# Where art thou?

# Regional distribution of culture workers in Finland

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**Abstract:** This study seeks to shed light on the regional distribution of culture workers in Finland. What factors – if any - make the location decisions of culture workers different from that of others? This study uses a rich micro level data for an application of multinomial logit model. The estimation results show that being a culture worker is an important factor in locational choice: the coefficient of living in a metropolitan area compared to rural areas is highly positive. According to the estimated marginal effects, the likelihood of living in a metropolitan region increases as much as 22 percentage points if the person is a culture worker. Another interesting notion is that the residential choices of cultural entrepreneurs seem to differ from that of other entrepreneurs.

# 1 Introduction

Community without cultural activities risks its future. Recent work argues for the growing importance of arts, entertainment and culture in regional development (see e.g. Arora et al. 2000, Sommers & Carlson 2000, Wikhal 2002, Power 2002, Florida 2002). Not only do artistic activities improve the surroundings and the image of the area where they take place, but it has been argued that artistic activities in fact increase economic growth through several channels. Culture supply creates favourable climate for attaining greater economic wealth and social well-being for citizens. Also cultural employment is one of the fast growing areas in the labour force (see e.g. García et al. 2003, Power 2002, Karttunen 2001).

This study seeks to shed light on the regional distribution of culture workers in Finland. What factors – if any - make the location decisions of culture workers different from that of others?

The past decade there has been particular interest in the role of human capital in regional development, a variety of empirical studies confirming that human capital is associated with regional growth (see eg. Sjaastad 1962, Lucas 1988, Krugman 1991). High human capital individuals, e.g. research and development personnel, can be seen as necessary labour input in the process of innovation. As a result, the presence of human capital in regions attracts enterprises. If presence of human capital attracts enterprises, what attracts high human capital individuals to come live in the region in the first place? Economic geographers and regional scientists have studied the role of cultural activities, concentration of human capital and regional growth. Human capital in form of culture workers generates innovativeness to the area thus enhancing the economic competitiveness and furthermore economic growth. It has been argued that the presence of people working in the field of arts and entertainment attract also other types of talented or high human capital individuals (see Florida 2002).

The role of arts, culture and entertainment in regional development can also be linked to the concept of social capital. It should also be noted, that culture workers have

always had uncertain labour markets and the work has been project-based. This implies that culture workers adjust more easily to the demands of modern time economy and therefore create a flexible atmosphere to the area where located. (see e.g. Kotkin 2000, Florida 2002).The assumption is that the creation and presentation of artistic activities builds social capital by creating and increasing openness, tolerance and cooperativeness. In this study, culture workers represent the cultural activities in the region.

The results of this paper show that being a culture worker is a statistically significant factor when studying regional distribution of labour force. Culture workers are highly concentrated to the metropolitan area compared to more sparsely populated areas. The likehood of living in a metropolitan area increases 22 percentage points if the person is a culture worker. Another interesting notion is that the residential decisions of cultural entrepreneurs seem to differ from that of other entrepreneurs.

The paper is structured as follows. Chapter 2 deals with the definitions of culture and cultural employment, describes the data and introduces some characteristics of cultural employment in Finland. Chapter 3 describes the model and variables applied. Chapter 4 presents the results. Finally, Chapter 5 concludes the paper.

## 2 Cultural employment

### 2.1 Discussing the definitions

One cannot write a paper on cultural employment and not discuss the difficulties of defining the concept itself. One has to go all the way back to define cultural industries and even culture itself. It's extremely problematic to define what is part of culture – and even more so: what is not.

The emphasis might be in traditional artistic activities, it can include production of culture and culture-related objects, or it can cover all creative and innovative work. As

for the start, the new literature of cultural industries and occupations has faded out the old division to high culture and popular culture. It embraces commercial cultural goods and emphasizes the role of not only arts, but also entertainment and advertising in promoting innovation and thus economic growth. As a rule, official reports and studies have promoted this view of cultural sector defining it to include not just museums and operas, but for example broadcasting as well.

The definition of cultural employment used in this study is quite extensive following the classification of industries and occupations adopted from Statistics Finland, the EU framework for cultural statistics, and previous Finnish studies and statistical publications.

Sometimes cultural employment is considered to be equivalent to the number of what is traditionally considered as artists. This is rather misleading as cultural activities provide variety of jobs. Casey (1999) divides cultural employment in three divisions:

- Those who train cultural occupation in a cultural industry
- Those who train cultural occupation in non-cultural industry and
- Those who train non-cultural occupation in a cultural industry

In the first two classes are people who directly create cultural goods or services as defined by the framework, such as a ballet dancer or an industrial designer. In the third class belong those who are employed in cultural industries but are not directly engaged in the creation of cultural goods and services but rather hold supporting jobs, for example administrative staff of an art facility.
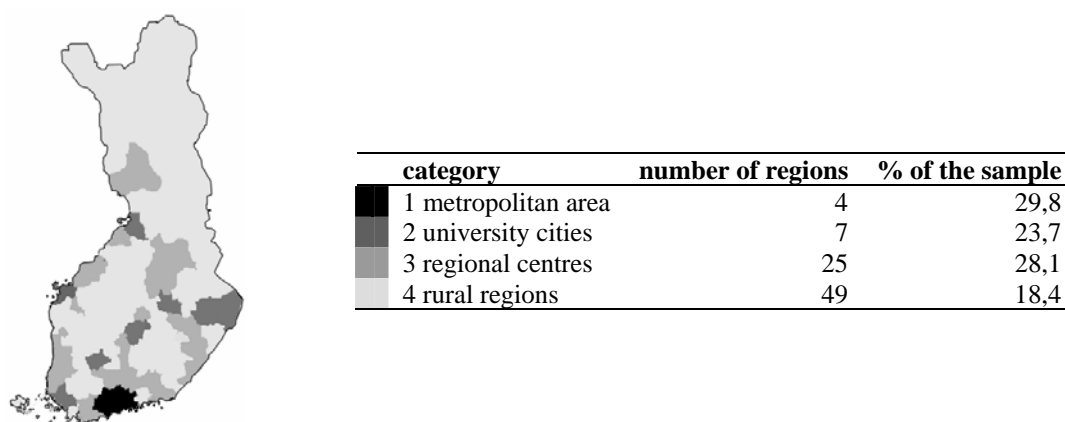
Thus, cultural employment does not include only those, who compose music, but also those who print the sheet. In this study, we employ this so called value chain model as broadly as possible as this sort of definition is commonly used in the field of cultural economics and gives a better idea of the total labour force employed by cultural activities. (For further discussions, see Throsby 2001a, Throsby 2001b) In addition, the separation of consumption of culture and production of culture can be seen artificial (see Pratt 2004). Therefore an approach including not only consumption but also so called collective production of culture can be considered to be more informative.

**2.2 Data**

The descriptive analysis, as well as the following empirical analysis, is based on data of the Finnish Longitudinal Census. The Longitudinal Census File has been merged from various registers by matching the personal identifiers across them. The census file is maintained and updated by Statistics Finland. The sample used in this study contains 7 per cent sample of individuals residing in Finland in 2001, providing panel data on each individual for 1970, 1975, 1980, 1985 and annually from 1987-2002. The socio-economic status of the sample individuals is well documented. The data provides information on personal characteristics, working life characteristics and family characteristics. There's also information on each individual's spouse and parents. For this analysis, the data is restricted to individuals in the labour market aged 15-74 and utilising data from the year 2000. The total sample size is 177 268 individuals of which 7875 individuals are regarded as the group of culture workers.

The classification of regions is based on classification of municipalities by Statistics Finland. Municipality is the basic unit of Finnish local self-government. In this study, the classification used combines municipalities into NUTS 4 -regions totalling of 77 regions. These regions have been grouped into four classes based on the amount of population and degree of urbanisation in the region: metropolitan area, university cities, regional centres and rural regions. (Figure 1)

FIGURE 1 Region categories



| category | number of regions | % of the sample |
|---|---|---|
| 1 metropolitan area | 4 | 29,8 |
| 2 university cities | 7 | 23,7 |
| 3 regional centres | 25 | 28,1 |
| 4 rural regions | 49 | 18,4 |

Cultural activities do not easily fit into a classification system because the boundaries between cultural activities and non-cultural activities are often vague. Because the data

are relied on official registers, there are problems as the identification of culture workers is not precise and particularly so in Finland where there is no systematic compilation of statistics on culture.

The census does not acknowledge multiple jobholding that is common in this field (see Menger 1999). Instead, the occupation/industry of which individual receives most income is being noted as the occupation/industry by which they are characterized. A typical form of multiple jobholding in this field is the case when an individual has on job he or she considers being the primary occupation that they carry out by making a living in host occupations such as teaching. Very unfortunate is that those culture workers whose primary occupation in the register is teaching of some cultural subject such as music or art, are lost in this study as their industry is seen as education and occupation as teacher. Multiple job-holding also makes the distinction between amateur and professional practise in arts more complex. In this study, we are interested in the behaviour of professional culture workers and therefore must rely on the perhaps a bit simplified assumption that those, who make their living in the cultural industries or occupations, can be considered professionals (for further discussion, see Throsby 2001b). The data does not provide any information on volunteer work, so the study is limited on paid cultural employment.[1]

This study uses two primary classification systems adopted from Statistics Finland. One classification is for cultural occupations and one for cultural industries. The occupational group applies to people in the selected cultural occupations, so it includes also people working outside cultural industries. Industries data apply on all the people employed in the selected cultural industries, also those not in cultural occupations. (Table 1) Although in some definitions included to culture, sports have been left out.

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[1] In this light, a data based on a questionnaire could in some way be more informative or at least supplement the definition of the group of culture workers. On the other hand, such survey would be difficult to conduct in a proper scale. Also as there are no standardized qualifications based on which one has the right to call him-/herself a culture worker, the results of such questionnaire would be most difficult to interpret. At least comparisons to other scientific work would be difficult, if not impossible, to make. Therefore using data based on official registers is probably the best alternative at hand when conducting cultural employment research in Finland and studying cultural employment as a whole.

According to these two classifications, cultural industries include 55 industries and cultural occupations 38 different occupations (see Karttunen 2001b and 1998).

TABLE 1 Cultural employment in Finland of all the labour force

|  | Cultural industries | Others |
|---|---|---|
| **Cultural occupations** | *1,6%* | *1,0%* |
| **Others** | *1,9%* | *95,5%* |

This study includes the following industries: Architectural and industrial design and art; Arts facilities; Art and antique shops and second-hand bookshops; libraries, archives, museums etc; Production and distribution of books; Production and distribution of newspapers and periodicals; Other publishing, e.g. news agency activities and printing of newspapers; Advertising; Photography; Radio and television; Production and distribution of motion pictures and videos; Production and distribution of music and sound recordings; Amusement parks, games and other entertainment and recreation. The occupational groups considered as cultural are Arts, design and crafts; Editing and journalistic work; Photography, cinematography and technical work in radio and television; Graphics; Advertising; Cultural administration and museum, archive and library work. (See Appendices 1 and 2 for more detailed grouping of the two classifications)

**2.3 Cultural employment in the data**

According to the definition used in this study, labour force in cultural industries and occupations is approximately 4,5 per cent of all the labour force in Finland. Culture workers are more concentrated to the Helsinki metropolitan area as well as other big cities compared to all the labour force. Cultural institutions, especially government funded, that draw culture workers are located in these big cities. Also many of the

cultural occupations rely on unofficial social relations which enhance the concentration of employment to certain areas. Almost 50 per cent of culture workers live in the Helsinki metropolitan region and 23 per cent in university city. Of the highly educated culture workers as many as 54 per cent live in the Helsinki metropolitan region. Less than 10 per cent of culture workers live in the countryside.(Figure 2)

FIGURE 2 Culture workers by regional distribution



0 Rural region
1 Regional centre
2 University city
3 Metropolitan area
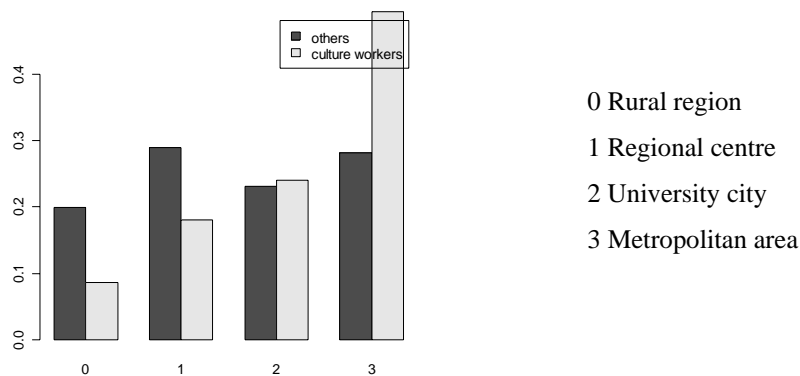
Of the sub-sectors main employers are those related to publishing, although in these industries certain sectors are declining due to the adoption of new technologies. Other large employer is radio and television (including also manufacturing of television and radio receivers etc.). Of the industries traditionally considered as (high) culture, main employer is that of libraries, archives and museums. In cultural occupations the main group are those working in the field of graphics. (Figure3, Figure 4)

FIGURE 3 Labour force in cultural industries by industry group and region category
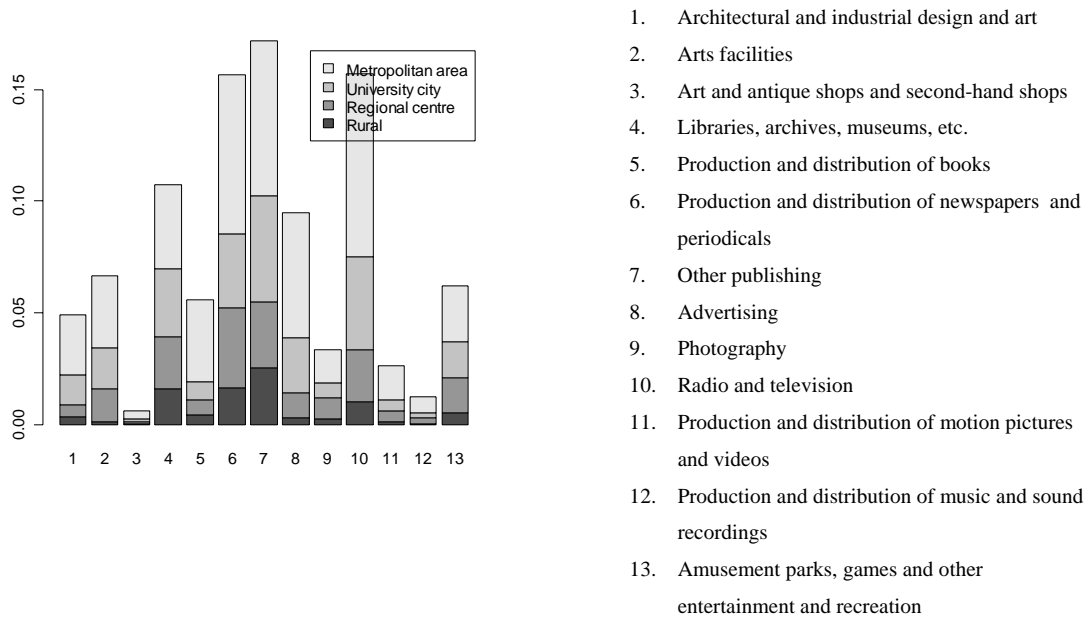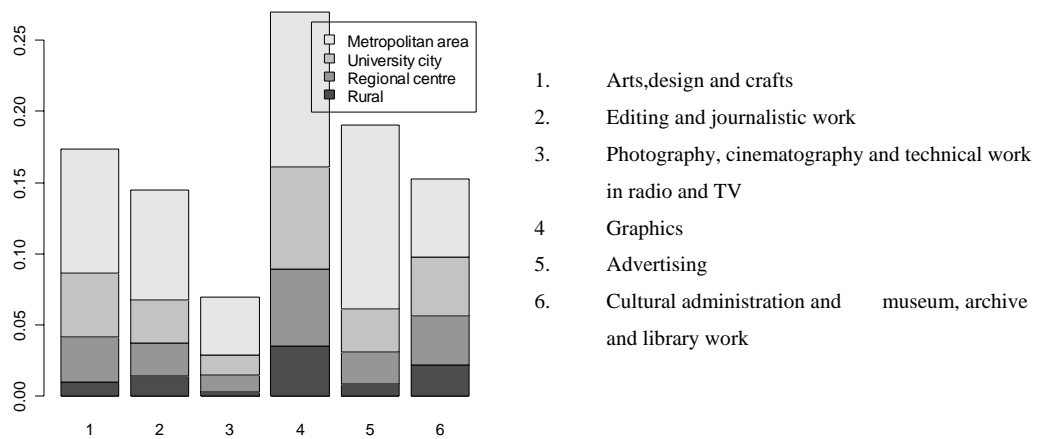


1. Architectural and industrial design and art
2. Arts facilities
3. Art and antique shops and second-hand shops
4. Libraries, archives, museums, etc.
5. Production and distribution of books
6. Production and distribution of newspapers and periodicals
7. Other publishing
8. Advertising
9. Photography
10. Radio and television
11. Production and distribution of motion pictures and videos
12. Production and distribution of music and sound recordings
13. Amusement parks, games and other entertainment and recreation

FIGURE 4 Labour force in cultural occupations by occupational group and region category



1. Arts, design and crafts
2. Editing and journalistic work
3. Photography, cinematography and technical work in radio and TV
4 Graphics
5. Advertising
6. Cultural administration and museum, archive and library work

The number of men and women in cultural industries does not differ drastically. The most significant differences can be seen in the industries and occupations related to library, archive and museum work and production and distribution of books, in which women represent over two thirds of the employment. Occupations related production and distribution of music and sound recordings and radio and TV work are male-dominated. In other industries, the differences are relatively small.

Culture workers are slightly higher educated compared to employees in other industries. The educational level is defined by the classification of Finnish Standard Classification of Education (2002). Greater percentage of cultural employment is highly educated compared to all the labour force, apart from doctoral degree which is more common in other industries. Women in cultural industries are higher educated than men. Entrepreneurship seems to be rarer amongst culture workers compared to all labour force, representing less than 6 per cent of employment in the culture sector. The exceptions are the sub-sectors of architectural and industrial design and art and second hand and antique shops in which more than 30% of labour force are entrepreneurs.

On average, the taxable incomes are slightly higher amongst culture workers compared to all labour force. But the differences between sub-sectors of cultural industries and occupations are rather large. Highest incomes have those working in the occupations related to radio and TV work and production of newspapers and periodicals. High education does not seem to guarantee big incomes. Women earn less than men. (See Table 2 and Table 3)

TABLE 2 Labour force in cultural industries in 2000 by industry, gender, regional distribution, educational level, entrepreneurship and income

| Industry | Share in cultural industries | Gender | | Regional distribution | | | Educational level | | | Entrepreneurs | Income |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Share of Women | Rural | Regional centre | University city | Metropolitan area | Primary | Secondary | Higher | Share of entrepreneurs | Mean €/year |
| *Architectural and industrial design and art* | 0,05 | 0,39 | 0,07 | 0,11 | 0,27 | 0,55 | 0,12 | 0,26 | 0,62 | 0,38 | 26 700 |
| *Arts facilities* | 0,07 | 0,49 | 0,02 | 0,23 | 0,28 | 0,48 | 0,23 | 0,50 | 0,27 | 0,005 | 23 300 |
| *Art and antique shops and second-hand bookshops* | 0,01 | 0,57 | 0,08 | 0,14 | 0,22 | 0,57 | 0,27 | 0,51 | 0,22 | 0,38 | 13 400 |
| *Libraries, archives, museums etc.* | 0,11 | 0,77 | 0,15 | 0,22 | 0,28 | 0,35 | 0,16 | 0,27 | 0,57 | 0,003 | 20 300 |
| *Production and distribution of books* | 0,06 | 0,69 | 0,08 | 0,11 | 0,14 | 0,66 | 0,22 | 0,37 | 0,41 | 0,03 | 24 100 |
| *Production and distribution of newspapers and periodicals* | 0,16 | 0,57 | 0,11 | 0,23 | 0,21 | 0,46 | 0,25 | 0,40 | 0,35 | 0,001 | 30 800 |
| *Other publishing* | 0,17 | 0,36 | 0,15 | 0,17 | 0,28 | 0,40 | 0,37 | 0,48 | 0,15 | 0,02 | 27 400 |
| *Advertising* | 0,09 | 0,52 | 0,03 | 0,12 | 0,26 | 0,59 | 0,20 | 0,44 | 0,35 | 0,07 | 28 900 |
| *Photography* | 0,03 | 0,51 | 0,08 | 0,28 | 0,20 | 0,44 | 0,29 | 0,52 | 0,19 | 0,09 | 22 200 |
| *Radio and television* | 0,16 | 0,38 | 0,07 | 0,15 | 0,26 | 0,52 | 0,18 | 0,48 | 0,34 | 0,01 | 29 300 |
| *Production and distribution of motion pictures and videos* | 0,03 | 0,48 | 0,04 | 0,19 | 0,18 | 0,59 | 0,23 | 0,49 | 0,28 | 0,04 | 20 800 |
| *Production and distribution of music and sound recordings* | 0,01 | 0,24 | 0,04 | 0,22 | 0,17 | 0,57 | 0,36 | 0,33 | 0,32 | 0,13 | 24 600 |
| *Amusement parks, games and other entertainment and recreation* | 0,06 | 0,55 | 0,08 | 0,25 | 0,26 | 0,40 | 0,28 | 0,50 | 0,22 | 0,06 | 19 600 |

TABLE 3 Labour force in cultural occupations in 2000 by occupation, gender, regional distribution, educational level, entrepreneurship and income

| Occupation | Share in cultural occupations | Gender Share of women | Rural | Regional centre | University city | Metropolitan area | Primary | Secondary | Higher | Share of entrepreneurs | mean €/year |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Entrepreneurs | Income |
| *Arts, design and crafts* | 0,17 | 0,43 | 0,06 | 0,18 | 0,26 | 0,50 | 0,19 | 0,43 | 0,37 | 0,15 | 24 800 |
| *Editing and journalistic work* | 0,14 | 0,50 | 0,10 | 0,16 | 0,21 | 0,53 | 0,11 | 0,40 | 0,50 | 0,06 | 38 700 |
| *Photography, cinematography and technical work in radio and TV* | 0,07 | 0,37 | 0,03 | 0,17 | 0,21 | 0,58 | 0,22 | 0,62 | 0,16 | 0,17 | 24 200 |
| *Graphics* | 0,27 | 0,36 | 0,13 | 0,20 | 0,26 | 0,40 | 0,38 | 0,51 | 0,11 | 0,05 | 24 900 |
| *Advertising* | 0,19 | 0,52 | 0,04 | 0,12 | 0,15 | 0,68 | 0,12 | 0,20 | 0,68 | 0,02 | 41 200 |
| *Cultural administration and museum, archive and library work* | 0,15 | 0,77 | 0,20 | 0,23 | 0,27 | 0,36 | 0,13 | 0,28 | 0,59 | 0,01 | 23 800 |

# 3 Model and variables

In the analysis, we employ a multinomial logit model to examine the regional distribution of culture workers. The dependant variable is the type of region where the individual resides. The explanatory variables are grouped in three: personal characteristics, family characteristics and working life characteristics. The model can be derived as follows:

For the $i$ th consumer faced with $J$ choices, suppose that the utility of the choice $j$ is as follows:

$$(3.1) \qquad U_{ij} = \beta_j ' x_i + \varepsilon_{ij}, \ j = 0,1,...J$$

If the consumer makes choice $j$, then we assume that $U_{ij}$ is the maximum among $J$ utilities.

By using the multinomial logit model we can provide a set of probabilities for the choices of an individual with characteristics $x_i$. These probabilities are given by

$$(3.2) \qquad \operatorname{Pr}ob(Y_i = j) = \frac{e^{\beta_j' x_i}}{\displaystyle\sum_{k=0}^{J} e^{\beta_k' x_i}}, \ j = 0,1...J$$

Normalization is needed, so let's denote $\beta_0 = 0$. Therefore, the probabilities are:

$$(3.3) \qquad \operatorname{Pr}ob(Y_i = j) = \frac{e^{\beta_j' x_i}}{1 + \displaystyle\sum_{k=1}^{J} e^{\beta_k' x_i}}, \ j = 1,2,3....J$$

Note, that if J=1, the model reduces to binary logit model.

When the normalization is done, the parameters can be interpreted as follows:

$$(3.4) \qquad \ln\left(\frac{\Pr ob(y_i = j)}{\Pr ob(y_i = 0)}\right) = \beta_j' x_i$$

The left-hand side of this equation is interpreted to be the logarithmic odds of choosing choice $j$ compared to choice 0. Thus, we may interpret $\beta_j$ as the proportional change in the odds ratio.

The log-likelihood function is needed for the estimation and can be derived by defining, for each individual, $d_{ij} = 1$ if alternative $j$ is chosen and 0 if not, for the J-1 possible outcomes. The log-likelihood is a generalization of that for the binomial logit model. The derivative of the log-likelihood function with respect to a parameter $\beta_j$ can be written as:

$$(3.5) \qquad \frac{\partial \ln L}{\partial \beta_j} = \sum_i \left(d_{ij} - P_{ij}\right) x_i, \quad j = 1, \dots J$$

To interpret the coefficient, we use marginal effects which give the absolute change in probability. They can be calculated as follows:

$$(3.6) \qquad \frac{\partial P_j}{\partial x_i} = P_j \left[ \beta_j - \sum_{k=0}^{J} P_k \beta k \right],$$

where $P_{ij} = \Pr ob(y_i = j)$.

The dependant variable, the type of region where the individual resides, has four different ordered classes based on the amount of population and degree of urbanisation of the region.

| | |
|---|---|
| **Y=3** | metropolitan area |
| **Y=2** | university city |
| **Y=1** | other regional centre |
| **Y=0** | otherwise (rural region) |

The explanatory variables used in this study are grouped in three: personal characteristics, family characteristics and working life characteristics. Personal characteristics include age, gender, educational level and home ownership. Family characteristics include marital status and having a child aged less than eighteen. Working life characteristics include income, labour market status, entrepreneurship, and of course, being a culture worker or other. (Table 4)

TABLE 4 Explanatory variables, values and sample means

| Variable | Min/Max | Mean |
|---|---|---|
| **Personal characteristics** | | |
| *Female* | 0 = man<br>1 = woman | 0,5 |
| *Young* | 0 = older than 30 y<br>1 = 30 years or younger | 0,2 |
| *Edu* | 0 = primary or secondary<br>      education<br>1 = higher education | 0,31 |
| *House* | 0 = not a house/flat owner<br>1 = house/flat owner | 0,67 |
| **Family characteristics** | | |
| *Single* | 0 = has a spouse<br>1 = single | 0,13 |
| *Child<br><18 years* | 0 = no children<br>1 = at least one child under 18 | 0,41 |
| **Working life characteristics** | | |
| *Lowincome* | 0 = Income higher than median<br>1 = Income lower than median | 0,5<br>(median<br>20 500) |
| *Entrepre* | 0 = not an entrepreneur<br>1 = entrepreneur | 0,1 |
| *Unemploy* | 0 = employed all year 2000<br>1 = unemployment period in | 0,19 |
| *Culture* | 0 = other<br>1= culture worker | 0,04 |

In addition, interaction variables are included to the model. The interaction variables are formed so that the variable *culture* is combined with each of the other variables. This way the special characteristics of culture workers can be examined.

## 4 Results

Multinomial logit model was used to examine the regional distribution of culture workers. What factors – if any – affect the locational choice of culture workers? In the model the dependent variable is the type of region where an individual resides: rural regions, regional centres, university cities and metropolitan are. The reference group is the group 0, i.e. rural regions. The sample consists of individuals who belong to the labour force aged 15-74 in Finland in the year 2000. The total number of observations is 177 268.

Table 5 presents the results of the estimation reporting the estimated coefficient, statistical significances and standard errors for each three region groups, the reference group being the group 0, rural regions. Most of the coefficients reach statistical significance at the 0,1% level, even so for the estimated coefficients for the interaction variables apart from some exceptions. It should be noted that the sample size is fairly large which affects to the statistical significance of the coefficients.

When using region groups as such that are used in this study, problems may occur as the observations are not necessarily independent within groups although they are independent across groups. This is why the standard errors may result biased. This problem has been dealt with by adjusting standard errors for intragroup correlation. Hence the robust standard errors in table 5.

The estimation results of the main variables show expected signs. Coefficient for women is positive for living in any type of region compared to the sparsely populated rural areas. Also highly educated and singles are concentrated to the cities. The coefficients are negative for the variables controlling entrepreneurship, having children under 18, low incomes, having experienced unemployment period, and home ownership.

What is of our special interest is the variable controlling culture workers from others: the coefficient reaches statistical significance at the 0,1 % level. The coefficient of metropolitan area and university cities compared to rural areas is highly positive.

The interaction variables show the most interesting estimation results. Also most of them reach statistical significance apart from some expectations. One especially attention grabbing notion is the interaction of culture workers and entrepreneurship. Being an entrepreneur has negative coefficients in the classes of regional centre, university city and metropolitan area (compared to rural areas). But for the interaction of culture workers and entrepreneurship, the coefficient is positive in the classes for university cities and metropolitan area. There is something in the highly populated areas that seem to attract especially entrepreneurs in the cultural industries and occupations. Another interesting result is in the interaction of highly educated and culture workers. Both highly educated and culture workers have positive coefficients in highly populated areas but their interaction is negative.

TABLE 5 Multinomial logit model for the likelihood of living in a certain region category compared to rural regions, coefficients and standard errors (individuals aged 15-74 years in year 2000)

| | Regional centre | | University city | | Metropolitan area | |
|---|---|---|---|---|---|---|
| | *Coef.* | *Robust Std. Err.* | *Coef.* | *Robust Std. Err.* | *Coef.* | *Robust Std. Err.* |
| *Intercept* | 0,822 | 1,632 | 0,888 | 1,641 | 1,591 | 1,648 |
| *culture* | 0,420*** | 0,016 | 0,904*** | 0,019 | 1,492*** | 0,026 |
| *female* | 0,082*** | 0,008 | 0,116*** | 0,011 | 0,230*** | 0,023 |
| *young* | -0,035*** | 0,006 | -0,039*** | 0,010 | 0,003 | 0,014 |
| *child* | -0,092*** | 0,004 | -0,170*** | 0,007 | -0,262*** | 0,012 |
| *edu* | 0,170*** | 0,006 | 0,551*** | 0,017 | 0,562*** | 0,025 |
| *entrepre* | -0,499*** | 0,007 | -0,800*** | 0,011 | -0,917*** | 0,019 |
| *house* | -0,315*** | 0,010 | -0,781*** | 0,018 | -1,267*** | 0,026 |
| *lowincome* | -0,295*** | 0,008 | -0,272*** | 0,015 | -0,629*** | 0,024 |
| *single* | 0,135*** | 0,009 | 0,076*** | 0,020 | 0,081* | 0,032 |
| *unemploy* | -0,919*** | 0,002 | -0,313*** | 0,006 | -0,831*** | 0,007 |
| *cultfem* | -0,097*** | 0,010 | -0,267*** | 0,031 | -0,274*** | 0,018 |
| *cultyoung* | -0,099*** | 0,010 | 0,008 | 0,017 | -0,162*** | 0,023 |
| *cultchild* | -0,032** | 0,010 | -0,021 | 0,011 | 0,018 | 0,024 |
| *cultedu* | -0,048*** | 0,004 | -0,270*** | 0,015 | -0,165*** | 0,024 |
| *cultentre* | -0,018 | 0,012 | 0,513*** | 0,021 | 0,473*** | 0,040 |
| *culthouse* | -0,057*** | 0,041 | 0,052* | 0,021 | 0,147*** | 0,032 |
| *cultlowinc* | 0,129*** | 0,006 | -0,025* | 0,012 | -0,455*** | 0,019 |
| *cultsingle* | -0,288*** | 0,017 | -0,199*** | 0,015 | -0,252*** | 0,029 |
| *cultunemp* | -0,087*** | 0,003 | 0,337*** | 0,004 | 0,5245*** | 0,006 |

Notes: \*\*\* statistically significant at the 0,001 level
\*\* statistically significant at the 0,01 level
\*statistically significant at the 0,05 level

Marginal effects were calculated to all four region categories: rural areas, regional centres, university cities and metropolitan area (Table 6). The marginal effects show the concentration of culture workers to the highly populated metropolitan area. The likelihood for a person to live in the metropolitan area increases 0,22 percentage points if the person is a culture worker. The marginal effects also verify the result that entrepreneurs operating in the cultural industries or occupations are concentrated to the university cities and metropolitan area unlike other entrepreneurs. On the whole, entrepreneurs are less concentrated to the highly populated areas but for the interaction effect controlling both being a culture worker and an entrepreneur, the effect is reversed. The marginal effect of interaction of culture workers and highly educated is now positive in the class of regional centres (the coefficient compared to rural regions was negative) but the classes for university cities and metropolitan area have negative marginal effects. Being both a culture worker and highly educated seems to decrease the likelihood of living in a metropolitan area.

Marginal effects of the other variables show expected signs: women are more concentrated to the metropolitan area, as well as young people and highly educated. People who have under aged children are less concentrated to the highly populated university cities and the metropolitan area. People, whose incomes are lower than the median, are more concentrated to the rural areas.

The interaction effects show the special features of culture workers. House and flat owners tend to live in the rural areas and regional centres but house owning culture workers are concentrated to the highly populated areas, the marginal effects for the interaction are however rather small. This could be explained by the fact that on average the culture workers who live in big cities have higher income than the culture workers living in the rural areas. This effect can be seen also in the results for the interaction of culture worker and low income. Female culture workers seem to be more likely to live in the rural areas when the women in general are more concentrated to the metropolitan area than men. The explanation could be found when looking at the cultural industries and occupations that are dominated by women, for example jobs related to libraries and museums: they are in general more evenly distributed than those dominated by men.

TABLE 6 Marginal effects

| | Rural area | Regional centre | University city | Metropolitan area |
|---|---|---|---|---|
| *culture* | -0,112 | -0,113 | 0,003 | 0,222 |
| *female* | -0,021 | -0,010 | -0,000 | 0,032 |
| *young* | 0,003 | -0,005 | -0,005 | 0,006 |
| *child* | 0,026 | 0,014 | -0,007 | -0,034 |
| *edu* | -0,060 | -0,051 | 0,050 | 0,061 |
| *entrepre* | 0,127 | 0,015 | -0,054 | -0,089 |
| *house* | 0,110 | 0,098 | -0,026 | -0,182 |
| *lowincome* | 0,060 | 0,010 | 0,013 | -0,084 |
| *single* | -0,015 | 0,016 | -0,001 | -0,000 |
| *unemploy* | 0,061 | 0,067 | -0,002 | -0,126 |
| *cultfem* | 0,033 | 0,020 | -0,024 | -0,029 |
| *cultyoung* | 0,014 | -0,008 | 0,020 | -0,025 |
| *cultchild* | 0,002 | -0,007 | -0,003 | 0,008 |
| *cultedu* | 0,024 | 0,022 | -0,034 | -0,012 |
| *cultentre* | -0,045 | -0,076 | 0,063 | 0,059 |
| *culthouse* | -0,007 | -0,027 | 0,003 | 0,032 |
| *cultlowinc* | 0,014 | 0,065 | 0,012 | -0,090 |
| *cultsingle* | 0,040 | -0,025 | -0,000 | -0,015 |
| *cultunemp* | -0,040 | -0,083 | 0,024 | 0,099 |

## 5 Concluding remarks

In this study, it has been assumed that culture workers create a milieu of creativity and innovation to the area and therefore possess vital features for regions. According to the data, in year 2000 4,5% of all labour force could be interpreted as culture workers. The cultural workforce in Finland is very unevenly distributed: approximately 50 per cent of culture workers live in the Helsinki metropolitan region. Cultural institutions, especially government funded, that draw culture workers are located in big cities. Also many of the cultural occupations rely on unofficial social relations which enhance the concentration of employment to certain areas.

The estimation results show that being a culture worker has a strong positive effect in the concentration to highly populated areas. Another interesting notion is that the locational choices of cultural entrepreneurs seem to differ from other entrepreneurs. This aspect needs a more detailed study.

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APPENDIX 1 Cultural industries (Statistics Finland)

**Architectural and industrial design and art**

Architectural activities (74203)

Industrial design (74841)

Artistic creation (92311)

**Arts facilities**

Theatre and concert activities (92312)

Operation of arts facilities (9232)

**Art and antique shops and second-hand bookshops**

Retail sale of art; art gallery activities (52484)

Antique shops (52501)

Second-hand bookshops (52502)

**Libraries, archives, museums etc.**

Library and archives activities (9251)

Museum activities and preservation of historical sites and buildings (9252)

Botanical and zoological gardens and nature reserves activities (9253)

**Production and distribution of books**

Publishing of books (2211)

Bookbinding and finishing (2223)

Wholesale of books (51474)

Retail sale of books (52472)

Retail sale of books via mail order houses (52611)

**Production and distribution of newspapers and periodicals**

Publishing of newspapers (2212)

Publishing of journals and periodicals (2213)

**Other publishing**

News agency activities (9240)

Printing of newspapers (2221)

Printing n.e.c (2222)

Composition and plate-making (2224)

Other activities related to printing (2225)

Retail sale of periodicals & Newspaper kiosks (52473&52474)

**Advertising**

Advertising agency activities (74401)

Direct and outdoor advertising activities (74402)

Other advertising activities (74409)

**Photography**

Photographic studio activities (74811)

Manufacture of optical instruments and photographic equipment (3340)

Photographic laboratory activities (74812)

Wholesale of photographic equipment and supplies (51475)

Retail sale of photographic equipment; photography services (52485)

**Radio and television**

Radio and television activities (9220)

Manufacture of television and radioreceivers, sound or video recording or reproducing apparatus and associated goods (3230)

Wholesale of radio and television goods (51432)

Retail sale of household appliances and radio and television goods (52451)

Data transmission services (64203)

**Production and distribution of motion pictures and videos**

Motion picture and video production (9211)

Reproduction of video recording (2232)

Motion picture and video distribution (9212)

Renting of videotapes (71401)

Motion picture projection (9213)

**Production and distribution of music and sound recordings**

Manufacture of musical instruments (3630)

Publishing of sound recordings (2214)

Reproduction of sound recording (2231)

Wholesale of musical instruments and supplies (51481)

Retail sale of musical equipment and supplies (52452)

**Amusement parks, games and other entertainment and recreation**

Fair and amusement park activities (9233)

Gambling and betting activities (9271)

Manufacture of games and toys (3650)

Wholesale of toys and games (51483)

Other entertainment activities n.e.c (9234)

Other recreational activities n.e.c (9272)

APPENDIX 2 Cultural occupations (Statistics Finland)

**Arts, design and crafts**

Authors and dramatrugists (24515)

Sculptors and painters (24521)

Graphic designers (24522)

Art and craft designers and related artists (24523)

Artistic and crafts and design associate professionals (34711)

Musical instrument makers and tuners (7312)

Handicraft workers in wood, textile, leather and related materials (7330)

Composers, musicians and singers (2453)

Choreographers and dancers (2454)

Actors (24551)

Stage and film directors (24552)

Night club and related musicians, singers and dancers (3473)

Clowns, magicians, acrobats and related associate professionals (3474)

**Editing and journalistic work**

Managing editors (24511)

Journalists, editors and critics (24512)

Radio and television journalists (24513)

Radio, television and other announcers (3472)

**Photography, cinematography and technical work in radio and TV**

Photographers and image and sound recording equipment operators (3131)

Broadcasting and telecommunications equipment operators (3132)

Producer's assistants and related associate professionals (34712)

Photographic and related workers (7344)

Photographic-products machine operators (8224)

**Graphics**

Printing technicians (31192)

Compositors, typesetters and related workers (7341)

Stereotypers and electrotypers (7342)

Printing engravers and etchers (7343)

Bookbinders and related workers (7345)

Silk-screen , block and textile printers (7346)

Printing-machine operators (8251)

Book-binding-machine operators (8252)

**Advertising**

Sales and marketing managers (1234)

Public relations professionals (24192)

Advertising and marketing professionals (24191)

Advertising copywriters (24514)

**Cultural administration and museum, archive and library work**

Cultural services managers (12294)

Archivists (24311)

Curators (24312)

Librarians and related information professionals (2432)

Library and filing clerks (4141)