Unemployment and health in the German population: results from a 2005 microcensus

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Abstract

Background

Although the health sciences have been observing the negative impact of mass unemployment on health for some time now, health reporting remains fragmentary.

Methods

The 2005 microcensus was conducted as an official random sample survey. A total of 380,000 households, comprising 820,000 individuals, took part. Providing health information was optional with response ratio about 85%. The Scientific Use File contains a 70% subsample of the data set.

Results

As of the survey date, average annual illness rates for 2005 were 6.5% among unemployed and 26.6% among inactive persons seeking to work (not available). If unemployed and inactive persons seeking to work are pooled into single group of “jobseekers”, their average annual illness rate is 8.8%. It's significantly higher than for employed individuals, whose rate was 4.4%.

However, the age-standardised odds ratios decrease from 2.2 to 1.8 for female jobseekers and from 2.2 to 1.6 for male jobseekers after adjustment for sociodemographic characteristics, family type, household structure, education, vocational training, socioeconomic variables, disabilities, smoker status, and other factors.

The children of jobseekers who are the principal income earners were more than proportionally ill at the survey date, too.

In multivariate model calculations, among persons who had been unemployed a year before, an illness lasting more than twelve months had strongest impact on chances for present employment. Chances for reintegration were likewise substantially lower for persons with a disability.

Conclusion

The microcensus analyses confirm the multifarious interactions between health and occupational status. Unemployment constitutes a present challenge for public health.

Keywords: unemployment and health, illness, disability, German 2005 microcensus

Introduction

Ever since the global economic crisis of 1929 research has examined the negative impact of involuntary job loss on health. “Marienthal: The Sociography of an Unemployed Community” by Jahoda, Lazarsfeld and Zeisel (1933), established a starting point for theoretical phase models of the individual experience of unemployment (Eisenberg and Lazarsfeld 1938). A number of significant theoretical approaches attempted to elucidate the interactions between unemployment and health:

- psychic deprivation model caused by the loss of manifest and latent benefits of work due to job loss, articulated by Jahoda (1981),
- the vitamin model of Warr (1987), describing a complex system of relations among nine environmental factors and mental health,
- financial deprivation and agency restriction model on options for action due to impediments and impoverishment during unemployment, according to Fryer (1986)
- identity theories (Ezzy 1993; Nordenmark and Strandh 1999), which also take account of perceived expectations and judgments from the social environment and point out alternative identity roles,
- stress approaches to an explanation with unemployment as a stressful phase of life, for example as in the transactional stress theory of Lazarus (1966; Lazarus and Folkman 1984) or in demands-control models (Creed and Bartrum 2006).

In the critical assessment of earlier theories, differential unemployment research places the emphasis on the diversity of individual ways of dealing with unemployment. According to the current status of research, various influencing factors moderate the effects of unemployment on health (Warr et al. 1988; Winefield 1995; Murphy and Athanasou 1999; McKee-Ryan et al. 2005; Paul and Moser 2009). The direction of the operation of effects between

unemployment and individual health status is one of the fundamental scientific questions (Creed and Bartrum 2006; Winefield 1995). One indicator of the causative effect of unemployment on health status is the frequent observation of an improvement in mental health after a return to employment (Murphy and Athanasou 1999; McKee-Ryan et al. 2005; Paul and Moser 2009). Many analyses show adverse effects on the health of unemployed individuals within a broad range of diseases – both internationally (reviews Winefield 1995; Murphy and Athanasou 1999; McKee-Ryan et al. 2005; Paul and Moser 2009; Kieselbach et al. 2006) and in Germany (Grobe and Schwartz 2003; Hollederer and Brand 2006; Hollederer 2009), but health reporting on the elevated risk of illness among the unemployed remains fragmentary.

Methods

The 2005 microcensus was an official random sample survey of the population and the labour market. Sampling districts of Germany were randomly selected by single-stage cluster sampling. All households and individuals in the districts were then surveyed by computer-assisted personal interviewing. The selection rate was 1% of the population. A total of some 380,000 households, comprising 820,000 individuals, took part in the survey in 2005. Thus the microcensus represents the largest annual household survey in Europe. It was conducted on a continuous, infra-annual basis for the first time during 2005, using the concept of the "flexible reporting week". The Microcensus Scientific Use File 2005 used here contains a 70% subsample selected at random from the original data set, and was prepared by the Federal Statistical Office in 2007. The methods, quality and results of the 2005 microcensus are well documented in the publication series of the Federal Statistical Office (StaBu 2006; Afentakis and Bihler 2005), by GESIS-ZUMA (Lechert and Schimpl-Neimanns 2007) and Hollederer (2010).

Most of the information was given under the statutory obligation to provide information; providing health information in the supplementary programme was optional. The unit non-response of 4.4% of the households surveyed was low, and the voluntary response to health questions, at roughly 85% of those interviewed, was high.

The extrapolation for the microcensus is carried out by the Federal Statistical Office, in a first step, by calculating compensation factors on the basis of information about non-responding households, so as to compensate for the recognized random and systematic errors in the random sample. In a second step, the random sample distributions for selected auxiliary variables, weighted with the compensation factors, are adjusted to key figures from the ongoing population projections and from the Central Register for Foreigners.

The microcensus asks about illnesses and accident injuries suffered by interviewees during the previous four weeks. An interviewee is considered ill under the terms of the microcensus if "he or she could not fully exercise his or her usual employment". A supplementary microcensus question, "Do you still have this illness or accident injury today?", identified the prevalence of illness as of the interview date. The microcensus's new continuous sampling method during the 52 weeks thus determines illness rates as an average for the year 2005.

The 2005 microcensus furthermore incorporates the Labour Force Survey (EU-LFS) of the countries of the European Community, which is conducted in parallel in all EU Member States. Here the labour force concept of the International Labour Organisation (ILO) (1998) defines the criteria for categorising the economically active population as either employed or unemployed, and classifies the rest as inactive. Persons age 15 and above are classified as unemployed if they

- were not in a paying employment relationship or self-employed during the week of the report,
- were available to start work immediately (within two weeks),
- had taken active steps to find a job or self-employment within the last four weeks.

Since the definition of unemployment is closely linked with the criterion of availability for the labour market, and illnesses can affect availability, inactive persons are additionally sorted into those seeking jobs and other inactive persons in Tables 1 and 2. Tables 3 and 4 combine unemployed persons and inactive persons seeking jobs into the single group of "jobseekers".

A logistic regression analysis was used to identify the independent variables that induce differences in the dependent variable. The B regression coefficients indicate whether the association between the independent variable and the dependent variable is positive or negative. The effect coefficient EXP(B) was used in evaluating the influencing variable; it indicates the factor by which the odds ratio is multiplied. 95% confidence intervals were calculated for the odds ratios. For predictions, independent variables were incorporated into the analysis in various models. One prerequisite for their application was that the independent variables must be metric or categorical. The goodness of the model fit was evaluated with the likelihood function. The limit for the inclusion of covariants in the logistic regression analyses was a significance level of $p < 0.05$, and the found differences from the reference category were considered statistically significant if the error probability was five percent. Forward selection using the Wald criterion was used as the selection method. In this method, variables are included in the model only if they contribute significantly to improve the goodness of the model. In the present study, a series of model variants were calculated using various combinations of independent variable sets. Out of the various model variants, the model calculation with the best goodness of fit is presented below.

Results

The four groups in Tables 1 through 3 – employed, unemployed, inactive seeking to work and other inactive persons (ILO 1998) – reflect the full population of employable age (15 to 64 years) in Germany. According to the Microcensus Scientific Use File 2005, the number of persons between ages 15 and 64 in Germany is estimated at 55,137 thousand. Of this age group, 65.4% are employed and 8.3% are unemployed; 1.2% count as inactive persons seeking to work (but not available for work), and 25.1% are other inactive persons.

Comparisons among the employment status groups reveal distinct differences in structural characteristics, e.g. gender, age, nationality, education, occupational status, household structure, socioeconomic variables (Table 1).

Table 1: Sociodemographic characteristics and education / vocational training of employed, unemployed and inactive persons in Germany in the 2005 microcensus

	Em-ployed persons	**Jobseekers**			**Other inactive persons**	**Total**
			including:			
			Unem-ployed persons	**Inactive persons**		
(N in thousands)	% of column	% of column	% of column	% of column	% of column	% of column
1	2	3	4	5	6	7
Sociodemographic characteristics						
Gender (N)	*(36,046)*	*(5,246)*	*(4,598)*	*(648)*	*(13,846)*	*(55,137)*
Male	55.0	54.8	56.0	46.0	37.3	50.6
Female	45.0	45.2	44.0	54.0	62.7	49.4
Age group (N)	*(36,046)*	*(5,246)*	*(4,599)*	*(648)*	*(13,846)*	*(55,139)*
15-29	20.9	28.3	26.9	38.3	40.8	26.6
30-49	55.1	46.2	47.6	36.4	20.2	45.5
50-64	24.0	25.5	25.5	25.3	39.0	27.9
Nationality (N)	*(36,046)*	*(5,246)*	*(4,598)*	*(648)*	*(13,845)*	*(55,137)*
German	91.6	82.9	83.0	82.3	86.6	89.5
From other EU State	3.4	4.1	4.2	2.9	3.3	3.5
From non-EU State	4.9	13.0	12.7	14.8	10.1	7.0
Country of birth (N)	*(36,046)*	*(5,246)*	*(4,598)*	*(648)*	*(13,845)*	*(55,137)*
Germany	85.7	75.1	75.1	74.8	80.0	83.3
Elsewhere	14.3	24.9	24.9	25.2	20.0	16.7
Western / Eastern Germany (N)	*(36,046)*	*(5,246)*	*(4,598)*	*(648)*	*(13,845)*	*(55,137)*
West	80.2	64.0	63.5	67.7	81.0	78.9
East	19.8	36.0	36.5	32.3	19.0	21.1
Education and vocational training						
Highest level of general school certification (N)	*(36,045)*	*(5,246)*	*(4,599)*	*(649)*	*(13,846)*	*(55,139)*
Lower secondary school-leaving certificate	31.6	39.7	40.1	36.7	34.1	33.0
Certificate from general secondary school	9.1	15.2	16.0	9.9	2.8	8.1
Intermediate school-leaving certificate (Mittlere Reife)	26.2	20.0	20.2	19.0	15.2	22.8
Certificate of aptitude for specialised short-course higher education	7.0	4.0	3.9	4.3	3.4	5.8
General or subject-specific certificate of aptitude for higher education	22.9	11.4	11.4	11.9	16.2	20.1
Not stated	0.6	0.7	0.7	0.9	0.7	0.6
Not applicable (no certificate or still in school)	2.7	9.0	7.8	17.4	27.6	9.5
Highest level of occupa-tional certification (N)	*(36,045)*	*(5,245)*	*(4,597)*	*(647)*	*(13,846)*	*(55,135)*
No vocational training cer-tificate or university degree	18.4	33.0	31.2	45.9	53.0	28.5
Training in semi-skilled occupation, practical	1.5	2.4	2.3	2.5	1.5	1.6

vocational training						
Certificate of completion of apprenticeship, specialised vocational school	53.5	52.1	53.9	39.6	35.5	48.9
Master's or technician's certification, or equivalent, from specialised technical school	9.5	4.8	4.9	4.5	3.9	7.6
Diploma from specialised institution of higher education or school of administration	6.1	2.6	2.7	2.3	2.0	4.7
University degree or doctorate	10.4	4.3	4.3	4.3	3.5	8.1
Not stated	0.6	0.7	0.7	0.9	0.6	0.6
Occupational status (current or most recent) (N)	*(36,046)*	*(5,246)*	*(4,597)*	*(649)*	*(13,846)*	*(55,138)*
Self-employed	10.7	3.4	3.4	3.5	2.5	7.9
White-collar	50.1	33.9	34.4	30.8	30.5	43.7
Blue-collar, home worker	27.4	46.3	47.5	37.6	20.1	27.4
Other (civil servant, trainee, soldier, etc.)	11.8	5.1	5.0	5.1	4.7	9.3
Not applicable (no previous occupation)	-	11.4	9.7	23.0	42.2	11.7
Family type and household structure						
Family type (N)	*(35,946)*	*(5,233)*	*(4,587)*	*(646)*	*(13,702)*	*(54,881)*
Married with unmarried children	45.4	35.7	36.0	33.9	47.9	45.1
Unmarried domestic partners with unmarried children	3.5	4.4	4.3	5.3	2.4	3.3
Single parent with unmarried children	6.4	12.4	11.8	17.0	8.6	7.5
Married without unmarried children	18.5	16.3	16.5	15.0	25.6	20.1
Single	19.1	26.3	26.6	24.6	13.2	18.3
Others	7.0	4.8	4.9	4.2	2.3	5.6
Socioeconomic variables						
Net income for past month (N)	*(34,223)*	*(5,028)*	*(4,415)*	*(615)*	*(13,332)*	*(52,585)*
Under EUR 700	20.6	70.7	69.4	74.7	39.1	20.6
EUR 700 or more	79.4	29.3	30.6	25.3	60.9	79.4
Basic livelihood (N)	*(36,046)*	*(5,246)*	*(4,598)*	*(648)*	*(13,846)*	*(55,138)*
Social assistance, social welfare, state basic benefits	0.5	3.4	3.2	5.1	4.1	1.6
Employment in previous year						
Employment one year ago (voluntary)	*(33,859)*	*(5,047)*	*(4,431)*	*(614)*	*(13,321)*	*(52,225)*
Employed, trainee	90.9	25.6	26.8	16.9	5.9	62.9
Unemployed	3.2	56.6	57.7	48.5	3.6	8.4
School or university student	3.6	7.0	5.5	17.4	34.1	11.7
Retired / in pre-retirement	0.3	0.5	0.4	0.8	22.2	5.9
Permanently unfit for work	0.1	0.6	0.4	2.0	3.6	1.0
Homemaker (F and M)	1.0	5.7	5.4	8.0	24.5	7.5
Military or alternative service	0.2	0.4	0.4	0.2	0.1	0.2
Others	0.7	3.7	3.4	6.2	6.0	2.3

According to self-provided information in the 2005 microcensus, 7.9% of the employed population have a recognised disability. In Germany, an official finding of disability is provided by the local benefits administration. This status requires the existence of a health problem that is not merely transient but lasts for more than six months. Persons whose disability is estimated at 50 percent or more are considered "severely disabled". Participation in employment is below average among the disabled (Table 2). The percentage of disabled persons among the employed, at 5.1%, is significantly lower than among the unemployed, at 6.9%.

Illness or accident injuries within the past four weeks were reported by 10.4% of the employed population. A large proportion of illnesses and accident injuries persisted as of the interview date. Annual average illness rates for 2005 were significantly higher for unemployed persons at the survey date, at 6.5%, than for employed persons, at 4.4%.

The rates were highest among inactive persons seeking to work, at 26.6%. The extremely large divergence from the other groups is explained primarily by a selection effect caused by the definition of the group. If a sick jobseeker is unavailable to the labour market within the next 14 days because of illness, that person is not counted as unemployed under the criteria of the ILO's labour force concept. Nearly one-third of the inactive persons seeking to work are unavailable to the labour market because according to their own information they cannot take on a new job within two weeks because of "illness or unfitness for work". If unemployed persons and inactive persons seeking to work are pooled into a single group of "jobseekers", their average annual illness rate is 8.8%.

Medical treatment, either outpatient or inpatient, had been provided within the last four weeks for 91,4% of the persisting illnesses and accident injuries.

According to the 2005 microcensus, unemployed persons have the highest percentages of smokers among the economically active population. At the survey date, 51.2% of the unemployed smoked tobacco products, while the level was 33.7% among the employed and 23.1% among other inactive persons (Table 2).

The risk of morbidity at the survey date rises with age. But illness among the unemployed remains higher than among the employed in all age groups up to age 60.

After adjustment for age, female jobseekers and male jobseekers each have a highly significantly elevated odds ratio of 2.2 for illness or accident injury at the survey date, compared to employed women and men (95% CI: 1.86-2.61 and 1.84-2.54). However, the odds ratios decrease to 1.8 (95% CI: 1.46-2.18) for female jobseekers and to 1.6 (95% CI: 1.30-2.00) for male jobseekers when in addition to age, adjustments are applied for other sociodemographic characteristics, education and vocational training, family type and household structure, socioeconomic variables, other influencing factors (Table 3), and (severe) disability and smoker status (Table 2). These risks are likewise elevated with a high level of statistical significance.

Table 2: Health of unemployed, employed and inactive persons in Germany in the 2005 microcensus

(N in thousand; N with voluntary disclosure of health information)	**Em-ployed persons**	**Jobseekers**			**Other inactive persons**	**Total**
			including:			
			Unem-ployed persons	**Inactive persons**		
	% of column	% of column	% of column	% of column	% of column	% of column
1	2	3	4	5	6	7
Officially confirmed disability (N)* **	*(30,911)*	*(4,518)*	*(3,989)*	*(530)*	*(11,871)*	*(47,301)*
No disability	94.9	92.4	93.1	87.2	84.6	92.1
Disability	5.1	7.6	6.9	12.8	15.4	7.9
Including: severe disability	*2.9*	*4.1*	*3.7*	*7.2*	*12.1*	*5.3*
Illness / accident injury in past four weeks* (N)**	*(30,926)*	*(4,528)*	*(3,995)*	*(533)*	*(11,832)*	*(47,286)*
No	90.7	87.9	90.3	69.2	87.2	89.6
Yes	9.3	12.1	9.7	30.8	12.8	10.4
Yes, sick	*8.6*	*11.5*	*9.1*	*29.1*	*12.3*	*9.8*
Yes, injured in accident	*0.7*	*0.7*	*0.5*	*1.7*	*0.5*	*0.6*
Continuation of illness / accident injury at survey date (N)* **	*(30,927)*	*(4,527)*	*(3,994)*	*(533)*	*(11,832)*	*(47,286)*
Yes	4.4	8.8	6.5	26.6	10.1	6.2
No, not continuing	4.8	3.2	3.1	3.8	2.6	4.1
No information	0.1	0.1	0.1	0.4	0.1	0.1
Not sick / injured in accident in past four weeks	90.7	87.9	90.4	69.2	87.2	89.6
Duration of continuing illness at survey date (N)* **	*(1,220)*	*(369)*	*(240)*	*(130)*	*(1,135)*	*(2,725)*
1 to 3 days	9.2	4.1	5.0	/	3.9	6.3
more than 3 days to 1 week	14.1	5.1	6.7	/	3.8	8.6
more than 1 week to 2 weeks	14.1	7.6	8.8	6.2	4.4	9.2
more than 2 weeks to 4 weeks	13.3	8.9	10.0	6.9	5.4	9.4
more than 4 weeks to 6 weeks	7.9	7.0	7.1	6.9	3.3	5.8
more than 6 weeks to 1 year	19.0	17.1	14.2	22.3	11.6	15.7
more than 1 year	22.5	50.1	48.3	53.1	67.7	45.0
Smoker Status* (N)**	*(29,949)*	*(4,396)*	*(3,879)*	*(516)*	*(11,471)*	*(45,815)*
Present smoker	33.7	50.5	51.2	45.5	23.1	32.7
Former smoker	18.8	13.8	13.7	14.5	14.3	17.2
Never smoked	47.5	35.7	35.1	39.9	62.6	50.1

Notes: Significance level of Pearson phi-square and chi-square test for columns 2 and 3: *** $p < 0.001$; Extrapolated group figures of less than 5,000 are not shown; a slash (/) appears instead.

As Table 2 shows, on average, not only are employed persons sick less often than the other employment status groups, but their illnesses are less severe and on average last a

considerably shorter time. About half of the unemployed persons and inactive persons seeking to work who were sick at the survey date had long-term illness lasting more than one year.

Illness rates of the unemployed at the survey date varied as a function of the length of time they had been looking for work (Fig. 1). The illness rate at the survey date was significantly higher among the long-term unemployed, at 7.4%, than among the other unemployed, at 5.3%.

Among those seeking work because of a dismissal, an illness-related "facilitation effect" is detectable in the first months of unemployment. It is apparently caused by the circumstances of a dismissal, before the person enters formal unemployment status. Over the long term, illness rates rise significantly with the duration of a job search. They are by far the highest among persons who have been seeking to work for four years or more.

(Fig. 1 here)

On average, blue-collar workers suffered more often from illness or accident injuries at the survey date than did white-collar workers, self-employed individuals and individuals in other categories.

Self-employed persons have the lowest levels of illness when at work, and the highest level of illness when unemployed, compared to blue-collar employees, white-collar employees, and rest groups as of the survey date.

On the whole, associations between net income in the past month and illness rate are non-uniform and non-linear.

The 2005 microcensus also surveyed occupational status a year before the survey date. It found that 26.8% of the unemployed and 16.9% of the inactive persons seeking to work had been employed a year earlier. The fact that 90.9% of employed persons had also been employed a year earlier, and that 57.7% of the unemployed and 48.5% of inactive persons seeking to work had had no employment a year earlier, suggests a generalised high level of impermeability in the German employment system (Table 1).

Within the group of persons who had been without employment a year before, those currently employed had a significantly better illness rate at the survey date than did unemployed persons and the inactive persons seeking to work (Table 3).

Conversely, in the group of persons who had been employed a year before, the illness rate was worse among the currently unemployed and the inactive persons currently seeking to work than it was among the employed.

Both unemployment and the incidence of illness are as a rule subject to very substantial seasonal fluctuations during the year. During the first quarter, the 2005 microcensus counted about one-third of all persons who had fallen ill or suffered an accident injury during the past four weeks. The seasonal fluctuations have a very considerable influence on health comparisons between the employed and the unemployed (Table 3).

Table 3: Illness rates at survey date by gender, age, nationality, occupational certification and occupational position in Germany in the 2005 microcensus

(N in thousand; N with voluntary disclosure of health information)	**Em-ployed persons**	**Job-seekers***	**Other inactive persons**	**Total**	**Phi for columns 2 + 3 (Signifi-cance level)**
	Ill or injured in accidents in % of column				
1	2	3	4	5	6
(N)	*(30,904)*	*(4,523)*	*(11,822)*	*(47,249)*	
Sociodemographic characteristics					
Gender					
Male	4.2	8.4	12.0	6.1	P < 0.001
Female	4.6	9.4	9.0	6.4	P < 0.001
Age group					
15-19	3.0	3.6	2.6	2.7	n.s.
20-24	3.0	5.1	2.7	3.2	P < 0.05
25-29	3.4	5.0	4.1	3.7	n.s.
30-34	3.7	6.6	6.1	4.3	P < 0.01
35-39	3.7	7.6	9.0	4.6	P < 0.001
40-44	4.2	8.7	14.2	5.5	P < 0.001
45-49	4.3	10.9	19.9	6.5	P < 0.001
50-54	5.4	13.5	22.2	8.6	P < 0.001
55-59	6.9	15.2	20.4	11.2	P < 0.001
60-64	7.5	12.4	14.0	12.1	P < 0.05
Nationality					
German	4.4	8.5	10.3	6.2	P < 0.001
From other EU State	4.4	10.2	9.8	6.3	P < 0.01
From non-EU State	4.8	10.4	8.6	7.1	P < 0.001
Country of birth					
Germany	4.4	8.5	10.1	6.1	P < 0.001
Elsewhere	4.5	9.9	10.3	7.0	P < 0.001
Residence in Western / Eastern Germany					
West	4.5	9.5	9.8	6.2	P < 0.001
East	4.1	7.8	11.3	6.3	P < 0.001
General school-leaving certificate					
No school-leaving certificate or lower secondary school-leaving certificate	5.5	10.3	10.8	7.9	P < 0.001
Certificate above lower secondary level	3.8	7.5	9.0	5.0	P < 0.001
Education and vocational training					
Highest level of occupational certification					
No vocational training certificate or university degree	4.9	9.5	6.6	6.2	P < 0.001
1. Training in semi-skilled occupation, practical vocational training	4.5	10.5	14.5	7.8	P < 0.05
2. Completion of apprenticeship, specialised technical school	4.5	8.5	14.3	6.7	P < 0.001
3. Master's or technician's certification, or equivalent, from specialised technical school	4.2	8.5	14.5	5.8	P < 0.01
4. Diploma from specialised institution	3.8	9.6	11.5	4.9	

of higher education or school of administration					P < 0.01
5. University degree, doctorate	3.6	7.7	9.7	4.5	P < 0.01
Occupational status (current or most recent)					
Self-employed	3.6	13.3	17.8	5.1	P < 0.001
White-collar	4.1	8.8	12.1	5.9	P < 0.001
Blue-collar, home worker	5.2	9.8	19.0	8.5	P < 0.001
Other (civil servant, trainee, soldier, etc.)	4.2	4.9	11.7	5.1	n.s.
Not applicable (no previous occupation)	-	5.3	3.5	3.7	-
Family type and household structure					
Persons in household					
1 person	5.3	11.3	19.1	8.5	P < 0.001
2 persons	5.1	10.3	14.0	8.0	P < 0.001
3 persons or more	3.8	7.1	6.2	4.7	P < 0.001
Employed persons in household					
No member of household is employed	5.2	10.3	15.0	8.4	P < 0.001
At least 1 other household member is employed	3.9	6.9	6.8	4.8	P < 0.001
Family type					
Single parent with unmarried children	5.0	10.1	8.1	6.7	P < 0.001
Others	4.3	8.7	10.2	6.2	P < 0.001
Small children					
Child(ren) under age 4	3.3	4.5	3.6	3.5	n.s.
No children, or all children age 4 and above	4.5	9.3	10.8	6.5	P < 0.001
Socioeconomic variables					
Net income for past month (N)					
EUR 1 to under 700	4.4	8.4	7.2	6.4	P < 0.001
EUR 700 or more	4.4	10.1	18.1	6.1	P < 0.001
Basic livelihood (N)					
Social assistance, social welfare, basic coverage	9.9	14.9	22.0	18.3	n.s.
No benefits drawn	4.4	8.6	9.7	6.1	P < 0.001
Other influencing factors					
Size of community					
Population under 20,000	4.3	7.7	10.1	5.9	P < 0.001
Population 20,000 to under 500,000	4.5	8.9	9.9	6.4	P < 0.001
Population 500,000 and more	4.4	10.9	10.6	6.7	P < 0.001
Season 2005					
First reporting quarter	5.1	8.5	10.0	6.7	P < 0.001
Second to fourth reporting quarter	4.1	9.0	10.1	6.1	P < 0.001
Employment in previous year					
Employment one year ago (voluntary), including:					
(N)	*(27,865)*	*(1,206)*	*(725)*	*(29,796)*	
Employed, trainee	4.4	6.8	10.8	4.6	P < 0.001
(N)	*(1,016)*	*(2,493)*	*(435)*	*(3,944)*	
Unemployed	4.4	10.0	17.5	9.4	P < 0.001

Notes: Extrapolated group figures of less than 5,000 are not shown; a slash (/) appears instead;
* The group of "jobseekers" comprises unemployed persons and inactive persons seeking to work (but not available for work).

According to the 2005 microcensus, about one-tenth of children under age 15 live in families whose principal income earner is unemployed or inactive and seeking to work. The children of unemployed principal income earners and inactive principal income earners seeking to work are somewhat more frequently ill or accident-injured, at 4.8% and 4.3%, than the children of employed or other inactive principal income earners, at 3.3% and 3.5%. Illnesses are shorter, on average, among the children of employed principal income earners. Their illnesses and accident injuries receive medical treatment less often than among the other employment status groups.

For the logistic regression analysis in Table 4, only those persons were included in the model calculation who had been workless a year before the survey, and who did not count as other inactive persons at the survey date. As the independent variable, a dichotomous variable was formed with a value of 1 for “employed at the survey date” and 0 for “unemployed/inactive seeking to work”.

The predictors taken into consideration were sociodemographic characteristics, education and vocational training, family type and household structure, and other influencing factors (Table 3) and health variables. The model is intended to check the influence of an officially recognised disability or severe disability, and of an illness or accident injury lasting more than one year.

According to this model, among those who said they had been unemployed a year before, the chances for employment at the survey date were most sharply reduced by an illness or accident injury lasting more than one year. This long-term illness or accident injury, which

already existed a year earlier while the person was unemployed, reduces the odds ratio with a high effect size to 0.26.

Age is the second largest influencing factor. The probability of present employment is minimised highly significantly, to an odds ratio of 0.29, for seniors age 50 and above who had been unemployed a year earlier.

The third-largest effect comes from a further health variable. For severely disabled persons who were unemployed a year earlier, the chance of employment was reduced by half at the survey date (odds ratio = 0.53). This result confirms the often-observed special difficulties of reintegrating the severely disabled into the labour market.

If there are other employed persons in the same household, the chances of present employment double for those unemployed a year earlier (odds ratio = 2.01). If those who were unemployed a year before live in a single-person household, the probability of employment is likewise higher (odds ratio = 1.49). On the other hand, the presence of small children reduces chances of integration (odds ratio = 0.61). Low levels of education – as expected – act as an impediment to integration into the labour market (odds ratio 0.61). Other significant influencing factors for integration into the labour market were the region of residence and the size of the community.

Table 4: Employment among those unemployed a year ago in Germany in the 2005 microcensus

	Regression coefficient B	Standard error	Wald	Sig.	Odds ratio	95.0% CI for odds ratio	
						Lower bound	Upper bound
Sociodemographic characteristics **Age** (reference: under age 30)		113.579	0.000				
• age 30 to less than 50	-0.395	0.096	16.996	0.000	0.673	0.558	0.813
• age 50 and above	-1.224	0.117	108.633	0.000	0.294	0.234	0.370
Region of residence (reference: Western Germany) • Eastern Germany	-0.230	0.085	7.306	0.007	0.794	0.672	0.939
Education and vocational training **General school-leaving certificate** (reference: certificate above lower secondary level) • Lower secondary school-leaving certificate or no certificate	-0.500	0.084	35.092	0.000	0.607	0.514	0.716
Family type and household structure **Household size** (reference: multi-person household) • Single-person household	0.397	0.090	19.364	0.000	1.487	1.246	1.774
• **Number of other employed persons in household**	0.696	0.086	66.091	0.000	2.005	1.696	2.372
Small children (reference: no children, or all children age 4 and above) • Children under age 4	-0.497	0.148	11.335	0.001	0.608	0.455	0.812
Health variable **Degree of disability** (reference: no severe disability) • Severe disability	-0.634	0.236	7.221	0.007	0.530	0.334	0.842
Duration of illness (reference: none or less than one year) • Sick or injured for more than one year	-1.348	0.304	19.656	0.000	0.260	0.143	0.471
Other influencing factors **Community size class** (reference: population under 20,000)			7.575	0.023			
• Population 20,000 to under 500,000	-0.143	0.087	2.688	0.101	0.867	0.731	1.028
• Population 500,000 and more	-0.312	0.116	7.256	0.007	0.732	0.583	0.919
Constant	-0.528	0.134	15.460	0.000	0.590		

Notes: Nagelkerke r-square model = 0.119; -2 log likelihood = 3,989.78;
A small conceptual inconsistency lies in the microcensus's use of the term "workless" here, familiar from German social law concept, in the answer option for the microcensus questionnaire, in place of the ILO term "unemployed", which is not commonly used in Germany.

Discussion

The results of the 2005 microcensus impressively confirm the elevated risk of morbidity among the unemployed and inactive persons seeking to work, relative to the employed – even when controls are included for various potential groups of determinants like sociodemographic characteristics. The comparison analyses of the 2005 microcensus reveal higher levels of illness among inactive persons seeking to work and also former self-employed individuals – levels that have previously been unnoticed in unemployment research. However, not only are unemployed persons and inactive persons seeking to work stricken with illness somewhat more often than the employed, their illnesses last substantially longer on average. Their ratio of persons with long-term illnesses is more than twice that for employed persons.

The illness rate of the unemployed at the survey date varies as a function of how long they have been looking for work. It is significantly higher among the long-term unemployed than among employed persons who have been looking for work for a shorter time.

In the interplay between illness and unemployment, moreover, the 2005 microcensus reveals hitherto unnoticed seasonal effects that have an impact on health comparisons.

Moreover, the 2005 microcensus documents a strikingly more extensive use of tobacco among jobseekers than among the employed.

The multivariate regression analyses provide evidence of a strong influence of longer-term illness and accident injuries on integration into the labour market. In the logistic regression analyses, among those who were employed a year earlier an illness or accident injury lasting more than a year causes the greatest reduction in chances for future employment. Prospects for employment decrease further with increasing age and with severe disability. The multivariate model calculations demonstrate a clear selection effect: long-term illness, severe

disability and higher age adversely affect the integration of jobseekers into the labour market. The regression analyses indicate that those with disabilities and chronic illnesses are in need of greater attention in terms of compensating for disadvantages. For the disabled, participation in work plays a key role for their entire integration into society.

The analyses also provide indications as to influencing factors and prognoses about membership in groups. Household structures can be both a help and a hindrance. Social support benefits of employed household members may contribute toward better integration into the labour market. Small children under age four in the same household are associated with a reduced probability of employment. This result may be because caring for small children often limits job seeking to part-time jobs (of which there are very few in Germany) and restricts the jobseekers' mobility. Furthermore, chances for reintegration depend on regional labour markets, which in Eastern Germany and various metropolitan areas like Berlin are characterised by above-average unemployment and few open positions.

The results concerning the health status of children of principal income earners seeking to work support the assumption that health inequality may reproduce itself across generations within the community of the needy.

The interactions between unemployment and health create a need for specific measures for prevention. The microcensus analyses reveal needs for a specification of target groups, strategies for making contact, and all-inclusive concepts to promote good health. The results on the health of the children of unemployed principal income earners also argue in favour of approaches systemically addressed to the entire family.

There is an especially strong need for further research in regard to the range and progression of illnesses among the unemployed. The narrowly defined selection of topics in the supplementary programme in regard to health has left important questions unanswered about

the health status of the unemployed. Significant health information is lacking, such as the principal diagnostic groups underlying the illnesses and a simple standardised question about subjective health status. It would also be desirable to have information about the genesis of the illness concerned, and about the nature of disabilities.

As in any representative survey, the selected surveying method entails limits in principle as to validity and scope in the microcensus as well. When extrapolated to the entire statistical population, these results entail on principle the risk of random error due to the random sample, generally as a function of the size of the sample and the spread of measured values in the statistical population. A methodological problem with regression analyses lies in their multicollinearity.

Conclusion

All in all, the microcensus is very good for identifying groups of persons at elevated risk of morbidity. The population-related survey considered unemployed people in a representative way and the sample size is favourable. The self-reported information from the interviewees can be assumed to provide a relatively valid assessment of illness status, because very high rates of outpatient or inpatient treatment are reported. Thus the microcensus would have potential for development as a source of continuous, systematic reporting about the health of the unemployed in Germany. Unemployment is not only as one of the greatest unresolved economic and sociopolitical problems, but also as a major public health challenge.

Conflict of interest

The author declares that he has no conflict of interest.

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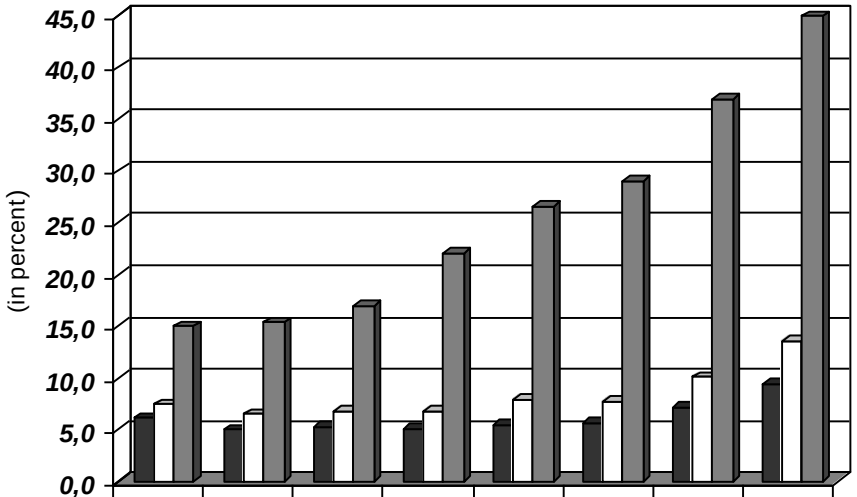
Fig. 1: Percentages of persons with illnesses and accident injuries at the survey date, by duration of job search



	less than 1 month	1 to less than 3	3 to less than 6	½ less than 1 year	1 to less than 1	1 ½ to less than 2	2 to less than 4	4 years or more
Unemployed	6,1	5,0	5,4	5,1	5,5	5,6	7,2	9,5
Jobseekers	7,4	6,5	6,8	6,7	8,0	7,7	10,1	13,6
Inactive persons seeking to work (but not available for work)	15,0	15,4	16,9	22,1	26,5	29,0	36,8	44,9

(N = 4,435 thousand; N with voluntary disclosure of health information)

Note: The group of "jobseekers" comprises unemployed persons and inactive persons seeking to work.