

# PRESENT POPULATION : DÉTERMINING METHODS FROM INQUIRIES ON TOURISTS

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## Introduction

The population "resident" is in general the only known population, in particular thanks to the census of the population carried out by INSEE. But with the development of mobility, the population "present" in a given place at a given moment can be notably different from the "resident" population. The preparation and control of a good public management make necessary the estimate of this population present. Indeed certain equipment must be gauged according to the maximum population being able to be present on these places. We were challenged by the ministry of health for the preparation of an emergency vaccination plan of the population in case of a bacteriological attack: aiming at very quickly storing a sufficient number of vaccines to be ready at any moment of the year, to vaccinate everyone on site, it was necessary to foresee the maximum population being able to be present on a given day in a given place. It is not obviously conceivable, in such circumstances, to hold vaccination with the only "inhabitants" by ignoring the "tourists". We thus have, on the basis of the available investigation data, undertaken to analyze the variations of population induced by tourism.

In analysis of mobility, the definition of the space-time crenel on which we work has a considerable importance. For this practice, we adopted the department, territory basic of public management. and the day (24h), which corresponds to the field of tourism. Indeed, according to the international standards, is tourist any person who travels whatever the reason may be, with at least a night spent out of the residence. We thus sought to estimate, day per day, the population present in each department of the Metropolitan France. We combined two approaches based on different data sources, one focuses on the population residing in France, the other focuses on the foreign tourists.

For the population residing in France, we based ourselves on the SDT investigation (follow up of tourist request), carried out by TNS-Sofres for the ministry for tourism, and based on a panel of 20.000 French questioned monthly on their tourist displacements of the past month. We know, by the INSEE (RP + annual actualization) the population resident of a department. From the SDT, we seek to determine, in the first time, the population resident absent from home due to displacement. These "absence" can be in tourist displacement (comprising at least a night out of the residence) in the same department, another metropolitan French department or out of Metropolitan France. Always relying on the same source we consider the population of the French residing in another department and who are on a journey in the department considered. On the theoretical level, this approach of the presence of French population does not pose a conceptual problem other than the choice of the space-time crenel already evoked. It on the other hand poses problems of statistical validity and of extrapolations necessary taking into account the sample, of its size and the mode of sampling.

The problems of the foreign tourists are simpler as they do not generate from absences but only an addition of population. But to estimate their presence on a given day we have information much less precise. It cannot however be a question of being unaware of this population: we estimate at approximately 75 million the number entered foreign tourists to France each year. We were thus brought to combine a number of sources, in particular the Enquiry at the frontiers 1996 and the monthly surveys of frequentation hotels and camp-sites (INSEE/Direction of tourism). On the basis of these data, we estimated the volume and the space-time distribution of these foreign tourists.

The results show the importance of this approach of the population “present” distinct from the population “resident”: certain departments double population at certain periods of the year, while the other have a population presents almost always lower than their population resident. This research opens the way with another glance on the problems of management and of regional planning. They are used also basic for a new approach of the territorial economy, the actual economy, of which the principle is only consumption, and thus an economic activity, is induced by the presence of people at a given time on this territory.

# 1. Estimation of the presence (and the absence) of the French.

## 1.1. Preamble

Mobility in all its forms involves an increasingly strong distortion between the population "resident" and the population "present".

The population resident is measured in France by the census of the population in which each individual is given a single place of residence (The case of populations (pupils boarders, etc...) are not evoked here) to which is attributed a double residence for the calculation of the total municipal populations with double accounts).

The population really present in a given place can be notably different from the population resident. For example in one day normal of week people are not present on their premises (place of residence) but on their place of work. In general they return the evening on their premises. For its part, tourism generates, over durations longer than the day, a very important surge of population sometimes in certain places and at certain times. This addition of population must be managed by the authorities. Thus, it must be measured.

The difference between the resident population and the present population is variable in time and according to places. For example the sea sides attract crowds in summer while the mountains host converging the skiers in winter and hikers and mountaineers in summer. So, we will try to study these continuous variations throughout the year.

The concept even of presence is eminently dependent on the duration of time considered for this presence in a given place. The number of people who pass at a given moment in a given place is often much more important than that of the people who remain one or more days in this same place. To define a population present in a place, we will have to about a convention over the minimal duration of presence in this place. Likely, the territorial mesh kept will have a great importance. All the displacements done by an individual inside this territorial mesh are not considered as movement. The presence in this place will be regarded as constant as long as the individual does not move outside.

The shorter the retained minimal duration of stay will be, the more the probability of presence in a given place will be strong. The smaller the retained territorial mesh will be, the stronger the mobility will be. This is much truer if the movements of short duration and short distance are important and this is exactly the case.

The selected space-time framework for the study is:

- For the framework of time, the day (24 hours)
- For the geographical framework, the department

The subject of study will be limited to the Metropolitan France.

Taking into account the statistical sources available, the study will include two parts:

- An estimate of the presence and absence of the French
- An estimate of the presence of the foreign tourists

We can foresee later to supplement the study by reducing the temporal field to one day without night and by studying:

- Movements home-work (source: RP99)
- Long distance travels of the French at the day (source: Complementary side of the SDT)

## 1.2. The (SDT) investigation (Tourist Request Follow-up)

The presence of the French in a given place can be estimated thanks to the results of the Follow-up of the Tourist Request. This device is based on monthly mail questioning of 20 000 people the sample of **panelized Meta-scope**.

The Meta-scope panel of Sofres is made up of at least 15 years old French individuals and more representative of the French population. The representative aspect of the panel is ensured by a stratification. The layers are based on crossings of the following criteria:

- The area of residence: Sofres uses cutting in areas UDA (the 22 administrative areas are gathered in 9 areas UDA)
- The age of the head of household (5 methods)
- Size of the residence agglomeration (5 methods)
- The socio-professional category of the head of household (7 methods)

In this investigation carrying onto the French population, we will study only the French population and its presence in the departments of the Metropolitan France or out metropolis (abroad or in foreign or in the DOM, all destinations confused). The presence of the foreign tourists will be studied in other aspects.

### 1.3. Data of framing:

#### 1.3.1. Space-time framework of the study:

The territorial mesh selected is the department. Any displacement inside the department is thus not taken into account. We work within the framework of the international definition of tourism, that's to say that we consider only displacements comprising at least a night out of the residence whatever is the reason (leisure, businesses, etc) and whatever may be the distance covered. Any displacement, even at long distance, done in the day with return back to the residence, is not taken into account. By convention we count the duration of the movement in nights, by comparing one 24 hours day to a night.

For each surveyed individual, we deduce the department where he is present for each day of the year. This is the basic information of this study. This information declines in the following way:

Either the individual remained on his place of residence (he can have travelled in the course of the day, even by leaving his department but he comes back home by the night), or the individual is travelling. In this case, we are interested in the department of his place of stay this day there. This department can be:

- The same one as the residence (He is a tourist but remains present in its department of residence).
- Another metropolitan department (he is a tourist and absent from its department)
- A foreign country or a DOM-TOM (he is a tourist and absent from metropolis)

Concretely one will have a file comprising as many recordings as individuals: each recording will comprise, for each day of the year, an indicator of its tourist state (remained at his place or on a tourist journey) and the department of presence of the individual that day.

#### 1.3.2. Physical presentation of the data:

The investigation is carried out at the beginning of each month: it is related to the finished travel the previous month. At the end of the year, we cumulate the 12 monthly waves of investigation to form the "cumulus" file. An extract of this file gathers all the panellists having answered in a constant way along the year (in practice: at least 10 months). This file is known as "constant": it is used for the longitudinal analyses. Information used here is extracted from the data file of the annual office plurality, to which one adds the file of January of the following year, in order to enter the voyages begun in December and finished in January, in particular voyages accomplished during Christmas festivals. That excludes in practice the long voyages which last more than one month starting in 2003 and not yet finished at the end of January 2004. We constitute then, starting from the respondents of each month, a file comprising as many recordings as individuals: each recording comprises, for each date of the year, an indicator of its tourist state, by answering the questions below, following some rules:

1) Is the panellist a respondent?

- ☞ If the panellist is respondent for a given month, He 'is so for each night of the month. In this case, each night is given a value.

2) For is each night, is he on a journey or not t?

3) If so , what is his destination?

- ☞ If the panellist is on a journey, his destination (department or country) is indicated for each date of the voyage.
- ☞ If this panellist did not leave his residence at the date considered, the date is given 0 value.

Thus if the panellist is a respondent for a month m but not travelling, so, all the dates of the month m are marked as 0 for this panellist.

The missing value "." means that panellist N is not answering the month considered. It can however have nights for which a destination is filled, if this concerns a travel which begins the month m, but finished the month m+1, month for which the panellist responded.

For the study of the presence, which is our principal object of interest, this information is enough. However, in order to study the relation between the path and presence, we can be interested in additional information:

1) About the way: Is it the day of the departure on a journey? (path outward journey)

Is it a day in the middle of stay? (no trip that day )

Is it the day of the return? (back home)

We can imagine to supplement information by the distance covered (calculated starting from the origin and of the destination).

2) About the duration: Which is the duration of the voyage in question?

## **1.4. Information known weaknesses:**

### **1.4.1. The unit of time: Day or night?**

The concept of presence in a given place and in a given day does not get its full sense until the individual remains in that place all day. Thus, we study travellers. One already established the convention to consider only "tourist" displacements, therefore with at least a night out of the residence. It is also necessary to assign one place of presence to an individual, including the day made clear by the investigation as the one when the movement from one place to another happens..

Working in absence day implies a double account when the panellist has accomplished two successive travels with contiguous dates. For example, an individual gone from the 10 to the 12, in the 75 and from the 12 to the 15 in the 63 would be counted twice the 12: once in department 75, once in the 63.

Basing itself on the night of absence appears to us more robust; that presents a better coherence compared to the field of the study and avoids the problem of the contiguous dates. We account then the day instead of the night which follows (night 1= night of January 1 to January 2). Here also, we make obviously an approximate assumption – of a normal behaviour by considering that any individual sleeps the night, and in a fixed place.

However, this concept of night does not help to distinguish cases which however are different. For example, we do not take into account the moments of travel: according to which the individual travels the evening or the morning, the duration is different, and this more over has more impact than when the voyage is short. We one cannot distinguish one weekend with work Friday all the day and return early on Monday morning followed by one working day, from one prolonged weekend with a departure on Friday morning and return on Monday evening. A normal stay of weekend (Saturday and Sunday) could be entered as three nights if the journeys are carried out on Friday evening and on Monday morning or as one night if the journeys are carried out on Saturday morning and Sunday evening.

By convention, the unit of reference used here is the night which follows the date considered: night 1= night from the 1<sup>er</sup> at January 2<sup>nd</sup>.

### **Presence or risk of presence ?**

These conventions were adopted to avoid the double accounts: an individual present in a given day A could not be considered present in B. In reality, when an individual travels a given day from place A to a place B, he is present alternatively in A and B. He is even – if we could break up finely his route – present successively in each place crossed during its voyage between A and B. We could thus, beside the measurement of the "presence" to which we attribute a univocal value, to define a "risk of presence" where the traveller would be accounted at the same time in A and B. This indicator generates a double account of course but can offer a better adapted answer to certain problems. However, we can note that, for measurements of precaution to adopt to intervene with the populations present (in case of a bacteriological attack for example), one must measure the "maximum risk of presence" in a given place in an unspecified day of the year. For a given place, the maximum presence in an unspecified day and the maximum risk of unspecified presence in a non specified day would be different only if one important drive out-cross between A and B operated the day when the presence in A or B reached its annual maximum.

### **1.4.2. Non surveyed population residing in France**

#### **Non French residents:**

Until 2003, the population of reference used for the SDT was the population of French nationality, except the foreigners living in France. With the annual data 2004, this exploitation will be possible for the whole population residing in France, since a double rectification was carried out in 2004: French/population resident.

Because of a mistaken information for 2003, which is year under review of this study, we had to make the assumption that displacements of the foreigners residing in France are similar to those of the French population residing in Metropolitan France. By doing this, we are probably under estimating the voyages abroad (holidays with the country).

#### **Children of less than 15 years:**

For less than 15 years, the only data available concerns less than 15 years accompanying. We must consider then that less than 15 years accompanying reside in the same department as the individual. Moreover, the SDT investigation does not provide any information about the on displacements of the children of less than 15 years travelling alone or in group. We can make an unsatisfactory assumption that the children of less than 15 years travelling alone have matter behaviours of tourist displacements similar to those of their elder ones.

A way of a possible improvement to avoid making such a strong assumption would be to have recourse to the results of the investigation holidays of INSEE. Results of this investigation, which relates to the displacements finished between the 1<sup>st</sup> October 2003 and on September 30 2004, should be published soon. The investigation holidays will help to count for each individual, the displacements of the two nights or more out off his residence. For the four nights displacements or more, will be specified by it nature, the duration, the precise destination in France or abroad, the means of transport used, the mode of organization and of the lodging and the reasons for stay. The field of this investigation is slightly different from that of the SDT, but remains sufficiently close to serve as auxiliary information.

## 1.5. Method of The absence calculation

### 1.5.1. The traditional absence calculation

To estimate a rate of absence per date, we exploited until now the annual file directly, with the monthly weights over the 12 months of the year. Let us recall that the monthly weights are calculated in “rectifying” the structure of the responding individuals according to principal socio-demographic criteria (provided by the Employment Investigation) in order to preserve the permanence of the statistical representative aspect of the sample. This rectification is carried out according to the method of chock on margins (algorithm “Iterative Proportional Fitting”) for each socio-demographic criterion.

In parallel, the number of these respondents is extrapolated with a constant manpower corresponding to the size of the sample of start (that is to say 20.000 individuals), avoiding that the variations of the rate of return interferes with the results. The same individual, while belonging to the same layer, can have a different weight according to surveyed month's if they are not the same individuals who answer and also because the sample is renewed regularly.

The criteria of rectification applied to the Follow-up of the Tourist Request (SDT) are as follows:

- Region UDA X agglomeration size X sex
- Socio-professional category of the head of household X individual sex
- Individual age X individual sex
- Sex of the individual X numbers people at home
- Individual sex X individual activity
- Area of residence (22) X sex of the individual

In addition, fault of convention for the voyages multi-stays, this type of voyage was taken into account in the calculation of the absences of the place of residence but not in that of the presences in another department.

### 1.5.2. Limits of the traditional treatment

By treating the data as described above, we observe distortions dates by date. Indeed, if we calculate the absent ones by department of destination (+ foreign) on the one hand, departing travellers per department of residence on the other hand, and the non-departing travellers per department of residence, the total population varies from date in date.

2 points explain these distortions:

- 1) The monthly calculated weights are not adapted to the cases where a voyage began the previous month
- 2) In the case of multi-stays voyage, the individual is regarded as absent, but is not accounted in destination.

### 1.5.3. A new treatment

#### Weights per night

The monthly periodicity of rectification induces a source of variations of population night per night. Indeed, the weight of an individual on a given date is the weight of the month of end of the voyage. This operating mode induced errors in the case where a voyage begun in the m-1 and finished in m.

Here an example: let us take to the case of a panellist left from January 29 to February 3. For each night of absence, it has the weight of the file of February:

Date of absence	January 29	January 30	January 31	February 1	February 2
Affected weight	Weight of February	Weight of February	Weight of February	Weight of February	Weight of February

1st case of figure: Panellist did not respond to the questionnaire of January, but answered in February and described its voyage.

So, we add to 3 dates of January an individual rectified according to the respondents of February. So, the layer of rectification of this individual was balanced in January in order to represent it. This over-represent this layer and leads to a sum of the weights higher than 20.000.

2<sup>nd</sup> case of figure: the panellist answered in January and February.

For the 3 dates of January, the weight of the individual is the one calculated in February and replaces that of January. This distorts the total population. For the last 3 days of January, the sum of the weights is different from 20.000.

To avoid these distortions, one could apply for the 2nd case the weight of January to the dates of January. However, that does not solve the problem of the 1st case: The individual does not exist" in January.

The only solution consists in calculating a weight for each night of the year. The individuals taken into account for the calculation of the rectification, are all those whose place of presence in the considered night is known, at home or on travel. By this way, we can calculate the flows towards each destination for each date, and for each date, the sum of the individuals whose place of presence is known equals 20.000.

The rectification for each date is carried out in the same process as at the monthly level.

The final file thus contains 365 weights in 2003, and each date must be treated with its own weights.

### **The voyages multi-destinations**

The itinerant travels or travels comprising several successive places of stay are described only in a partial way in the investigation. To take them into account, conventions should have been adopted. We relate here a travel to a single and unique destination: all the night of absence are attributed to the department or country in which the individual remained longest. In case of equality of durations between several destinations, the absences are attributed by convention to the destination of the first stay.

For example: 1 travel from the 1<sup>er</sup> to the 15 in 3 stays:

- One 4 nights stay in the Cantal
- One 5 nights stay in the Cantal
- One 6 nights stay in Puy de Dôme

The nights of 1st to the 14 will be attributed to the department of the Cantal (15).

The flows can thus be estimated department by department, by date, since this information indicates to us if the individual is respondent, if he is at his place, if he is on a journey, and towards which destination. This individual has a weight for each date in which we have specified information about him.

### **1.6. Obtained results:**

By adding individual information we obtain, for each day of the year, the population present by department.

For a given department, in a given day, the population present equals to the resident population to which we subtract the people absent (accomplishing a voyage out of the department) and to which one adds the tourist population (in stay in the department and whose place of residence is out of the department).

Each day the population resident of the department, regarded as fixed throughout the year, is distributed between those who remained on their premises, those who travel (with night out of the residence) in the department, those who travel to Metropolitan France in another department and those who travel out of the Metropolitan France (DOM-TOM or abroad). The three last categories are tourists but only the two last ones make the population absent from the department. The two first categories represent the stable population for which we must add the tourists coming from other departments to form the population present.

Pop-present (D) = pop-stable (D) + tourists (D)

Pop-stable (D) = pop-resident (D) – pop-absent (D)

### **1.7. Obtained information quality:**

There remains the question: is the sample sufficient to give information reliable per day and per department?

### 1.7.1. Interval confidence Calculation

To evaluate the reliability of the results obtained, we can establish two types of confidence intervals per day and per department: a confidence interval for the proportion of panellists having left their department of residence a given day on the one hand, and another for the proportion of panellists present in a certain department (other than theirs) on the other hand.

If we were in the case of simple random sampling, these confidence intervals would have the following form:  $[p - U \sqrt{p(1-p)/n}; p + U \sqrt{p(1-p)/n}]$

Where: "p" is the proportion of panellists to which we want to calculate a confidence interval

"n" is the size of the sample

"u" is the normal law fractile (for example  $u=1,96$  for a bilateral confidence interval with a risk of 5%).

This method should not however be applied in our case. Indeed, two of the required assumptions are not checked:

"n" indicates the number of people of the SDT' sample residing in the department for which one seeks to calculate a confidence interval. For the small departments, the number of panellists "n" can be quite small (from 17 panellists residing in Lozere to 912 panellists residing in Paris; an average of 220 panellists per department). So, to be able to apply the central limit theorem and thus to suppose that the proportion follows a normal law, it is necessary that "n" is at least equal to 30 individuals.

The sample size problem 'n' is not the major problem which prevents us from using this method. SDT n is not resulting from a simple random sampling. The panellists are selected after various stratifications and the data are then rectified according to variables different from the variables of stratification.

An estimated confidence interval for the proportion of people leaving a department for a given day using a bootstrap method seems thus more suitable. This method helps to estimate the confidence intervals without making assumptions preliminary on the sample. The only constraint is enough individuals to be able to make enough iteration. It is estimated that to have a convergence, a minimum of 30 observations is necessary. Consequently, this method enables us to calculate the confidence intervals, only for the great destinations (Paris for example) or for the pick tourist season.

### 1.7.2. Possible improvements

How to consolidate the available information? Several ways can be possible:

- To increase the geographical mesh (for example while working by area) would reduce the uncertainty but would reduce the interest. On the one hand, the larger the mesh is and the weaker the movements are (internal displacements with the mesh are not taken into account). In addition the interest for the public actors would be rather at a level of proximity, sometimes even on the level of the commune when it is a question of adapting public equipment. We will thus try to stick to the department.
- To cumulate the information collected over several years is a possibility that has been used for many studies dealing with the attended destinations. Here, this way does not seem to be able to be used because the day distribution of the tourist stays varies from one year to another, according to the positioning of the weekends, the bridges and the movable feasts, in particular in spring. It would remain to check if the addition of these various movements would however not open a usable way.
- To extrapolate information seems the most accessible way. Remains to study if we can consolidate these methods of extrapolation, by introducing known variables:
  - Tourist capacity of lodging per type (hotels, camp-sites, hiring...); it is imperfectly known, taking into account the multiplicity of the methods of the commercial and non commercial lodgings; we approach it however on the basis of the Communal Inventory.
  - Dates of the school holidays in this zone or the zones often emitting tourists towards the zone, etc...

## 1.8. Some exploration ways

### 1.8.1. Representative aspect of the sample in the place of stay

We will evoke here, without solving the recurring question: does the representative aspect of the sample in the residence guarantee a representative aspect in the place of stay? This question could be formulated differently: is there a neutrality of the sampling (in residence) on the representative aspect of the places of stays? We deliver here some elements of reflection on this question: one can suppose that the individual propensity to travel is partly related to strong factors but of which the statistical base is not known. For example, a Parisian who has a second home in Burgundy, in general, will make a number of voyages towards this area superior to the average of his neighbour



travels. So, we do not have a statistical base crossing place of residence, possession a second home and localization of this second home. Another example, a person originating in Marseille working in the "North" also will generate multiple displacements between his family and himself (holidays or weekend in the country on the one hand, and the family visits on the other hand). Neither, we do dispose with the basic statistics on the historical territorial of the individuals here. So, we find ourselves face to factors which can be generators of mobility but upon which one cannot found a sampling, a statistical basic fault. The SDT investigation offers within this framework the advantage to be a panel: if we can suppose that any sample could be biased, one largely smoothes the effects of this skew by preserving the same sample of one month on the other. A study on the territories attended by the tourists living in each French area was undertaken over 5 years of SDT investigation: it shows a great stability of the relation origin destination.

### 1.8.2. Other methods of day measurement of the tourist frequentation

#### **In residence:**

The SDT investigation offers an important advantage of allowing a crossed analysis between the place of residence and the place of stay. This authorizes a simultaneous study of the absences and the presences on a territory. The restriction is obviously that this source helps to study only the French. By taking the point of view of the territories and not the one of the populations, this source provides complete results of the absences in the metropolitan French departments; for the presences, we miss information on the foreign tourists, which obliged us to have, for this study, resort to other sources. To extend the field of the investigation would require a representative sample of the population of the whole world, and this is obviously unforeseen. Certain organizations, in particular international IPK, try to gather the results of similar investigations carried out near the individuals lying in a maximum of the transmitting countries of the world tourists. The process is interesting and gives good results for global analyses. But these investigations often do not offer the same level of detail information as the SDT: In general, we only use a questioning on the long stays (4 nights or more) often restricted at the only holidays (for leisure purposes) Taking into account the general tendency to the acceleration of the voyages and the shortening of the stays, this restriction of the field – justified by a strong reduction of the investigation costs – can be penalized enough for fine analyses. Moreover, they cannot provide for France sufficiently fine territorial information within the framework of our study.

Beside these surveys carried out near the individuals in their residence, other investigations are carried out near the tourists on their places of stay or their crossing points.

#### **In the place of stay:**

For the investigations into the spot of stay we will distinguish the investigations in the lodging places. In France we have mainly INSEE Direction of Tourism on the frequentation of the hotels and the camp-sites researches. These investigations helps the follow-up of the day frequentation, without being able however to distinguish, on this temporal point of time, the French tourists from the foreign ones. But these two lodging modes themselves collect less than 20% of the stays of the French tourists. The other modes, merchants (lodgings, furnished, residences of tourism, vacation villages ...) or not commercial (family, friends, second homes ...) are declining in so many varied forms and individual or collective establishments that it is difficult to foresee and think of an exhaustive enquiries. Certain categories of commercial lodging (lodgings, furnished) are surveyed in some areas but, except hotels and the camp-sites, no investigation covers the whole metropolitan territory.

#### **On the attended places:**

This type of investigation must be distinguished from the investigations done in the lodging spot. It aims at enquiring the tourist in places they attend. These investigations cause large methodological problems to avoid distortions of weight between the tourists who attend only one place and those who attend several places. Thus becomes the idea to have recourse to the methods known as "with shared weight", already used by INSEE fin an enquiry about the SDF and by the Spanish area of Asturias to inquire about tourists. A first investigation of this type is currently tested in Brittany on the tourist frequentation. Methodological communications on this subject are presented in these same Days of statistical methodology (Deville & Alii).

#### **At the tolls:**

A way, currently tested on the foreign tourists, consists in counting the passages of vehicles at tolls of the motorways, nationality being determined by the bank cards used for the payment. Manual counting on the number of vehicles by nationality (registration plate) and the number of passengers by vehicle

help then an extrapolation in the number of people. A priori, this type investigation does not seem however to bring information truly usable for the generalized measurement of the presence.

**At the frontiers (investigations cords):**

The cord investigations – called investigations at the frontiers when the limits of the studied territory form frontiers - offered the surest way to determine the presence in a given day. The principle consists of establishing a cord – not medical but statistical - around the territory concerned. By counting and inquiring about the people – or at least about a representative sample of these people – who cross this cord to enter or leave the territory we can determine the present population in the territory. This type of investigation is particularly adapted to the islands where the airport constitutes the point of passage obliged for the entries and the exits. The operation is much more complex on the metropolitan territory of France where the means of transports and the points of input-output are multiple. A difficulty recently came to add an additional complication with the suppression of borders points between Europe country (agreements of Schengen) and the practical impossibility of recourse to the order forces to stop the vehicles desired for the enquiry of the passengers. Currently this type of investigation at the frontiers points do not exist, It's replaced by another investigation (EVE) which we will not detail here. At the local plan (departmental or regional) this type of cord investigation integrated into a methodological unit (method of flows, cf. biblio) currently still gives operational results on some areas or departments.

**New technologies:**

Many technical devices are currently available which would allow a precise follow-up of the movements of the people and thus of their presence in a place. These devices are used more and more for the follow-up of the goods (labels with chip). For the people, these techniques present risks to touch the rights to the private life. They are used in precise cases (bracelet of the prisoner, follow-up of the sick old people, followed children in the attraction parks, etc ...). Their generalization will obviously help to draw up good statistics but would undoubtedly not be desirable from a moral point of view. Certain largely widespread equipment (telephones, bank cards) can however leave enough prints so that we can use them with fine statistics, strictly respecting the laws and the deontological rules.

## **2. Estimate of the presence (and the absence) of the non-resident tourists.**

The construction of the European Union made more difficult the international tourism measurement. The opening of the frontiers complicated the estimation of the frequentation of the foreign tourists in France; the passage to the euro disturbed the evaluation of their expenses on the French territory.

To have an idea of the number of foreign tourists present per department and day in 2003, it was thus necessary to proceed to a whole unit of successive estimates. First, evaluating the expenses of the foreign tourists in France to estimate their total frequentation in nights; then distributing these nights by areas, then per month, then by department, and finally by day.

### **2.1. Estimate of the “voyages” line receipts of the Payments Balance**

Until 1996, the Management of Tourism regularly led to investigations in the borders, this helped them to have a good estimate of the frequentation in arrivals and nights of the non-residents tourists in Metropolitan France. In 2001, a new survey was carried out but its results were not published: because of the opening of the borders, most of the tourists leaving the French territory by road could not be questioned. The Management of Tourism had thus to re-examine its method and launched a new investigation near the foreign visitors. While waiting for that the results of this investigation to be available, the evolution of the frequentation of the non-resident tourists is estimated each year according to several economic indicators of which the most important is the level of the receipts of the station “voyages” of the Balance of Payments.

However the passage to the euro disturbed the measurement of the expenditure of the tourists' non-residents on the French territory. Until January 1, 2002, the Bank of France established flows of the line “voyages” via the exchanges of tickets, the payments trans-border by bank cards or the transactions of the travel agencies. The exhaustiveness of flows was thus in theory recalled in a satisfactory way for the establishment of the final figures.

Since the arrived of the euro, we had only a partial idea of the amount of the expenditure from abroad in France. Indeed, not only the residents of the Euro zone need no more to change currency before their visit into France, and in addition to this, the non-European tourists can get euros everywhere and do not necessarily spend them on the French territory. The Management of Tourism has, to mitigate this lack, developed a methodology of estimate of the expenses of the foreigners in France.

An econometric model was set up for each principal customer of France. For each country, one determines a relation between the expenses of the foreign tourists in France and a certain number of explanatory variables, like the hotel nights of the country, the nights in camp-site, possibly the rate of exchange between the currency of the country and the euro or of the data of air traffic. This relation is calculated over the years for which one has the data Bank of France (starting from 1995 until the last published data). The estimate of the receipts of the station “voyages” of the Balance of Payments for the year is course is then obtained by prolonging by twelve months the relation established on the past of the series.

The type of selected model is a model with distributed lags (linear Regression on the corrected series of the seasonal variations; among the explanatory variables appear of the delayed endogenous variables).

### **2.2. Estimate of the annual volume of nights**

The volume of nights spent by foreign tourists in France is estimated starting from the receipts of the line “voyages” of the Balance of Payments. For each of the most important tourists transmitting countries, we make the following assumption:

*The annual evolution of the average expenses by night (at constant price) is equal to the evolution of the private household consumption in volume in the origin country.*

This requires solving an equation with an unknown factor: we have  $s$  for each country an estimation of the evolution of private consumption of the households, of an estimate of the expenses of  $f$  the foreign tourists in France and volume of tourist nights of the previous year. One thus obtains an estimate of the annual volume of nights for each country.

There remains however a problem to be treated for the countries whose currency is not the euro: should we consider that as the average expense in euros or the average expense expressed in the currency of the transmitting country which progresses like the private household consumption? In the first case, the tourists have, on holiday in France, a way of life which is the same through the years, whatever the rate of exchange between euro and their currency; in the second case, the tourists on the spot adapt their way of life according to the rate of exchange, so that their expenses, expressed in their local currency, varies only in a marginal way.

It is probable that the truth is between these two extremes; we have fixed then a parameter, for each country except the euro zone, which determines the level of taking into account the rate of exchange in the evolution of the expense average by night. The value of this parameter was chosen as different according to the origin country of the tourist. Let us take the example of the British and the Japanese. Many British tourists go regularly to France: in 1996, an investigation at the frontiers shows that only 8% among them came for the first time on the French territory (against 44% of the Japanese tourists). Moreover, Great Britain is surrounded by the Euro zone countries: Out off euro zone destinations are more distant and rarely accessible by car. Rather than to discourage the English tourists from coming to France, a devaluation of the pound face to the euro probably encourages them to supervise their expenditure at the time of their stay. The situation is a little different for the Japanese tourists. For them, travelling to Europe gets an exceptional character; it is probable that even when the euro is strong, once they decided to leave for Europe, the Japanese tourists choose to benefit fully from their voyage on the spot. A rise of the euro would encourage more the Japanese tourists make their voyage different in Europe rather than limiting their expenses in France.

### **2.3. Estimate of the annual volume of nights per area**

In 1996, the results of the investigation at the frontiers made it possible to know the frequentation in nights of the non-resident tourists in the French areas. We also have, for the years 1997 to 2003, an estimate of the volume of nights spent by the foreigners in the metropolitan territory, for the principal foreign customers. Instead, we have more data on the regional scale. It is thus necessary to distribute the total of the nights between the various French areas for the years after 1996. The idea consists of in making make the regional structure of the nights of 1996 progress according to the regional evolution observed in surveyed lodgings: classified hotels and camp-sites.

The investigations of frequentation in hotel trade and hotel trade of full air, carried out jointly by the INSEE and the Management of tourism, enable us to know, for each year from 1997 to 2003, the regional distribution of the foreign nights spent in the hotels and classified camp-sites. On the other hand, the frequentation of the foreign tourists in the other modes of lodging is not known. It thus remains to distribute by area the total of the nights passed in non surveyed lodgings and this for each origin country of the non-residents tourists. The nights spent in a non-inquired lodgings can be distributed by area in two different ways, according to whether as we consider that their regional evolution' one year over other is correlated or not with the regional evolution of the nights in hotel and camp-site.

#### **First method:**

An assumption is made that the regional evolution of the nights in non-inquired lodgings is independent of the regional evolution of the nights observed in the hotels and camp-sites. For an origin country given, the evolution of the nights out off hotels and camp-sites is the same one in each area, and is equal to the evolution estimated at the scale of whole France.

#### **Second method:**

An assumption is made that the regional evolution of the nights in the modes of non-inquired lodging is correlated perfectly with the evolution of the nights in the hotels and camp-sites. For each origin country the regional shares of market of the nights in other lodgings know the same evolution as the regional shares of market of the nights spent in the hotels and camp-sites.

This is in fact a hybrid method which was adopted. It consists of fixing, for each country, a coefficient determining the level of training of the evolution of the nights in hotels and camp-sites over the' evolution of the nights in the other modes of lodgings. The value of this coefficient is selected between 0 and 1. By fixing a coefficient of training lower than 1, the variations of the regional nights in non surveyed lodgings are accentuated. As the degree of uncertainty is raised enough, it seems more advisable to smooth the hotel variations which can sometimes be rather radical.

The level of the coefficient differs according to the countries. The choice of the coefficient was made according to the share of the nights in hotels and camp-sites among the total of the nights. Indeed, the more the share of the nights in surveyed lodgings is strong, the more the evolutions of the nights of these lodgings can be regarded as representative of those of the total of the nights.

### **2.4. Estimate of the volume of foreign nights per area**

The aim from now on, for each area, is to distribute the annual volume of nights per month.

At this stage, one gives up the decomposition of the nights by the origin of the tourists. To consider the totals annual of nights per area, it was essential to take account of the nationality of the non-residents

tourists: otherwise, we would have been victim of a structure effect generated by a modification of the origin of the principal foreign customers between 1996 and 2003. Indeed, the areas visited by the foreign tourists vary according to their origin country. The home country of the foreign tourists is instead an additional data essential to consider the monthly distribution of the regional nights.

The investigations of frequentation in the hotel trade and full air hotel trade help to know, for each area, two types of seasonal variations: regional monthly seasonal variation of the foreign nights in the camp-sites (for May to September), and the regional monthly seasonal variation of the foreign nights in the classified hotels. These two types of seasonal variations will be used to distribute the regional nights per month.

It aims at classifying the lodging modes according to whether their frequentation knows a seasonal variation rather close to that of the hotels or rather near to that to the camp-sites. The quarterly results of the Enquiry at the Frontiers of 1996 suggest installing the seasonal variation of the nights in the villages and clubs of holidays to that of the nights in camp-sites and to install the seasonal variation of the other modes of lodging (hiring, second home, lodging in parents or friendly ...) with that of the hotels.

For each area, one calculates the share of the nights which, in 1996, had been spent in camp-sites or clubs and vacation villages, and the share of the nights which had been spent in all the other types of lodging. We use the same proportions to separate the nights from 2003 which must follow the monthly seasonal variation of the camp-sites of those which must follow the hotel seasonal variation. For each area, we apply to each of the two aggregates of nights the seasonal variation which corresponds to him; we obtain thus an estimate of the number of nights of non-residents tourists by area and by month.

## **2.5. Estimate of the foreign nights per department**

To proceed to the estimate of the nights of the non-residents per department and per month, we start from the estimated structure per area and per month of preceding stage, and distributes, month by month, the nights of each area between the various departments which make it up. With this intention, we cannot have recourse to the results of the investigation at frontiers of 1996: indeed, if this investigation informs about the foreign frequentation by administrative area, it does not bring any information on the tourist frequentation at the departmental level.

The investigations of frequentation INSEE-Direction of Tourism make it possible as for them to know volumes of nights of the foreign tourists in the hotels and camp-sites per department. However, as nothing guarantees that the departmental distribution of the nights of the non-residents in lodgings other than the hotels and camp-sites is identical to the departmental distribution of the nights in these two structures of lodging, it appears delicate not to use that the series resulting from the investigations of frequentation in the hostelry and open air hostelry, to distribute all the regional nights of the non-residents per department and per month. We will thus use another source to consider the monthly and departmental volumes of the nights spent in non-inquired lodgings.

We will make the assumption that for a given month, the distribution per department of the nights out of hotels and camp-sites of the foreign tourists within an area is close to that of the nights of the French tourists.

It is thus necessary for each area and each month, to calculate the distribution of the nights spent through the French in the departments including the area. For this we use the results of investigation "Followed by the Tourist Request". Only the nights of the French include in stays of approval are taken into account (personal stays not moved by the visit of family or friends), in order not to over-estimate the frequentation of the foreigners in the less tourist departments. We have chosen in stead to take five years of observation to calculate these shares of nights per department (the years 1999 to 2003 rather than only for 2003). That risks to blur phenomena specific to the year of 2003 (like the multitude increased in July 2003 in Seine-Maritime for L ' Armada of Rouen), but this risk is weak compared to the profit of reliability brought by five years of observation rather than one year only.

To recapitulate, the passage of the regional level at the departmental level is made of two stages:

- The nights of the non-residents spent in the hotels and camp-sites by department and are known thanks to the investigations of frequentation in hotel trade and hotel trade of open air.
- The nights spent in non inquired lodgings, for each month and within each area, are distributed per department according to the same division as the nights of approval of the French tourists.

## **2.6. Estimate of the foreign nights per department and per day**

At this stage, we have the nights per department and per month. It aims from now on at distributing these monthly data per day. One once again will use the results of the investigations of frequentation in hostelry and open air hostelry. These investigations allow indeed to have an idea of the day

frequentation of the tourists by the means of the rate of rooms occupied for the hotels and of the rate the sites occupied in the camp-sites. These day data cover a rather broad field unfortunately, since they are calculated only at the regional level and that they gather at the same time the French and foreign nights, both of businesses and of leisure.

It is thus necessary to build for each month and each area a seasonal variation day of the nights. One will then apply to each monthly and departmental total of nights the seasonal variation day of the month corresponding and the area to which the department belongs.

For each area and each month, one distributes the nights in two groups, according to which ones are spent in the lodgings which follow a seasonal variation rather close to that to the camp-sites or rather near to that to the hotels. We use the distribution of nights "assimilate hotels" and "assimilate camp-sites" which helped to the nights estimate per area and per month. For the assimilated camping" nights, for each area we only use a day distribution of the monthly nights according to the day data of rate of the occupied sites. For comparable nights the "hotels", the things become complicated slightly. Indeed, the day data which we have reveal that the rates of occupation are higher during the days of week than the days of weekend. This is explained by the fact that the nights of businesses represent certain the entire months more than half of the nights. So the nights of businesses are for the essential carried out by the French tourists. These peaks of frequentation in the middle of the week do not concern the foreign tourists. We chose thus to smooth the rates of daily occupation of their weekly variations with the help of a mobile average of 7. For each area and each month, we can estimate the day frequentation of the foreign tourists in the hotels and lodgings compared to the assistance of these rates of the smoothed daily occupations.

Then we sum the two day series of nights we obtain, for each area and each month, an estimate of the day distribution of the nights. These seasonal day variations are then applied to the totals of nights per department and day: the 567 million nights of tourists non-residents in France in 2003 are thus distributed per day and per department.

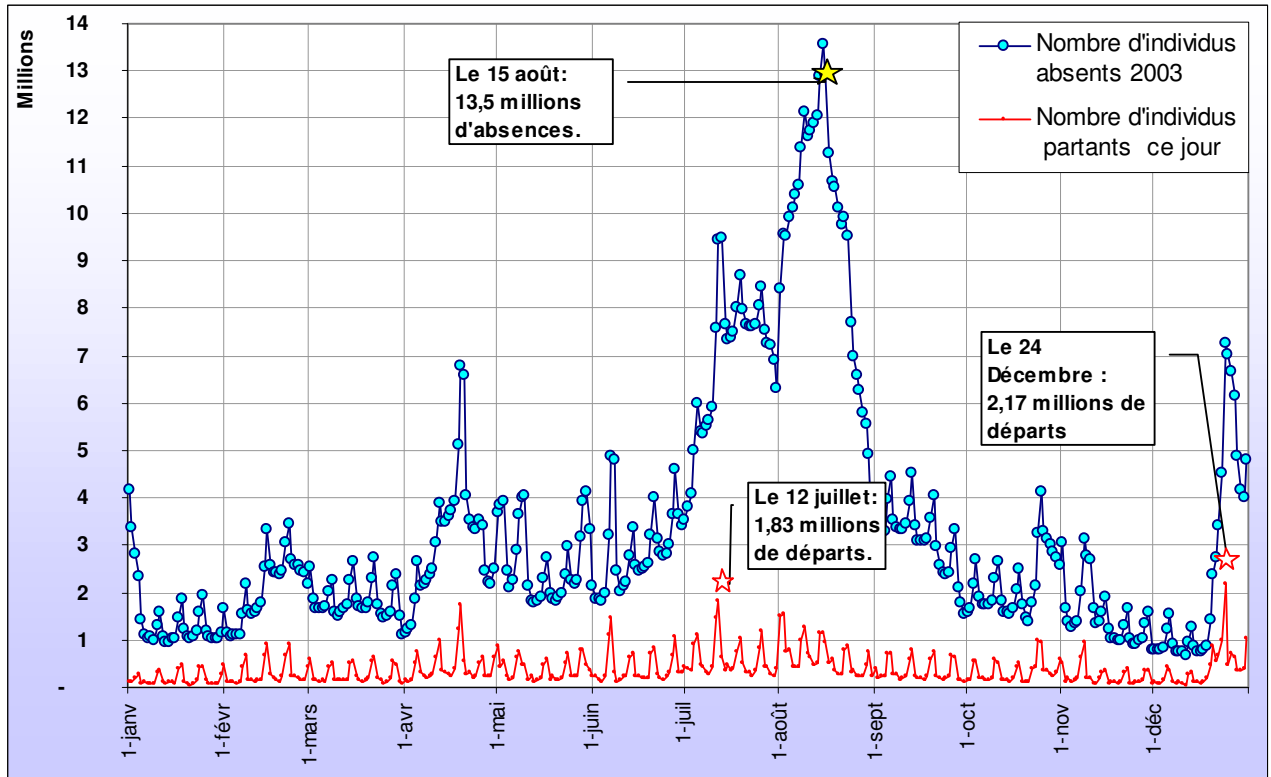
The method of the estimate chosen implies that there are sometimes ruptures in the day curves day at the time of the passage from one month to another. Indeed, because of some other mistaken data, we applied the day distributions of the nights in the hotels and camp-sites, all nationalities and all reasons (businesses or leisure) confused, with the monthly and departmental totals of the nights all modes D' lodging confused. There is thus no reason for a perfect continuity between the day data of the end of the month and those of the beginning of the next month. To blur these artificial ruptures, we smoothed by a mobile average the data of the few days of transition corresponding to the passage of a new month. This improves the chart of the day curves without losing any relevant information.

**Limit:** The seasonal variation which we have one calculated from the rates of the daily occupation of the hotels and camp-sites is not always very satisfactory. This namely the case for the Île area of France, where the share of the nights of businesses in hotels is very important and the nights of camp-site are almost non-existent. The day seasonal variation thus seems to reflect primarily the movements of tourism of business (gap between on July 14 and on August 15, gap around November 11, of the first and May 8) and thus is adapted little to the nights of the non-resident tourists. The day seasonal variations of the other areas do not meet, however this shelf.

### 3. Results

#### 3.1. Presence of the French

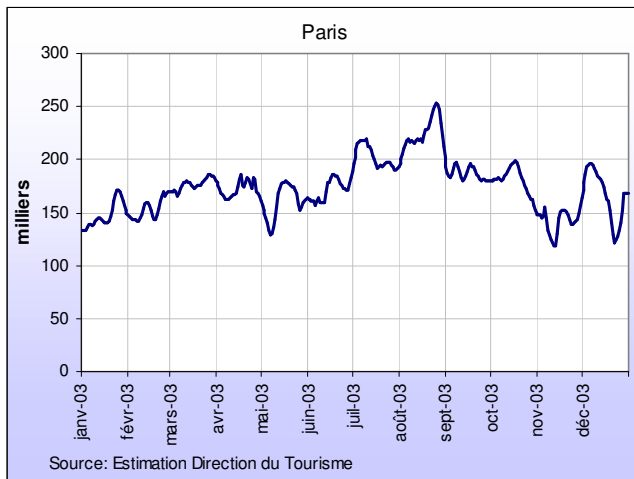
Numbers of absent individuals and leaving this day in 2003



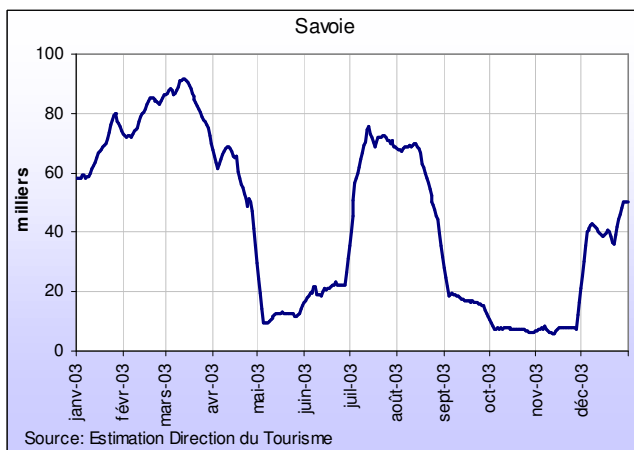
resource : SDT / estimation Direction du Tourisme

## 3.2. Frequentation of the tourists non-residents in France

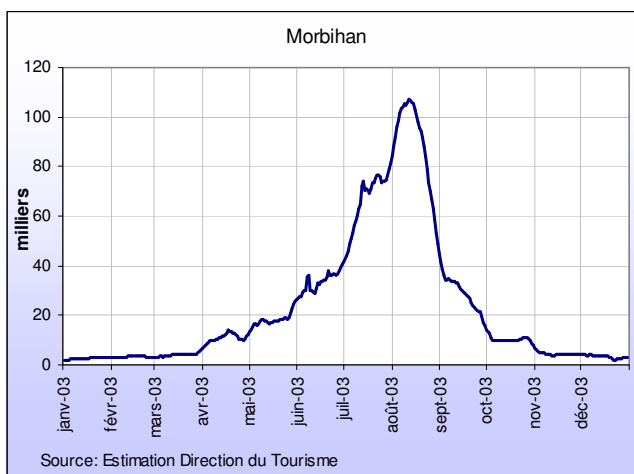
### 3.2.1. Presence per day of the non-residents in three tourist departments



Seasonal variation of the tourist stays of non-residents is marked remarkably little in Paris. The urban environment in fact does not justify an increased frequentation at a certain period of the year. The climax ratio (day of frequentation maximum) over the annual average (permanent equivalent living) is worth 1,5; Paris is the department for which this ratio is more weak. This ratio is worth 2,4 in all France and is worth more than 4 in certain departments with the very



This graph reflects well the two peaks of frequentation tourist in Savoy, the one in February-March and the other in July-August. Winter peak is more marked than the estival peak, whereas that is not the case in Haute-Savoy. The ski resorts which have largest structures of reception are indeed rather established in Savoy.



Profile of the frequentation of the tourists non-residents in Morbihan is very seasonal worker: more half (57%) of the foreign nights are concentrated during July and August. Indeed, the offers tourist of this department is primarily centered on the littoral; the attracted of Morbihan is thus limited apart from the estival season.



### 3.2.2. Statistics of frequentation of the non-residents for the year 2003

Arrivals total Numbers:	<b>75 millions</b>
total Number of nights:	<b>567 millions</b>
Tourists present on August 12, 2003 (day of maximum frequentation)	<b>3,8 millions</b>
Tourists present on December 22, 2003 (day of minimal frequentation)	<b>0,5 million</b>
number of tourists equivalent to living in permanent	<b>1,6 million</b>

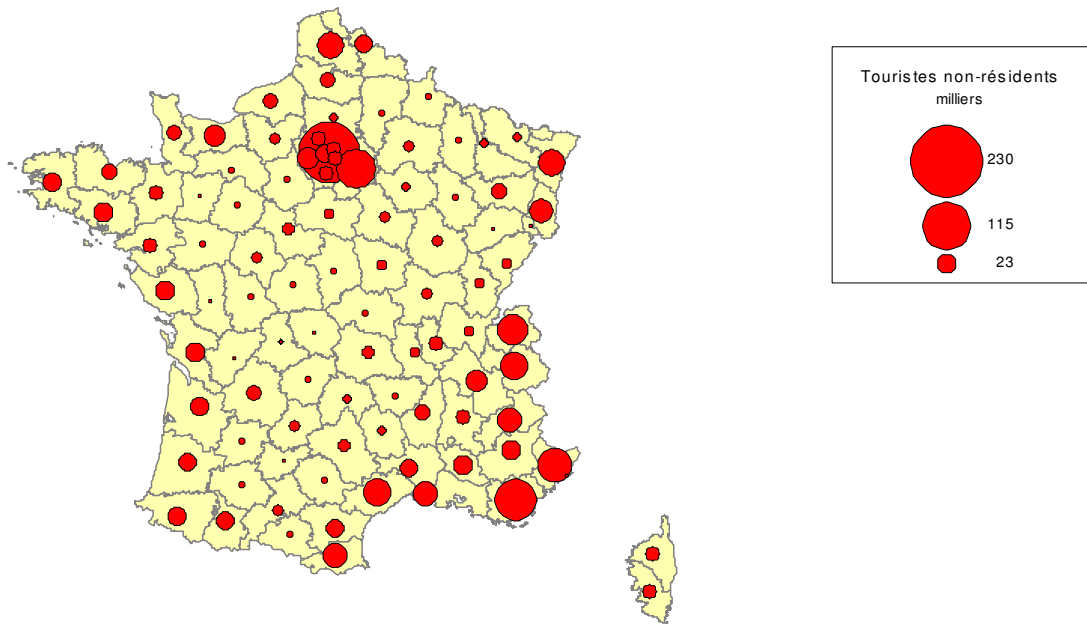
Estimation : Direction du Tourisme

#### The most attended departments

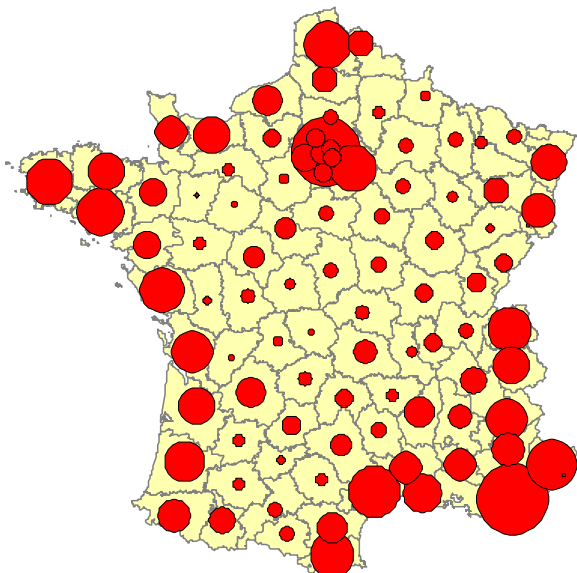
Row	Department	Annual total frequentation in thousands of nights	Permanent equivalent living (thousands)
<b>1</b>	Paris	63 433	174
<b>2</b>	Var	31 098	85
<b>3</b>	Seine-et-Marne	27 236	75
<b>4</b>	Alpes-Maritimes	22 220	61
<b>5</b>	Haute-Savoie	17 774	49
<b>6</b>	Hérault	16 016	44
<b>7</b>	Savoie	15 951	44
<b>8</b>	Pas-de-Calais	14 354	39
<b>9</b>	Bas-Rhin	14 031	38
<b>10</b>	Hautes-Alpes	12 628	35
<b>11</b>	Pyrénées-	12 250	34
<b>12</b>	Bouches-du-Rhône	12 065	33
<b>13</b>	Haut-Rhin	11 190	31
<b>14</b>	Isère	8 978	25
<b>15</b>	Calvados	8 781	24

Estimation : Direction du Tourisme

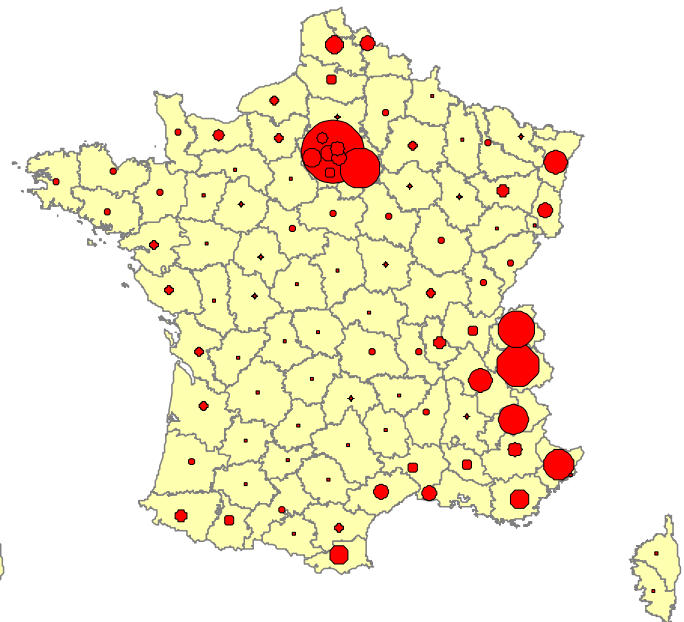
3.2.3. Cartography of the departmental distribution of the tourists non-residents in 2003  
**Tourists non-residents in equivalent permanent living**



**Tourists non-residents the day of maximum frequentation (August 12, 2003)**



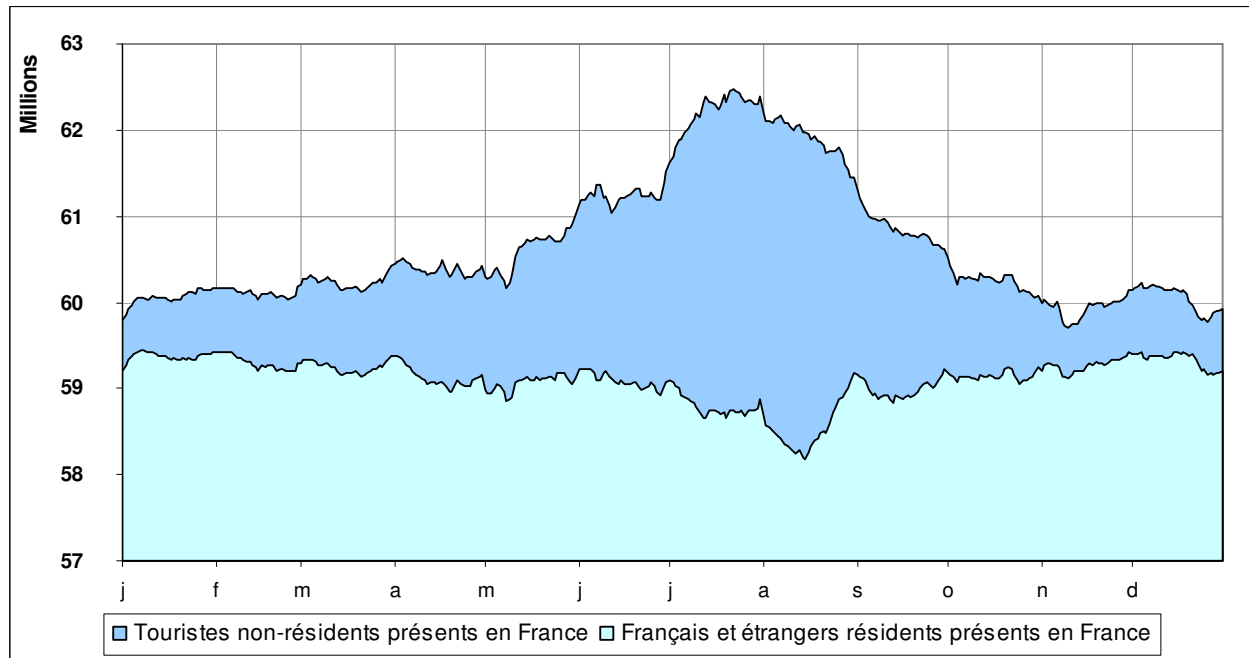
**Tourists non-residents the day of winter of maximum frequentation (March 13, 2003)**



Source : Estimation Direction du Tourisme

### 3.3. Population presents in France (French and non-residents)

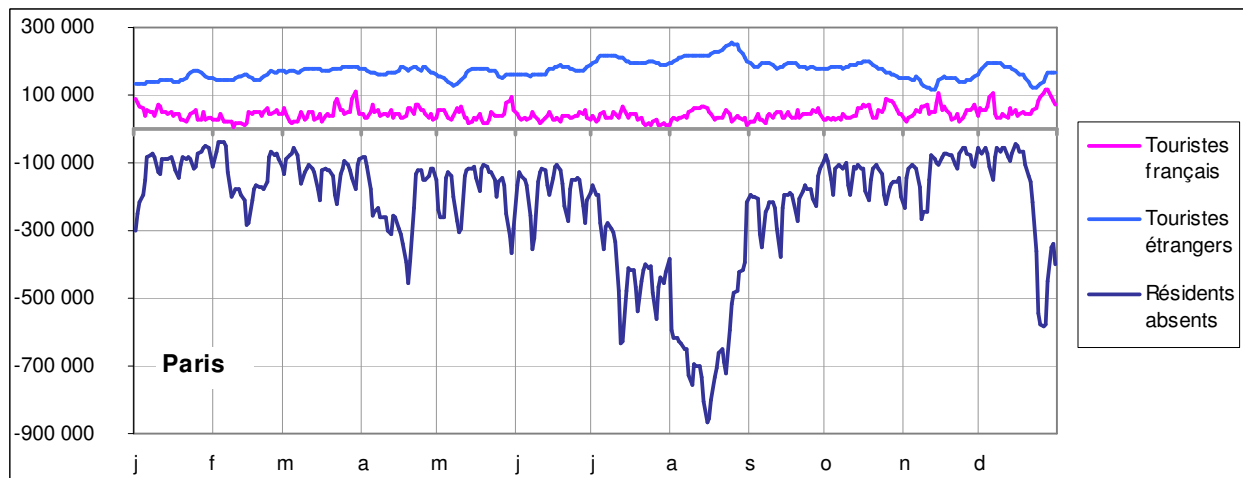
#### 3.3.1. Presence per day on whole French territory (residents/ non-residents)



Source : Estimation Direction du Tourisme

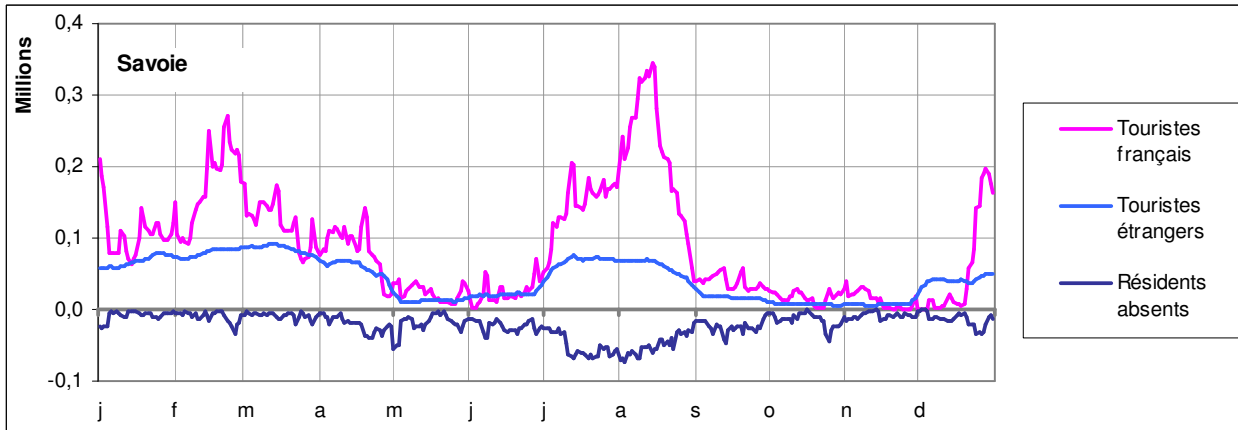
#### 3.3.2. Presences and absences per day in three tourist departments

##### Paris



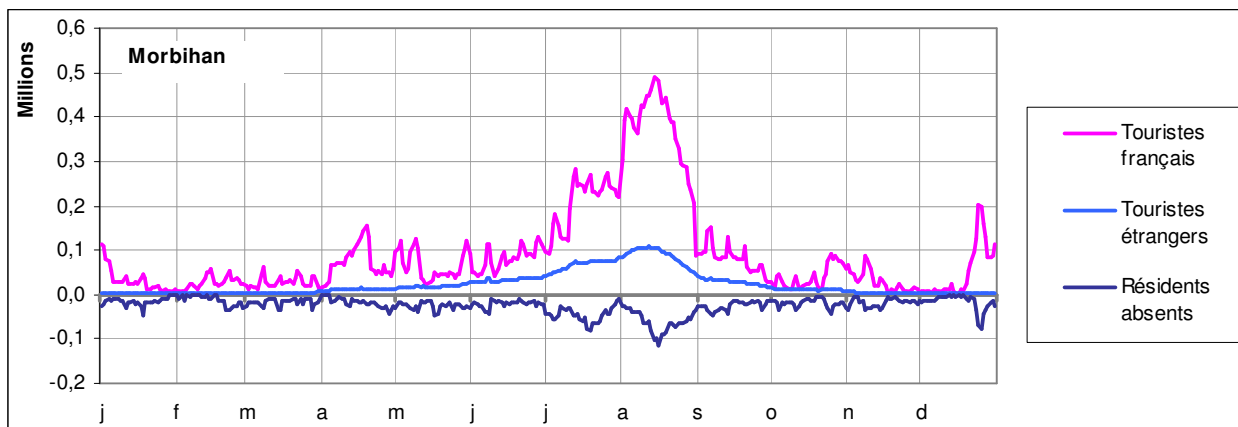
Source : SDT / estimation Direction du Tourisme

### Savoie



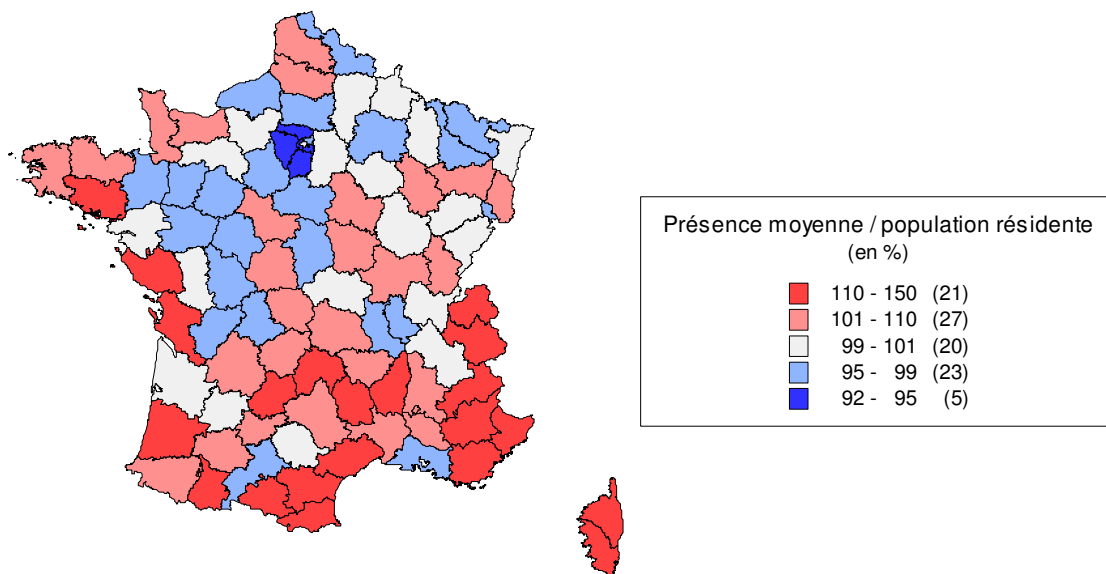
Source : SDT / estimation Direction du Tourisme

### Morbihan



Source : SDT / estimation Direction du Tourisme

### 3.3.3. Population present and population resident by department



**Population presents in permanent equivalent living (PELEHP) and population resident by department**  
**In thousands**

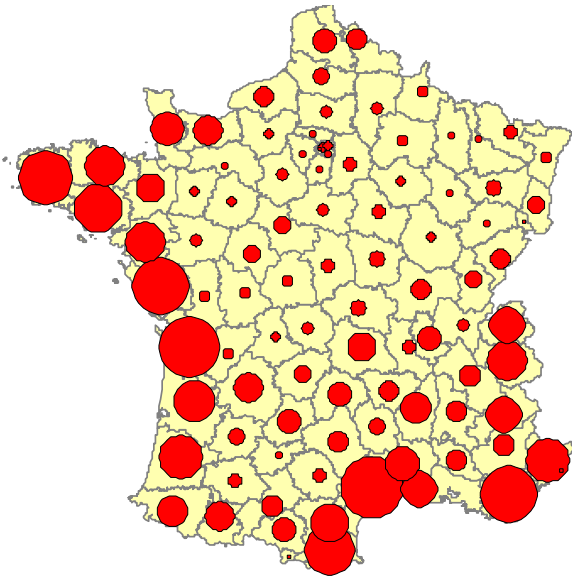
**EN MILLIERS**

Code dep	Département	Population résidente INSEE 2002	Equivalent habitant permanent (EHP)	Population totale max	Population totale min	Code dep	Département	Population résidente INSEE 2002	Equivalent habitant permanent (EHP)	Population totale max	Population totale min
	<b>France entière</b>	<b>59 635</b>	<b>60 658</b>	<b>62 478</b>	<b>59 708</b>	48	Lozère	74	89	165	70
1	Ain	539	537	567	476	49	Maine-et-Loire	745	733	817	662
2	Aisne	535	534	579	481	50	Manche	485	516	642	473
3	Allier	342	341	366	317	51	Marne	563	554	594	483
4	Alpes-de-Haute-Prov.	145	187	329	139	52	Haute-Marne	191	193	213	171
5	Hautes-Alpes	127	190	342	122	53	Mayenne	291	285	307	249
6	Alpes-Maritimes	1 046	1 157	1 353	1 059	54	Meurthe-et-Moselle	718	696	756	593
7	Ardèche	295	325	470	258	55	Meuse	192	194	216	167
8	Ardennes	289	287	304	236	56	Morbihan	666	755	1 160	659
9	Ariège	140	154	230	133	57	Moselle	1 028	1 006	1 051	908
10	Aube	294	295	328	242	58	Nièvre	222	238	301	207
11	Aude	322	368	573	308	59	Nord	2 562	2 494	2 632	2 164
12	Aveyron	267	292	389	256	60	Oise	777	756	808	647
13	Bouches-du-Rhône	1 884	1 864	1 954	1 740	61	Orne	291	293	330	261
14	Calvados	660	698	869	631	62	Pas-de-Calais	1 451	1 466	1 545	1 415
15	Cantal	148	171	294	139	63	Puy-de-Dôme	610	632	711	578
16	Charente	341	336	364	304	64	Pyrénées-Atlant.	614	660	845	604
17	Charente-Maritime	577	679	1 182	562	65	Hautes-Pyrénées	224	268	374	219
18	Cher	312	302	346	220	66	Pyrénées-Orientales	411	505	802	410
19	Corrèze	234	246	317	226	67	Bas-Rhin	1 053	1 060	1 117	971
20	CORSE	266	326	575	228	68	Haut-Rhin	723	743	790	694
21	Côte-d'Or	510	506	562	461	69	Rhône	1 622	1 561	1 677	1 149
22	Côtes-d'Armor	554	596	823	521	70	Haute-Saône	232	233	268	210
23	Creuse	123	132	187	115	71	Saône-et-Loire	544	551	622	508
24	Dordogne	392	418	565	371	72	Sarthe	537	525	571	451
25	Doubs	506	502	543	451	73	Savoie	386	494	741	374
26	Drome	453	463	514	415	74	Haute-Savoie	664	771	955	651
27	Eure	550	550	596	485	75	Paris	2 147	2 141	2 336	1 560
28	Eure-et-Loir	412	406	437	356	76	Seine-Maritime	1 237	1 224	1 297	1 138
29	Finistère	864	917	1 269	832	77	Seine-et-Marne	1 232	1 243	1 311	999
30	Gard	649	673	816	618	78	Yvelines	1 370	1 293	1 400	872
31	Haute-Garonne	1 103	1 073	1 133	935	79	Deux-Sèvres	348	349	383	311
32	Gers	175	185	211	162	80	Somme	557	568	640	513
33	Gironde	1 331	1 338	1 478	1 240	81	Tarn	350	349	378	315
34	Hérault	946	1 045	1 444	886	82	Tarn-et-Garonne	214	217	260	184
35	Ille-et-Vilaine	895	884	944	762	83	Var	946	1 111	1 591	927
36	Indre	231	236	265	211	84	Vaucluse	518	533	608	481
37	Indre-et-Loire	563	557	627	504	85	Vendée	565	667	1 175	555
38	Isère	1 129	1 130	1 246	1 003	86	Vienna	403	396	436	339
39	Jura	253	266	328	238	87	Haute-Vienne	354	340	369	284
40	Landes	341	398	698	313	88	Vosges	381	398	457	361
41	Loir-et-Cher	319	332	382	303	89	Yonne	336	347	409	316
42	Loire	727	708	750	589	90	Territoire-de-Belfort	139	136	160	101
43	Haute-Loire	214	225	293	196	91	Essonne	1 153	1 066	1 162	735
44	Loire-Atlantique	1 174	1 183	1 277	1 123	92	Hauts-de-Seine	1 471	1 354	1 490	820
45	Loiret	629	613	659	499	93	Seine-Saint-Denis	1 396	1 340	1 412	1 122
46	Lot	164	181	293	137	94	Val-de-Marne	1 239	1 145	1 246	807
47	Lot-et-Garonne	310	310	338	272	95	Val-d'Oise	1 122	1 059	1 131	815

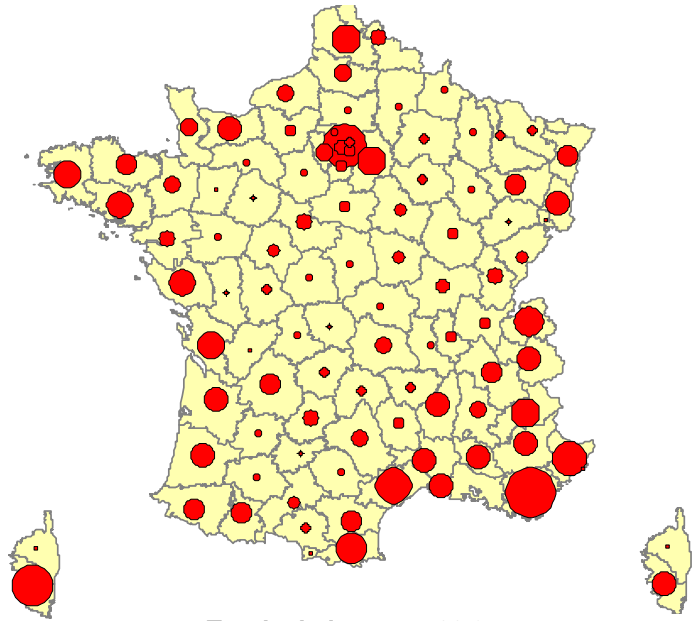
Source : SDT / estimation Direction du Tourisme

3.3.4. Cartography of the absences and presences by department the day of maximum frequentation (July 22, 2003)

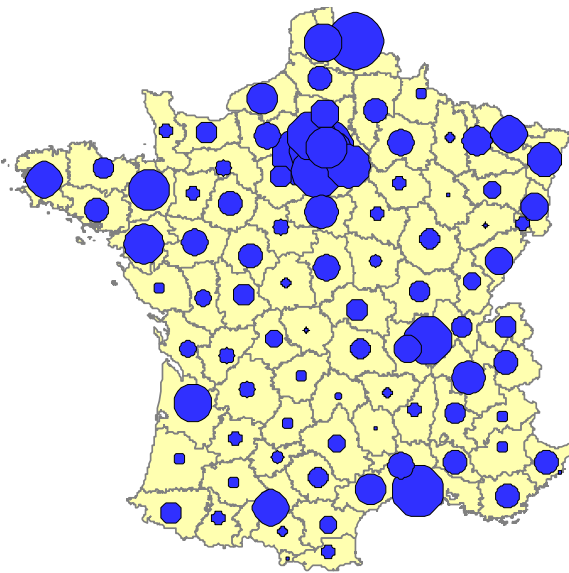
**French tourists present on 22/07**



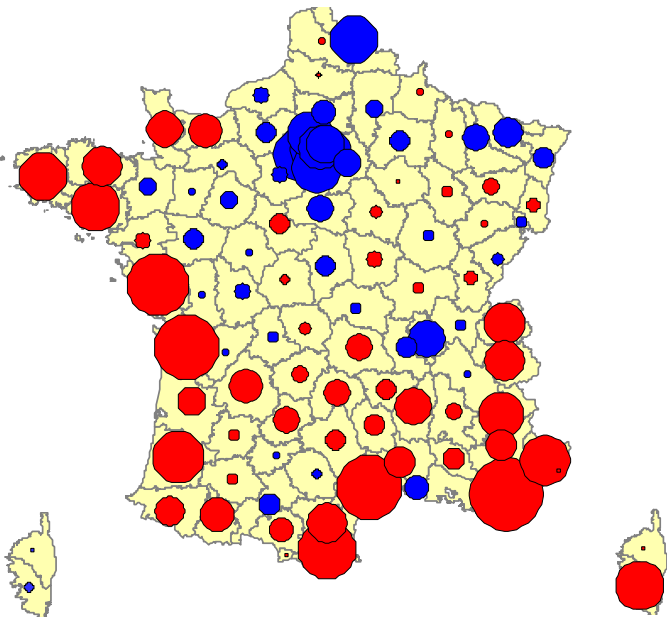
**Foreign tourists present on 22/07**



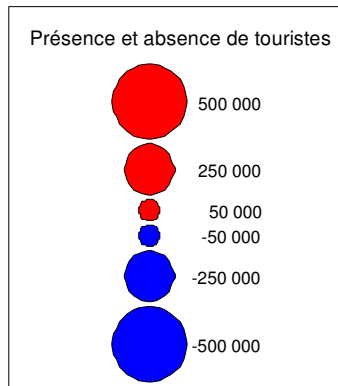
**French absent from home on 22/07**



**Tourist balance on 22/07**



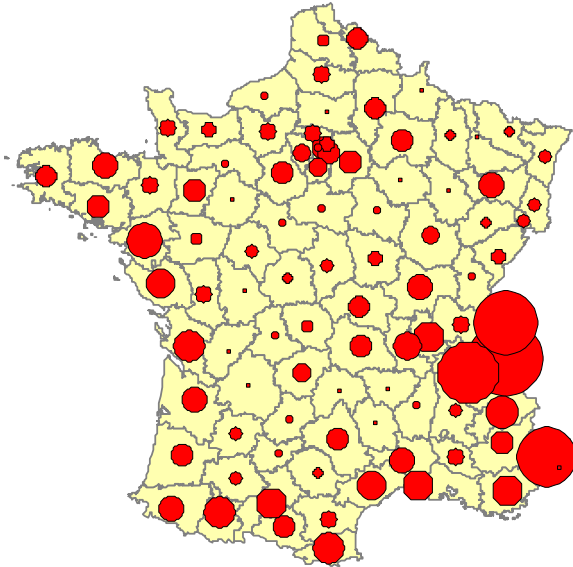
Source : Estimation Direction du Tourisme



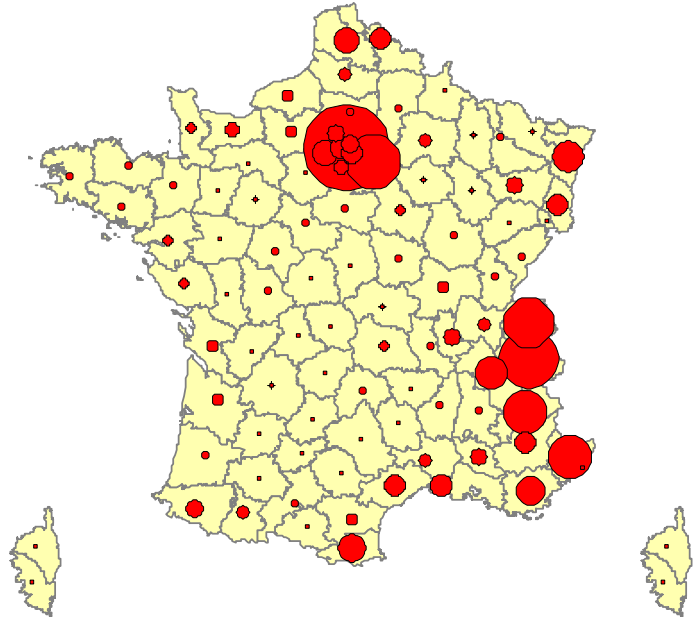
NB : The SDT does not distinguish the two departments of Corse. So we have chosen for the graphic representation, the affectation of all the spent nights in Corse in department 2A.

3.3.5. Cartography of the absences and presences by department the day of maximum frequeantation in winter (March 4 )

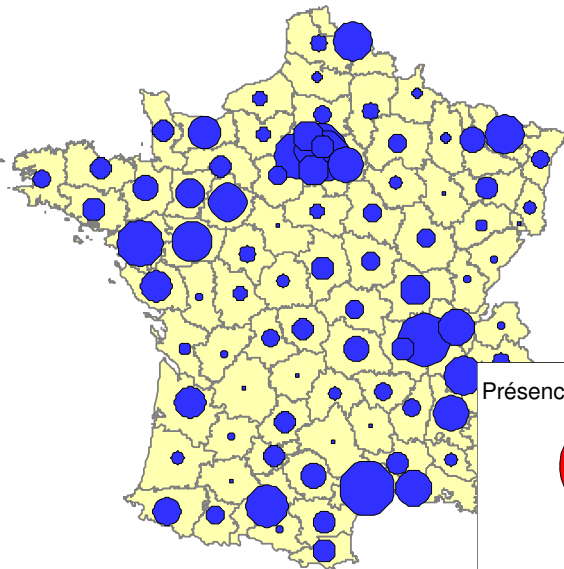
**French tourists present on 04/03**



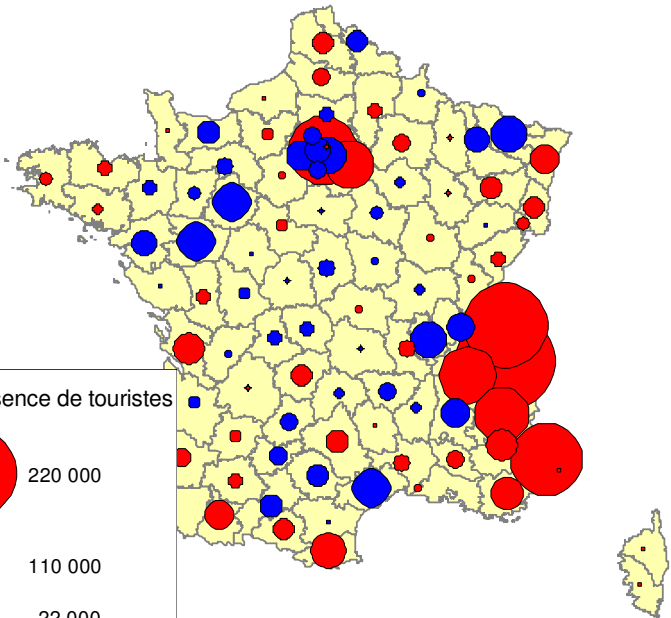
**Foreign tourists present on 04/03**



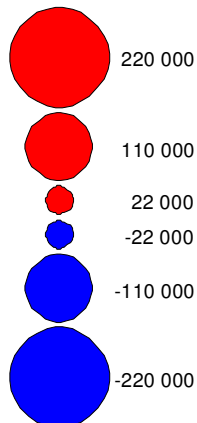
**French absent from home on 04/03**



**Tourist balance on 04/03**



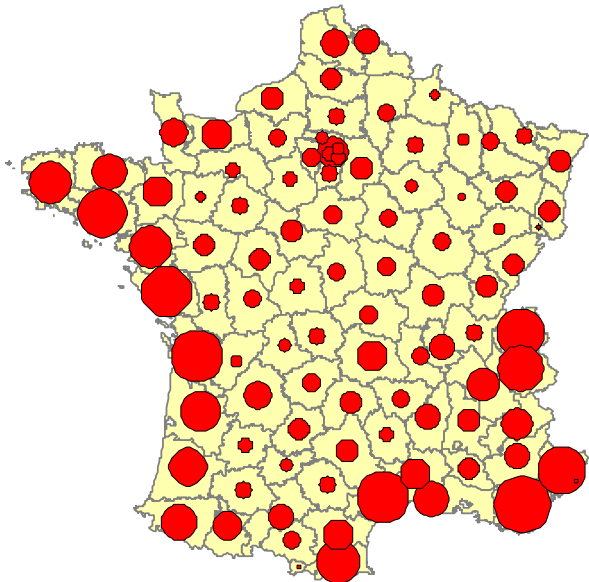
Présence et absence de touristes



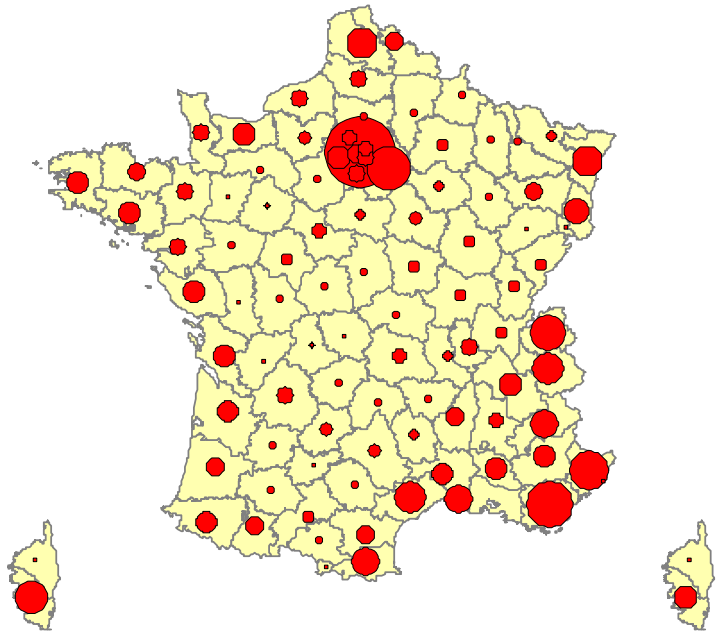
Source : Estimation Direction du Tourisme

### 3.3.6. Cartography of the absences and presences by department (permanent equivalent living)

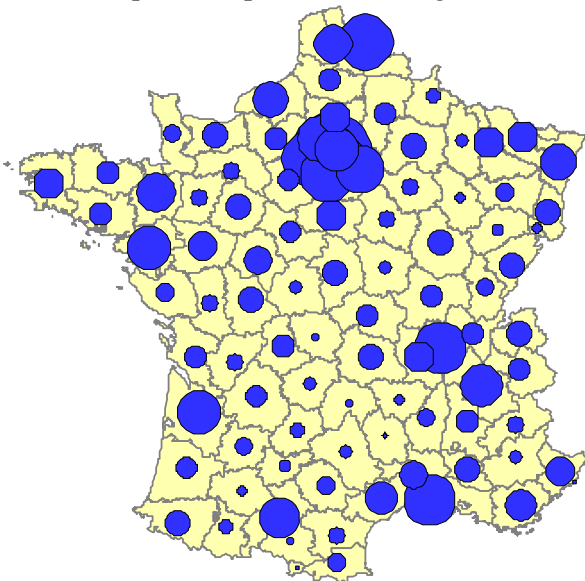
**Presence of French tourists**  
Equivalent permanent living



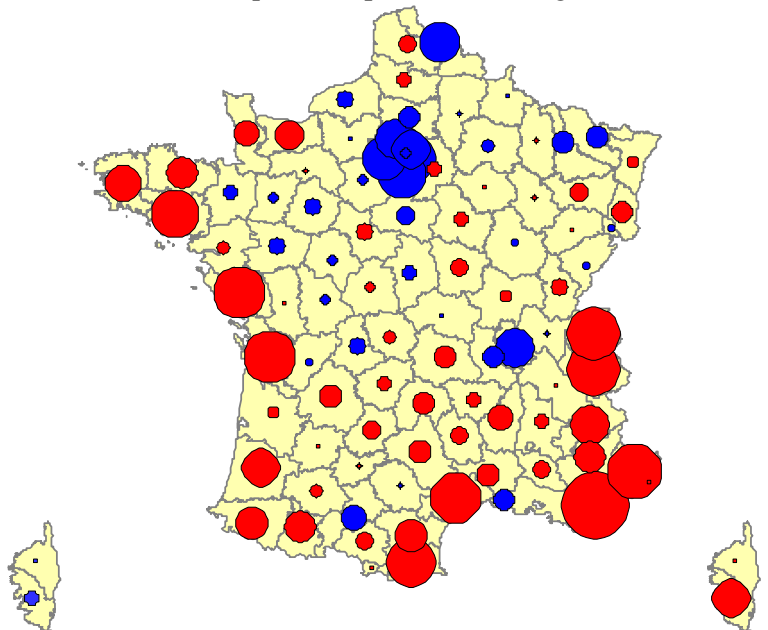
**Presence of foreign tourists**  
Equivalent permanent living



**Absence of residents**  
Equivalent permanent living



**Tourist Balance**  
Equivalent permanent living



Source : Estimation Direction du Tourisme



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<http://asrdlf2003.entpe.fr/pdfpapiers/tourisme/239.pdf>
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