

Master SHS
Mention Sciences Sociales
Villes et Territoires



UMR 6173 CITERES

Cités, Territoires, Environnement et Sociétés

CNRS-Université de Tours

MSH de Tours

Behavior of commuters due to heterogeneity in spatial
distribution between settlements and job centers,
A French Case study - communauté de communes Val de l'Indre.

Master dissertation

Année 2010

Tutor : Professor Christophe Demaziere

Bhuvaneshwaran Sampath

Abstract

In this research, a study is made on evolution of urban sprawl and emerging of spatial growth in Europe at this 21st century. It explores the conflict between homes to the Job centres or sub centres which provide employment opportunities for large group of community or group of communes. The research includes literature reviews from both European and French context. It explain the evolution of urban sprawl and its trend in French context, evolution of SCOT, commuting behaviour of inhabitants in France and also deals with the intra-urban spatial distribution. This study also includes a case study that primarily concentrates on the commuting behaviour of homes to job centres within the neighbouring communauté de communes (group of communes) Val de l'indre located at south of Tours, an intermediary city of around 300,000 inhabitation, in France. A data analysis is carried out in order to understand the characteristic of the commuters and lack of active economic zones in their respective communes. A concept is arrived to title the daily commuters according to their distance travelled to the neighbouring L'aire urbaine or other communauté de communes for jobs. Finally, a sensitive result and justification have been brought out from empirical analysis.

Research objective

To study

1. The spatial distribution of urban pattern of current scenarios and the evolution of uncontrolled urban sprawl in European context.
2. To observe one of the world challenging issue of commuting behavior across France through literature reviews.
3. Also a case study on commuting behavior due to location of job centers or Active Economic Zones (AEZ) in communauté de commune Val de l'indre which also called as district that is located in south of Tours Agglomeration.

Methodology

1. Broad reviews were made through literatures on home to job centers, commuting towns, urban sprawl, polycentrism, intra urban spatial distribution, spatial mismatch and other related subheadings through several articles in both extensive and French case studies.
2. An initial survey have been made through online both to the students and professors who commutes to their work place or study centers both within Tours and its agglomeration from which a general perspective on the topic is observed.
3. The Study area is identified through consideration of issues and problems that continuously faced by the community on economic growth, social services and also which depends on employment opportunities and education to strong neighboring municipalities like Tours. However, the study area is finalized with the guiding professor as "Communauté de commune Val de l'indre".
4. After finalization of study area, the obligatory Data needed are listed and questionnaires are created for data collection.

5. The data's are collected from the corresponding departments (ATU) and meetings and discussion were made for several times with the expertise of corresponding sectors until the clear data and information are obtained.
6. The field visits are made to study area (Montbazon canton) to explore the Active Economic Zone and the behavior of commuters as well as known about the Tourism development.
7. The collected data of each commune are compiled and analyses were made on availability of number of Active Economic Zones or Job centers in each commune, the number of active employers and rate of unemployment and also the rate of commuters who travel outside their communes for their jobs and the mobility behavior within the communauté de communes are analyzed through comparing, distinguishing and differentiating each individual commune and also understanding the historic spatial growth pattern of CCVI.

After identification of the job centers or sub centers of different size and area, the number of commuters is attracted towards the poles and the number of people repelled or out-migrates to their work place from their communes are observed from which the external, internal and zero commuters are determined. And also the rates of existing unemployment are identified even the problems and issues to be face by the society are observed according to existing situations.

8. Therefore, from the above analysis the rate of commuters is extracted from the number of employments are available within and outside the communauté de communes of Val de l'indre and the weakness of job centers or Active economic zone are addressed through predictions.
9. Justifying Hypothesis, this may prove the hypothesis statement which was made at the initial stage of research.
10. Conclusion

Introduction

World population clock runs faster than a GMT clock. For every second population is increase by 3¹, meanwhile the land required for every one hour is about 2 square miles² for this cumulative population. In this fast growing century, the foot print of human being is almost stepped across the earth for habitation which induces on the more usage of scaring non-renewable resources through commuting behavior and also the standard land requirement per person is increasing day by day with consciousness of environmental degradation. Over the last decades, there has been considerable interest in the analysis of urban spatial structure. Indeed, urban growth has exhibited complex spatial patterns including both population spread and employment decentralization from the central city towards the suburbs. (Catherine Baumont, Cem Ertur et al.)

“It is quite remarkable that, even though Europe is one of the most developed regions of the planet and one where sprawl is supposed to be appearing more and more over time, its urban sprawl has received so little attention from urban researchers” stated in ERSA 2010 Report. Due to increase in daily commuters, the usage of petrol is increased enormously which leads to untold endangered resource in near future. This distance growth also increasing the cost on infrastructure and other facilities that needs to be provided all along the way for commuters. Although the home to work distance is only the commuting distance that travel daily by the commuters but there are several other sound reasons why this trips are significant to focus on. Sometimes home to shops and commercial centers are also said to be commuting distance but then the home to job centers are more likely to be generated every day³.

This paper holds two studies. First, it explicates the trend on urban sprawl and the diverse view of French cases by unlike authors, which

¹ Death rates are not considered.

² As per standard requirement of single person

³ Commercial centers are also considered to job centers.

concentrates on the inconsistency between job centers and homes due to modern urban sprawl in French agglomerations. Second, the case study, deals on the commuting behavior of the working population living in Communauté Communes VAL de L'INDRE in the south of Tours. The sub-centers or job centers are identified in each commune of Val de l'indre and analyses made on the number of employees working within the same and outside the communauté de communes. Then the commuting behaviors are identified based on the influence to the job centers or nearby towns. The objective of the research is to explore the spatial distance growth between Active economic poles and residential zones and also to improve the SCOT strategies in val de l'indre communauté de communes.

Literature review

From both extensive and intensive Reviews were made to shape the research methodology and to make strong hypothesis for better understanding and justifications respectively. However, the reviews are concentrated on the view of French context and its distinctiveness.

Urban sprawl at 360 degree

Urban sprawl in all angle, defined as low-density residential and commercial development on previously undeveloped land in a scattered pattern of urban development. Urban sprawl is just another phrase for "excessive" metropolitan decentralization or suburbanization. Suburbanization occurs over time when a larger percentage of a metropolitan area's residential and/or business activity takes place outside of its central locations (Robert W. Wassmer, 2002). And Robert also pointed out when further decentralization imposes, greater the net marginal cost's on every individuals in the metropolitan area than if the development had remained more centralized (Gordon and Richardson, 1996; Mills, 1999; and Brueckner, 2000).

The characteristics of sprawl from land-use point of view are consisted of low-density residential development, homogenous single-family residential development with scattered units, non-residential uses of shopping centers, strip retail, freestanding industry, office buildings, education and other community uses. Sprawl can also be characterized by heavy consumption of exurban agricultural and environmentally sensitive land, dependence on the automobile for transport and some small developer's constructions (US Research Transport, 1998), because the growth of cities is brought about not only through an increase in the population within fixed limits, but also through spatial expansion, it is always difficult to measure. International comparisons are still complicated by the differences in ways of defining the urban population and demarcating city limits in the different countries (Pumain, Saint-Julien, 1991).

What urban sprawl means to a politician probably differs from what it is for an urban planner, economist and far from an environmental activist

An urban planner, Reid Ewing takes a very deliberate approach to conceptualizing urban sprawl. Surveying 15 academic articles on the subject, written between 1957 and 1992, he found that the terms low-density, strip or ribbon, scattered, or leapfrog development are most often used to characterize urban sprawl. Ewing lump these characteristics under the term "non-compact development"

Urban sprawl in 21st Century

In the late 19th and early 20th century, there is a sudden increase in urbanization attributed to Industrial Revolution, which provided better economic opportunities in the cities, due to setting up of factories and industries. As the cities and towns reap most of the benefits of innovations in the fields of science and technology, urbanization still continues to take place in them. As a result of this, the cities and its suburbs spill over to the rural

areas along their boundaries, and this spread is termed as urban sprawl. Hence, migration is not a new phenomenon, Due to high intra-urban transport costs for both people and goods, residences were located near or even within that central area (Mieszkowski and Mills, 1993). The emergence of new transport modes such as tramways, trains, then cars, made it possible for the population to sub-urbanize. The decrease in intra-urban costs associated with transport innovations enabled people to move to the suburbs in order to consume more housing while keeping their jobs at the city centre. The general increase in population and wealth also contributed to the spatial expansion of cities and fostered the emergence of rich suburban areas, especially in the second half of the 20th century and still the trend continues.

In this modern sprawl, the economic strength of an average income people raises to high living standards and affordable to spend their money on travel to the nearby communes for a better life at the suburb. It is also evident that Commercial and industrial activities are pushed to outskirts where taxes are generally low for a better and cheap availability of land, this intend people to sprawl. Even in the absence of any government policies that encourage sprawl, low-density suburban communities still would proliferate because many people prefer living in areas with less traffic congestion, larger lot sizes and cheaper housing costs (Glaeser and Kahn 2003).

Urban Sprawl Evolution in France

Urban sprawl has become established in France with original characteristics that could be summed up as the result of the intermediate position of the country between Northern and Southern Europe, stated by Denise Pumain, in the first line of his introduction and also confirmed by Chavouet et al.,2000, Without being as interventionist in urban planning as Holland or Sweden, the French state has certainly played an important role in the extension of the cities, through its policies related to housing and

transportation and he also mentioned that French territorial divisions (Nomenclature of Territorial Units for Statistics NUTS 5 level of local units) are the smallest among Europe, 1.5 km² and 1600 inhabitants on average, but half of the communes have fewer than 400 inhabitants.

Urban sprawl is categorized in to three major levels of intercommunalité boundaries which denote several forms of cooperation between communes in France. In 1954, the communautés d'agglomération was created based on the morphological criterions which include center and the suburban communes with at least a threshold population of 2000 each (pumain). It is less integrated than an urban community but more integrated than a communauté de communes. Now about 174 Agglomeration communities were exist as of 2009 and consist of a commune of at least 15,000 inhabitants with combined population of 21 million. In 1966, the communautés urbaine was first created in French parliament which composed of a city (commune) and its independent suburbs (independent communes) with a combined population of about 7.5 million. In 1971, there was a debate on merging the communes with each other by the Marcelline law, but only 1300 communes were agreed which is only 4% of 37659 communes (Wikipedia - communautés d'agglomération)

Later in 1992, communauté de communes were formed between communes outside the communautés d'agglomération for the effective frame work of economic and social developments. Unlike the communautés d'agglomération and the communautés urbaines, communautés de communes are not subjected to a minimum threshold of population to come into existence, the only constraint were geographical continuity and In 1999 when the Chevènement Law regulatory modifications came into force, communautés de communes already in existence that did not meet the criterion of geographical continuity were left untouched (Wikipedia).

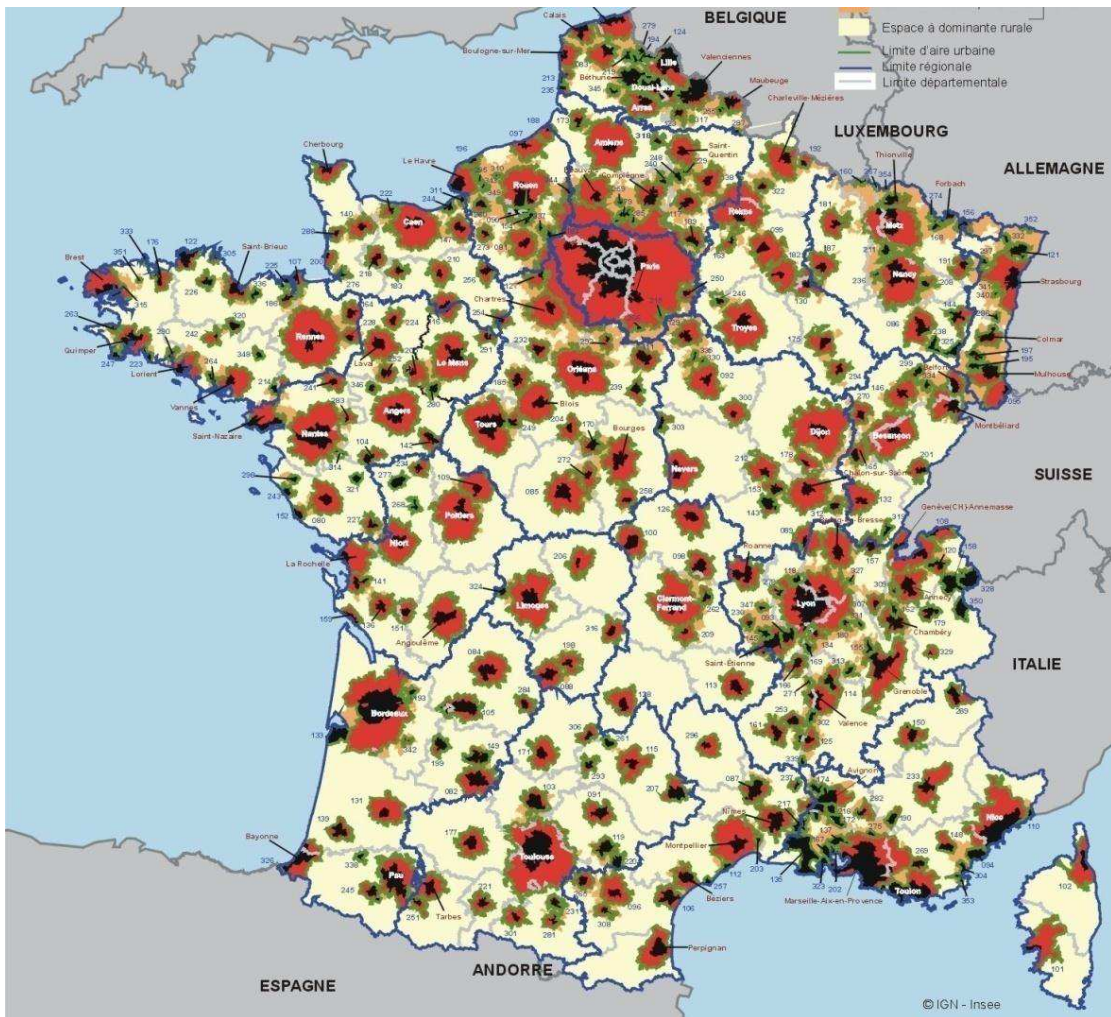
In 2008 there were 2,393 communautés de communes in France. Of these, roughly 1,000 had been in existence for less than a year. New communautés are currently being created at a more rapid rate than in the early years. Nevertheless, there are still many rural communes that have not joined one of these groupings (DGCL- Direction générale des collectivités locales)

In 1996, the 'aires urbaines' replaced the Z. P. I. U. (Zones of Urban and Industrial Settlements), were created in 1962 by INSEE to measure the influence of economic growth in rural and suburban zones which is now considered to be too extensive they concentrated three quarters of the communes and especially 96% of the French population in 1990. An 'aire urbaine' is composed of an urban center and a surrounding urban ring. Urban poles providing at least 5,000 jobs, and suburban communes in which at least 40% of the active population works in the urban pole or in a secondary center that is already attached to the urban center by means of this criterion (Denise Pumain). Map 1 shows the Aires urbaines in 1999.

According to INSEE, the Tours city is composed of 80 municipalities which also include the case study region communauté de communes Val de l'indre (CCVI).

In 2000, the Solidarity and Urban Renewal Act, introduces SCOT (Schéma de cohérence territoriale), a policy for strengthening the Job centers and active poles in order to create employment opportunities at regional levels which also include urbanism, housing, travel and commercial developments. Consequently the proposals and sustainable development plans will be reviewed and validated for every 10 years.

Map of France - 1 Aire Urbaine 1999



Source: Aires Urbaine, 1999 France.

“The law on national commitment to the environment called Grenelle II of 12 July 2010 reinforces the objectives of SCOT (as well as Local Plan (PLU) and communal map) These plans, maps and diagrams should help to reduce space consumption (the fight against urban sprawl), preserving the spaces assigned to farming or forestry, to balance the geographical distribution of trade and services”

Wikipedia

From the above statement it is found that the SCOT objective is to improve the economic status of the region as well as the social connectivity with continues territory without enclaves between the communauté de communes and Urbaine agglomerations. It is the tool design and

implementation of an inter-municipal planning in guiding the evolution of an area within a proposed development and sustainable development. The SCOT is intended to serve as a framework for the various sector policies, especially those focused on issues of housing, travel, business development, environment, organization of spaces. This ensures consistency, as it ensures the consistency of inter-sector documents (PLH, PDU), and local plans (PLU) or communal maps established at municipal level. It specifically concentrates on improving the Job economic poles which could change the commuting behavior of home to job centers.

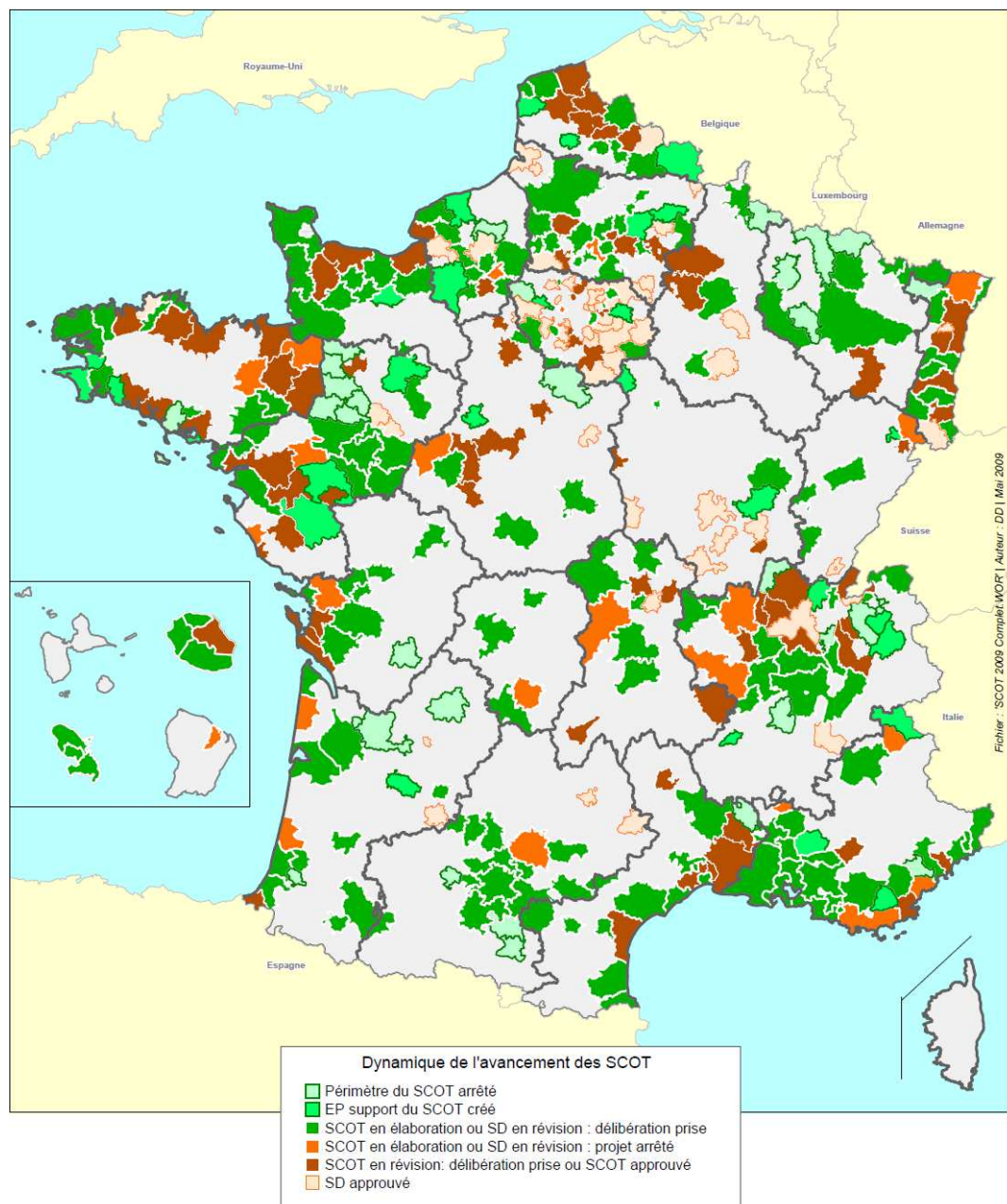
SCOT, it aims to perform by grouping the closed communes, new towns and countries through urban transport plans, creating of business development centers, local housing programs, charters and other inter-municipal developments for the sustainable and united community. The compliance of the SCOT and PLU compared to the Grenelle Law II, following a new law introduced in 2011 (for the field of urban planning) restores the ability to exceed 20% limits of size and density land use in protected areas, for buildings that meet certain energy performance criteria or with equipment for renewable energy production. A new Article 20 increases the transitional period enjoyed by the communes and public establishments of intercommunal cooperation (EPCI) to achieve compliance with their PLU Scot and the rules of the Grenelle 2 (Wikipedia - SCOT)

According to Amendment Act Article L122-2, 2010, the municipalities which are not covered under this schéma de cohérence territoriale, and which ever local plan area bounded after 2002, can be modified or revised in order to create active urbanization zones and also in the first paragraph coated that “Until December 31 2012, the first paragraph applies within the municipalities located within fifteen kilometers from the seashore or within ten miles of the outskirts of a town of over 50,000 inhabitants. And from 1st January 2013 to 31st December 2016, it applies to municipalities located within fifteen kilometers from the seashore or at least fifteen miles to the outskirts of a town

more than 15,000 inhabitants. Finally from January 2007, it applies to all municipalities (Wikipedia - SCOT).

SCOT in Tourangalle, covers about 830 square kilometer including CCVI which is one among the four communauté de communes with 353,000 inhabitants as per INSEE 2006.

France Map 2 - SCOT Perimeter

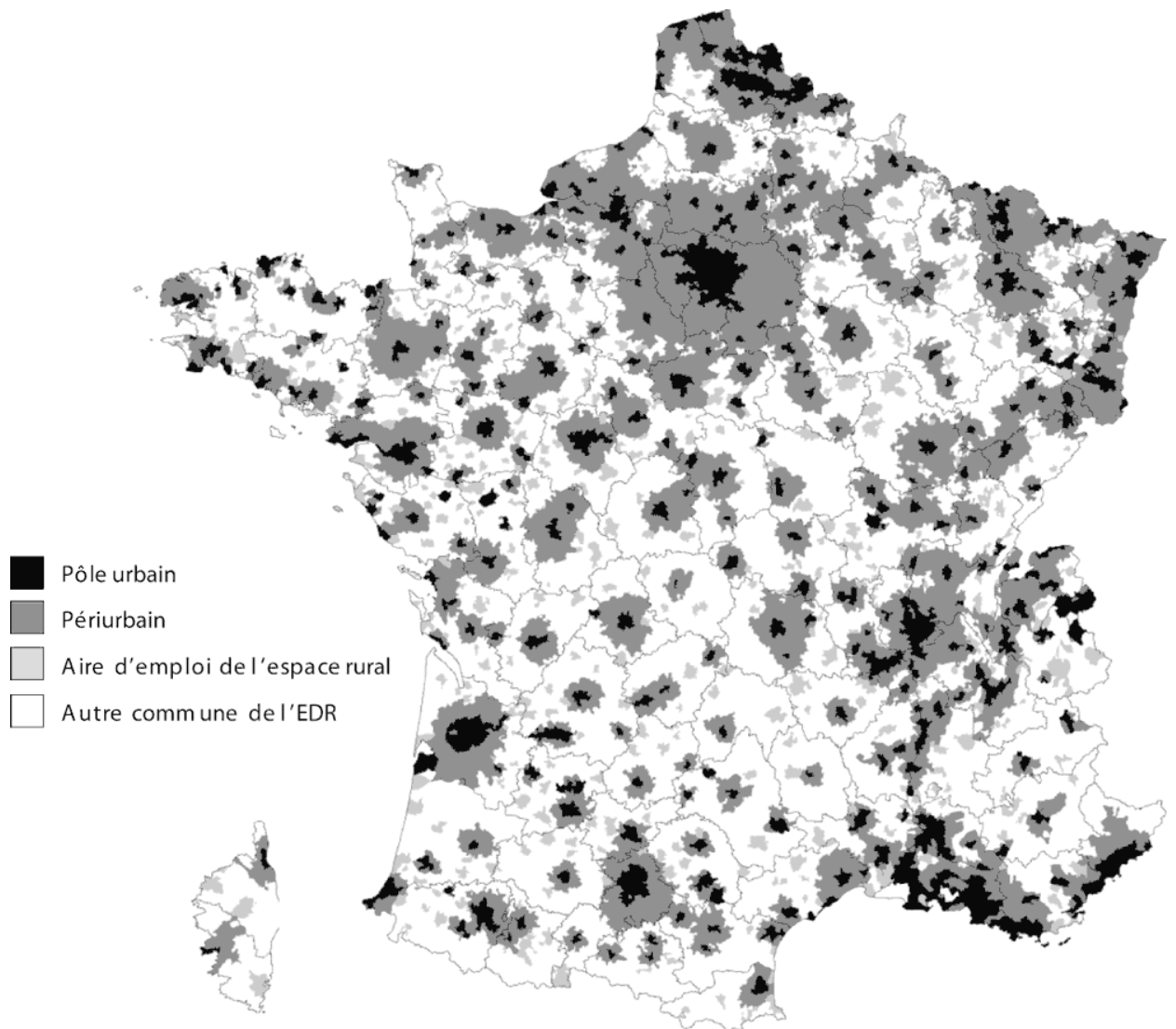


Source: SCOT, 2009 France

Urban sprawl is distinguished from two territory level, Aire urbaine and Urbaine agglomération. From the census of 1999, 1,995 agglomérations were counted, spreading across around 6,000 communes, that is, 44.2 million inhabitants, and a surface area of 100,000 km². Grouping 75.5% of the French population in 18% of the territory, with an average density of 442 inhabitants per km², the agglomérations constitute dense nuclei of urbanization. The aires urbaines are at one and the same time less numerous and more spread out: these 354 pools of work and daily life centered on the largest pockets of work include a somewhat larger population (45 million inhabitants, that is, 77% of the French population), but more particularly, spread out over a much wider surface area (13,900 communes, 176,000 km², that is, 32% of the territory). The average density of these zones under a strong urban influence is only 250 inhabitants per km², that is, only twice the average density of the French population (Denise Pumain)

According to Denise when urban expansion is measured from 1968 to 1999, the surface area urbanised is multiplied by 5, the number of urban communes are multiplied by 4, but the total population are increased half of the total population. The map 3 shows the extension of urban sprawl from 1968 to 1999.

France Map 3 - Urban Sprawl



Source: INSEE, Recensements de la population, France

Pole urbain: Extension of daily urbane system in 1968

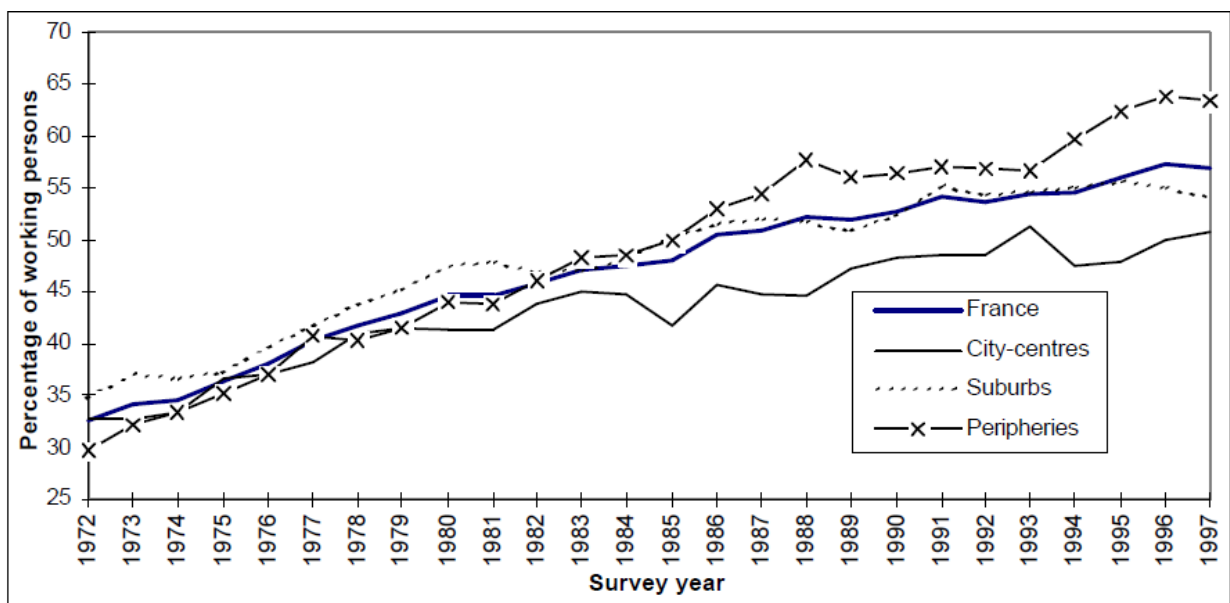
Periurbain: Extension of daily urban system in 2001

Commuting and Mobility Behavior in France

In the Beginning of 1970s, several cities came up with the idea of resisting the invasion of the automobile through a more widespread use of pedestrian zones, as well as the introduction of public transportation in bus lanes, and succeeded in slowing down the growth of intra-urban traffic. But in the same period, in early 1970, the appearance of ring roads emerged to 'protect the city', as well as parking facilities provided for employees of businesses which encouraged the inter-urban mobility and The length of the network of motorways multiplied by 2.5 between 1975 and 1990 (from 2,700 km to 6,800 km), it is evident that the period from 1960 to 1970, the dominant policy was to adapt the city to the car. Further the place of residence is from the city center, the higher the rate of motorization, the use of a car and daily distances (Gallez and Orfeuil, 1998). Many studies have highlighted the continuous lengthening of the average home-to-work distance (Andan et al., 1999; Bourne, 1989). This length is mostly by the workers, whose jobs are located outside their communes, even the number of workers employed within the commune is in less numerous, this reduction is more significant and rapid in case of France due to the number of jobs available in the sub-centers are less where as more concentrated at the city centers. (Aguilera and Mignot, 2002; Talbot, 2001). The inefficiency of distant job search can be caused by informational frictions when the available information about job vacancies decreases with distance to job opportunities (Rogers, 1997, Ihlanfeldt and Sjoquist, 1990, Ihlanfeldt, 1997, Wasmer and Zenou, 2002 and 2005). when deciding to accept or reject a job offer so that, if transport costs are very large, workers are likely to reject many job offers and remain unemployed or accept jobs that are poorly remunerated but located close to their residences (Brueckner and Martin, 1997, Coulson, Laing and Wang, 2001, Brueckner and Zenou, 2003) but not all the time.

L. Van Der Laan (1998) distinguishes centralized cities, where most home-to-work travels concern the city center, from polycentric cities where the periphery attracts a significant share of the commuters and categorized the commuting behavior in to three, first, the periphery attracts most of the commuters, including those coming from the center, in the second the central and peripheral labour markets are quite separate, and in the third a great number of the people living in the center work in the periphery and inversely. Average commuting distance for people living in sub-centers has been rising over the decade, so that the average attraction distance of the jobs located in sub centers (Aguilera et al)

Car use differs according to place of residence and work place. Indeed, the proportion of working peoples going by cars is greater in the peripheries than in the suburbs and city centers which reflects from the following figure (Akli Beri and Jean-Loup Madre, 2003).



Sources : Household Conjunction Survey (Insee) and, from 1995 on, Parc Auto panel survey (Sofrès).

These conclusions explain that the impact of urban sprawl on mobility is generally held as being negative and (partly) justifies a rekindling of interest in the alternative models of urban development (Gordon and Richardson, 1997).

Intra-Urban Spatial distribution

Over the last decades, there has been considerable interest in the analysis of urban spatial structure. Indeed, urban growth has exhibited complex spatial patterns including both population spread and employment decentralization from the central city towards the suburbs. From an empirical point of view, studying polycentric rather than monocentric urban configurations raises a set of challenges (Anas *et al.*, 1998; Baumont and Le Gallo, 1999, 2000) which can be summarized as follows. How many economic sub centers can be identified apart from the traditional Central Business District (CBD)? What are their sizes and their boundaries? Does the emergence of urban sub centers result in the CBD decline? Finally, how do these multiple economic centers influence land values, population and employment distributions? (Catherine Baumont, Cem Ertur et Julie Le Gallo, 1999). The identification of subcenters is often carried out using Giuliano and Small's (1991) methodology (see, for example, Giuliano and Small, 1991; Small and Song, 1994; Song, 1994; Sivitanidou, 1996; McMillen and McDonald, 1998a, b). These authors define a center as a zone or a set of contiguous zones for which a measure of employment concentration is higher than for all adjacent zones and for which the employment and employment density are above some predetermined cut-offs. The critical values chosen for these levels depend on the metropolitan area and may even vary over the metropolitan area if one observes strong variations in the employment or density employment distributions.

P. Gordon et H.W. Richardson (1996), on the basis that the sub centers cannot be defined only in reference to their number of jobs, claim it is also

important to take into account the nature of these jobs in reference to their level of attraction of trips (other than home-to-work). The authors thus define sub centers as zones with higher (potential) densities of attraction.

Hypothesis

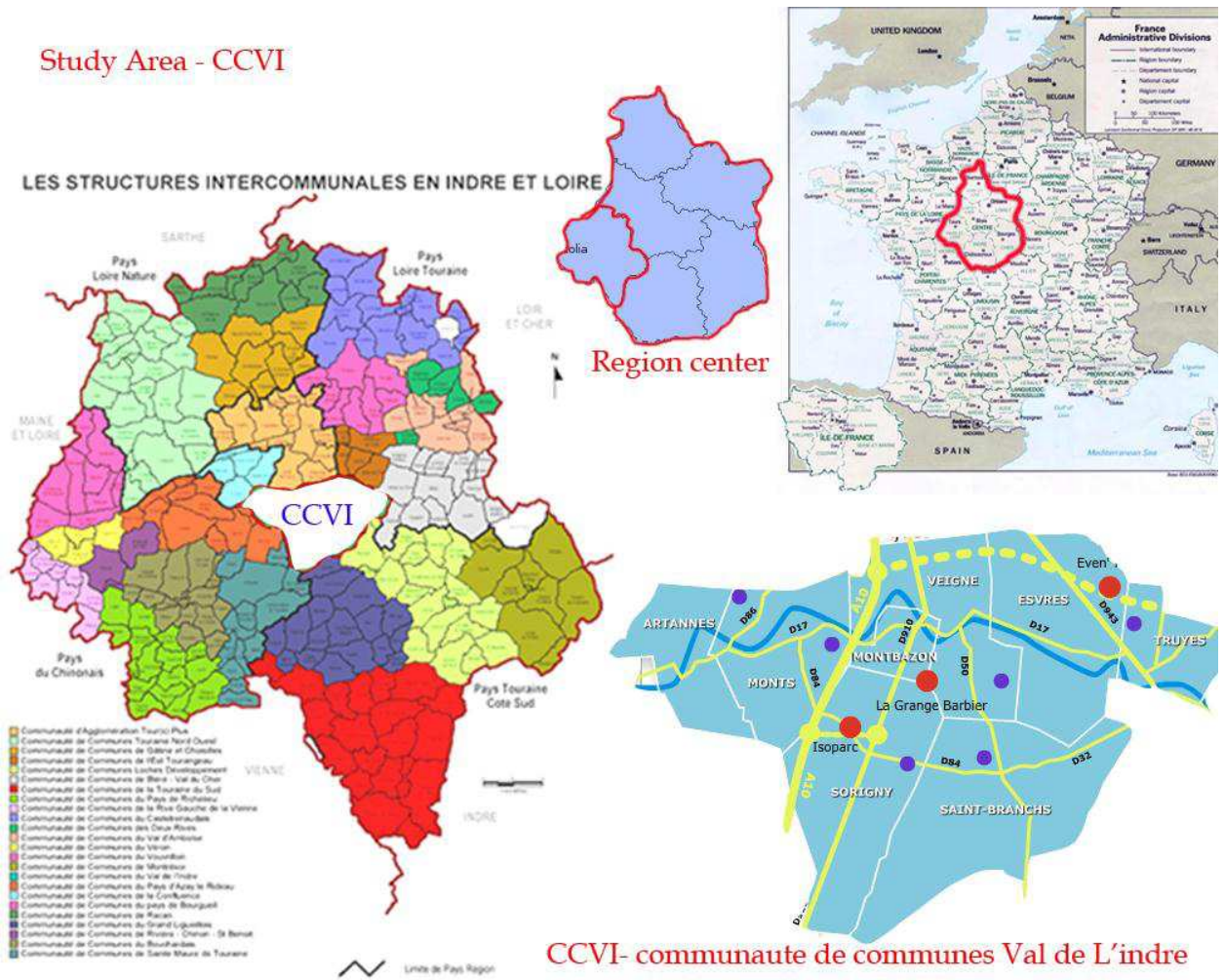
“As the number of job-centers or sub-centers increases in each district or departement, the number of commuters as well as the distance between homes to work place increases extensively this may lead to scattered development and uncontrolled urban sprawl”

A French Case Study - Communauté de Communes Val de l'indre

Introduction

As the population increases around city of Tours due to economic development, agglomeration occurs to withhold the working population. CCVI, one of the inter-communal structures was established on January 2001. it is located in the south of Indre-et-Loire departement at the region Center with size of about 30,264 inhabitants (as per 2007 INSEE statistical data) which is the highest population among 22 inter-communities, with the exemption of Tours agglomeration. It holds 8 communes (Artannes sur Indre, Monts, Sorigny, Saint Branchs, Montbazon, Veigné, Esvres sur Indre and Truyes.) with limitation of 228.16 square kilometers and density of 133 inhabitants per square kilometer. The Administrative services are distributed in to two communes, one is in Mont which is headquarter of CCVI and other in Montbazon.

Map 4 - Location of Study Area



Case Study Objective

To explore the current economic and employment situation of communauté de communes Val de L'indre from which number of daily working commuters who travel to their jobs from their communes to neighboring communes or out of their communauté de communes are identified, in brief, the number of job centers and economic zones are located at each communes of CCVI from where the total number of jobs available within CCVI are obtained. This shows the number of employed population within communauté de communes Val de L'indre and outside is determined. From this, a concept has been made for different category of commuters

between homes to job centers to know the rate of extreme commuters and number of jobs available for CCVI population, to explore their self-sustainability and their economic developments.

Demography

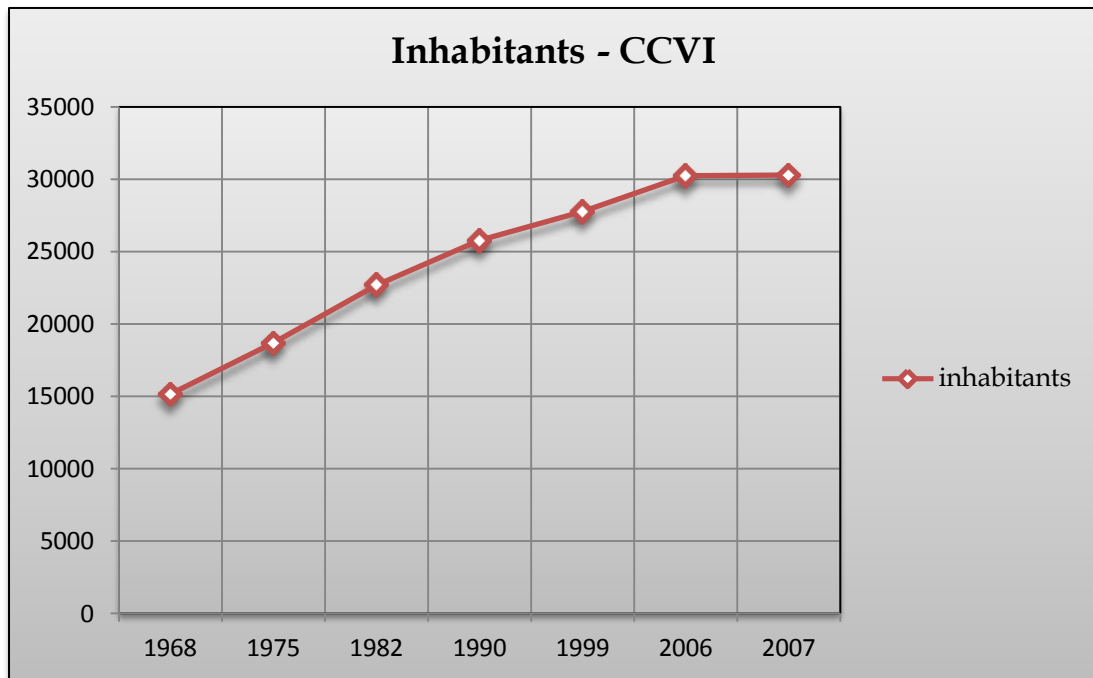
The combined population of communauté de communes of Val de L'indre is about 30,264 in 2007 according to the INSEE census, it is found that the population has doubled or increased to exactly 100% in 40 years (1968 to 2007) of time interval, averagely 25% of population have been increased at every decades. In 2006, the population is recorded as 30,215 which reflects only 49 inhabitants are increased in one year interval. Whereas from 1999 to 2006 the average increase in population per year is about 300 inhabitants which is six times higher in population rate than between 2006 to 2007 as well as the birthrate has decreased from 16% to 11% from 1975 to 2007 consistently. The following table 1 shows the evolution of population in CCVI from 1968 to 2007.

Table 1 - Population of CCVI

Year	Inhabitants of CCVI	Inhabitants of Indre-et-Loire
1968	15,144	437,866
1975	18,673	478,597
1982	22,674	506,093
1990	25,746	529,345
1999	27,732	553,747
2006	30,215	580,312
2007	30,264	583,084

Source: Insee, 2007, France.

Chart 1 - Evolution of population from 1968 to 2007.



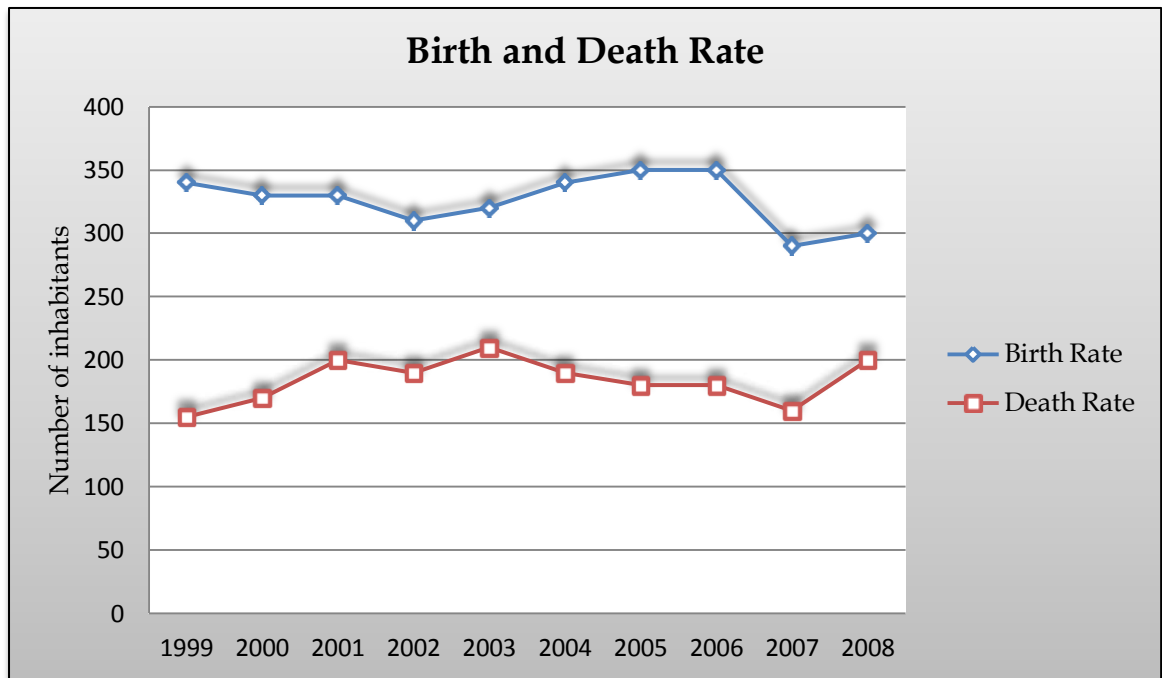
The average annual change in percentage of population has decreased from +3.1% to +1.1% from 1975 to 2007 correspondingly which proves that the cumulative population are reducing from the past. Both birth as well as death rate numbers are not in uniform level along the decades as show in the below table 2.

Table 2 - Birth rate and Death rate in percentage from 1968 to 2007

	1968 - 1975	1975 - 1982	1982 - 1990	1990 - 1999	1999 - 2007
Average annual change %	+3.1	+2.8	+1.6	+0.8	+1.1
Birth rate %	16.6	11.7	12.2	11.0	11.4
Death rate %	9.3	8.2	7.4	6.5	6.4

Source: Insee, exploitations principales - Etat Civil, France.

Chart 2 - Evolution of Birth rate and Death rate from 2000 to 2008



A broad range of age groups with sex ratio are listed in the following table 3.

Table 3 - Age group and sex ratio of 2007

	Male	%	Female	%
0 to 19 years	4208	27.9	3908	25.7
20 to 64 years	8765	58.2	8795	57.9
Above 65	2091	13.9	2497	16.4
Total	49.8	15064	15200	50.2

Source: Insee, 2007, France.

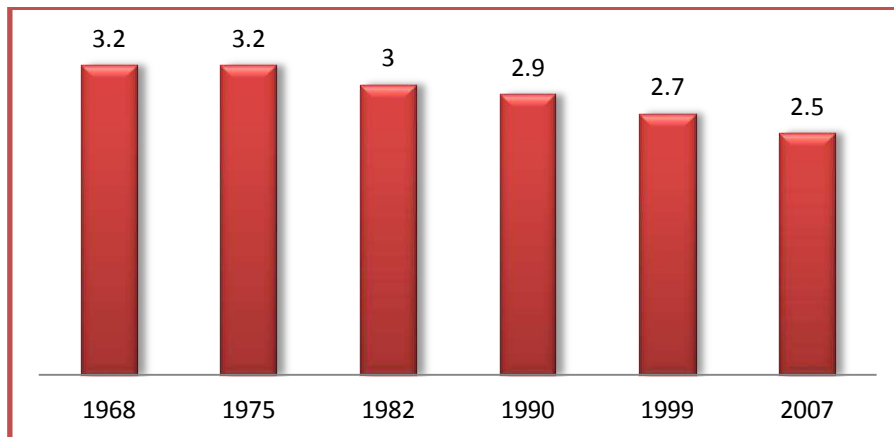
There are about 2,363 houses holds only single person in 2007 and it is increased from 1734 in 1999 which reflect the number of households are decreased from 3.2 to 2.5 from 1975 to 2007. The number of couples doesn't have child are increased from 32% to 34% from 1999 to 2007. This concludes there exist an unbalance house hold across CCVI as shown in the table 4.

Table 4 - Households detail in 1999 and 2007.

	1999	%	2007	%
Single household	1,734	17.4	2,363	20.35
Family without child	3,207	32.1	4,002	34.4
Family with child	4,435	44.4	4,426	38.1
Single-parent	537	5.3	691	5.95
Other households	78	0.8	141	1.2
Total	9,991	100	11,623	100

Source: Insee, RP 1999 and RP2007, France.

Chart 3 - Number of Households from 1968 to 2007



Working population

Total active population within CCVI is about 19,625 in 2007 as per INSEE whereas in 1999 it is 4% less which were 18,330. Out of these the employed population is about 69.8% and unemployment is 4.5%, which is decreased from 6.3% in 1999. Almost each household has two active workers. The following table 5 shows both active workers and non-active workers population.

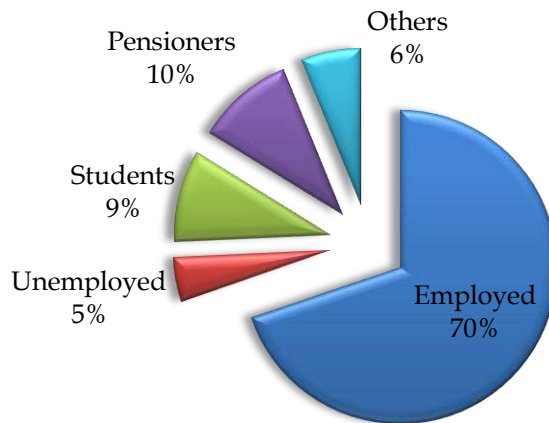
Table 5 - Employment details

	1999	%	2007	%
Employed population	11,941	65	13,807	69.8
Unemployed population	1128	6.3	787	4.5
workers population	13,069	71.3	14,594	74.3
Active population with respect to Total population (age 15 to 64)	18,330	66	19,625	64.8
Non-workers population	5261	28.7	5818	25.6

Source: Insee, RP 1999 and RP 2007, France.

Chart 4

Proportion of Population



CCVI Sprawl

Communauté de communes have a total area of about 228 square kilometer with lesser densities of only 132 persons per square kilometer and also there exist an unbalanced spatial distribution of settlements and road patterns with cul-de-sac which obstruct the integration of further development of housing and the most vulnerable households are struggling to continue their residential route. The map below shows the discontinuity in the sub-road network.

Map 5 - Discontinues Road pattern



Source: wikimapia

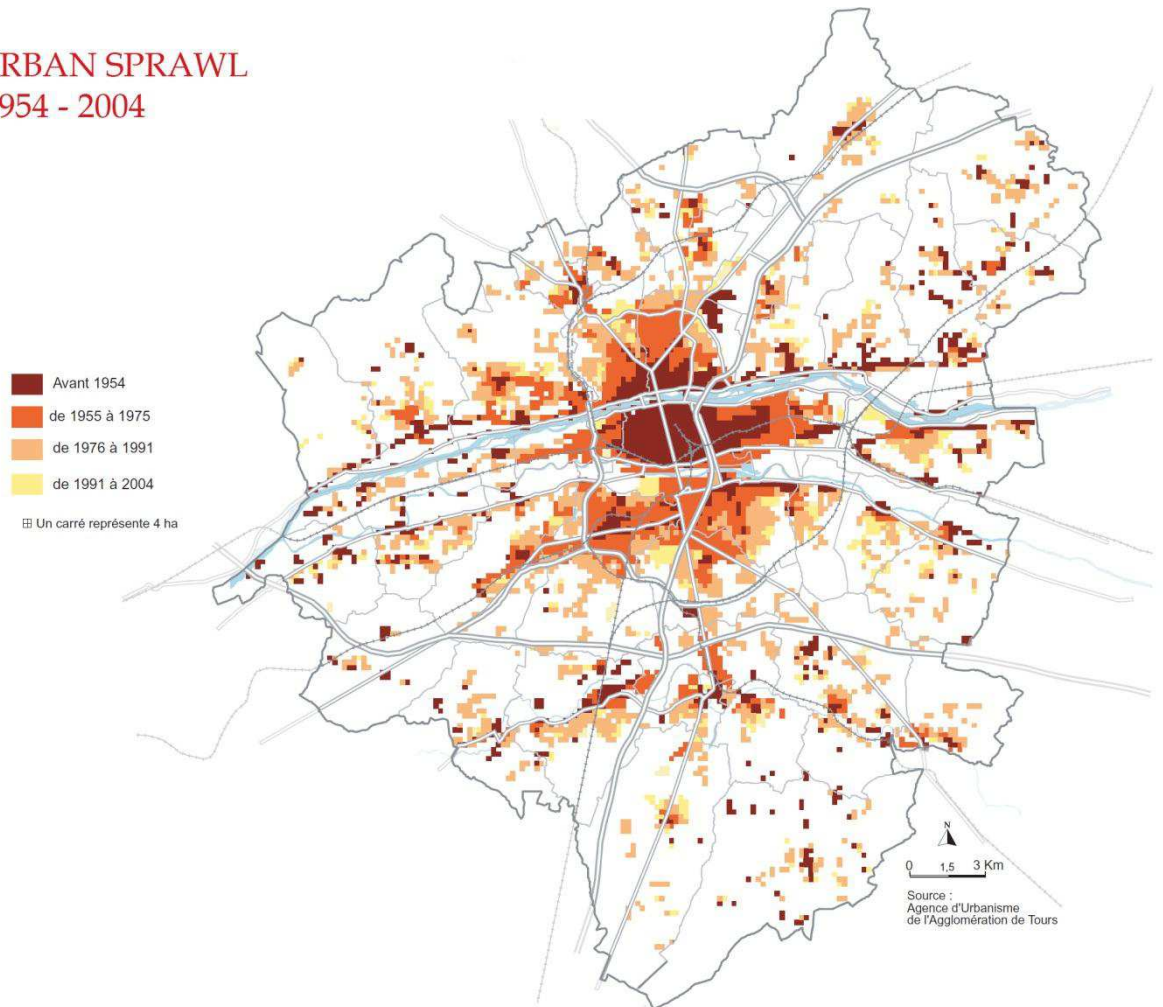
Table 6 - Housing

	1968	1975	1982	1990	1999	2007
Number of houses	5,441	6,779	8,369	9,684	10,939	12,445
Population density (inhabitant/km²)	66.2	81.8	99.4	112.8	121.5	132.6

Source: Insee, RP 1968 a 1990 dénombremments – RP 1999 and 2007, France.

Map 6 - Urban Sprawl in Tourangelle SCOT Perimeter

URBAN SPRAWL 1954 - 2004



Source: SCOT Sprawl Report, France.

As the number of individual houses has decreased from 92% to 91% from 1999 to 2007 which means the consumption of the area for households has decreased and the density are likely to be increased, it also shows that social housing (apartments) are upcoming which may control from urban sprawl, infrastructure cost as well as the cost of living.

Table 7 - Category of houses

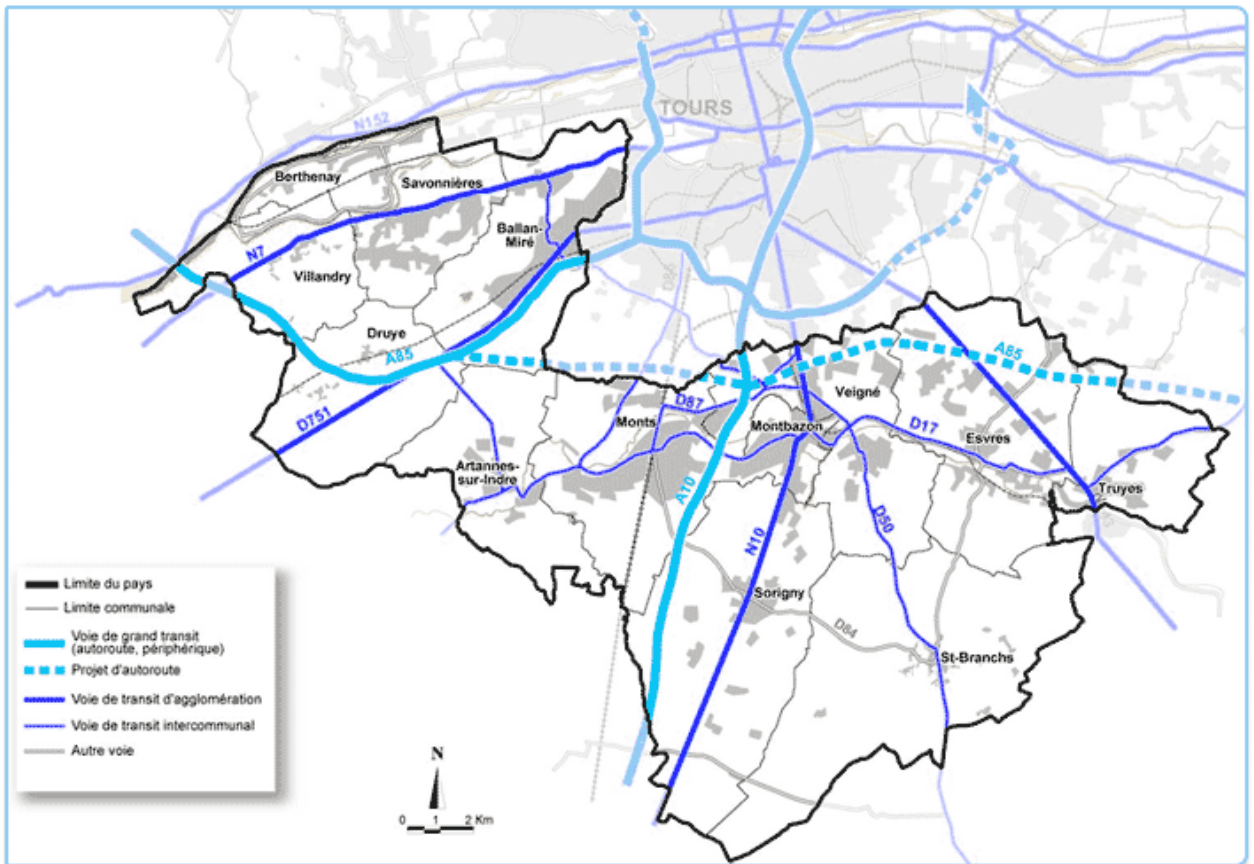
	1999	%	2007	%
Individual houses	10,064	92	11,346	91.2
Apartments	651	6	995	8
Others	224	2	104	0.8
Total	10,939	100	12,445	100

Source: Insee, RP 1999 and RP 2007, France.

Beyond the communes, peri-urban families acceding are now hosted outside the SCOT perimeter. People living outside the departement are attracted by their surrounding life, employment and the university. it also includes students and retirees. Indeed, the heart of a pool of life cycles and residential beyond its limits, the SCOT is facing the periurban families outside its perimeter. (Source: SCOT, 2008)

As the Touraine agglomeration is integrating its surface area, the nearby communes are included within their administrative boundaries in order to create combined development from their heterogenic economic condition. On 1 January 2010, after a process of dissolution of the Communauté de communes, the five members of The Confluence Communes - Ballan-Mire, Berthenay, Druye, Savonnières and Villandry - have joined the Community Tour (s) Plus. The CCVI, meanwhile, maintained its foothold in the territory of the Val de l'indre and outlined his plans in this regard. It's serving a population of 43,331 inhabitants the Country Indre-et-Cher deployed since its creation, its initiatives and projects (Source: CCVI, 2010).

Map 7 – Administrative Boundary of CCVI before 2010



Source: CCVI 2010, France

Active Economic Zone (AEZ):

Communauté de communes Val de L’indre displays a good policies and goals to strengthen the business and industrial sectors within the territory. It already has 9 economic active zones which are the main industrial poles that reflect the economic condition of CCVI.

Three major areas interest to meet the needs of large and medium industrial enterprises and services are “Even Parc” located in ESVRES, grouping sites Pommeraie, St Malo and the Grand Berchenay of approximately 100 hectares with 700 employees. “La Grange Barbier” in MONTBAZON which is about 40 hectares with 800 employees and “Iso parc” in MONTS of 15 hectares with 639 employees. Seven small industrial and commercial zones are listed in the table below.

Table 8 – Job centers

Business poles	Located commune	Employed
Le grange barbier	Montbazone	800
Iso-parc	Monts	639
Even parc	Esvres	700
La bouchardiere	Artannes	100
La pinsonniere	Monts	65
Les petits partenais	Veigne	30
Cretinay	Sorigny	5
Les coquettes	Saint-branches	32
Les perchees	Truyes	45
Total employees	CCVI	2,416

Source: CCVI official webpage <http://www.ccvl.fr/zones.php>

Some of the business pole in expansion phase, a geo-strategic position south of the department strengthened by the presence of Isoparc.

Thus almost 200 hectares are devoted for the economic activity which is very less from total area of 22,800 hectares, and only 2,416 employees⁴ are working in this Active Economic zones, (if considered the inhabitants who lives in CCVI is employed in these active economic zones then only 17% of working population are employed with respect to total working population of 13,807). This doesn't satisfy the threshold working population of CCVI, which makes people to migrate out of the communauté de communes to nearby cities like Tours and Orleans for their employment opportunities.

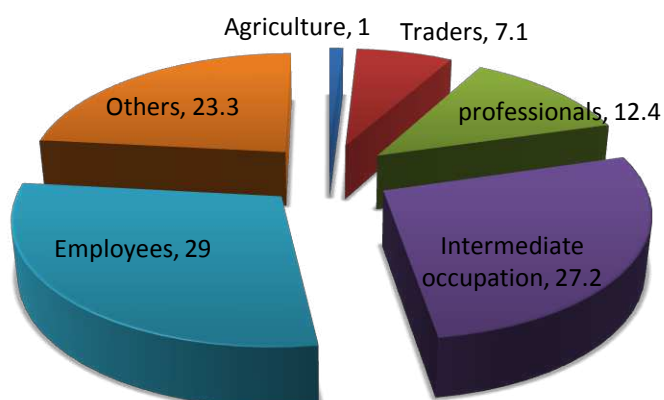
⁴ There may be workers outside CCVI.

Table 9 - Active Sectors

Sectors	1999		2007	
	Workers	Employed	Workers	Employed
Agriculture	205	201	143	143
Traders/entrepreneurs	847	813	1,047	995
Managers/professionals	1,224	1,156	1,806	1,754
Intermediate occupation	2,960	2,788	3,967	3,823
Employees	4,034	3,583	4,205	3,880
Others	3634	3400	3390	3212
Total	13,069	11,896	14,594	13,807

Source: Insee, RP 1999 and RP 2007, France.

Chart 5 - Percentage of Employment in each sectors, 2007



From the above table 9 - Active sectors, the active working population is about 11,896 from 13,177 that is 10% of the population is unemployed in 1999, where as in 2007 it reduced to 7% but still the number is huge which is about 1,000 unemployed population. Again in 2009, the unemployed rate is increased to 1,166 and the proportion of women among the unemployed is reduced from 58% in 1999 to 52% in 2007 from the table below.

Table 10 - Proportion of Unemployment

	1999	2007	2009
Total Number of unemployment	1188	787	1166
Male	728	378	551
Female	460	409	615

Source: Insee, RP 1999, RP 2007 and RP 2009, France.

The territory of the CCVI benefited from the proximity of the training and research activity of Tours. The training institutions and higher education, universities, and laboratories are an asset for companies that move onto the CCVI. In 2001, the consolidation of eight municipalities within a communauté de communes are brought together for the establishment and operation of an effective policy for sustainable economic development. Harmonization of 12.86% is levied on single business tax to develop a competitive pricing policy and taxation on the entire territory of the CCVI business areas and land assets highlights social, economic and environment features.

Commuters

As from the above table 1, the total working population lives in CCVI is about 13,807, from which the following concept provides the number of commuters within and outside the communauté de communes that is employed within and outside CCVI.

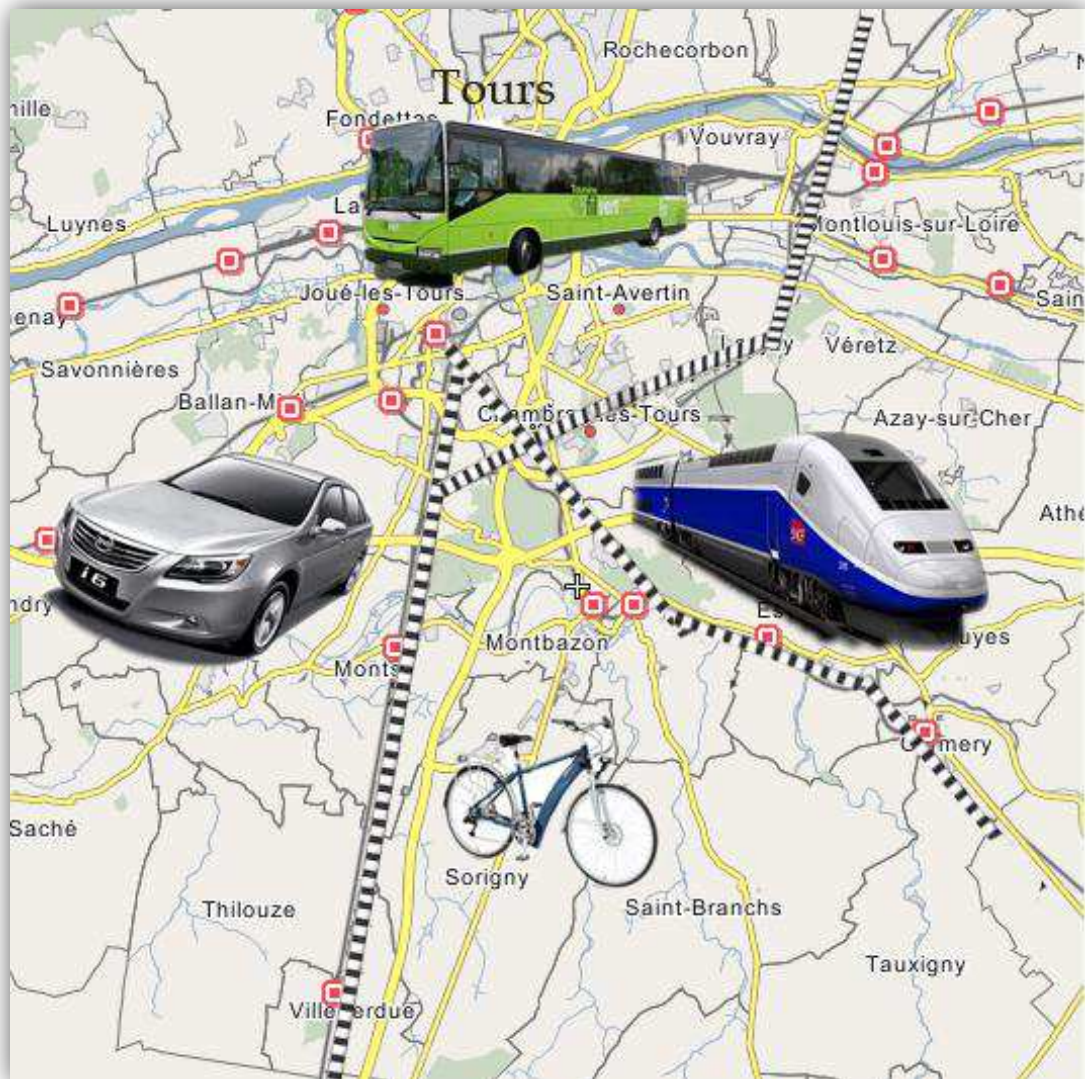


Figure 1 - Mode of Transport

Concept:

Here considering the commuters in to three different categories

- a. External commuters - outside communauté de communes of Val de l'indre

- b. Inter Commuters- inside or within communauté de communes of Val de l'indre
- c. Zero commuters - within their communes.

External commuters are people who travel long distance of more than 20 kms for their daily work from inside to outside the communauté de commune boundary. These inhabitants are considered to be the most carbon emitters as well as consuming more resources than the standard energy consumption of 5.73MJ (million joules) per day. Most of these commuters are depend on their own individual vehicle - car, motor bikes, bikes etc.

Inter-commuters are the people who commute to their neighboring communes from inside to outside or vice versa for their daily work which is about 5 to 20 kms. They are also called as typical commuters.

Zero commuters are the people who commute within their communes which is less than 5 kms for their daily work, which obtained separately for each individual commune. But still these commuters use car for their mobility due to unavailability of frequent public transport within their communes.

Analysis:

Collected Data

1. Total number of population in CCVI = 30,264
2. Total number of working population (15 to 64) within CCVI = 19,625
3. Number of active employees within CCVI = 13,807
4. Number of non-workers population like students and pensioners = 5,818
 - a. Student and trainees = 547
 - b. Pensioners = 587
 - c. Others = 360

5. Person who works in CCVI, but may live within or outside communauté de communes Boundary of Val de L'indre = 9,365
6. Person who live in CCVI, but may work within or outside communauté de communes Boundary of Val de L'indre = 13,807

From the above data it is clear that the total number of jobs available in CCVI is about 9,365. The number of employees working in Active economic zones is about 2,416, which is only 25% of employees are benefited from AEZ. If all the workers employed in AEZ is from CCVI, then only 17.5% of people are benefited. Therefore the number of job opportunities must be created in order to saturate the threshold population of CCVI.

7. People who both works and live in CCVI is about 2,563⁵ in 2007 as per INSEE, whereas in 1999 it was 2,668 which is 4.5% higher than present. This shows that the daily commuters for the job are increased without including the outside commuters (i.e.) the people who already commute for their jobs.

By comparing the above data 5th and 6th, the total number of daily commuters to their work place outside CCVI is about 11,244. It was only 9,273 in 1999 that is 4% of commuters are increased and also by evaluating the data 5th and 7th, the number of inside commuters from outside for their daily work place is about 6,802. By combining the above figures the total number of commuters that crosses the boundary of CCVI to their work places is about 18,046.

⁵ Obtained from sum of each communes



Figure - 2 External Commuters > 20kms

Therefore, from the above analysis, the number of External Commuters are found to be 81.4% with respect to total active population within the boundary of Communauté de Communes (11,244/13,807). These commuters are considered to be travelling for a longer distance of more than 20kilometers.

Inter-commuters:

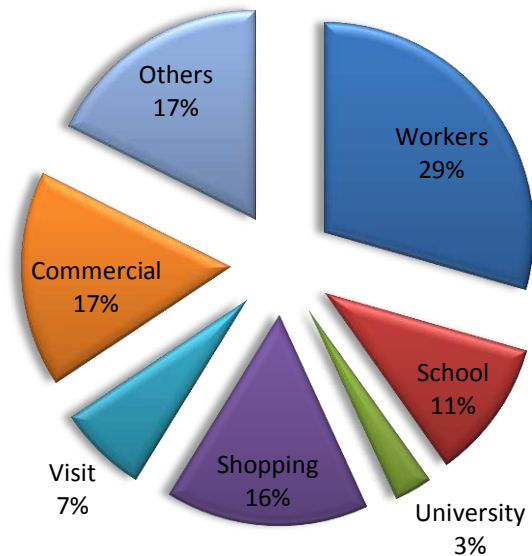
The working population who commute within their communauté de commune are said to be inter commuters. These commuters are extracted from the following mobility within CCVI.

Mobility in CCVI:

As per the mobility data of CCVI, the total commuter that touches the boundary of CCVI is about 95,604 per day and commuters to their work place are 28,681 in 2008. Mobility within CCVI is about 48,656 which include workers, students and other non-active workers. The following table 11 provides the proportions of commuters.

Table 11 - Percentage of population proportion commutes within CCVI

Category	% of commuters
Workers	30
School	11
University	3
Shopping	16
Visit	7
Commercial	17
Others	18

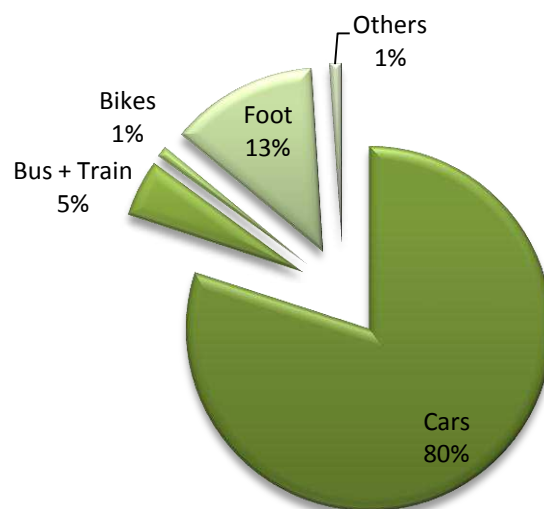


Source: ATU 2008, France.

Almost 95% of the commuters who travels outside CCVI are depend on their own transport, Only 5% of people use public transport. From which most of them commute by cars and only 1% use bikes. Different modes of commuters transport are listed below with percentage of usage.

Table 12 - Mode of commuters outside CCVI

Mode	% of usage
Cars	80
Bus + Train	5
Motor bikes	Negligible
Bikes	1
Foot	13
Others	1

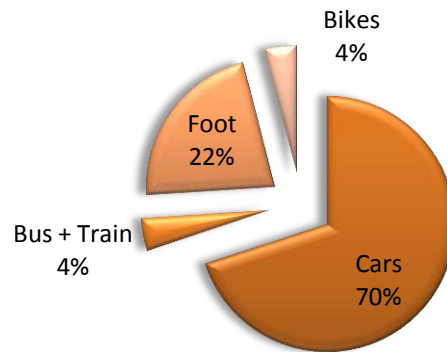


Source: ATU 2008, France

From the above analysis, the total active employers work and commutes in CCVI is 9,365⁶ from which 70% are depends on cars and only 4% of them uses public transport (bus and train) as show below.

Table 13 Mode of commuters inside CCVI

Mode	% of Usage
Cars	70
Bus + Train	4
Foot	22
Bikes/Motorbikes	4



Source: ATU 2008, France

Therefore, from the table 11, it has been found that the number of inter commuter are about 14,596 (48,656 x 30%) who commute within CCVI.



Figure - 3 Inter Commuters 5 - 20kms

⁶ But not all from CCVI may also from outside CCVI.

Zero commuters:

The employees who work and lives in CCVI or within communes are said to be Zero commuters, these people mobile within their communes to their work place but still 70% of the commuters are depends on car and 22% on their foot as shown in the above table 13.

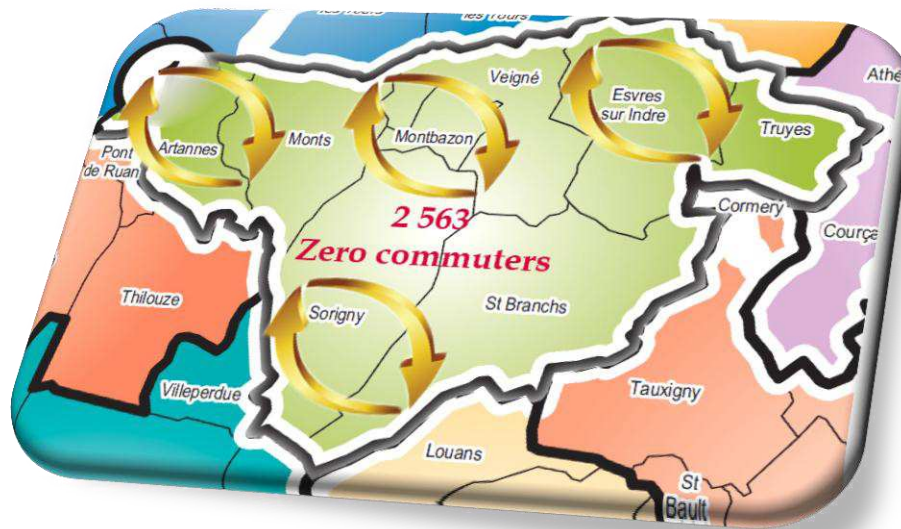
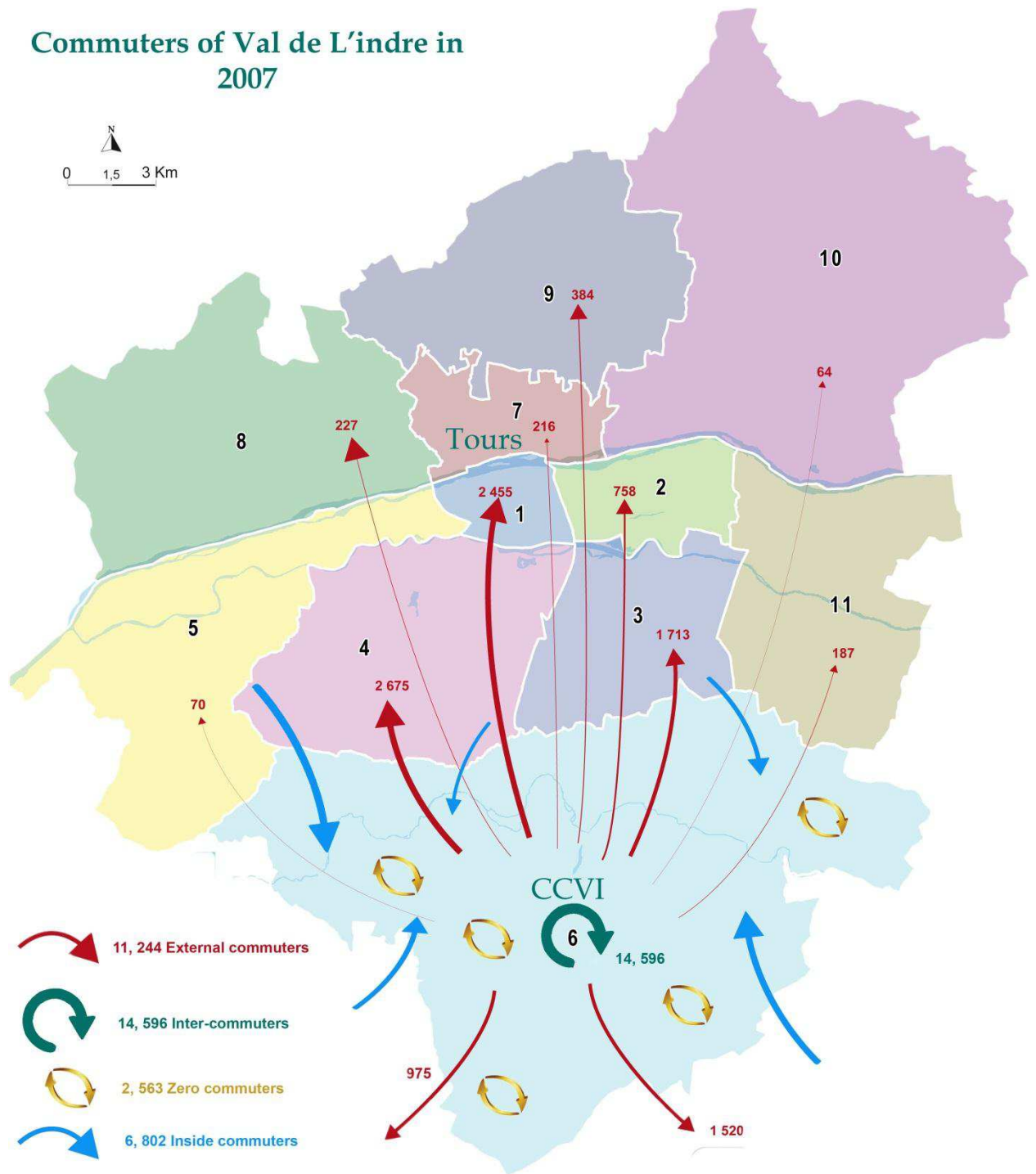


Figure - 4 Zero Commuters < 5kms

Map 8 - Total Commuters of Communauté de Commune Val de L'indre



Environmental Aspect:

The role of environment is also one of the key factors that should be considered for sustainable development. On average, 2 trips per day per person are generated, and then the time consumption per day is nearly 2 hours per person. Only one by fourth of car seats are utilized for their trips to work place that is a single person travel in one car, from which nearly 9,000 cars of CCVI are commuting 20 kilometers and 9,365 cars are commuting 5 kilometers within CCVI. As per the INSEE statistics each car emits about 173.7 grams of carbon-di-oxide per kilometer. Therefore, the total car commuters both within and outside CCVI only to their work place emits $(9,000 \times 20 + 9,365 \times 5) \times 173.7 / 1000$ 40 tons of carbon dioxide each day. Consequently 3.5 kg of CO₂ are emitted per person per day.

Future proposals:

As part of the mid-term review and negotiations with the Region, an amendment signed on February 26, 2010 between Jean-Michel Bodin, Vice-Chairman of Regional Council, and Jacques Durand, President of the Country Indre-et-Cher, allowed to redistribute € 1,245,600 over fifteen new projects, including the extension of the AEZ- Even'Parc in Esvres-sur-Indre and the establishment of the Cycling route between the Artannes-sur-Indre and Truyes. Creation of bike loops along river Loir in Berthenay to encourage bike ridings and also the construction of residence "Foyer Young Workers" in Montbazon.

Nearly 4,286,000 euros were mobilized on the theme of services to the population and cultural and sports facilities of CCVI. (Source: CCVI official webpage).

Result

The analysis clearly says that the active working populations in CCVI are not provided with enough job centers or Active Economic Zone (AEZ) within their communes and indirectly encourages the commuting behavior. The job opportunities created across CCVI are also not fulfills the working population who lives within the community.

From the birth rate analysis, approximately 350 graduates are comes out each year for the job or employment after completing their education, as a result, migration or commuting happens daily to the nearby cities or municipalities for the jobs, higher education and other activities.

If number of jobs available within communauté de communes that doesn't satisfies the threshold population of CCVI, then the number of external commuters may increase than the inter-commuters and also the zero commuters may decrease according to the availability of job opportunities within the communes.

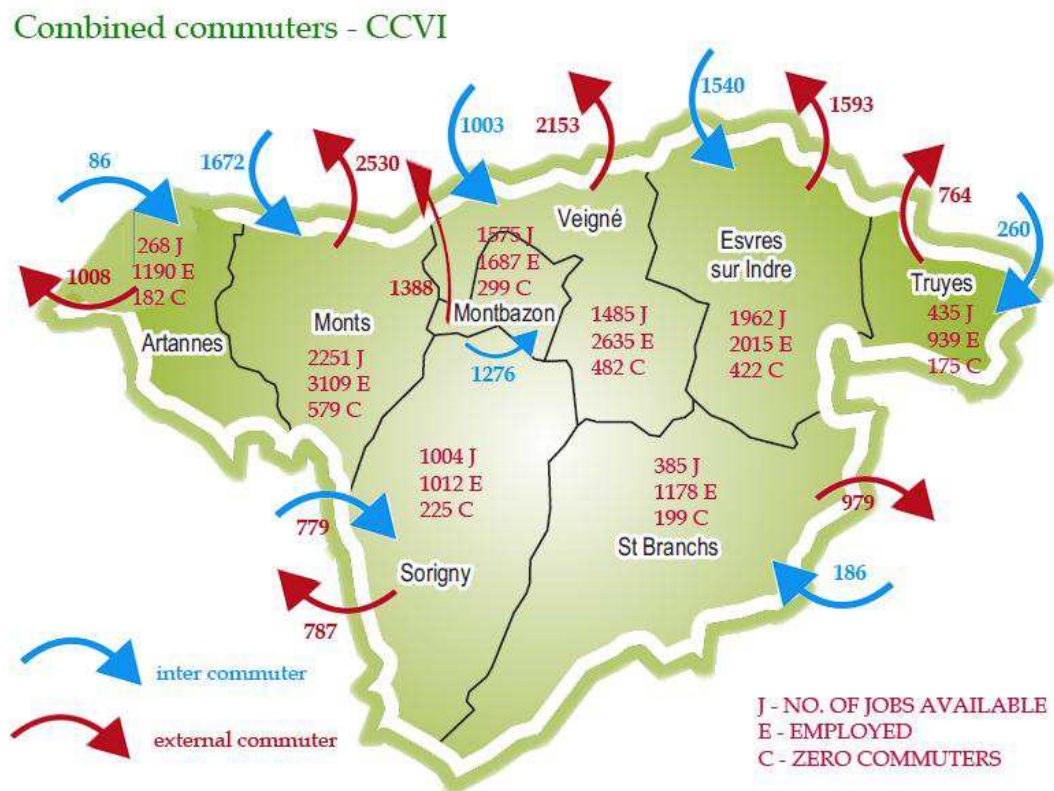


Figure 4 - Commuters of each communes

Policy implications

This article doesn't end only with the issues and difficulties faced by the community of Val de L'indre, it also recommend some policies to improve the quality of development are listed below.

1. **Effective inter public transport** - A well inter connected public transport should be introduced between the communes and should ensure it connects major active economic zones or job centers which are already existed or yet to be established in future. This can improve the communication department as well the commuters can be reduced.
2. **Levying tax** - There should liberal in tax levying and land values for the entrepreneurs who are going to put their industries or commercial hubs in CCVI and also to introduce an attractive "magnetic scheme" which can pull the corporate companies which can provide a partial employment for the CCVI working population.
3. **Transfer of development** - one of the successful planning schemes across world, as CCVI holds sufficient hectares of lands which are not necessary to introduce but still to improve the densities along the commercial corridors.
4. **Research institute** - Training center and research labs for students can be established to improve the quality of education.
5. **Toll** - Tax should be levied on the commuters who enter or exiting from CCVI administrative boundary.
6. **Integration** - The existing economic parks should be integrated and developed, as already some of the job centers like "Iso parc" are being in process.

Key issues of SCOT

1. Should we stop the specialization of socio-spatial territories and move towards more of mixing?
2. What organization of economic activities should we advocate and promote?
3. Should we organize the territory around some gathering of centralities multiple functions (shops, equipment, and service by public transport, public spaces, housing, and employment)?

Justification

There are numerous articles that argue the conflicts of job sprawl and commuting behavior between homes to job centers which are still at controversy stage. This should be brought out from conversation and the obstruction between homes to job centers should be broken out from its path to avoid long commuting distance and make the community service as simple as possible.

In this article, the Justification is completely based on the Theoretical discussions and statistical analysis with compiled information and available data's.

In 1936, France consist of 38,014 communes which is the most highest number among three centuries and this was reduced to 36,382 communes in 1978 which is the least till present. After this decrease there were ups and downs in the number of metropolitans in 20th century. Again the numbers of communes are increased by 187, currently France metropolitan region holds 36,569 communes as per 2008. Even this is considerably higher in total than that of any other European countries. From this above scenarios, there may chance of increase in number of job centers or economic active zones which could be the reason for starting the hypothesis with this.

Table 14 - Evolution of communes in France

Year	Number of Communes
1936	38,014
1947	37,983
1954	38,000
1968	37,708
1978	36,382
1985	36,631
1999	36,565
2000	36,567
2006	36,572
2008	36,569

Source: wiki communes of France

“As the number of job centers or sub-centers increases in each district or departement, the number of commuters as well as the distance between homes to work place increases extensively this may lead to scattered development and uncontrolled urban sprawl”

“Between 1992 and 2003 the population has increased by 5.5% and the artificial lands are increased by 14%, it means 60,000 hectares per year have been utilized for such a small amount of population.

For every 10 years 1 departement have been created...”

sylvain Petitet

As the communes are newly created and discovered, the real estate of corresponding community starts encouraging the developments for the new site which is cheaper with reduced tax. This makes the entrepreneur and developers more attractive and stimulated to establish their industries or economic zones. Certainly, the creation of economic or job centers are reduced in nearby existing communes where the inhabitants are more than the newer communes which anticipate the employers to migrate or commute daily from neighboring communes. The migration takes place only at a negligible rate, as they are settled already in their commune and prefer to commute daily from their commune to the newer commune for their work.

As per the concept, if the commuters cross the boundary of their communes they come under inter-commuters or external commuters (i.e.) they commute for more than 5 kms or 20kms respectively.

Therefore, this scattered job centers creates lack of job opportunities within their commune and doesn't provide enough employment for the graduates who come out for the jobs every year.

However, from the current scenarios the numbers of communes are maintained and try to include the neighboring communes to their administrative boundaries for the homogeneous economic growth and for the better basic services and also to integrate the infrastructure facilities across the agglomerations. This is evident from the following amendment made by the Tours Municipalities which was already mentioned under sprawl subheading.

“On 1 January 2010, after a process of dissolution of the Communauté de communes, the five members of The Confluence Communes - Ballan-Mire, Berthenay, Druye, Savonnières and Villandry - have joined the Community Tour (s) Plus. The CCVI, meanwhile, maintained its foothold in the territory of the Val de l'indre and outlined his plans in this regard”

In future, there may be change in the administrative map of Communauté de communes of Val de L'indre that the number of communes may reduce from CCVI administrative map, which may soon join with the Tour(s) Agglomeration.

Nevertheless, the hypothesis is proved theoretically as per the concept, but not certainly at present context of Administrative behavior of communauté de communes Val de L'indre and Tours Agglomeration.

Conclusion

A sustained production of housing but disparities remains, the pace of housing construction has continued to maintain the same level of population requires more homes today than yesterday with reduced household size, changing lifestyles with an uneven distribution of housing in terms of shapes, sizes, and occupancy status.

In 2004, 43% of jobs available in Tours center, Progression Qualification Like other French cities, qualifying jobs grow faster in the metropolitan Tours than the neighboring communauté de communes. Most of the jobs are within the urban agglomeration. Economic development does not exclusively develop the business parks. Thus, in the catchment area of Tours, 2 of 3 jobs are located outside the areas devoted economic activities.

The number of accidents in Inde-et-Loire is 88 for every one million inhabitants, obviously this happens to daily commuters to their work place. The other important factor that encourage commuting is the system of levying rental and tax for houses which differ in Metropolitan and rural communes. People prefer peri urban communes in order to avoid high tax and rentals where they pay less money for better environment and spend money on commuting through cars but they are not aware of scarcity of resources and increase in carbon level in the atmosphere.

Therefore, The analysis results that 81% of working population of CCVI commutes outside their commune which doesn't mean that only 19% of economically feasible, it also considered the commuters from outside to CCVI which is 6,802 and 2,563 who are zero commuters. Therefore, 68% of jobs are available for working population in CCVI, but the number of jobs available for the people who live within CCVI is lesser than the jobs provided for inside commuters (i.e.) 62% of jobs are occupied by neighboring inhabitants.

Bibliography

- Aguilera A., Mignot D., 2002, *Structure des localisations intra-urbaines et mobilité domicile-travail*, *Recherché Transport Sécurité*, n°77, pp. 311-325.
- Anas A., Arnott R., Small K.A., 1998, *Urban Spatial Structure*, *Journal of Economic Literature*, volume XXXVI, September, pp. 1426-1464.
- Anne Aguilera and Dominique Mignot, *Urban Sprawl, Polycentrism and Commuting: A Comparison of Seven French Urban Areas*. France.
- Catherine Baumont, C. E. (January 2003). *Intra-urban spatial distributions of population and employment: the case of the agglomeration of Dijon*, 1999. Dijon, France.
- Daniel Arribas-Bel, P. N. (2009). *Multidimensional urban sprawl in Europe: a self-organizing map approach*. Spain .
- European environmental agency (2010). *Land in Europe: prices, taxes and uses pattern*, Luxemburg.
- Gordon P., Kumar R A., Richardson H.W., 1989, *Congestion, Changing Metropolitan Structure, and City Size in the United States*, *International Regional Science Review*, volume 12, n°1, pp. 45-56.
- Madre, A. B.-L. (2003). *Urban sprawl and household car traffic growth in France: Projection to the year 2010 to 2020*. France: Association for European Transport.
- Nix, j. (2002). *urban sprawl, one-off housing and planning policy: more to do, but how?* Dublin.
- Petit, Sylvain. (2010). *French SCOTs and Inter SCOTs: The Right Way to Face Global Challenges.*, (pp. 3-4). Lyon.
- Pumain, D. *Is There a French Case?* France.
- Van der Laan N., 1998, *changing urban systems: an empirical analysis at two spatial levels*, *Regional Studies*, volume 32, pp. 235-247.
- Wassmer, R. W. (september 2002). *An economic perspective on urban sprawl*. Sacramento, CA
- SCOT Report, 2008.

Online reference

1. <http://www.buzzle.com/articles/urban-sprawl-causes-and-effects.html>
2. <http://www.ccvl.fr/>
3. <http://www.atu37.org/blog/>
4. <http://scot-agglotours.fr/>
5. <http://www.insee.fr/fr/default.asp>
6. http://en.wikipedia.org/wiki/Communes_of_France
7. http://fr.wikipedia.org/wiki/Intercommunalit%C3%A9s_d%27Indre-et-Loire
8. http://fr.wikipedia.org/wiki/Communaut%C3%A9_de_communes
9. http://fr.wikipedia.org/wiki/Communaut%C3%A9_de_communes_du_Val_de_l%27Indre
10. http://fr.wikipedia.org/wiki/Sch%C3%A9ma_de_coh%C3%A9rence_territoriale

M a s t e r S H S
Mention Sciences Sociales
Villes et Territoires

UMR 6173 CITERES

Cités, Territoires, Environnement et Sociétés

CNRS-Université de Tours

MSH de Tours



Tutor :

Prof. Christophe Demaziere

Bhuvaneshwaran Sampath

Année 2010

Summary

In this research, a study is made on evolution of urban sprawl and emerging of spatial growth in Europe at this 21st century. It explores the conflict between homes to the Job centers or sub centers which provide employment opportunities for large group of community or group of communes. The research includes literature reviews from both European and French context. It explain the evolution of urban sprawl and its trend in French context, evolution of SCOT, commuting behaviour of inhabitants in France and also deals with the intra-urban spatial distribution. This study also includes a case study that primarily concentrates on the commuting behavior of homes to job centers within the neighboring communauté de communes (group of communes) Val de l'indre located at south of Tours, an intermediary city of around 300,000 inhabitation, in France. A data analysis is carried out in order to understand the characteristic of the commuters and lack of active economic zones in their respective communes. A concept is arrived to title the daily commuters according to their distance travelled to the neighboring L'aire urbaine or other communauté de communes for jobs. Finally, a sensitive result and justification have been brought out from empirical analysis.

MASTER'S IN URBAN AND REGIONAL PLANNING



Behavior of commuters due to heterogeneity in spatial distribution between settlements and job centers.

A Case study on communauté de communes Val de L'indre



POLYTECH
TOURS
Département Aménagement



**Behavior of commuters due to heterogeneity in spatial
distribution between settlements and job centers**

A French Case study

communauté de communes Val de l'Indre

Bhuvaneshwaran Sampath

Supervised Research Report

Submitted to Professor Christophe Demaziere

In partial fulfillment of Masters in Urban and Regional Planning

Aménagement Department

Polytech Tours

Research centre Cités, territoires, Environnement et Sociétés

Université François Rabelais, France

June 2011

Acknowledgement

First, I express my sincere gratitude to Professor Christophe Demeziere, who gave his support and confidence to complete the research successfully and contributed his precious time to evaluate the research works. His immediate feedback helped me to take the research smoothly at right path.

I extremely thank Mr. Olivier Schampion- Deplacements and Ms. Marion Chery- Bases de Donnees, ATU department for providing me an enough data for the research work and also thank for their patient explanations.

I also extend my thanks to the Professors and students who responded my initial survey questions through online.

Finally, my grateful to Department of Amenagement for giving me a wonderful opportunity to pursue my research work in France through an exchange program.

At last my thanks to all friends.

Table of Content

Abstract.....	1
Research objective.....	2
Methodology.....	2
Introduction.....	4
Literature reviews.....	5
Urban sprawl at 360 degree.....	5
Urban sprawl in 21 st Century.....	6
Urban sprawl evolution in France.....	7
Commuting and mobility behavior in France.....	15
Intra-urban spatial distribution.....	17
Hypothesis.....	18
A French Case study - Communauté de Communes Val de l'indre (CCVI)	
Introduction.....	18
Case study objective.....	19
Demography.....	20
CCVI Sprawl.....	24
Active Economic Zone.....	28
Commuters.....	32
Concept.....	32
Analysis.....	33
Environment.....	40
Future proposal.....	40

Result and discussions.....	41
Policy implications.....	42
Hypothesis Justification.....	43
Conclusion.....	46
Bibliography	48

List of Tables

Population of CCVI.....	20
Birth rate and Death rate in percentage from 1968 to 2007.....	22
Age group and sex ratio of 2007.....	22
Households detail in 1999 and 2007.....	23
Employment details.....	24
Housing.....	25
Category of houses.....	27
Job centers.....	29
Active Sectors.....	30
Proportion of Unemployment.....	31
Percentage of population proportion commutes within CCVI.....	36
Mode of commuters outside CCVI.....	36
Mode of commuters inside CCVI.....	37
Evolution of communes in France.....	44

List of Charts

Evolution of population from 1968 to 2007.....	21
Evolution of Birth rate and Death rate from 2000 to 2008.....	22
Number of Households from 1968 to 2007.....	23
Proportion of Population.....	24
Percentage of Employment in each sectors, 2007.....	30

List of Maps

Aire Urbaine 1999.....	10
SCOT Perimeter.....	12
Urban Sprawl.....	14
Location of Study Area.....	19
Discontinues Road pattern.....	25
Urban Sprawl in Tourangelle SCOT Perimeter.....	26
Administrative Boundary of CCVI before 2010.....	28
Total Commuters of Communauté de Commune Val de L'indre.....	39

List of Figures

Mode of Transport.....	32
External Commuters.....	35
Inter Commuters.....	37
Zero Commuters.....	38
Commuters of each communes.....	41

Abbreviation

CCVI - Communauté de Communes Val de L'indre

SCOT - Schéma de cohérence territoriale

ATU - L'Agence d'Urbanisme de l'Agglomération Tourangelle

INSEE - National Institute for Statistics and Economic Studies