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Who will work on Sunday? The winners and losers of Sunday laws relaxation

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Abstract**:** In 2016, a law made it possible to work on Sundays in the retail trade of about thirty French areas, representing 3% of French retail trade. We show that the reform did not coincide with any significant increase in retail trade sales or retail trade employment in target areas. Retail establishments are open one more day each week, but the number of employees is roughly the same before and after the reform. However, the increase in the number of days that shops are open has led retail employers to favor employees who are sufficiently experienced to manage a store independently. On the other hand, there has been a significant decline in the employment share of less experienced workers in target areas, as well as a sharp decline in the employment share of single parents, for whom it is difficult to reconcile family responsibilities and Sunday work.

Résumé : A partir de 2016, une loi a rendu le travail du dimanche possible dans le commerce de détail d'une trentaine de zones du territoire métropolitain, représentant en tout environ 3 % du commerce de détail en France. Nous montrons que la réforme ne s'est accompagnée d'aucune hausse des effectifs ou du chiffre d'affaires dans le commerce de détail des zones ciblées. Les commerces de détail sont ouverts un jour de plus par semaine, mais le nombre de salariés est à peu près le même avant et après la réforme. Toutefois, l'augmentation du nombre de jours d'ouverture des magasins a conduit les employeurs du secteur du commerce de détail à privilégier les salariés suffisamment expérimentés pour gérer un magasin de manière autonome. En revanche, on observe une baisse significative de la part des salariés moins expérimentés dans les zones ciblées, ainsi qu'une forte baisse de la part d'emploi des parents isolés, pour lesquels il est difficile de concilier responsabilités familiales et travail dominical.

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Introduction

There is a long religious and political tradition in the Christian West of limiting the opening of shops and work on Sunday. In this tradition, Sunday is reserved for family and spiritual life, for leisure time shared with other members of the community. However, in recent decades, this tradition has been challenged in many countries on the grounds that it limits the development of consumption and employment, while generating congestion (and time loss) in the stores during the week. Despite opposition from local Christian churches and major workers' unions, many countries have granted exemptions to allow shops to open and employees to work on Sundays, especially in tourist municipalities or in passenger transit areas such as major train stations.

These initiatives are intended to boost activity and employment in the retail sector, while contributing to consumer welfare. A potential problem, however, is that these reforms may lead to a reorganisation of work that may be detrimental, if not to all employees, at least to some. As it happens, Sunday work is generally reserved for volunteers and not all employees can afford to volunteer to work on Sundays, especially if they are single parents. In addition, by increasing the number of days that stores are open, the deregulation of Sunday work may force employers to rely primarily on employees who are able to run the store in their absence (on weekends or during the week), which may lead to a decline in job opportunities for younger and less experienced employees.

In this paper, we attempt to shed light on these questions by evaluating a recent increase in the number of areas where Sunday work is authorized in the retail sector in France, a reform that is typical of the relaxation of Sunday laws observed in Western countries in recent decades. Using a rich set of employer-employee matched data, we show that the development of Sunday work has not had significant effect on the overall number of jobs in the retail sector in targeted areas, nor on the total number of hours worked, but has induced important changes in the composition of the work force, to the detriment of the least experienced employees and those most constrained by family responsibilities.

In France, the general principle is that a day of rest must be granted to employees on Sunday, but many exceptions have been gradually introduced by authorities. The reform under consideration took place between September 2015 and July 2016, when French authorities created several dozens of new Sunday store-opening zones (called *Zones Touristiques Internationales*, herafter ZTI) in which Sunday work is authorized by way of derogation in the retail trade. Twelve of these new zones are located in the city of Paris, the rest are located in other highly touristic places or around major train stations. Taken together, these areas represent 3% of retail employment in France.

According to the new law, the targeted zones are chosen because they have "an exceptional influx of tourists residing outside France" and benefit from "a significant flow of purchases made by tourists residing outside France". The ambition is to generate additional consumption, especially among foreign tourists whose stay in France is very short, with the hoped-for result of increased employment and income in the local retail trade. However, to benefit from the possibility of opening on Sundays, retail employers in the targeted zones must have signed an agreement with their employees specifying the compensation granted to employees working on Sundays, particularly in terms of compensatory rest and wages. In addition, only employees who volunteer to work on Sundays may be required to work on Sundays.

In this paper, we propose an evaluation of the impact of the reform on employment and wages using a unique set of matched employer-employee data with information on the exact addresses of employers. We first show that the implementation of the law was followed by a sharp increase in the number of employer-employee agreements on Sunday work in the ZTIs. By the end of 2017, an agreement on Sunday work has been signed in more than 40% of retail establishments located in the ZTIs, compared to less than 5% in the other areas. Our analysis also reveals that this sharp increase in the number of agreements was followed by a strong increase in Sunday work in ZTIs. The proportion of employees working on a given Sunday of the year more than tripled in ZTIs after 2016 (from about 4% to about 13%), while it remained quasi stable in other areas, even those adjacent to ZTIs. The rise in Sunday work in ZTIs was accompanied by a decline in work on all other days of the week. As a result, employees work on average about the same number of days per week before and after the reform, but these days are now spread more evenly over the seven days of the week.

Contrary to expectations, however, this change in the workweek was not accompanied by any increase in the overall number of employees in the retail trade. The employment share of the retail trade industry remained roughly the same before and after the deregulation of Sunday work. On the other hand, we observe significant changes in the nature of jobs in retail trade after 2016, with a significant decline in the share of temporary workers and the share of non-managerial staff. In contrast, the share of employees holding store management positions increases significantly in targeted areas. In order to increase the number of days open with more or less the same number of employees, retail trade establishments have to rely on a core group of permanent employees, able to manage and supervise a store by themselves.

These developments are detrimental to the youngest and least experienced workers (aged under 25), whose employment share declined significantly. The reform also appears to be particularly penalizing for the group of employees whose family responsibilities make it difficult to volunteer to work on Sundays, but also to invest completely in their work. This is particularly the case for single parents, who did not benefit from the development of Sunday work and whose employment share in the retail trade is divided by more than two in targeted areas after the reform. There has also been a significant decline in the proportion of employees over 50 in the retail sector following the deregulation of Sunday working. Close to retirement, these employees are traditionally among the least likely to sacrifice their weekends for work. In contrast, the employment share of married, prime-age employees is strongly increasing and they appear to be the main winners of the reform.

Our article contributes to the literature on the effects of deregulation of Sunday work and store hours. In the United States and Canada, papers using variation in Sunday shopping regulation across states (or provinces) and over time generally conclude that the impact on retail employment is positive (Goos, 2004, Burda and Weil, 2004, Skuterud, 2005), although these reforms also appear to have coincided with a decline in teenagers' investment in school (Lee, 2013). In Europe, the literature provides a more nuanced diagnosis. For example, the different evaluations of the 2006-2007 German reform suggest that deregulation in Germany resulted mostly in the substitution of part-time work for full-time work, with an increase in the number of people working fewer hours than they would ideally like (Paul, 2015, Bossler and Oberfichtner, 2017, Sentleben-Konig, 2014). In England and Wales, the deregulation of Sunday opening for large shops in 1994 was followed by a shift in sales from smaller shops to larger (more productive) shops and resulted in an overall decline in retail employment (Oxford Economics, 2015). In contrast, the evaluation of the recent deregulation of shop opening hours in Italy suggests that it has had a small positive effect on the number of establishments and employment in the retail sector (Rizzica et al., 2020). Comparing European countries that have reduced constraints on Sunday opening of shops between 1999 and 2013 to other European countries, Genakos and Danchev (2015) argue that the effect is heterogeneous and that some specific industries have suffered from deregulation while others have benefited.

Generally speaking, the existing literature has mainly focused on the effect of Sunday work deregulation on overall employment and number of hours worked. Much less is known about how Sunday work reforms affect the composition of the workforce and the distribution of employment opportunities. In this context, one of our contributions is to provide new insights into how deregulation of Sunday work affects the employment opportunities of individuals with different levels of experience and different family constraints. This exploration is made possible by the availability of data matching detailed survey information on employees' work and family situation with administrative information on the exact location of their employers. Sunday work contributes to desynchronizing parents' work weeks with their children's school weeks, and our analysis reveals that this is particularly penalizing for single parents. We also provide new insights into how Sunday work deregulation affects the nature of jobs offered by employers. Faced with the challenge of opening an extra day, employers do not increase their workforce but rely on employees who are sufficiently experienced to manage a store and to whom employers offer more secure employment contracts. In contrast, employment opportunities for younger employees appear to be shrinking. Finally, our work is also, to our knowledge, one of the first to provide a precise description of the extent to which a Sunday work deregulation reform results in an actual increase in Sunday work and decrease on other days of the week, namely a description of the first-stage effects of the reform without which it is difficult to interpret post-deregulation evolution of employment opportunities.

The paper is organized as follows: the next section presents the institutional context and describes the 2015 reform. Section 3 provides a description of the data used. Section 4 provides a graphical analysis of the effect of the reform on Sunday work and employment in retail trade industry. Section 5 shows the results of a regression analysis exploring the effect of the reform on Sunday work, employment level as well as on the composition of the workforce in retail trade industry.

2. Institutional context

According to French labour laws, an employer cannot ask an employee to work more than 6 days per week (article L-3132-1). At least one day of rest must be granted per week and, with rare exceptions, this weekly rest day must be Sunday. Before 2015, exemptions include the few industries where work cannot be interrupted. They also include the shops located in a small set of tourist enclaves (hereafter, TZ). [1]

In August 2015, however, the French government passed a new law that expands the possibilities of Sunday work in new and much larger geographic areas. Specifically, it introduces the possibility of creating International Tourist Zones (*Zones Touristiques Internationales*, hereafter ZTI) in large shopping areas where foreign tourists traditionally flock and authorizes retail trade establishments located in these zones to give their employees weekly rest on a day other than Sunday[2].

In the following year, from September 2015 to July 2016, as a result of the law, nineteen ZTIs are created, in which Sunday work is allowed in the retail trade whereas it was prohibited

[1] Mayors also have the possibility to authorize the opening of shops in their municipalities on five Sundays per year.
[2] See article 242 of the law of August 6, 2015 and new article L. 3132-24 of Labour laws.

before. Twelve of these zones are located in Paris, three on the French Riviera (in Cannes, Antibes, Saint-Laurent du Var) and four others elsewhere in the country (in La Baule, Deauville, Dijon and Serris Val d'Europe, near Eurodisney). In February 2016, the possibility to work on Sundays is also extended to retail stores in a dozen major train stations in Paris, Lyon, Marseille, Montpellier, Nice, Bordeaux and Avignon, chosen for the crowds they can experience on Sundays. [3]

Where an establishment located in a ZTI has 11 or more employees, it can only benefit from the Sunday work provision if it has signed an agreement with workers' representatives providing for compensation for employees working on Sundays. It should be noted, however, that no minimum compensation is required by law. In establishments with fewer than eleven employees, it is not necessary to sign an agreement; it is sufficient to consult the employees and obtain the approval of a majority of them. Finally, in both large and small establishments, only voluntary employees may be required to work on Sundays.

3. Data and samples

The main objective of this article is to compare the evolution of retail trade employment and Sunday work in the areas (ZTIs) targeted by the August 2015 law and in other areas. The aim is to determine the extent to which targeted and non-targeted areas have diverged after the reform. To achieve this objective, we supplemented the available databases on employment

[3] Among the new ZTIs created in 2016, five contain small tourist zones (TZ) where Sunday work was already authorized before the reform: we have excluded these smaller zones from the perimeter of the areas considered as "treated" (Assemblée nationale et Sénat, 2011). It should also be emphasized that two small ZTIs were created in the cities of Cagnes-sur-Mer and Nice, but they were simply transformations into ZTIs of tourist zones where Sunday work was already authorized before the reform, which is why we did not consider these two areas as being “treated”.

and Sunday work with information on the exact addresses of establishments and whether or not these addresses are within the official boundaries of a ZTI.[4]

Labour Force Surveys

Our work is based in part on the French Labour Force Survey (LFS) conducted by the French statistical office between 2013 and 2019. The survey is conducted on samples drawn quarterly and interviewed for 6 consecutive quarters. The dataset comprises about 380 000 individual observations per year, uniformly distributed across the weeks of the year.

The survey provides information on the main socio-demographic characteristics of respondents as well as details on their employment status, industry and occupation. We also have information on employees' monthly wages for one third of the sample (first and last interviews in each housing). In addition to this information about their jobs and wages, employed respondents provide detailed information on their number of hours worked and working schedule during a specific "reference" week. In particular, we have information on the days on which they worked during this specific week.[5]

For the first LFS interview, the "reference week" (i.e., the week to be described by the respondents) is drawn evenly over the quarter and the interviewer's visit takes place the week following this reference week. In case respondents are not reachable that week, further attempts are made up to 2 weeks and 2 days after the reference week. Respondents are then surveyed every quarter for five more quarters, and the reference week is incremented by 13

[4] Each ZTI and its boundaries is defined by a decree in the Official Journal (*arrêté du Journal officiel de la République française*).
[5] This information was not available prior to 2013, so it is not possible to identify who worked on Sundays during the survey week prior to that date.

weeks between each of these interviews. This survey design ensures that observations are evenly distributed over the weeks of the year.

The LFS also provides the identification numbers of respondents' establishments. Building on this information, we were able to identify the exact addresses of respondents' establishments[6] and to determine for each respondent whether his/her employer is located in a ZTI, or in a ZTI-adjacent area (i.e., not in a ZTI, but in a municipality containing a ZTI).

In the end, the LFS working sample consists of approximately 105,000 observations per year of private sector employees whose employer has been identified and located (and of which about 10% work in the retail sector). These data make it possible to compare both the evolution of Sunday working and the evolution of employment (and earnings) in the retail trade before and after the 2016 deregulation, in the target areas and in the other areas.

Establishment-level database on employment and payroll

In addition to the LFS, we used an exhaustive administrative establishment-level database (the *Déclarations Annuelles de Données Sociales*, hereafter, DADS), which provides annual information on establishments' industry, employment level and total payroll. Again, building on the official definition of the boundaries of ZTIs, we augmented this establishment-level database with information on the type of area in which establishments are located (i.e., ZTIs, ZTI-adjacent areas, control areas). Unlike the LFS, these administrative data do not make it possible to analyse the evolution of Sunday work, but they do make it possible to analyse the annual evolution of employment, working time and earnings in the retail sector before and

[6] The correspondence between establishments' identification numbers and establishments' addresses was obtained from the SIRUS database (managed by the French statistical office).

after the reform and, on this point, they make it possible to test the robustness of the results obtained with the LFS.[7]

We also used the administrative database on collective agreements. This database is operated by the Ministry of Labour and allowed us to further augment the DADS data with information on whether and when establishments signed an agreement on Sunday work. For each agreement, the register provides the date of the agreement, the identifiers of the establishments concerned by the agreement as well as the topics covered by the agreement (and in particular if it relates to Sunday work). By matching the augmented DADS database with this register, we obtain an establishment-level database that makes it possible to analyse the evolution of the proportion of establishments who signed a Sunday work agreement with workers' representative in the different industries and in the different types of areas (i.e., within ZTIs, close to ZTIs or neither within nor close to ZTIs). It is also possible to compare these evolutions with those of the proportion of agreements that do not cover Sunday work.

In the end, the working sample consists of approximately 2 million observations per year of private sector establishments whose location is known (of which about 13% operate in the retail sector).

Establishment-level database on sales

Finally, we used data on sales from the declarations made by firms to the General Directorate of Public Finance (DGFiP) to pay VAT (hereafter VAT database). These declarations are made at the level of the firm, not the establishment. We will therefore restrict this part of the

[7] It should be borne in mind, however, that the definition of working time is not quite the same in the two databases. The DADS provides us with a measure of hours paid (including paid leave) on average each week, whereas the LFS provides us with a measure of hours actually worked (excluding paid leave) in a particular reference week.

analysis to single-establishment firms. For multi-establishment firms indeed, it is not possible to allocate the sales between the different establishments and therefore it is generally not possible to determine the extent to which sales were made in a ZTI or not. We augmented this single-establishments database with the information on the type of area in which establishments are located (i.e., within ZTIs, ZTI-adjacent areas, control areas). Single-establishments represent the large majority of establishments (more than 80%), however they represent about 34% of the total sales (a little more in the retail trade, 37%). The corresponding working sample consists of approximately 2.2 million observations per year of establishments whose location is known (of which about 10% operate in the retail sector).

4. The impact of the reform: a graphical analysis

According to the law, the development of Sunday work in establishments with more than 10 employees can only take place after the signing of an agreement between the employer and the workers' representatives on the compensation granted to employees who agree to work on Sundays. A first basic question is whether the reform has been followed by an increase in the number of such agreements.

Agreements before and after the reform

To explore this issue, we use our establishment-level database with information on establishments' exact location and number of employees as well as on whether (and when) they signed a Sunday work agreement. This source makes it possible to identify the agreements signed by retail establishments located in a ZTI, as well as those signed by establishment located in ZTI adjacent areas (i.e., outside ZTIs but in a municipality with a ZTI), or by those signed by establishment located elsewhere in the territory (our control group), before and after the reform.

Figure 1 shows the proportion of retail establishments with more than 10 employees that have signed a Sunday work agreement, quarter by quarter between 2012 and 2019, by type of location. Whether we look at ZTIs or at other areas, the proportion of establishments signing an agreement remains very low (i.e., below 1% or 2% per quarter) until the last quarter of 2015, namely the date of the reform. From then until the end of 2017, the proportion jumps in ZTIs (exceeding 7% in some quarters) while it remains very small elsewhere. After 2017, agreement signing flows fall back to their pre-2015 residual level. In cumulative terms, by the end of 2017, about 40% of establishments in the ZTIs had already signed an agreement on Sunday work, compared with only about 8% of establishments outside these areas. In 2017, retail establishments that have signed an agreement employ around 60% of retail employees in ZTIs compared to only 11% outside ZTIs.

Building on the same databases, we checked that no comparable increase was observed in other industries (see Figure A1 in the appendix). We also checked that the signing of agreements relating to themes other than Sunday work did not show any particular inflection from the 4th quarter of 2015 onwards (see Figure A2 in the appendix). The reform does not appear to have coincided with any change in industrial relations that might have confounded its effects. Overall, the 2015 reform was followed by a sharp increase in the number of agreements on Sunday work and a considerable increase in the exposure to the possibility of working on Sundays in ZTI retail establishments, while this exposure remained very modest everywhere else (including in ZTI adjacent areas).

Sunday work before and after the reform

The 2015 law was followed by the creation of several new ZTIs in 2016 and by the multiplication of agreements on Sunday work in retail trade establishments in these areas.

However, the signing of an agreement on Sunday work is necessary but not sufficient for the use of Sunday work by an establishment. It is also necessary to find voluntary employees. To explore this issue, we built on the LFS conducted between 2013 and 2019, augmented with information on the exact locations of employer establishments. These surveys make it possible to test whether the proportion of retail trade employees working on a given Sunday has increased in ZTIs.

To start with, Figure 2a shows the evolution of the proportion of retail trade employees working on a given Sunday between 2013 and 2019, separately for ZTIs (solid line) and for control areas (dotted line). The Figure reveals that the proportion increases from less than 5% before the reform to more than 10% after the reform in the ZTIs, while this same proportion remains almost stable in the control group. The Figure 2b further shows the evolution of the difference in the proportion of retail employees working on a given Sunday between ZTIs and control areas, with the difference observed in 2016 taken as a baseline. The Figure confirms a significant increase in the differential after 2016. Online appendix Figures A3a and A3b replicate this analysis for ZTI-adjacent areas. No increase in Sunday work is detected in these areas. The increase in Sunday work in the ZTIs does not appear to have had any knock-on effects on Sunday work in adjacent areas.

Finally, beyond Sunday work, available data allow to measure the evolution of the proportion of retail trade employees working on other days of the week. Using this information, Table 1 compares the days worked in ZTIs and in the control areas in the years before and after the reform. In line with the previous graphical analysis, this difference in differences exercise confirms that the reform was followed by an increase in the proportion of employees working on Sundays which is much more significant in ZTIs than in control areas (+7.4 percentage points). It also reveals that this increase in Sunday work in ZTIs was offset by a parallel decrease in the number of days worked during the rest of the week: the proportion of those working less than five days between Monday and Saturday increased by more than 8 percentage points in the ZTIs, whereas it was stable in control areas. The decline is noticeable every day of the week from Monday to Saturday, although it is most significant on Fridays, and to a lesser degree on Thursdays and Saturdays. Friday is traditionally the weekday when retail activity is concentrated. In the end, both ZTI and non-ZTI employees work approximately the same number of days per week before and after the reform, but a significant part of the activity of ZTI employees now takes place on Sundays rather than on the rest of the week. Opening stores on Sundays has mostly resulted in a more balanced distribution of retail activity between the different days of the week and especially between the four last days of the week.

Employment and wages before and after the reform

The fact that the reform was followed by a significant increase in Sunday work in the retail trade in treated areas does not necessarily mean that it coincided with an increase in overall employment in this industry in these areas. The development of Sunday work may be associated with a reorganization of weekly work, without additional employment. By allowing a better distribution of retail activity across the days of the week, it may even lead to productivity gains and a reduction in the overall number of employees needed. Even if it turned out that employment increased in the retail trade in ZTIs, it would still have to be checked that it did not decrease in adjacent areas.

To shed light on these issues, Figure 3a uses the same LFS as Figure 2a to compare the evolution of the share of retail employment within and outside the ZTIs, before and after the reform. The Figure first shows that in municipalities without any ZTI (our control group), the employment share of retail industry remains very stable throughout the 2013-2019 period, just under 10%. Hence, when we look at areas that were likely not impacted by the reform, the period under consideration appears neither particularly dynamic nor particularly depressed for retail employment. The diagnosis is very similar in ZTI-adjacent areas: in these areas, the share of employment in the retail trade remained very stable, just below 8%, throughout the period. Finally, when we focus on ZTIs (our treated areas), we also do not detect any significant change in the share of employment in retail trade after 2016. In these areas, the employment in retail trade remained close to 20% throughout the same period. Overall, the reform does not appear to have been accompanied by any significant change in the importance of retail trade in employment.

To take one step further, Figure 3b shows the evolution of the estimated difference between the employment share of retail trade in the ZTIs and in control areas, taking the estimated difference in 2016 (the year ZTIs were created) as a reference. The figure confirms that the estimated difference does not vary significantly throughout the period studied. Similarly, Figure 3c confirms that the diagnosis is the same when comparing the employment share of retail trade in ZTI-adjacent areas and control areas. Overall, our graphical analysis suggests very clearly that the significant increase in Sunday work observed in ZTIs after 2016 did not coincide with any significant change in the share of retail employment in these areas, nor in neighbouring areas.

In the online appendix, we replicate this graphical analysis using an alternative data source, namely administrative social data (see Figures A4a and A4b). We do not detect any post-reform evolution of the share of retail trade in employment with these administrative data either. In the same online appendix, we also replicate our graphical analysis by focusing on retail trade earnings rather than retail trade employment. Specifically, Figure A5a and Figure A5b use Labour Force Surveys to compare the evolution of monthly retail trade earnings in ZTIs and outside ZTIs before and after the reform. Figure A6a and Figure A6b use administrative data and their measure of annual earnings to make the same comparison. Regardless of the data used, we do not detect any significant shift in the retail trade earning differential between ZTIs and non-ZTIs after the reform.

5 Regression analysis

The previous section suggests that the reform led to a significant increase in Sunday work in the retail industry, but no increase in overall employment. Employment has not increased, it has simply shifted from weekdays to Sundays. In this section we use more parsimonious regression models to explore the robustness of these findings as well as the heterogeneity of the effect of the reform on the different subgroups of employees.

We first focus on the sample of employees working either in a ZTI or in a control area and consider the following basic difference-in-differences regression model,

$$(1)\quad E_{izt} = \alpha + \beta Post_{zt} + \delta_z + \gamma_t + \varepsilon_{izt}$$

where, for each worker i in area z on survey year t, E_{izt} denotes a dummy indicating that worker i works in the retail sector, while $Post_{zt}$ is an interaction variable indicating that z is a treated area and that year t falls within the post treatment period (i.e., t>2016). The δ_z parameters capture a set of area fixed effects, while the γ_t parameters represent a set of year fixed effects and ε_{izt} is an error term. Parameter β captures the extent to which the difference in retail employment share between treated and control areas changed after the reform. The same model can be used on the subsample of retail trade employees working either in a ZTI or in a control area, so as to test whether the reform generated indirect effects on their monthly earnings or on their number of hours worked per week.

Effects on employment and earnings

The regression results are given in Table 2. In line with previous graphical results, we detect no effect in either the share of employment in retail trade or the number of hours worked per week in retail trade. These findings hold true regardless of whether we focus on ZTIs (top panel) or on ZTI-adjacent areas (bottom panel). In addition, consistent with previous graphical analysis, we find no significant effect on monthly earnings.

We replicated the analysis in Table 2 using administrative data (see Table A1 in the online appendix). Because of the very large size of this administrative sample, estimated effects become very precise, but (in line with graphical results and LFS regression results) they also remain small. Specifically, we detect very little effect on retail trade employment share (0.2 ppt or +1%), on number paid hours (-0.3 hours or -0.7 %) or on annual earnings (about +2%). In the same table and with the same data, we also check that the reform had no significant effect on the proportion of establishments belonging to the retail trade nor on the proportion of establishments with more than 10 employees belonging to the retail trade. The relaxation of the Sunday laws in ZTIs is not accompanied by any particular flow of establishment creation in these areas.

The fact that there was little effect on employment does not necessarily mean that activity and sales did not increase. It is possible that sales (and consumption) have increased, but that the effect of this increase on employment has been offset by the productivity gains made possible by the deregulation of opening hours. To explore this issue, we also analyzed the impact of the reform on the share of turnover in retail trade. As mentioned above, data on turnover is available at the firm level and not the establishment level. For multi-establishment firms we are therefore unable to know what proportion of turnover was generated in establishments located in ZTIs. Hence, this analysis focuses on single-establishment firms only. We replicated the estimation of model (1) on the sample of single-establishment firms either in a ZTI or in a control area, the dependent variable being a dummy indicating that the firm operates in the retail sector, weighted by its turnover. The regression results are given in Appendix Table A2. We detect no variation in the share of turnover in retail trade, regardless of whether we focus on ZTIs or on ZTI-adjacent areas. We also analyzed the impact of the reform on the turnover shares in retail trade separately for "mom and pop" firms without employees and firms with at least one employee. We detect no variation in the share of turnover in retail trade in either sub-sample. This result is comparable to that of McNiel and Yu (1989) who showed that Sunday closing laws ("blue laws") do not affect the overall level of retail activity in a significant manner in the US.

Effects on the composition of workforce and the nature of jobs

To take one step further, we analysed the impact of the reform on the employment shares of the different types of jobs as well as on the different types of employees, whether defined in terms of level of education, age, gender or family type. Specifically, for each type *k* of employees (or jobs), we have replicated the estimation of model (1) by focusing on the sample of retail trade employees working in either a ZTI or a control area and using as dependent variable a dummy indicating whether employee is of type *k*.

The regression results are provided in Table 3. They first reveal that the development of Sunday work is mostly based on employees to whom the employer can delegate the day-to-day management of the shop and with whom it is possible to make a long-term arrangement. Specifically, we detect a significant increase in the proportion of workers with permanent labour contracts (+6 percentage points) and the types of jobs that have developed the most after the reform are those of store managers (their employment share doubled). To increase the number of days that the shops are open with a constant number of employees, employers give priority to those who are most capable of assisting them and managing the shops in their absence.

These developments occurred at the expense of the least experienced employees (aged 25 or less) whose share decreased by about 8 percentage points (-40%). The share of older employees (aged 50 and over) also fell very significantly after the reform, as employees close to retirement are traditionally the least likely to sacrifice their weekends for their work.[8]

The reform has also been particularly penalizing for the group of employees whose family responsibilities make it difficult to volunteer to work on Sundays. This is particularly the case for single parents, whose employment share in the retail trade fell by 6 percentage points after the reform (-54%). The employees who ultimately benefited the most from the reform are those who live in couples with children. Their employment share in the retail trade increased by 8 percentage points after the reform. These employees are on average the most strongly integrated into their firms. For example, in the retail sector, only 5% of them do not have a permanent employment contract, compared to 10% of people in couples without children, 23% of single people without children or 33% of single people with children.[9] The implementation of Sunday work has led retail firms to favor the demographic groups with the

[8] In France, the older the employees, the less frequently they work on Sundays, on average in all sectors (Létroublon, 2016, Létroublon and Daniel, 2018).

[9] In France, marriage and childbirth generally occur after individuals have moved into permanent jobs (e.g., Landaud, 2021).

strongest initial employment relationships at the expense of the demographic groups with the weakest attachment to employment. Women have a higher proportion of single parents, but also a higher proportion of non-single parents, so that the overall effects of the reform are not significantly different for men and women.

Online appendix Table A3 replicates this regression analysis using the sample of retail trade employees working in either a ZTI-adjacent area or a control area and focusing on the impact of the reform on the employment share of the different types of workers in these adjacent areas. Comfortingly, most estimated effects are non-significant, in line with the idea that Sunday work deregulation had little indirect effect on ZTI-adjacent areas.

Conclusion

In 2016, a law made it possible to work on Sundays in the retail of about thirty French areas, representing in total about 3% of the retail trade in France. These areas were chosen for their high tourist numbers and the potentially very important impact of Sunday work on their development.

In this article we show that this law coincided with a sharp increase in Sunday work in retail establishments in the target areas. Contrary to expectations, however, there is no significant impact on the level of sales or employment in these establishments. Retail establishments are open one more day each week, but the number of employees and the turnover remain more or less the same.

These changes have led retail employers to favor employees who are both sufficiently experienced to run a shop and sufficiently free from family constraints to volunteer to work on Sundays. Conversely, there has been a decline in the number of young workers in employment, as well as a decline in the number of single parents, for whom it is often particularly difficult to reconcile family life and Sunday work.

The deregulation of Sunday working is often presented as a policy that can decongest shops and increase consumer welfare, while increasing activity and employment in the retail trade. On this last aspect, the lessons that can be drawn from the French experience are not quite up to expectations, since the reform has not really changed the total number of jobs, but has mainly changed the distribution of employment opportunities across employees of different ages or in different family situations.

In any society, a minimum of desynchronization is necessary between those working in retail (and more generally in personal services) and other workers, without which commercial transactions could hardly take place. On the other hand, it is obviously important to have social times (such as Sundays or public holidays) when everyone has the opportunity to spend time with close relatives, friends or those who share the same interests. Like any policy that induces desynchronization, the deregulation of Sunday work can thus generate positive, but also negative externalities, which are still largely unknown and which our work shows can be very different from one social group to another. Future research should aim to better describe all the externalities at stake (especially on consumers) as well as their distribution across the members of society.

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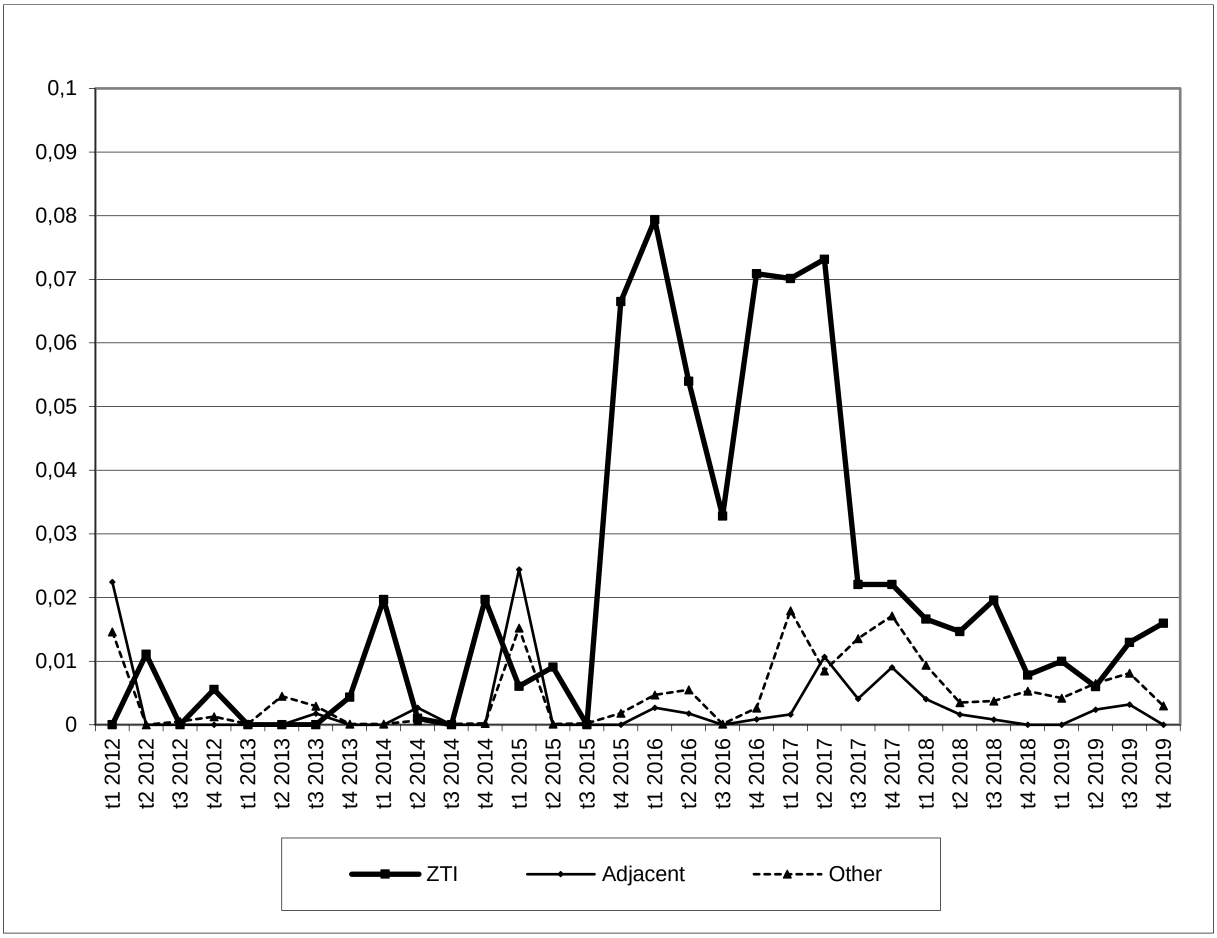
Figure 1: Proportion of retail trade establishments having signed a Sunday work agreement



Source: Agreements database, Dares, DADS, Insee.
Note: for each quarter, the figure shows the proportion of retail trade establishments with more than 10 employees who sign a Sunday work agreement during the quarter. The solid bold line refers to establishments located in a ZTI, the thin solid line refers to those located in ZTI-adjacent areas and the dotted line refers to control areas.

Figure 2a: Proportion of retail trade employees working on Sunday (ZTIs vs control)

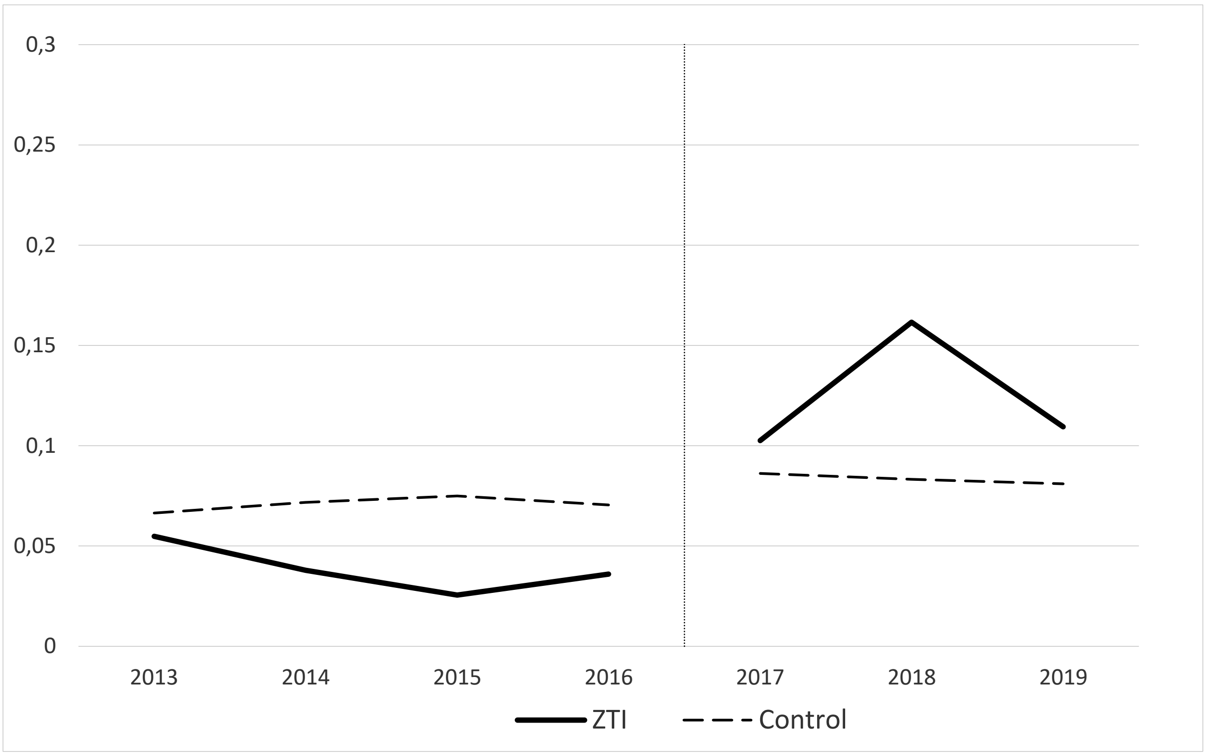
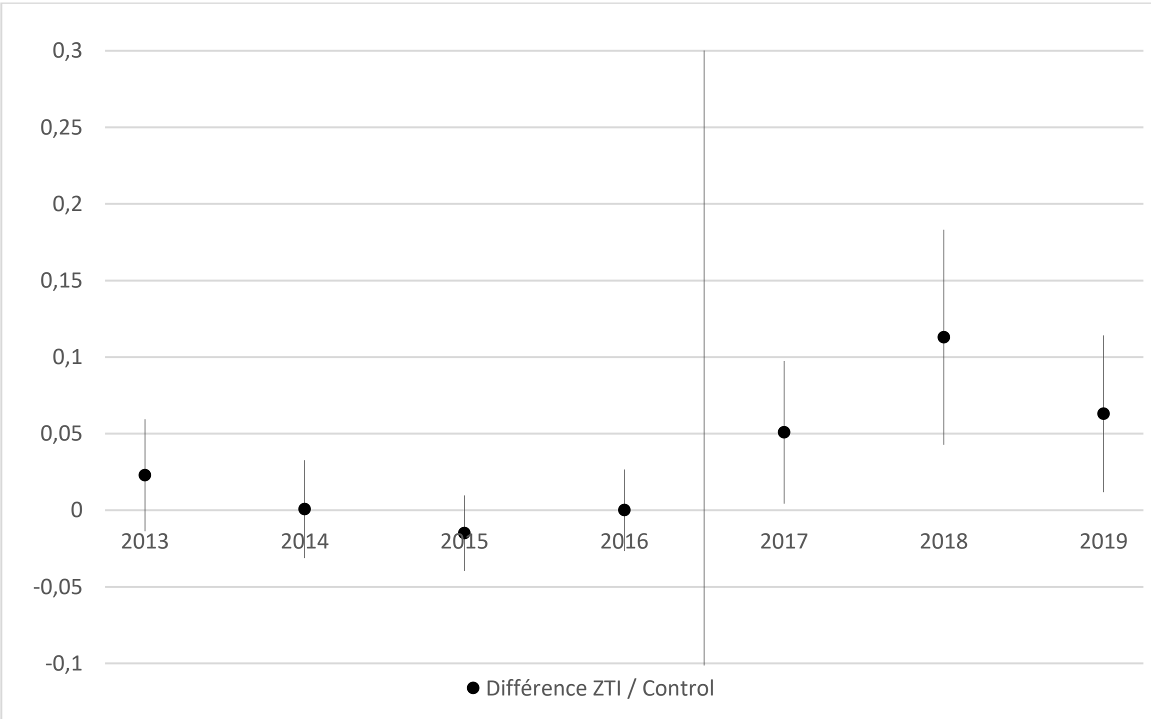


Figure 2b: Difference in Sunday work between ZTIs and control areas



Source: French Labour Force Surveys, 2013-2019, Insee.
Note: Figure 2a shows the evolution of the proportion of retail trade employees working on Sunday in a given week of the year in ZTIs (solid line) as well as in control areas (dotted line) between 2013 and 2019. Figure 2b shows the estimated difference between the two proportions, using the 2016 difference as a reference. Standard errors are clustered at the household level.

Table 1: Impact of the reform on the days worked in the week

	ZTIs		Control areas		Estimated DD impact
	Pre-reform	Post-reform	Pre-reform	Post-reform	
Work on Monday	63.9	62.8	62.4	62.4	-1.1 (3.5)
Work on Tuesday	76.9	75.0	72.7	72.4	-1.7 (2.9)
Work on Wednesday	73.1	70.4	69.9	69.1	-2.0 (3.2)
Work on Thursday	74.2	71.2	70.5	71.9	-4.4 (3.0)
Work on Friday	77.8	72.5	74.9	75.9	-6.3 (2.8)**
Work on Saturday	47.7	43.6	60.7	59.6	-3.0 (4.2)
Work on Sunday	3.9	12.5	7.1	8.4	+7.4 (2.1)***
Nb days worked per week	4.18	4.08	4.18	4.20	-0.11 (0.12)
Work less than 5 days between Mond. and Sat.	33.0	41.2	36.7	36.3	+8.7 (3.4)**
Nb of obs.	867	751	36,801	26,797	65,216

Source: French Labour Force Surveys, 2013-2019, Insee.

Note: the table refers to the sample of retail trade employees working either in ZTIs (columns 1 and 2) or in control areas (columns 3 and 4). For the 7 days of the week, the first 7 rows of the table show the average proportion of individuals working on that day in ZTIs for the period 2013-2016 (column 1), in ZTIs for the period 2017-2019 (column 2), in control areas for the period 2013-2016 (column 3), in control areas for the period 2017-2019 (column 2). The last column shows the basic difference in differences estimate obtained by subtracting the [(4)-(3)] difference to the [(2)-(1)] difference. The last two rows of the table replicate this difference in differences analysis for two additional outcomes, namely the average number of days worked per week (row 8), the proportion of workers who work less than 5 days between Monday and Saturday (row 9). Standard errors clustered at the household level are in parentheses. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.

Figure 3a: Evolution of the retail trade employment share, by type of areas

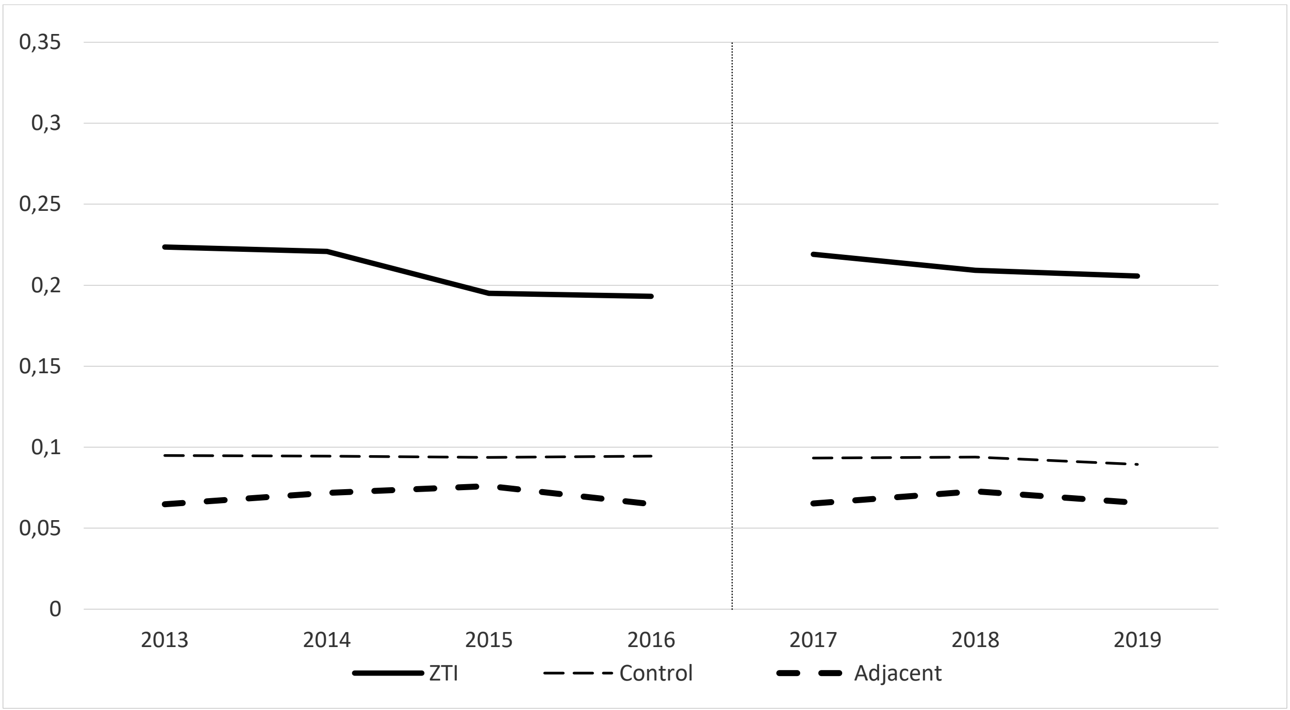


Figure 3b: Difference in retail employment share between ZTIs and control group

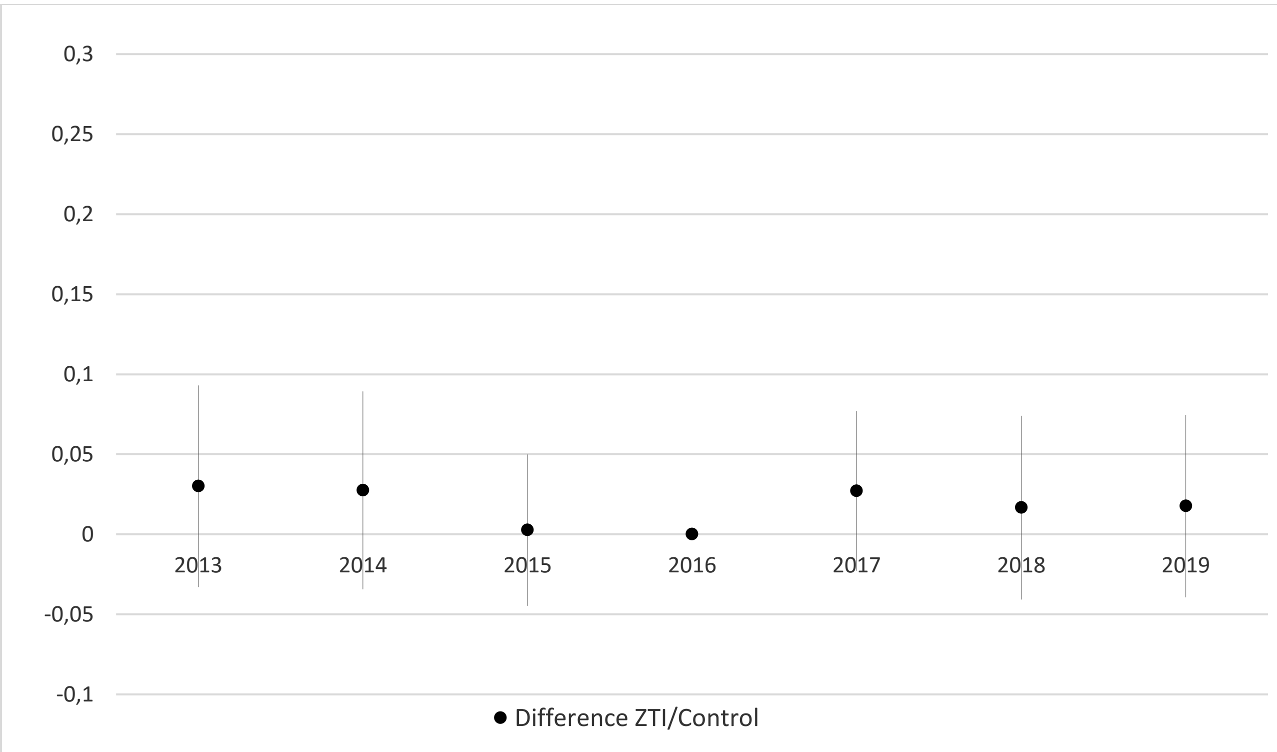
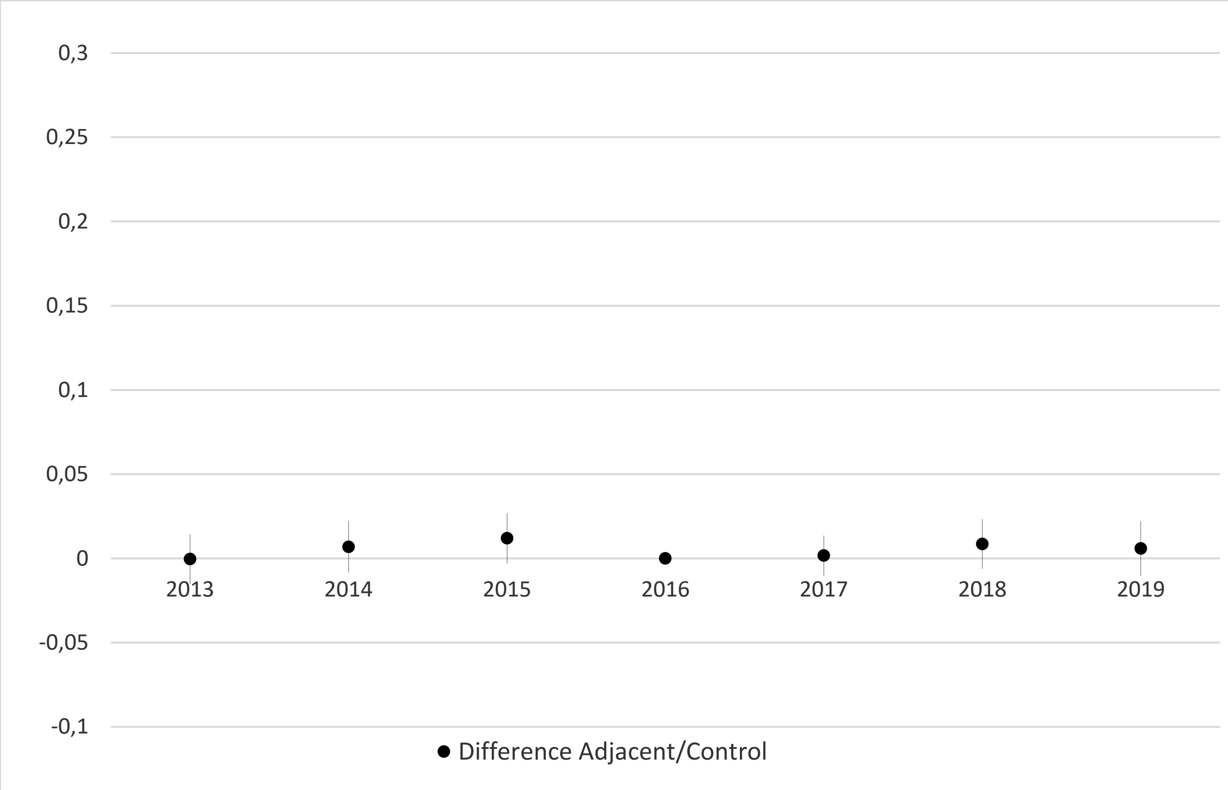


Figure 3c: Difference in retail employment share between ZTI-adjacent areas and control areas



Source: Labour Force Surveys, 2013-2019, Insee.
Note: Figure 3a shows the evolution of the proportion of employees working in the retail trade industry in ZTIs (solid line), in ZTI-adjacent areas (thin dotted line) as well as in control areas (bold dotted line). Figure 3b shows the evolution of the difference between the proportions observed in ZTI and control areas, using the difference in 2016 as a reference. Figure 3c shows the evolution of the difference between the proportions observed in ZTI-adjacent and control areas, using the difference in 2016 as a reference. Employment is measured in full-time equivalents. Standard errors are clustered at the household level.

Table 2: The impact of the reform on retail employment, hours worked and monthly wages

	Pre-reform mean	Estimated DD impact	Nb obs.
ZTIs			
Retail trade employment share	0.211	+0.007 (0.019)	677,085
Monthly net wage in retail trade (log)	7.37	+0.05 (0.06)	21,824
Nb of hours worked in retail trade (per week)	30.1	+0.2 (1.0)	65,216
ZTI adjacent areas			
Retail trade employment share	0.072	+0.002 (0.005)	727,512
Monthly net wage in retail trade (log)	7.20	+0.02 (0.04)	21,824
Number of hours worked in retail trade (per week)	29.8	+0.1 (0.7)	67,668

Source: French Labour Force Surveys, 2013-2019, Insee.
Note: The top panel refers to the sample of private sector employees working in either a ZTI or a control area. The first row shows the average proportion of employees working in retail trade in ZTIs (column 1) and the difference in differences impact of the reform on this proportion (column 2). The next two rows further focus on the sub-sample of private sector employees working in retail trade in either a ZTI or a control area (with wages only observed in about one third of the sample). They show the average number of hours worked per week and the average (log) monthly wage in this industry, as well as the difference in differences impact of the reform on these two outcomes. The bottom panel replicates this analysis with the sample of employees working either in a ZTI-adjacent area or in a control area. Standard errors clustered at the household level are in parentheses. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.

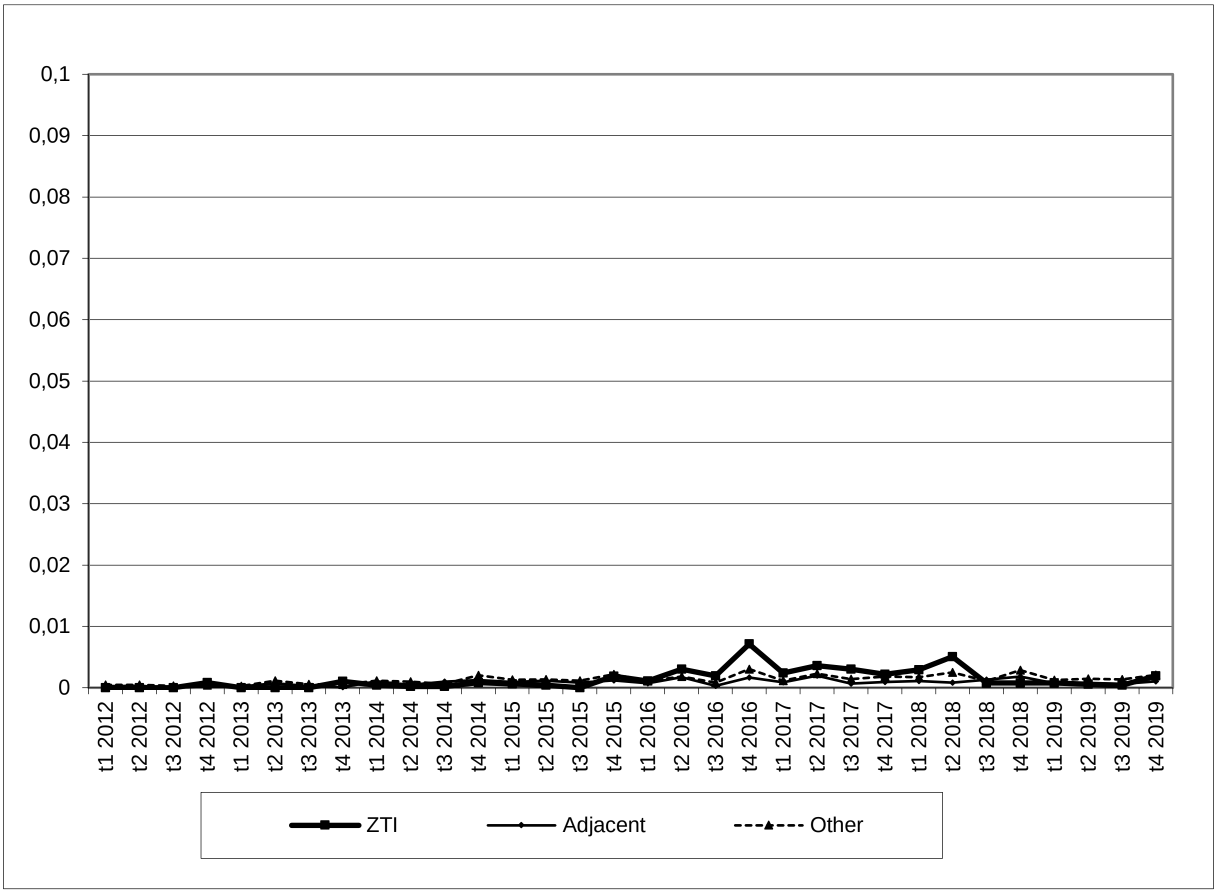
Table 3: The impact of the reform on the composition of the retail labour force in targeted areas

	Pre-reform mean	DD estimated impact
High school graduate	67.4	4.0 (4.5)
Age:		
25 years or less	20.7	-7.9 (3.5)**
between 26 and 49 years	59.4	18.2 (4.3)***
50 years or more	20.0	-10.3 (3.5)***
Male	34.7	1.8 (4.9)
Temporary contract	15.0	-6.0 (3.2)*
Part-time	18.3	0.2 (3.7)
Occupation:		
Store or sales area manager	4.6	6.5 (2.8)**
Other type of management	8.9	-0.4 (3.1)
Non-management staff	86.6	-6.1 (3.9)
Family type:		
Married (or cohab.) with children	19.5	8.0 (4.4)*
Married (or cohab.) w/o children	32.7	1.0 (4.7)
Single with children	10.6	-6.1 (2.5)**
Single without children	37.2	-2.9 (4.9)

Source: French Labour Force Surveys, 2013-2019, Insee.
Note: the Table refers to the sample of retail trade employees working either in a ZTI or in a control area (N=65,216). For each characteristic, column (1) shows the proportion observed pre-reform and column (2) shows the estimated difference in differences impact on this proportion. Standard errors are clustered at the household level. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.

Appendix

Figure A1: Proportion of non-retail trade establishments having signed a Sunday work agreement



Source: Agreements database, Dares, DADS, Insee.
Note: for each quarter, the figure shows the proportion of non-retail trade establishments with more than 10 employees who sign a Sunday work agreement during the quarter. The solid bold line refers to establishments located in a ZTI, the thin solid line refers to those located in ZTI-adjacent areas and the dotted line refers to control areas.
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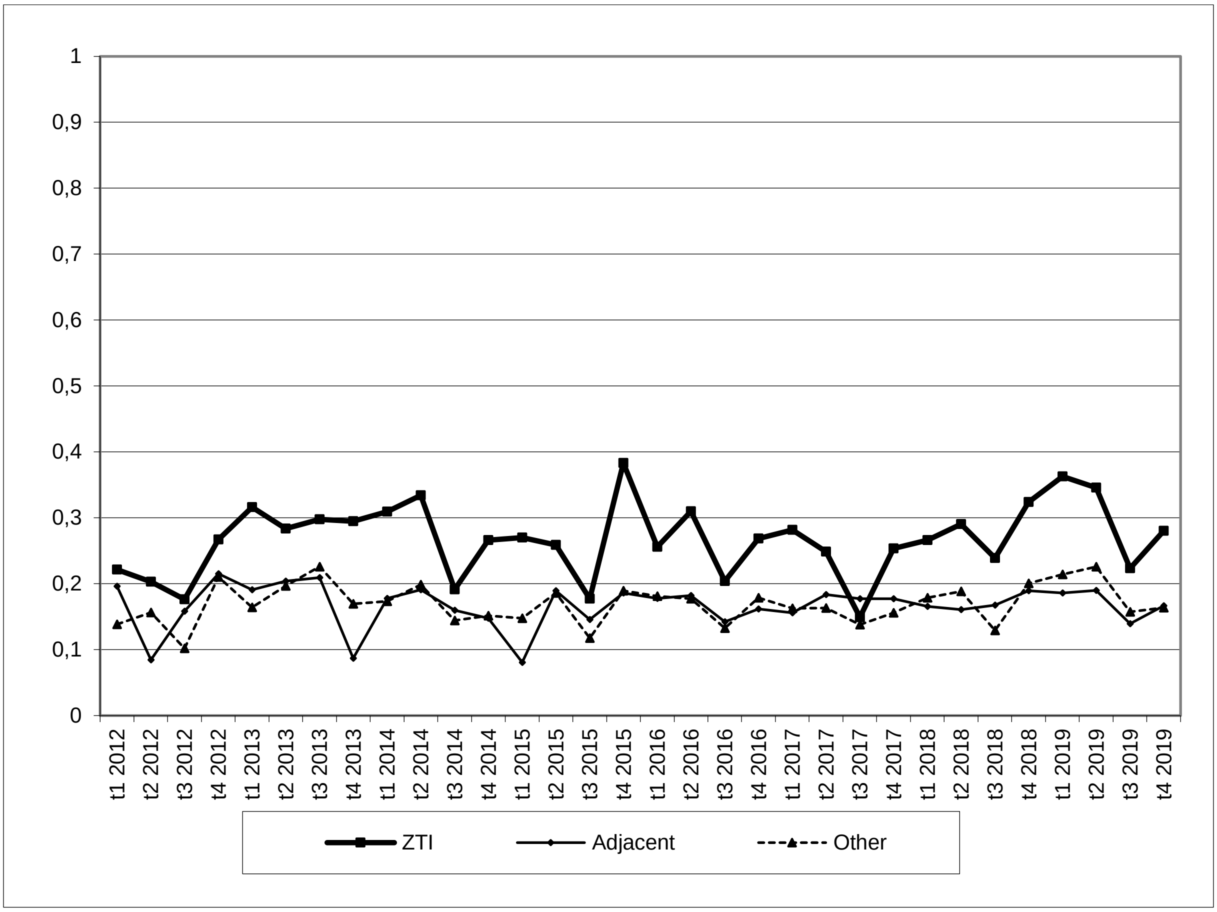
Figure A2: Proportion of retail trade establishments having signed an agreement not related to Sunday work



Source: Agreements database, Dares, DADS, Insee.
Note: for each quarter, the figure shows the proportion of retail trade establishments with more than 10 employees who sign an agreement not related to Sunday work during the quarter. The solid bold line refers to establishments located in a ZTI, the thin solid line refers to those located in ZTI-adjacent areas and the dotted line refers to control areas.

Figure A3a: Proportion of retail trade employees working on Sunday (ZTI-adjacent vs control)

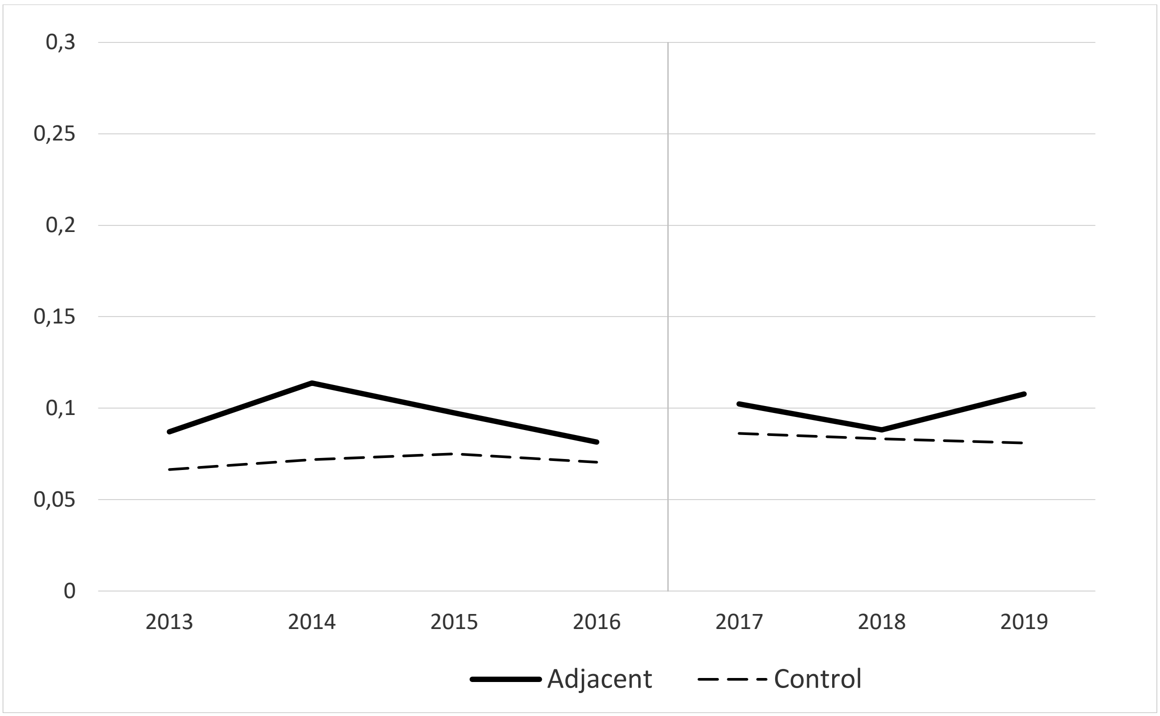
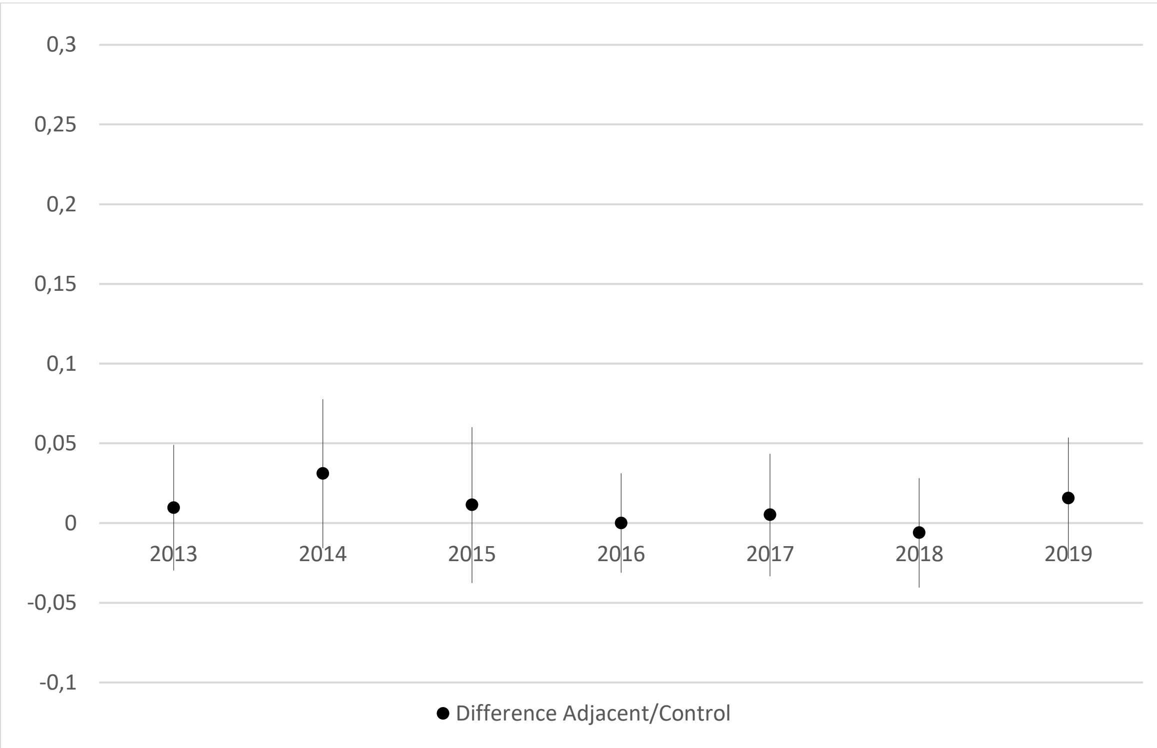


Figure A3b: Difference in Sunday work between ZTI adjacent and control areas



Source: French Labour Force Surveys, 2013-2019, Insee.

Note: Figure A3a shows the evolution of the proportion of retail trade employees working on Sunday in ZTI-adjacent areas (solid line) as well as in control areas (dotted line) between 2013 and 2019. Figure A3b shows the estimated difference between the two proportions, using the 2016 difference as a reference. Standard errors are clustered at the household level.

Figure A4a: Difference in retail employment share between ZTI and control areas

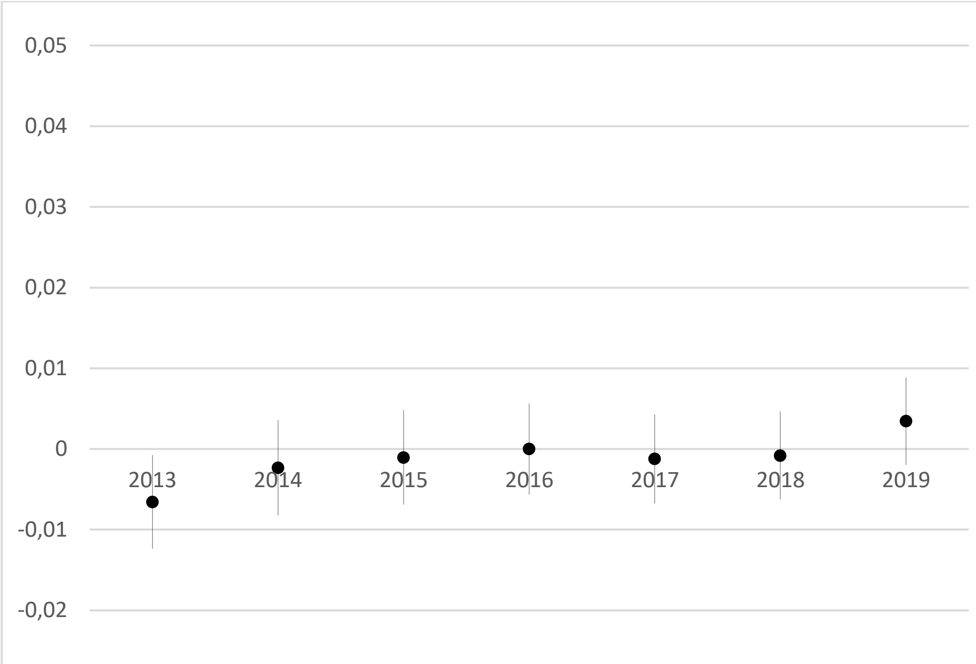
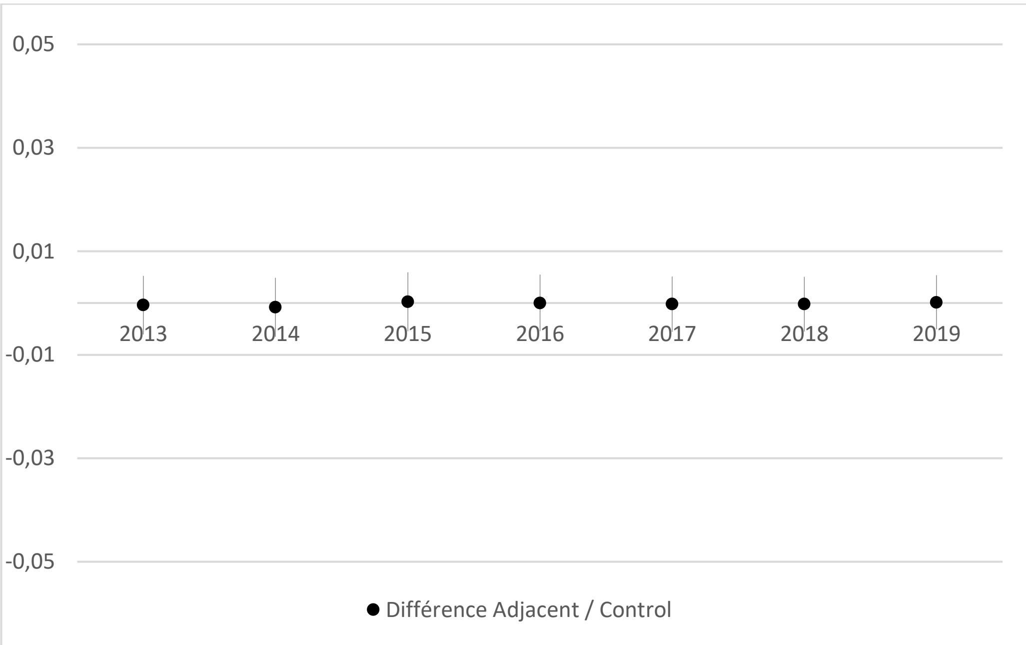


Figure A4b: Difference in retail employment share between ZTI-adjacent and control areas



Source: DADS (sample of private sector employees), 2013-2019, Insee.
Note: Figure A4a shows the evolution of the difference between the proportion of employees working in retail trade in ZTIs and the proportion of employees working in retail trade in control areas, using the difference in 2016 as a reference. Figure A4b shows the evolution of the difference between the proportion employees working in retail trade in ZTI-adjacent areas and the proportion of employees working in retail trade in control areas, using the difference in 2016 as a reference. Employment is measured in full-time equivalents. Standard errors are clustered at the household level.

Figure A5a: Evolution of average monthly (log) wages in retail trade, by type of areas

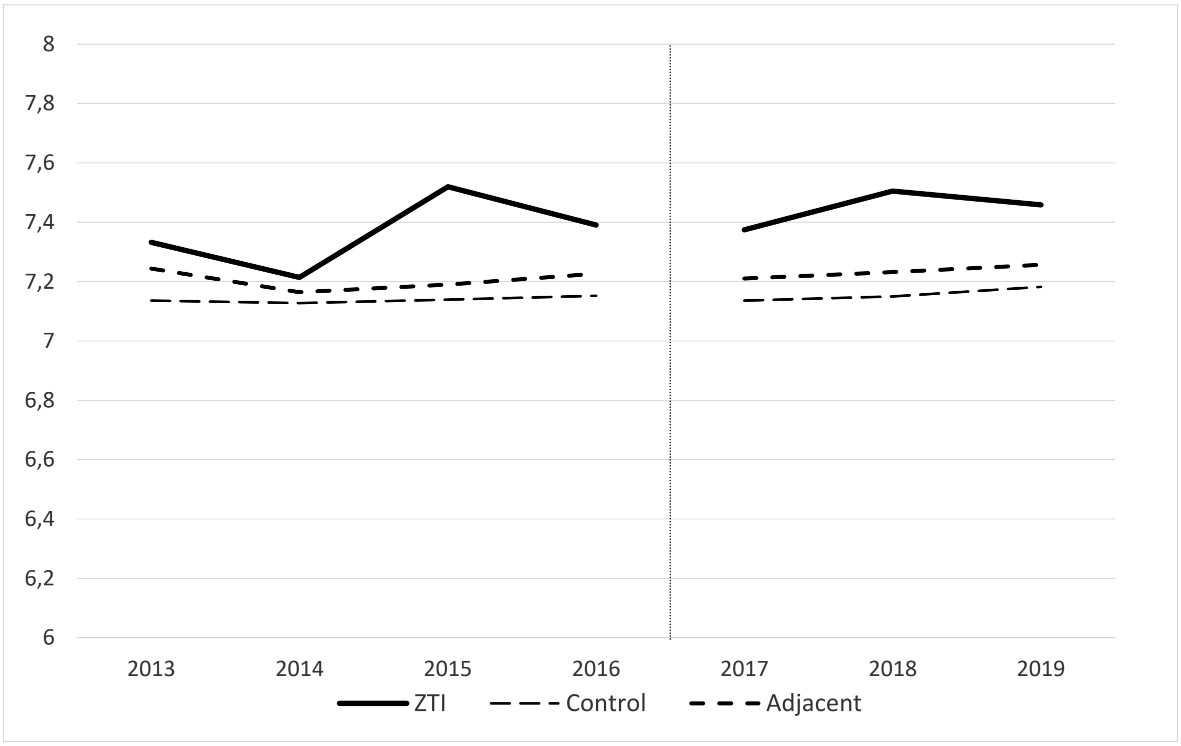
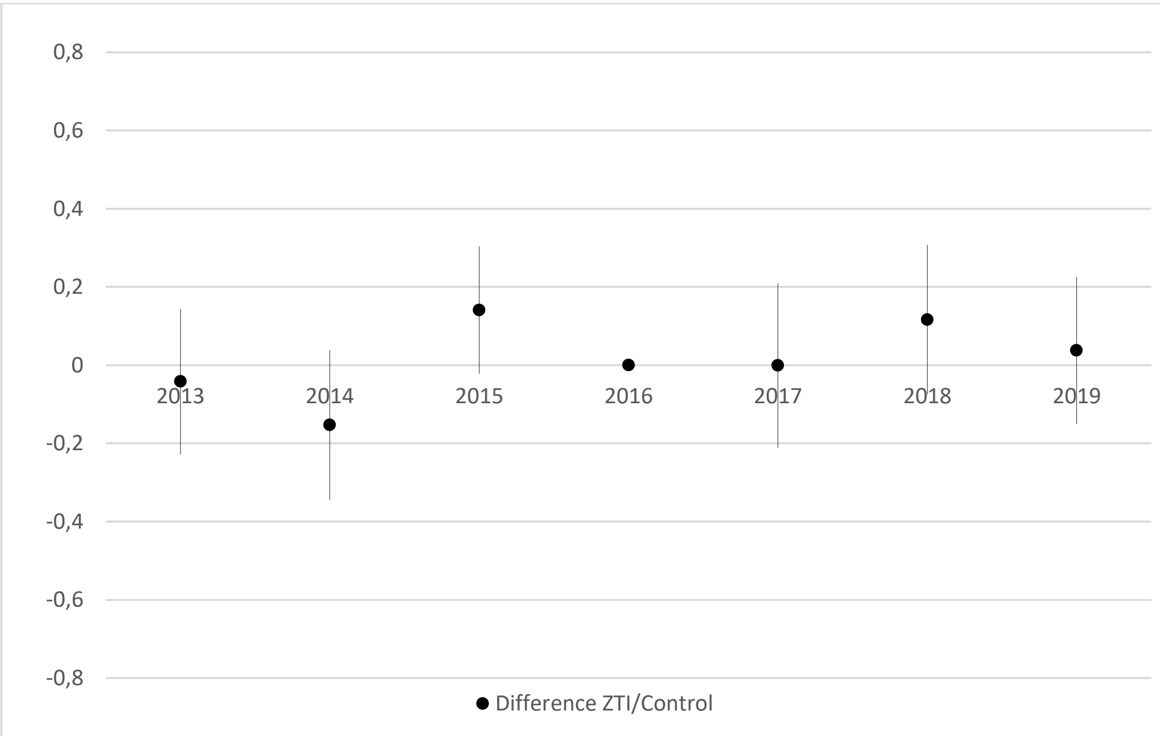


Figure A5b: Difference in retail trade (log) monthly wages between ZTIs and control group



Source: French Labour Force Surveys, 2013-2019, Insee.

Note: Figure A5a shows the evolution of the average monthly log wages of employees working in the retail trade industry in ZTIs (solid line), in ZTI-adjacent areas (thin dotted line) as well as in control areas (bold dotted line). Figure A5b shows the evolution of the difference between the monthly log wages observed in ZTI and control areas, using the difference in 2016 as a reference. Wages are in current euros. Standard errors are clustered at the household level.

Figure A6a: Evolution of average annual (log) wages in retail trade, by type of areas

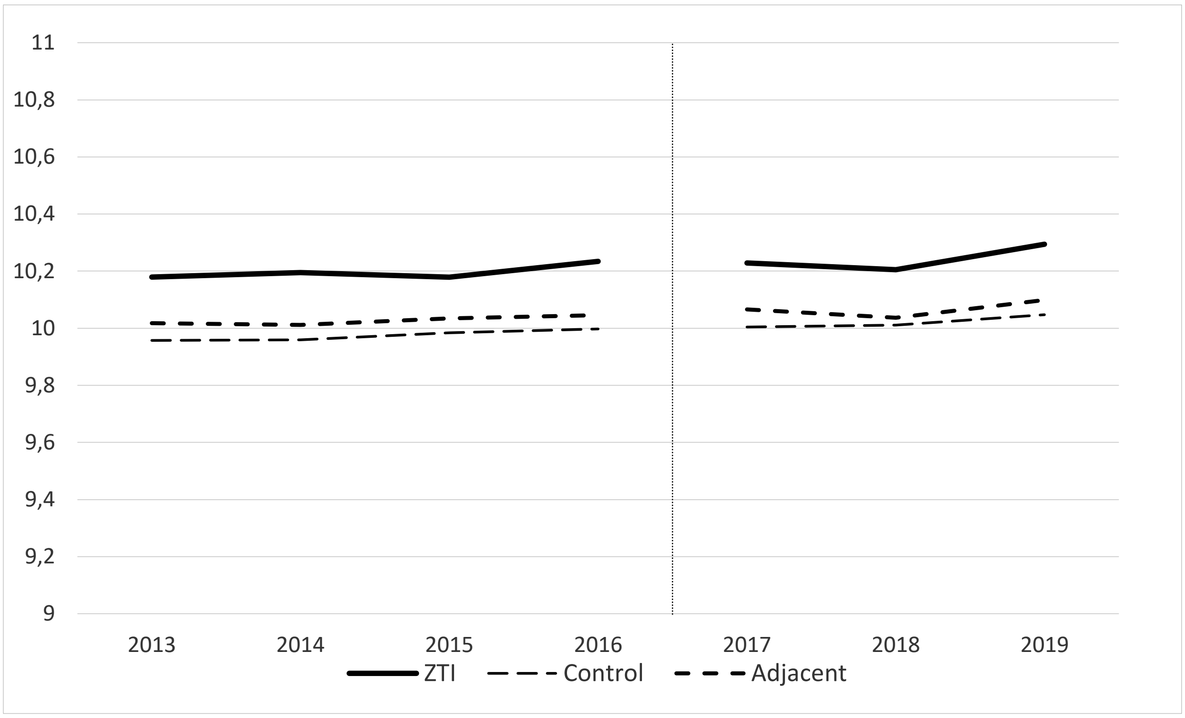
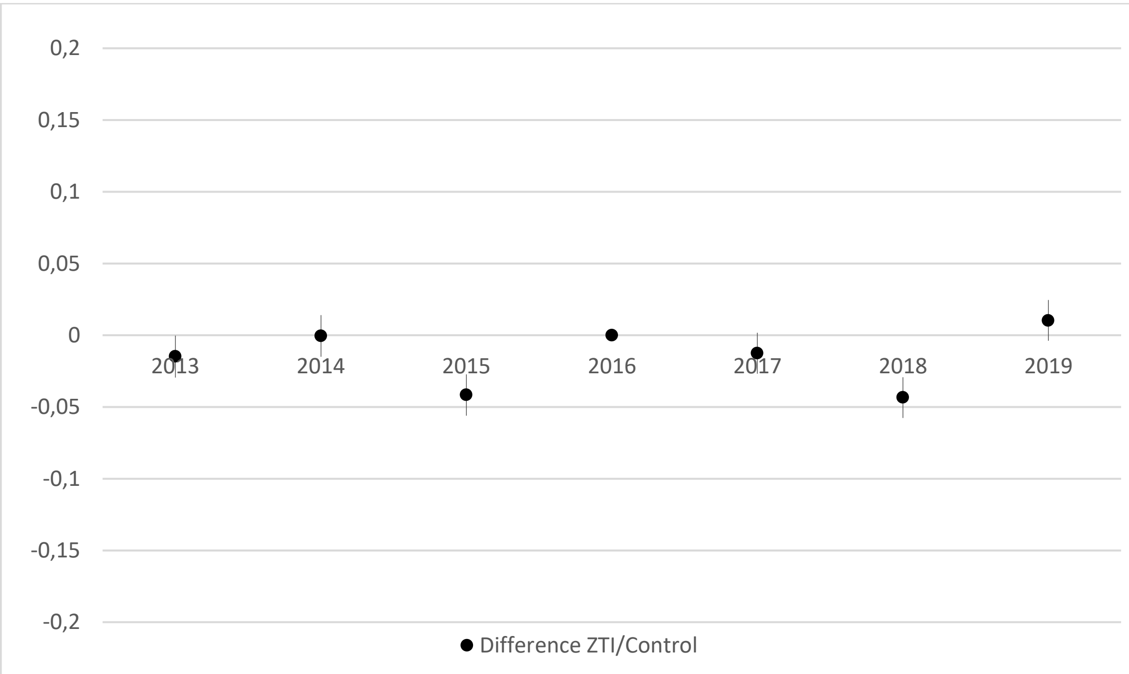


Figure A6b: Difference in retail trade annual (log) wages between ZTIs and control group



Source: DADS (sub-sample of retail trade private sector employees), 2013-2019, Insee.
Note: Figure A6a shows the evolution of the average annual log wages of employees working in the retail trade industry in ZTIs (solid line), in ZTI-adjacent areas (thin dotted line) as well as in control areas (bold dotted line). Figure A6b shows the evolution of the difference between the monthly log wages observed in ZTI and control areas, using the difference in 2016 as a reference. Wages are in current euros. Standard errors are clustered at the household level.

Table A1: The impact of the reform on retail employment, paid hours and annual wages using administrative data

	Pre-reform mean	Estimated DD Impact	Nb obs.
ZTIs			
Retail trade employment share	0.172	+0.0022 (0.0013)*	11,602,050
Annual net wage in retail trade (log)	10.13	+0.021 (0.003)***	1,598,242
Nb of paid hours in retail trade (per week)	36.60	-0.28 (0.04)***	1,598,736
Share of establishments in retail trade	0.222	-0.0019 (.0015)	11,602,050
Share of more than 10 employees establishments in retail trade	0.158	-0.0028 (0.0033)	1,554,052
ZTI adjacent areas			
Retail trade employment share	0.078	+0.0003 (0.0005)	12,865,670
Annual net wage in retail trade (log)	9.98	+0.014 (0.002)***	1,728,487
Nb of paid hours in retail trade (per week)	36.26	-0.09 (0.03)***	1,728,516
Share of establishments in retail trade	0.123	+0.0001 (0.0006)	12,865,670
Share of more than 10 employees establishments in retail trade	0.073	-0.0022 (0.0014)	1,692,258

Source: DADS, 2013-2019, Insee.

Note: The top panel refers to the sample of private sector employees working in either a ZTI or a control area. The first row shows the average proportion of employees working in retail trade in ZTIs (column 1), the difference in differences impact of the reform on this proportion (column 2) as well as the number of observations (column 3). The next two rows further focus on the sub-sample of private sector employees working in retail trade in either a ZTI or a control area. They show the average number of paid hours per week and the average annual net wage in this industry, as well as the difference in differences impact of the reform on these two outcomes. The fourth row shows the average proportion of establishments (with employees) in retail trade in ZTIs and the difference in differences impact of the reform on this outcome and the fifth row shows the same figures for establishments with 10 employees or more. The bottom panel replicates this analysis with the sample of private section employees working either in a ZTI-adjacent area or in a control area. Standard errors clustered at the household level are in parentheses. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.

Table A2: The impact of the reform on retail turnover

	Pre-reform mean	Effect
ZTIs retail trade sales share		
All mono-establishment firms	0.0597	+0.0013 (0.0042)
Mono-establishment firms with employees	0.0754	+0.0061 (0.0048)
Mono-establishment firms without employees	0.0197	-0.0002 (0.0045)
ZTI adjacent areas		
All mono-establishment firms	0.0706	-0.0001 (0.0034)
Mono-establishment firms with employees	0.0853	+0.0007 (0.0034)
Mono-establishment firms without employees	0.0231	-0.0003 (0.0039)

Source: VAT database, 2013-2019, DGFiP, DADS, Insee.
Note: The top panel refers to the sample of mono-establishment firms located in either a ZTI or a control area. The first row shows the average share of turnover in retail trade in ZTIs pre-reform (column 1) and the difference in differences impact of the reform on this proportion (column 2). The next two rows further focus on the sub-sample of mono-establishment firms respectively with and without employees. The bottom panel replicates this analysis with the sample of firms located either in a ZTI-adjacent area or in a control area. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.

Table A3: The impact of the reform on the composition of the retail labour force in ZTI-adjacent areas

	Pre-reform mean	Effect
High school graduate	66.1	-1.5 (3.6)
Age:		
25 years or less	21.1	-0.8 (2.6)
between 26 and 49 years	61.8	1.7 (3.3)
50 years or more	17.0	-0.9 (2.5)
Male	43.9	-3.4 (3.6)
Temporary contract	12.6	-1.1 (2.0)
Part-time	23.4	0.7 (3.0)
Occupation:		
Store or sales area manager	4.2	2.3 (1.4)*
Other type of management	7.0	0.8 (1.7)
Non-management staff	88.8	-3.1 (2.1)
Family type:		
Married (or cohab.) with children	29.2	-0.7 (3.6)
Married (or cohab.) w/o children	25.8	2.6 (3.1)
Single with children	10.5	-2.5 (1.8)
Single without children	34.5	0.7 (3.6)

Source: French Labour Force Surveys, 2013-2019, Insee.
Note: the sample includes retail trade employees working either in a ZTI-adjacent area or in a control area (N=67 668). For each characteristic, column (1) shows the proportion observed pre-reform and column (2° shows the estimated difference in differences impact on this proportion. Standard errors are clustered at the household level. * = significant at the 10% level, ** = significant at 5% level, *** = significant at the 1% level.