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Spatial Dimensions of E-Shopping in France

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Abstract: Although online purchases still make up only a small share of individuals' purchases, they increasingly represent an alternative to in-store purchases. This alternative seems even more valuable in sparsely populated areas with poorer access to shops. Online purchases may smooth out spatial constraints on access to tangible goods. The efficiency hypothesis postulates that people with low accessibility tend to buy more online. This study examines this hypothesis. The aim is to check whether online purchasing is more developed in suburban areas and whether online purchasing practices for the inhabitants of such areas are a way of overcoming their poor access to shops. Our results show quite different patterns between suburban and urban households. The efficiency hypothesis is partially validated.

Keywords: E-Commerce, E-Shopping, Suburban Mobility, Pick-Up-Points, Home Deliveries, France

1. INTRODUCTION

Online sales have thrived in recent years. France reports two-figure growth rates in terms of value, whereas growth of in-store sales is very low or even zero (INSEE, 2015, pp. 180–181). Although online purchases still make up only a small share of individuals' purchases (4% as expressed in value), they are increasingly an alternative to in-store purchases. This alternative seems even more valuable in sparsely populated areas with poorer access to shops. Online purchases may smooth out spatial constraints on access to tangible goods (Mokhtarian, 2004). The efficiency hypothesis (Anderson *et al*., 2003) postulates that people with low accessibility tend to buy more online. This study examines this hypothesis. The aim is to check whether online purchasing is more developed in suburban areas and whether online purchasing practices for the inhabitants of such areas are a way of overcoming their poor access to shops.

This work draws on a body of research conducted concomitantly as part of a research project funded by the French Ministry of Ecology and Sustainable Development, a territorial diagnosis, a survey of e-retailers and transport operators, and two population surveys – a

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qualitative survey conducted by interviewing 30 respondents and a quantitative questionnaire-based survey of 814 respondents. The quantitative data were processed by multivariate analysis. They reveal increased resort to online purchasing in outlying areas. Analysis of the interviews also points to spatial differences in online purchasing practices. In city centres, online purchasing is closely complementary to continued frequentation of shops, whereas in outlying areas online purchasing is a means of avoiding making certain shopping trips and avoiding frequenting city-centre shops or shopping malls. Finally, for collecting their purchases, inhabitants of outlying areas give greater precedence than urban residents to home delivery so as to save a shopping trip or detour to a pick-up point, which in sparsely populated areas may often be some distance away.

The remainder of the paper is structured as follows. Section 2 provides a literature review and identifies existing data. Section 3 presents methods and data. Section 4 provides an interpretation of the results. Section 5 provides a discussion of results and a conclusion.

2. GENERAL DATA AND LITERATURE

2.1. A surge in online sales

In Europe more than half of EU consumers (53%) purchased goods and services over the Internet in 2015 (Reinecke, 2015). This includes digital purchases such as tickets for travel as well as goods that need physical delivery, such as clothes and shoes. The proportion of e-shoppers varies considerably across Member States, ranging from 18 % of internet users in Romania to 87 % in the United Kingdom (UK). In 2014 the largest B2C digital markets in Europe were the UK (€127.1bn), Germany (€71.2bn) and France (€56.8bn), an increase of 12%compared with 2013 (European Commission, 2016).

In France in 2012, 78% of residents aged 15 years and more had home Internet access (Gombault, 2013). Counting all locations or types of connection (computer, tablet, smartphone, etc.), 62% of 16–74 year olds accessed Internet at least once a day. According to Eurostat, in 2012, 69% of French people had made an online purchase in the previous 12 months. While not as widespread as in Northern European countries, online sales are growing steadily in France (Kranklader, 2014; Bigot *et al*., 2013; Seybert, 2011). Online purchasing conceals differences in behaviour by age, social category and metropolitan area of residence (Gombault and Reif, 2013). Additional key variables are purchasing frequency and type of goods (tangible and intangible goods) however, few precise figures are currently available about French online buyers.

Even though the Internet is an expanding channel for purchasing, it is still a minor one among French household purchasing practices. Distance sales and Internet sales in particular accounted for just 2% of food sales and 4% of non-food sales in 2014, according to INSEE (2015) whose figures are lower than those of the industry (FEVAD, 2015, estimating that 5.5% of purchases were made online). The Internet remains a minority form of selling. Even so, its market share, like the number of online buyers, is constantly on the rise.

2.2. Online sales and in-store purchases

Many issues relate both to individual practice with regard to mobility (Schwanen *et al*., 2008; Mokhtarian, 2002) and interaction between online and in-store purchasing (Farag *et al*., 2003). More generally, the question is whether online purchasing is a substitute for, complementary to, or has no effect on everyday mobility whether related to purchasing or not (Cao, 2009;

Mokhtarian *et al*., 2009). Much work has been done on this topic and various methods and approaches have been employed. Nuzzolo and Comi (2014) used a system of models based on demographic data, store locations and a survey on shopping behaviour to show a substitution effect. Surveys in which individuals are questioned directly about the connection between online and in-store purchasing point to a substitution effect between the two channels (Sim and Koi, 2002; Weltevreden, 2007). Yet that substitution effect is weak. That is, the rise in online purchases does not translate into a corresponding fall in in-store purchases. While Hsiao (2009) showed that "in terms of monetary values, avoiding a shopping trip to a bookstore produces far more benefits than bearing waiting for the delivery." Moreover, there is little impact on mobility since the number of purchases is not proportional to the number of shopping trips (Mokhtarian, 2004). Research inferring the articulation between online and in-store purchasing is based on multivariate analyses of data including variables relating to both online and in-store purchasing. These are data from activity/travel diaries (Ferrell, 2004) or ad hoc surveys on purchasing practices (Crocco *et al*., 2013; Cao, 2012; Farag *et al*., 2007, 2005). For the former, the variables are often poorly suited to this type of analysis and therefore difficult to process; for the latter, everyday mobility is not the crux of the investigation. The findings of those multivariate analyses based on sophisticated modelling reveal a complementarity effect rather than a substitution effect (Cao, 2012; Farag *et al*., 2007; Ferrell, 2004).

2.3. Spatial differences and online purchases

Many commentators have emphasized the potential effects of the Internet (Schwanen *et al*., 2008) and more particularly e-commerce (Dijst *et al*., 2009; Ren and Kwan, 2009; Visser *et al*., 2014) in terms of accessibility. Anderson *et al*. (2003) formulated the "efficiency hypothesis" about increased resort to online purchasing in areas with poor access to shops. Anderson *et al*. (2003) also formulated the "innovation-diffusion hypothesis" of increased resort to online purchasing in city centres because the urban residents are more open to innovation and technology and because Internet access in densely populated areas is usually of a higher standard, among other things. What are at first sight two opposing hypotheses turn out to be compatible. Farag *et al*. (2006) in their work on online purchasing in the Netherlands validate both hypotheses by showing that "People living in a (very) strongly urbanised area have a higher likelihood of buying online, but people with a low shop accessibility buy more often online" (p. 59). Cao *et al*. (2013) reach the same type of conclusion reporting a higher probability of making online purchases in urban areas and suburban areas with little access to shops. However, their findings contradict those of Farag *et al*. in that they conclude there is more frequent purchasing in urban areas than elsewhere and especially places with poor access to shops. Yet it might be thought that with time and growing Internet coverage and as the Internet and online purchasing become more commonplace, the innovation-diffusion hypothesis should diminish and spatial differences with it.

2.4. Home deliveries or pick-up points?

While on the one hand the virtual character of e-commerce simplifies trade and allows online buyers to virtually access all shops, on the other hand physical obstacles still remain since parcels have to be delivered to recipients. As a result e-commerce modifies the existing logistics systems, especially in urban areas where traffic congestion and difficulties of access are critical challenges. In practice, online purchases of physical goods are reflected by the increased atomization of receivers and the ensuing fragmentation of goods flows over the final mile (Esser and Kurte, 2006; Rallet, 2001).

Delivering small and irregular orders is expensive for sellers. Accordingly, delivery alternatives have arisen for carrying parcels at a lower cost. Pick-up points (PP), which are stores providing parcel drop-off and pick-up services, and automated lockers are fast-growing solutions (Morganti *et al*., 2014). These two end-delivery options are playing a decisive role in the reorganization of commercial and logistics activities (Augereau *et al*., 2009) and are becoming key features of the strategy of e-commerce and transport players (Morganti *et al*., 2014; Visser *et al*., 2014). Moreover many large European retailers have adopted "click and mortar" solutions (physical stores and online sales) and some now offer "click and collect" services for both food and non-food products. These delivery options are designed to fulfill online customers' requirements as to flexibility and to consolidate parcel delivery by grouping shipments to drop-off and pick-up points (Augereau *et al*., 2009). Gonzalez-Feliu *et al*. (2012) show that "the joint use of home deliveries and proximity reception points allows a reduction […] of the road occupancy rates in urban areas" (p. 1).

In France a growing number of pick-up network providers have entered the market over the past ten years, such as Kiala (today part of the UPS group). More recently, networks of automated lockers have also appeared such as the "Pick Up Stations" currently implemented by La Poste group.

For carriers, especially over the final mile, failed deliveries are largely eliminated and driver time is optimized. Online retailers providing pick-up points and click-and-collect delivery services offer their customers a larger and often cheaper selection of delivery services than home delivery. Many online retailers now offer pick-up point delivery free-of-charge to attract customers.

This mode of distribution developed by distance-selling firms is sometimes better suited to the timetables of categories such as the working population who are not at home during business hours (Gratadour, 2001). An increasing number of e-shoppers are using pick-up points for collecting their purchases. In France in 2014 some 66% used this form of delivery (FEVAD, 2015) and the practice continues to grow, although home delivery is still preferred by 84% of French online buyers.

3. METHOD AND DATA

The results presented below are taken from three methodological approaches. The first was a spatial diagnosis of supply and interviews with stakeholders involved in distribution. Then, two surveys were conducted of respondents who may or may not have been online purchasers. The first survey was a questionnaire producing quantitative data for multivariate analysis. The second a qualitative survey conducted through interviews.

3.1. A territorial diagnosis and interviews with stakeholders in distribution

A spatial diagnosis and a survey were conducted among actors involved in online sales to bring out any differences in service among areas that might affect purchasing and delivery practices.

The territorial diagnosis sought to show up any spatial inequalities for online customers, particularly for the sale of food and groceries. Those inequalities showed up in two ways: by the range of home deliveries from cybermarkets and by the spatial distribution of pick-up points and "click-and-collect". For home delivery of non-food products, there were *a priori* no spatial inequalities as parcel distribution covers most of the country with postal services or services of subsidiaries of the La Poste group (Chronopost) and their private-sector competitors (DHL, UPS, FedEx). Some more complicated shipments (bulky products such as furniture) may

require a few variations in price and quality of service, but all reach their addressees in the end.

The range of cybermarket deliveries and the location of "click-and-collect" points were taken from the websites of the various companies. Business hours and any charges were also recorded. The information taken from the Internet was checked and supplemented by telephone calls to the various stores in the areas studied. The locations of non-food pick-up points were obtained from direct contacts with the top four national networks.

Table 1. Survey of e-commerce transport and distribution systems

Sector	Service	Activity	Survey type	Quantity
Transport system	Pick-up point	Pick-up point and automated locker service providers	Interviews	4
	Home delivery	Post and parcel operators, carriers	Interviews	4
	Logistics	Logistics operators	Interviews	2
Distribution system	Commercial activities	Corner shops operating a pick-up point	Questionnaires	16
	E-commerce	E-retailers, brick-and-mortar retailers, shopkeepers associations	Interviews	7
			Total	33

Source: the authors

The phase of surveying actors involved in online sales (carriers, logistics providers, e-retailers) was organized around 33 interviews and questionnaires (Table 1). The operators of e-commerce supply and delivery chains were listed in two segments of activity, namely (i) the transport system, covering providers of pick-up points and automated lockers; express delivery and transport providers; and logistics operators; (ii) the commercial distribution system, in which we listed e-commerce operators by their main commercial activity; in-store and online sellers, who may use several sales channels (multichannel). A distinction was drawn between actors in mass retail and independent shops.

3.2. A questionnaire-based quantitative survey

The questionnaire survey of individuals was conducted in October 2013 in the metropolitan areas of Dijon and Besançon and in May 2014 in the Paris metropolitan area. In all, 838 adults replied to the questionnaire, which targeted their own and their household's online purchasing practices.

The survey was conducted by door-to-door calling, at respondents' homes, in the streets of pre-selected districts and municipalities. Quotas of individuals by sex and age were defined so that the sample composition was as close as possible to that of the population of the survey areas. Selection aimed to investigate areas that were neither too rich nor to poor and with a socio-demographic profile close to the regional average. Three types of area were selected: city, intermediate suburban areas (inner suburbs) and peripheral suburban areas (outer suburbs).

The questionnaire was subdivided into six topics: services to the person and at home, cybermarkets, distance shopping for foodstuffs (other than in cybermarkets), distance purchases of non-food products, online services, and socio-demographic questions. Segmentation by product type (everyday food, other food, non-food, services) was used because of the specific character of these types of products, their distribution networks and the ways traditionally associated with ordering or delivering them.

This is why we have restricted our analysis in this work to online purchases of physical goods, both food and non-food products. For food, we have confined our analysis to cybermarkets. Another (fast growing) market is the distance sale of ready-made dishes. It is

often a local question related to the presence of restaurants or caterers providing this service, however, and the service is increasingly provided by instant delivery digital platforms. There is also the distance sale of specialized food products (e.g. direct circuits with producers), but this remains limited in volume and value and is highly fragmented.

Apart from food, some products may require a specific form of distribution and delivery such as hazardous goods and/or bulky products, but because such purchases are made less often they are less of a challenge in the framework of our analysis.

Table 2. Distribution of households in questionnaire and interview surveys by urban character of their home municipality (three levels)

	City	Suburbs	Outer suburbs	Total
Dijon	124 (51%) / 7 (37%)	72 (30%) / 7 (37%)	46 (19%) / 5 (26%)	242 / 19 (100%)
Besançon	93 (49%) / na	60 (31%) / na	38 (20%) / na	191 / na (100%)
Seine-et-Marne	125 (31%) / 6 (33%)	156 (38%) / 4 (22%)	124 (31%) / 8 (45%)	405/ 18 (100%)
Total	342 (41%) / 13 (35%)	288 (34%) / 11 (30%)	208 (25%)/ 13 (35%)	838 / 37 (100%)

Source: authors' survey

How to read the table: In the Dijon metropolitan area, in the city sector 124 households were surveyed by questionnaire, i.e. 51% of households surveyed by questionnaire in the three sectors of the Dijon metropolitan area. Seven households were surveyed by interviews in the Dijon city sector i.e. 37% of households surveyed by questionnaire in the three sectors of the Dijon metropolitan area.

Table 3. Socio-demographic characteristics of households in the questionnaire survey

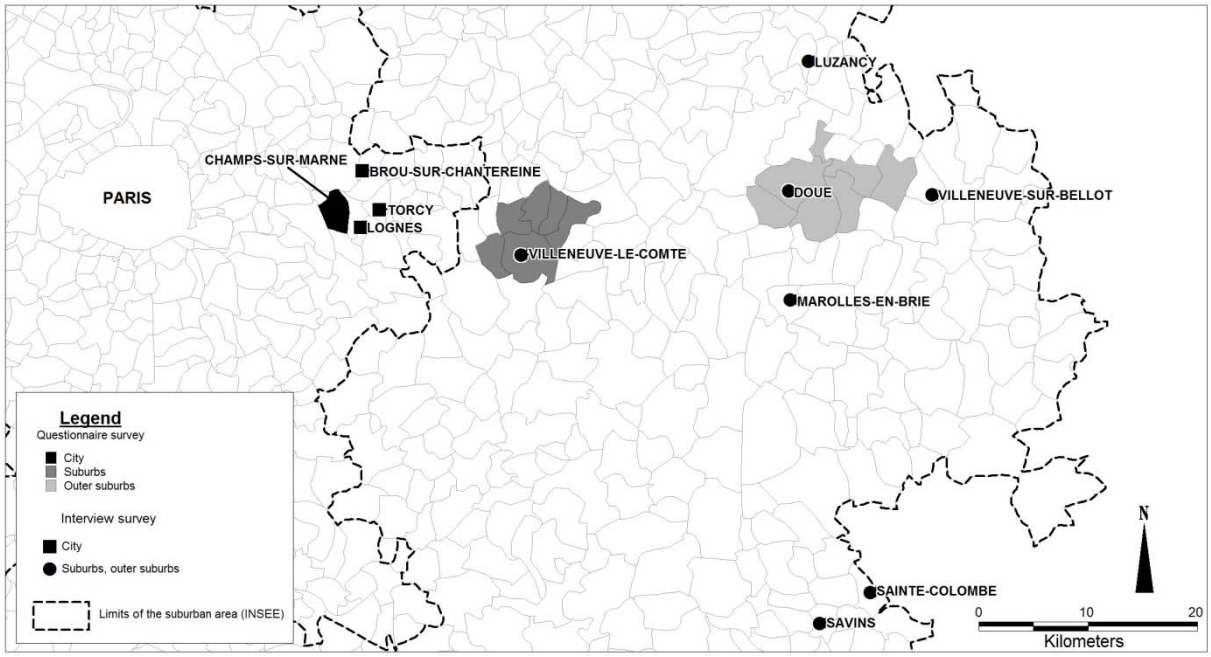
Variables	Modalities	N	%
Gender	Male	376	44.9
	Female	462	55.1
Age	20–29 years	204	24.3
	30–39 years	159	19.0
	40–49 years	171	20.4
	50–59 years	122	14.6
	60 years and over	182	21.7
Household type	Singles and single-parent families	320	38.2
	Childless couples	333	39.7
	Couples with children	185	22.1
Household net monthly income	Less than €2500	466	55.6
	€2500 – €4000	238	28.4
	More than €4000	134	16.0

Source: authors' survey

The structure of our sample is very similar to that of the municipalities surveyed. Quotas by sex and age for each municipality surveyed were observed in the survey. However, the size of the suburban segments in the survey means that our sample is not strictly representative of the areas surveyed. The differences are moderate, though. Women are slightly overrepresented in our survey (55% versus 52% in France) and in the survey areas (Dijon and eastern Paris). The lower proportion of women in the working population and the shorter working hours of working women compared with working men mean that the probability of questioning a woman

was greater for a door-to-door survey. The over-60s are less represented (22% versus 24% in Seine et Marne and 29% in the Dijon metropolitan area). This can be explained by the weight of suburban municipalities with a higher proportion of working population in the sample. Our sample includes a percentage of singles and single-parent families similar to the figures for eastern Paris but lower than the values recorded for the Dijon area, where the concentration of singles is particularly high in the city centre. Lastly, the income levels in our sample are similar to those observed for both eastern Paris and the Dijon area.

3.3. A qualitative survey of online purchasers



Source: authors' survey

Figure 1. The quantitative and qualitative survey sectors in the eastern Paris area
Source: authors' survey and map

The qualitative survey was conducted to ascertain in detail how households use online purchasing and how it fits into their purchasing practices. It should be specified that the nature of online purchases was not limited a priori, the aim being precisely to ascertain the diversity of purchases made. The survey was conducted in Dijon and eastern Paris from May to September 2012. The qualitative survey therefore predated the quantitative survey. The segments surveyed were chosen so as to overlap with those of the quantitative phase. Even so, as Figure 1 shows, differences arise because of the type of recruitment, based on stepwise extension and the phone directory. In all 40 interviews were held and fully transcribed and 37 were selected, corresponding to respondents with the Internet and having already made online purchases. The variety of cases encountered in the two geographical areas reveals varied uses and profiles for each type of area, the city and the suburbs. This qualitative exploration is designed to include and illustrate the quantitative results of the questionnaire survey. By its nature, the sample interviewed cannot be representative of the population under study.

4. RESULTS

4.1. Areas served differently by online sales

The same service of home delivery of online purchases is not available everywhere. In practice, there are more or less marked spatial differences depending on whether food or non-food purchases are made.

Spatially concentrated distribution for cybermarkets.
According to the information gathered, e-grocery home delivery is available mainly in the centres of the largest cities. Wherever population densities decline and/or locations are less central, home delivery is no longer free-of-charge and is superseded by click-and-collect services. In the Paris agglomeration, more cybermarkets (6) offer free home delivery than in Dijon (4) and the supermarkets in Dijon are secondary actors in the sector in France. In smaller cities, cybermarkets often do not offer home deliveries.

The home delivery of food and groceries in Dijon is based on initiatives by franchised stores, the main purpose of which is to keep the leading competitors away from their customer catchment area (Motte-Baumvol *et al*., 2012). Consequently, these tend not to be sustainable sources of supply and they vary widely geographically. In the Paris area, the main e-grocery actors in France are all to be found and the biggest of them rely on dedicated distribution centres. Investment is greater and is reflected by less variability in the offer of services. Two e-grocery firms propose extended ranges of delivery encompassing all the municipalities of Seine-et-Marne (for both companies) and all the municipalities in the Dijon urban area (for one company- for the other one, deliveries are not on offer everywhere every day and deadlines may exceed more than half a day, with wider time slots). Besides, in one case, the number of products available is reduced (Toupargel, for whom the e-grocery activity is a supplement to its core business of frozen food distribution).

Outside of dense urban centres, click-and-collect is the preferred form of e-grocery distribution. The number of click-and-collect services has exploded since 2012 according to our surveys. Such proliferation might potentially have brought a gain in access through coverage of the area on a finer scale. While a relocation of distribution points closer to residential areas would enable a significant reduction in traffic (Nuzzolo *et al*., 2014), this has not been the case in reality. The vast majority of click-and-collects are adjacent to existing stores and stand-alone click-and-collect points (adjacent to a dedicated warehouse) are scarce and almost always located in the immediate vicinity of a competitor's store. They therefore fail to provide consumers with any additional access points.

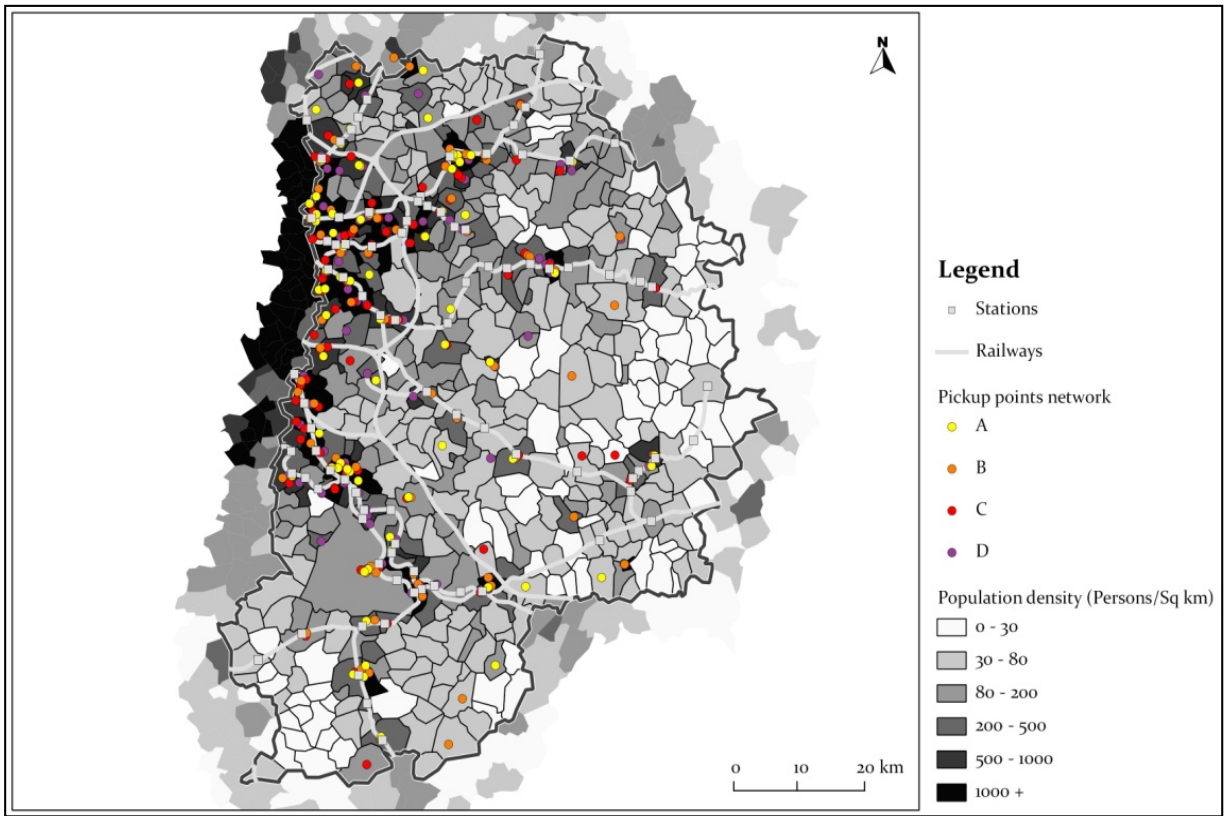
E-grocery is therefore adopting forms of distribution that reinforce the existing concentration for stores. Home delivery and click-and-collect points engender only slight gains in access to food shopping for the population.

Home delivery for (almost) everyone for non-food products.
Home delivery is on offer almost systematically without any surcharge for almost all non-food products. Moreover, delivery times and costs vary little if it all from one area to another. When home delivery is not feasible because the addressee is out during business hours and cannot take delivery at some other place, or because attempted deliveries have failed, purchases can be collected from pick-up points. Pick-up points provide a much finer-scale coverage of the area than supermarkets and click-and-collect points do.

A glance at the positioning of the networks of pick-up points in Seine-et-Marne (Figure 2) shows that they are not evenly spaced throughout the area but form clusters in more or less

populous zones and zones with the best public transport services. More specifically, stations along the regional rail network (Réseau Express Régional – RER) have been identified as the prime targets for this type of service: one in two stations has a pick-up point within 300 metres. There is a pick-up point within 400 metres, or just a seven-minute walk, of every RER station.

Pick-up points are also located in small suburban centres. However, coverage of sparsely populated areas is very intermittent while pick-up points are overrepresented in densely populated areas. For all of the areas studied, there are heavier concentrations of pick-up points than of population in urban municipalities: only 7% of pick-up points are located in rural municipalities, although they are home to 17% of population in Seine et Marne.



Source: authors' survey

Figure 2. Networks of pick-up points in Seine et Marne

Online shopping provides vastly improved geographical accessibility as there is no need to travel to collect shipments. Only the need to collect purchases from pick-up points engenders travel, but there again and even in the less densely populated areas, gains in accessibility are observed.

4.2. More frequent online sales in suburban areas

The questionnaire survey reveals that 77% of respondents bought physical goods online other than food. The vast majority of them (85%) purchased recurrently online, i.e. several times a year. Based on frequency, it can be seen that online purchasing is more widespread and diversified in outlying areas than central areas. Some 82% of respondents living in the outer suburbs purchased physical goods online (non-food) in the previous 12 months, versus just 72% of city residents. On average, city dwellers purchased 4.8 different types of product versus 5.9 types for households in the outer suburbs. Values for online groceries are far lower with just

one in four individuals having already purchased online. These observations are confirmed by the multivariate analysis.

The analysis of effects in logistic regression reveals that the typical online purchaser of physical non-food products is young, with a high income and living outside the metropolitan area of Paris and in an outlying suburban municipality (Table 4). For the use of click-and-collect services for food products, the typical online purchaser is young, lives as a couple with or without children, is wealthy, also buys non-food products online, and lives outside the metropolitan area of Paris and in an outlying suburban municipality (Table 5), That is to say that the inhabitants of outlying suburban municipalities, in medium-sized metropolitan areas are the ones most likely to buy online food or non-food products. The spatial dimension is remarkable in two ways: it is individuals living in the smaller cities and in the outlying areas who buy online most.

Table 4. Model of online purchases of physical non-food products (r^2=0.22)

		Estimate	Std. Error	Pr(>|z|)
	(Intercept)	0.86	0.22	<0.001
Age (ref: under 30)	30-39	-0.99	0.27	<0.001
	40-49	-0.79	0.27	0.003
	50-59	-1.68	0.28	<0.001
	60 and +	-3.11	0.28	<0.001
Household income (ref: - €2500)	2500 – 4000	0.92	0.20	<0.001
	4000 and +	1.20	0.25	<0.001
Metropolitan area (ref: Paris)	Dijon	0.57	0.21	0.005
	Besançon	0.41	0.22	0.063
Type of municipality (ref: urban)	Inner suburbs	0.28	0.20	0.159
	Outer suburbs	0.66	0.22	0.003

Source: authors' survey

Table 5. Model of car-owner household use of click-and-collect services (r^2=0.17)

		Estimate	Std. Error	Pr(>|z|)
	(Intercept)	-2.72	0.36	<0.001
Age (ref: - 30 years)	30-39	-0.24	0.29	0.411
	40-49	-0.48	0.28	0.086
	50-59	-1.31	0.36	<0.001
	60 and +	-2.96	0.64	<0.001
Household income (ref: - €2500)	2500 – 4000	0.54	0.24	0.024
	4000 and +	0.53	0.28	0.062
Household type (ref: single or single-parent family)	Couple without children	0.62	0.28	0.027
	Couple with children	0.65	0.31	0.034
Non-food distance purchases (dummy)		0.78	0.27	0.004
Metropolitan area (ref: Paris)	Dijon	0.76	0.24	0.001
	Besançon	0.11	0.27	0.694
Type of municipality (ref: urban)	Inner suburbs	0.59	0.25	0.021
	Outer suburbs	0.71	0.28	0.009

Source: authors' survey

4.3. The efficiency hypothesis and individual comments

It has just been seen that, despite the offer being focused more on urban areas (for food and pick-up points), suburban households are major users of online purchasing. The interviews conducted give us greater insight into the reasons for this sociospatially distinctive online purchasing behaviour. Practices revealed and described by households during interviews are consistent with the findings of the questionnaire-based quantitative analysis.

In the interviews, recourse to online sales is seldom formulated directly in terms of a general way of offsetting remoteness from shopping locations. Few people construct so explicit a strategy. Particularly since online purchasing motivations are much the same from one type of space to another. Several motivations or triggers were evoked in the interviews to explain the resort to e-commerce. They are not necessarily specific to sparsely populated areas but they do work in a particular way there.

These motivations are actually interdependent, as attested to by the excerpts from interviews:

"Well, […] I had tried a time or two before my pregnancy, but when I was pregnant I did because it was handier, it meant I didn't have to […] carry bags of shopping." Mrs B, aged 38, married, four children, Seine-et-Marne, has lived in the suburbs since 1998 (owner occupier), librarian (on maternity leave).

"So there's a financial saving, […] but there's also access to rarity. That's clear enough. And online purchasing via the Internet […] means choice, and choice is not limited geographically […]." Mr Three, aged 37, married, two children, Côte-d'Or, lives in the suburbs (owner occupier), special needs teacher.

Beyond the arrival of a new child, moving house or an unplanned life cycle event (disability), these excerpts illustrate to what extent the transition to online purchasing is driven by multiple factors. While those factors are a priori common to urban and suburban households, they may have a greater effect in suburban areas. Less easy access to shops and remoteness in space and time prompt people to use online shopping more readily or to adopt it more quickly.

"*AND DID YOU BUY ONLINE BEFORE… WHEN… AT THE TIME YOU WERE LIVING IN TORCY* [urban area]?"

"No, I don't think so. In Torcy […] we were in an urban area all the same and we had an enormous number of shops available. And then again it was not yet … [implication: so easy and so common to purchase online]." Mrs I, aged 62, married, two children not living at home, Seine-et-Marne, has lived in the suburbs since 2003 (owner occupier), retired and runs a self-catering holiday let.

Several of the suburban households we met pointed out this remoteness from shops. While distance does feature in what is said, it is often combined with other arguments: greater choice, better prices, etc. One point that differentiates households living close to shops from others is the switching back and forth between physical and virtual shops, less difficulty in accessing shops that are not perceived as distant or remote contrary to what more suburban households experience.

"[Buy books online] no, I don't find any need for it because I can easily go near here, to the shop." Mrs F, aged 65, married, no children at home, Seine-et-Marne, has lived in the city segment since 1983 (owner occupier), retired.

"*So it is the absence of physical shopping sites that make us go online*." Mr One, aged 49, married, four children aged 9 to 14 years, Côte-d'Or, has lived in the city since 2004 (owner occupier), state sector employee.

The use of online sales by people living in areas close to shops may follow the same motivations as those reviewed above: lower prices, wider choice, preference for delivery rather

than carrying heavy items, comfort of using ever improving telephone connections. The parallel use of both possible purchasing circuits will thus be more frequent. This is obvious from more frequent comparison, in situ testing of products purchased online, and the consultation of online instructions for use for store-bought products. Getting out for a stroll that is characteristic of purchasing in an urban context is duplicated by quite significant mobility between home (on the computer) and in a shop. Such to-ing and fro-ing is more exceptional in suburban settings and is often accompanied by a rejection of the commercial atmosphere in places of purchase where there are "too many people" and too much "time wasting" (and not just in getting there).

This observation from the qualitative interviews is found also in part in the questionnaire results. Thus, for non-food products, while price is the primary reason for online shopping, saving a journey and the unavailability of the products sought near to home come in second and third positions being cited by more than 40% of households questioned that shop online for this type of products.

More specifically, avoiding a journey is less important for city residents than residents in the outer suburbs, whether for cybermarkets or non-food products. This tends to confirm the hypothesis that for suburban households distance purchasing and especially online purchasing is a more ready substitute for a journey than for city residents. In actual fact, distance purchasing and the Internet remain forms of purchasing that complement in-store purchasing, whether in the city or the suburbs. However, for suburban households, the Internet is a fully alternative purchasing space.

4.4. Ways of collecting non-food purchases

Although suburban resident are more likely to purchase online that does not mean that a priori they avoid all shopping trips and that the efficiency hypothesis is confirmed. For online groceries, the lack of home delivery in such areas means that suburban residents must collect their purchases from the click-and-collect and travel just as far as if they went to the shop. For non-food products, they have the choice between pick-up points and home delivery. But the findings are incontrovertible. The preferred method of collection for online purchases is home delivery for 70% of respondents, whether in the city or the suburbs. Simplicity is the reason stated by 85% of respondents. The reasons for preferring a pick-up point are less clear cut. The only one that stands out against home delivery is the reliability of recovery. This motive is cited for 39% of respondents versus just 14% for home delivery. The price of collection from pick-up points, which is often lower than for home delivery, is not cited very often. It can be assumed that the difference in price with home delivery is not great enough to force consumers to prefer this form of collection.

Conversely, it can be observed from the multivariate analysis that those who purchase most on the Internet prefer pick-up points (Table 6). Moreover, pick-up points are used in preference when available in the municipality of residence. The proximity of pick-up points seems, then, to be a decisive factor for this form of collection, but they are not available for most suburban areas.

From the logistic regression shown in Table 6 the typical purchaser who prefers pick-up point collection makes more purchases, especially of clothing or small electronic items, returns several products per year and lives in a municipality where there is a pick-up point, that is, in the most populous municipalities and the ones with most shops.

While suburban households mostly have home deliveries, urban households give preference more than elsewhere to pick-up points for their purchases. In suburban areas, the coverage with pick-up points is coarser than in the city. Accordingly, collecting a purchase from a pick-up point means making a detour or a special trip when the municipality is not one

otherwise frequented, whereas the motivation for resort to online purchasing is to avoid just such trips, which are deemed superfluous. Obviously online shops do not always provide a choice as to forms of delivery.

Table 6. Model of preferred collection from pick-up points (r^2=0.12)

		Estimate	Std. Error	Pr(>|z|)
(Intercept)		-1.41	0.31	<0.001
Electronic product purchases (dummy)		0.64	0.19	<0.001
Clothing purchases (dummy)		0.98	0.21	<0.001
Frequency of distance purchases (ref: several times a month)	Several times a year	-0.39	0.21	0.062
Returns of purchases (ref: none or once)	Twice	0.51	0.25	0.044
	3 times and +	1.03	0.22	<0.001
Metropolitan area (ref: Paris)	Dijon	-0.16	0.21	0.440
	Besançon	-0.53	0.24	0.030
Pick-up point in municipality (dummy)		0.43	0.19	0.022

Source: authors' survey

Several households interviewed tend to dismiss the pick-up point solution in that it imposes just such a trip that they wish to avoid by using the Internet. Mrs I explains this quite explicitly.

"So it is possible to go and get them from pick-up points and so on. But it's a nuisance. If I get something on the Internet then they may just as well bring it to me at home. If I use the Internet, it's because I don't want to have to go out." Mrs I, aged 62, married, two children not living at home, Seine-et-Marne, has lived in suburbs since 2003 (owner occupier), retired and runs a self-catering holiday let.

When there is no choice between home delivery and pick-up point and there is no escaping the latter, households do not relinquish online purchasing even so. However, the pick-up point is chosen so as to be consistent with travel routines. The product is collected so as to be chained with another trip (work, other shopping, etc.):

"*When my wife used to work in Genlis, we had it brought to Genlis. If we were to order now, it's very likely we'd have it sent to Quetigny because I'll be going through Quetigny, and it'll take less time than to go to Genlis and back*." Mr Three, aged 37, married, two children, Côte-d'Or, lives in the suburbs (owner occupier), special needs teacher.

These excerpts illustrate to what extent online purchasing is part of a rationale of minimizing associated trips right down to the final part of the process, the collection of the product, and more specifically so for suburban households. They seek primarily to avoid any trips (home delivery) and then to minimize the impact of trips on the daily routine by integrating them into their activities and/or routine trips.

5. DISCUSSION AND CONCLUSION

Our findings reveal that the uses of online sales are differentiated by several factors. Households are more inclined to make online purchases if one or even two members are part of the working population, if they have children especially infants, or – an important factor in our subject of study – if they live in a suburban area or are dependent on cars.

By focusing on differences between urban and suburban households, the Internet can be

seen as an additional space for shopping that households incorporate into their daily activities. For suburban households especially, the propensity to purchase online is stronger. Online sales provide choice, competition and prices to which suburban residents did not readily have access before. According to our results, suburban households have clearly identified the advantages that are provided by this delivery solution. They are more likely to buy online and to buy online more frequently than urban households. Similarly, the smaller the urban area the more the local populations resort to purchasing online. The limits of what is on offer locally therefore prompt households to buy over the Internet.

Moreover, suburbanites resort more often to home delivery than do urbanites who quite readily use pick-up points, meaning they must make trips to collect their purchases. Even so, the quantitative results do not directly confirm the efficiency hypothesis (Anderson *et al*., 2003), which postulates that people with low accessibility tend to buy more online, insofar as it cannot be shown that online purchasing substitutes for in-store purchasing. However, the efficiency hypothesis is very much present in the discourse of suburban households in the qualitative stage interviews and it is consistent with the quantitative results. It would be tempting therefore to conclude there is a stronger substitution effect in the suburbs than in the cities.

Compensation for reduced accessibility and the substitution of shopping trips by recourse to ICT – the efficiency hypothesis – takes its source in the potential offered by online purchasing in terms of organization of routines and trips. Accordingly, in the suburbs, activity schedules and trips promote the use of clustering and chaining. Purchasing online and having home delivery is an easier practice in suburban areas dependent on cars because it is consistent with the perceived drudgery of making trips, a desire to rationalize and save on trips, and the quest for proximity based on the home and immediate neighbourhood (which facilitates delivery to the detriment of pick-up points).

Thus, by taking into account a broadly defined purchasing space (physical and online shops), it is tempting to conclude that suburbanites are now like other urbanites with access to much the same range of choices that urban households enjoy. However, in what households have to say, it is striking to observe that, for suburban households, the use of online shopping is part of selective separation from the city and the shops to be found there. Their uses of online sales are therefore part of a lifestyle or a spatially differentiated form of residence and are asserted as such.

These results and conclusions apply primarily to non-food products. Food products sold by online groceries do not fare well for one thing. For another, online sales provide few if any advantages in terms of geographical accessibility. Food click-and-collect points allow their customers more flexibility in shopping hours but do not save them a trip, or time or distance compared with existing stores. On the contrary, even, click-and-collects, which have thrived in France since 2013, are still fewer and more concentrated than brick-and-mortar stores, meaning longer distances for their customers to travel. So online sales only partly challenge the urban/suburban model. Food apart, differences in access between urban and suburban segments have all but vanished. However, for food, suburban households continue to travel much longer distances and remain dependent on the car for their shopping.

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