



ACEI working paper series

**PREVALENCE OF DISEASES AND HEALTH CARE UTILIZATION
OF THE SELF-EMPLOYED ARTISTS AND THEIR EMPIRICAL
DETERMINANTS: EVIDENCE FROM A SLOVENIAN SURVEY**

Andrej Srakar

AWP-08-2017

Date: September 2017

Prevalence of Diseases and Health Care Utilization of the Self-Employed Artists and Their Empirical Determinants: Evidence From a Slovenian Survey

Andrej Srakar¹, Institute for Economic Research (IER), Ljubljana and Faculty of Economics,
University of Ljubljana, Slovenia, srakara@ier.si

Abstract

Empirical studies on precarious work are still at their beginnings, even more so when the health of precarious workers is under concern. Commonly, precarious workers are assumed to have the inferior health to the employees and even to the population in general, although some recent studies found counter evidence to this claim. In particular, studies on the labor market of artists have so far almost completely neglected the question of the health of the artists, and this study tries to fill in this large and important void. In the study, we employ a survey of Slovenian self-employed artists, undertaken in 2015, to study the determinants of the prevalence of diseases and health utilization of self-employed artists in Slovenia using econometric modelling and network analysis. We study and find the determinants, influencing the prevalence of each type of the most common disease among the self-employed artists, determine the most common groupings/multiple diseases among this population, and, finally, study the determinants of health care utilization of self-employed artists and model the heterogeneity in the observed sample. An interesting result lies in determining two different groups according to their health care utilization and providing their interpretation which fits into the existing literature on artist labor markets.

Keywords: self-employed artists, diseases, health care utilization, multiple diseases, determinants, heterogeneity

JEL: Z11, Z18, C45, C38, J44, I14

¹ Dr. Andrej Srakar, Research Associate, Institute for Economic Research, Ljubljana; Assistant Professor, Faculty of Economics, University of Ljubljana, Slovenia; T: +386 1 5303 860; GSM: +386 40 677 680; F: +386 1 5303 874; Mailto: srakara@ier.si; URL: www.ier.si.

1. Introduction and literature review

Precarious work of artists is a topic, getting more and more attention in the recent years, mainly because the topic of precarious work has become the forefront topic of labor markets in general. Studies on self-employed artists have also become an important topic being previously of slightly less importance in studies on the artists' labor markets. Nevertheless, there is literature that deals with occupational hazards of the artists. As stated by Žuskin et al. (2007), the research has demonstrated that artists may sustain extensive exposure to potentially toxic substances, indicating that they may benefit from occupational health education and prevention programs (Lesser and Weiss, 2015). The occupational health of artists is also important because of the potential exposure of these workers to toxic chemicals in art materials, the tools and methods they use, and the unregulated settings in which they frequently perform their work (Glasbrenner, 1984). Artists often work for many hours using art materials in small and intensely contaminated work spaces, thereby exposing themselves and their families to potentially toxic materials (Glasbrenner, 1984; Grabo, 1997).

Speaking of precarious work, it is, in general (as stated by Srakar and Prevolnik Rupel, 2017a), an inherent feature and growing problem of the modern society, yet is hard to define precisely, as it is neither a statistical (see ESOPE, 2004) nor legal (see Gubenšek, 2013) category. An adequate definition was provided by ESOPE (2004) which defines precarious employment as »a variety of forms of employment (e.g. temporary employment, underemployment, quasi self-employment, on-call work) established below the socially accepted normative standards (typically expressed in terms of rights, of employment protection legislation, and of collective protection) in one or more respects (the four dimensions) which results from an unbalanced distribution towards and amongst workers (towards workers vs. employers, and amongst workers, which leads to the segmentation of labor) of the insecurity and risks typically attached to economic life in general and to the labor market in particular« (ibid.: 9).

In the extant literature, precarious work has been studied mainly in three types of aspects:

- gender equality (see e.g. Fudge et al., 2006; Bardasi and Gornick, 2008; Barker, 2005; Bettio et al., 2012; Jaumotte, 2003; Kjeldstad and Nyoem, 2012; Korpi, 2000; Maître, Whelan and Nolan, 2003; Matteazzi, Pailhé and Solaz, 2013; Nieuwenhuis, Need and van der Kolk, 2013; Pettit and Hook, 2005; Perrons et al., 2007; Stier and Mandel, 2009; Tomlinson, 2006);
- part-time work (Allaart and Bellmann, 2007; Anxo et al., 2007; Bardasi and Gornick, 2008; Booth and van Ours, 2013; Buddelmeyer, Mourre and Ward, 2004; O'Reilly and Fagan, 1998; Delsen, 1995; Comi and Grasseni, 2012);

- social rights (McKay et al., 2012; Rodgers and Rodgers, 1989; Standing, 2011; Besamusca, 2011; Seymour, 2011; EFFAT, 2011; International Labour Organisation, 2011; Malentachhi, 2012; Wilson, 2012; Tucker, 2002).

According to the literature, main features which generally characterize precarious work can be summarized as (Tucker, 2002; Cardoso et al., 2014; Rodgers and Rodgers, 1989):

- The job can be terminated with little or no prior notice by the employer;
- Hours of work are uncertain or can be changed at will by the employer;
- Earnings are uncertain or irregular;
- Functions of the job can be changed at will by the employer;
- There is no explicit or implicit contract for on-going employment;
- There is, in practice, no protection against discrimination, sexual harassment, unacceptable working practices;
- The job is low income – at or below the minimum wage.;
- There is little or no access to ‘standard’ non-wage employment benefits such as sick leave, domestic leave, bereavement leave or parental leave.;
- There is limited or no opportunity to gain and retain skills through access to education and training;
- The task performed or the health and safety practices in the workplace make the job unhealthy or dangerous.

There are many problems that precarious work and its growing spread bring to European societies but surprisingly few existing empirical studies (particularly related to health). It is usually assumed that precarious workers are de-privileged in most socio-economic and health conditions of living as compared to general population and regular employees (see e.g. ESOPE, 2004; Cardoso et al., 2014; Letourneux, 1998; Rodgers and Rodgers, 1989). An empirical study on characteristics of older precarious workers was done by Srakar (2015a), who found that several of the established claims on comparisons of (older, i.e. of age 50 or older) precarious workers and their conditions to the employees and general population do not hold firm when analyzed empirically. Also, Srakar and Prevolnik Rupel (2017a) analyzed the health of older precarious workers and determined two large and different groups by their income and health characteristics.

It is, therefore, our aim in this study to develop this analysis further and study the questions related to the labor market of precarious workers in the arts. When speaking about precarious workers in the arts,

at least in Slovenia, we are talking about self-employed artists². For them, actually, all of the features noted above hold – each bullet point (as demonstrated in several studies, see e.g. Društvo Asociacija, 2010; Društvo Asociacija, Open Chamber of Contemporary Art and Association of Slovenian Journalists, 2013; Srakar, 2015b). Their job can be terminated with little or no prior notice by the employer (i.e. the client, paying for their work on a regular basis). Their hours of work are uncertain or can be changed at will by the employer. Their earnings are uncertain and irregular. Functions of their job can be changed at will by the employer. There is no explicit or implicit contract for their on-going employment. There is, at least in practice, no protection against discrimination, sexual harassment, unacceptable working practices. Their job is low income, at or below the minimum wage. For them, there is little or no access to ‘standard’ non-wage employment benefits such as sick leave, domestic leave, bereavement leave or parental leave. For them, there is limited or no opportunity to gain and retain skills through access to education and training. The task performed or the health and safety practices at the workplace make their job unhealthy or dangerous.

In cultural economics, labor markets of artists have been the core topic ever since its beginnings, as evidenced by several influential articles in the field, e.g. Throsby (1994) and Blaug (2001). Ever since the start of cultural economics with the work of Baumol and Bowen (1966), the field of artists labor markets has received a major spring with the article of Sherwin Rosen on the economics of superstars (1981) and later replies of Adler (1985), Macdonald (1988) and Towse (1992). Empirical studies (e.g. Wassall in Alper, 1992; Throsby, 1992; Towse, 1992) have shown that artistic work is special in the artists having multiple occupations and in the education having a minor effect on the success of artists as it has in the other economic sectors. Artists also differ from the general population in different conditions of work: Throsby (1994) reports that in Australia, around 70 percent of artists work longer than the usual full working time, while in the US, only around 20-25 percent of them perform the artistic work for full working time, while the remaining of their day is dedicated to so-called humdrum (see Caves, 2000) activities.

Apart from multiple occupations, the feature of artistic work is also in strong non-artistic incentives, similarly is in most academic and scientific occupations. Among the characteristics, influencing the level of incomes in the arts are education, conditions of work and competences. Special role has talent – ever since the afore mentioned work of Rosen (1981), there is live and vibrant discussion on the

² We define self employment following Dawson et al. (2009), as "at one end entrepreneurial, single employee micro-businesses. A substantial body of research investigates the self-employed as entrepreneurs, using self-employment as an observable category which, albeit imperfectly, identifies the stock of entrepreneurial talent in the economy. At the other end this spectrum, self-employment may comprise a far less desirable state chosen reluctantly by individuals unable to find appropriate paid employment under current labour market conditions."

differences in talent, where the occurrence of superstars and "A-list/B-list" property (Caves, 2000) denotes the fact that very few artists have far greater incomes than the remaining large majority.

Despite the topic of artists' labor markets being among the prevalent topics in cultural economics, very few attention has been devoted to the health of the artists. To this reason, in the article, we want to study the health of self-employed artists. The study is an exploratory one, and we will mainly try to determine the main characteristics that determine the prevalence of individual diseases among the artists. Also, we will model and study the presence of multiple diseases, following an approach using network analysis, as developed recently by Srakar and Prevolnik Rupel (2017b). Finally, we will model the factors, influencing the health care utilization of the self-employed artists and explore the possible sources of heterogeneity among them, following the main features of the previously mentioned approach of Srakar and Prevolnik Rupel (2017a).

To this end, we will utilize a survey among self-employed, performed for the National Council for Culture of Slovenia in 2015 (see Plut et al., 2017). The study enables the study of many features of the economic, social and health situation of self-employed artists in Slovenia and has been so-far not used for scientific purposes. Methodologically, we will use econometric modelling (apart from most commonly used models like OLS, Probit and Poisson we will also model heterogeneity using latent class analysis) and network analysis (using a two-mode network analysis approach and clustering techniques, such as those in Doreian, Ferligoj and Batagelj (2005)).

2. Context – self-employed in culture and the arts in Slovenia

The field of self-employed in culture and the arts in Slovenia has been a hotly debated topic of recent years in Slovenian cultural policy which is evidenced by numerous articles and discussions in the media, several policy measures proposed or implemented and several research reports. For the latter, we can firstly mention a research, done in 2010 by a research group of Društvo Asociacija, which performed the research on the estimation of the costs of work of self-employed in culture, where they estimate that "in comparison with the employed in culture, self-employed are in an unequal or even discriminatory position regarding their invested work, length of daily work, workload and income, furthermore, they cannot claim many of the legal rights of the employees (sick leave, vacation leave, etc.)" (Društvo Asociacija, 2010: 15).

The Ministry of Culture financed two further studies in 2012 and 2013. The first one (Filozofska fakulteta in Ekonomska fakulteta Univerze v Ljubljani, 2012) states an important claim which to date determines the discussions on the improvements of the condition of the sector: according to the authors, "the state should take into account a two-level understanding of self-employed in culture and

the arts: 1) artist as a social subject with attributed social rights and security; and 2) artist as a creator with corresponding public infrastructure for enhancement of excellence in cultural/artistic sphere" (ibid.: 149). The second one was a legal comparison of existing systems in European countries (see Inštitut za primerjalno pravo pri Pravni fakulteti v Ljubljani, 2013), finishing with another important recommendation on the closing up of the economic and social conditions of work (e.g. social contributions) between self-employed and employed, by not neglecting the foundational differences in the nature of work of the two legal status forms.

Two further studies have emerged in the recent years, both done under the main auspice of Društvo Asociacija. The first one, done in 2012 (Društvo Asociacija, 2012), estimated the effects of the (at that time) upcoming changes in the Act on Self-Employed in Culture and predicted a large drop in the number of self-employed with paid social contributions by the ministry³. The second one, done one year later (Društvo Asociacija, Open Chamber for Contemporary Art and Association of Slovenian Journalists, 2013), estimated the effects of the 2012' changes in income tax and pensionary legislation and, again, estimated significant problems and financial drawbacks for the field of self-employed workers in general – based on this study, several measures were newly implemented, among them the (disputed) so-called "pocket money" for self-employed in culture, where each self-employed can apply once in three years for a yearly sum of ca. 1,500.00 EUR to cover his/her work expenses and new projects.

Some of the main features of the system are presented in tables 1-3. Table 1 presents the prevalence of legal forms of organizations in the arts, including corporate and physical legal subjects. A notable trend which can be observed here is a significant rise in the number of freelance entrepreneurs individuals, almost doubling in the period 2008-2014. On the other hand, number of self-employed (both journalists, which are in Slovenia under the auspice of the Ministry of Culture, and artists) has been stagnating, although more recent data (not included as they have not yet been published in an official report to our knowledge) point to a drastic rise in the number of self-employed in culture and the arts as well in 2015 and 2016, which still opens up a space for much needed and correct interpretations which are not the subject of this article.

Table 1: Prevalence of legal forms of artistic organizations in public and private sector

Legal Form	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------

³ A feature of the Slovenian system of self-employed in culture and the arts is that each registered self-employed artist with yearly income under a pre-specified census can apply for the payment of his social contributions at a certain (relatively low) level by the fund of the Ministry of Culture, in 2015 there were 1,693 self-employed with such payments (approximately 69% of the total number of registered self-employed in culture and the arts, see Ministry of Finance, 2017).

Public institutions, endowments and agencies	236	244	248	251	253	252	251
Private companies	2,644	2,798	2,858	2,929	2,988	3,043	3,090
Freelance entrepreneurs individuals	3,634	4,306	4,846	5,260	5,439	6,168	6,868
NGO's – legal subjects of private law	354	411	474	522	546	582	625
Associations	607	606	599	619	618	625	627
Self-employed journalists	409	357	329	283	262	229	247
Self-employed in culture	2,436	2,403	2,403	2,421	2,278	2,218	2,291
Other	14	14	16	15	11	10	13
Total	10,336	11,141	11,775	12,302	12,395	13,127	14,012

Source: Srakar, 2015b.

Table 2 presents a comparison of the level of wages for public and private sectors in Slovenia. The previously pointed weaker position of self-employed as compared to employees is visible. Both the average and the median yearly incomes of self-employed in culture and the arts in 2009-2011 were significantly below the average Slovenian wage and even further below the average wages of employees in private and public sector in culture and the arts.

Table 2: Monthly wages in the cultural sector in Slovenia

Year	Public and private legal subjects in culture and the arts - joint	Public legal subjects in culture and the arts	Private legal subjects in culture and the arts	Self-employed in culture - average	Self-employed in culture - median	Average Slovenian monthly wage	Minimal Slovenian monthly wage
2000	990.01	-	-	-	-	-	-
2001	1,095.10	-	-	-	-	-	-
2002	1,198.75	-	-	-	-	-	-
2003	1,275.85	-	-	-	-	-	-
2004	1,348.28	-	-	-	-	-	-
2005	1,358.71	1,398.31	1,311.96	-	-	-	-
2006	1,399.93	1,445.64	1,350.81	-	-	1,207.49	538.53
2007	1,471.91	1,491.97	1,452.53	-	-	1,277.00	566.53
2008	1,594.37	1,644.38	1,549.19	-	-	1,383.16	589.19
2009	1,662.14	1,765.56	1,570.58	1,214.24	1,009.18	1,437.06	597.43
2010	1,694.90	1,795.17	1,603.96	1,173.87	1,042.16	1,490.63	734.15
2011	1,689.81	1,784.71	1,600.37	1,171.40	1,038.66	1,523.47	748.10
2012	1,659.11	1,773.97	1,542.90	-	-	1,527.29	763.06
2013	1,622.58	1,728.23	1,511.82	-	-	1,522.46	783.66
2014	1,615.21	1,729.59	1,494.09	-	-	1,538.59	789.15

Source: Srakar, 2015b.

Table 3 presents the inequality and poverty measures for self-employed in culture and the arts in Slovenia. We can observe quite a large Gini coefficient (above 0.4, for thresholds on this see e.g.

Atkinson and Brandolini, 2010; Milanovic, 2016) which is not very surprising based on the previously presented general findings from the literature. Interestingly, Gini coefficient (and most of other measures of inequality) was falling in the period 2009-2011, confirming some of the more general and recent findings on the dynamics of the income inequality in Slovenia in times of the financial crisis (Stanovnik and Verbič, 2013; Srakar and Verbič, 2015). Poverty measures confirm the high level of self-employed in culture and the arts under the poverty line⁴ - a significantly higher percentage than is the Slovenian average.

Table 3: Inequality and poverty among the self-employed in culture and the arts in Slovenia

	2009	2010	2011
Relative deviation in averages	0.3136	0.2886	0.2836
Coefficient of variation	1.2889	0.9531	1.0914
Gini coefficient	0.4564	0.4219	0.4131
Mehran coefficient	0.6135	0.5796	0.5707
Piesch coefficient	0.3779	0.3431	0.3343
Kakwani coefficient	0.1850	0.1623	0.1576
Theil index	0.3698	0.2771	0.2724
Poverty risk threshold (in EUR)	7,118.00	7,042.00	7,199.00
Risk of poverty in Slovenia in general (%)	11.30%	12.70%	13.60%
Risk of poverty among the self-employed in culture and the arts in Slovenia (%)	29.93%	27.81%	26.72%

Source: Srakar, 2015b.

3. Data and method

The data we use are derived from the study on self-employed in culture, done under the auspice of National Council for Culture in 2015. The study was based on a web-based survey, encompassing a final sample of 589 respondents. The questionnaire of the survey encompassed over 100 questions, structured in several main modules: basic socio-economic data; opinions on the performance of the Ministry of Culture – level of social contributions, legal acts, etc; opinions on the representative organizations in the sector; cooperation with different types of legal subjects (public, private, NGO) in culture and the arts; importance of different types of public revenue sources; provision of accounting, taxes and pensions; health and material deprivation of respondents; advantages and disadvantages of having a status of self-employed in culture and the arts.

⁴ The percentages for self-employed, living under the poverty line, have been calculated under the assumption of all self-employed living in a one-person household, due to the unavailability of more detailed data.

Some basic characteristics of the sample are resumed in Table 4. We can see that about 60% of respondents are female, the respondents are largely tertiary educated⁵, they have predominantly low incomes⁶, mainly live in urban areas, and most of them come from the fields of Visual Arts, Books, Media and Audiovisual Culture and Performing Arts. Much fewer come from the fields of Music (we could explain this by the existence of large public institutions and orchestras in the field of music which employ the musicians on permanent/non-self-employed basis), Intermedia Arts and Cultural Heritage.

Table 4: Basic characteristics of the sample

	%	n
Gender (Female)	59.62	341
Education, Primary	0.77	4
Education, Secondary	11.15	58
Education, Tertiary	88.08	458
Income, Low	55.83	230
Income, Middle	37.14	153
Income, High	7.04	29
Urban/Rural	88.00	396
Books	31.16	148
Archit	22.74	108
PerfArts	26.11	124
Music	16.00	76
VisArts	32.21	153
InterArts	15.16	72
MedAudioV	30.74	146
CultHerit	11.58	55
	Average	Median
Age	43.24	42

Source: Own elaboration.

Table 5 shows the prevalence of diseases by artistic sector in our sample⁷. The most prevalent diseases are Pain in the back or other chronic malfunction (most prevalent among the architects, media and

⁵ We transformed here the answers to original question on educational level of the respondent from the questionnaire as follows: answer 1 (primary school) was left as code 1/primary education; answers 2 and 3 (2-year or 3-year occupational secondary school; and 4-year secondary school and gymnasium) were coded as 2/secondary education; while all the rest (with higher education than response answer 3) were coded as 3/tertiary education. In the regression analysis we pooled the categories 1 and 2 due to small size of the sample, leaving only two categories, 0 – non-tertiary education and 1 – tertiary education.

⁶ We transformed here the answers to original question on income the of respondent from the questionnaire as follows: respondents with income levels up to 10,000.00 EUR were coded as low income category; respondents with income levels from 10,000.01 EUR up to 20,000.00 EUR were coded as middle income category; and respondents with income levels higher than 20,000.00 EUR were coded as high income category. In setting the thresholds, we followed some descriptions and information of incomes of self-employed from the existing secondary literature, noted in the article.

⁷ The abbreviations denote: Asthma – Asthma (including allergic asthma); ChronBronch – Chronic bronchitis, chronic obstructive pulmonary disease, emphysema; HeartAttack – Heart attack (myocardial infarction); CoronHeartDis – Coronary heart disease (angina pectoris); BloodPres – Increased blood pressure (hypertension); Stroke – Stroke (brain stroke, brain thrombosis); RheumArth – Rheumatoid arthritis (inflammation of the joints); OsteoArth – Osteoarthritis (arthrosis, degenerative joint disorders); PainBack – Pain in the back or other chronic malfunction; PainNeck – Pain in the neck or other chronic neck injury; Diabetes – Diabetes; Allergy – Allergy, such as rhinitis, eye inflammation, dermatitis, food allergy, or other; Ulcer – Gastric or duodenal ulcer (ulcer); LiverCirr – Hepatic cirrhosis, liver function disorders; Cancer – Cancer (malignant tumor, including leukemia

audiovisual artists and literary artists, and least among musicians); Allergy, such as rhinitis, eye inflammation, dermatitis, food allergy, or other (most prevalent among media and audiovisual artists, musicians, literary artists and architects, and least among visual artists); Pain in the neck or other chronic neck injury (most prevalent among media and audiovisual artists and architects, and least among musicians and intermedia artists); and Asthma, including allergic asthma (most prevalent among musicians, literary and performing artists, and least among intermedia and media and audiovisual artists).

As shown below (and supported by the results of regressions in Tables 6 and 7), we could identify typical (most prevalent) diseases for each group of artists as the following:

- Books: Ulcer; Urinary retention disorders; Chronic anxiety; Other mental problems;
- Architecture and Design: Rheumatoid arthritis; Pain in the back or other chronic malfunction; Permanent damage or damage due to an accident;
- Performing Arts: Diabetes; Chronic depression; Other mental problems;
- Music: Asthma; Chronic depression;
- Visual Arts: Increased blood pressure; Osteoarthritis;
- Intermedia arts: Chronic bronchitis; Strong headache, migraine;
- Media and Audiovisual Culture: Pain in the neck or other chronic neck injury; Diabetes; Allergy;
- Cultural Heritage: Heart attack; Increased blood pressure; Stroke; Cancer.

The basic interpretation could argue that literary and performing artists (including musicians) are more prone to mental diseases, while, in particular, architects and designers, visual artists and media and audiovisual artists are more exposed to diseases related to physical condition (e.g. pain the back, pain in the neck, arthritis). This could be related to heavier working conditions of the latter, being much more exposed to working with dangerous materials (liquids, pigments, solvents, etc. – see e.g. Žuskin et al., 2007) and in more demanding physical conditions.

Table 5: Prevalence of diseases by artistic sector

	Books	Archit	PerfArts	Music	VisArts	IntermArts	MedAudioV	CultHerit
Asthma	15.38%	10.00%	13.11%	15.79%	10.13%	8.57%	9.84%	10.71%
ChronBronch	6.41%	8.33%	6.56%	10.53%	7.59%	11.43%	4.92%	10.71%
HeartAttack	0.00%	0.00%	1.64%	2.63%	1.27%	2.86%	1.64%	3.57%
CoronHeartDis	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BloodPres	10.26%	16.67%	6.56%	10.53%	15.19%	5.71%	9.84%	17.86%

and lymphoma); HeadMigr – Strong headache, migraine; UrinDis – Urinary retention disorders, problems with the functioning of the urinary bladder; ChronAnx – Chronic anxiety; ChronDepr – Chronic depression; OtherMentDis – Other mental problems; PermDamgDis – Permanent damage or damage due to an accident.

Stroke	0.00%	0.00%	1.64%	2.63%	1.27%	2.86%	1.64%	3.57%
RheumArth	3.85%	8.33%	0.00%	0.00%	1.27%	0.00%	1.64%	7.14%
OsteoArth	3.85%	5.00%	4.92%	5.26%	7.59%	5.71%	4.92%	10.71%
PainBack	35.90%	36.67%	32.79%	28.95%	32.91%	31.43%	36.07%	32.14%
PainNeck	15.38%	20.00%	13.11%	10.53%	16.46%	11.43%	22.95%	14.29%
Diabetes	2.56%	0.00%	4.92%	2.63%	2.53%	5.71%	6.56%	3.57%
Allergy	28.21%	28.33%	26.23%	28.95%	17.72%	22.86%	31.15%	21.43%
Ulcer	11.54%	6.67%	6.56%	7.89%	3.80%	2.86%	8.20%	0.00%
LiverCirr	0.00%	1.67%	1.64%	0.00%	1.27%	0.00%	3.28%	0.00%
Cancer	3.85%	5.00%	4.92%	5.26%	3.80%	2.86%	3.28%	7.14%
HeadMigr	12.82%	18.33%	14.75%	5.26%	12.66%	20.00%	4.92%	7.14%
UrinDis	3.85%	1.67%	0.00%	0.00%	2.53%	0.00%	1.64%	3.57%
ChronAnx	11.54%	3.33%	4.92%	7.89%	6.33%	11.43%	6.56%	3.57%
ChronDepr	7.69%	3.33%	11.48%	18.42%	2.53%	8.57%	8.20%	3.57%
OtherMentDis	11.54%	5.00%	9.84%	7.89%	5.06%	11.43%	9.84%	3.57%
PermDamgDis	2.56%	6.67%	1.64%	5.26%	5.06%	2.86%	3.28%	3.57%

Source: Own calculations.

The methods we use are econometric modelling and network analysis. For the first, we use basic probit (for modeling the determinants of the prevalence of diseases) and Poisson (for modeling the health care utilization) models, while also using models from latent class analysis, namely finite mixture models, to appropriately model the heterogeneity in the sample, which is likely to arise due to significant inequality among self-employed artists, noted both in the extant literature findings as well as in the empirical results of the existing studies for Slovenia.

The main mathematical forms for the econometric equations we estimate are, therefore, the following:

$$\Pr(Y = 1|X) = \Phi(X'\beta) \quad (1)$$

$$\Pr(Y = y|\mu, t) = \frac{e^{-\mu t}(\mu t)^y}{y!} \quad (2)$$

for the, respectively, probit and Poisson regression, while a finite mixture model is a (convex) combination of two or more probability density functions. By combining the properties of the individual probability density functions, mixture models are capable of approximating any arbitrary distribution (Gesteira Costa Filho, 2008). A probability density function of a mixture model is defined by a convex combination of K component probability density functions:

$$p(x|\Theta) = \sum_{k=1}^K \alpha_k p_k(x|\theta_k) \quad (3)$$

where $p_k(x|\theta_k)$ is the pdf of the k th component, k are the mixing proportions (or component priors) and $\Theta = (\alpha_1, \dots, \alpha_K, \theta_1, \dots, \theta_K)$ is the set of parameters, with α_k being non-negative and summing to one.

For a given data X with N observations, the likelihood of the data assuming that x_i are independently distributed is given by:

$$P(X|\Theta) = \mathcal{L}(\Theta|X) = \prod_{i=1}^N \sum_{k=1}^K \alpha_k p_k(x_i|\theta_k) \quad (4)$$

The problem of mixture estimation from data X can be formulated as to find the set of parameters Θ that gives the maximum likelihood estimate (MLE) solution:

$$\Theta^* = \arg \max_{\Theta} \mathcal{L}(\Theta|X) \quad (5)$$

Finally, we use network analysis to model the presence of multiple diseases (i.e. to explore which diseases are most likely to appear jointly when speaking about self-employed in our sample). We model multiple diseases as a two-mode network analysis problem, following recent elaboration in Srakar and Prevolnik Rupel (2017b), where one mode is the diseases and the second mode the individuals, having them. Using software package Pajek, we transform such network into a final, one-mode network, including only the connections between the diseases, where the width of the lines represents the frequency of connections. We also use clustering techniques developed for network analysis: Louvain and VOS clustering, explained in more detail in De Nooy, Mrvar and Batagelj (2005). As described in Emmons et al. (2016), the Louvain algorithm is one of the first scalable methods to build on Newman-Girvan modularity maximization. It is a hierarchical agglomerative method that takes a greedy approach to local optimization. The algorithm is based on two steps. In the first step, the algorithm iterates over the nodes in the graph and assigns each node to a community if the assignment will lead to an increase in modularity. In the second step, the algorithm creates super-nodes out of the clusters found in the first step. The process repeats iteratively, always using the base-graph to compute the gains in modularity.

On the other hand, VOS (visualization of similarities) clustering technique proposed for the first time by Van Eck and Waltman (2007; 2009; 2010). As described in Meligy et al. (2015), the communities obtained by VOS clustering are similar but not the same as the ones obtained by the Louvain method, since in Louvain method modularity is optimized while in VOC clustering VOS quality function is optimized. The quality function V of VOS technique is:

$$V = \frac{1}{2m} \sum_{i,j} [s_{ij} - \gamma] \delta(C_i, C_j) \quad (3)$$

where:

m – the total number of edges in a network;

s_{ij} – the association strength between vertex i and j ;

γ – resolution parameter;

δ – a function, which yields 1 if vertices are in the same community, and 0 otherwise;

C – respective community.

In the analysis, the following variables from the original dataset are included:

- Gender: binary variable, having the value of 1 for females and 0 for males;
- Age (and AgeSq): age of respondent and age squared;
- EducTert: binary variable, having the value of 1 for respondents with tertiary education and 0 for those without it;
- IncMid: middle level of income, see footnote 5;
- IncHigh: high level of income, see footnote 5;
- Urban: binary variables, having the value of 1 for respondents, living in urban areas and 0 for those in rural;
- Diseases: number of diseases, the respondent has been diagnosed in his past;
- GALI: so called "true" limitations indicator, as an answer to the question "To what extent have you been in the last 6 months or before limited in your daily activities due to your health problems?", where the value of 1 denotes the answers "severely limited" and "limited" and 0, "not limited";
- SubjHea: subjective health assesment, on the scale of 1 to 5, where 1 means excellent and 5 poor;
- SocExcl: "index of social exclusion", i.e. the sum of the answers to all of the questions on material deprivation;
- SavePens: binary variable, having the value of 1 if the respondent saves for his pension, and 0 if not;
- ChoiceSelfE: binary variables, having the value of 1 if the respondent chose the self-employed status on his own will, and 0 if not;
- ProjTot: total number of projects, the respondent has been engaged in the past 5 years (including public institutions, NGO's and private companies);

- WorkReg: binary variable, having the value of 1 if the respondent has regular subscribers to his/her work; and 0 if not;
- YearsPens: years, the respondent has until his pension (subjective assesment);
- YearsWork: years, still able to work for the respondent in his occupation;
- Sectors of respondent's art activity: Books – literary activity; Archit – architecture and design; PerfArts – performing arts; Music – music; VisArts – visual arts; InterArts – Intermedia Arts ; MedAudioV – media and audiovisual culture; CultHerit – cultural heritage.

4. Results – determinants of the prevalence of diseases

In Table 6 we present the modelling of determinants of individual diseases (all of the models are Probit). Included are the variables from the dataset, which are assumed to influence the prevalence of an individual disease. Most of the models show relatively solid fit, although the models for Asthma, Chronic bronchitis, Pain in the neck in Table 6 and Cancer, Urinary retention disorders and Permanent damage or damage due to an accident do not show sufficient level of fit to provide any meaningful conclusions.

Let's shortly review the main determinants found:

- For BloodPres – Increased blood pressure (hypertension): tertiary education has a positive impact (increases the risk for high blood pressure), which could be explained by the people ith higher levels of education accepting also jobs and tasks with higher risk and, therefore, higher prevalence of certain related health problems; also: decision for self-employment done voluntarily has a negative impact which is surely a sign that respondents having more control over their lives are also the ones with lower blood pressure;
- RheumArth – Rheumatoid arthritis (inflammation of the joints): this disease is significantly related to age – the risk of it increases with age and decreases in older age (approximately after the age of 57); it is also related to social exclusion – the more the respondent is materially deprived, the more is his risk of rheumatoid arthritis.
- OsteoArth – Osteoarthritis (arthrosis, degenerative joint disorders): this disease is more prevalent among women, which fits into the medical literature; and has a negative relationship to education, which is again in line with the growing literature on the effects of education on health (see e.g. Brunello et al., 2012; Schneeweis et al., 2012; Mazzonna, 2012).
- PainBack – Pain in the back or other chronic malfunction: more prevalent among men; has again the characteristic U shape in relationship to age (growing in prevalence until ca. 49 years of age and decreasing since); and being positively related to education and income; again, pain in the back is less prevalent among the respondents, choosing the status of self-

employed voluntarily; and it is more prevalent among the architects and designers and media and audiovisual artists.

- PainNeck – Pain in the neck or other chronic neck injury: the relationships we find are related to age (increasing until ca. 43 years and decreasing since); and sector: media and audiovisual artists have a higher prevalence of this disease.
- Diabetes: the main relationships we find are related to the sector of activity – diabetes is more prevalent among the performing, intermedia and media and audiovisual artists.
- Allergy – Allergy, such as rhinitis, eye inflammation, dermatitis, food allergy, or other: related to income, the higher classes have a lower prevalence of this disease; and to sectors: literary artists and musicians have a higher prevalence of it and visual artists a lower.

Table 6: Determinants of the prevalence of the diseases, first part

	Asthma	ChronBronch	BloodPres	ReumArth	OsteoArth	PainBack	PainNeck	Diabetes	Allergy
Gender	0.17	0.09	-0.23	-0.82	0.99 ***	-0.50 ***	0.13	-0.03	0.24
Age	0.00	0.56 **	0.05	2.20 *	0.19	0.25 ***	0.16 *	-0.07	-0.05
AgeSq	0.00	-0.01 **	0.00	-0.02 *	0.00	-0.00 ***	-0.00 **	0.00	0.00
EducTert	0.29	0.68	0.81 *	0.08	-1.11 ***	0.88 ***	0.36		0.07
IncMid	0.02	-0.01	-0.06	1.51	0.13	0.34 **	0.27	-0.91	-0.01
IncHigh	0.74 *	-0.76	-0.54	1.07		-0.03	-0.69		-0.71 *
Urban	0.14	0.08	0.57	-1.00	-0.06	0.03	-0.25	-0.63	0.16
SocExcl	-0.12 *	-0.11	0.00	1.09 **	-0.10	0.07	-0.02	-0.03	-0.02
SavePens	0.66 **	0.47	0.00	1.05	-0.09	-0.04	0.17	0.19	0.00
ChoiceSelfE	0.41 *	-0.18	-0.42 **	-1.48	0.41	-0.29 *	0.10	-0.80	0.13
ProjTot	0.00	0.00	-0.01	-0.03	-0.01	0.00	0.00	0.00	0.00
WorkReg	0.01	-0.26	-0.18	-4.34	-0.08	-0.15	-0.14	0.96	0.18
YearsPens	0.01	-0.02	-0.01	0.10	0.02	-0.01	-0.02	-0.04	-0.01
YearsWork	-0.02	0.01	0.00	0.03	-0.01	-0.01	-0.01	-0.07	0.00
Books	0.43 **	0.29	0.01	1.46	-0.12	0.12	-0.18	0.06	0.32 **
Archit	0.25	0.34	0.33	1.26	-0.29	0.38 **	0.07		0.22
PerfArts	0.15	-0.12	0.05		-0.04	0.14	-0.18	1.10 *	-0.03
Music	0.37	0.62 *	0.41		0.38	0.30	-0.17	-1.52	0.32 *
VisArts	0.04	0.03	0.03	-0.69	0.08	0.19	-0.06	-0.10	-0.29 *
IntermArts	-0.25	0.20	-0.25		0.10	-0.08	0.11	1.29 *	0.26
MedAudioV	-0.30	-0.33	0.09	-1.78	0.09	0.31 **	0.37 **	1.25 *	0.10
CultHerit	0.11	0.16	0.09	0.83	0.44	-0.29	0.10	0.02	-0.24
Constant	-3.79	-15.57 ***	-4.66 *	-72.35 *	-6.19	-7.79 ***	-4.66 *	0.50	0.09
Nr. Obs.	474	474	474	277	433	474	474	296	474
LR Chi 2	28.69	24.13	37.20 **	45.80 ***	35.48 **	62.68 ***	29.24	36.50 ***	26.17
Log Likelihood	-102.80	-64.46	-123.27	-13.34	-53.96	-238.99	-163.48	-18.53	-227.12
Pseudo R2	0.1225	0.1576	0.1311	0.6319	0.2474	0.1159	0.0821	0.4963	0.0545

Source: Own calculations. Asterisks denote statistical significance: *** – 1%; ** – 5%; * – 10%.

Table 7 shows the determinants of the second section of diseases. Again, we summarize it by points:

- Ulcer – Gastric or duodenal ulcer (ulcer): an U relationship to age (the turn point is at ca. 53 years); negatively related to more work pressure (more projects under work); negatively related to the years remaining to work in present occupation; and more prevalent among the literary artists.

- HeadMigr – Strong headache, migraine: more prevalent among women, again by the medical literature; adversely related to workload (number of projects under work); and less probable among musicians and media and audiovisual artists.
- ChronAnx – Chronic anxiety: more prevalent among female self-employed artists; positively related also to social exclusion (the more excluded have a higher probability of it); less probable among the people, choosing the self-employed status voluntarily; negatively related to the years remaining to work (which could be related to the fear of (uncertain, for self-employed artists) retirement); and less prevalent among the architects and designers.
- ChronDepr – Chronic depression: positively/adversely related to social exclusion; again negatively related to the years remaining to work (with probably the same explanation as above: related to the fear of (uncertain, for self-employed artists) retirement); and less prevalent among the visual artists.
- OtherMentDis – Other mental problems: more prevalent among men; among rural population; and among literary and performing artists.

Table 7: Determinants of the prevalence of the diseases, second part

	Ulcer		Cancer		HeadMigr		UrinDis		ChronAnx		ChronDepr		OthMentDis		PermDmgDis
Gender	-0.16				0.66	***	-0.03		0.54	**	-0.17		-1.02	***	-0.16
Age	0.29	**	0.26		0.02		0.13		0.03		0.10		0.17		0.47
AgeSq	-0.00	**	0.00		0.00		0.00		0.00		0.00		0.00		-0.01
EducTert	-0.28				-0.33				0.14		0.43		0.54		-0.29
IncMid	-0.16		-0.43		-0.19		-0.51		-0.21		0.35		-0.08		-0.25
IncHigh					-0.39				0.63		-0.09				
Urban	-0.04		0.02		0.46		-0.55		0.01		-0.12		-0.71	**	
SocExcl	-0.13		0.26	**	-0.02		0.16		0.20	***	0.15	*	0.12		0.11
SavePens	0.33		-0.50		-0.11		0.39		0.12		0.15		-0.26		0.60
ChoiceSelfE	-0.08		-0.57		-0.09		0.19		-0.46	**	0.16		0.08		0.29
ProjTot	-0.03	**	-0.01		-0.02	*	0.01		-0.01		0.00		0.00		0.00
WorkReg	0.06		0.26		0.00		0.05		0.10		-0.06		0.01		-0.87
YearsPens	0.02		-0.01		0.01		-0.03		0.02		-0.02		0.00		-0.03
YearsWork	-0.05	***	-0.02		-0.01		0.00		-0.02	*	-0.04	***	-0.01		0.01
Books	0.46	*	0.05		0.07		0.38		0.25		0.14		0.77	***	-0.14
Archit	-0.12		0.08		-0.09		-0.33		-0.58	*	-0.34		0.39		0.60
PerfArts	-0.01		0.16		0.10		-0.29		-0.31		-0.14		0.66	**	-0.12
Music	-0.03		0.47		-0.76	**			-0.02		0.44		-0.29		0.85
VisArts	-0.51		-0.07		-0.32		-0.32		-0.33		-0.89	***	-0.22		0.36
IntermArts	-0.39		-0.64		0.38		-0.12		0.01		0.02		0.26		-0.60
MedAudioV	-0.01		-0.71	*	-0.36	*	0.55		-0.12		0.13		0.40		0.22
CultHerit			-0.05		-0.30		0.16		-0.26		0.04		-0.90		-0.11
Constant	-7.57	**	-5.26		-1.07		-4.71		-3.81		-3.42		-5.87		-12.62
Nr. Obs.	382		246		474		334		474		474		433		377
LR Chi 2	40.97	***	23.47		42.19	***	17.34		37.45	**	34.82	**	36.71	**	21.13
Log Likelihood	-77.08		-47.46		-157.01		-39.69		-101.03		-80.48		-62.68		-35.60
Pseudo R2	0.2100		0.1983		0.1184		0.1792		0.1564		0.1779		0.2265		0.2289

Source: Own calculations. Asterisks denote statistical significance: *** – 1%; ** – 5%; * – 10%.

5. Results – multiple diseases groupings

Next, we model the multiple diseases as groupings of most prevalently connected diseases for the self-employed artists. To this end, we employ clustering techniques for network analysis data.

Figure 1 shows the frequencies of connections between the diseases. It can be seen that the highest frequencies can be observed for the connections between PainBack and PainNeck; Allergy and HeadMigr; Allergy and PainBack; Allergy and Asthma; and Allergy and PainNeck.

Figure 1: Frequencies of connections between diseases

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Label
1.	0	4	0	0	2	0	0	3	9	4	0	12	4	0	1	6	0	4	3	2	0	Asthma
2.	4	0	0	0	3	0	0	1	3	2	0	4	0	0	0	3	0	0	0	0	0	CronBronch
3.	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	HeartAttack
4.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	CoronHeartDis
5.	2	3	1	0	0	1	1	2	6	5	3	5	1	1	1	6	1	3	2	0	0	BloodPres
6.	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	Stroke
7.	0	0	0	0	1	0	0	1	3	1	0	1	0	0	1	0	0	0	0	0	1	ReumArth
8.	3	1	0	0	2	0	1	0	4	5	0	3	3	0	0	4	0	3	1	0	0	OsteoArth
9.	9	3	0	0	6	0	3	4	0	21	1	14	7	0	1	7	3	6	7	5	3	PainBack
10.	4	2	0	0	5	0	1	5	21	0	1	10	4	0	1	7	1	4	8	2	1	PainNeck
11.	0	0	1	0	3	1	0	0	1	1	0	0	1	1	0	1	0	2	1	1	0	Diabetes
12.	12	4	0	0	5	0	1	3	14	10	0	0	3	1	1	15	2	5	7	5	2	Allergy
13.	4	0	0	0	1	0	0	3	7	4	1	3	0	0	0	4	0	5	4	5	0	Ulcer
14.	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	LiverCyr
15.	1	0	0	0	1	0	1	0	1	1	0	1	0	0	0	2	0	0	1	0	1	Cancer
16.	6	3	0	0	6	0	0	4	7	7	1	15	4	1	2	0	1	8	7	2	3	HeadMigr
17.	0	0	0	0	1	0	0	0	3	1	0	2	0	0	0	1	0	1	2	0	0	UrinDis
18.	4	0	0	0	3	0	0	3	6	4	2	5	5	1	0	8	1	0	9	4	0	ChronAnx
19.	3	0	0	0	2	0	0	1	7	8	1	7	4	0	1	7	2	9	0	4	0	ChronDepr
20.	2	0	0	0	0	0	0	0	5	2	1	5	5	0	0	2	0	4	4	1	0	OtherMentDis
21.	0	0	0	0	0	0	1	0	3	1	0	2	0	0	1	3	0	0	0	0	0	PermDmgDis

Source: Own calculations.

To decide on the number of clusters we follow the information, provided by the Cramers' V statistic, Rajski's Index, and Adjusted Rand Index. We use two methods of clustering for network analysis (Louvain and VOS) and compare the solutions for four chosen resolution parameters. As can be seen from Table 8, the highest correlation (Rajski's Index) is achieved for the VOS clustering method with resolution parameter 1.05, which is, therefore, also our choice for the analysis.

Table 8: Decision table for number of clusters

	Nr. of Clusters	Modularity	VOS Quality	Cramer's V	Rajski's Index	Adjusted Rand Index
Louvain, resolution: 1.0	5	0.0733		0.9592	0.6554	0.6031
Louvain, resolution: 1.05	5	0.0595		0.8969	0.6661	0.6363
Louvain, resolution: 1.1	5	0.0466		0.9322	0.7736	0.7322
Louvain, resolution: 1.2	5	0.0179		0.9369	0.7322	0.6853
VOS, resolution: 1.0	5		0.5836	0.9411	0.7992	0.7431
VOS, resolution: 1.05	6		0.5759	0.9411	0.8037	0.7320
VOS, resolution: 1.1	6		0.5701	0.9466	0.7370	0.6977
VOS, resolution: 1.2	7		0.5596	0.9416	0.7765	0.6841

Source: Own calculations.

This solution provides for 6 clusters, visually presented in Figure 2. The final clusters of diseases we include in the analysis are, therefore:

Cluster 1: Asthma – Asthma (including allergic asthma); ChronBronch – Chronic bronchitis, chronic obstructive pulmonary disease, emphysema; Allergy – Allergy, such as rhinitis, eye inflammation, dermatitis, food allergy, or other;

Cluster 2: HeartAttack – Heart attack (myocardial infarction); BloodPres – Increased blood pressure (hypertension); Stroke – Stroke (brain stroke, brain thrombosis); Diabetes – Diabetes; LiverCirr – Hepatic cirrhosis, liver function disorders;

Cluster 3: CoronHeartDis – Coronary heart disease (angina pectoris);

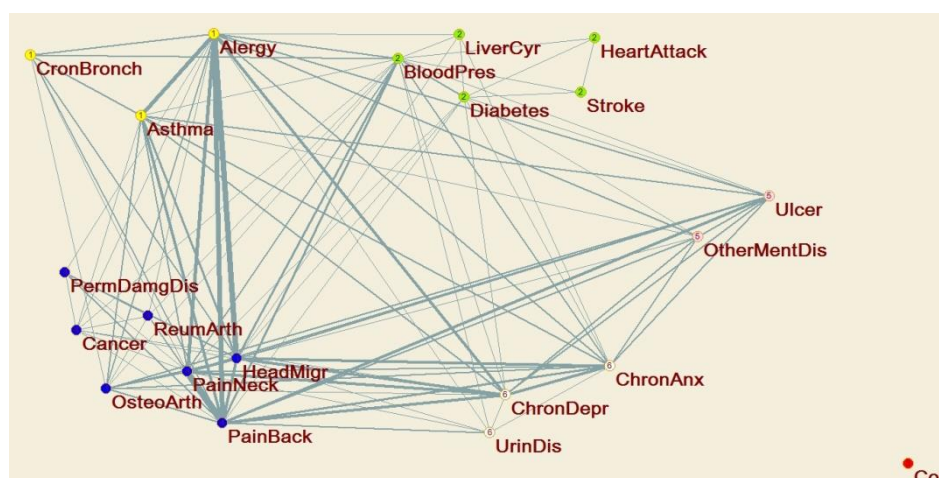
Cluster 4: RheumArth – Rheumatoid arthritis (inflammation of the joints); OsteoArth – Osteoarthritis (arthrosis, degenerative joint disorders); PainBack – Pain in the back or other chronic malfunction; PainNeck – Pain in the neck or other chronic neck injury; Cancer – Cancer (malignant tumor, including leukemia and lymphoma); HeadMigr – Strong headache, migraine; PermDamgDis – Permanent damage or damage due to an accident;

Cluster 5: Ulcer – Gastric or duodenal ulcer (ulcer); OtherMentDis – Other mental problems;

Cluster 6: UrinDis – Urinary retention disorders, problems with the functioning of the urinary bladder; ChronAnx – Chronic anxiety; ChronDepr – Chronic depression.

Mainly, the groupings of diseases are related to what would be expected from the medical theory. The diseases, such as asthma, bronchitis, and allergy; heart attack, blood pressure, stroke and diabetes; rheumatoid arthritis, osteoarthritis, pain in the back, and pain in the neck; and mental diseases and malfunctions group together. Some disease with a very small number of responses, like hepatic cirrhosis, liver function disorders, and coronary heart disease, are outliers, but this should be taken into consideration with the limitations of the sample.

Figure 2: Groupings of diseases, VOS method of clustering, resolution parameter set to 1.05.



Source: Own calculations.

6. Results – determinants of health care utilization

Finally, we model the determinants of health care utilization among the self-employed. To this end, we use two variables from the original dataset: a number of taken sick leaves; and number of visits to medical doctor (both are of course count variables). We expect a significant heterogeneity in the dataset due to inequality among the artists (the presence of so-called "A-list/B-list property" of Richard Caves and/or "superstars" of Sherwin Rosen). Therefore, we model the regression using finite mixture models and due to the count nature of the variables, use Poisson mixing distributions.

The results of the first modelling are presented below. Interestingly, they strongly confirm the existence of two groups in the sample, where one is a very large one (Component 1), being characterized by strong relationship to the health variables (in this group, the respondents with more prevalence of diseases, more GALI limitations and worse subjective assessment of health also have a significantly higher utilization of health services); and the second being much smaller in size, but being characterized by significantly more influence of other characteristics like social exclusion, saving for pensions, and sectorial/occupational memberships. Indeed, this observation holds for both health utilization variables – number of taken sick leaves and number of visits to the medical doctor.

Table 9: Modelling heterogeneity in health care utilization, finite mixture models, no cluster effects

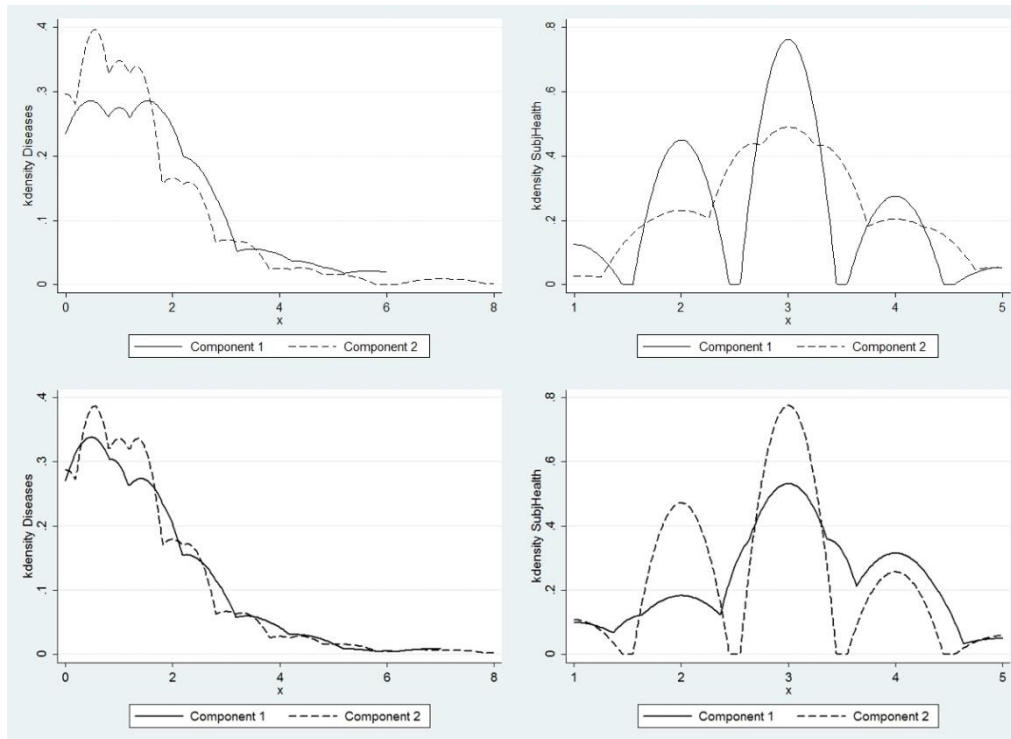
	Number of taken sick leaves						Number of visits to medical doctor					
	Component 1			Component 2			Component 1			Component 2		
	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.
Gender	0.55	3.11	***	0.07	0.53		0.05	0.34		2.35	10.19	***
Age	0.03	0.47		0.06	1.06		0.01	0.18		-0.06	-0.72	
AgeSq	0.00	-1.31		0.00	-0.86		0.00	-0.91		0.00	1.32	
EducTert	0.60	2.30	**	-0.10	-0.62		0.87	3.87	***	4.86	8.10	***
IncMid	-0.33	-1.78	*	0.25	2.15	**	-0.21	-1.32		0.38	1.68	*
IncHigh	0.15	0.45		1.09	5.70	***	0.14	0.42		-0.46	-1.23	
Urban	0.06	0.23		0.01	0.08		0.00	-0.01		-3.57	-10.83	***
Diseases	0.20	3.34	***	0.02	0.68		0.22	4.03	***	0.01	0.11	
GALI	0.64	3.79	***	0.36	3.44	***	0.69	4.86	***	5.39	20.21	***
SubjHea	0.36	3.82	***	-0.19	-3.24	***	0.09	1.05		-0.23	-1.71	*
SocExcl	-0.02	-0.38		0.12	4.73	***	-0.01	-0.18		1.26	21.82	***
SavePens	0.21	1.07		-0.32	-3.86	***	0.07	0.36		2.13	5.61	***
ChoiceSelfE	0.11	0.62		-0.21	-2.71	***	0.18	1.20		2.30	10.31	***
ProjTot	0.00	1.26		0.00	-1.28		0.00	-0.65		-0.03	-10.99	***
WorkReg	0.17	0.84		0.40	5.03	***	0.07	0.46		1.33	5.67	***
YearsPens	-0.01	-0.35		0.01	1.41		-0.02	-1.34		-0.06	-2.73	***
YearsWork	0.00	-0.16		0.00	-1.28		-0.01	-2.02	**	-0.06	-5.86	***
Books	0.12	0.74		0.20	2.33	**	-0.01	-0.06		-3.41	-13.08	***
Archit	0.10	0.54		-0.65	-7.12	***	-0.32	-1.89	*	0.41	1.54	
PerfArts	-0.03	-0.15		0.14	1.44		0.10	0.64		1.02	4.26	***
Music	0.40	1.61		-0.39	-2.63	***	-0.19	-0.93		0.60	2.24	**
VisArts	-0.10	-0.55		-0.32	-3.88	***	-0.28	-1.83	*	-3.07	-11.73	***
IntermArts	-0.03	-0.12		0.34	2.85	***	0.28	1.41		-1.27	-3.89	***
MedAudioV	-0.20	-1.19		-0.23	-2.68	***	-0.31	-2.03	**	-0.55	-1.98	**
CultHerit	-0.35	-1.39		-0.23	-2.39	**	0.01	0.04		7.32	12.80	***
Constant	-0.84	-0.40		-0.59	-0.39		0.81	0.45		-7.31	-2.50	**

Nr. Obs.	474.00		474.00	
Wald Chi 2	588.83	***	3167.80	***
Log Likelihood	-734.93		-859.69	
pi1	0.74		0.90	
pi2	0.26		0.10	

Source: Own calculations. Asterisks denote statistical significance: *** – 1%; ** – 5%; * – 10%.

Figure 3 presents the distribution of the two main health variables, which are among the main distinctive variables for the interpretation of the two components. As can be seen, component 2 (the group with less importance of health reasons for visiting the doctor) has a much higher density of responses close to 0 and much lower density of responses in the higher values, as would also be expected from the results of Table 9.

Figure 3: Distribution of the health variables by the two components, Top: variables Diseases (left) and SubjHealth (right) for Number of taken sick leaves; Bottom: variables Diseases (left) and SubjHealth (right) for Number of visits to medical doctor.



Source: Own calculation.

Finally, we include in the analysis also the effects of the clusters/groups of diseases, elaborated in Section 5. As Cluster 1, we include the cluster with respondents having zero diseases, while we eliminate Cluster 3 (Coronary heart disease) with zero responses. Indeed, the results change only in a minor way, but the goodness of fit of the models improves, as demonstrated by the AIC, BIC and Log Likelihood statistics. Again, we can observe two components, in line with what was previously elaborated.

Table 10: Modelling heterogeneity in health care utilization, finite mixture models, cluster effects included

	Number of taken sick leaves						Number of visits to medical doctor					
	Component 1			Component 2			Component 1			Component 2		
	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.	Coef.	z	Sig.
Gender	0.40	2.57	**	0.24	40.50	***	0.01	0.04		4.37	8.28	***
Age	0.06	0.98		0.06	24.19	***	-0.05	-0.88		0.10	0.79	
AgeSq	0.00	-1.70	*	0.00	-18.32	***	0.00	0.05		0.00	-0.77	
EducTert	0.54	2.30	**	-0.30	-29.55	***	0.96	4.35	***	3.22	5.45	***
IncMid	-0.31	-1.94	*	0.50	70.38	***	-0.26	-1.72	*	0.13	0.39	
IncHigh	0.18	0.56		1.19	93.74	***	0.25	0.81		0.05	0.07	
Urban	0.23	1.04		-0.06	-5.39	***	-0.10	-0.52		-3.80	-5.52	***
Diseases	0.22	3.09	***	0.01	0.26		0.21	2.95	***	-0.22	-1.92	*
GALI	0.64	4.37	***	0.24	38.47	***	0.66	4.81	***	5.80	14.32	***
SubjHea	0.33	3.74	***	-0.06	-22.22	***	0.06	0.72		-0.12	-0.57	
SocExcl	-0.01	-0.22		0.10	52.38	***	0.02	0.41		1.15	11.37	***
SavePens	0.09	0.49		-0.44	-60.97	***	0.08	0.45		1.43	3.24	***
ChoiceSelfE	0.08	0.49		-0.14	-22.21	***	0.18	1.22		2.26	5.51	***
ProjTot	0.00	1.18		0.00	-23.75	***	0.00	-0.73		0.00	0.43	
WorkReg	0.14	0.83		0.51	83.16	***	0.15	0.93		0.87	1.56	
YearsPens	0.00	0.08		0.02	42.83	***	-0.03	-2.00	**	-0.11	-2.82	***
YearsWork	0.00	-0.06		0.00	-21.71	***	-0.01	-1.75	*	-0.05	-2.83	***
Books	0.06	0.39		0.14	22.64	***	-0.15	-1.02		-2.82	-7.31	***
Archit	-0.02	-0.10		-0.45	-72.12	***	-0.38	-2.33	**	-1.00	-2.32	**
PerfArts	0.08	0.51		0.09	14.78	***	0.04	0.26		-0.21	-0.58	
Music	0.29	1.40		-0.37	-56.56	***	-0.11	-0.59		1.25	2.09	**
VisArts	-0.05	-0.32		-0.17	-25.10	***	-0.32	-2.17	**	-2.36	-5.35	***
IntermArts	-0.07	-0.35		0.20	25.06	***	0.07	0.34		0.14	0.32	
MedAudioV	-0.18	-1.20		-0.19	-27.03	***	-0.20	-1.39		-0.64	-1.36	
CultHerit	-0.45	-2.03	**	-0.36	-49.54	***	0.07	0.34		7.97	7.80	***
Clust1	0.22	0.97		0.50	52.99	***	0.16	0.70		-0.96	-1.70	*
Clust3	0.31	1.01		-0.15	-16.04	***	-0.56	-1.95	*	0.31	0.45	
Clust4	0.14	0.80		0.22	26.55	***	0.38	2.05	**	-1.74	-4.17	***
Clust5	-0.26	-0.73		0.37	29.65	***	-0.31	-0.91		0.83	1.30	
Clust6	-0.59	-0.86		0.33	20.84	***	-0.57	-0.96		-7.06	-5.37	***
Constant	-1.84	-0.96		-1.01	-16.58	***	2.24	1.27		-6.04	-1.31	
Nr. Obs.	474.00						474.00					
Wald Chi 2	82000.89	***					1265.75	***				
Log Likelihood	-681.36						-858.12					
pi1	0.87						0.87					
pi2	0.13						0.13					

Source: Own calculations. Asterisks denote statistical significance: *** – 1%; ** – 5%; * – 10%.

7. Discussion and conclusion

The article represents to our knowledge one of the first attempts to study the health of self-employed artists in more detail. Some of the contributions of the article, therefore, seem clear and are listed below:

- We provide one of the rare analyses of health of artists and its determinants in cultural economics;
- We demonstrate and discuss the determinants of each disease for the sample of self-employed in culture and the arts in Slovenia;

- We model the multiple diseases groupings using network analysis and come to the sensible set of groupings of diseases;
- We also model the heterogeneity in the utilization of health care and demonstrate the existence of two clear groups in the data and link them to the discussion on inequality in the artist's labor markets.

The study has several limitations and is mainly a basis for further work on an important topic and using a previously unexplored (open source) dataset which allows rich possibilities to study self-employed in culture and the arts in future. Among the limitations, surely we have to mention the sample, although great care has been devoted to it (the author of this paper participated in the survey design and implementation) – the usage of weighting methods would be appropriate and desired in future. In the article, we still do not relate strongly to the literature in medical sciences which would be greatly desired. The groupings of diseases are still insufficiently linked to the main research objectives although they provide important (and innovative – unexplored also in the medical literature) grounds for further research. The two components' characteristics should be explored in more detail in future. Also, very desired would be a verification of the findings in other settings and contexts.

Also, a more general discussion on the topic seems appropriate. Topics of the connection of health and arts seem growing in interest (an additional and most recent example at the time of writing this study is Rehfeld et al., 2017). Nevertheless, the topic has not been given much consideration so far in cultural economics, apart from studies on the causal effects of arts participation on health outcomes (see e.g. Thiel, 2015). Our study, therefore, opens up a lot of questions, mentioned briefly above. In particular, from the view of labor markets in the arts it would be interesting to explore the effects of the health condition of the artists (and prevalence of different diseases) on their performance. Also, specific diseases and groups of diseases for groups of artists (employed – in public and/or private and NGO organizations, self-employed, other types of precarious workers, sectorally oriented, different minority groups of artists, the specific effects of age, gender, education and other socioeconomic characteristics) should be identified in different geographic and labor contexts. Indeed, a list of possible questions to study seems large and it opens up another interesting topic for future research in cultural economics. We hope, therefore, it will be provided more importance in future.

References

- Abbing, H. (2002). *Why Are Artists Poor? The Exceptional Economy of the Arts*. Amsterdam: Amsterdam University Press.
- Adler, M. (1985). Stardom and talent. *American Economic Review* 75, 208–212.
- Allaart P, Bellmann L. (2007). Reasons for part-time work: an empirical analysis for Germany and The Netherlands. *International Journal of Manpower* 28(7):14.

- Anxo, D., Fagan, C., Smith, M., Letablier, M.-T., Perraudin, C. (2007). *Part-time work in European companies: Establishment Survey on Working Time 2004-2005 European Foundation for the Improvement of Living and Working Conditions*. Luxembourg: Office for Official Publications of the European Communities, 2007.
- Atkinson, A. B., Brandolini, A. (2010). On Analyzing the World Distribution of Income. *World Bank Economic Review* 24(1): 1–37.
- Bardasi, E., Gornick, J.C. (2008). Working for less? Women's part-time wage penalties across countries. *Feminist Economics* 14(1):37-72.
- Barker, D. (2005). Beyond women and economics: rereading "women's work. *Signs* 30(4):2189-2209.
- Besamusca, J. (2011). Review: The Precariat: The New Dangerous Class. *CLR News* 2 Vol.2011,4:87-91.
- Bettio, F., Corsi, M., D'Ippoliti, C., Lyberaki, A., Lodovici, M.S., Verashchagina, A. (2012). *The impact of the economic crisis on the situation of women and men and on gender equality policies*. Luxembourg: European Commission.
- Blondel, V., Guillaume, J., Lambiotte, R., Lefebvre, E. (2008). Fast unfolding of communities in large networks, *Journal of Statistical Mechanics, Theory and Experiment* 10, (P10008).
- Booth, A.L., van Ours, J.C. (2013). Part-Time Jobs: What Women Want? *Journal of Population Economics* Vol.26,1:263-283.
- Brunello, G., Fort, M., Schneeweis, N., Winter-Ebmer, R. (2012). The causal effect of education on health: What is the role of health behaviors? SHARE Working Paper Series, 08-2012.
- Buddelmeyer, H., Mourre, G., Ward, M. (2004). *The Determinants of Part-Time Work in EU Countries: Empirical Investigations with Macro-Panel Data*. European Commission Economic Papers, No. 213, September 2004.
- Cardoso, P.M., Erdinc, I., Horemans, J., Lavery, S. (2014). *Precarious Employment in Europe*. Brussels: FEPS Young Academics Network.
- Caves, R. (2000). *Creative Industries. Contracts between Art and Commerce*. Cambridge & London: Harvard University Press.
- Comi, S., Grasseni, M. (2012). Are temporary workers discriminated against? – evidence from Europe. *The Manchester School* Vol.80,1:28–50.
- Dawson, C., Henley, A., Latreille, P. (2009). *Why Do Individuals Choose Self-Employment?* IZA Discussion Paper No. 3974. January 2009.
- Delsen, L. (1995). *Atypical Employment: An International Perspective. Causes, Consequences and Policy*. Groningen: Wolters-Noordhoff.
- De Nooy, W., Mrvar, A., Batagelj, V. (2005). *Exploratory social network analysis with Pajek*. Cambridge: Cambridge University Press.
- Doreian, P., Batagelj, V., Ferligoj, A. (2005). *Generalized Blockmodeling*. Cambridge: Cambridge University Press.
- Društvo Asociacija (2010). *Ocena stroškov dela za samozaposlene v kulturi*. Ljubljana: Društvo Asociacija.
- Društvo Asociacija (2012). *Simulacija števila samozaposlenih po uveljavitvi predlaganih sprememb Uredbe o samozaposlenih*. Ljubljana. Društvo Asociacija.
- Društvo Asociacija, Open Chamber for Contemporary Art and Association of Slovenian Journalists (2013). *Ocena učinkov nove zakonodaje (Zakon o dohodnini, Zakon o pokojninskem in invalidskem zavarovanju) na samozaposlene v kulturi in samostojne novinarje*. Ljubljana: Društvo Asociacija.

- EFFAT (2011). *Precarious work in Europe: Causes and consequences for the agriculture, food and tourism sectors*. Brussels: EFFAT – European Federation of Food, Agriculture and Tourism Trade Union.
- Emmons, S., Kobourov, S., Gallant, M., Börner, K. (2016). Analysis of Network Clustering Algorithms and Cluster Quality Metrics at Scale. *PLoS ONE* 11(7): e0159161. <https://doi.org/10.1371/journal.pone.0159161>
- ESOPE (2004). *Precarious Employment in Europe: A Comparative Study of Labour Market related Risks in Flexible Economies*. Brussels: European Commission.
- Filer, R.K. (1986). The 'starving artist' – Myth or reality? Earnings of artists in the United States. *Journal of Political Economy* 94, 56–75.
- Filozofska fakulteta in Ekonomska fakulteta Univerze v Ljubljani (2012). *Socialni položaj samozaposlenih v kulturi in predlogi za njegovo izboljšanje s poudarkom na temi preživetvene strategije na področju vizualnih umetnosti*. Ljubljana: Ministrstvo za izobraževanje, znanost, kulturo in šport RS.
- Fudge, J., Owens, R. (2006). *Precarious Work, Women and the New Economy: The Challenge to Legal Norms*. Onati International Series in Law and Society. Oxford: Hart.
- Gesteira Costa Filho, I. (2008). *Mixture Models for the Analysis of Gene Expression*. Dissertation, Freie Universität Berlin.
- Glasbrenner, K. (1984). Maladies may be linked to artists' material. *JAMA* 251:1391-5.
- Grabo, T.N. (1997). Unknown toxic exposures. Arts and crafts materials. *AAOHN J* 45:124-30.
- Gubenšek, T. (2013). *Davčni vidiki prekarne delo v Sloveniji*. Graduation Thesis. Maribor: Pravna fakulteta.
- Inštitut za primerjalno pravo pri Pravni fakulteti v Ljubljani (2013). *Primerjalnopravna analiza ureditve statusa in socialne varnosti samozaposlenih oseb v kulturi v nekaterih evropskih državah*. Ljubljana: Ministrstvo za kulturo RS.
- International Labour Organisation (ILO) (2011). *Policies and regulations to combat precarious employment*. Geneva: ILO Publication.
- Jaumotte, F. (2003). *Female labour force participation: past trends and main determinants in OECD countries*. OECD Economics Department Working Papers No 376, Paris: OECD.
- Kjeldstad, R., Nyoem, E.H. (2012). Part-time work and gender: Worker versus job explanations. *International Labour Review* 151(1-2):85-107.
- Korpi, W. (2000). Faces of inequality: gender, class, and patterns of inequalities in different types of welfare states. *Social Politics: International Studies in Gender, State, and Society* 7(2):127-191.
- Lesser, S.H., Weiss, S.J. (1995). Art hazards. *Am J Emerg Med* 13:451-8.
- Letourneux, V. (1998). *Precarious Employment and Working Conditions in Europe*. Dublin: European Foundation for the Improvement of Living and Working Conditions.
- MacDonald, G. (1988). The economics of rising stars. *American Economic Review* 78, 155–166.
- Maître, B., Whelan, C.T., Nolan, B. (2003). *Female Partner's Income Contribution to the Household Income in the European Union*. EPAG Working Paper 43. Colchester: University of Essex.
- Malentachhi, M. (2016). *Precarious work: What needs to be done?* Available from: http://www.global-unions.org/IMG/pdf/Marcello_s_speech.pdf [Accessed August 11, 2017].
- Matteazzi, E., Pailhé, A., Solaz, A. (2013). *Does Part-Time Employment Widen the Gender Wage Gap? Evidence from Twelve European Countries*. ECINE Working Paper 2013 – 293. Verona: ECINE – Society for the Study of Economic Inequality.

- Mazzonna, F. (2012). The effect of education on old age health and cognitive abilities - does the instrument matter? SHARE Working Paper Series, 10-2012.
- McKay, S., Jefferys, S., Paraksevpoulou, A., Keles, J. (2012). *Study on precarious work and social rights*. Brussels: European Commission.
- McLachlan, G.J., Peel, D. (2000). *Finite Mixture Models*. New York: Wiley.
- Meligy, A., Samak, A.H, Saad, M.E. (2015). A new Pre-processing Strategy for Improving Community Detection Algorithms. *International Journal of Computer Applications* (0975 – 8887) Volume 119 – No.16, June 2015. 16-20.
- Milanovic, B. (2016). *Global Inequality: A New Approach for the Age of Globalization*. Cambridge, MA: Belknap Press of Harvard University Press.
- Ministry of Finance of Slovenia (2017). *Poročilo o pregledu izdatkov s predlogi možnih ukrepov na področju kulture in civilne družbe*. Ljubljana. Ministry of Finance of Slovenia.
- Nieuwenhuis, R., Need, A., van der Kolk, H. (2013). *Women's Earnings: Trends in earnings inequality within and between coupled households in 18 OECD countries, 1981-2005*. LIS Working Paper Series No. 598. Luxembourg: Cross-National Data Center.
- O'Reilly, J., Fagan, C., eds. (1998). *Part-Time Prospects: An international comparison of part-time work in Europe, North America and the Pacific Rim*. London: Routledge.
- Peacock, A. (1970). *A Report on Orchestral Resources*. London: The Arts Council of Great Britain.
- Peacock, A., Weir, R. (1975). *The Composer in the Market Place*. London: Faber.
- Perrons, D., McDowell, L., Fagan, C., Ray, K., Ward, K. (2007). Gender, Social Class and Work-Life Balance in the New Economy. In: R. Crompton, R., Lewis, S. and Lyonette, C. (Eds.), *Women, Men, Work and Family in Europe*. Houndmills: Palgrave Macmillan.
- Pettit, B., Hook, J. (2005). The structure of women's employment in comparative perspective. *Social Forces* 84(2):779-801.
- Plut, J., Pungertar, M.M., Srakar, A. (2017). Analiza o položaju samozaposlenih v Sloveniji s predlogi izboljšav. Ljubljana: National Council for Culture of Slovenia.
- Prince, M.J., Reischies, F., Beekman, A.T., Fuhrer, R., Jonker, C., Kivela, S.L., Lawlor, B.A., Lobo, A., Magnusson, H., Fichter, M., van Oyen, H., Roelands, M., Skoog, I., Turrina, C., Copeland, J.R. (1999). Development of the EURO-D scale--a European, Union initiative to compare symptoms of depression in 14 European centres. *The Brit J of Psyc* 174:330-338.
- Rehfeld, K., Müller, P., Aye, N., Schmicker, M., Dordevic, M., Kaufmann, J., Hökelmann, A., Müller, N.G. (2017). Dancing or Fitness Sport? The Effects of Two Training Programs on Hippocampal Plasticity and Balance Abilities in Healthy Seniors. *Front. Hum. Neurosci.* 11:305. doi: 10.3389/fnhum.2017.00305.
- Rodgers, G., Rodgers, J., eds. (1989). *Precarious Jobs in Labour Market Regulation: The Growth of Atypical Employment in Western Europe*. Brussels: International Institute for Labour Studies and Free University of Brussels.
- Rosen, S. (1981). The economics of superstars. *American Economic Review* 75, 845–858.
- Schneeweis, N., Skirbekk, V., Winter-Ebmer, R. (2012). Does schooling improve cognitive functioning at older ages? SHARE Working Paper Series, 09-2012.
- Seymour, R. (2016). *We Are All Precarious - On the Concept of the 'Precariat' and its Misuses*. Available from: http://www.newleftproject.org/index.php/site/article_comments/we_are_all_precarious_on_the_concept_of_the_precariat_and_its_misuses [Accessed August 11, 2017].
- Simpson, C. (1981). *SoHo: The Artist in the City*. Chicago: The University of Chicago Press.

- Srakar, A. (2015a). Samozaposleni in prekarni delavci v državah SHARE : nekaj osnovnih ugotovitev. In: Majcen B, ed. *Značilnosti starejšega prebivalstva v Sloveniji - prvi rezultati raziskave SHARE*. 1st Ed. Ljubljana: Inštitut za ekonomska raziskovanja; = Institute for Economic Research, 2015.
- Srakar, A. (2015b). Samozaposleni v kulturi v Sloveniji : nekaj osnovnih podatkov. *Likovne besede*, 2015, 38-48.
- Srakar, A., Prevolnik Rupel, V. (2017a). For financial or active ageing reasons? Econometric evidence from SHARE on health of the older precarious workers. SHARE Working Paper Series, 29-2017.
- Srakar, A., Prevolnik Rupel, V. (2017b). Multiple chronic conditions in older people and their effects on health care utilization: a network analysis approach using SHARE data. 12th World Congress in Health Economics (iHEA), Boston 2017, Powerpoint Presentation.
- Srakar, A., Verbič, M. (2015). Dohodkovna neenakost v Sloveniji in gospodarska kriza. *Teorija in praksa*, maj-jun. 2015, 52, 3, 538-553.
- Standing, G. (2011). *The Precariat : The new dangerous class*. London: Bloomsbury.
- Stanovnik, T., Verbič, M. (2013). Earnings Inequality and Tax Progressivity in Slovenia, 1991–2009. *Acta Oeconomica, Akadémiai Kiadó*, 63(2013), 4, 405-421
- Stier, H., Mandel, H. (2009). Inequality in the family: The institutional aspects of women's earning contribution. *Social Science Research* 38(3):594-608.
- Thiel, L. (2015). *Leave the Drama on the Stage: The Effect of Cultural Participation on Health*. SOEPpapers on Multidisciplinary Panel Data Research, 767, 2015.
- Throsby, D. (1992). Artists as workers. Ponatisnjeno v: Towse, R. (ur.), (1997). *Cultural Economics: The Arts, the Heritage and the Media Industries*. Cheltenham: Edward Elgar.
- Throsby, D. (1994b). The production and consumption of the arts. *Journal of Economic Literature* 32, 1–29.
- Tomlinson, J. (2006). Women's work-life balance trajectories in the UK: reformulating choice and constraint in transitions through part-time work across the life-course. *British Journal of Guidance & Counselling* 34(3):18.
- Towse, R. (1992). The labour market for artists. *Ricerche Economiche* XLVI, 55–74.
- Towse, R. (2010). *A Textbook of Cultural Economics*. New York and Cambridge: Cambridge University Press.
- Tucker, D. (2002). »Precarious« *Non-Standard Employment: A Review of the Literature*. Wellington: Labour Market Policy Group.
- Van Eck, N.J., Waltman, L. (2007). VOS: A new method for visualizing similarities between objects. In H.-J. Lenz & R. Decker (Eds.), *Advances in data analysis. Proceedings of the 30th Annual Conference of the German Classification Society* (pp. 299–306) , Springer.
- Van Eck, N.J., Waltman, L. (2009). How to normalize cooccurrence data? An analysis of some well-known similarity measures. *Journal of the American Society for Information Science and Technology*, 60(8), 1635–1651.
- Van Eck, N.J., Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538.
- Wassall, G., Alper, N. (1990). When is an artist an artist: An analysis of factors related to claiming membership in this profession. *Journal of Arts Management and Law* 4, 37–50.
- Wilson, M. (2016). *Precarious Work: The need for a new policy framework*. Available from: http://www.whitlam.org/data/assets/pdf_file/0015/430008/Perspectives_8_Margaret_Wilson.pdf [Accessed August 11, 2017].

Žuskin, E., Schachter, E.N., Mustajbegović, J., Pucarín-Cvetković, J., Lipozenčić, J. (2007). Occupational Health Hazards of Artists, *Acta Dermatovenereol Croat* 15(3):167-177.