

Homelessness in a Scandinavian welfare state: The risk of shelter use in the Danish adult population

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Abstract

This article analyses the risk of homelessness in the Danish adult population. The study is based on individual, administrative micro-data for about 4.15 million Danes who were 18 years or older on 1 January 2002. Homelessness is measured by shelter use from 2002 to 2011. Data also cover civil status, immigration background, education, employment, income, mental illness, drug and alcohol abuse, and previous imprisonment over five years prior to the measurement period. Prevalence of shelter use shows a considerable risk of homelessness amongst individuals experiencing multidimensional social exclusion. Nonetheless, even in high-risk groups such as drug abusers and people with a dual diagnosis, the majority have not used shelters. A multivariate analysis shows significantly higher use of homeless shelters amongst immigrants and individuals with low income, unemployment, low education, mental illness, drug or alcohol abuse, or a previous imprisonment. The highest risk of shelter use is associated with drug abuse, alcohol abuse, mental illness and previous imprisonment, whereas the risk associated with low income is smaller than for the psychosocial vulnerabilities. The results show that homelessness in Denmark is widely concentrated amongst individuals with complex support needs, rather than associated with wider poverty problems.

Keywords

homelessness, mental illness, poverty, risk factors, shelter use, substance abuse

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Introduction

Homelessness is one of the most extreme forms of social marginalisation in contemporary society. Even in the Scandinavian countries, representing some of the world's most advanced welfare systems, homelessness has been shown to be a persistent social phenomenon (Benjaminsen and Dyb, 2008; Benjaminsen and Lauritzen, 2013; Dyb and Johannessen, 2013; Socialstyrelsen, 2012). A

widespread consensus in the research literature is that homelessness arises from social mechanisms that operate on structural, systemic, interpersonal and individual levels, often in complex interplay (Fitzpatrick,

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2005; Fitzpatrick et al., 2013). Individual psychosocial vulnerabilities interact with structural factors such as poverty, unemployment and the lack of affordable housing, and systemic factors such as the lack of adequate social support systems. These social mechanisms are generally embedded in broader characteristics of welfare systems. Thus the risk factors of homelessness identified in statistical models are generated by more complex underlying social mechanisms. Yet risk analysis is very useful in identifying patterns that appear on the individual level. Not only can risk analysis identify the relative importance of various factors such as poverty and psychosocial vulnerabilities, but it can also identify how large a part of risk groups is actually affected by homelessness, thereby contributing to a better understanding of the possible shortcomings in welfare and support systems.

The risk factors of homelessness and the risk profiles of homeless people are well described in the research literature. Studies generally show that a broad range of risk factors such as mental illness, substance abuse, incarceration, institutional care in childhood, relationship breakdown, weak social ties, poverty and unemployment are overrepresented amongst homeless people (Allgood and Warren, 2003; Bearsley-Smith et al., 2008; Caton et al., 1994, 1995, 2005; Culhane and Metraux, 1999; Folsom et al., 2005; Herman et al., 1997; Kemp et al., 2006; Koegel et al., 1995; van Laere et al., 2009; Piliavin et al., 1989; Sosin and Bruni, 1997; Sullivan et al., 2000; Susser et al., 1991, 1993). Quantitative studies of risk factors of homelessness have generally been based on surveys comparing homeless people with the general population or to at-risk populations (such as people in poverty or individuals with mental ill health), or comparing subgroups of homeless people, e.g. according to the duration of their homelessness situation.

However, no study has used individual, administrative micro-data to analyse the risk of homelessness for the population of an entire country. This article analyses the risk of homelessness measured by the use of homeless shelters over a ten-year period, using individual, administrative data for the entire Danish adult population and with individual data on key risk factors, measured prior to the measurement period for shelter use.

The analysis is based on individual administrative data from various data sources for 4.15 million people who were 18 years or older on 1 January 2002. The data are combined on individual level through unique identifiers. Homelessness is measured with data from a national client registration system in homeless shelters from 2002 to 2011. In addition to demographic factors, socioeconomic characteristics include income, employment and education. The analysis also includes individual vulnerability factors: mental illness, drug and alcohol abuse problems, and imprisonment. Because micro-data are available on homelessness and other dimensions of social exclusion for the entire adult population, the analysis offers unique insights into the actual occurrence of homelessness in risk groups such as the mentally ill, substance abusers, the poor and those excluded from the labour market.

Moreover, the analysis shows whether homelessness is a rare or frequent occurrence in these groups and to what extent homelessness is embedded in a pattern of multiple social exclusion. The analysis also investigates the relative importance of various risk factors, including the relative importance of psychosocial vulnerabilities and socioeconomic characteristics. In the regression model the large data set enables interaction effects between key explanatory variables. This analysis provides important knowledge on how the interplay between the main risk factors affects the risk of homelessness.

Theoretical understanding

A scholarly understanding of the relation between homelessness and broader forms of housing exclusion has been growing, with a general consensus in the research literature that not only rough sleepers (individuals sleeping outdoors) and people in homeless shelters but also a broader group of people in various forms of short-term accommodation and transitional housing are in a homeless situation, as their housing situation has no permanency. In Europe the housing-based ETHOS (European Typology of Homelessness and Housing Exclusion) definition has been gaining widespread support (Busch-Geertsema et al., 2010). Based on theoretical assumptions on the nature of housing exclusion, this definition distinguishes amongst four main categories of homelessness and housing exclusion; rooflessness, houselessness, insecure housing and inadequate housing (Edgar and Meert 2005). A revised definition ('ETHOS light') includes categories only for homelessness, differentiating amongst rough sleepers, emergency night shelter users, shelter users, people in transitional accommodation, people awaiting institutional release without a housing solution in place, and individuals staying temporarily with family or friends (Edgar et al., 2007).

Theoretical understandings of the causes and dynamics underlying the phenomenon of homelessness have been influenced by the general synthesising trend in social theory (Avramov, 1999; Blid et al., 2008; Fitzpatrick, 2005, 2012; Pleace, 2000). A shift towards a more dynamic understanding of homelessness has led to a break with predominantly individualist or structuralist approaches (Anderson & Christian, 2003; Clapham, 2003; Fitzpatrick, 2012; Fitzpatrick et al., 2000).

From a critical realist understanding of a layered reality, Fitzpatrick et al. (2013)

argues that the social mechanisms generating homelessness must be understood as an open and contingent interplay between structural, systemic, interpersonal and individual factors, with none of these levels a priori more fundamental than others. In some cases homelessness may be a consequence of structural factors such as a lack of affordable housing, whilst in other cases interpersonal or individual factors may be more significant. Therefore, no single 'trigger' of homelessness or any one necessary or sufficient cause of homelessness can be identified (Fitzpatrick et al., 2013; Neale, 1997). This approach also applies to cross-country comparisons explaining why not only the patterns of homelessness but also the generative mechanisms underlying these patterns may vary across different societies and welfare systems (Fitzpatrick, 2012; Fitzpatrick and Stephens, 2007; Fitzpatrick et al., 2013; Stephens and Fitzpatrick, 2007).

A more dynamic understanding of homelessness has also been conceptualised within the 'pathways theory', informed by empirical research showing that socially vulnerable individuals often enter and exit homelessness several times over a life course and that different pathways into and out of homelessness can be identified (Anderson and Tulloch, 2000; Clapham 2003; Culhane et al., 1994, 2007; Kuhn and Culhane, 1998; MacKenzie and Chamberlain, 2003; Metraux and Culhane 1999; Shinn et al., 1998). Furthermore, homelessness has been analysed within the conceptualisation of social exclusion, with homelessness often shown to be part of a pattern of multiple social exclusion ('deep social exclusion'), as people exposed to homelessness often also experience exclusion in many other life domains (Cornes et al., 2011; Fitzpatrick et al., 2011).

However, the pathways approach has also contributed the understanding that not all homeless people can be characterised by

deep social exclusion. Research from the USA has shown a considerable heterogeneity amongst homeless people, and groups of chronically, episodically and transitionally homeless people have been identified (Kuhn and Culhane, 1998). The chronic shelter users have relatively few but very long shelter stays, the episodic shelter users have frequent but often short shelter stays, and the transitional shelter users are those with only few and short shelter stays. This US research has shown that whilst the chronically and episodically homeless usually have complex support needs, and thus can be characterised as being in deep exclusion, fewer amongst the transitionally homeless have complex support needs – and this group is more often homeless because of poverty and housing affordability problems (Kuhn and Culhane, 1998).

The welfare system plays an important role in mediating the risk of homelessness, both through general social protection measures, poverty reducing policies and housing policies, and through more specific policies such as the provision of specialised housing and support for groups with complex support needs. According to a general hypothesis in homelessness research, homelessness in countries with relatively extensive welfare systems and lower levels of poverty tend to be concentrated amongst individuals with complex support needs, whereas homelessness in countries with less extensive welfare systems and a higher level of poverty tends to affect a broader segment of poor and unemployed households and individuals (Shinn, 2007; Stephens and Fitzpatrick, 2007; Toro, 2007). In the social-democratic welfare states in Scandinavia, with their relatively low levels of poverty and extensive welfare systems, we can expect homelessness to be widely concentrated amongst people with mental illness and substance abuse problems. We can also expect these factors to be stronger predictors of homelessness than poverty or unemployment.

Homelessness in Denmark

Denmark can be characterised as a typical social-democratic welfare state with a relatively high level of income redistribution, low level of income poverty and a relatively low level of unemployment (Organisation for Economic Cooperation and Development (OECD), 2014). The public housing sector comprises about 20% of the total housing stock, with allocation mechanisms targeted at individuals who have special support needs and are in acute need of housing (Skifter Andersen, 2010; Skifter Andersen et al., 2012).

Denmark has two main sources of homelessness data. The first source is the nationwide client registration system on homelessness shelters operated under section 110 of the Social Assistance Act, a data system established in 1999. Annual statistics have shown the total number of shelter users to be quite stable over time, at about 6000 individual users each year (Ankestyrelsen, 2014). The measurement of homelessness in this article is based on data from these shelters.

Previous research on Danish shelter users has shown a high prevalence of mental illness and addiction problems and a high mortality amongst shelter users (Nielsen et al., 2011). Moreover, previous research has shown that the groups of chronic, episodic and transitional shelter users, identified in the USA, can also be found in Denmark (Benjaminsen and Andrade, 2015). However, the profile of the transitional shelter users (i.e. with few and short shelter stays) has been shown to be different in Denmark, as even this group (along with the chronic and episodic shelter users) is widely concentrated amongst people with complex needs (Benjaminsen and Andrade, 2015). In contrast, as previously mentioned, the transitional shelter users in the USA include a larger group of people who are homeless

mainly because of poverty and housing affordability problems (Kuhn and Culhane, 1998). However, these earlier Danish studies neither include data for non-shelter users nor estimate the risk of shelter use for the general population.

The second source of data on homelessness in Denmark is the national point-in-time (one-week) counts that have been carried out biannually since 2007 (Benjaminsen, 2009; Benjaminsen and Christensen, 2007; Benjaminsen and Lauritzen, 2013; Lauritzen et al., 2011). These counts include not only shelter users but also rough sleepers, people in short-term transitional housing, and people staying temporarily with family or friends (to the extent that these individuals are known by the social services). In the last count in week 6, 2013, 5820 individuals were found to be homeless, with age information for 5624 of them; 5480 homeless people were 18 years or older. This figure was equivalent to 0.12% of the adult Danish population of 4.4 million people (Benjaminsen and Lauritzen, 2013: 31). According to the national homelessness count, individuals who sleep in homeless shelters are the largest category amongst the homeless. Other significant groups were rough sleepers and people staying temporarily with family and friends.

However, research – mainly from the USA – has shown that point-in-time counts of homelessness tend to underestimate the scale of homelessness over a longer period (Culhane et al., 1994). The pathways approach suggests that repeated spells of homelessness during a life course is a common pattern for socially vulnerable individuals. Moreover, point-in-time counts oversample individuals with longer spells of homelessness and underestimate the number of individuals experiencing homelessness of a relatively shorter duration. Such oversampling may cause an over-representation of individuals with complex support needs, as people with less complex support needs are

less likely to stay in the shelter system for a long time. Therefore, the analysis in this article gives a new perspective on homelessness in Denmark, because it is based on individually linked data for the entire Danish adult population, measuring shelter use over a long period and including a wide range of individual risk factors measured for the entire population through administrative registers.

Data and measurement

The analytical understanding that structural, systemic, interpersonal and individual factors interact in shaping the risk of homelessness for the individual also has methodological implications. Variable-centred risk analysis has generally been criticised for individualising the reasons for social marginalisation (France, 2008; Kelly, 2001). In contrast, the critical realist approach (Sayer, 1992, 2000) offers a more nuanced approach to the way in which quantitative analysis can enrich our understanding of homelessness. As previously mentioned, according to critical realism the observed empirical patterns are generated by underlying social mechanisms and interacting factors that may operate on different levels, including structural and systemic factors not measured in the analysis of individual data. Thus the statistical analysis identifies those individuals most likely to be affected by such adverse social and economic trends and systemic deficiencies (Fitzpatrick, 2005). Whilst the discussion section will provide possible explanations of the patterns found, a deeper understanding of these processes would need further evidence from both qualitative and mixed-methods studies.

Data

Denmark has extensive central databases of high-quality micro-data, which can be

utilised for research purposes. The empirical analysis is based on a combination of administrative data from various data sources. The main database, provided by Statistics Denmark, contains individual data for the entire Danish population of adults who were 18 years or older on 1 January 2002. Data on homelessness have been obtained from client registration systems on homeless shelters. Section 110 in the Social Assistance Act mandates that municipalities must provide temporary accommodation for homeless people. A total of 73 homeless shelters are operated under it with a total of 2180 beds (Ankestyrelsen, 2014). When enrolling in a shelter, individuals must give their CPR (Central Personal Register) number for registration, with the reporting of CPR numbers to a central database being mandatory for shelters. The CPR number enables the linking of data on shelter use to the main database. Almost all the Danish shelters included in the data provide emergency shelter. At the same time many shelter users have longer stays, and the shelters often have individual rooms. Thus compared with similar functions in other countries, the shelters widely also fulfil the function of providing short-term temporary accommodation.

The use of data on shelter use for estimating homelessness means that only those individuals who use shelters are categorised as homeless, whereas individuals who sleep rough and never use a shelter or those who stay temporarily with family and friends are not. However, data from the national count show that even during the short span of the count week half of all rough sleepers also use homeless shelters (Benjaminsen and Lauritzen, 2013). Thus over a 10-year period a considerable proportion of rough sleepers are likely to be recorded as using shelters one or more times. However, the risk of 'false negatives' exists, that is individuals

who did not use homeless shelters but who indeed experienced other forms of homelessness situations.

Explanatory variables

Individual administrative data on demographic variables, socioeconomic variables and data from the general hospital system and the criminal justice system have been obtained from Statistics Denmark. Data have also been obtained from the Central Psychiatric Register (Mors et al., 2011) on diagnoses of mental illness and from the Register of Treatment for Substance Addiction on substance abuse. These data have been provided by 'Statens Serum Institut' (SSI), an agency under the auspices of the Ministry of Health. All data can be individually linked through CPR numbers. CPR numbers for all data sources included in the study have been converted by Statistics Denmark into anonymised unique numbers. The anonymised data are accessed through the Statistics Denmark register research system. Permission for the study was granted from the Danish Data Protection Agency.

The explanatory variables are gender, age, civil status, ethnic background, resident in Copenhagen, income, employment, education, mental illness, drug addiction, alcohol addiction and previous imprisonment. The demographic variables are measured on 1 January 2002. Civil status is measured by whether the individual is single or not. All individuals who are not married or cohabitating, and those divorced or widowed, are categorised as 'single'. Individuals who are married or cohabitating are registered as 'non-single'. This category also includes young adults up to 25 years still living with their parents. Immigrant background is measured by three categories – non-immigrants, immigrants and children of immigrants. 'Resident in Copenhagen' measures whether

the individual is recorded in the population register in the city of Copenhagen at the onset of the period.

Income is measured by net disposable income after tax and interest payments, measured in two categories – below and above 100,000 DKK/year (approximately 13,000 Euros). For a single person this income level approximates the OECD poverty line for Denmark. Employment is measured by being employed or not. Although the term ‘unemployment’ usually refers to people who have either lost their jobs or are seeking work, the category ‘unemployed’ also includes those who are without work but who do not fall into the usual unemployed category, e.g. people on early retirement. Education is measured in two categories – compulsory level or less (9th or 10th grade or less) and beyond compulsory level. Whilst income and employment are measured during the 2001 calendar year, education is measured on 1 January 2002.

Mental illness and substance abuse are measured through diagnosis registers from the general hospital system, the mental health system and the addiction treatment system. Having a mental illness, suffering from drug or alcohol abuse, and having been imprisoned are measured over time from 1997 to 2001, i.e. prior to the period in which homelessness is measured. A diagnosis of mental illness covers both severe mental illness such as schizophrenia and bipolar condition and also includes less severe illness such as moderate depression and anxiety disorders. A diagnosis of drug abuse problems covers the abuse of both hard drugs (e.g. heroin and cocaine) and cannabis. The diagnoses of mental illness and drug or alcohol problems are those given by medical professionals in the public health system according to the ICD-10 (International Classification of Diseases).

The time sequence between a diagnosis for mental illness or substance abuse, and a

recording of homelessness can in principle be established from the data registers. However, the time of diagnosis does not yield adequate information on when an individual started to suffer from symptoms, and the actual time order between psychosocial vulnerabilities and homelessness therefore cannot be measured in a valid way from the registers. For example, a mental illness with escalating substance abuse may first lead to homelessness. Then a shelter stay may be an entry point for further access to the mental health or addiction treatment systems, and a diagnosis may eventually be given after psychiatric assessment. In this example, whilst a shelter stay is recorded in the shelter data registers before a diagnosis for mental illness is recorded in the psychiatric data registers, the actual chronological order between mental illness and shelter use is the opposite.

To approach this issue of complex associations between psychosocial vulnerabilities and homelessness, given the data available, I include two measurement periods of the psychosocial vulnerabilities. In addition to a measurement period from 1997 to 2001, prior to the measurement period for shelter use, a measurement of mental illness and substance abuse over an extended time from 1997 to 2011 is also included in the descriptive statistics. The different measurement periods affect the share of shelter users identified as having a mental illness or a substance abuse problem, as over a longer time span more people will be recorded in the public health system with a diagnosis. Therefore, the longer time span more adequately represents the extent of psychosocial vulnerabilities amongst people affected by homelessness.

Omitted cases

Whilst individuals who died or emigrated during the period are included in the analysis, individuals who immigrate during the period are not. Individuals who died during

the period have fewer years to be exposed to the risk of homelessness. However, when one analyses full population data over a long period, eliminating all individuals who die during that period would disproportionately diminish the study population in older cohorts. More specifically, given a higher mortality amongst individuals who have been homeless (Nielsen et al., 2011), eliminating individuals who die during the period may incorrectly lower the risk of homelessness in older cohorts.

In total 4,186,953 individuals were 18 years or older on 1 January 2002. However, 35,672 individuals are omitted from the analysis because of missing values on some of the variables. The final data set comprises 4,151,281 individuals. The only variable for which individuals are not omitted from the analysis, despite missing information, is for education. The reason is that about 7% of all individuals are in the category 'unspecified education', mainly in older cohorts, as their education was not known when the register data system began in 1980. I include this category as a separate control dummy in the multivariate analysis, along with the other educational categories, as the loss of data resulting from omitting these individuals would not only be too large but also not offer any advantage to the analysis.

Statistical methods

The analysis calculates the observed bivariate prevalence of shelter use for each risk factor, and the frequencies of risk characteristics for shelter users and non-shelter users. As the data set comprises the entire adult population, the observed prevalence of shelter use provides a unique insight into how large a part of different risk groups actually experience shelter use over a longer period. To analyse how homelessness is part of a pattern of multidimensional social exclusion, I also calculate the prevalence of shelter use, depending on the cumulative number of risk characteristics. Then I estimate the risk of shelter use and the relative importance of various risk factors through multivariate logistic regression models. The first model includes only the main effects of the explanatory variables; the second model, the two-way interaction effects between specific variables.

Results

Prevalence and risk profile

Table 1 shows the share of the adult population on 1 January 2002, by gender and age, who enrol in a homeless shelter at least once from 2002 to 2011. Of the 4,151,281

Table 1. Shelter users (2002–2011) by age (2002) and gender.

Age by gender	Shelter users (%)	Shelter users (n)	Total N
<i>Men</i>			
18–29	1.02	4053	396,114
30–49	1.38	10,864	787,146
50 +	0.37	3132	847,292
Total	0.89	18,049	2,030,552
<i>Women</i>			
18–29	0.27	1046	385,830
30–49	0.40	3042	761,952
50 +	0.09	905	972,947
Total	0.24	4993	2,120,729

individuals in the analysis data who were 18 years and above in 2002, 23,042 enrolled in a homeless shelter during this period – equal to 0.56%.

Men represented 78.3% of shelter users (18,049 individuals), equal to 0.89% of the male adult population in 2002. Amongst women, 0.23% (4993) used shelters. The highest use of shelters is amongst younger and middle-aged men. Amongst men aged 30–49, 1.38% used shelters over the period, and amongst women in the same age group the highest prevalence was 0.40%. The share of shelter users amongst people who were 18–29 years old in 2002 does not reflect youth homelessness as such, as some of those who used shelters in the later part of the period may have been in their 30s at the time of enrolment. For both men and women the lowest prevalence of shelter use is the age group of 50 years and older, at 0.37% and 0.09% amongst men and women, respectively. This relatively lower prevalence in the older age groups may be explained partly by high mortality amongst the homeless, especially amongst drug abusers. However, it may also indicate that, in Denmark, many elderly socially vulnerable individuals are under care in the mainstream care system.

Table 2 shows the prevalence of shelter use for the categories of the explanatory variables, still by gender and age groups. Table 3 shows the share with specific characteristics amongst shelter users compared with non-shelter users within each age group and for males and females, respectively.

For men, a higher prevalence of shelter use appears for immigrants than for non-immigrants. Amongst immigrant males aged 18–29, 2.24% used shelters over the period, compared with 0.93% of non-immigrants. In the same age group the prevalence of shelter use amongst male children of immigrants, at 1.28%, is closer to the prevalence for non-immigrants. Most children of immigrants were still young at the turn of the 21st

century, as the first wave of labour immigration in Denmark started in the late 1960s. Thus the age groups from 30 years and above contain very few people who were children of immigrants.

For immigrant women the pattern is somewhat different. Amongst women aged 30–49, the rate of shelter use for immigrants is similar to that of non-immigrant women, whilst amongst younger women the share of shelter users is higher amongst immigrants. This pattern indicates that younger immigrants (both genders) and male immigrants, regardless of age, are more at risk of homelessness than their ethnic Danish counterparts, whilst the difference levels out for middle-aged women. Nonetheless, the large majority amongst the shelter users are non-immigrants.

The risk of shelter use was substantially higher for people with low income. For males aged 30–49, 4.70% in the low-income group enrolled in a homeless shelter from 2002 to 2011, compared with ‘only’ 0.83% of males not in the low-income group. For females aged 30–49 the corresponding figures are 1.09% and 0.28%. However, amongst those aged 18–24 (both men and women), the difference in shelter use according to income is not as strong, as many young people generally have relatively low incomes whilst still in education. Moreover, the oldest age group shows very little difference in the prevalence of shelter use according to income group, likely reflecting lower income differentials amongst pensioners.

The unemployed also have a higher risk of shelter use. For men aged 30–49 in 2002 and with no employment in 2001, 6.56% used a homeless shelter over the 10-year period, compared with only 0.61% of employed men in the same age group. For women in the same age group 1.57% of the unemployed used shelters, compared with only 0.15% of the employed.

A higher risk of shelter use also exists amongst individuals with low educational

Table 2. Prevalence of shelter use by age and gender in risk groups (%).

Variable	Category	Men				Women				
		18–29	30–49	50 +	18–29	30–49	50 +	18–29	30–49	50 +
		Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users
Age 1 January 2002		396,114	787,146	847,292	385,830	761,952	972,947			
Total N in age group										
Immigrant status										
	Non-immigrants	0.93	1.30	0.36	0.26	0.40	0.09			
	Immigrants	2.24	2.20	0.67	0.43	0.42	0.18			
Urbanity	Children of immigrants	1.28	1.72	0.98	0.34	1.01	0.11			
	Not living in Cph	1.06	1.29	0.35	0.28	0.38	0.09			
	Living in Cph	0.81	2.14	0.69	0.25	0.57	0.11			
Civil status	Having a partner	0.58	0.63	0.14	0.19	0.21	0.07			
	No partner	1.65	3.20	0.98	0.43	0.97	0.13			
Income	High/middle income	0.50	0.83	0.33	0.18	0.28	0.10			
	Low income	1.55	4.70	0.45	0.33	1.09	0.08			
Employment	Employed	0.47	0.61	0.24	0.07	0.15	0.08			
	Unemployed	2.63	6.56	0.49	0.63	1.57	0.10			
Education	High level	0.08	0.39	0.29	0.04	0.13	0.11			
	Medium level	0.30	0.90	0.37	0.07	0.24	0.11			
	Compulsory level	1.87	2.90	0.45	0.57	0.87	0.10			
Mental illness (97–01)	No mental illness	0.86	1.14	0.30	0.19	0.29	0.07			
	Mental illness	6.76	8.39	2.36	1.85	2.97	0.61			
Mental illness (97–11)	No mental illness	0.50	0.78	0.23	0.10	0.16	0.04			
	Mental illness	6.20	7.45	1.46	1.34	2.26	0.37			
Drug abuse (97–01)	No drug abuse	0.87	1.21	0.36	0.22	0.34	0.09			
	Drug abuse	16.75	23.28	11.17	13.59	18.16	4.31			
Drug abuse (97–11)	No drug abuse	0.44	0.95	0.34	0.13	0.27	0.08			
	Drug abuse	17.13	24.51	13.01	13.00	17.90	4.00			
Alcohol abuse (97–01)	No alcohol abuse	0.89	1.01	0.23	0.24	0.29	0.06			
	Alcohol abuse	7.07	16.86	6.46	3.00	11.73	3.99			
Alcohol abuse (97–11)	No alcohol abuse	0.63	0.57	0.11	0.17	0.15	0.03			
	Alcohol abuse	9.06	15.07	4.82	4.41	10.29	2.85			
Mentally ill drug abusers (97–01)	Not mentally ill DA	0.96	1.31	0.36	0.24	0.37	0.09			
	Mentally ill DA	19.01	27.32	13.91	17.47	21.18	5.13			

(continued)

Table 2. (Continued)

Variable	Category	Men				Women			
		18–29		30–49		18–29		30–49	
		Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	Percent shelter users	
Age 1 January 2002		396,114	787,146	847,292	385,830	761,952	972,947		
Total N in age group									
Mentally ill drug abusers (97–11)	Not mentally ill DA	0.66	1.14	0.35	0.17	0.32	0.09		
	Mentally ill DA	21.54	28.49	14.81	14.50	20.32	5.03		
Imprisonment (97–01)	No imprisonment	0.79	1.11	0.34	0.25	0.37	0.09		
	Imprisonment	10.04	14.32	6.04	19.17	14.86	6.67		
Imprisonment (97–11)	No imprisonment	0.57	0.95	0.33	0.22	0.35	0.09		
	Imprisonment	9.33	13.72	6.28	16.44	14.41	7.26		

attainment. For men aged 30–49 with a maximum of compulsory education, 2.90% used shelters, compared with only 0.39% for men with a high education level. For women aged 30–49 the corresponding figures are 0.87% and 0.13%, respectively. However, also amongst men with a medium education level (of whom men with a vocational education is the largest subgroup), there is a higher risk of shelter use – 0.90% amongst those aged 30–49 – reflecting that men with a vocational education have a considerably higher risk of homelessness than men with higher education. Amongst women this difference is not as large, as 0.24% of women aged 30–49 with a medium education level used shelters over the period, a level closer to what we find amongst women with higher education.

Whilst the relation between a precarious socioeconomic position and the risk of homelessness is evident, the highest prevalence of shelter use is amongst people with psychosocial vulnerabilities. As previously mentioned, mental illness, drug and alcohol abuse problems, and previous imprisonment have been measured both before the period for which we measure shelter use, and simultaneously with the observation of shelter use. Whilst only about 3% of all males aged 18–29 in the general population are recorded with a mental illness from 1997 to 2001, about 9% are recorded with a mental illness from 1997 to 2011. The longer measurement period for mental illness and substance abuse better reflects the actual extent of these problems amongst people who have experienced homelessness. A very high number of the shelter users had been recorded with either mental illness or drug or alcohol abuse: 82.4% of all male shelter users (across age groups) and 87.2% of all female shelter users measured from 1997 to 2011.

However, caution should be applied to the causal interpretation of the sequence between mental illness, substance abuse problems and homelessness. Although

Table 3. Shelter users and non-shelter users by gender and age, percentage with each background characteristic.

	18–29		30–49		50 +	
	Per cent of shelter users	Per cent of non-shelter users	Per cent of shelter users	Per cent of non-shelter users	Per cent of shelter users	Per cent of non-shelter users
Men (n)	4053	392,061	10,864	776,282	3132	844,160
Non-immigrants	83.8	91.2	86.3	91.4	92.3	95.8
Immigrants	14.2	6.4	13.3	8.3	7.4	4.1
Children of immigrants	2.1	1.6	0.4	0.3	0.3	0.1
Living in Copenhagen	12.2	15.4	16.0	10.2	12.5	6.7
Civil status – No partner	66.6	41.0	67.8	28.7	73.2	27.4
Income – Low income	75.6	49.7	48.5	13.8	41.4	34.2
Unemployed	66.2	25.3	61.3	12.2	69.8	52.8
High level education	0.4	6.0	5.3	19.1	12.1	15.6
Medium level education	14.5	49.5	35.5	54.5	42.4	42.2
Compulsory level education	78.6	42.8	51.4	24.1	40.5	33.4
Mental illness (MI) (97–01)	18.6	2.7	20.2	3.1	20.2	3.1
Mental illness (97–11)	55.2	8.6	48.6	8.5	46.0	11.5
Drug abuse (DA) (97–01)	15.6	0.8	13.0	0.6	3.6	0.1
Drug abuse (97–11)	58.9	2.9	32.1	1.4	9.4	0.2
Alcohol abuse (AA) (97–01)	14.9	2.0	28.9	2.0	38.7	2.1
Alcohol abuse (97–11)	41.4	4.3	61.3	4.8	71.5	5.2
MI and/or DA and/or AA (97–11)	83.4	12.9	82.3	11.9	81.6	15.1
MI and DA (97–11)	36.7	1.4	18.5	0.6	6.0	0.1
Imprisonment (97–01)	24.9	2.3	21.5	1.8	8.0	0.5
Imprisonment (97–11)	47.1	4.7	33.3	2.9	11.9	0.7
Women (n)	1046	384,784	3042	758,910	905	972,042
Non-immigrants	85.3	90.5	90.8	91.7	91.6	95.7
Immigrants	12.7	7.9	8.5	8.0	8.3	4.2
Children of immigrants	2.0	2.0	0.8	0.3	0.1	0.1
Living in Copenhagen	15.7	17.2	13.2	9.2	8.8	7.7
Civil status – No partner	55.2	34.9	60.2	24.6	61.3	44.9
Income – Low income	72.0	58.5	40.3	14.7	41.1	45.6
Unemployed	82.4	35.6	69.5	17.4	72.3	66.8
High level education	1.2	9.0	8.8	26.5	15.2	12.5
Medium level education	13.3	51.7	27.4	46.1	34.7	29.9
Compulsory level education	80.0	37.8	56.1	25.6	45.3	43.5

(continued)

Table 3. (Continued)

	18–29		30–49		50 +	
	Per cent of shelter users	Per cent of non-shelter users	Per cent of shelter users	Per cent of non-shelter users	Per cent of shelter users	Per cent of non-shelter users
Mental illness (MI) (97–01)	32.6	4.7	31.6	4.1	32.9	5.0
Mental illness (97–11)	69.2	13.9	63.4	11.0	62.7	15.5
Drug abuse (DA) (97–01)	19.6	0.3	14.7	0.3	4.4	0.1
Drug abuse (97–11)	53.4	1.0	31.7	0.6	10.1	0.2
Alcohol abuse (AA) (97–01)	13.5	1.2	29.3	0.9	40.9	0.9
Alcohol abuse (97–11)	38.9	2.3	63.8	2.2	71.8	2.3
MI and/or DA and/or AA (97–11)	86.4	15.5	88.1	12.2	87.2	16.8
Mentally ill drug abusers (97–11)	39.5	0.6	21.2	0.3	8.6	0.2
Imprisonment (97–01)	7.6	0.1	7.3	0.2	3.2	0.0
Imprisonment (97–11)	18.4	0.3	12.1	0.3	4.3	0.1

mental illness and substance abuse problems increase the risk of shelter use, homelessness may also cause a substance abuse problem to emerge or accelerate symptoms of mental illness owing to the stressfulness of being in a homeless situation.

For individuals recorded with a mental illness from 1997 to 2011, the highest prevalence of shelter use was found amongst males aged 30–49 at 7.45%, compared with 0.78% amongst males without a mental illness observed over that period. Of all male shelter users, 49.9% were recorded as having had a mental illness. The prevalence of shelter use at 2.26% of men aged 30–49 was much lower amongst women recorded with a mental illness than amongst their male counterparts. However, a high number of female shelter users, 65.1%, have been recorded with a mental illness between 1997 and 2011.

The highest prevalence of shelter use for any of the risk groups was observed for drug abusers. Amongst males aged 30–49 recorded with a drug abuse between 1997 and 2011, 24.51% of those used shelters between 2002 and 2011. Amongst female drug abusers in the same age group, 17.90% used shelters. Moreover, amongst drug abusers aged 18–29 the prevalence of shelter use was also high: at 17.13% for males and 13.00% for females. In addition, a relatively high rate of shelter use appears amongst individuals with a diagnosis of alcohol abuse: 15.07% for men aged 30–49 and 10.29% for women in the same age group. Whilst drug abuse is more widespread amongst the younger shelter users, alcohol abuse is more common in the older age groups. Further analysis (not shown) indicates that alcohol abuse amongst younger shelter users is part of a multi-use problem, as many of the young alcohol abusers also abuse drugs.

Previous imprisonment is the only risk factor in which the risk of shelter use is higher for women than for men. Amongst

women aged 18–29 who were incarcerated from 1997 to 2001 (prior to the observation period for homelessness), 19.17% used shelters between 2001 and 2011; amongst women aged 30–49 who had been incarcerated, 14.86% used shelters. Amongst men in the same age groups, these figures were 10.04% and 14.32%, respectively. As many as 47.1% of male shelter users aged 18–29 and 33.3% of male shelter users aged 30–49 have been incarcerated between 1997 and 2011. For their female counterparts, the corresponding figures are somewhat lower, at 18.4% and 12.1%, respectively.

Multiple social exclusion and the risk of homelessness

Homelessness is often part of a complex pattern of multiple social exclusions, in which the individual is excluded from many dimensions of life. Table 4 shows, by gender and age, the prevalence of homelessness for the general population according to the number of risk characteristics. Table 5 shows the shelter users and non-shelter users grouped by the number of risk factors, also by gender and age. This analysis includes seven risk factors: low education, unemployment, low income, mental illness, alcohol abuse, drug abuse and previous imprisonment. This part of the analysis, which includes the risk factors simultaneously, measures all seven factors prior to the observation period when homelessness was measured.

Whilst the youngest age group includes many students recorded as unemployed, and the oldest age group includes many pensioners who are also unemployed, the category of those aged 30–49 includes mainly age groups active in the labour market. Although the majority of individuals in the middle-aged group in the general population have none of the seven risk factors, there is a considerable group exposed to one or two risk factors (Table 5). However, only about

Table 4. Prevalence of shelter use in the Danish adult population by the cumulative number of risk factors, per cent and Total N.

Gender and age	0 risk factors		1–2 risk factors		3–4 risk factors		5–7 risk factors	
	Shelter users, %	Total N in population	Shelter users, %	Total N in population	Shelter users, %	Total N in population	Shelter users, %	Total N in population
Men								
18–29	0.15	132,410	0.62	198,417	3.32	63,058	23.78	2,229
30–49	0.29	481,004	1.58	264,364	10.78	38,336	33.27	3,442
50+	0.14	265,470	0.32	448,432	0.90	132,532	14.69	858
Total	0.22	878,884	0.75	911,213	3.17	233,926	27.58	6,529
Women								
18–29	0.02	107,043	0.16	207,745	0.79	70,248	18.14	794
30–49	0.08	443,017	0.42	281,827	3.45	35,993	24.48	1,115
50+	0.03	195,232	0.08	532,255	0.16	244,684	5.80	776
Total	0.06	745,292	0.19	1,021,827	0.62	350,925	17.21	2,685

Table 5. Shelter users and non-shelter users, percentage with cumulative number of risk factors.

Gender	Age group by shelter use or non-shelter use	0 risk factors	1–2 risk factors	3–4 risk factors	5–7 risk factors
Men	18–29				
	Shelter users	4.98	30.32	51.62	13.08
	Non-shelter users	33.72	50.30	15.55	0.43
	Total	33.43	50.09	15.92	0.56
	30–49				
	Shelter users	12.92	38.48	38.05	10.54
	Non-shelter users	61.78	33.52	4.41	0.30
	Total	61.11	33.59	4.87	0.44
	50 +				
	Shelter users	11.49	46.26	38.22	4.02
	Non-shelter users	31.41	52.95	15.56	0.09
	Total	31.33	52.93	15.64	0.10
Women	18–29				
	Shelter users	2.39	30.98	52.87	13.77
	Non-shelter users	27.81	53.91	18.11	0.17
	Total	27.74	53.84	18.21	0.21
	30–49				
	Shelter users	11.21	38.99	40.83	8.97
	Non-shelter users	58.33	36.98	4.58	0.11
	Total	58.14	36.99	4.72	0.15
	50 +				
	Shelter users	6.85	45.08	43.09	4.97
	Non-shelter users	20.08	54.71	25.13	0.08
	Total	20.07	54.71	25.15	0.08

5% in the middle-aged group in the general population have three risk factors or more. In this age group, the risk of shelter use increases sharply when the number of risk factors exceeds three or more. Amongst men aged 30–49 only 1.58% of those with one or two risk factors have used shelters, compared with 10.78% amongst those with three or four risk factors, and 33.27% of those with five or more risk factors have used shelters (Table 4). The same pattern is observed for women, albeit with a lower prevalence of shelter use in all groups.

Almost two-thirds of young shelter users (both genders) and about half of middle-aged shelter users have three risk characteristics or more (Table 5). The length of the measurement period for the risk factors

obviously affects the shares with risk characteristics in Table 5. If mental illness, substance abuse and incarceration are measured from 1997 to 2011 (not shown), even fewer of the shelter users have none of the risk factors (e.g. 3.64% and 2.40% amongst male and female shelter users aged 30–49, respectively). The analysis thus shows that homelessness in Denmark is largely part of a pattern of multiple social exclusions.

Multivariate analysis of the risk of shelter use for the Danish adult population

A multivariate logistic regression model of the risk of homelessness over the 10-year period has been estimated for the entire adult

Table 6. Logistic regression model, shelter use (OR) (2002–2011) by risk factors (1997–2001), separate for men and women.

Variable (reference group)	Category	Model 1, Main effects			Model 2, Interaction model		
		OR	SE	P	OR	SE	P
<i>Men</i>							
Age (18–29)	30–49	1.95	0.04	0.000	1.93	0.04	0.000
	50 +	0.43	0.01	0.000	0.43	0.01	0.000
Immigrant status (Non-immigrant)	Immigrant	1.89	0.05	0.000	1.90	0.05	0.000
	Children of immigrants	1.03	0.10	0.765	1.02	0.09	0.822
Urbanity (not in Cph)	Living in Cph	0.96	0.02	0.089	0.96	0.02	0.093
Marital status (couple)	Single	2.68	0.05	0.000	2.61	0.05	0.000
Income (high income)	Low income	1.66	0.03	0.000	1.65	0.03	0.000
Employment (yes)	Unemployed	2.18	0.04	0.000	2.11	0.04	0.000
Education (high level)	Compulsory level	2.35	0.08	0.000	2.30	0.08	0.000
	Medium level	1.38	0.05	0.000	1.37	0.05	0.000
	Unspecified	1.82	0.08	0.000	1.80	0.08	0.000
Mental illness (MI) (none)	Mental illness	2.10	0.05	0.000	2.55	0.07	0.000
Drug abuse (DA) (none)	Drug abuse	3.08	0.10	0.000	5.87	0.24	0.000
Alcohol abuse (AA) (none)	Alcohol abuse	5.91	0.12	0.000	7.55	0.18	0.000
Imprisonment (none)	Imprisonment	3.98	0.09	0.000	3.76	0.09	0.000
MI + DA (none)	Both MI and DA	–	–	–	0.64	0.04	0.000
MI + AA (none)	Both MI and AA	–	–	–	0.71	0.03	0.000
DA + AA (none)	Both DA and AA	–	–	–	0.30	0.02	0.000
Constant		0.001	<0.001	0.000	0.001	<0.001	0.000
<i>Women</i>							
Age (18–29)	30–49	2.07	0.08	0.000	2.06	0.08	0.000
	50 +	0.27	0.01	0.000	0.29	0.01	0.000
Immigrant status (non-immigrant)	Immigrant	1.31	0.07	0.000	1.36	0.07	0.000
	Children of immigrant	1.52	0.25	0.009	1.56	0.25	0.006
Urbanity (not in Cph)	Living in Cph	0.91	0.04	0.030	0.89	0.04	0.008
Marital status (couple)	Single	1.92	0.06	0.000	1.81	0.06	0.000
Income (high income)	Low income	1.33	0.05	0.000	1.30	0.04	0.000
Employment (yes)	Unemployed	2.82	0.11	0.000	2.61	0.10	0.000
Education (high level)	Compulsory level	2.00	0.11	0.000	1.89	0.11	0.000
	Medium level	1.14	0.07	0.023	1.13	0.07	0.032
	Unspecified	1.53	0.12	0.000	1.48	0.12	0.000
Mental illness (none)	Mental illness	3.01	0.11	0.000	4.28	0.18	0.000
Drug abuse (none)	Drug abuse	6.61	0.36	0.000	21.05	1.57	0.000
Alcohol abuse (none)	Alcohol abuse	10.35	0.41	0.000	20.46	0.98	0.000
Imprisonment (none)	Imprisonment	6.80	0.52	0.000	4.94	0.38	0.000
MI + DA (none)	Both MI and DA	–	–	–	0.50	0.05	0.000
MI + AA (none)	Both MI and AA	–	–	–	0.41	0.03	0.000
DA + AA (none)	Both DA and AA	–	–	–	0.15	0.02	0.000
Constant		<0.001	<0.001	0.000	0.000	0.000	0.000

population 18 years or older in 2002, separately for men and women (Table 6). When interaction effects are included in the model,

a large number of interactions become significant owing to the large number of individuals in the data set. Therefore, the interaction

model includes only specific two-way interactions between the three variables: mental illness, drug abuse and alcohol abuse. These variables represent the most intrinsic aspects of homelessness in the advanced welfare state – those individuals who fall through the social safety net because of highly complex support needs. The analysis with interaction effects thus offers an insight into how a dual diagnosis of mental illness and substance abuse, and the combination of alcohol and drug abuse, affects the parameter estimates of shelter use. Incarceration has not been included amongst the interaction variables because of a very high multicollinearity with drug abuse.

The table shows both a model (1) with only main effects and a model (2) including the interaction effects. Mental illness, substance abuse and incarceration have been measured from 1997 to 2001, prior to the measurement period for homelessness.

The analysis shows that for both men and women almost all risk factors in both models have a significant impact on the risk of homelessness: age, gender, civil status, immigrant background, low income, unemployment, low education, drug and alcohol abuse, mental illness and previous imprisonment. Only the variable for being a resident in Copenhagen at the beginning of the period is insignificant for men, as well as the coefficient for being a child of immigrants.

For those not belonging to any of the risk groups identified in the model, the risk of becoming homeless is extremely small, as illustrated by the very low odds ratio for the constant. All variables in the model contribute significantly to explaining the risk of homelessness. The coefficients for most risk factors are relatively large and, given the population size, they are estimated very precisely.

The effects for the demographic variables show that both men and women share a higher risk of homelessness in the age group

30–49 years. Being an immigrant is associated with a higher risk of shelter use for both men and women. When I control for other risk factors, I find no enlarged risk of shelter use amongst male children of immigrants compared with non-immigrant males, whereas an increased risk of shelter use appears for female children of immigrants compared with non-immigrant females.

There is a higher risk of shelter use for both single men and women, with the odds ratio being highest for single men. Surprisingly, for both men and women, no higher risk of shelter use appears for individuals who were residents of Copenhagen at the beginning of the period. For both men and women the effect is actually slightly negative ($OR < 1$), although significant only for women. This result indicates that a higher overall risk of homelessness found in the bivariate analysis (Tables 2 and 3) for individuals living in the capital (except for the youngest age group) is attributable to a higher prevalence of other risk factors, especially those related to substance abuse and mental illness, amongst people living in the city.

The socioeconomic risk factors of low income, unemployment and low educational attainment are all associated with a higher risk of homelessness for both men and women. The largest coefficients for the socioeconomic variables are found for having no employment, with an odds ratio of 2.3 for men and 2.8 for women (model 1). Thus even though I control for vulnerability factors such as mental illness and substance use, the lack of employment remains an important risk factor for homelessness, along with income poverty and lack of education. In contrast, the coefficient for low income is considerably smaller than for unemployment, with an odds ratio of 1.7 for men and 1.3 for women (model 1).

Substance abuse problems strongly increase the risk of homelessness, with odds

ratios for the main effects (model 1) for men at 5.9 for alcohol abuse and 3.1 for drug abuse, and at 10.4 and 6.6, respectively, for women. The relative risk of homelessness associated with mental illness also remains substantial, with an odds ratio of 2.1 for men and 3.0 for women, but considerably lower than the risk attached to drug and alcohol abuse. The interaction effects (model 2) give valuable insights into how the combination of these main risk factors affects the risk of homelessness. For drug abuse, alcohol abuse and mental illness, comorbidity between any two of these variables moderates the combined main effects, so that the cumulative effect of each of these variables is not fully reflected in the total effect on the risk of shelter use. This pattern is found for both men and women. Nonetheless, given the overall cumulative structure of the risk factors in the model, the highest overall risk of homelessness is still found for those individuals with comorbidity between the major risk factors of drug and alcohol abuse and mental illness, that is people with a dual diagnosis (mental illness and substance abuse) or combined use of alcohol and drugs.

Moreover, previous imprisonment is also strongly associated with a risk of shelter use, with an odds ratio of 4.0 for men and 6.8 for women. As a strong multicollinearity exists between drug abuse and incarceration, as mentioned earlier, further interaction effects with incarceration are thus problematic for inclusion in the model.

Conclusion

This article has presented the first statistical analysis of the risk of homelessness based on micro-data for the entire adult population of a country, Denmark. The analysis has been based on robust administrative data from various data sources, including data from a nationwide client registration system on

homeless shelters and data from the public health system. The independent variables have included not only demographic and socioeconomic factors but also mental illness, substance abuse and previous incarceration.

The findings show that in a typical Scandinavian welfare state such as Denmark, homelessness is widely concentrated amongst people with severe psychosocial problems and complex support needs and that the homelessness problem in Denmark is not widely associated with more general poverty problems. The results also show that homelessness is part of a pattern of multiple social exclusion. For individuals facing exclusion in many domains, homelessness is a common occurrence. For people exposed to five or more of the risk factors in the analysis, about one in four have used shelters over the observation period of ten years. For drug users in particular, homelessness is a common experience: about one in four drug abusers have used shelters over the ten-year period, whereas for the mentally ill without a dual diagnosis the prevalence of shelter use is considerably lower than for drug abusers.

Thus a considerable part of homelessness in Denmark is the housing problem of substance abusers and part of their general exclusion in society, likely reflecting their particular vulnerability to evictions, barriers to housing access, and less extensive available support. In contrast, the mentally ill are often in supported accommodation under social-psychiatric services or receive floating support in their own home. However, despite the high prevalence of shelter use amongst individuals suffering from multiple social exclusion, the majority – even in high-risk groups such as people with drug abuse problems or a dual diagnosis – have not used shelters over the period.

In the multivariate model, low income, unemployment and low education remain

significant factors. This result shows that socioeconomic conditions play a role at the individual level, adding to the risk of homelessness – even in a Scandinavian welfare state, with its overall relatively low levels of poverty. However, that the statistical coefficients for the socioeconomic variables are much lower than for substance abuse and mental illness is also evident. Moreover, amongst the socioeconomic explanatory variables, the magnitude of the coefficient for unemployment is substantially larger than the coefficient for low income on the risk of shelter use. These results indicate that the extensive redistribution of income in the Scandinavian welfare state model substantially modifies the risk of homelessness due to poverty. This pattern also indicates that exclusion from the labour market for marginalised groups not only has financial consequences for the individual but also represents an exclusion from daily meaningful activities and social contacts.

The findings are in line with results of the Danish national counts of homelessness, which have shown that about 80% of individuals recorded as homeless in these point-in-time surveys have either a mental illness, a substance abuse problem, or both (Benjaminsen and Lauritzen, 2013). These findings correspond with the prevailing hypothesis in homelessness theory that homelessness in countries with low levels of poverty and extensive welfare systems is more highly concentrated amongst people with complex needs, whereas homelessness in more unequal societies with less extensive welfare systems more widely affects broader segments of poor households (Stephens and Fitzpatrick, 2007).

As mentioned earlier, analysis from the USA on similar shelter data has shown that despite a considerable part of homeless people having complex support needs in the US, there is also a significant part without records of mental illness or substance abuse

problems. Those individuals are more likely to be homeless because of more general poverty and housing affordability problems (Kuhn and Culhane, 1998). Although the group with a transitional pattern of shelter use (i.e. few and short shelter stays) has also been identified in recent Danish research, in Denmark even transitional shelter use is concentrated mainly amongst people with mental illness and substance abuse problems (Benjaminsen and Andrade, 2015). The analysis in this article further corroborates these earlier findings, as it has demonstrated the risk pattern of shelter use for the population as a whole and has shown that the risk of shelter use in the Danish adult population is widely concentrated amongst people with complex needs.

Whilst the overall extent of homelessness in Denmark is relatively small, the results indicate that the otherwise strong social safety net in Denmark is apparently not tight enough for the most socially vulnerable groups. In terms of policy implications, the results indicate a need for developing policies and interventions for strengthening the provision of housing and social support for the most marginalised groups, particularly substance abusers. As many substance abusers have a criminal record and as a previous prison sentence is also a significant risk factor for shelter use, rehousing efforts should also incorporate a focus on people leaving the prison system without a housing solution.

The research literature generally points to ‘Housing First’ – immediate permanent housing with intensive social support following evidence-based methods such as Assertive Community Treatment (ACT) or Intensive Case Management (ICM) – as an effective intervention for homeless individuals with mental illness and addiction problems (Coldwell and Bendner, 2007; Nelson et al., 2007; Tsemberis et al., 2004). Nonetheless there is an ongoing debate as to whether this

method also applies to individuals with the most severe addiction problems (Kertesz and Weiner, 2009; Kertesz et al., 2009; Pleace, 2011).

A turn towards Housing First-oriented policies and practices only occurred relatively late in Denmark: the first national homelessness strategy, based on the Housing First approach, was adopted in 2008, and the strategy programme from 2009 to 2013 emphasised providing access to permanent housing in combination with intensive social support following the ACT, ICM and CTI methods (Ministry of Internal and Social Affairs, 2009). In accordance with the results from international research, the evaluation research on the Danish strategy programme generally shows that Housing First and these evidence-based floating support methods are highly effective in rehousing homeless people. However, the evaluation research also shows that these types of interventions still cover only a minor part of homeless people in Denmark (Benjaminsen, 2013; Rambøll and SFI, 2013). The results of the analysis in this article thus point to a need to extend such intensive interventions to cover a wider part of individuals with severe addiction problems and dual diagnoses – individuals with a high risk of falling through the welfare safety net and becoming homeless. Moreover, the evaluation of the Danish programme also points to considerable structural barriers to implementing Housing First-based policies, especially given an increasing lack of affordable housing in Denmark's larger cities.

Thus one should be cautious about interpreting the empirical findings in this article from an individualist perspective. Whilst the analysis indicates that homelessness in Denmark is not widely associated with more general poverty problems, the statistical analysis did not measure possible structural and systemic factors such as barriers of access to affordable housing for vulnerable

groups, nor did it address possible shortcomings in the social support system for these groups. Rather, the analysis has identified those individuals most likely to be affected by such adverse structural trends and systemic deficiencies and who are in need of more intensive and targeted interventions.

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