ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume LXI 314 Number 7, 2013
http://dx.doi.org/10.11118/actaun201361072811

REGIONS AND MEDIA FROM QUANTITATIVE AND QUALITATIVE PERSPECTIVES: THE CASE OF CZECH REPUBLIC

Jan Sucháček, Petr Seďa, Václav Friedrich

Received: August 29, 2013

Abstract

SUCHÁČEK JAN, SEĎA PETR, FRIEDRICH VÁCLAV: *Regions and media from quantitative and qualitative perspectives: the case of Czech Republic.* Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 2013, LXI, No. 7, pp. 2811–2819

Media become increasingly important in co-creating the image of spatial units at various scales. The situation is even more intriguing in transition/post-transitions countries, which were exposed to modernization trends in rather short, almost compressed periods. The article aims at showing how media shape the image of NUTS III regions in the Czech Republic. Comparisons show TV coverage embodies media agenda in a satisfactory manner as it has one of the highest impacts on the public on the one hand and is representative enough on the other. That is why TV coverage at the national level with contributions related to individual NUTS III in the Czech Republic was chosen as a point of departure. Thus, the objective of the paper is to analyze and interpret TV news related to NUTS III regions in the Czech Republic. This will be accomplished from both quantitative and qualitative perspectives. Quantitative analysis is focusing on the number of contributions related to the size of the region in question. Nonetheless, self-governing regions in the Czech Republic will be evaluated also from qualitative perspective when the composition of TV news will be accentuated. Although it is stated only seldom media analysis is of utmost importance in relation to regional development. In order to quantify and evaluate afore mentioned dependencies the methods of regression and correlation analysis will be utilized. Moreover, correspondence analysis and analysis of contingency tables will be used in the qualitative part of our research.

NUTS III regions, image, media, Czech Republic, regression analysis, correspondence analysis, contingency tables

1 INTRODUCTION

Soft factors of local and regional development are getting increasingly popular. Mental maps belong to the most important categories in this respect. According to Gregory *et al.* (2009), the term is referring to the psychological representation of space. These maps do not record the real space but its reflection in the perception of individuals. Gould and White (1986) show that mental maps are not mere preference surfaces but also predictors of consequent spatial behaviour. Some researchers (e.g. Lloyd, 1976) for instance found significant correlations between the mental maps of students in several regions and the patterning of migration flows.

Media coverage undoubtedly represents one of pivotal factors influencing the creation of mental maps. One has to take into account that media provide us with selected pieces of information, i.e. they display only a little part of complex reality. Wide public thus gets the information on the one hand and is influenced by these news on the other. From spatial point of view we are entitled to talk about improvement or deterioration of territorial images, which happens just through the media (see also McQuail, 2009, Franklin and Murphy, 1998 or McCombs and Shaw, 1972).

Territorial image can be perceived either from external or from internal perspective. From external point of view, the reputation of the territory co-

determines behaviour, attitudes as well as other informal institutions of external economic, social and political entities to the territory in question. From internal standpoint, we deal primarily with the perception of the territory by its own inhabitants. There is ample evidence that psychosocial atmosphere of towns and regions can quite importantly co-determine further destiny of these territories (see also Suchacek and Malinovsky, 2012 or Klamar and Rosic, 2010).

The mission of media consists in objective, accurate, verified and unbiased depiction of reality. Contemporary media however already co-create the environment we are living in. Regarding the great and steadily growing interconnectedness of the world, media can show just selective cuts of complex reality. People are thus informed about the events but at the same time the media more or less conspicuously direct their behavior and the perception of reality. Many people even accept opinions presented by media in a very sophisticated way.

From geographical point of view, media shape namely the external image of individual territories. Taking into consideration the organization of media and spatial scope of their coverage, we can distinguish national, regional and local media. This differentiation helps us to conceptualize the relations between media and territories of various scales (see also Karlsson and Picard *et al*., 2011).

Local and regional media provide the information from localities and regions. Their influence is basically constrained by the delimitation of territories they deal with. Contrary to that, national media utilize the information also from particular localities and regions. Thus, news devoted to local or regional issues appear alongside national or foreign affairs.

It is apparent that influence of national media on the wide public is higher than that at regional or local levels. But regional and local news, which appear in national media substantially co-create the territorial image and from aggregate point of view also mental maps. Not surprisingly, our article is devoted to national media and their view on NUTS III regions in the Czech Republic.

Media in the Czech Republic are concentrated into the capital city of Prague. Prague headquarters gather the information also from regional and local media. However, the selection of these news is subject to the need to lure the maximum numbers of readers, listeners or TV viewers. Subsequently, the composition of news about individual regions may considerably differ from real situation in these territories.

For the purposes of this research, authors focused on TV. TV coverage has one of the highest impacts on the public on the one hand and is representative enough on the other. Moreover, comparisons show that TV coverage agenda to a large extent represents also press or radio coverage agenda (Nečas, 2008). That is why TV coverage will be taken as a point of departure for this research. Our research focuses upon contribution of national TV news about NUTS III self-governing regions in the Czech Republic, which represents the topic that has been largely omitted so far.

Naturally, settlement system and socioeconomic characteristics of country's regions form an elementary framework for our research as they are based on material categories and relations (see Nevima and Kiszova, 2013; Suchacek and Baranek, 2012 or Suchacek and Seda, 2012). Media portrayals of individual NUTS III regions are on the contrary of intangible character and should be in consonance with genuine features of country's territories.

Thus, the main objective of the paper consists in quantitative and qualitative analysis and interpretation of contributions in national TV coverage, which are related to individual NUTS III regions in the Czech Republic.

2 MATERIALS AND METHODS

The empirical analysis is based on unique data purchased from Media Tenor, Ltd., which deals with a systematic and continuous analysis of media reports in the Czech Republic. The above mentioned company offers a complete set of analytical services based on the content analysis of media. It accurately evaluates the quantitative and qualitative aspects of media publicity. Analytical and consulting services are usually used by private companies, local government, political parties, PR agencies, media editors as well as scholars.

TV coverage we investigated was represented by evening news of 3 principal TV companies in the Czech Republic. The research thus monitored Události ČT and Události, komentáře ČT, both of them representing public TV. On the contrary, Televizní noviny constitute the part of private TV Nova air time. The same applies to Zprávy of TV Prima. Our research covers the period between April 2004 and December 2011, which (taking into account the newness of the whole topic) is maximum possible time in this sphere. On the other hand one can already get at least an essential overview of developmental tendencies in the researched realm.

2.1 Quantitative approach

Quantitative analysis will be devoted to the number of these contributions as territories, which disappear from media space become naturally less conspicuous also in common life. These contributions will be evaluated also in a wider context, i.e. we take into account the distance of individual regions (or more precisely their capitals) from the media headquarters located in the capital city as well as the population of individual NUTS III regions.

It is worth reminding that activities happening in any territory are always bound to the population living in the given space (see also Suchacek, 2013).

From this perspective, the news concerning individual NUTS III regions that appear in national media should be roughly in balance with existing settlement system.

The hypothesis tested in the quantitative part of our paper is thus as follows: H1: Distance of the examined regional capitals from Prague TV headquarters plays significant role in relation to the number of contributions in national TV coverage related to individual NUTS III regions.

In order to accomplish a basic quantitative analysis of the data for particular country's regions at the NUTS III level and verify the hypothesis H1, we have chosen the methods of regression and correlation analysis. As for software equipment, Microsoft Excel was used during this quantitative part of our research.

The methods of regression and correlation analysis are very useful tool for quantifying the relationships between variables in general. The main aim of regression analysis is to examine the causal relationships between two or more quantitative or/and qualitative variables. When we calculate the characteristics of mentioned relationship, especially the mean and variance, or even the degree of their dependence in the terms of covariance, we can begin to investigate how to express and calculate these relationships using mathematical tools.

The basic aim of the regression analysis is to estimate a suitable regression function which is able to describe deterministic or, in other words, identifiable and predictable component of estimated regression model. Any mathematical function can be theoretically chosen as regression dependence. Nevertheless, we cannot select respective regression function completely arbitrarily. Thus, we have to find a function which penalizes the dependence of dependent variable and independent variables in a best way. For practical reasons, we usually select the simplest functional dependence taking into consideration also causal relationship between variables in regression analysis. For the purpose of our analysis, it will be chosen a linear function.

The goal of regression analysis is not only to find suitable regression dependence in the form of mathematical function but also to express the strength, intensity and tightness of dependence that describes estimated mathematical function. It is obvious that stronger dependence indicates prevailing role of deterministic part in estimated regression model and therefore less significant influence of error component. In other words, a random component has to be minimized. In addition, the random or error term of the model must fulfill certain statistical assumptions.

Therefore, it may be very important to confirm the quality of fit of the model and the statistical significance of the estimated parameters when a regression model has been estimated. Commonly used methods of evaluation the quality of goodness of fit include the *R*-squared, hypothesis testing and analyses of the pattern of residuals. Statistical significance of regression model is usually checked using *F*-test of the overall fit of estimated model, followed by one sample *t*-tests of individual parameters estimated; see Friedrich (2008) for details.

In order to minimize the residuals of regression model estimated it is usually used the Ordinary Least Squares method or its modifications. Using this method, we are looking for the regression function that meets certain statistical properties which concern the error term. As a suitable marker of the relationship between dependent variable and independent variables estimated using of ordinary least square methods it could serve the *R*-squared or the coefficient of determination. This testing statistic denotes how much of the variability can be explained by the dependence of dependent variable on independent variables expressed by the regression function. In other words, the higher value of *R*-squared signifies that empirical observations are more closely around the regression function and the estimated regression function may express the relationship between independent and dependent variables in a better way.

2.2 Qualitative approach

Qualitative analysis and interpretation is based on content structure of contributions appearing in national TVs and related to individual NUTS III regions in the Czech Republic. Individual themes related to country's self-governing regions include relevant economic, social, environmental and other aspects of life in these territories. Contributions were thematically divided into 30 categories and 6 pillars (social, environmental, economic, educational, public administration and international). Altogether the amount of 60,739 contributions was monitored in this way.

The hypothesis formulated for the qualitative part of our research is as follows: H2: Structure of contributions in national TV coverage related to NUTS III regions is different for individual TV companies.

In the next step of our analysis the hypothesis H2 has to be verified. Therefore, it will be introduced the methods of correspondence analysis and analysis of contingency tables as a second approach. Correspondence analysis is a multivariate statistical technique proposed by Hirschfeld (1935) and later developed by Greenacre (1983). Correspondence analysis is very appropriate approach when attempting to determine the proximal relationships usually among two or more categorical variables. Using correspondence analysis when having categorical variables is similar to using correlation analysis or principal components analysis for continuous or nearly continuous variables.

Similarly to the quantitative part of our research, Microsoft Excel was used here. However, in the qualitative part of our research, IBM SPSS Statistics software was utilised too.

In contrast to correlation analysis, correspondence analysis represents a nonparametric approach and does not calculate any statistical significance test since it is not based on a probability distribution assumption. Correspondence analysis is able to work with nominal variables, ordinal variables, and also with ratio variables, although creating discrete categories from a continuous variable is generally discouraged. Correspondence analysis can describe the relationships between categories of each variable, as well as the relationship between these variables (see Meloun and Militký, 2006).

One of the most important goals of correspondence analysis is therefore to describe the relationships between two variables in a correspondence table in a low-dimensional space, whereas simultaneously describing mutual relationships between the categories for each variable. A key component of correspondence analysis is the multi-dimensional map or graph resulted as part of the output. The correspondence map allows us to visualize the relationships among particular categories spatially on dimensional axes. In other words, it shows which categories are close to other categories using empirically derived dimensions. The distances between category points for each variable in a plot represent the relationships between the categories with similar categories being drawn close to each other. Therefore, projecting points for one variable on the vector from the origin to a category point of the other variable represents the relationship between analysed variables.

Correspondence analysis is usually performed on contingency tables of size where is the number of rows and represents the number of columns in contingency table. From statistical point of view, a contingency table is a type of table in a matrix format that displays the multivariate frequency distribution of the variables. A crucial problem of multivariate statistics is finding dependence structure underlying the variables contained in high dimensional contingency tables. Like principal components analysis, correspondence analysis generates orthogonal units and, for each item in a table, a set of rates usually called factor scores. In a typical correspondence analysis, a contingency table of frequencies is usually first standardized, so that the relative frequencies across all cells sum to 1.0. In other words, in typical analysis is to represent the entries in the table of relative frequencies in terms of the distances between individual columns and rows in a low-dimensional space. For application of correspondence analysis all used data should be nonnegative and on the same scale, and the method of correspondence analysis deals with rows and columns equivalently.

The contingency tables offer several measures of association and tests of association (e.g. test or Fisher exact test, Phi coefficient, contingence coefficient C and Cramer´s V) but cannot graphically represent any relationships between the variables. An analysis of contingency tables often includes investigation of row and column profiles and testing for independence via the statistic. Nevertheless, the number of categories can be quite large, and the chi-square test sometimes does not detect the dependence structure. Correspondence analysis decomposes the test statistic associated with this table into two orthogonal factors which are represented by combined location map as dimensions 1 and 2. A chi-squared test, also referred to test, is statistical hypothesis test in which the sampling distribution of the test statistic has a chi-squared distribution when the null hypothesis is true. Since correspondence analysis is only descriptive technique, it can be applied to tables whether the statistic is appropriate or not.

Last but not least, it should be mentioned that quantitative and qualitative categories in the framework of this research are partly overlapping.

3 RESULTS AND DISCUSSION

The following parts of the article will be devoted to the quantitative and qualitative aspects of regionally-orientated contributions in national TV coverage. Regression analysis, correlation analysis, correspondence analysis and contingency tables will be utilized here.

3.1 Quantitative view on news related to regions

To test the hypothesis H1, the regression analysis examining the dependence of the number of articles on the distance between the regional capitals and the capital city of Prague, was used. The amount of articles was evaluated for each NUTS III region and covered the period between 2004 and 2011.

The beeline distances between cities were measured using Google Maps. Alternatively also the train and road network connection distances were used but the differences in results were not so significant. Population of individual self-governing regions was identified on the basis of Czech Statistical Organization database from June 2010 (see Tab. I.).

At first a simple linear model of number of contributions based on distance was estimated, see Tab. II. This relation was proved to be insignificant at 5% significance level, the territory of the capital city of Prague was found as outlier with the number of contributions higher than corresponding to a given model.

The rest of regions represents relatively homogenous group, see Fig. 1. The relatively high value of correlation coefficient ($r = 0.35$) in the model was caused by the influence of outlier (i.e. capital city of Prague).

Estimated model shows that the absolute number of contributions in a given region does not depend on the distance from the capital city. That is why the hypothesis H1 cannot be confirmed.

In order to find the significant relation between the amount of contributions and the distance from

I: *Regional distances, population, number of contributions and number of contributions per capita (thousand inhabitants)*

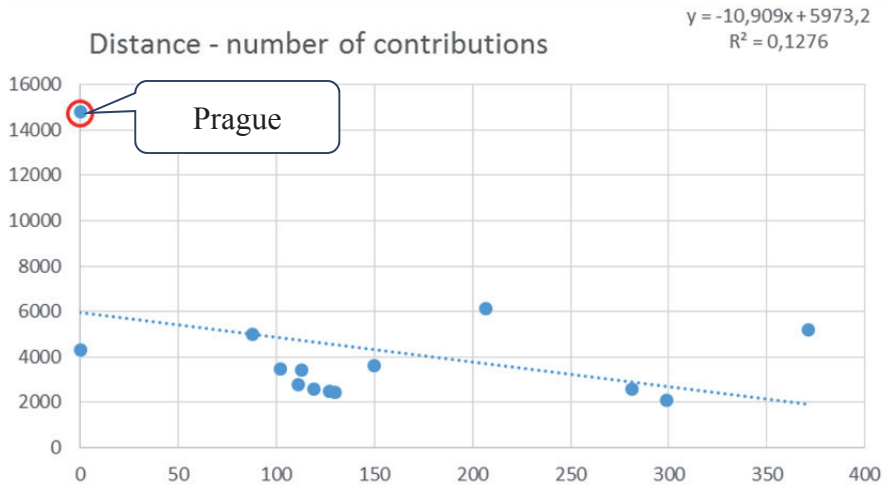
NUTS III Region	Distance from Prague in km	Population as per June 2010	Contributions 2004–2011	Contributions per capita
South Bohemia	150	637723	3632	5.695
South Moravia	207	1152819	6120	5.309
Karlovy Vary	127	307380	2465	8.019
Hradec Kralove	113	554370	3404	6.140
Liberec	111	439458	2771	6.305
Moravia – Silesia	371	1244837	5182	4.163
Olomouc	281	641555	2576	4.015
Pardubice	119	516777	2556	4.946
Plzen	102	571831	3452	6.037
Prague	0	1251072	14822	11.847
Central Bohemia	0	1256850	4277	3.403
Usti	88	835814	4991	5.971
Vysocina	130	514805	2409	4.679
Zlin	299	590527	2082	3.526

Source: *Czech Statistical Office and authors*

II: *Statistical depiction of linear regression model expressing relations among distances, populations and the number of contributions for all NUTS III regions*

Regression statistics	
Coefficient of determination and correlation coefficient	0.1276 and 0.3572
Significance of model (*F*-test)	0.2099
Significance of intercept and distance from Prague (*t*-test)	0.0011 and 0.2099

Source: *authors*



1: *Linear regression model expressing relations among distances and the number of contributions for all NUTS III regions*
Source: authors

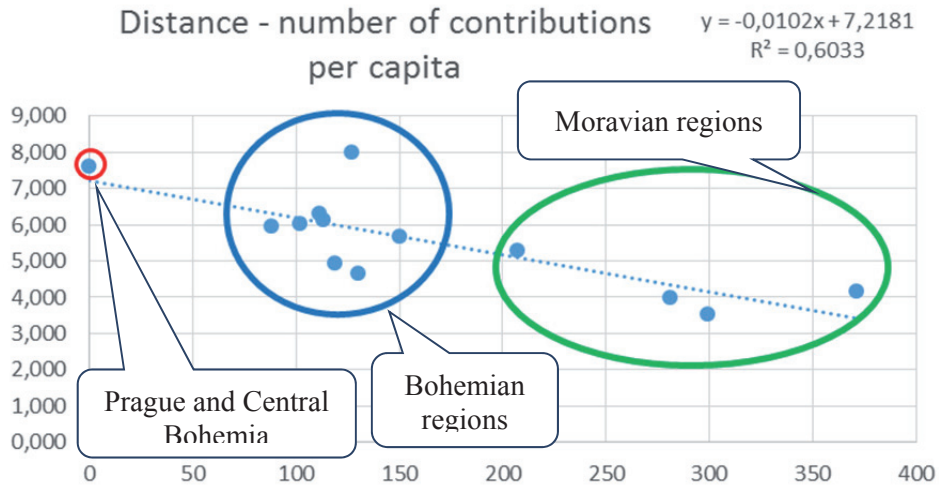
Prague, a relative number of contributions (per capita, in fact per 1 000 inhabitants) was used instead of an absolute value. Afterwards, the second linear regression model was estimated to describe such a relation. To lower the influence of Prague, two NUTS III regions with the same center – i.e. Prague and Central Bohemia – were aggregated into one region. This is already in consonance with their natural geographical characteristics.

Interestingly, the maximum number of contributions per capita was not found in the "central" region of Prague and Central Bohemia but in Karlovy Vary region with 8.019 contributions per 1000 inhabitants. This can be ascribed to the lowest number of inhabitants in Karlovy Vary

III: *Statistical depiction of linear regression model expressing relations among distances, populations and the number of contributions for all NUTS III regions (Prague and Central Bohemia united)*

Regression statistics	
Coefficient of determination and correlation coefficient	0.6033 and 0.7767
Significance of model (*F*-test)	0.0018
Significance of intercept and distance from Prague (*t*-test)	8.95E-09 and 0.0018

Source: authors



2: *Linear regression model expressing relations among distances, populations and the number of contributions per capita for all NUTS III regions (Prague and Central Bohemia united)*
Source: authors

self-governing region as well as some relatively important events, such as Karlovy Vary film festival (see also Tab. I.).

The newly estimated linear regression model is statistically significant at 5% significance level with the high value of correlation coefficient r = 0.78, so we can say that the relative number of contributions per capita decreases with distance of the regional capital from Prague, see Tab. III.

The regression graph, see Fig. 2, shows that all NUTS III regions were divided into three groups: one consists only of the capital city of Prague united with Central Bohemia, next group includes the regions closer than 200 km to Prague, and third group consists of regions with distances greater than 200 km from Prague. With the exception of Vysočina all the regions in the second group are Bohemian territories (according to the historical division of the Czech Republic into Bohemia and Moravia), the third group includes exclusively Moravian regions. The region of Vysočina is located predominantly in Moravia, but also partly extends into the historic Bohemian land.

It is possible to claim that with exception of South Moravia, where the most important Moravian city of Brno is located, the Moravian regions are represented in the TV coverage less than it would correspond to their population.

3.2 Qualitative view on news concerning regions

To test the hypothesis H2 (the structure of contributions in national TV coverage related to NUTS III regions is different for individual TV companies) the contingency tables were used (cross-classification of qualitative data) and the relationship between the rows and columns of tables were analyzed using Pearson's chi-square test of independence and Fisher's exact test with Monte Carlo method (so that the conditions for using chi-square test were not met). Due to the magnitude the contingency tables themselves are not shown in this paper, only the results of tests are presented from the IBM SPSS Statistics software.

The dependence of individual thematic categories of contributions structure to the television station (Czech TV, Nova, Prima) was tested. Czech TV has two relatively distinct evening news programs (Události ČT a Události, komentáře ČT), so we analyzed the level of dependence between the program and the structure of contributions.

Fisher's exact test of independence showed (at the significance level of $\alpha = 0.05$) a significant contingency between a specific program and structure of contributions in it, see Tab. IV.

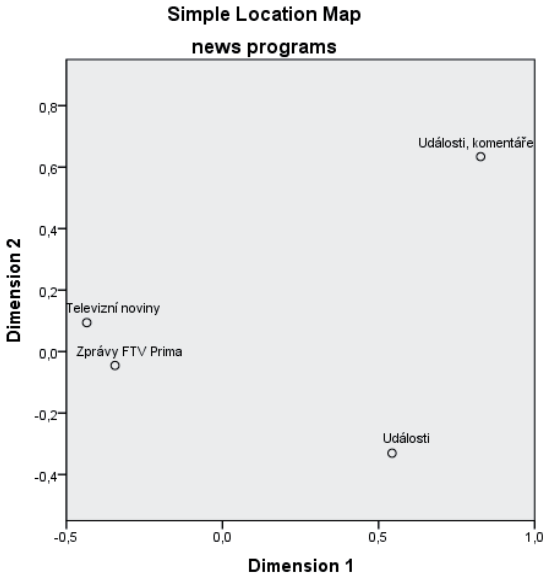
The "triads" of the most common issues on individual news programs are as follows:

- Události ČT – crime, accidents, culture (altogether 44.3%),

IV: *Fisher Exact Test of Independence (IBM SPSS Statistics)*

Chi-Square Tests	Value	Monte Carlo Sig. (2-sided)
		Sig.
Fisher's Exact Test	4012,338	,000
N of Valid Cases	54667	

Source: authors



3: *Result of correspondence analysis (simple location map)*
Source: authors

- Události, komentáře ČT – crime, accidents, culture (together 44.4%),
- Televizní noviny (Nova) – crime, accidents, society (56.7 %),
- Zprávy TV Prima (Prima) – crime, accidents, society (57.5 %)

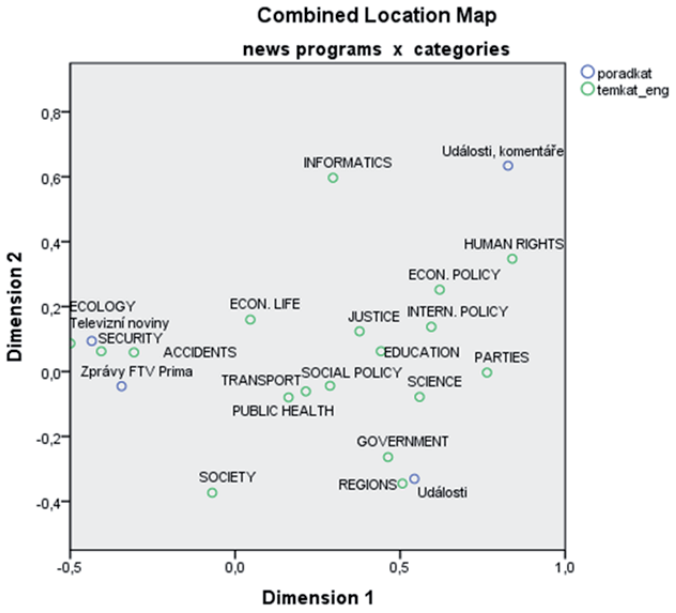
It is apparent that the contribution structure of commercial televisions prefers tabloid topics, while the public Czech TV is trying a more balanced representation of all topics. The percentages above indicate that the proportion of major themes in both Czech TV news programs would be similar.

To show the similarity or dissimilarity between contributions structure in various TV stations and their news programs the graphical outputs of correspondence analysis with two factors (the relative location maps) can be used. The simple location map (including only news programs) presents that the difference between thematic structure of both Czech TV news programs is more significant than the difference between Nova and Prima news, see Fig. 3. We can say that Czech TV is able to create two different news programs with various specializations and more distinct profile.

In order to better clarify the profiles of above mentioned programs, we can display both dimensions of correspondence analysis into one combined location map, see Fig. 4. From this perspective it is clear that Události ČT program concentrates primarily on government and regions, while Události, komentáře ČT are focusing on ethnic minorities, the European Union, or the new technologies, which is distinctive in comparison with other TV programs.

4 CONCLUSIONS

This article serves as a confirmation that media portrayals of regions are getting increasingly important. From quantitative point of view, it turned out to be useful to unite Prague with surrounding



4: *Result of correspondence analysis (combined location map)*
Source: authors

Central Bohemia into one region. This territorial unit is in consonance with natural geographical characteristics on the one hand and regression model proved to be statistically significant on the other hand. Relative number of contributions per capita decreases concurrently with the distance of regional capital from Prague.

The regression graph 2 shows that all NUTS III regions were divided into three groups: one consists only of the capital city of Prague united with Central Bohemia, next group includes the regions closer than 200 km to Prague, and third group consists of regions with distances greater than 200 km from Prague. With the exception of Vysočina all the regions in the second group are Bohemian territories (according to the historical division of the Czech Republic into Bohemia and Moravia), the third group includes exclusively Moravian regions. It is possible to claim that with exception of South Moravia, where the most important Moravian city of Brno is located, the Moravian regions are represented in the TV coverage less than it would correspond to their population. We thus got a basic spatial pattern expressing the relations among population of NUTS III regions, distances from Prague and the number of regionally-bound contributions within national TV coverage.

While hypothesis H1 related to the above mentioned quantitative part of research was not confirmed, the opposite is true for the hypothesis H2. From qualitative perspective, the basis of our research was content structure of contributions appearing in national TVs and related to individual NUTS III regions. Individual themes related to these regions include relevant economic, social, environmental and other aspects of their lives. At that stage, contingency tables were used and the relationship between the rows and the columns of tables were analyzed using Pearson's chi-square test of independence and Fisher's exact test with Monte Carlo method. It turned out that structure of contributions of analyzed private TV stations (i.e. Nova and Prima) bears a great resemblance and differs significantly from the coverage of public Czech TV. In contrast to Nova or Prima, the coverage of public Czech TV is also more motley and its individual programmes are more differentiated as confirmed by correspondence analysis.

SUMMARY

The main objective of this article consists in quantitative and qualitative analysis and interpretation of contributions in national TV coverage, which are related to individual NUTS III regions in the Czech Republic. Comparisons show that TV coverage agenda to a large degree represents also press or radio coverage agenda. That is why TV coverage, which has one of the highest impacts on the public on the one hand and is representative enough on the other, will be taken as a point of departure for this research. In spite of severe limitations in current data, our research covers the period between 2004 and 2011.

Quantitative analysis is devoted to the number of regionally-related contributions in national TV as territories, which disappear from media space become less conspicuous also in common life. These contributions are evaluated in a wider context, i.e. the distance of individual regions (or more precisely their metropolises) from the media headquarters located in the capital city as well as the population of individual NUTS III regions are taken into account. In order to accomplish quantitative part of research, regression and correlation analyses were utilized.

As to the number of contributions, Prague turned out to be an outlier and other NUTS III regions created relatively homogenous group. However, when Prague and Central Bohemia were united into one territory – which is in compliance with their basic geographical characteristics – regression model proved to be statistically significant at 5% significance level with the high value of correlation coefficient r=0.78 and the number of contributions per capita decreases with the distance of the regional capital from Prague.

From qualitative perspective, the basis of our research was content structure of contributions appearing in national TVs and related to individual NUTS III regions. Individual themes related to these regions include relevant economic, social, environmental and other aspects of their lives. At that stage, contingency tables were used and the relationship between the rows and the columns of tables were analyzed using Pearson's chi-square test of independence or Fisher's exact test with Monte Carlo method. It turned out that structure of contributions of analyzed private TV stations (i.e. Nova and Prima) bears a great resemblance and differs significantly from the coverage of public Czech TV. This was confirmed by correspondence analysis.

Acknowledgement

The support provided by VSB-TU Ostrava under the SGS project SP2013/126 is kindly announced.

REFERENCES

FRANKLIN, B. and MURPHY, D., 1998: *Making the Local News: Local Journalism in Context.* London: Routledge, 273 s. ISBN 978-04-151-6803-8.

FRIEDRICH, V., 2002: *Statistika I: Vysokoškolská učebnice pro distanční studium*. Plzeň: Vydavatelství Západočeské univerzity, 398 s. ISBN 80-7082-913-3.

GOULD, P. and WHITE, R., 1986: *Mental Maps*. London: Routledge, 204 s. ISBN 0-41-508482-2.

GREENACRE, M., 1983: *Theory and Applications of Correspondence Analysis*. London: Academic Press, 364 s. ISBN 0-12-299050-1.

GREGORY, D. et al., 2009: *The Dictionary of Human Geography.* London: Wiley-Blackwell, 1072 s. ISBN 1-40513-288-4.

HIRSCHFELD, H. O., 1935: A connection between correlation and contingency, *Proc. Cambridge Philosophical Society*, 31: 520–552. ISSN 0305-0041.

KARLSSON, CH. and PICARD, R. et al., 2011: *Media Clusters. Spatial Agglomeration and Content Capabilities.* Cheltenham: Edward Elgar, 416 s. ISBN 978-0-85793-268-6.

KLAMAR, R. and ROSIC, M., 2010: Image regiónu ako mäkký faktor perepcie rozvoja. In: Fnukal, M. et al. *Sborník příspěvků z konference 50 let geografie na Přírodovědecké fakultě Univerzity Palackého v Olomouci*, Olomouc: Univerzita Palackého, pp. 373–380, ISBN 978-80-244-2493-4.

LLOYD, R., 1976: Cognition, preference and behaviour in space. *Economic Geography*, 52, 3: 241–253. ISSN 1944-8287.

MCCOMBS, M. E., SHAW, D. L., 1972: The Agenda-Setting Functions of the Mass Media. *Public Opinion Quarterly*, 36, 2: 176–187. ISSN 0033-362X.

MCQUAIL, D., 2009: *Úvod do teorie masové komunikace*, Praha: Portál, 640 s. ISBN 978-80-7367-574-5.

MELOUN, M. and MILITKY, J., 2006: *Kompendium statistického zpracování dat*. Praha: Academia, 982 s. ISBN 80-200-1396-2.

NEČAS, V., 2008: Mediální kontext české zahraniční politiky. In: Kořan, M. et al. *Česká zahraniční politika v roce 2007*, Praha: Ústav mezinárodních vztahů, pp. 41–48. ISBN 978-80-86506-67-8.

NEVIMA, J. and KISZOVA, Z., 2013: Multiplicative and additive approach in analytic hierarchy process – case study of competitiveness evaluation of Czech and Slovak regions. *International Journal of Mathematical Models and Methods in Applied Sciences*, 7, 5: 490–499. ISSN 1998-0140.

SUCHACEK, J. and BARANEK, P., 2012: Largest enterprises in the Czech Republic: A spatio-temporal perspective. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 60, 7: 329–336. ISSN 1211-8516.

SUCHACEK, J. and MALINOVSKY, J., 2012: Transformation processes in Ostrava: Hectic quest for a new identity. *European Journal of Economics, Finance and Administrative Sciences*, 47: 101–110. ISSN 1450-2275.

SUCHACEK, J. and SEDA, P., 2012: Stochastic conception of input-output model: Theoretical and practical aspects. *International Journal of Mathematical Models and Methods in Applied Sciences*, 6, 6: 739–747. ISSN 1998-0140.

SUCHACEK, J., 2013: Transition in the Czech Republic from institutional point of view. *International Journal of Mathematical Models and Methods in Applied Sciences*, 7, 3: 320–332. ISSN 1998-0140.

Address

doc. Ing. Jan Sucháček, Ph.D., Ing. Petr Seďa, Ph.D., Ing. Václav Friedrich, Ph.D., VŠB-TU Ostrava, Faculty of Economics, Sokolská třída 33, 70121 Ostrava 1, Czech Republic, e-mail: jan.suchacek@vsb.cz, petr.seda@vsb.cz, vaclav.friedrich@vsb.cz