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**Small-scale food production and location of gourmet
restaurants in rural Sweden**

**Sara Johansson
Lars Pettersson**

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Sara Johansson

Jönköping International Business School
and the Swedish Board of Agriculture
e-mail: josa@jibs.hj.se

Lars Pettersson

Jönköping International Business School
e-mail: lars.pettersson@jibs.hj.se,

Abstract: This study explore the location pattern of gourmet restaurants in Sweden by using information about restaurant quality from the White Guide. The purpose of the paper is to analyze which factors that influence the location pattern of gourmet restaurants, with particular focus on the influence of small-scale food producers. This variable can be expected to be of substantial importance in creating comparative advantages related to geographical location. Econometric estimates of a zero-inflated Poisson regression show that the number of small-scale food producers in a location significantly increases the number of gourmet restaurants in locations with non-zero count. Moreover, factors related to the demand side, such as market size and tourism significantly increases the number of gourmet restaurants in a municipality once the probability of a non-zero count is accounted for. The tourism sector appears to be of particular strong importance in rural areas where the size of the permanently residing population is insufficient for creating business opportunities for restaurateurs striving for the upper quality segment.

Keywords: Culinary markets, restaurants, small-scale food production, tourism, regional development, innovation systems, agglomeration economies

JEL codes: R10; L66

1 Introduction

The importance of culinary markets for regional growth and development has been acknowledged in recent research (Ljunggren et al. 2010, Boniface, 2003; Hall et al. 2003, among others). The importance of local products and gourmet restaurants for development of experience industries in rural and urban areas have also been in focus for recent policy initiatives¹. From the perspectives of economic science as well as economic policy, gourmet restaurants are particularly interesting in this context. These restaurants constitute one essential part of the “high end” of the supply in culinary markets, with innovative ground breaking cooking and associated meal experiences. The production activities in these firms are characterized by a high degree of creativity and innovations in the work of creating new menus, new combination of taste and other experiences attached to meals. In view of the extensive literature on innovation systems, and the different types of actors usually considered as vital in such systems, gourmet restaurants can be expected to have a leading part in regional innovation systems related to food and culinary markets. Gourmet restaurants represent, a type of customer in culinary markets with high knowledge and strong preferences distinguished by qualitative aspects on food and meals. Accordingly, these restaurants can be expected to transfer important knowledge to their suppliers, thereby contributing to product development in the food sector. Moreover, food production is a geographically dispersed industry, with a comparatively large share of its employment in rural areas. This means that the presence of gourmet restaurants can have a significant role in shaping local and regional culinary markets, which may support growth and development of rural business clusters related to such markets.

The insight that both local restaurants and food producers contribute to a rich countryside brings curiosity to the reasons behind the patterns of location and development of high-quality restaurants. However, little previous research has paid attention to this question. For this reason, the purpose of this paper is to examine the characteristics influencing the location pattern of gourmet restaurants in Sweden. In particular, location decisions are expected to be influenced by the potential to develop unique products and experiences that can attract

¹In 2008, the Swedish Government launched the policy initiative *Culinary Sweden* in purpose to support the expansion and growth of markets that builds on food. This initiative has a long run ambition to increase employment in the wide food sector, stimulate tourism and also export of Swedish food products.

customers with high willingness to pay for a restaurant meal. This means that the location pattern for high-quality restaurants are likely to be related to the presence markets for tourism and visitors, since these markets bring customers who seek unique experiences. In this context, regional cuisines and supply of local food specialties may be of particular importance.

Anecdotic findings suggest that ingredients with local origin from the nearby surroundings can be considered as one type of elementary part for successfulness and competitiveness of high quality restaurants (Ljunggren, 2010). From an economic point of view the possibility to build a restaurant business on local specialties of high quality can be assumed to serve as a comparative advantage that is hard to replicate for competitors. In this type of restaurants, meals and menus are often set up in such way that they build on the regional and local culinary culture. This means that food suppliers with products of high quality can be expected to have significant influence on the development of gourmet restaurants and their spatial distribution.

In this paper we analyze how the location of gourmet restaurants in Sweden can be explained by the spatial distribution of small scale food producers and markets for tourism. In the empirical analysis we employ data from 2009 and define gourmet restaurants as restaurants in Sweden that have received at least 60 points (out of 100) in the “White Guide”. Furthermore, we define small scale food producers as firms in the food producing sector (on five digits level of the Swedish Standard Industrial Classification of firms) with less the 10 employees. The quantitative analysis is conducted at the geographical level of municipalities (local government areas) which implies that there are 290 location possibilities.

The theoretical background of this study is presented in the next section of the paper, which is followed by a description of the empirical approach in Section 3. The empirical results are presented and discussed in Section 4 whereas concluding remarks are summarized in Section 5.

2 Theoretical Background

The location pattern of gourmet restaurants is likely to be influenced by many factors that relate to the supply as well as the demand side of culinary markets. Gourmet restaurants mainly belong to the experience industry, which implies they contribute as well as depend on the attractiveness of the region as a place to visit. Food can play a central role in a regions cultural heritage and can be of significant importance for local economic development, notably in rural areas (Tregear et al, 2007). There has lately been a renewed interest in local culture and tradition, and previous literature has acknowledged the importance of national cuisine and local food as subjects of tourism (Hall et. al., 2003; Boniface, 2003). Accordingly it is often presumed that gourmet restaurants are dependent on access to local and/or regional food suppliers, whose products are characterized by unique attributes. These conditions relate to the growing interest in the geographical origin of food products and the types of product characteristics that are specific to the location of the production.

The market potential is an important factor in location decisions of entrepreneurs in culinary markets. Some regions are famous for its culinary kitchen or regional products per se and therefore attract tourists by this reason itself. If not, a region could enhance the benefits of tourism by improving the local food market as to attract more visitors. Firms in culinary markets generally have three types of customers; local customers, business visitors and tourist visitors. Accordingly, culinary markets often constitute key stones in the local tourism sector. The latter shows the backward economic linkage between the food and the tourism industry, where the tourism demand is caused by an existing supply of well-reputed restaurants and/or superior local food producers (Boniface, 2003).

Gourmet restaurants also belong to the creative industry and are most often driven by (i) a well reputed chef, implying an assurance of quality; (ii) innovation and technology, i.e. high level of research and development (ground-breaking cooking), (iii) entrepreneurial philosophy, e.g. use of local ingredients and a diversified business in order to create numerous revenue streams. Accordingly, the restaurant sector may be considered as a creative industry, where innovation and creativity are main determinants of success or failure. Restaurateurs strive for uniqueness by continuously improving the food experience supplied

to the restaurants customers. In this process of development of new and innovative taste and meal experiences the restaurant entrepreneur is a leading actor.

Recent research (Ljunggren et al., 2010) found that restaurant entrepreneurs contribute to regional change and development by enacting institutional change and by taking on an important role as community entrepreneurs. The restaurateurs are essential in the creation and quality upgrading of clusters of local experience producers. The inter-dependencies between gourmet restaurants and other local businesses can take the form of both vertical and horizontal relations between firms, and they can be characterised by more or less bounding geographical conditions. This suggests that externalities, arising from concentration and co-location of different culinary activities may be significant and result in cluster formations with strong growth potential.

The importance of location-specific characteristics for economic prosperity is a core feature in the so-called new economic geography. This research area focuses on how spatial distribution of different economic activities impact on their performance and the overall economic development of localities and regions. A central idea is that vertical and horizontal integration of firms result in spill over effects that increase firm-level efficiency. The presence of spill over effects results in agglomeration economies, which provides a reason for firms to co-locate. As a consequence clusters of firms appear in the geography of economic activities.

Economics of agglomeration has a long tradition. Marshall (1890) argued that firms located in a cluster of other firms in the same industry may be more efficient due to external scale economies originating from specialized suppliers, pooled labor markets and knowledge spillovers. Ohlin (1933) and Hoover (1937) made useful distinctions between agglomeration economies arising from urbanization respectively localization. Localization economies arise due to geographic concentration of one particular industry, whereas urbanization economies arise due to spatial concentration of overall economic activity. A number of theoretical contributions have been added to this area, of which many address the interaction between transport cost, internal and external scale economies and the mobility/immobility of production factors (see, for example, Kilkenney and Thisse (1999)).

The implications of geographically trapped resources and spatial distance have been emphasized also in the literature in innovation science. The concept of innovation systems is

based upon the idea that innovations are stimulated by interaction. The ability of an economy (regional or national) to innovate does not only depend on the performance of individual firms, organizations and institutes but rather on how they interact as parts of a system (Freeman 1995, Gregersen et. al., 1996). Innovation systems are traditionally referred to as national systems but ample evidences of knowledge spillovers being spatially localized (Feldman et. al., 1998) have resulted in an increased focus on regional innovation systems (RIS). A RIS is generally characterized by two key features; a core regional cluster of firms and a supportive institutional infrastructure (Asheim et. al., 2002). Moreover, Eliasson et.al. (2003) describes different actors that are included in an innovation process and highlights the importance of competent customers. Gourmet restaurants can be viewed as important in this aspect both regarding up- and downstream relations with customers and suppliers. Moreover, the inter-dependence between gourmet restaurants and local experience industries implies that agglomeration economies may be of significant importance in sectors related to culinary markets.

The role of gourmet restaurants in both experience industries and creative sectors imply that the location decision of restaurateurs is expected to be influenced by the possibilities of co-location with other actors in markets for experience and food creativity. There are several linkages between tourism and food production. More tourists generally imply more restaurants as a result of an increase in demand for restaurants in these regions. Food tourism is today a well-known concept and the type of tourists that travel to a certain destination with the primary motive of visiting a specific restaurant are today widely recognized (Hall et al. (2003).

Summarizing the arguments above the location decisions of gourmet restaurants are likely to depend on the access to local suppliers of high quality food products. Such products generally take the form of small scale food handicraft. Locations with a large number of small scale food producers are therefore expected to attract entrepreneurial restaurateurs aiming for the higher quality segments of culinary experiences, as such locations provide numerous opportunities for developing unique products and experiences. Besides the number of small-scale food producers the market potential in a given location is presumed to significantly affect the location decision of these entrepreneurs. Accordingly, one would expect that the number of tourists along with the accessibility to resident population to be important determinants of the market potential for gourmet restaurants. The culinary experiences in the

form of ‘fine dining’ that such restaurants offers is, however, quite costly, which implies that the market potential for these restaurants is likely to increase with the share of the regional population that belongs to the upper quartile of the income distribution. The importance of these factors in determining the location patterns of gourmet restaurants in Sweden is quantitatively examined in the sequel of this paper.

3 Data and empirical approach

For the purpose of investigating the geography of culinary markets in Sweden and examine the relationship between gourmet restaurants, local food handicraft and market potential, data with information about high quality restaurants, number of small-scale food producers, number of visitors, residing population and their income levels have been collected from various sources.

Gourmet restaurants are defined as the restaurants awarded in White Guide 2010. White Guide is an objective Swedish restaurant guide published yearly by Millhouse Förlag AB. The screening of restaurants and publication of the points is in many respects similar to the Guide Michelin and other restaurant guides found all over the world. In Sweden, however, Guide Michelin only covers restaurants in the three largest metropolitan cities. A large number of gourmet restaurants are found on the countryside outside the cities in Sweden for what reason it is more appropriate to use the White Guide classification scheme rather than information from Guide Michelin. An objective examination and classification of approximately 800 restaurants, situated all over Sweden, was performed in 2009. The restaurants were evaluated with respect to the quality and originality of their cooking, their wine-list, the composition of the menu, the atmosphere in the restaurant, the service, general impression etc. 544 restaurants out of the 800 were presented in the 2010 edition of the White Guide. The points are announced for all restaurants that receive 60 or more points out of a maximum of 100. In this study, the restaurants that received 60 points or more are defined as high quality (gourmet) restaurants.

The best restaurants in Sweden are mostly found in the metropolitan areas where Stockholm is the culinary capital. Out of the 228 restaurants awarded by the White Guide, 61 are situated in the Stockholm area. Nonetheless, excellent food and gastronomic experiences can today be

found all over the country. Figure 1 below illustrates the location pattern of Swedish restaurants acknowledged by the White Guide 2010. As expected the highest points were provided to Swedish urban regions (Stockholm, Göteborg and Malmö), followed by municipalities with high concentration of tourists (Gotland, Åre, Malung).

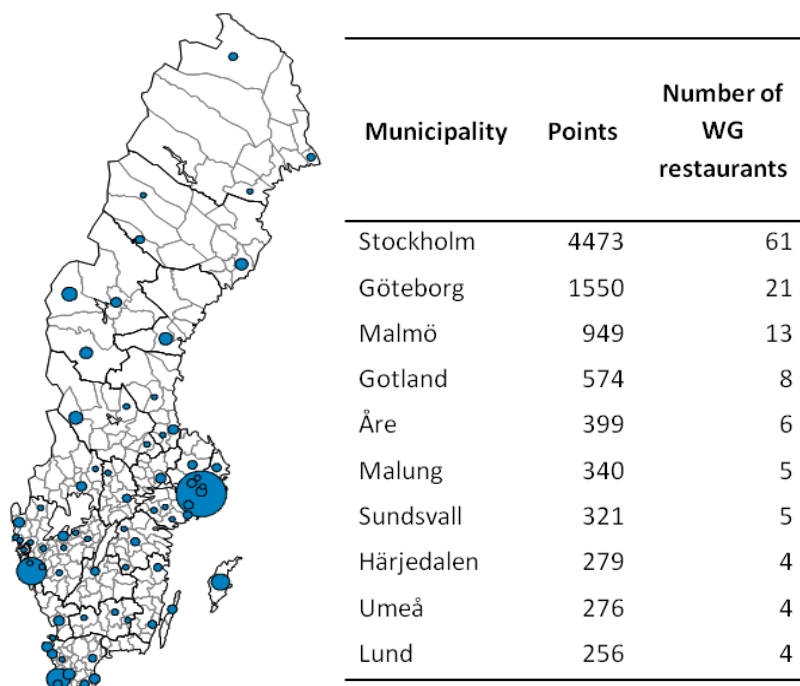


Figure 1. Swedish regions where gourmet restaurants are represented

Source: Author's own calculation based on information in the White Guide (2010)

Secondly, we define small-scale food producers as firms in food-sectors (NACE 15) with less than 10 employees. This data is collected from Statistics Sweden. Data on population and income levels are also taken from Statistics Sweden. In order to get a measure of the size of the local market the empirical analysis use accessibility to population rather than absolute population size. In terms of accessibility the market size is given by the population size discounted with a distance decay function². This measure serves the purpose of reflecting the market size when the choice context of spatial mobility is taken into account. This spatial choice context is approximated by travel time distances between all municipalities in Sweden.

² See for example Weibull (1976), Johansson and Klaesson (2001) and Gråsjö (2006) for theoretical derivations and empirical application of accessibility measures.

Another important factor influencing the market potential is the number of visitors. Since data on the number of tourists is not available, this variable is partly approximated by data on the number of nights spent in hotels, lodges and camping areas, provided by Statistics Sweden. Another type of visitors is people spending time in private vacation houses. This type of tourism is approximated by data on the number of vacation houses.

Since the accessibility to residing population and the number of high income residents are, by definition, smaller in rural than in urban regions it is also relevant to consider that the importance of visitors may be stronger in rural areas. However, it is not straight forward to define which municipalities that is urban or rural. One classification of municipalities into an urban-rural divide is elaborated by the Swedish Board of Agriculture (see appendix). According to that definition, municipalities with a population of at least 30 000 inhabitants and where the largest city has a population of 25 000 people or more are defined as urban. Smaller municipalities that are neighbours to these urban municipalities will be considered as a part of a larger urban area if more than 50 percent of its labour force commutes to a neighbouring municipality. If this is the case, smaller municipalities are also categorized as urban. In this way, a functional region perspective is adopted as the divide of municipalities into urban and rural partly relies on accessibility conditions.

Still, there is large variability in the accessibility to population among urban municipalities as well as among rural municipalities. Hence, the analysis includes a dummy variable that controls for rural municipalities besides the variable reflecting the accessibility to population. Moreover, this dummy variable is interacted with the number of overnight stays in hotels, lodges and camping areas. This variable is expected to reveal if the importance of tourism for occurrence of gourmet restaurants is stronger in rural areas. The variables included in the analysis are summarized in Table 1.

Table 1. Definitions of variables

Variable name	Definition	Expected effect
Dependent Variable:		
Restaurants	Number of gourmet restaurants restaurants per municipality (2009)	
Independent Variables:		
Small-scale food production	Number of firms in the food industry with < 10 employees (2009) per municipality	+
Tourism	Number of nights tourists spend per municipality in hotels, lodges, camping areas (2009)	+
Vacation houses	Number of vacation houses per municipalities (2009)	+
Accessibility to population	Municipalities' accessibility to population in all locations in Sweden.	+
High income	Share of the population in the functional region that belongs to the upper quartile of the income distribution of the national population.	+
Rural municipality	Dummy variable taking the value of one if the municipality is categorized as rural.	-
Rural tourism	The number of overnight stays in hotels, lodges and camping areas in rural municipalities.	+

In order to examine the location pattern of culinary experiences on the one hand and tourism on the other hand, location quotients are calculated with respect to gourmet restaurants, small scale food production and tourism. This method is commonly used to identify specialization patterns in local economies as the location quotients reflects if a particular economic activity is overrepresented in some regions (Isserman, 1977). The location quotients for (a) gourmet restaurants, (b) small scale-food production and (c) tourism in Swedish municipalities are displayed in Figure 2. The darker areas have the highest concentration of gourmet restaurants/small-scale food producers/tourism relative to the share of these sectors in the total Swedish economy.

The maps in Figure 2 show that other regions than the larger metropolitan cities have strong concentrations of gourmet restaurants small-scale food firms and tourism.

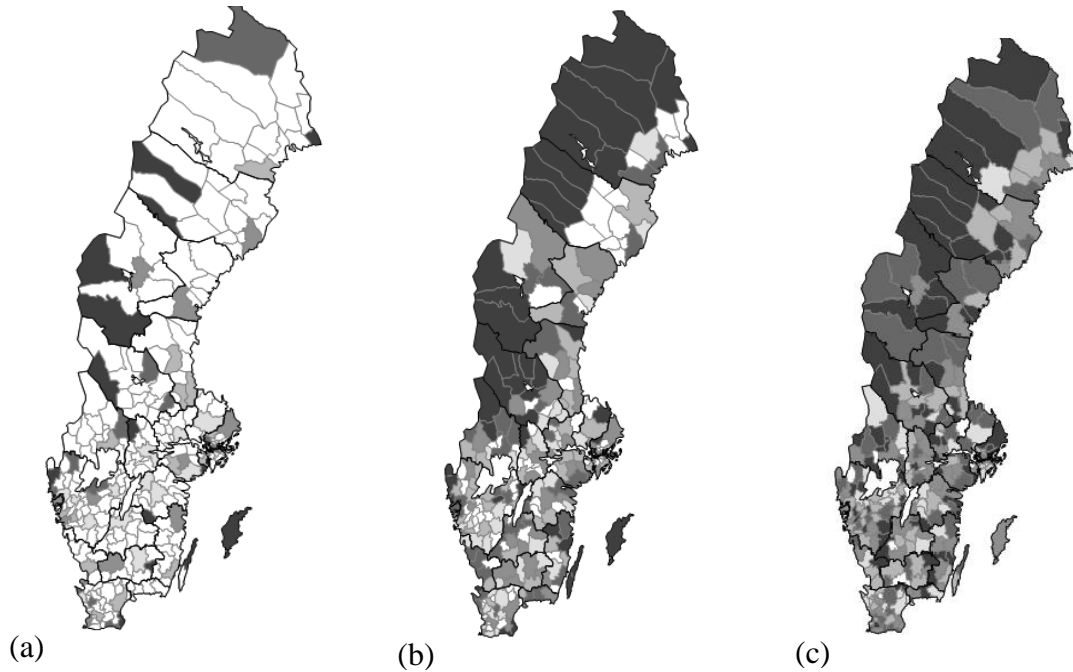


Figure 2. Swedish municipalities' relative national advantage in; (a) gourmet restaurants, (b) small-scale food producers, (c) tourism

In spite of a geographical dispersed localization pattern of high quality restaurants in Sweden, most municipalities do not host a gourmet restaurant as defined by the scores in the White Guide (see Figure 1). Out of 290 municipalities, 70 have at least one gourmet restaurant and 220 have none. This implies that the data set used for regression estimates in this analysis is inflated by zero values. Moreover, the number of gourmet restaurants per municipality is strongly skewed, following a Poisson distribution, which is common in count data. This calls for regression techniques that allows for a Poisson distribution and a data set that is zero-inflated. The number of zero counts in the data on the dependent variable (number of gourmet restaurants per municipality) far violates the distributional assumption of the Poisson regression models. However, once the large number of zero counts in the data is controlled for by methods of zero inflation, statistical test reveal no signs of over dispersion. The statistical analysis is, accordingly, based on a zero-inflated Poisson model.

Zero-inflated count models are two-step models where the first step is an estimation of binary process (logit or probit), generating positive (1) versus zero counts (0). In this analysis the first step is an estimation of the binary probability of having no gourmet restaurant in the municipality given the explanatory variables discussed above:

$$Prob(y_i = 0) = e^{z_i}, \quad z_i = \gamma'X_i \quad (1)$$

Secondly, the model use a count process were a Poisson regression model is estimated using the same regressors to explain the number of gourmet restaurants in a municipality when the probability of having a zero count is already controlled for:

$$Prob = (y_i = j) = \frac{(1-e^{z_i})e^{-\lambda_i}\lambda_i^j}{j!(1-e^{-\lambda_i})}, \quad \ln\lambda_i = \beta'X_i, \quad j = 1,2 \dots n \quad (2)$$

The results of this two-step estimation are presented and discussed in the next section.

4 Empirical Analysis

The hypothesis that the location pattern of gourmet restaurants are determined by the number of local small-scale food producers and the spatial conditions for market potential is tested by estimation of the zero-inflated Poisson regression model described by Equations 1 and 2 on data at the municipality level for the year 2009. The variable reflecting accessibility to population is based on a matrix of travel time distances between all municipalities in Sweden. As shown by Gråsjö and Andersson (2007) the inclusion of accessibility variables in cross-regional regression models significantly reduces spatial auto-correlation, which implies that the accessibility variable largely absorb spatial dependencies between municipalities. Consequently, spatial autocorrelation should not be a significant problem. The results of the estimation are presented in Table 2.

The results of the inflation model are shown in the bottom of Table 2. These estimates reveal that the only variables that has a significant effect on the probability that a location has a positive number of gourmet restaurants are the two variables reflecting tourism. Both these variables have a negative significant impact on the probability that a municipality have zero gourmet restaurants. Hence, tourism seem to be important for creating business opportunities

for gourmet restaurants in both urban and rural locations. These findings suggest that the occurrence of gourmet restaurants is conditional upon a certain amount of tourism in the form of overnight guests. Among the other variables, the number of local small-scale food producers has the expected negative sign on the probability of a zero count, yet this result is not statistically significant.

Table 2 Results of zero-inflated Poisson regression

Variable	Coefficient	Robust Std. Error	Marginal effect
Local small-scale food production	0.020***	0.003	0.02
Accessibility to Population	1.91e-07**	1.01e-06	9.63e-07
Rural Municipality (dummy)	-1.068***	0.360	-1.02 ^{a)}
Tourism	-7.59e-08	8.52e-07	2.34e-06
Vacation houses	8.21e-05***	2.61e-05	8.65e-06
Rural Tourism	2.38e-06**	1.01e-06	1.14e-05
Share of high income earners in regional population	-8.250	5.129	-5.23
Constant	1.590	1.170	
Inflation model (Logit)			
Local small-scale food production	-0.032	0.028	
Accessibility to Population	1.91e-06	2.15e-06	
Rural Municipality (dummy)	1.512	1.088	
Tourism	-1.69e-05***	5.98e-06	
Vacation houses	2.62e-04	1.70e-04	
Rural Tourism	-6.44e-05**	3.1e-05	
Cons	1.617	1.281	

No. Observations: 290

Log psuedolikelihood: -195.12 Wald test chi(7):1248.85

***significant at 1 %, ** significant at 5 %. a) The marginal effect of a change in this variables consider a change from an urban to a rural municipality.

The estimates from the Poisson regression are presented in the top of Table 2. These results show that the number of local small-scale food producers is an important determinant of the

location pattern of high quality restaurants. Hence, it seems to be beneficial for restaurateurs aiming for the upper quality segments to co-locate with small scale food producers. This result indicates that different actors in local culinary markets interact in creating culinary experiences related to local food resources and supports findings from previous research based on case studies.

Moreover, the spatial conditions for the market size of gourmet restaurants appear to have a substantial impact on the location of restaurateurs in the upper quality segments. Accessibility to population significantly increases the number of gourmet restaurants at the municipality level and rural municipalities has generally fewer restaurants of high quality. However, rural municipalities with large tourism sectors, i.e. many overnight visitors in hotels, lodges and camping areas, seem to be attractive locations for gourmet restaurants. In urban areas, the number of overnight stays appears to be of no importance in explaining the variation in the number of gourmet restaurants once the probability of a non-zero count is accounted for. Hence, the importance of tourists for market potential for culinary experiences seem to be strongest in rural areas where the size of the permanently residing population is insufficient for creating business opportunities for gourmet restaurateurs.

Still, visitors staying in private vacation houses appear to stimulate the market potential for gourmet food experiences in urban as well as rural municipalities, as the number of vacation houses has a significant positive impact on the number of gourmet restaurants. The share of the population that belongs to the top quartile of the national income distribution does not seem to significantly affect the location pattern of gourmet restaurants. One explanation to this insignificant result is that there are some correlation between the share of high income earners and the accessibility to population, since municipalities in metropolitan regions host a larger fraction of high income earners.

5 Conclusion

The purpose of this paper is to analyze which factors that influence the location pattern of gourmet restaurants in Sweden. In accordance with previous literature on this subject, this analysis confirms that there are significant relationships between gourmet restaurants and local industries for tourism. Econometric estimates of a zero-inflated Poisson regression show that the number of overnight guests significantly increases the probability that a municipality has a positive number of gourmet restaurants. Moreover, factors related to the demand side, i.e. accessibility to population, number of overnight guest and number of vacation houses significantly increases the number of gourmet restaurants in a municipality once the probability of a non-zero count is accounted for. The tourist sector appears to be of particular strong importance in rural areas where the size of the permanently residing population is insufficient for creating business opportunities for restaurateurs striving for the upper quality segment.

Beside variables relating to the demand side, the variable of particular interest in the context of culinary experiences is the local small-scale food production. This variable can be expected to be of substantial importance in creating comparative advantages related to geographical location. In accordance with expectation this variable has a positive influence on the number of gourmet restaurants in municipalities with non-zero count. The findings in this analysis suggest that even though the local food handicraft does not seem to be a prerequisite for occurrence of gourmet restaurants, locations that host many small-scale food producers are preferred location for many restaurateurs that wish to provide gourmet food experiences.

This study has explored the location pattern of gourmet restaurants by the number of awarded White Guide restaurants per municipality. Further understanding of the importance of location-specific factors on different quality levels within the world of gastronomy could be enhanced by using the amount of points scored by each municipality. Another relevant direction for future research on culinary markets is to further explore the role of gourmet restaurants for innovations and product development related to food and culinary experiences.

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Appendix

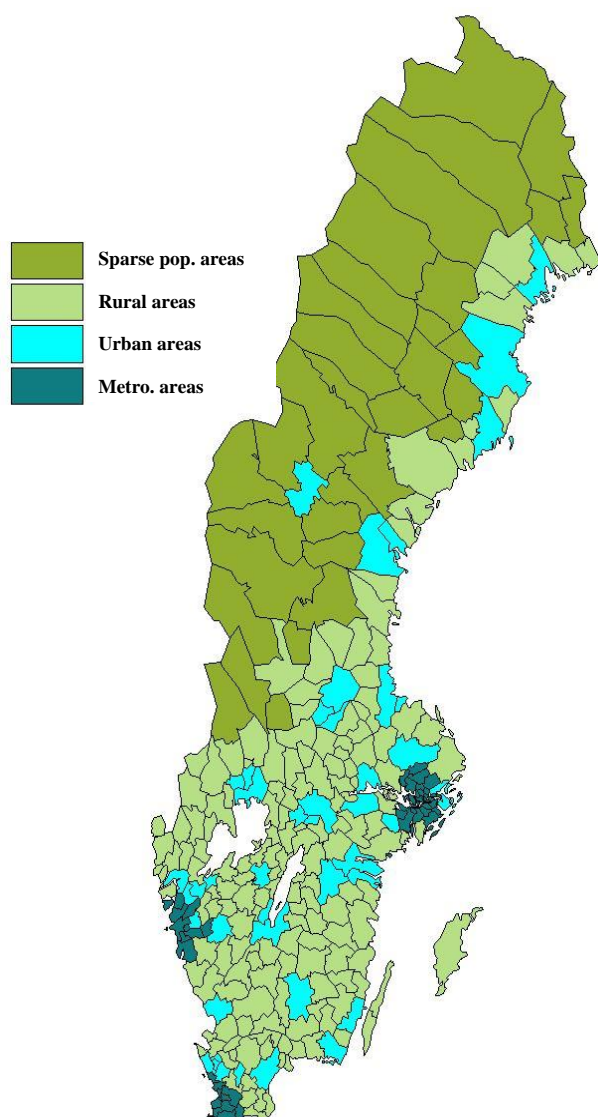


Figure A1: Swedish municipalities classified into (1) metropolitan areas, (2) urban areas, (3) rural areas/countryside, and (4) sparse populated rural areas