021	-0.003
	(0.014)	(0.017)	(0.014)
R^2	0.144	0.116	0.168
No. obs	954,660	954,660	954,660
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Table 4, which isolates the reform's impact on teachers and professors, reveals that they reacted significantly less than other parents (see the top panel of Table 4). These two occupations were plausibly much more aware of the intrinsic quality of schools pre-reform and thereby, less reactive to any new (bad or good) piece of information conveyed by neighborhood labeling. This result suggests that imperfect information on school quality is the key mechanism driving the backfire stigma effect triggered by place designation.

5.2 Heterogeneity by school-year (and information held by the parents)

To dig further into this conjecture, we provide a 'placebo' analysis in line with Boutchenik (2020), whereby we test whether parents who had their children already enrolled into lower secondary education at the time of the reform resorted across schools post-reform. If most parents (except well-informed teachers) face imperfect information at the entry of lower secondary education because they have to choose a new school for their children, there is actually little reason to believe that parents who are already familiar with their kids' school would revise their beliefs post-reform. Since lower secondary education lasts four years in France (from the 6^{th} grade to the 9^{th} grade, which ends with the DNB certification), we choose pupils entering the 8^{th} grade as the 'placebo' cohort because they have been in the pipeline of lower secondary education for already two years. We thus estimate the probability that, post-reform, parents would move their child to another school between the 7^{th} and 8^{th} grades.

Table 5 shows that 8^{th}-grade enrollment was totally unaffected by the reform, as parents who had a kid already enrolled into a newly-labeled neighborhood did not switch more to another public (nor a private) school than parents of children already enrolled into counterfactual unlabeled neighborhoods.[30] Our main average treatment effects are not then statistical artifacts, but rather represent strategic parental behavior at the start of lower secondary education, at the time when they are enduring the highest informational frictions on school quality.

5.3 Heterogeneity by other dimensions

We also investigate heterogeneity across a number of other dimensions. First, pupil citizenship, as foreign residents may have more difficulty in understanding French and insufficient knowledge of the French institutional requirements to bypass their catchment-area school, or adapt quickly to the new information produced by the reform. Table J1 in Appendix J provides no clear indication of such heterogeneity for zoning entry, which has the same enrollment effect for French and foreign pupils. Zoning exit seems to have reduced the likelihood that parents of foreign pupils opt for a private school, whereas those of French pupils did adjust their public-school opt-out strategies. Appendix J reveals no robust evidence of heterogeneous entry-effects by gender (Table J2), by catchment-area school type i.e. with or without additional compensatory education resources (Table J3), or by distance to the closest

[30]Note that the number of observations and R^2 are not perfectly comparable with those of Section 4, as we estimate here the probability to change middle school from grade 7 to grade 8, with fixed effects defined upon the middle school of enrollment in grade 7, whereas Section 4 estimates the probability to choose the CA school, controlling for CA school fixed effects.

Table 5 – Re-zoning and pupil enrollment in 8th grade

	Probability to enroll at:		
	Previous Public School	Other Public School	Private School
T^{entry}	0.009	-0.009	-0.000
	(0.010)	(0.009)	(0.004)
R^2	0.010	0.009	0.006
No. obs	303,977	303,977	303,977
No. clusters	237	237	237
T^{exit}	0.003	-0.004	0.001
	(0.003)	(0.003)	(0.001)
R^2	0.010	0.009	0.007
No. obs	687,380	687,380	687,380
No. clusters	619	619	619
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. Previous Public School refers to the middle school of enrollment in 7th grade. Standard errors in parentheses are clustered at the school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the previous school (i.e the middle school of enrollment in grade 7) benefiting from a compensatory education program and the number of private schools within a 5km radius of the previous school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

private school (Table J4).[31]

Heterogeneity is more salient for urban-zoning exit, but it might be interpreted with caution, as we could not completely dismiss the existence of pre-trends in this case. Parents with a French pupil citizenship seem more affected by school bad reputations, as they favour relatively more private schools after de-zoning. Girls seem more likely to be enrolled back in their catchment-area school after de-zoning than boys. And public middle schools more distant from their closest private school seem to experience larger enrollment rise post-reform than other public middle schools.

6 Robustness checks

It is important to check whether the treatment estimates above are robust to a number of checks. We first assess whether our findings are robust to a change in (i) the treatment definition, (ii) the identification of school catchment-areas, and (iii) how we model school choices.

[31] We also tested for heterogeneity by DNB gap between the catchment-area and the actual schools of enrollment, and did not find any significant differences either. These results are available upon request.

6.1 Narrow definition of urban policy treatment

Prior to the 2014 reform, French urban policy combined a regulatory approach based on automatic support (EZ) with a contractual approach producing potential (but not automatic) credits (other non-EZ zones). As such, non-EZ labeled neighborhoods may have actually received little public funding. In addition, while many households were aware of the geographical perimeter of the three first-tier zones, as EZ subsidies were partly granted to firms conditional upon them hiring residents from the first three-tier neighborhoods, Tier-4 zones were mostly known by institutions and local authorities. We thus check whether our results are robust to a narrower definition of urban-policy treatment, whereby we consider that only the first three-tier zones were treated before the reform, as large informational frictions may have prevented the residents of the fourth-tier zones to reassess school quality in light of the reform.

The resulting point estimates appear in Table H1 in Appendix H.[32] There is no qualitative change, with the main differences being that our average treatment effects are even more significant with this narrow treatment definition. As shown in the top panel of Table H1, the probability that parents choose their catchment-area middle school is 2.1 pp lower post-labeling than in counterfactual neighborhoods (as against -3.5 pp in Table 1, the two coefficients are not statistically different), and the probability of choosing another public school 2.6 pp higher (as against +4.1 pp in Table 1). As with our previous treatment definition, re-sorting is immediate and mostly benefits public schools outside the policy scheme, which experience a +1.2 pp rise in enrollment compared to the control schools in 2014 and 2015, and a +1.5 increase pp in 2016 (see column 3 of Table H2 in Appendix H). All of these robustness tests thus confirm our key result that urban zoning stigmatized public middle schools in labeled neighborhoods.

The point estimates for de-zoned neighborhoods are remarkably stable in terms of size, but they are more significant than those with the broader definition of policy treatment. In the bottom panel of Table H1, de-zoning raised the probability that parents choose their catchment-area middle school by a marginally significant 1.4 pp compared to control schools (as against an insignificant +0.2 pp in Table 2), and reduced the probability of choosing another public school by 1.7 pp (as against +1.2 pp in Table 2). However, this stigma reversion becomes more diluted over time with the narrower treatment definition (See Table H3 in Appendix H).

6.2 Public school assignment and construction of school catchment-areas

Furthermore, as we do not know the exact perimeter of catchment areas, we check whether our school assignment to pupils affects the results. For now, we allocated public middle schools via their shortest distance to each pupil's primary school. This could wrongly assign schools to some pupils if their catchment-area school is not necessarily the closest to the

[32] Appendix H provides complementary yearly treatment effects (see Table H2 for entry and Table H3 for exit).

pupil's primary school, or if there are two equidistant public middle schools.[33] If these errors are not random, our point estimates may be biased. As long as mis-classification to catchment areas is exogenous, there should not be any systematic estimation bias.

We tackle this issue by using geo-coded information from a separate dataset that allows us to recover catchment areas on the basis of the shortest distance between each pupil's home address and the set of all public middle schools.[34] Unfortunately, we cannot replicate all of our previous analyses, as these geo-coded datasets are available only every odd year from 2011 to 2017, and do not contain all of the individual covariates that appeared in the annual data. Nonetheless, as shown in Table 6, the results are qualitatively similar to those based on pupils' primary schools: zoning significantly reduces the probability that parents choose their catchment-area schools relative to counterfactual schools, with a stigma size slightly lower than that in the yearly data (-2.6 pp instead of -3.5), although the two coefficients are not significantly different from each other. We also find that parents shifted mostly to other public schools, but less so than in the yearly data (-2 pp instead of -4.1), instead of to private schools (although the coefficient in column (3) is also positive at +0.6 pp). By way of contrast, de-zoning significantly increases the probability that parents enroll their children at their catchment-area school (relative to counterfactual schools), with a stigma reversion even more significant and slightly larger than with the yearly data (+2.7 pp on average against +1.1 at best, just after the reform).

To further test whether assigning public schools to pupils on the basis of the distance to their primary school raise concerns, we check if some public schools end up with zero enrollment following our assignment rule. This is the case for 72 public middle schools out of 5,125, of which only 2 are in the "entry" sample and 12 in the "exit" sample. Excluding these observations, which presumably have the wrong catchment area, has almost no effect on the results: the point estimates are identical (to two or three decimal places) and the significance levels are unaffected.[35]

6.3 Multinomial analysis

In the above, middle-school enrollment was modeled via separate linear-probability regressions of three dichotomous variables that were considered to be independent: enrolling at the catchment-area middle school, another public middle school, or a private school. As this may be restrictive, we estimate a multinomial model in which parents choose one school out of the three alternatives (see Appendix I for model details). Tables I1 and I2 in Appendix I list the multinomial point estimates, which are very similar to those from the linear-probability models. The probability that pupils be enrolled in a public school outside their catchment area is 32.2% higher in labeled neighborhoods than in entry-counterfactual neighborhoods post-reform (column 1 of Table I1).

[33] Note that schools are correctly classified into treatment and control groups in any case, but pupils might be incorrectly assigned to catchment-area schools.

[34] Maugis and Touahir (2018) show that this procedure yields a fairly good approximation of catchment areas.

[35] These results are available upon request.

Table 6 – Re-zoning and pupil enrollment - Geo-coded data

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.026***	0.020***	0.006
	(0.009)	(0.007)	(0.006)
R^2	0.110	0.083	0.135
No. obs	152,679	152,679	152,679
No. clusters	236	236	236
T^{exit}	0.027***	-0.019*	-0.008
	(0.010)	(0.012)	(0.006)
R^2	0.136	0.077	0.150
No. obs	391,673	391,673	391,673
No. clusters	607	607	607
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends (exit)	✓	✓	✓

Sources: Fichiers géoréférencés des élèves, 2011, 2013, 2015 and 2017, DEPP - Ministère de l'Éducation.

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, scholarship and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the share of private schools in the urban unit hosting the primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

As the baseline probability of being enrolled at the catchment-area school is 54% for the counterfactual group (respectively 47% for the treated group), and the baseline probability to enroll at another public school 24% for the counterfactual group, this corresponds to a 3.6 pp increase in the probability to enroll at another public school,[36] which is comparable to the 4.1 point estimate in Table 1.

7 Policy designation and pupils' performance later on

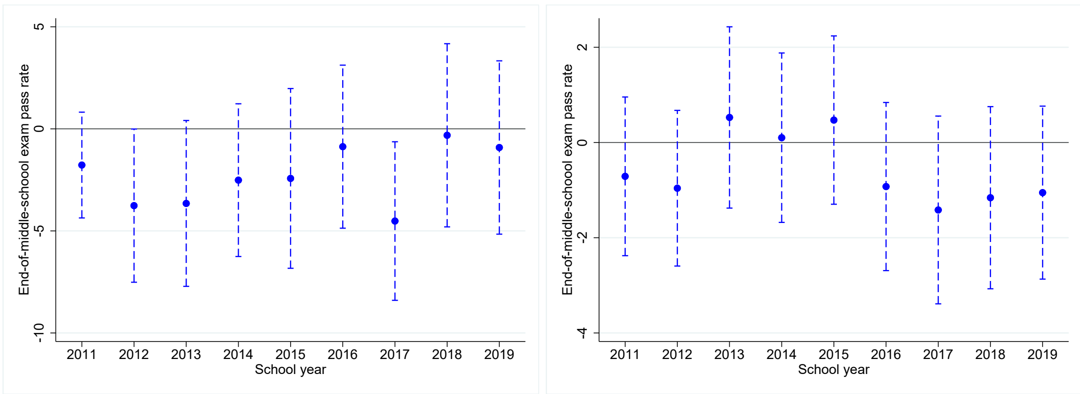
Last, we turn to the fundamental question of whether changes in school composition and education subsidies arsing from policy designation or disqualification affect students' performance. The re-sorting of families across schools driven by policy designation can reduce pupils' performance in newly-labeled neighborhoods if high-achieving students shift to other schools. But it can also raise the performance of pupils who stay put if it produces more-homogeneous groups of peers at school, with more teaching resources at their disposal thanks to place-based redistribution. To see which effect outweighs the other, we appeal to the unique measure of students' performance we observe in our data set: the average share of DNB graduates in each middle school at the end of 9th grade. Panel (a) in Figure 9 plots the es-

[36] Calculated as $0.47 \times 1.322 \times \frac{0.24}{0.54} = 0.276$, i.e 3.6 pp higher than 24%.

timated gaps in the DNB pass rate of public middle schools in newly-labeled neighborhoods *versus* counterfactual never-labeled neighborhoods.

Figure 9 – Re-zoning and students' performance at the end of lower secondary education

(a) "Entry" into policy zoning (b) "Exit" from policy zoning



Sources: APAE - 2010-2019, DEPP - Ministère de l'Éducation; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Note: The X-axis displays school years (2011 stands for the 2011-2012 academic year, and so on), taking 2010 as the reference. The Y-axis plots the estimated gap in DNB success rates for schools in newly-labeled neighborhoods (Panel a) – resp. disqualified neighborhoods (Panel b) – compared to counterfactual schools. Estimations are carried out at the school level, with control for school and year fixed effects, as well as a dummy indicating whether schools benefit from a compensatory education program during the year. 90% confidence intervals are plotted with standard errors clustered at the school level.

As shown in this event-study, the former experienced an average success-rate lower (of about 4.5 pp) than the later in the 2017-2018 school-year. This corresponds precisely to the first pupil cohort affected by the Lamy reform, who enrolled into 6^{th} grade in 2014-2015, and who passed the DNB exam at the end of 9^{th} grade (i.e. in 2017-2018). Although marginally significant, this difference may be related to high-achieving peers flying away from the targeted areas. This reduction in school attainment is however only short-lived, as we observe no such gaps for the 2018-2019 and 2019-2020 student cohorts. Therefore, we conjecture that, after a two-year ramp-up period, education subsidies may have fully compensated the adverse stigma effects.

By way of contrast, Panel (b) indicates no significant difference in students' performance across disqualified and still-labeled counterfactual neighborhoods, suggesting no symmetric positive compensation from label loss, which is unsurprising given that only low-SES parents reevaluate public school quality upon exit, while high-SES parents do not.

8 Conclusion

Even though place-based policies funnel large transfers toward low-income neighborhoods, the extent to which they provide disadvantaged residents with more opportunities is still a matter of debate. Place-based redistribution may improve school enrollment in low-income neighborhoods if parents expect benefits on their children's education, but it can also affect public schools' reputations via a negative image from policy-designation, which is likely to exacerbate social segregation at school. This paper estimates the net effect of these two opposing forces in France over the 2010-2019 period.

The main challenge in evaluating place-based policies is selection into treatment, as neighborhoods qualify for public subsidies precisely because they are deprived. The naive comparison of labeled and unlabeled neighborhoods is thus likely to underestimate policy effectiveness. We overcome this challenge by appealing to the quasi-natural experiment provided by a reform that redrew the boundary of urban neighborhoods eligible for place-based subsidies in France, on the basis of a non-manipulable local poverty cut-off. We exploit this discontinuity design in a spatial difference-in-differences framework with two-way fixed effects to evaluate the causal impact of place-based policies on schooling outcomes in France.

We show that public middle schools in neighborhoods that became eligible to education subsidies witnessed a significant long-lived reduction in students' enrollment in the wake of the reform, compared to public middle schools in never-designated areas lying just above the eligibility threshold. This "zone-and-shame" effect was triggered by parents turning away from public schools in zoned neighborhoods. Low-SES parents have shifted to public middle schools outside the policy zoning, while High-SES parents were more likely to opt for private schools. We also find a marginally significant - but short-lived - decrease in students' test-scores, suggesting that the re-sorting across schools driven by neighborhood labeling may have temporarily offset any positive effect from the policy. We uncover, on the contrary, only weak evidence of stigma reversion after an area loses its designation, and only for Low-SES families, suggesting hysteresis in bad reputations, as only Low-SES families seem to re-adjust their school-quality beliefs following de-zoning.

Policy designation reduces the probability for parents to enroll their kid at a public middle school in labeled neighborhoods by at least 4 pp. This penalty, which is equivalent to 6 fewer pupils yearly per school in zoned neighborhoods, is not offset by the 1 pp rise following de-zoning (corresponding to fewer than 2 additional pupils per de-zoned school). Note, however, that, as many more schools "exited" than "entered" the urban policy scheme post-reform, the number of pupils turning away from zoned schools is about 10 times smaller than the number of pupils coming back to de-zoned schools. Our main estimates are robust to a number of different specifications, various falsification and placebo tests, an alternative treatment definition, and many other checks.

Furthermore, it is very likely that this 4 pp yearly-penalty reflects only the lower bound of stigmatization from neighborhood labeling, which could have been larger without the school sectorization that limits parents leeway to change schools. In educational contexts other than France, territorial stigmatization may then well appear with more salience or persistence, especially if parents have greater latitude to choose between public schools.

When discussing the desirability of place-based education subsidies, even though our results could be interpreted as an encouragement to fund students rather than neighborhoods to escape the trade-off between spatial redistribution and territorial stigma, it must be kept in mind that place-based policies may yield positive returns on students' performance later on, that could outweigh their short-term efficiency costs, in line with the equity gains emphasized by Gaubert et al. (2021) for the US.

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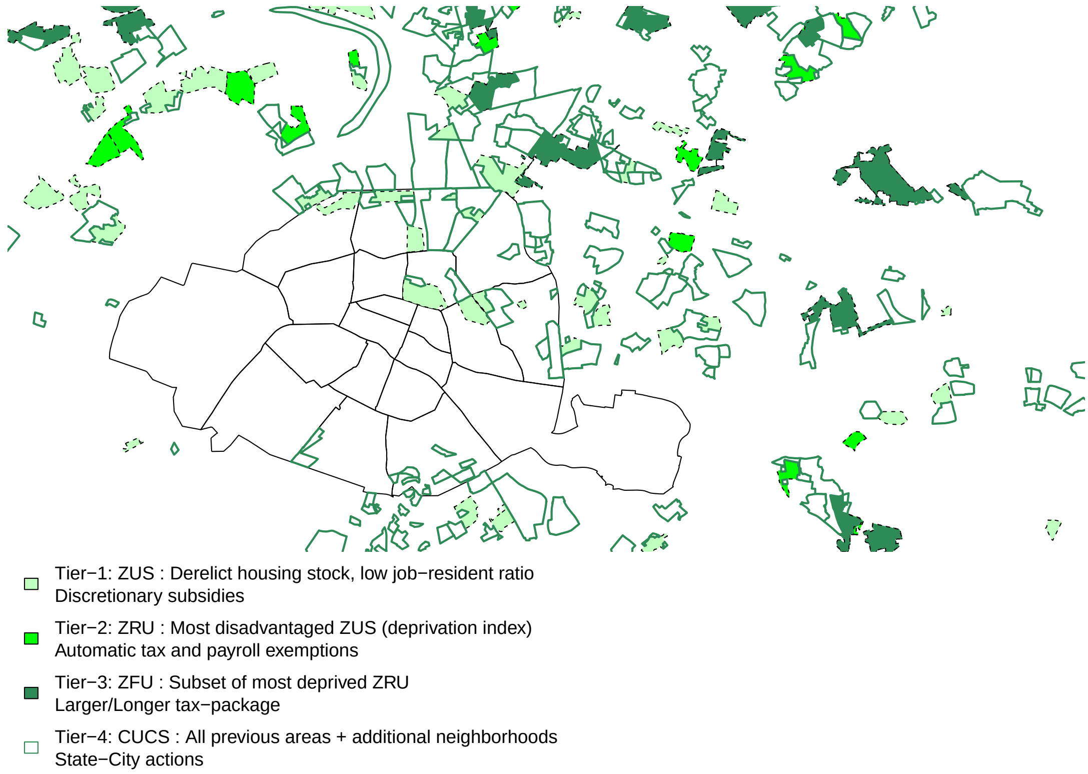
A Place-based urban policies in France before 2014

Figure A1 – A four-tier zoning system of deprived urban neighborhoods: The Paris example



Note: Tier-1 ZUS (French acronym for *Zones urbaines sensibles*), Tier-2 ZRU (for *Zones de redynamisation urbaine*), Tier-3 ZFU (for *Zones franches urbaines*), Tier-4 CUCS (for *Contrats urbains de cohésion sociale*)

Source: Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET).

B Internet information on urban-policy coverage

Figure B1 – Internet information on the urban policy coverage

Source: French Ministry of Urban Affairs (https://sig.ville.gouv.fr/).

Note: The address refers to a public middle school located in a QP (shown in blue) located in the north of Paris.

C Descriptive statistics

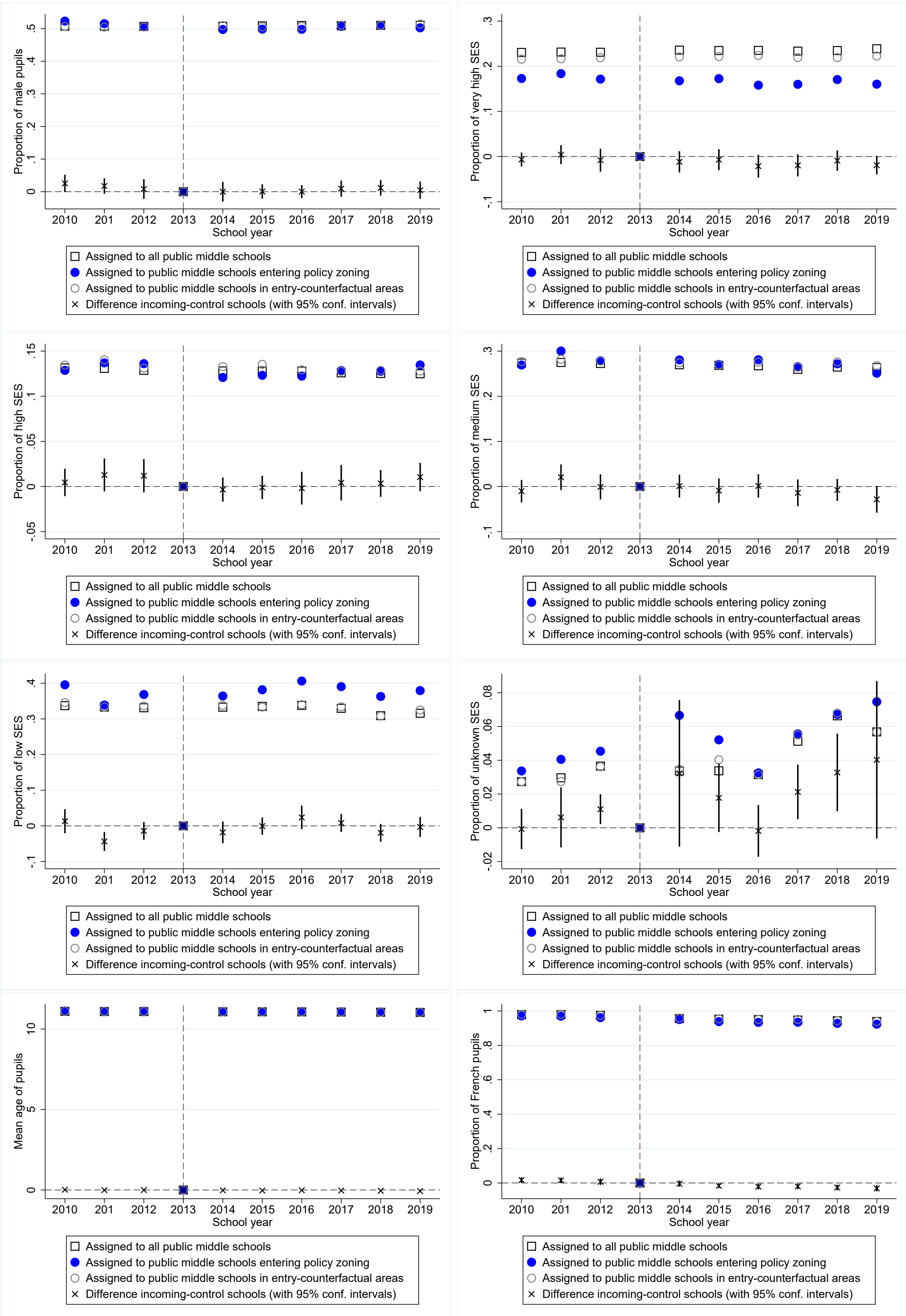
Table C1 – Description of the sample

	Freq.	%
Gender		
Girl	3,673,594	49
Boy	3,799,984	51
Socioeconomic status		
Very High SES	1,748,272	23
High SES	955,174	13
Medium SES	2,006,649	27
Low SES	2,459,399	33
Unknown SES	304,084	4
Citizenship		
French	7,165,558	96
Other	308,020	4
Age		
7-10	213,575	3
11-12	7,248,610	97
13-17	11,393	0
Middle School Choice		
Catchment-Area School	4,069,682	54
Other Public School	1,762,704	24
Private School	1,641,192	22
Catchment-area school		
In policy zoning	2,291,369	30.7
Entering policy zoning	29,374	0.4
Exiting policy zoning	1,941,826	26.0
Exiting policy zoning ($0.6<I_R<0.7$)	686,137	71.2
In entry-counterfactual areas	355,104	4.8
In exit-counterfactual areas	320,169	4.3
Total	7,473,578	100

Source: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP.

D Balancing tests between control and treated schools

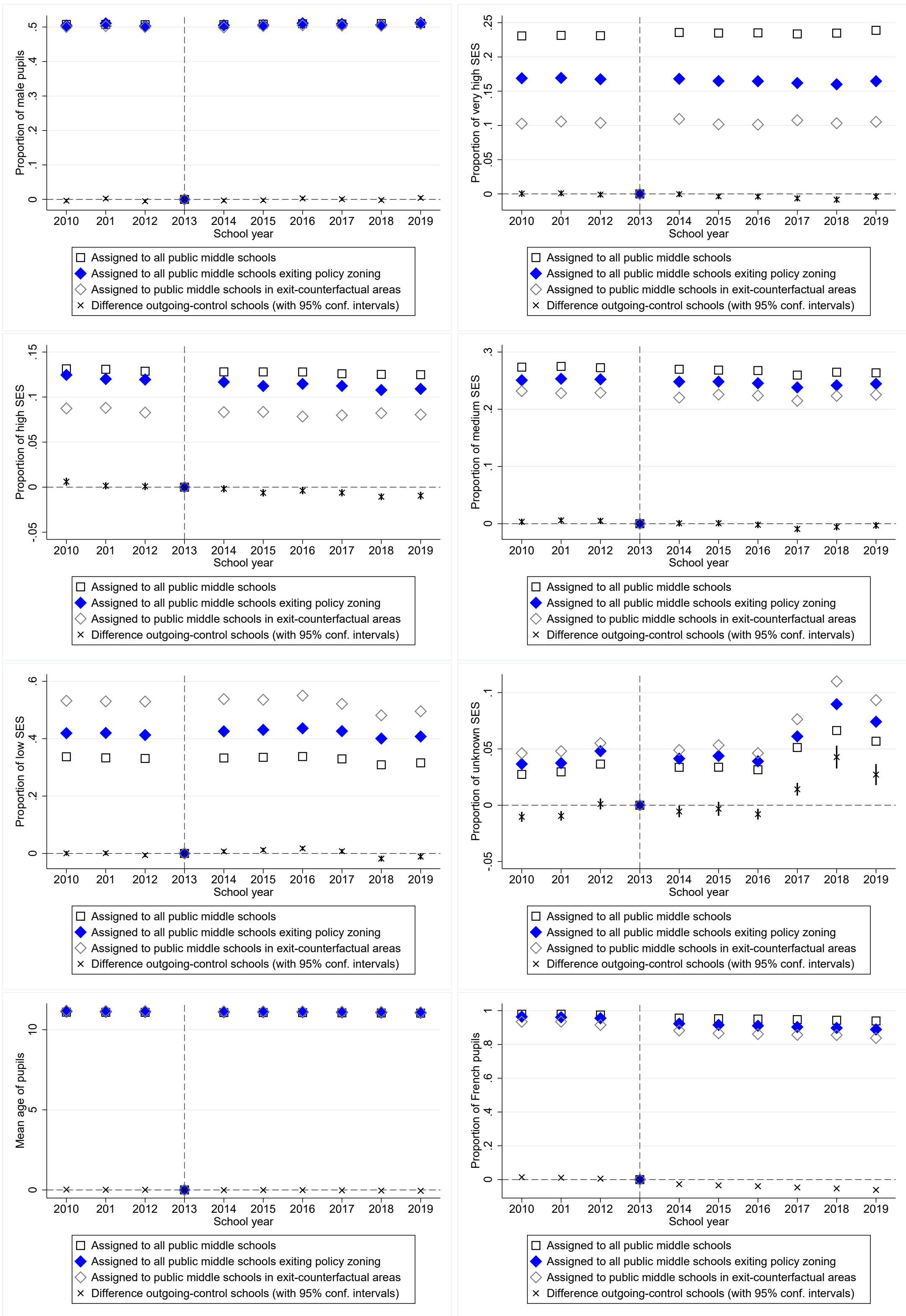
Figure D1 – Comparison of pupils assigned to incoming vs. entry-counterfactual schools



Note: Balancing tests for pupils entering 6^{th} grade for the first time.

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP.

Figure D2 – Comparison of pupils assigned to outgoing vs. exit-counterfactual schools

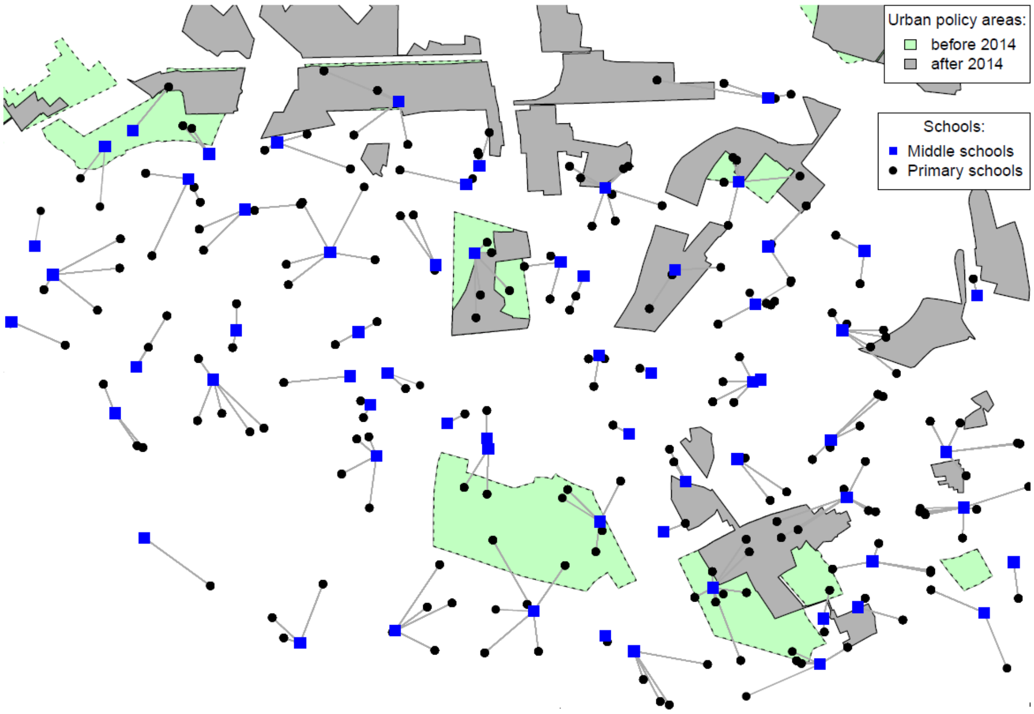


Note: Balancing tests for pupils entering 6^{th} grade for the first time.

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP.

E Definition of catchment-areas based on pupils' primary schools

Figure E1 – Catchment-areas based on each pupil's primary school in the Paris municipality



Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP.

Note: This illustration refers to the north-eastern part of the urban unit of Paris: blue squares represent public middle schools and black dots primary schools. Black segments link each primary school to its closest public middle school, defined as the catchment-area school of all pupils previously enrolled at this primary school.

F Rezoning and pupil enrollment by year

Table F1 – "Entry" into policy zoning and pupil enrollment - By year

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
T^{entry} × year=2010	-0.005	-0.006	-0.002	0.013
	(0.015)	(0.006)	(0.012)	(0.014)
T^{entry} × year=2011	-0.010	-0.012**	0.005	0.017
	(0.016)	(0.006)	(0.011)	(0.015)
T^{entry} × year=2012	-0.016	0.001	0.005	0.010
	(0.015)	(0.007)	(0.007)	(0.010)
(ref.=2013)				
T^{entry} × year=2014	-0.040***	0.013	0.022**	0.005
	(0.013)	(0.011)	(0.010)	(0.010)
T^{entry} × year=2015	-0.047***	0.010	0.029***	0.008
	(0.014)	(0.011)	(0.011)	(0.010)
T^{entry} × year=2016	-0.050***	0.013	0.021*	0.016
	(0.015)	(0.012)	(0.011)	(0.011)
T^{entry} × year=2017	-0.042***	0.017	0.025***	0.001
	(0.014)	(0.013)	(0.008)	(0.011)
T^{entry} × year=2018	-0.048***	0.026*	0.017	0.005
	(0.017)	(0.015)	(0.011)	(0.012)
T^{entry} × year=2019	-0.032*	0.025	0.015	-0.007
	(0.020)	(0.015)	(0.010)	(0.012)
R^2	0.166	0.143	0.129	0.187
No. obs	384,478	384,478	384,478	384,478
No. clusters	235	235	235	235
Pupil's characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept, and the coefficients on these controls are not listed.

Table F2 – “Exit” from policy zoning and pupil enrollment - By year

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
T^{exit} × year=2010	-0.001	-0.002	0.010**	-0.006
	(0.007)	(0.006)	(0.005)	(0.005)
T^{exit} × year=2011	-0.005	0.007	0.004	-0.005
	(0.006)	(0.005)	(0.005)	(0.005)
T^{exit} × year=2012	0.005	-0.001	-0.004	0.000
	(0.006)	(0.005)	(0.004)	(0.005)
(ref.=2013)				
T^{exit} × year=2014	0.011*	-0.002	-0.010***	0.001
	(0.006)	(0.005)	(0.004)	(0.004)
T^{exit} × year=2015	0.008	-0.003	-0.007*	0.002
	(0.006)	(0.005)	(0.004)	(0.004)
T^{exit} × year=2016	-0.001	-0.002	-0.006	0.010**
	(0.006)	(0.005)	(0.004)	(0.004)
T^{exit} × year=2017	-0.001	0.003	-0.010	0.008*
	(0.008)	(0.006)	(0.006)	(0.004)
T^{exit} × year=2018	-0.005	0.005	-0.014*	0.014***
	(0.009)	(0.007)	(0.008)	(0.005)
T^{exit} × year=2019	-0.001	0.004	-0.012	0.008*
	(0.009)	(0.007)	(0.008)	(0.005)
R^2	0.167	0.167	0.140	0.211
No. obs	954,666	954,666	954,666	954,666
No. clusters	616	616	616	616
Pupil’s characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l’Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. The reference year is 2010. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils’ characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil’s primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

G Rezoning and pupil enrollment by year - with treatment-group specific pre-trends

Table G1 – "Entry" into policy zoning and pupil enrollment by year - With treatment-group specific linear time-trends

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
T^{entry}=1 × year=2011	-0.006	-0.008	0.006	0.008
	(0.013)	(0.006)	(0.010)	(0.008)
T^{entry}=1 × year=2012	-0.014	0.003	0.005	0.006
	(0.014)	(0.007)	(0.007)	(0.009)
(ref.=2013)				
T^{entry}=1 × year=2014	-0.041***	0.011	0.022*	0.009
	(0.014)	(0.012)	(0.013)	(0.012)
T^{entry}=1 × year=2015	-0.050***	0.006	0.028*	0.016
	(0.019)	(0.013)	(0.015)	(0.017)
T^{entry}=1 × year=2016	-0.056***	0.007	0.019	0.029
	(0.020)	(0.017)	(0.021)	(0.022)
T^{entry}=1 × year=2017	-0.049*	0.009	0.022	0.018
	(0.026)	(0.018)	(0.019)	(0.026)
T^{entry}=1 × year=2018	-0.057*	0.016	0.014	0.027
	(0.032)	(0.021)	(0.028)	(0.027)
T^{entry}=1 × year=2019	-0.043	0.013	0.011	0.019
	(0.039)	(0.024)	(0.028)	(0.035)
R^2	0.166	0.143	0.129	0.187
No. obs	384,478	384,478	384,478	384,478
No. clusters	235	235	235	235
Pupil's characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓
Group-trends	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept, and the coefficients on these controls are not listed.

Table G2 – “Exit” from policy zoning and pupil enrollment by year - With treatment-group specific linear time-trends

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
T^{exit}=1 × year=2011	-0.004	0.008*	-0.002	-0.001
	(0.006)	(0.005)	(0.004)	(0.004)
T^{exit}=1 × year=2012	0.006	-0.000	-0.008**	0.002
	(0.006)	(0.004)	(0.003)	(0.004)
(ref.=2013)				
T^{exit}=1 × year=2014	0.010	-0.002	-0.007	-0.001
	(0.007)	(0.006)	(0.004)	(0.005)
T^{exit}=1 × year=2015	0.007	-0.004	-0.001	-0.002
	(0.009)	(0.007)	(0.006)	(0.006)
T^{exit}=1 × year=2016	-0.003	-0.004	0.003	0.004
	(0.011)	(0.008)	(0.007)	(0.008)
T^{exit}=1 × year=2017	-0.003	0.000	0.003	0.000
	(0.014)	(0.010)	(0.010)	(0.009)
T^{exit}=1 × year=2018	-0.007	0.002	0.002	0.004
	(0.017)	(0.013)	(0.012)	(0.010)
T^{exit}=1 × year=2019	-0.004	0.000	0.007	-0.004
	(0.019)	(0.015)	(0.014)	(0.012)
R^2	0.167	0.167	0.140	0.211
No. obs	954,666	954,666	954,666	954,666
No. clusters	616	616	616	616
Pupil's characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓
Group-trends	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. The reference year is 2010. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

H Narrow definition of neighborhood treatment

Table H1 – Re-zoning and pupils' enrollment - Narrow treatment definition

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.021***	0.026***	-0.005
	(0.008)	(0.008)	(0.005)
R^2	0.170	0.126	0.192
No. obs	449,998	449,998	449,998
No. clusters	280	280	280
T^{exit}	0.014*	-0.017**	0.003
	(0.007)	(0.007)	(0.005)
R^2	0.178	0.102	0.218
No. obs	574,409	574,409	574,409
No. clusters	368	368	368
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends (exit)	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and coefficients on these controls are not listed.

Table H2 – "Entry" into policy zoning and pupil enrollment - Narrow definition of neighborhood treatment

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
$T^{entry} \times$ year=2010	0.000	-0.011*	-0.000	0.011
	(0.010)	(0.006)	(0.008)	(0.008)
$T^{entry} \times$ year=2011	-0.002	-0.009	-0.001	0.012*
	(0.010)	(0.006)	(0.007)	(0.007)
$T^{entry} \times$ year=2012	-0.005	-0.007	0.006	0.007
	(0.009)	(0.006)	(0.005)	(0.007)
(ref.=2013)				
$T^{entry} \times$ year=2014	-0.025***	0.007	0.012**	0.006
	(0.009)	(0.006)	(0.006)	(0.006)
$T^{entry} \times$ year=2015	-0.024**	0.003	0.012*	0.010
	(0.010)	(0.007)	(0.007)	(0.006)
$T^{entry} \times$ year=2016	-0.027***	0.008	0.015**	0.005
	(0.010)	(0.007)	(0.007)	(0.006)
$T^{entry} \times$ year=2017	-0.020*	0.004	0.012	0.004
	(0.010)	(0.008)	(0.007)	(0.007)
$T^{entry} \times$ year=2018	-0.019*	0.015*	0.010	-0.006
	(0.011)	(0.009)	(0.008)	(0.007)
$T^{entry} \times$ year=2019	-0.022*	0.014*	0.009	-0.000
	(0.012)	(0.008)	(0.008)	(0.007)
R^2	0.170	0.188	0.132	0.192
No. obs	449,998	449,998	449,998	449,998
No. clusters	280	280	280	280
Pupil's characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Table H3 – "Exit" from policy zoning and pupil enrollment - Narrow definition of neighborhood treatment

	Probability to enroll at:			
	CA School	Other Public School		Private School
		In zoning	Out zoning	
T^{exit} × year=2010	-0.002	-0.003	0.012**	-0.008
	(0.008)	(0.007)	(0.006)	(0.005)
T^{exit} × year=2011	-0.008	0.009	0.005	-0.006
	(0.007)	(0.006)	(0.006)	(0.005)
T^{exit} × year=2012	0.007	-0.004	-0.002	-0.002
	(0.007)	(0.006)	(0.005)	(0.006)
(ref.=2013)				
T^{exit} × year=2014	0.013*	-0.005	-0.011**	0.004
	(0.007)	(0.007)	(0.004)	(0.005)
T^{exit} × year=2015	0.012*	-0.005	-0.008*	0.001
	(0.007)	(0.006)	(0.005)	(0.005)
T^{exit} × year=2016	-0.000	-0.002	-0.005	0.007
	(0.008)	(0.006)	(0.005)	(0.005)
T^{exit} × year=2017	0.007	-0.001	-0.011	0.005
	(0.010)	(0.007)	(0.008)	(0.005)
T^{exit} × year=2018	-0.003	0.006	-0.015	0.012**
	(0.011)	(0.008)	(0.009)	(0.006)
T^{exit} × year=2019	0.002	0.006	-0.011	0.003
	(0.012)	(0.008)	(0.010)	(0.006)
R^2	0.178	0.160	0.145	0.218
No. obs	574,409	574,409	574,409	574,409
No. clusters	368	368	368	368
Pupil's characteristics	✓	✓	✓	✓
Time-varying controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
School FE	✓	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

I Multinomial logit estimation results

Let U^l_{idt} denote utility that the family of pupil i, who is assigned to catchment-area school d at time t, derives from choosing school l. We model school choice using the following multinomial logit model:

$$Y_{idt} = k \text{ if } U^k_{idt} > U^l_{idt}, \tag{5}$$

with

$$U^k_{idt} = \alpha^k + \beta^k T_d \times \mathbb{1}_{t \geq 2014} + X_{it}\gamma^k + Z_{dt}\delta^k + \mu^k_d + \mu^k_t + \eta^k_{idt}, \tag{6}$$

and $k = \{1, 2, 3\}$ for respectively the catchment-area school, another public school, or a private school.

Table I1 – Multinomial logit - "Entry" into policy zoning and pupil enrollment

	Relative risk ratios	
	Middle school choice (ref = CA School)	
	Other Public School	Private School
T^{entry}	1.322***	1.053
	(0.139)	(0.061)
SES (ref.=Medium)		
Very High SES	1.114***	1.664***
	(0.045)	(0.066)
High SES	0.996	1.155***
	(0.027)	(0.040)
Low SES	0.907***	0.370***
	(0.027)	(0.018)
Unknown SES	0.990	0.377***
	(0.086)	(0.039)
Male	1.052***	1.054***
	(0.011)	(0.016)
French	1.120**	2.361***
	(0.059)	(0.163)
Age	1.100***	0.770***
	(0.022)	(0.022)
CA School in comp. educ. prog.	0.965	0.927
	(0.069)	(0.079)
No. Private Schools within 5km	0.594***	0.919
	(0.048)	(0.050)
Pseudo R^2	0.165	
No. obs	384,478	
No. clusters	235	
Year FE	✓	
School FE	✓	

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. For the sake of clarity, we do not list the intercept.

Table I2 – Multinomial logit - "Exit" from policy zoning and pupil enrollment

	Relative risk ratios	
	Middle school choice (ref = CA School)	
	Other Public School	Private School
T^{exit}	0.960	1.056*
	(0.028)	(0.031)
SES (ref.=Medium)		
Very High SES	1.386***	2.182***
	(0.045)	(0.083)
High SES	1.112***	1.270***
	(0.024)	(0.034)
Low SES	0.755***	0.300***
	(0.017)	(0.009)
Unknown SES	0.873***	0.310***
	(0.040)	(0.022)
Male	1.052***	1.038***
	(0.006)	(0.011)
French	1.192***	2.441***
	(0.036)	(0.103)
Age	1.013	0.617***
	(0.012)	(0.012)
CA School in comp. educ. prog.	0.942	0.966
	(0.035)	(0.034)
No. Private Schools within 5k	0.835***	0.899***
	(0.029)	(0.031)
Pseudo R^2	0.168	
No. obs	954,666	
No. clusters	616	
Year FE	✓	
School FE	✓	

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. For the sake of clarity, we do not list the intercept.

J Other heterogeneity dimensions

Table J1 – Re-zoning and pupil enrollment by citizenship

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.016	0.033	-0.016
	(0.030)	(0.032)	(0.030)
SES (ref.=Foreign)			
French × T^{entry}	-0.028	-0.000	0.028
	(0.026)	(0.029)	(0.031)
R^2	0.179	0.136	0.207
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
T^{exit}	0.007	0.014	-0.021***
	(0.010)	(0.010)	(0.006)
SES (ref.=Foreign)			
French × T^{exit}	0.005	-0.027***	0.023***
	(0.009)	(0.009)	(0.005)
R^2	0.186	0.133	0.236
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Table J2 – Re-zoning and pupil enrollment by gender

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.042***	0.027*	0.015
	(0.014)	(0.016)	(0.010)
Gender (ref.=Girl)			
Boy × T^{entry}	-0.001	0.010	-0.009
	(0.006)	(0.007)	(0.005)
R^2	0.179	0.136	0.207
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
T^{exit}	0.015**	-0.015**	-0.001
	(0.006)	(0.006)	(0.004)
Gender (ref.=Girl)			
Boy × T^{exit}	-0.008***	0.007***	0.000
	(0.002)	(0.002)	(0.002)
R^2	0.186	0.133	0.236
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Table J3 – Re-zoning and pupil enrollment by school type

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.027**	0.017	0.010
	(0.012)	(0.015)	(0.013)
CA School extra-funds × T^{entry}	-0.049	0.051	-0.002
	(0.036)	(0.040)	(0.015)
R^2	0.179	0.136	0.207
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
T^{exit}	0.005	-0.009	0.004
	(0.007)	(0.007)	(0.005)
CA school extra-funds × T^{exit}	0.011**	-0.004	-0.007**
	(0.006)	(0.005)	(0.004)
R^2	0.186	0.133	0.236
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefits from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.

Table J4 – Re-zoning and pupil enrollment by distance to the closest private school

	Probability to enroll at:		
	CA School	Other Public School	Private School
T^{entry}	-0.065**	0.025	0.040***
	(0.026)	(0.022)	(0.015)
Below median distance × T^{entry}	0.042	0.006	-0.048
	(0.048)	(0.046)	(0.032)
R^2	0.181	0.140	0.211
No. obs	384,478	384,478	384,478
No. clusters	235	235	235
T^{exit}	0.029***	-0.030***	0.001
	(0.010)	(0.010)	(0.006)
Below median distance × T^{exit}	-0.025**	0.027***	-0.002
	(0.011)	(0.009)	(0.006)
R^2	0.192	0.142	0.237
No. obs	954,666	954,666	954,666
No. clusters	616	616	616
Pupil's characteristics	✓	✓	✓
Time-varying controls	✓	✓	✓
Year FE	✓	✓	✓
School FE	✓	✓	✓
Group-trends	✓	✓	✓

Sources: Base centrale scolarité (BCS) - 2010-2019, DEPP - Ministère de l'Éducation, ADISP; Shapefiles from the French Ministry of Urban Affairs (ANCT-CGET); Local income data (Insee).

Notes: ***p<0.01, **p<0.05, *p<0.10. CA School refers to the Catchment-Area School. Standard errors in parentheses are clustered at the CA-school level. Pupils' characteristics include socioeconomic background, gender, age and citizenship. Time-varying controls include a dummy for the CA school benefiting from a compensatory education program and the number of private schools within a 5km radius of the pupil's primary school. For the sake of clarity, the intercept and the coefficients on these controls are not listed.