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Peripheral Retail Expansion: Social Implications and Spatial Inequalities the Case of the Île-de-France Region

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1 Introduction

Inequalities amongst territories raise concerns all over the world. There is increasing evidence that urban sprawl and spatial inequalities in terms of public facilities and/or other amenities provision lead to social inequalities and affect upward mobility (Ewing et al., 2016).

As a matter of fact, the majority of the population living in and suburban areas of rural areas near to the metropoles does not fully benefit from the globalized, connected, dynamic world of the cities. There is evidence in France that, while inequalities in income per inhabitant between regions and inequalities between *Départements* have decreased since the 1960s, spatial dichotomy between metropolis and their suburbs has been growing continuously (Davezies, 2012). One of the major concerns for suburban and rural territories is the loss of vitality and viability they have experienced.

Town centre activities, particularly retail, are a key component of vitality in rural communities as rural retail sales are often used as an indicator of attractiveness of rural communities. That is why declining retail sales is a growing concern for local policy makers (Artz & Stone, 2006). The arrival of large decentralized stores in these communities has led to an intensive competitive environment for small shops.

Retail development has indeed known great changes in forms and localization since the 1970s. It has experienced decentralization and an ongoing size increase (Colla, 2003). Retail decentralization was first used by Berry to refer to American retail expansion outside the central business district. At that time, retail amenities

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were still grouping in poles at the edge of the city and settling close to other economic activities. Later in 1986, Schiller described three waves of decentralization for retail in the UK. These were closely linked to the arrival of new retail patterns; supermarkets and hypermarkets in the 1970s involving food retailing only, then retail warehouses five to ten years later, and finally in the 1980s, retail parks and outlets, involving mainly clothing, comparison goods and some supporting services traditionally found in the town centres began to settle out of town (Schiller, 1988).

Until recently, the focus on retail decentralization was much more about retail patterns and about how much these retail patterns were changing. Links between sprawl and retail patterns have been investigated by Dodds (2015). Retail expansion has been massive in the surroundings of large metropolis such as Paris. It has led to high retail densities even in some remote areas of the Paris region. The competition for small retail units in the town centre of these areas is heavy and it can lead to spatial and social inequalities.

Since the 1970s, retail expansion in France and in other developed countries remains at a high level. Until 2015, France had the largest shopping centre market in Europe (Russia has broken France's 43-year reign as Europe's largest shopping centre market in 2015) and the highest numbers of hypermarkets and supermarkets in Europe.

Pressure for land efficiency is particularly high in the Paris region, as it concentrates employment, population and great quality soils for agriculture as well. Moreover, it has experienced a massive retail sprawl, as it contains 42.9% of the total amount of French large stores (above 500 employees). This expansion has raised great concerns amongst central administrators, local elected personnel and citizen of this region. Nowadays, there is a tendency towards giant projects combining food retailing, clothing, comparison goods and attraction theme parks, such as Europa City planned on 80 hectares at 17 km from the centre of Paris, which includes an aquatic attraction theme park and a skiing installation.

Spatial and social inequalities are deeply linked and the links between them have been part of the focus of regional inequality literature (Wei, 2015). In the Ile-de-France region, discontent amongst populations living in the suburbs and in declining rural areas and a feeling of abandonment are often expressed in their vote (Giblin, 2012). In the last presidential elections, Paris *intramuros* was the place where extreme voters were the least numerous (less than 5% of the voters), but between 20 and 50 km away from the capital city, the extreme vote was the highest with between 20 and 40% (Alidières, 2012). Localization of the habitat is now for a majority of geographers one of the main predictors of political orientation, even more efficient than socio-economic distinctions (Lévy & Le Bras, 2012).

This paper aimed to be part of the literature on regional inequality. Our focus is on retail development and how it can impact the social and spatial inequalities of the Île-de-France region. In Sect. 2, we give a literature of the environmental, social and economic impact of peripheral retail expansion. In Sect. 3, we introduce general comments on retail expansion in the Ile-de-France region and its local socio-economic implications based on the financial analysts' reports, regional and local retail studies and local newspapers. In Sect. 4, we use descriptive statistics to illustrate

retail sprawl and spatial inequalities in terms of retail provision on the 1975–2015 period in the region Ile-de-France. In Sect. 5, we statistically study the links between retail and social characteristics in the municipalities of the Ile-de-France region using the number of shops and retail units, the retail floorspace built and socio-economic variables including medium yearly income, percentage of households with non-taxable income and unemployment rate. We finish with a few conclusions.

2 Literature Review: Retail Decentralization and Its Socio-economic Implications

In this part, we provide a survey on the literature on social and economic implications of retail expansion and its consequences for spatial equality.

2.1 Employment and the Survival of Small Retail Units in the USA

From the 1980s to the 2000s, several studies focused on the impact of out-of-town retail stores and the socio-economic implications of retail decentralization.

In the USA, socio-economic implications of Walmart expansion have attracted a great deal of investigation. A scientific and political debate grew on the social and economic costs and benefits of the of the world's biggest retail expansion. Most of research works conducted in the late 1980s or the early 1990s consisted in case study analyses, non-econometric analyses. From the 2000s, econometric analyses have started to tackle the issue.

Our review of econometric studies is based on our own literature review, as well as Bonnano and Goetz's (2012) and Basker's reviews (2007). The results are summarized in Table 1. In the USA, we found twenty-six econometric studies published in peer-reviewed journals that were assessing the socio-economic implications of Walmart expansion on local and regional market structures. All papers deal with the impacts of the opening or the presence of one or several Walmart stores either at the county level or in a perimeter close to Walmart set for the need of the study. Four main impacts are addressed: sales of other stores; the number of other stores, employment and wages and benefits.

All the eleven studies addressing the impacts of Walmart on existing stores sales concluded that Walmart stores create heavy competition with other existing stores and capture the market shares of their competitors (see Table 1). For example, Aili-wadi et al. (2010) proved that after Walmart entered the market, sales decreased for more than 65% of the mass merchandisers (median decrease of 40%), while smaller decreases in sales were observed in supermarkets (median decrease 17%) and drug stores (6%). In California, Chiou (2009) assessed that Walmart's entry not only

Table 1 Socio-economic impacts of large decentralized stores in the USA: a literature review

Investigators	Period of study Zone of study	Methods	Employment	Wages/Health benefits[a]	Effects on existing stores' sales[b]	Effects on small retail stores' population[c]
Capps and Griffin	30 stores in areas surrounding Dallas 1987–1994 (monthly)	Linear regression model			– –	
Hicks and Wilburn	1988–2000 counties in West Virginia	County-level spatial econometric	+	0		+
Basker	1977–1999 1750 US counties with above 1500 jobs	County-level econometric	+			– –
Ingraham et al.	City of Dallas 1990–2003	Spatial econometric			– – –	
Cardiff-Hicks et al.	1996–2013 National retail companies	Linear regression models		+		
Boarnet et al.	2003–2010 San Francisco Bay Area	Scenario-based econometric analysis		–		
Artz and Stone (2006)	1990–2005 Mississippi's 82 counties	Difference-in-difference approach			– –	

(continued)

Table 1 (continued)

Investigators	Period of study Zone of study	Methods	Employment	Wages/Health benefits[a]	Effects on existing stores' sales[b]	Effects on small retail stores, population[c]
Singh et al.	November 1999–June 2001 small suburban towns	Hierarchical Bayesian econometric approach			— —	
Dube et al. (2007)	1992–2000 All US counties	State and county-level econometric		— —		
Hicks	2001–2005 8 counties in Pennsylvania	County-level Linear regression models	— —	0 except for new hires in the retail sector: +		
Jia (2008)	1988–1997 2065 small and medium-sized counties	Three-stage competition model				— —
Hicks	1988–2003 Maryland		— —	++		
Sobel and Dean	All US states 2000	Linear regression model				0
Neumark et al.	1977–1995	Econometric function of the time and distance from the first Walmart	— —	—		
Hicks (2009)	Iowa counties 1989–2003	County-level econometric				0

Table 1 (continued)

Investigators	Period of study Zone of study	Methods	Employment	Wages/Health benefits[a]	Effects on existing stores' sales[b]	Effects on small retail stores' population[c]
Chiou (2009)	central and southern California	Econometric study			—	
Paruchuri et al.	1983–2004 counties in Florida	Negative binomial model + endogeneity control				—
Drewianka and Johnson	1990–2004 (quarterly) all counties with W	County level linear regressions	++	0		0
Ailiwadi et al. (2010)	Seven Walmart entries, 90 stores	Before-and-after-with-control-group analysis			Mass merchandisers: — —— Supermarkets: -	
Haltiwanger et al.	Washington, D. C. area all big box retailers 1976–2005	Linear regression models using spatial components	——			—
Cleary and Lopez (2011)	1996–2000 Dallas–Fort Worth	Structural model			—	
Davis et al. (2012)	2006,2007 and 2008	Local econometric	0		——	——

Table 1 (continued)

Investigators	Period of study Zone of study	Methods	Employment	Wages/Health benefits[a]	Effects on existing stores' sales[b]	Effects on small retail stores' population[c]
Artz and Stone	1976–2008 122 Iowa towns and cities with less than 20,000 population					Rural towns: + +
Hicks et al.	1989–2002 counties in Indiana	One county econometric study				No effect on independent stores, but on others: -
Ellickson and Grieco	1994–2006 All USA sites close to Walmart	Spatial econometric analysis	Within 2-mile of Walmart:- otherwise: 0		Within 2-mile of Walmart:- Further away: 0	
Ficano (2013)	1991–2003 all retail unit births and deaths all US counties		– – –			– –

[a]Positive means increase in wages/ negative means decrease in wages).

[b]Positive means increase in existing stores' sales/ negative means decrease in existing stores' sales.

[c]Positive means increase in the small stores' number/negative means decrease in the small stores' number.

affected market shares of stores more similar to the chain, such as Costco (-12%), Target (-10%) and Kmart (-8%), but also those of specialized stores (ranging from -16% to -6%).

The impact on the number of stores nearby or at the county level is measured using either the entry and exit rates of retail stores, or the births and deaths of retail stores (see Table 1). Over thirteen studies we have found, three only proved Walmart to have a positive impact on the entry of other retail stores, arguing that Walmart created a friendly environment for new retail stores to settle nearby. Three studies found no impact and the remaining seven studies found a negative impact of Walmart on existing store population. Jia (2008) using a competition model on a sample of 2065 small- and medium-sized counties proved that "*Walmart's expansion alone explains 50–70% of net exit of small discount retailers between 1988 and 1997*". Ficano (2013) carried out a nationwide study including all US counties, all Walmart stores and looked at the impacts of the Walmart expansion at the county level on the retail unit births and deaths between 1991 and 2003. She concluded that after 15 months of a new Walmart store entry, between 4.4 and 14.2 existing retail units closed while at most 3.5 new retail units opened. Moreover, she showed that in rural communities, the impact of Walmart is stronger, as retail deaths went up from 7.6 to 12.2 after a Walmart store entry in the county.

As far as employment is concerned, we found ten econometric studies addressing the impacts of Walmart on employment on the long run. Three studies found that a Walmart store entry caused a slight permanent increase in county-level employment. One study showed no impact (Davis et al., 2009); one demonstrated a slight decrease in employment within two miles of a new Walmart, but no significant impact further away. However, five showed that overall Walmart's entry or presence caused heavy decrease in employment at the county level. For example, the presence of Walmart in a county resulted in a loss in countywide annual retail employment of between 248 and 408 workers in the Maryland state. In a nationwide study on the 1977–1995 period, Neumark (2008) showed that for each job created by Walmart, 1.4 jobs are estimated to be lost.

To finish, it has to be noticed that the eight studies about wages and benefits lead to inconclusive results as three of them showed a positive impact, three others showed no impact and the three remaining studies, including two on nationwide data proved a negative impact (see Table 1 for references).

2.2   Socio-economic Implications of Retail Decentralization in the UK

In the UK, there is also an ongoing debate about external costs and benefits of large store development. Wrigley et al. (2009) used linear regression models with spatial components to assess the impact of large decentralized stores on the entry and exit rates of eleven categories of small stores (butchers, delicatessen, etc.) located within

a 10 km circle of 303 supermarkets in England. They showed that in the prosperous regions of London and the South East, the entries into the small store sector have been accelerated. However, in the rest of the UK, the majority of the categories (7 out of 11) of small retail stores showed higher net exit rates in centres/high streets that have experienced supermarket openings.

In Britain, the main concern for public authorities about retail decentralization was the impacts on viability and vitality of communities, particularly rural communities (Ravenscroft, 2000; Thomas et Bromley, 2002). Indeed, small rural towns retail stores failure is seen by communities as a loss of vitality and viability among the communities. The model of large decentralized stores has impacted the communities in various ways, in their way of living, in the choices they have to reach grocery stores. Moreover, it led to communities, particularly rural communities to rely more on the use of private cars, even for short journeys to the grocery stores (Ronse et al., 2015).

2.3   Retail Expansion, Social Capital and Poverty

A few studies have been addressing the issue of the links between poverty rates and large decentralized stores. Schuetz et al. (2012) examined the relationship between neighbourhood income and retail density for several types of goods and services in 58 large U.S metropolitan areas. They regressed retail employment measures on residential income measures in three models using employment densities, employment growth rates and income changes over two time periods (1992–2000 and 2001–2006). It allowed them to give insights on the evolution of retail patterns according to income changes. They proved that high-poverty neighbourhoods have a higher density of supermarket units, but lower employment density, smaller units and fewer chain supermarkets. Neighbourhoods that experienced income upgrading, relative to the metropolitan area, saw larger gains in retail employment, while high-poverty neighbourhoods in which poverty increases experience smaller employment gains (or larger losses).

Goetz and Swaminatham (2004) assessed the impacts of Walmart's presence at the county level on the poverty rate in 1987 and 1998. They found that poverty rate in counties with new or existing Walmart stores is 0.2 and 0.09 percentage points higher, respectively, than those in counties without Walmart. Fitzgerald and Wirtz (2008) found that poverty rate reductions between 1989 and 2004 in the federal district of Minneapolis were smaller in Walmart than non-Walmart counties. Metzer and Schuetz (2012) analysed how retail services vary across New York City neighbourhoods with regard to income and by racial composition. Lower income and minority neighbourhoods have fewer retail stores, smaller average units and a higher proportion of "unhealthy" restaurants.

An interesting debate opposed two papers on the impacts of Walmart on social capital. Both studies used the same social capital indexes built on several variables, including county-level data, such as voter turnout, number of associations,

census participation rate and individual-level data, such as number of times in the preceding year the respondent played a "social" sport (softball, volleyball, tennis, golf or bowling), played cards, attended a religious service, hosted or attended a dinner party, etc. Goetz and Rupasingha (2006) found that Walmart reduced social capital at the county-level. However, Carden et al. (2009) by replicating their results showed that they were inconsistent. They found Walmart entry is associated with a statistically significant increase in the number of associations and a slight decrease of the number of associations in rural areas. Walmart leads to a statistically significant reduction in voter turnout in all three models, although the magnitudes are modest (0.2–0.7%).

Finally, there is an increasing number of studies about food deserts and their social consequences, as well about the effects of food stores accessibility on health (Beaulac et al., 2009). These studies are part of the literature on the links between spatial inequalities, with a focus on retail development and social inequalities. Our aim is now to provide some evidence on these linkages in the region Ile-de-France.

3   Retail Expansion, Controversies and Regulation in the Île-de-France Region

The previous literature review focuses mostly on the economic implications of the arrival of the big box retailers on the market and part of it on the social impacts for the communities living next to large decentralized stores. In this part, we focus on the concerns about social, economic and environmental impacts coming from the administrative bodies, the residents, the local elected personnel and other institutional agencies related to retail development. Our aim is to provide some evidence on these linkages in the region Île-de-France, based on the study of local newspapers, institutional reports and local plans.

3.1   National Regulation: An Entry Barrier to Large Stores Since 1973

The first supermarket and hypermarket opened respectively in 1958 and 1963 in France. At that time, independent small retailers were represented nationally and raised voices against the competition brought by big box retail stores. In 1973, the central government took some restrictive measures towards retail development projects above 1000 m^2 of selling space in cities with less than 40,000 inhabitants and above 1500 m^2 in cities with more than 40,000 inhabitants. They made it compulsory for these stores to ask for an authorization of zoning boards before applying for a planning permission.

This entry barrier is still in place, even if it has been through a lot of criticism. The opponents to the regulation found that it was aimed at preventing competition and was an unjustified barrier for retail stores. The European commission put a lot of pressure on the French government to review this regulation as it went against the principles of a free trade. It succeeded in 2008 as the new regulation was much less restrictive towards retail development. It stipulated retail development could only be stopped if the boards found adverse effects on landscape and environment. Any economic criteria such as the impacts of the proposal on other retailers were no more to be considered. The proponents of a regulation have raised concerns about the composition of the regulatory boards, mainly composed of local elected personnel, whose interest was to see new stores settle on their territories to obtain short run tax benefits.

Other measures were taken by the central government in order to protect small retail units. In 1989, a national fund was created using the profits coming from the taxation of large economic activities to preserve the mom and pop stores. Municipalities could ask for financial help to be able to resort to their pre-emption rights in order to avoid changing the use of the land.

3.2 Environmental Concerns and Regional Plans in the 2000s

In 2003, a national regulation was put in place to encourage municipalities to group together in order to produce local plans at a more global scale than the municipal level. In 2004, the government required each of these plans to include a specific document for retail development, included in large-scale planning documents, named *Schémas de Cohérence Territoriale (SCOT)*. In 2015, the Île-de-France region was covered by thirty-three of these documents. We analysed twelve produced in rural areas produced between 2008 and 2014. They all recommended to maintain, revitalize or develop the small retail units in the town centres, ten of them advise the municipalities to control, reduce or even block large store production. Five of them produced a set of criteria for large retail development that mostly involves limiting the development to the areas already urbanized. Four plans advise municipalities to produce perimeters to save the existing retail units in the town centres and use the national financial help to buy any retail unit that would go bankruptcy and prevent a change of use.

3.3 Local Attitudes Towards Retail Development

Since devolution was put in place in 1982–1983, mayors have been in charge of land use planning: they produce local plans and grant or refuse the planning applications, in accordance with the larger *SCOTs* regulations. Moreover in 1993, local elected
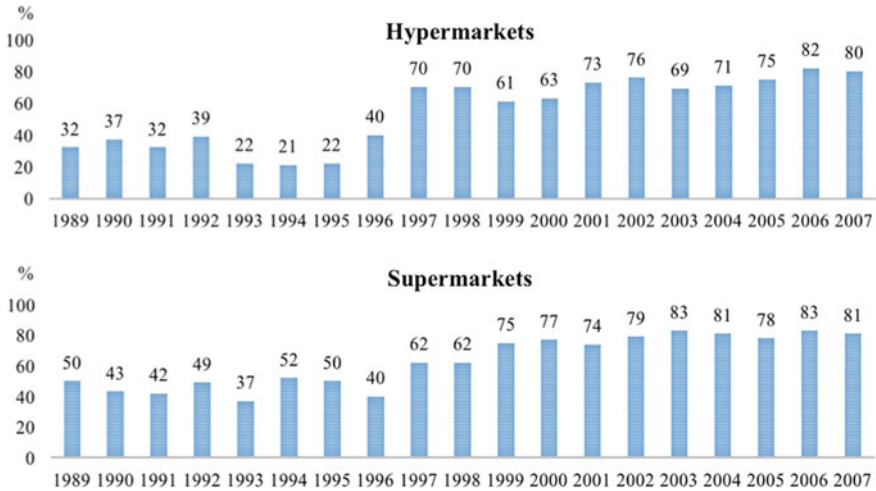
Fig. 1 Approval rates of hypermarkets and supermarkets in the French local zoning boards between 1989 and 2007

personnel was put in the great majority of the zoning boards, in charge of granting or refusing permission for the large retail development.

For municipalities, particularly for rural ones, financial benefits from taxation, the prospect of creation of jobs and vitality for their communities were at stake. Moreover, in case of a refusal, there was a heavy risk for them that the large store would be accepted in a nearby municipality and that they would hence suffer from a loss of vitality in their own municipalities. So, retailers have benefited from competition between small municipalities (Colla, 2003). Consequently, in the years 1993–1997, the rate of approval for large stores increased drastically as shown in Fig. 1.

In the 2000s, the main concern of rural municipalities laid in the bankruptcy of small-town centres retail units and the consequent loss of vitality of the communities. A few studies have been released with alarming figures concerning the loss of small retail units and the vacancy rates. Nationally, the vacancy rate in the town centres is between 8 to 9% and 12 to 14% in small rural cities (Senate, 2016). In 2014, one of the leading real estate consulting groups declared that retail non-prime markets (mainly rural) would *« continue to experience high vacancy rates consequently raising questions about the future of retail wasteland»* (Cushman et Wakefield, 2014).

Mayors and Chambers for retail and industry have put into place numerous strategies to cope with the increasing loss of quality of life in rural communities, mostly the loss of infrastructures and proximity services We provide a list of these strategies in Table 2, which summarizes the concerns towards retail development we could find using local newspapers, institutional reports and local plans. Environmental issues include congestion, car dependency, land consumption, low-density development and harm caused to the character and appearance of the area. Social issues include

loss of vitality and viability of the rural communities, difficulties to manage the vacant spaces. And finally, economic issues include loss of jobs in local retail market and households' expenses on oil consumption due to car dependency. Measures and actions are taken by the local municipalities include using compulsory purchase orders to avoid change of use of retail units in the town centres, allowing discounts for any good that would be bought in the town centres retail units.

Several articles in national newspapers have mentioned an overproduction of retail stores relative to the expansion of retail business in Île-de-France (Les Echos, 2014; la Depeche, 2016; L'Obs, 2016; Le Monde, 2016). In 2015, a meeting at the French National Assembly was dedicated to the issue of loss of vitality and viability in rural areas. Large decentralized stores were accused of being "ever further away, ever bigger". Several members of local elected personnel raised concerns about the expansion of large peripheral retail stores; notably they accused the retail stores of being the cause of poverty amongst local citizens (La Tribune, 2015; Les Echos, 2014).

4 Retail Decentralization and Spatial Inequalities: Statistical Study

In this part, we aim at measuring and characterizing retail expansion and decentralization and providing some insights about consequences of this expansion on retail forms.

4.1 Data Description

We use four databases on retail development in Île-de-France and one database on the social and economic characteristics of the Île-de-France municipalities from the French National Institute for Statistics (INSEE). We exclude the city of Paris from our analysis as the retail market within the core city is highly competitive and contains specific stores called *Grands magasins.*

The first database, named *Sitadel,* contains the floorspace by development type (housing, office, retail, warehouse) built between 1975 and 2013 in each municipality. We use the retail floorspace built each year from 1975 to 2013 in the municipalities of the Île-de-France region.

The second database is produced by the INSEE, and named *Connaissance locale de l'Appareil productif.* It is composed of 134,916 retail units in the Île-de-France region, and includes each retail unit in France.[1] Per unit, it contains the number of employees in FTE, the opening date and the localization at the municipality level.

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[1] The access to this database is protected by the French National Committee for statistical secret.

Table 2 Concerns towards retail development and actions taken by local government

	Concerns relative to large decentralized stores	Actions and measures taken
Environmental issues	Congestion, traffic pollution, car dependency Low density development and land consumption Harm caused to the character and appearance of the area	
Social issues	Quality of life and viability of the town rural centres Loss of attractiveness for many rural communities Drug traffic around the vacant retail units, insecurity	Covering vacant shop windows Negotiating with retailers to settle in town centre Launching major development project Fund raising amongst the local population to save a local shop Buying the vacant retail units to avoid the change of use (Compulsory purchase orders)
Economic issues	Loss of jobs in local independent retailers Households expenses on oil consumption	Associations of local independent retailers (events, fidelity program…) Private consultants paid by the municipalities to advise local independent retailers on accountability and management matters Reconstruction of the road network in the town centres and modernization of the public spaces Discounts, lottery competition for any purchase in one of the local town centre shops
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Table 2 (continued)

	Concerns relative to large decentralized stores	Actions and measures taken
Economic issues	Loss of jobs in local independent retailers Households expenses on oil consumption	Associations of local independent retailers (events, fidelity program…) Private consultants paid by the municipalities to advise local independent retailers on accountability and management matters Reconstruction of the road network in the town centres and modernization of the public spaces Discounts, lottery competition for any purchase in one of the local town centre shops

The third database we use is an inventory of all stores in each municipality in the Île-de-France region. It includes 25 categories: hypermarkets (above 2500 m^2 of selling space), supermarkets (between 400 and 2499 m^2), large building material shops (above 400 m^2), medium-sized food retail shops (between 120 and 400 m^2), general merchandise, bakeries, butchers, frozen food stores, fishmongers, clothing stores, home furnishing, furniture and equipment, sports stores, florists, bookshops, etc. Contrary to the other databases, it does not include all retail units, such as eating and drinking units, car-dealers, real estate agencies and other specialized units. The total number of stores is 36,042 in Île-de-France.

Our fourth database is the inventory of all stores above 1000 m^2 in Ile-de-France. It contains the postal address and the total selling space of each of these stores. This database is produced by the *Atelier Parisien d'Urbanisme.*

The database we use on social and economic characteristics contains: the medium yearly income per households, the percentage of households with non-taxable income, the unemployment rate and the percentage of retired people between the total population at the municipality level.

To distinguish urban, suburban and rural municipalities, we use the typology of the municipalities produced by INSEE. This typology has been elaborated using the evolution of population, housing and employment densities. The urban municipalities are located within a dense urban environment including an employment level above 10,000 jobs. The suburban municipalities have known a steep increase in housing units located around employment centres. The rural municipalities have a low residential density, low increase in population and are located further away from the employment centres. In the seven *Départements* of Île-de-France, according to this classification, there are 395 urban municipalities, 673 suburban municipalities and 212 rural municipalities. They respectively group 6,200,329 residents (64.2% of the population in the region), 2,953,986 residents (30.6% of the population) and

503,566 residents (5.2% of the population), corresponding to a total of 14.8% of the whole population of France.

4.2   Retail Expansion Between 1975 and 2014: Equally Distributed?

Between 1977 and 2012, more than 15 million sq.mt of retail floorspace were added in the Ile-de-France region, which corresponds to 20% of the current total of retail floorspace in France. In this part, we aim at studying how large decentralized stores expansion has been distributed and its implications for spatial equality.

In Fig. 2, we observe that retail decentralization followed population decentralization between 1975 and 1999. Retail development took place where population had settled a few years earlier and remained closer to Paris than the variation of the population. Between 1975 and 1983, 71% of the retail floorspace built was located between 5 to 20 km from central Paris (including about 25% at 15 km from Paris and 32% at 20 km). From the middle of the 1980s, retail floorspace was more decentralized than in the 1983–1990 and 1991–1999 periods, about 22% of the retail floorspace was built at 30 km from Paris (to compare to 11% in the 1975–1982 period) and 15% at 35 km (to compare to 7% between 1975 and 1982).

We notice that between 2000 and 2012, retail development has settled even further away from the centre of the metropolis than the population had settled. About 5% of the total floorspace built between 2000 and 2012 was located 70 km away from the centre of Paris, while only less than 3% of the total variation of the population at the same period settled that far from central Paris (Fig. 3). People were even more likely to take their cars to reach the retail facilities and this could explain why we found the
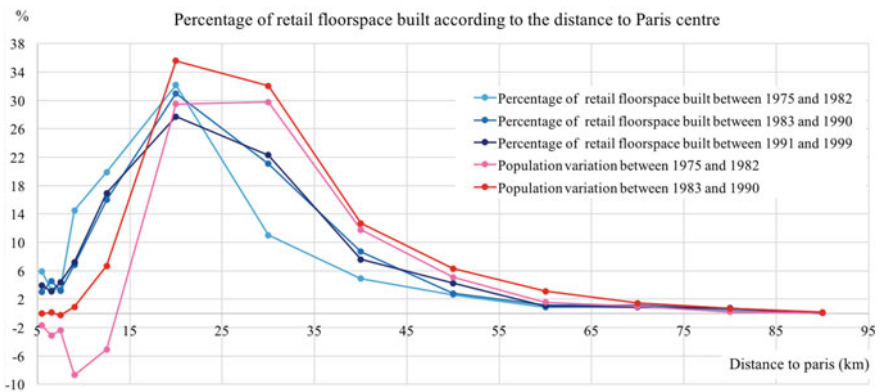

Fig. 2 Retail floorspace built and variation of the population according to the distance to central Paris between 1975 and 1999
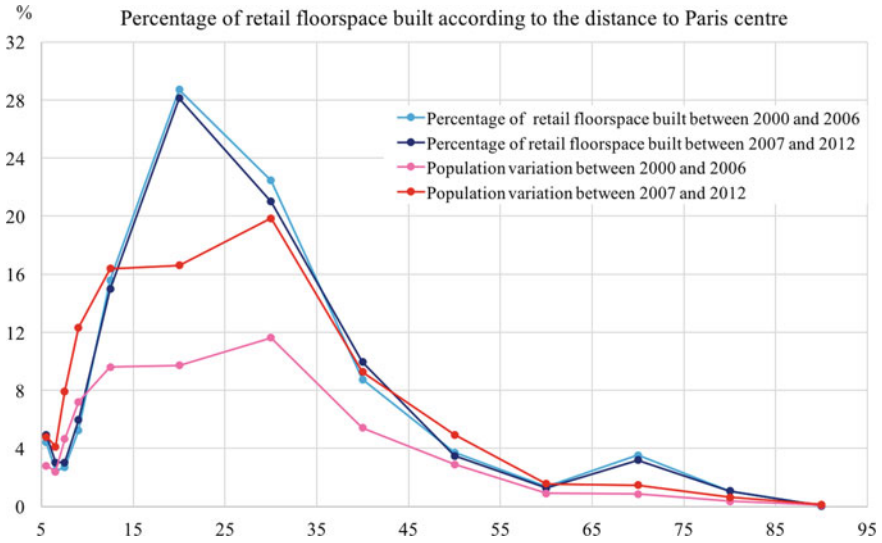
Fig. 3 Retail floorspace built and variation of the population according to the distance to central Paris between 2000 and 2012

highest retail densities (number of stores and retail floorspace per 1000 residents) in the remotest areas of the Ile-de-France region.

4.3 Retail Facilities in 2014

4.3.1 Food Deserts in Ile-de-France?

In 2014, 14.13% of the Île-de-France population lived in one of the 487 municipalities with no shops at all, including 10.58% of the population having no food store. Respectively, 4,2% of large stores, such as hypermarkets, supermarkets, home, furniture and equipment and 4,0% of small independent food stores (bakeries, butchers, general merchandise and fishmongers) were located in rural municipalities. Moreover, about 12.3% of the rural municipalities grouped 86% of the total number of the 25 categories shops in the rural areas (Table 3).

   These numbers can be explained by the high rates of bankruptcy of small retail units in France and particularly in suburban and rural areas. In the food-retailing sector, the market shares of small retail units dropped from 66.7% in 1970 to 30.5% in 1996, hypermarkets' market shares increased from 3.6% in 1970 to 36.8% in 1996. Finally, between 1966 and 1998, the numbers of independent stores such as bakeries, textile stores, convenience stores and butcher's shops decrease by between 50 to 85% (Insee, 1998).

Table 3 Proportion of the population with no shops or no food stores in its municipalities

	Urban	Suburban	Rural	Total	
	Population (% of urban population)	Population (% of suburban population)	Population (% of rural population	Municipalities (% of municipalities)	Population (% of population)
With no shops	176,269 (2.84%)	915,055 (**30.96%**)	273,249 (**54.3%**)	**344 (26.9%)**	**1,364,873 (14.13%)**
With no food stores	259,285 (4.18%)	1,465,843 (**49.6%**)	317,949 (**63%**)	**487 (38%)**	**2,043,077 (10.58%)**

4.3.2 Versus a Consumers' Paradise

About 20,5% of the municipalities, gathering 74% of the total population in 2015, took in 90% of the retail floorspace built between 1975 and 2013.

In Fig. 4, we observe that part of the retail growth has been concentrated in the *Villes nouvelles.* In the 1960s, land use planning was heavily centralized and the government took several measures in order to stop congestion in Paris, decentralize economic activities from the core city. The *Villes nouvelles* policy was part of these measures; they aimed at avoiding urban sprawl by concentrating the development. The first one was implemented in 1970 in the Ile-de-France region. Since then, a total of cinq *Villes nouvelles* were created: *Evry, Cergy-Pontoise, Saint-Quentin-en-Yvelines, Marne-la-Vallée, Melun-Sénart*, grouping 70 municipalities in total. Part of the policy was to give subsidies to any economic activity that would be launched in these cities.

This policy has proved successful to concentrate economic activities in the *Villes Nouvelles* (Schearmur & Alvergne, 2003). As far as retail development is concerned, 16.6% of the total retail floorspace has been built between 1975 and 2013 in these areas. In 2013, they gathered 10% of the Île-de-France population, 9.4% of the total number of retail units, 14.4% of the total employment in retail sector and 16.9% of the total retail floorspace of stores above 1000 m^2.

In Fig. 4, we can observe that some suburban and even rural municipalities, located in the remote part of the region, have welcomed a high level of retail floorspace, which is not in accordance with the distribution of the population. Retail densities in terms of number of retail units per 1000 residents in urban, suburban and rural municipalities have evolved from respectively 0.1, 0.1 and 0.13 stores per 1000 residents in 1975 to 14, 17.19 and 15.35 stores per 1000 residents. Rural municipalities have the highest densities in terms of number of stores per 1000 residents, but retail development does not seem to be equally distributed in these communities as a few rural municipalities concentrate all retail floorspace built between 1975 and 2013.
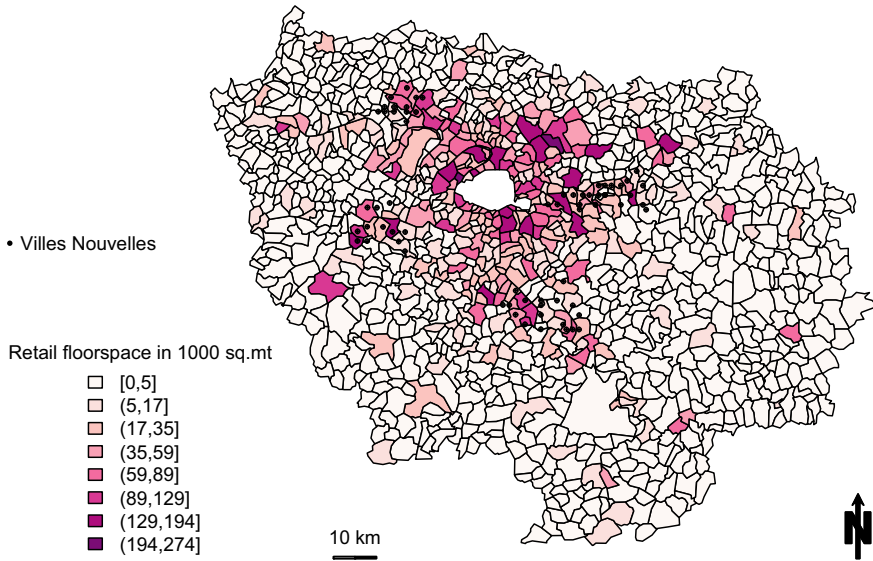
Fig. 4 Retail floorspace built between 1975 and 2013 in the region Ile-de-France

5 Retail Expansion and Socio-economic Characteristics of Municipalities

In this part, we aim at studying the socio-economic implications of retail expansion and giving some insights about the links between social inequalities and retail development in the municipalities of the Île-de-France region.

5.1 Retail Employment and the 2008 Crisis: Unequal Consequences Given the Location of Stores

Despite an ever-increasing number of retail stores openings, retail employment decreased in urban and rural areas between 2007 and 2013, as employment in retail experienced a 13.4% drop in rural areas and a 2.4% decrease in urban areas (Fig. 5). Suburban areas have not been affected as employment has increased by 1.9%. The 2008 crisis strongly hit rural areas. We found out that, amongst the 39 rural municipalities that have one or more retail units employing more 20 employees, 31 of them have lost on average 17% of their total employment in retail after the 2008 crisis. The municipalities that are characterized by high levels of large decentralized stores seem to be more vulnerable to economic crisis.

In Fig. 6, we spatially define the link between the number of large stores in 2007 (defined as the number of retail units employing more than 200 persons) and
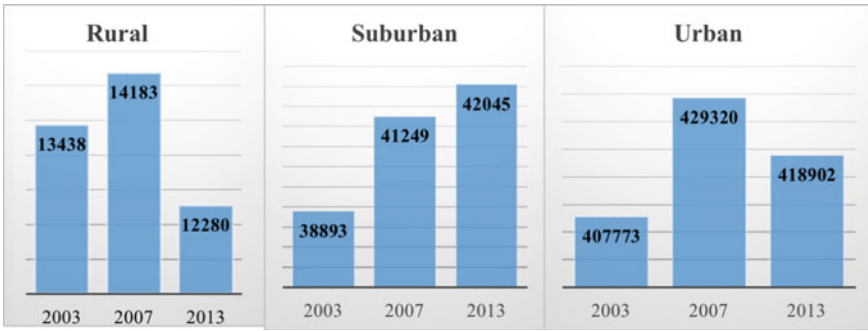
Fig. 5 Retail employment in rural, suburban and urban municipalities in Île-de-France between 2003 and 2013

the evolution of the unemployment rate between 2007 and 2012 in suburban and rural areas only. We observed that it is more likely that there is an increase of the unemployment rate in areas in which the number of large stores is higher.
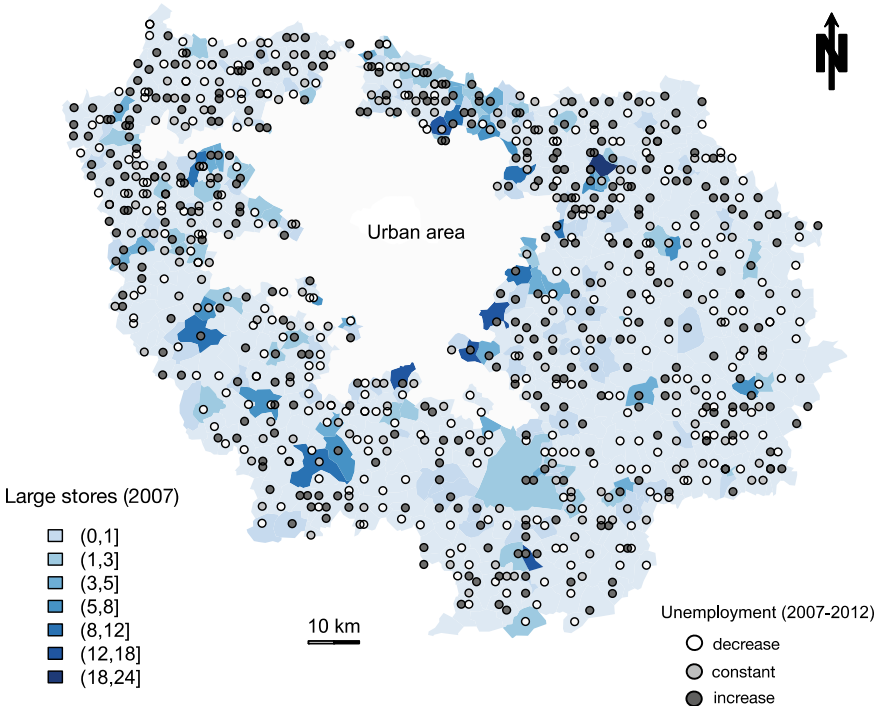

Fig. 6 Large retail stores in 2007 and the evolution of unemployment rate between 2007 and 2012 in the region Île-de-France
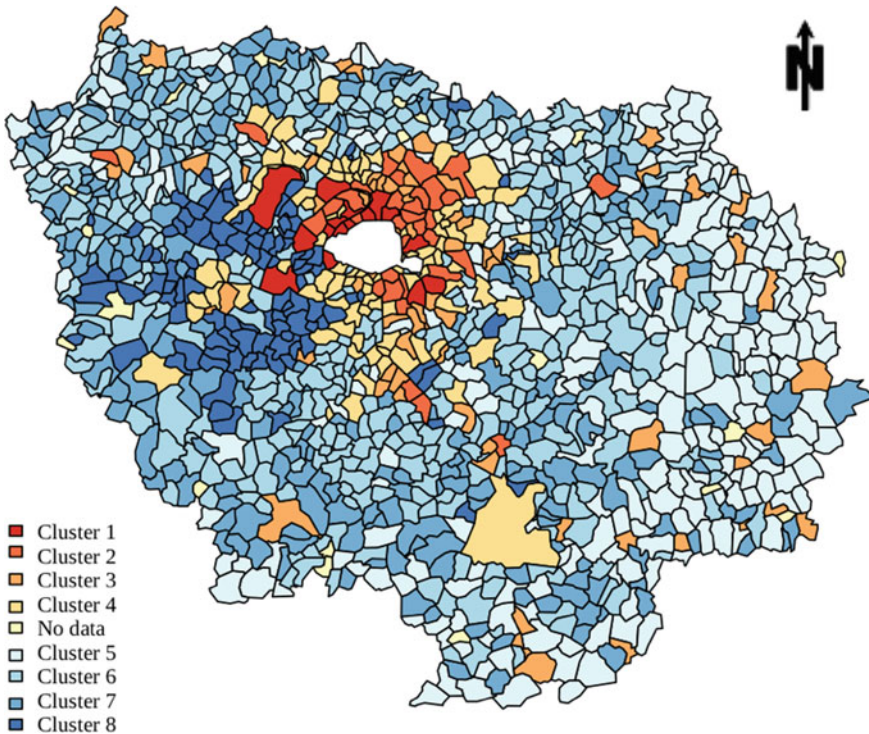
- Cluster 1
- Cluster 2
- Cluster 3
- Cluster 4
- No data
- Cluster 5
- Cluster 6
- Cluster 7
- Cluster 8

Fig. 7 Spatial representation: clusters of municipalities in 2014

5.2 Social Inequalities and Retail Development: The Clustering of Municipalities

In order to study the links between socio-economic characteristics and retail development, we produce a multiple variable analysis and a hierarchical clustering analysis in the municipalities of the region. We use six quantitative variables at the municipal level: the number of shops, the number of retail units, the medium yearly income per households, the percentage of households with non-taxable income, the unemployment rate, the percentage of retired people and the typology of each municipality: urban, suburban or rural.

We find that the two first dimensions of the multiple analysis account for 78.35% of inertia (dimension 1: 54.49% and dimension 2: 23.86%). The first axis shows that the number of shops or units is negatively correlated with the medium income and the percentage of retired people. It means that the higher the numbers of shops and units in a municipality are, the lower the medium income and the percentage of retired people are. On the contrary, the number of shops and units is positively correlated with the unemployment rate and the percentage of households with non-taxable income, meaning that the municipalities with a high number of retail units are the

Table 4 Correlation between socio-economic variables and retail characteristics in the Île-de-France municipalities

Coefficients of correlation	Medium yearly income per household[a]	Percentage of households with non-taxable income	Unemployment rate
Number of shops	−0.1933728	0.3201983***	0.4388576***
Number of retail units	−0.2400724	0.3702274***	0.4901769***

[a]Signif. codes: 0 '***'.

poorest. We used partial correlations testing with the Pearson method to check the correlations between number of shops or retail units and income, unemployment rate and percentage of households with non-taxable income correcting from the population. Tests were successful (p-value <0.001) in proving that the number of shops and retail units are positively correlated with unemployment rate and percentage of households with non-taxable income. However, the correlation between the income and the number of retail units or shops was not statistically significant (Table 4).

On the basis of these correlations and the results of the multiple variable analysis, we produced a clustering of the municipalities. We chose to keep the income as an informative variable in the clustering even if the correlation test was not successful. The aim is to characterize the municipalities in each of the clusters with the variables we have chosen in this study. The results of the clustering give eight clusters. Clusters 1, 2 and 3 represent most of the municipalities (61%), they have a significantly higher medium income, less households with non-taxable income and a lower unemployment rate. The numbers of shops and retail units are much lower with respectively average numbers of 61, 17 and 37 units for cluster 1, 2 and 3, compared to an overall mean of 107. These clusters are representative of relatively well-off areas where retail development has not settled in high numbers.

Cluster 1 has the highest income on average, the lowest unemployment rate and percentage of households with non-taxable income. It represents the wealthy areas of the west of the Île-de-France region, including the wealthiest cities such as Versailles, and the suburbs of the *Villes nouvelles*. In this cluster, the municipalities have 16 shops on average and 61 retail units, which is below the overall average.

Cluster 2 is characterized by a number of shops close to 3 shops only on average, it groups wealthy rural and suburban areas where retail development is not largely present. These municipalities have an average higher yearly income per household, lower unemployment rate and percentage of households with non-taxable income.

Cluster 4 is heterogeneous. It is composed of 58% suburban, 28% rural and 13% urban municipalities, characterized by a relatively low income, relatively high unemployment rate and percentage of households with non-taxable income and low numbers of retail units. It corresponds to relatively poor areas with a lower accessibility to retail. These municipalities are heterogeneously located but we find that the 28% of rural municipalities are the ones located further away from central Paris,

close to the border of the region. They have not been colonized yet by retail decentralization and their socio-economic indicators are close to the national average for rural areas.

Cluster 5, 6, 7 and 8 are characterized by low to very low incomes (23,489–16,889 euros per year per household in average), high to very high unemployment rate (10.35–17.35% on average), high to very high percentage of households with non-taxable income (35.33–48.36% in average) and large number of retail units and shops (200–1470 retail units and 50–411 stores on average). They include poor to very poor urban municipalities with a very large number of retail stores and contain all the *Villes nouvelles* and the areas which experienced fast urbanization in the 1950s and 1960s to provide housing for the increasing population due to the baby boomers (Table 5).

Only a few rural municipalities are part of clusters 5–8, meaning that some rural areas are poor to very poor and have a great number of retail units (as many as we can find in the urban municipalities). They concentrate 31% of the rural population in 2012 and 54% of the total number of units in the rural areas. These municipalities have the highest rate of unemployment in rural municipalities, between 24.03% and 12.85% (16.56% in average), and amongst the highest percentage of households with non-taxable income, between 37.4% and 59.53% (47.41% in average).

6   Conclusions

The literature on social implications of retail expansion showed some controversial impacts, but a majority of studies stressed the social consequences of the heavy competition brought by large decentralized stores: loss of town centre retail units, affecting the vitality of the communities, loss of jobs in retail, spatial inequalities in terms of retail provision and car dependency of the communities. In this paper, we aim at studying the retail decentralization surrounding a large metropolis such as Paris and its socio-economic implications. Our focus is on the evolution of retail development in the different municipalities composing the region; urban, suburban and rural ones. We use socio-economic characteristics of these municipalities to study the links between income, unemployment rate and proportion of households with non-taxable income and the predominance of retail.

We found that retail densities are globally higher in suburban and rural areas, meaning that the number of large stores per 1000 residents in rural and suburban areas is higher than it is in urban areas. More generally, retail expansion has been unequally distributed in the region and we provide evidence that it has increased the spatial inequalities, as in 2014, 14.13% of the Ile-de-France population lived in a municipality with no shops at all. These inequalities have been accelerated by the fact that small food stores in rural areas have been bankrupting due to the competition with large decentralized stores.

Using different sources and statistical spatial analysis, we showed that municipalities, urban, suburban or rural, with a higher number of retail units are amongst

Table 5 Results of the clustering: mean and standard deviation of the socio-economic and retail variables in the overall dataset and in each cluster

	Composition	Medium yearly income per household	Percentage of households with non-taxable income	Unemployment rate	Percentage of retired people	Number of retail units	Number of shops
Total data (N = 1257)		24,431.747335 (4203.236590)	29.288895 (8.510334)	8.929753 (3.449079)	5.082299 (1.587067)	107.299920 (235.057386)	28.673031 (65.517065)
Cluster 1 (n = 107)	52.3% urban 36.45% suburban	33,038.70 (3195.525026)	19.663367 (3.146943)	6.812991 (1.327214)	4.595234 (1.252929)	61.037383 (75.671687)	16.439252 (25.317120)
Cluster 2 (n = 264)	65.9% suburban 25% rural 9% urban	25,626.464394 (2448.793107)	25.757099 (4.625593)	7.364242 (1.883417)	7.283485 (1.199698)	16.719697 (24.91221)	3.534091 (7.918068)
Cluster 3 (n = 400)	66.75% suburban 25% urban 8% rural	25,241.590500 (1712.2008679)	25.049752 (3.5407433)	7.151875 (1.5746480)	4.537200 (0.9384563)	37.122500 (55.7647962)	8.100000 (13.7404512)
Cluster 4 (n = 270)	58% suburban 28% rural 13% urban	21,731.224074 (1333.379751)	34.797250 (4.520299)	10.007852 (1.965219)	Not significantly different from the overall mean	35.270370 (53.502899)	8.066667 (12.977588)
Cluster 5 (n = 93)	92.47% urban 2.15% rural 5.38% suburban	23,489.853763 (2747.1892627)	Not significantly different from the overall mean	10.357204 (1.4915543)	3.937527 (0.7557943)	381.827957 (143.9176604)	117.892473 (52.5628067)
Cluster 6 (n = 74)	60.81% urban 21.62% suburban	17,708.960811 (1902.773399)	46.847891 (6.705599)	16.812162 (3.002918)	3.786622 (0.774796)	199.918919 (143.769688)	49.932432 (36.693519)
Cluster 7 (n = 33)	96.97% urban 3.03% rural	16,889.851515 (1886.1523619)	48.354514 (6.8460723)	17.353636 (3.1981309)	3.345455 (0.4410943)	780.121212 (216.2929772)	202.545455 (57.9111602)
Cluster 8 (n = 16)	100% urban	Not significantly different from the overall mean	35.33172 (13.3550136)	13.04312 (5.4649414)	3.03875 (0.4578875)	1469.43750 (475.9016401)	411.81250 (91.979086)

the poorest municipalities, considering three indicators of wealth: medium yearly income per household, percentage of households with non-taxable income and unemployment rate.

We demonstrated that rural areas where the numbers of retail units are the largest and where employment depends mainly on retail have also the highest unemployment rates in Ile-de-France. We argue that these areas have suffered from the 2008 crisis as their employment depends mainly on financialized economic activities. On the contrary, rural areas where retail development has not settled are amongst the wealthiest municipalities in Île-de-France and have the lowest rates of unemployment. Consequently, we argue that the decentralization of large stores leads spatial inequalities in terms of retail facilities provision and to more vulnerability for territories, particularly rural areas, to financial crises.

Finally, we provided evidence that several local plans in rural areas give recommendation towards avoiding large stores because of the external costs. However, in poor rural areas, the attitude of local elected personnel towards retail development is still controversial. In order to dynamize retail in their town centres that have suffered from the heavy competition of the large stores they welcome any development in their territories, including large stores. They put into place numerous strategies to cope with the decline and vacancy of their retail units, such as discounts for any good bought in the town centres shops, compulsory purchase orders to avoid the change of use, but they do not prevent large stores to settle in their territories. The competition between the small municipalities for tax benefits is an incentive for them to approve any large store development.

Based on our results and the review of literature dealing with this topic, we argue in this paper that accepting large retail development cannot lead towards more wealth and quality of life, particularly for rural communities. Moreover, the recent priority given to the financial dimension amongst the retail sector raises new incentives for land planning professionals to strictly control retail development as large retailers' profits depend less on domestic sales and the productivity of each of their stores but more on other financial activities.

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