TOURISM AS A MEANS TO COUNTERACT INNER AREAS (IAS) DEPOPULATION: THE CASE STUDY OF CAMPANIA REGION[1]

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Abstract. In recent years, there has been a growing interest in rural areas, affected by profound changes mainly in the shift of economic activity and population to urban areas. These phenomena have led to a crisis in the traditional structure and organization of rural areas, exposing them to the risk of economic, social and environmental decline. To combat demographic decline and promote sustainable territorial competitiveness, the Italian National Strategy for "Inner Areas" (SNAI) was born in 2013. Rural tourism has a high potential to stimulate local economic growth and social change because of its complementarity with other economic activities. These positive externalities can stop Inner Areas (IAs) population loss. This study proposes a theoretical model for the construction of a synthetic index to measure rural tourism in IAs, starting from 22 basic indicators declined in three Pillars: 1) Infrastructural density and touristic fluxes; 2) Economic impact of touristic sector and 3) Agricultural sector support. It was used a multisource approach (statistical and administrative sources, big data), by analysing 8 data sources: survey and administrative sources, Statistical registers and Big Data on Agritourisms. The research focused on the areas of the Campania Region and the complexity of rural tourism in the Peripheral, Ultraperipheral Areas (165 Municipalities) was compared with the Urban Centres and Belt (260 Municipalities) and the Intermediate municipalities (126). The result provides a tool for monitoring tourism sector by stakeholders and policy makers, useful to promote sustainable territorial competitiveness of IAs.

1. Rural tourism and Italian National Strategy for "Inner Areas" (SNAI)

As registered by the World Tourism Organization (WTO), tourism connected to food and countryside is a quickly growing segment. A high percentage of tourists does choose tourist destination on the basis of quality food as well as of the will to

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gain positive experiences by tasting local products in small locations, renowned for their quality and their strong connection to the territory. In this way, a strong relationship has been created among free time, tourism, food rediscovery, and rural areas' promotion, able to exert an influence on both demand and supply of tourist services (Piñeiro *et al*., 2019).

The rural areas are also affected by profound changes mainly in the shift of economic activity and population to urban areas. These phenomena have led to a crisis in the traditional structure and organization of rural areas, exposing them to the risk of economic, social and environmental decline. To combat demographic decline and promote sustainable territorial competitiveness, the Italian National Strategy for "Inner Areas" (SNAI) was born in 2013. The risk is that demographic decline and geographical marginality will be followed by dysfunctional processes that undermine the very provision of basic services. The worrying population loss is confirmed by the data: against a positive demographic dynamic on a national basis between 2001 and 2020 (+3.9%), growth in the central municipalities was even more accentuated (+5.6%) while the inland areas lost the overall population (-1.4%). This decrease is particularly relevant because it is precisely the most marginal municipalities of the Inner Areas (Peripherals and Ultra-peripherals Regions) that have suffered the biggest drops (respectively -4.7% and -9.1%) (ISTAT, 2022).

The identification of the Inner Areas (IAs) starts from a polycentric reading of the Italian territory, characterized by a network of municipalities or aggregations of municipalities (service offering centers) around which gravitate areas characterized by different levels of spatial marginality (Agenzia per la Coesione Territoriale, 2021).

SNAI looks at the entire Italian territory in its articulation at municipal level and identifies Municipalities with a joint offer of three types of services - health, education and mobility - known as Poles/Inter-municipal Poles. It also classifies all the other Municipalities based on their distance from these poles (in terms of actual average travel times on the road), classifying them into four categories at increasing relative distance - Belt, Intermediate, Peripheral, Ultraperipheral - and, therefore, with greater potential discomfort in the use of services. Municipalities classified as Intermediate, Peripheral and Ultraperipheral represent the set of IAs of our country.

In the IAs, the agricultural, pastoral and forestry sectors play a central role as opportunities for economic growth and for the value of care and environmental prevention (Lucatelli and Storti, 2019). For example, agricultural soil management is essential in areas with high levels of landslide risk and hydrogeological disruption; pastoralism contributes to the vitality of mountain giving a contribution to maintaining biodiversity and combating soil degradation.

Rural tourism has a high potential to stimulate local economic growth and social change because of its complementarity with agriculture and other economic

activities (World Tourism Organization, 2023). In the long term, it enhances economic growth by stimulating investment in new infrastructure and human capital, and increases competition, promoting industrial development, creating jobs and thereby increasing income. These positive externalities can stop Inner Areas (IAs) population loss.

The aim of the work is to represent the complexity of rural tourism in IAs, compared with Urban Poles and "Belt" municipalities, analyzing main components and driving forces, using a multisource approach. The study identifies useful indicators for the evaluation of these phenomena by exploiting the opportunity given by using both Big Data and traditional sources.

The research focused on the areas of the Campania Region and the complexity of rural tourism in the Peripheral, Ultraperipheral Areas (165 Municipalities) was compared with the Urban Centers and Belt (260 Municipalities) and the Intermediate municipalities (126).

2. Rural tourism in IAs measurement: a theoretical model

2.1. Multi-source approach

Many National Statistical Institutes (NSIs), especially in Europe, are moving from single-source to multi-source statistics, due to higher quality demands on the statistics produced. NSIs have traditionally produced statistics from a single source, where basically only data from a single data source is used and other data sources are also often used only as ancillary data. In most cases, the single data sources are surveys, although nowadays administrative data are increasingly used as unique data sources and Big Data is also starting to be used. By combining survey data with administrative data and Big Data already available, INSs can reduce data collection and processing costs and reduce the burden on respondents (de Waal *et al.*, 2019).

A multisource approach (statistical and administrative sources, Big Data) was used to meet the need to develop a system of homogeneous, comparable and up-to-date statistics. For the construction of indicators were used 8 data sources: survey and administrative sources (Continuous Population Census, Survey of Museums and similar institutions, Agricultural Census, Capacity of Collective tourist accommodation establishments, Statistical Atlas of the Municipalities), Statistical registers (Statistical register of active enterprises - ASIA, Frame SBS) and Big Data on Agritourisms. Sources are described as below.

• *Capacity of collective tourist accommodation establishments survey*. It is a total survey by Istat, carried out annually (https://www.istat.it/it/archivio/210783). The quantitative survey, at the single municipality level, of the number of establishments,

beds, bedrooms and bathrooms for hotels; of exercises and beds for the other structures. (Data source for indicators 1-5).

• *Continuous Population Census*. Istat makes available the most recent official data on the population in Italian Municipalities deriving from the surveys carried out at the Registry and Civil Status Offices of the Municipalities (http://demo.istat.it/) and from the Population Census (http://dati-censimentipermanenti.istat.it/). Personalized queries (by year, territory, citizenship, etc.) allow you to build the tables of interest and download the data in a reprocessable format. It is also possible to find information on the main demographic phenomena, such as birth and death rates, forecasts of the resident population, the old age index, the average age (Data sources for indicators 1-3).

• *Survey of museums and similar institutions*. The survey is an annual survey of a census nature, conducted by Istat in collaboration with the Ministry of Culture (MiC), the Regions and the Autonomous Provinces (https://www.istat.it/it/archivio/6656). (Data source for indicator 6).

• *Statistical Register of Active Enterprises - ASIA*. The Istat Statistical Register of Active Enterprises (Asia) was established under EC Regulation no. 177/2008 relating to the community coordination of the development of business registers used for statistical purposes (http://www.istat.it/it/archivio/216767). The Register plays a central role in economic statistics: it is used for National Accounting estimates and identifies the reference population for sampling plans and for reporting to the universe of the main business surveys conducted by Istat. (Data source for indicators 7, 9 and 10).

• *FRAME SBS*. The Istat SBS Frame (https://www.istat.it/it/archivio/249448) is an integrated system of administrative and statistical data, created annually by Istat for the estimation of the economic results of companies, starting from the units included in the statistical register of companies (ASIA). It is currently used both for the production of estimates of structural statistics on companies (SBS), and as a relevant source in the estimates of the National Accounts. (Data source for indicator 8).

• *Big Data on Agritourisms*. Istat decided to experiment the possibility to collect information on agritourisms through a web scraping technique, in order to enable the collection of sparse and unstructured information in the Internet, belonging to the vast category of Big Data (Barcaroli *et al*., 2016a). Data source is http://www.agriturismoitalia.gov.it (Data source for indicators 11-15).

• *Statistical Atlas of the Municipalities*. The Statistical Atlas of the Municipalities by Istat (https://asc.istat.it/ASC/) provide a dynamic information, produced both by Istat and by other bodies belonging to the national statistical system. Each series of data (currently around 150 in total) is then enriched by a collection of metadata

which guide the user towards a correct reading and interpretation of the contents (Data source for indicators 4, 11 and 12).

• *Agricultural Census*. Since data at municipality level of the 7th Agricultural Census (2021) are not yet available, we based our analysis on last available data, referred to 2010 Agricultural Census, as a proxy (Data source for indicators 16-22).

2.2. Big Data (web data) analysis on agritourisms: an innovative approach

Usually, the main source of information for these farms is represented by the administrative data of the authorized Agritourisms, collected both by Istat and by Ministry of Agriculture in different surveys. To enhance the data quality (i.e. timeliness, accuracy, punctuality) and to increase the amount of information related, in this work was proposed the use of web scraping techniques.

Web scraping is a process of extracting data from websites using software programs; it has become an increasingly popular technique in recent years due to the growth of the internet and the large amount of data available online. Web scraping can be used for a variety of purposes, including data analysis, research, and business intelligence (Barcaroli *et al*., 2015; Barcaroli *et al*., 2016b)

There are two main types of web scraping: specific and generic web scraping. Specific web scraping involves scraping websites where the structure and content are known in advance. This means that the software program can be programmed to replicate the behavior of a human user visiting the website and extract only the relevant information from the website.

Generic web scraping, on the other hand, involves scraping websites where no prior knowledge of the content is available. This means that the software program must scrape the entire website and then use machine learning or other techniques to infer relevant information.

In this work, the web data acquisition focuses on specific web scraping. Custom software programs have been developed to extract information from the website http://www.agriturismoitalia.gov.it, which is the official website for Italian Agritourisms, including about 25,000 units.

Specifically, the list of Italian official Agritourisms was acquired first, then for each enterprise in the list, detailed information was downloaded. For both activities custom web-scraping programs have been developed from scratch by the team in Python.[2]

The extracted data were stored in a tabular data format and automatically processed using a Python script to produce the dataset used for analysis in this study.

[2] The software used for web-scraping has not yet been made public.

Big Data preparation is the process of cleaning and transforming raw data prior to processing and analysis.

- Normalization of the denominations of the municipalities (122 agritourisms for which it was not possible to match an official municipality on the basis of the name)
- Manual correction of incorrect municipality names
- Search and resolution of duplicates
- Attribution of municipality codes
- Attribution of the number of beds: num_posti_letto_nel_comune = (num_camere_nel_comune * 2) + (num_appartamenti_nel_comune * 4) + (num_piazzole_nel_comune * 4).

2.3. Pillars and indicators proposed

For the assessment of driving forces that affect rural tourism in IAs, this study proposes a theoretical model for building a synthetic index starting from 22 basic indicators declined in three Pillars: 1) Infrastructural density and touristic fluxes; 2) Economic impact of touristic sector and 3) Agricultural sector support. The estimation of a complex phenomenon as tourism, with the use of a synthetic index, summarizes the concept at the highest levels, leaving little space to the analysis of the individual facets, but represents a photograph of the phenomenon, useful for the evaluation of touristic and agricultural ex post policies.

Indicators are described in the Appendix (Table 1).

3. Results and Final remarks

3.1. Results

Focusing on Campania region, the following areas have been joined for the calculation of indicators:

- Group A: Poles/Inter-municipal Poles, Belt (260 municipalities)
- Group B: Intermediate (126 municipalities)
- Group C: Peripheral, Ultraperipheral (165 municipalities).

Pillar 1 (Table 2): the potential of accommodation facilities is evidently very high in Peripheral and Ultraperipheral Areas. For example, the indicator Total accommodation rate (Figure 1) where the value for group C (222.6) is taller than

group A (17.3) and group B (102.4). Exception is Visitor pressure on museum and similar institutions, which, as expected, is higher in the Poles.

Table 2 – *Basic indicators by areas - Pillar 1: Infrastructural density and touristic fluxes.*

Infrastructural density and touristic fluxes	Total accommodation rate	Rate of accommodation		Density of establishments, hotels and accommoda-tion facilities	Incidence of accommodation at municipality level	Visitor pressure on museum and similar institutions per inhabitant
		high-end hotel structures	extra-hotel facilities			
Poles Areas	17.3	6.3	6.8	17.5	1.5	2,527.8
Intermediate Areas	102.4	26.6	58.9	13.6	1.0	1,087.7
Peripheral/ Ultrap. Areas	222.6	63.1	100.0	19.2	1.9	1,969.5
Campania	41.8	12.8	19.1	17.1	4.5	2,351.7

Pillar 2 (Table 3): even the economy of the tourism sector confirms the potential of Peripheral and Ultraperipheral Areas, particularly the Added value per capita of the tourism sector registers in the group C shows a twice value (1,398.8) compared to group B (725.5) and more than quadruple value compared to group A (321.9).

Table 3 – *Basic indicators by areas - Pillar 2: Economic impact of touristic sector.*

Economic impact of touristic sector	Incidence of employment in the tourism sector	Added value per capita of the tourism sector	Incidence of employment in the tourism-related entertainment sector	Localization quotient of local tourist unit employees
Poles Areas	7.7	321.9	1.2	0.9
Intermediate Areas	11.5	725.5	1.0	1.3
Peripheral/ Ultrap. Areas	17.2	1,398.8	1.4	2.0
Campania	8.7	446.1	1.2	1.0

Pillar 3 (Tables 4a,b): the density of Agritourisms (Figure 2) is lower in group C (0.05). The used source of Big Data, by its nature, excludes a part of the Agritourisms, in particular those not in possession of the certification. (Agritourisms with certification can use the label on the right). In fact, thanks to the "Agriturismo Italia" brand by Ministry of Agriculture, tourists and professional operators can easily distinguish officially accredited businesses. This distinction is very important, especially for the international market where the Italian agritourism reality is not always perfectly known and the various operators could easily be disoriented by

other forms of hospitality, equally present in the rural area. Therefore, it cannot be excluded that a part of the Agritourisms is missing, even if they are located in the Peripheral and Ultraperipheral Areas, but not in possession of the certification.

This is caused by uneven territorial marketing throughout the territory and the lack of associations among the structures. Agricultural holding data source refers to Agricultural Census 2010, since data at municipality level of 2021 Census are not yet officially released. In this case we used this source to calculate basic indicators for Pillar 3, but we'll update these indicators. Moreover, 2010 used data refer to the location of the holding, in most cases the legal address, instead of the location of lands (cadastral parcels) or livestock.

Table 4a – *Basic indicators by areas - Pillar 3: Agricultural sector support.*

Agricultural sector support	Density of Agritourisms	Agritourisms with accommodation	Share of Agritourisms with catering services	direct sale	other gainful activities except direct sale
Poles Areas	0.06	0.51	88.38	41.90	63.73
Intermediate Areas	0.06	0.64	91.74	40.87	56.09
Peripheral/ Ultrap. Areas	0.05	0.41	77.22	34.60	36.71
Campania	0.06	0.51	85.89	39.28	52.86

Table 4b – *Basic indicators by areas - Pillar 3: Agricultural sector support (2).*

Agricultural sector support	Share of holding with grapes for PDO/PGI wines	organic farming UAA	organic farming livestock	wooded area	permanent crops	permanent pasture and meadows	short rotation coppices
Poles Areas	27.03	0.95	1.29	15.05	77.13	4.78	0.82
Intermediate Areas	18.73	1.55	1.26	24.88	85.19	9.48	1.55
Peripheral/ Ultrap. Areas	8.89	1.52	0.97	33.85	81.34	20.58	1.62
Campania	18.92	1.30	1.16	23.59	80.91	10.83	1.28

Figure 1 – *Total Accommodation rate*.

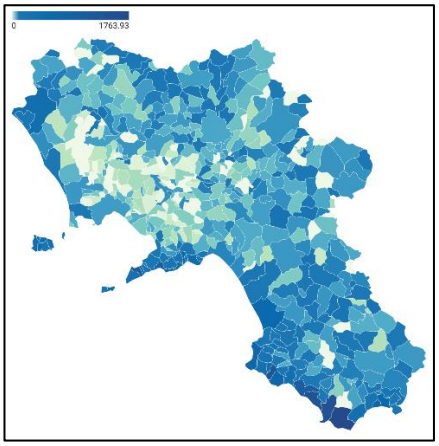
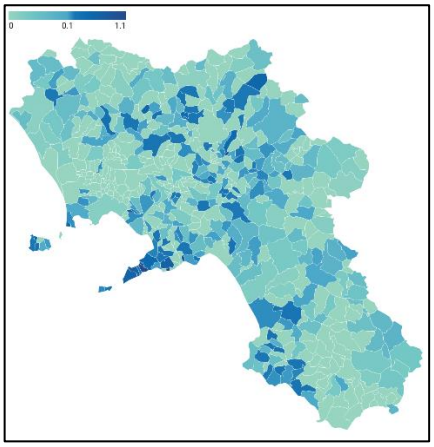


Figure 2 - *Density of Agritourisms.*



3.2. Final Remarks

The rural tourism of Inner Areas, to a certain point, depends on the agricultural sector. The construction of a new offer (diversification of activities) and the construction of an integrated and organized offer of high-typical goods and services (specialties and integrated specialties) in synergy with tourism is necessary for the sector development.

The decline in agricultural and other forms of rural employment in many countries has created a need for a diversified range of rural businesses. In most cases, rural tourism has become an important element of the diverse activities and development in rural areas.

Switching from single source to multisource statistics seems like the way to go. However, this transition is not easy. Multisource statistics come with new problems that need to be overcome before the resulting output quality is sufficiently high and before those statistics can be produced efficiently (de Waal *et al*., 2019).

The limit of the use of multi-source statistics is that supporting data come in many different varieties as data sets can be combined in many different ways. Every data source has its own problems (*i.e.* time lag, different target) for which customized solutions are needed.

Despite these limits, the described tool is important to monitor the trend of rural tourist supply and demand in internal areas with the use of indicators in order to guide the stakeholders in the political choices about sustainable IAs.

The next step will be to calculate and to evaluate the strength of synthetic indices and calculate them for all Italian regions.

Appendix

Table 1 - *Pillars, Basic indicators, Algorithms and related Data sources. (segue)*

Pillar	Indicator	Algorithm	Data source
Infrastructural density and touristic fluxes	Total accommodation rate	Number of total beds per 1,000 inhabitants	Istat, Capacity of collective accommodation establishments survey; Istat, Continuous population census
	Rate of accommodation of high-end hotel structures	4-5 star hotel beds per 1,000 inhabitants	idem
	Rate of accommodation of extra-hotel facilities	Extra-hotel beds per 1,000 inhabitants	idem
	Density of establishments, hotels and accommodation facilities	Total beds per km^2	Istat, Capacity of collective accommodation establishments survey; Istat, Statistical Atlas of the Municipalities
	Incidence of accommodation at municipality level	Total beds of the Municipality/Total beds at national level (%)	Istat, Capacity of collective accommodation establishments survey;
	Visitor pressure on museum and similar institutions per inhabitant	Visitors of museum and similar institutions per 1,000 inhabitants	Istat, Survey of museums and similar institutions
Economic impact of touristic sector	Incidence of employment in the tourism sector	Employees of tourist Local Unit/Total employees of Local Units of Municipality	Istat, Statistical Register of Active Enterprises (ASIA)
	Added value per capita of the tourism sector	Added value of tourist Local Units per inhabitant	Istat, FRAME SBS
	Incidence of employment in the tourism-related entertainment sector	Employees of tourism-related entertainment Local Units/Total employees of Local Units of Municipality	Istat, Statistical Register of Active Enterprises (ASIA)
	Localisation quotient of local tourist unit employees	[Employees of the Tourist Local Unit of Municipality/ Employees of the total Local Unit of Municipality]/[Employees of the Tourist Local Unit Italy/ Employees of the total Local Unit Italy]	idem

Table 1 - *Pillars, Basic indicators, Algorithms and related Data sources. (continua)*

Pillar	Indicator	Algorithm	Data source
Agricultural sector support	Density of agritourisms	Agritourisms per km^2	Big Data on agritourisms; Istat, Statistical Atlas of the Municipalities
	Density of agritourisms with accomodation	Beds of agritourisms per km^2	idem
	Share of agritourisms with catering services	Agritourisms with catering services/Total agritourisms	Big Data on Agritourisms
	Share of agritourisms with direct sale	Agritourisms with direct sale/Total agritourisms	idem
	Share of agritourisms with other gainful activities except direct sale	Agritourisms with other gainful activities except direct sale/Total agritourisms	idem
	Share of holdings with grapes for PDO/PGI wines	Holdings with grapes for PDO/PGI wines/Total holdings with vineyard	Agricultural Census
	Share of holdings with organic farming UAA	Holdings with organic farming UAA/Total holdings with UAA	idem
	Share of holdings with organic farming livestock	Holdings with organic farming livestock/Total holdings with livestock	idem
	Share of holdings with wooded area	Holdings with wooded area/Total holdings	idem
	Share of holdings with permanent crops	Holdings with permanent crops/Total holdings with UAA	idem
	Share of holdings with permanent pasture and meadows	Holdings with permanent pasture and meadows/Total holdings with UAA	idem
	Share of holdings with short rotation coppices	Holdings with short rotation coppices/Total holdings	idem

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