



Unemployment at a young age and sickness absence, disability pension, death and future unemployment
- A register-based study of native Swedish and immigrant young adults

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Abstract

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Youth unemployment is an increasing burden on societies around the world. This prospective, register-based cohort study examined the relationship between unemployment and sickness absence, disability pension, death and future unemployment among youth in Sweden. A comparison was also made between immigrants and native Swedes. Another aim was to see if Active Labour Market Programs (ALMPs) and attained education moderated the outcomes. The baseline year was 1992, a year of severe economic downturn. The follow-up period was from 1993 to 2007, divided into three 5-year periods. The study group of 199,623 individuals comprised all immigrants born between 1968 and 1972 who immigrated before 1990 (25,607) and a random sample of native Swedes in the same age range (174,016). Individuals with unemployment benefit in 1990-1991, disability pension in 1990-1992 or severe disorders leading to hospitalization in 1990-1992 were excluded in order to minimize selection bias. Those who were unemployed in 1992 had elevated risk, measured as odds ratios, of ≥ 60 days of sickness absence, disability pension, ≥ 100 days of unemployment and all, except native Swedish women, had elevated risk of death during follow-up. The risk of future unemployment declined until the last follow-up period, while the elevated risk of future sickness absence was about the same in all three follow-up periods. Higher level of education at baseline decreased the risk of future unemployment. Individuals participating in ALMPs had an increased risk of future unemployment, and immigrant women had an increased risk of sickness absence, compared to non-participating individuals. Attained education between 1993 and 1997 decreased the risk of future unemployment and decreased the risk of sickness absence among immigrants. The risk of both future unemployment and future sickness absence increased with the length of unemployment in 1992. Immigrants had higher risk of unemployment both at baseline and follow-up compared with native Swedes, but followed the pattern of native Swedes when unemployed. The conclusion is that exposure to unemployment are associated with elevated risk of future unemployment, sickness absence, disability pension and death fifteen years after exposure. To a society this will mean substantial costs in the form of increased welfare payments and loss of productivity and tax income. Selection to unemployment by individuals already sick, may explain part of the association between unemployment and the studied outcomes.

Keywords: Unemployment, Sick Leave, Disability Pension, Immigrants, Young Adult

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List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

I Helgesson, M., Johansson, B. Nordqvist, T. Lundberg, I. Vingard, E. "Unemployment at a young age and later sickness absence, disability pension and death in native Swedes and immigrants", *European Journal of Public Health*, Vol. 23, No. 4, 2013, pp. 606-10.

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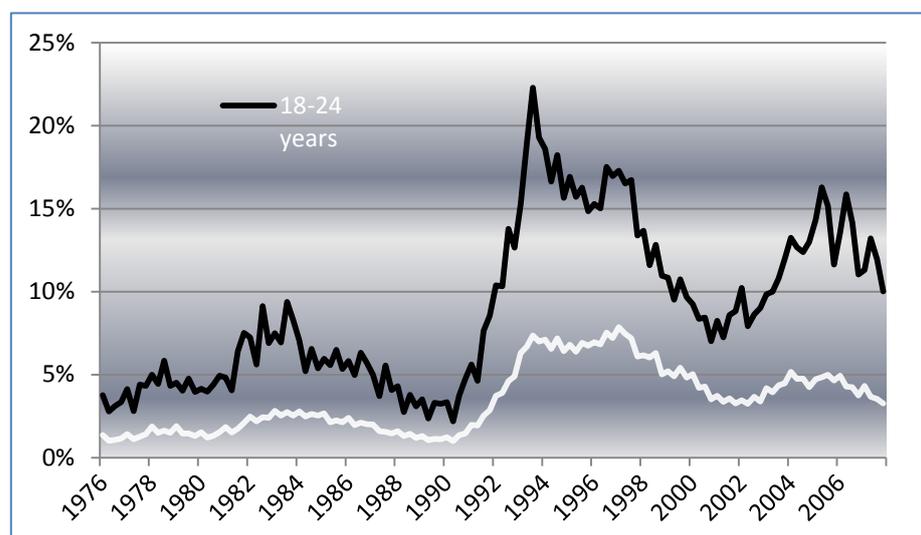
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Introduction

Youth unemployment has become an increasing problem for many western countries in recent decades. The unemployment rate among young people (15 -24 years) in EU was on average 22 percent in October 2011, compared to just over eight percent for older workers (25-74 years) (Eurostat, 2013). Sweden entered a deep recession in the beginning of the 1990s, which in many ways was similar to the situation in Europe after the financial crisis in 2008. The unemployment rate, especially among young individuals, increased substantially, from a few percent in 1990 to over 20 percent in 1993 (Figure 1).

Figure 1 Unemployment rate in Sweden 1976 to 2007



Source: Statistics Sweden

Many studies show that unemployed individuals have worse health, both mentally and physically, compared to employed individuals (McKee-Ryan et al., 2005; Paul & Moser, 2009). The causal relation between unemployment and bad health is, however, unclear. Does unemployment lead to bad health, or will health problems make it harder to succeed on the labour market? Notwithstanding the causal relationship, unemployment is a problem to individual's well-being and ultimately for the well-being of societies. A high utilization of benefits can also erode the foundation of the welfare state.

The main body of research on health effects of unemployment has focused on direct health outcomes (Hammarstrom & Janlert, 2005; McKee-Ryan et al., 2005; Paul & Moser, 2009), a few has exclusively focused on young adults (Hultman & Hemlin, 2008; Novo et al., 2001; Reine et al., 2004). There are very few studies with the outcomes sickness absence/disability pension after a period of unemployment. A Finnish study has found an elevated risk of disability pension due to depression in 2003 among individuals exposed to unemployment in 1998 (Lamberg et al., 2010). An ecological study from Iceland revealed an increased incidence of disability pension due to mental and behavioural disorders one year after a peak in the unemployment rate (Thorlacius & Olafsson, 2010).

Death is a more common outcome in studies on unemployment. A meta-analysis on 20 million individuals indicates a Hazard Ratio of death from any cause of 1.63 for unemployed individuals compared to employed (Roelfs et al., 2011). A longitudinal study from Sweden investigates newly unemployed individuals in an economic downturn and indicates a slightly elevated risk of premature death during the first four-year period of the eight year follow-up period but not in the remaining four years. Adjustment for socioeconomic factors and sickness absence in the years preceding exposure to unemployment erases, however, most of the differences in risk of death between unemployed and not unemployed individuals (Lundin et al., 2010).

Unemployment seems also to predict future unemployment. Two longitudinal studies, one from Sweden and one from Norway, conclude that periods of unemployment in late adolescence increase the risk of future unemployment (Hammarstrom & Janlert, 2000; Hammer, 1992; Hammer, 1997).

Active Labour Market Programs (ALMPs) have been seen to mitigate the health consequences of unemployment (Andersen, 2008; Wulfgramm, 2011), while making it possible for unemployed individuals to remain near the labour market and thereby maintain skills and social contacts (Forslund et al., 2011). There is, however no unambiguous positive effect on future job participation (Forslund et al., 2004; Huber et al., 2009).

According to a Swedish study, unemployed young persons have worse mental health than both young employed individuals and unemployed adults (Hultman & Hemlin, 2008; Reine et al., 2004). The probability of future spells of unemployment is also higher for individuals who were young when they experienced their first period of unemployment (Recotillet & Werquin, 2003). Youth have generally a better initial health compared to adults but possible negative life-style changes, like alcohol consumption, drug abuse, eating habits etc. correlated to unemployment can deteriorate the health relatively fast (Breslin & Mustard, 2003; Hammarstrom, 1994; Reine et al., 2004).

Besides young individuals, immigrants have had harder to succeed on the labour market than native Swedes. Sweden has, compared to many other countries, a relatively large immigrant population. In the 1950s and 1960s, immigration was mainly labour-driven, but after 1970 this changed to immigration of refugees and family members seeking reunification. The research on work and health in the native- compared to immigrant population is fragmentary (Ahonen et al., 2007; EU-OSHA, 2007; Wren & Boyle, 2001). A study on integration of young individuals in four countries (Sweden, Finland, Germany and France) concludes that in Sweden young immigrants have a higher prevalence of mental illness than native Swedes (Malmberg-Heimonen & Julkunen, 2006). Disability pension is more common among immigrants than in the native population, in both Sweden and Norway (Claussen et al., 2010; Osterberg & Gustafsson, 2006).

Materials and Methods

Study population

The study was a prospective cohort study based on registers. The baseline year was 1992, a year of deep recession and rapidly rising unemployment. The cohort was followed from 1993 to 2007. To be classified as unemployed the person must be enrolled as a possible recipient for support from the National Labour Office and instantly be ready to take a job in 1992. Persons classified as having no days of unemployment did have a paid work, studied, received sickness benefit or were outside the labour market. To form a cohort as healthy as possible excluded from the analyses were: individuals who received unemployment benefit in 1990 and 1991, individuals who received disability pension in 1990 to 1992, and individuals who were hospitalized due to pulmonary, cardiovascular, musculoskeletal and psychiatric diagnoses in the period 1990 to 1992. The study group comprised all foreign-born individuals aged 20 to 24 who were living in Sweden in 1992 and had immigrated before 1990 (n=25,607). A random sample of native Swedes in the same age group (n=174,016) was also included in the study (Table 1). Approximately 17,000 persons, both immigrants and native Swedes, emigrated temporarily or permanently from Sweden during the follow-up period. We have chosen to exclude those individuals because their time under risk for sickness absence and disability pension are uncertain and death in another country is not reported to Sweden.

Table 1 Distribution of unemployment in 1992 for individuals in the study

		Total	No days	1-99 days	≥100 days
Native Swedes	Women	83,406	59,397 (71.2%)	15,278 (18.3%)	8,731 (10.5%)
	Men	90,610	60,042 (66.2%)	16,403 (18.1%)	14,165 (15.6%)
Immigrants	Women	13,544	8,471 (62.5%)	2,781 (20.5%)	2,292 (16.9%)
	Men	12,063	6,756 (56.0%)	2,400 (19.9%)	2,907 (24.1%)
Total		199,623	134,666	36,862	28,095

Outcomes

The groups were observed from 1993 to 2007 with regard to:

I) ≥ 60 days of sickness absence in each of three five-year periods. Sickness absence was defined as receiving sickness benefit from the Swedish National Insurance Office. Part-time sick leave was converted into full days, two days with a half day of sick leave equals one full day.

II) Disability pension in the follow-up period from 1993 to 2007. In Sweden, disability pension was granted to individuals expected to remain unable to work for at least one year. Often they had been on sickness absence before receiving disability pension.

III) Death in the follow-up period from 1993 to 2007.

IV) ≥ 100 days of unemployment in each of three five-year periods.

Statistical analysis

Odds ratios and hazard ratios with 95 percent confidence intervals were analyzed for the studied outcomes by logistic regression methods using SAS version 9.2. Potential confounders included in the analyses were age (continuous), income from work in 1991 (continuous) and income from sickness absence in 1990 and 1991 (continuous), region of origin (12 regions), place of residence in Sweden (25 areas), educational background (three levels). Most of the analyses were made separately for men and women, and separately for native Swedes and immigrants. When the results were calculated just for immigrants and native Swedes, adjustments were also made for sex.

Registers used

Data was obtained from the LISA (*Longitudinal Integration Database for Health Insurance and Labour Market Studies*) database for unemployment, sickness absence, education, disability pension, income and native country and residence. Mortality data were collected from the Cause of Death Register, which includes all deceased persons who were registered in Sweden at the time of death, whether death occurred in Sweden or abroad. The National Patient Register provided data on hospitalization.

Results

Sickness absence and disability pension

Individuals on long-term unemployment (≥ 100 days) in 1992 had a higher probability of sickness absence compared to individuals not unemployed; the elevated risk increased among men but not among women until the second and third period of follow-up (Table 2). Individuals on short-term unemployment (1-99 days) had just a slightly elevated risk, if any, of sickness absence in the first period of follow-up. The risk increased, however, until the second and third period of follow-up.

The risk of ≥ 60 days of sickness absence increased slightly with the length of the period of unemployment in 1992, in all three follow-up periods (Table 3). The effect was most pronounced among native Swedes.

There were no associations between ALMPs and future sickness absence 1998-2002 in native Swedes. Immigrant women had a higher risk for sickness absence in the period 1998-2002 if they participated in ALMPs but immigrant men had a slightly decreased risk of sickness absence. Attained education seemed especially beneficial for immigrants, the risk of future sickness absence decreased (Table 4). The numbers were however low.

The elevated risk of disability pension was increased for individuals on long-term unemployment (≥ 100 days) and slightly increased to men on short-term unemployment (1-99 days) (Table 5). The increased risk of disability pension was slightly lower among immigrants compared to native Swedes.

Death

There was a slightly increased risk of death in the follow-up among immigrants and native Swedish men on long-term unemployment; the number of dead were, however, low (Table 5). The elevated risk of death among immigrants was just slightly higher to individuals on long-term unemployment (≥ 100 days) compared to individuals on short-term unemployment.

Future unemployment

A higher proportion of immigrants had long-term unemployment (≥ 100 days) compared to native Swedes, both at baseline and in the follow-up. Swedish-born men had during the follow-up the least risk of ≥ 100 days of unemployment both compared to Swedish-born women and immigrants (Table 6).

Individuals who were unemployed in 1992 had a higher risk of ≥ 100 days of unemployment during the follow-up (Table 7). This was true for individuals both on short-term unemployment (1-99 days) and long-term unemployment (≥ 100 days). The effect was seen in every time-period, but declined over time. During the first five-year interval of follow-up, educational background was of importance to the results (Table 8). For the two other follow-up periods, the effects were much less pronounced.

There was an increasing risk of future unemployment for every step of 50 days until the maximum exposure to unemployment noted in this study of 300 days or more (Table 9).

Even exposure to 1 to 49 days of unemployment increased the risk for ≥ 100 days of future unemployment substantially, particularly in the first period of follow-up.

There were no particular differences between immigrants and native Swedes regarding future unemployment. Immigrants and native Swedes had the same pattern when exposed to unemployment, although from different levels.

Adjustments for previous sickness absence as an indicator of sickness did not alter the Odds Ratios more than marginally for any of the outcomes.

Participation in an Active Labour Market Programme (ALMP) increased the risk of future unemployment in the period from 1998 to 2002 (Table 10). During the first five-year interval of follow-up, educational level at baseline had an effect on the results. In all groups except Swedish men, individuals who had attained higher education between 1992 and 1997 had a slightly decreased risk of future unemployment in the period from 1998 to 2002 (Table 11).

Table 2. Adjusted OR* (CI 95 %) for ≥ 60 days of sickness absence for individuals unemployed 1 - 99 or ≥ 100 days in 1992 compared with individuals with no unemployment in the same year

			1993-1997		1998-2002		2003-2007	
			N	OR	N	OR	N	OR
Native Swedes	Women	1-99 days	1,543	1.04 (0.97-1.11)	3,163	1.10 (1.05-1.15)	3,530	1.15 (1.10-1.20)
		≥ 100 days	1,237	1.27 (1.19-1.37)	2,243	1.30 (1.23-1.38)	2,462	1.36 (1.29-1.44)
	Men	1-99 days	979	1.08 (1.00-1.17)	1,396	1.23 (1.15-1.32)	1,489	1.21 (1.13-1.29)
		≥ 100 days	1,114	1.25 (1.15-1.34)	1,580	1.49 (1.40-1.59)	1,676	1.48 (1.39-1.58)
Immigrants	Women	1-99 days	305	1.02 (0.88-1.19)	707	1.11 (1.00-1.24)	841	1.34 (1.21-1.48)
		≥ 100 days	324	1.34 (1.16-1.55)	649	1.24 (1.11-1.38)	712	1.33 (1.20-1.48)
	Men	1-99 days	159	1.03 (0.84-1.26)	300	1.25 (1.08-1.46)	315	1.22 (1.06-1.42)
		≥ 100 days	231	1.10 (0.92-1.32)	393	1.28 (1.11-1.47)	460	1.45 (1.27-1.65)

*Adjusted for: Age, educational level, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 3. Adjusted OR* (CI 95 %) for ≥ 60 days of future sickness absence for individuals exposed to different lengths of unemployment in 1992 compared to individuals with no unemployment in the same year

		1993-1997		1998-2002		2003-2007	
		N	OR	N	OR	N	OR
1-49 days	Native Swedes	1,280	1,02 (0,96-1,08)	2,316	1,09 (1,04-1,14)	2,566	1,13 (1,07-1,18)
	Immigrants	218	0,96 (0,82-1,12)	493	1,17 (1,04-1,30)	537	1,22 (1,09-1,35)
50-99 days	Native Swedes	1,242	1,08 (1,01-1,15)	2,243	1,19 (1,13-1,25)	2,453	1,21 (1,16-1,27)
	Immigrants	246	1,04 (0,90-1,21)	514	1,15 (1,03-1,28)	619	1,38 (1,24-1,53)
100-149 days	Native Swedes	908	1,15 (1,07-1,24)	1,600	1,27 (1,20-1,35)	1,815	1,37 (1,29-1,44)
	Immigrants	210	1,23 (1,05-1,44)	385	1,17 (1,03-1,32)	432	1,28 (1,14-1,44)
150-199 days	Native Swedes	610	1,36 (1,24-1,49)	995	1,48 (1,37-1,59)	1,050	1,45 (1,35-1,56)
	Immigrants	138	1,21 (1,00-1,46)	274	1,33 (1,15-1,54)	303	1,44 (1,25-1,66)
200-249 days	Native Swedes	437	1,52 (1,36-1,68)	658	1,57 (1,44-1,72)	687	1,55 (1,42-1,69)
	Immigrants	89	1,09 (0,87-1,38)	183	1,26 (1,06-1,50)	209	1,43 (1,21-1,68)
250 -299 days	Native Swedes	233	1,57 (1,36-1,81)	347	1,66 (1,47-1,88)	351	1,58 (1,40-1,79)
	Immigrants	65	1,36 (1,04-1,79)	116	1,43 (1,15-1,78)	130	1,58 (1,28-1,95)
≥ 300 days	Native Swedes	163	1,77 (1,49-2,10)	223	1,77 (1,51-2,06)	235	1,80 (1,55-2,10)
	Immigrants	53	1,41 (1,04-1,90)	84	1,27 (0,99-1,62)	98	1,45 (1,14-1,84)

* Adjusted for: Age, educational level, sex, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 4 Adjusted OR* (CI 95%) for ≥ 60 days of sickness absence during the period 1998-2002, for unemployed individuals who participated in ALMP in 1992/1993 or had a development in education between 1992 and 1997, compared with individuals who neither participated in ALMP nor had a development in education.

		Education		ALMPs		ALMPs+Education	
		N	OR	N	OR	N	OR
Native Swedes	Women	96	1,06 (0,66-1,69)	462	1,13 (0,90-1,43)	127	1,24 (0,79-1,94)
	Men	20	0,47 (0,20-1,09)	357	1,24 (0,95-1,61)	26	0,60 (0,27-1,35)
Immigrants	Women	18	0,58 (0,23-1,45)	187	1,37 (0,96-1,97)	24	0,56 (0,23-1,36)
	Men	4	0,13 (0,02-0,74)	110	0,91 (0,60-1,38)	12	0,27 (0,06-1,21)

*Adjusted for: Age, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 5 Adjusted HR* (CI 95 %) for disability pension and death during follow-up; individuals unemployed 1 - 99 or ≥ 100 days in 1992 compared to individuals with no unemployment

		Disability Pension			Death	
		N	HR	N	HR	
Native Swedes	Women	1-99 days	798	1.05 (0.96-1.14)	75	1.15 (0.88-1.50)
		≥ 100 days	801	1.53 (1.41-1.66)	43	1.02 (0.73-1.43)
	Men	1-99 days	451	1.23 (1.10-1.37)	142	1.18 (0.97-1.44)
		≥ 100 days	617	1.62 (1.46-1.79)	177	1.56 (1.30-1.87)
Immigrants	Women	1-99 days	248	0.98 (0.85-1.14)	26	1.59 (0.98-2.60)
		≥ 100 days	276	1.26 (1.09-1.45)	23	1.65 (0.99-2.75)
	Men	1-99 days	158	1.08 (0.89-1.32)	37	1.01 (0.68-1.51)
		≥ 100 days	250	1.38 (1.16-1.63)	53	1.15 (0.81-1.64)

*Adjusted for: Age, educational level, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 6. Adjusted OR* (CI 95 %) for ≥ 100 days of future unemployment compared to native Swedish men

	1993-1997	1998-2002	2003-2007
	OR	OR	OR
Swedish born women	1.0 (1.0-1.1)	1.3 (1.2-1.3)	1.3 (1.2-1.3)
Swedish born men	1.0	1.0	1.0
Immigrant women	1.5 (1.2-1.9)	1.9 (1.5 -2.5)	1.4 (1.0-1.8)
Immigrant men	1.6 (1.2-2.0)	1.7 (1.3-2.2)	1.4 (1.0-1.8)

*Adjusted for: Age, educational level, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 7 Adjusted OR* (CI 95 %) for ≥ 100 days of future unemployment, individuals unemployed 1 - 99 or ≥ 100 days in 1992 compared to individuals with no unemployment in the same year

			1993-1997		1998-2002		2003-2007	
			N	OR	N	OR	N	OR
Native Swedes	Women	1-99 days	10,456	3.55 (3.41-3.69)	4,633	1.63 (1.56-1.70)	2,914	1.33 (1.26-1.40)
		≥ 100 days	7,101	6.90 (6.51-7.31)	3,677	2.54 (2.41-2.67)	2,260	1.84 (1.74-1.94)
	Men	1-99 days	11,373	4.54 (4.37-4.72)	4,337	1.82 (1.74-1.90)	2,722	1.47 (1.40-1.55)
		≥ 100 days	11,282	7.92 (7.57-8.29)	4,794	2.52 (2.41-2.63)	3,000	1.92 (1.83-2.02)
Immigrants	Women	1-99 days	2,245	3.97 (3.56-4.42)	1,375	1.58 (1.44-1.74)	858	1.31 (1.18-1.44)
		≥ 100 days	2,046	7.64 (6.63-8.82)	1,360	2.25 (2.03-2.48)	835	1.59 (1.44-1.76)
	Men	1-99 days	1,976	4.37 (3.87-4.94)	1,187	1.81 (1.64-2.01)	747	1.30 (1.16-1.45)
		≥ 100 days	2,583	7.78 (6.82-8.88)	1,579	2.20 (1.99-2.42)	1,049	1.63 (1.47-1.80)

*Adjusted for: Age, educational level, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 8 Adjusted OR* (CI 95 %) for ≥ 100 days of future unemployment 1993 to 1997 for individuals with different educational background and unemployed 1 - 99 or ≥ 100 days in 1992 compared to individuals with no unemployment

			1993-1997		1998-2002		2003-2007	
			N	OR	N	OR	N	OR
Native Swedes	Women	1-99 days	1,497	4.46 (3.88-5.14)	7,767	3.82 (3.65-4.00)	1,173	2.32 (2.11-2.56)
		≥ 100 days	1,614	9.94 (8.27-11.94)	4,853	7.40 (6.91-7.93)	610	3.92 (3.40-4.52)
	Men	1-99 days	1,501	5.83 (5.12-6.63)	8,480	4.92 (4.70-5.15)	1,358	2.70 (2.46-2.97)
		≥ 100 days	2,037	13.24 (11.39-15.39)	8,203	8.60 (8.15-9.08)	1,002	3.69 (3.30-4.13)
Immigrants	Women	1-99 days	731	5.41 (4.32-6.78)	1,284	3.64 (3.17-4.19)	139	2.37 (1.69-3.30)
		≥ 100 days	741	9.84 (7.43-13.04)	1,121	7.19 (5.96-8.67)	93	5.40 (3.29-8.88)
	Men	1-99 days	677	5.66 (4.39-7.30)	1,107	4.46 (3.81-5.22)	98	2.28 (1.57-3.33)
		≥ 100 days	933	11.23 (8.46-14.90)	1,390	7.76 (6.54-9.21)	115	3.29 (2.22-4.88)

*Adjusted for: Age, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 9 Adjusted OR* (CI 95%) for ≥ 100 days of future unemployment for individuals, both native Swedes and immigrants, exposed to different lengths of unemployment in 1992, compared with individuals with no unemployment in 1992

		1993-1997		1998-2002		2003-2007	
		N	OR	N	OR	N	OR
1-49 days	Native Swedes	10,916	3.58 (3.46-3.71)	4,378	1.57 (1.51-1.64)	2,763	1.29 (1.24-1.36)
	Immigrants	1,982	3.65 (3.28-4.06)	1,169	1.52 (1.39-1.67)	724	1.19 (1.08-1.31)
50-99 days	Native Swedes	10,913	4.66 (4.49-4.85)	4,592	1.88 (1.81-1.96)	2,873	1.49 (1.42-1.56)
	Immigrants	2,239	4.73 (4.23-5.28)	1,393	1.85 (1.69-2.02)	881	1.40 (1.28-1.54)
100-149 days	Native Swedes	7,915	5.94 (5.66-6.23)	3,443	2.16 (2.06-2.26)	2,191	1.70 (1.62-1.79)
	Immigrants	1,768	6.44 (5.61-7.40)	1,069	1.93 (1.75-2.13)	707	1.55 (1.40-1.72)
150-199 days	Native Swedes	4,718	7.88 (7.36-8.44)	2,200	2.59 (2.44-2.74)	1,331	1.85 (1.73-1.97)
	Immigrants	1,141	6.95 (5.82-8.30)	736	2.26 (2.00-2.55)	447	1.50 (1.32-1.70)
200-249 days	Native Swedes	3,145	10.18 (9.29-11.15)	1,512	2.96 (2.76-3.18)	898	2.00 (1.85-2.17)
	Immigrants	812	8.41 (6.71-10.54)	531	2.40 (2.08-2.77)	354	1.80 (1.56-2.07)
250 -299 days	Native Swedes	1,640	11.53 (10.10-13.17)	799	3.07 (2.79-3.38)	502	2.23 (2.01-2.48)
	Immigrants	500	11.94 (8.60-16.58)	329	2.68 (2.23-3.22)	208	1.75 (1.46-2.10)
≥ 300 days	Native Swedes	965	14.94 (12.32-18.12)	517	3.70 (3.27-4.20)	338	2.70 (2.36-3.09)
	Immigrants	408	17.82 (11.32-28.04)	274	2.78 (2.26-3.43)	168	1.68 (1.37-2.06)

*Adjusted for: Age, educational level, sex, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92.

Table 10 Adjusted OR* (CI 95%) for ≥ 100 days of future unemployment during the period 1998-2002, for unemployed individuals who participated in ALMP in 1992/1993 or had a development in education between 1992 and 1997, compared with individuals who neither participated in ALMP nor had a development in education during the same period.

		Education		ALMPs		ALMPs+Education	
		N	OR	N	OR	N	OR
Native Swedes	Women	2,141	0.67 (0.63-0.70)	6,433	2.02 (1.94-2.11)	933	1.10 (1.01-1.19)
	Men	1,689	0.81 (0.76-0.86)	7,005	2.00 (1.92-2.08)	717	1.59 (1.45-1.75)
Immigrants	Women	403	0.58 (0.51-0.67)	2,133	1.90 (1.74-2.07)	193	0.89 (0.73-1.08)
	Men	343	0.72 (0.62-0.84)	2,044	1.85 (1.69-2.03)	168	1.04 (0.84-1.30)

*Adjusted for: Age, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92

Table 11 Adjusted OR* (CI 95%) for ≥ 100 days of future unemployment during the period 1993-1997 for individuals who had different educational backgrounds and were unemployed 1-99 or ≥ 100 days in 1992, compared with individuals with no unemployment in 1992

		Elementary		Upper secondary		University		
		N	OR	N	OR	N	OR	
Native Swedes	Women	1-99 days	1,497	4.46 (3.88-5.14)	7,767	3.82 (3.65-4.00)	1,173	2.32 (2.11-2.56)
		≥ 100 days	1,614	9.94 (8.27-11.94)	4,853	7.40 (6.91-7.93)	610	3.92 (3.40-4.52)
	Men	1-99 days	1,501	5.83 (5.12-6.63)	8,480	4.92 (4.70-5.15)	1,358	2.70 (2.46-2.97)
		≥ 100 days	2,037	13.24 (11.39-15.39)	8,203	8.60 (8.15-9.08)	1,002	3.69 (3.30-4.13)
Immigrants	Women	1-99 days	731	5.41 (4.32-6.78)	1,284	3.64 (3.17-4.19)	139	2.37 (1.69-3.30)
		≥ 100 days	741	9.84 (7.43-13.04)	1,121	7.19 (5.96-8.67)	93	5.40 (3.29-8.88)
	Men	1-99 days	677	5.66 (4.39-7.30)	1,107	4.46 (3.81-5.22)	98	2.28 (1.57-3.33)
		≥ 100 days	933	11.23 (8.46-14.90)	1,390	7.76 (6.54-9.21)	115	3.29 (2.22-4.88)

*Adjusted for: Age, income in 1991, residence in Sweden 1992, native country and sickness absence in 1991-92.

Discussion

Causation or selection

The relationship between unemployment and health is complex and the question about causation or selection is debated and one of the key issues in understanding the research area. All unemployed persons will not develop illness so unemployment will not necessarily in itself cause ill health. Rothman says that a sufficient cause inevitably will produce an effect, and a sufficient cause is made up by component or contributing causes (Rothman, 2002). Unemployment can be one component cause and together with other component causes, e.g. chronic illness, the welfare system, earlier outbreak of mental or physical illness, lacking coping strategies, high sensibility to stress, bad eating habits, low socioeconomic status, propensity for alcohol and/or drug abuse, can different constellations form different necessary causes for illness.

There is in literature evidence of both a casual effect from unemployment to illness and selection effect (reversed causation) where illness leads to unemployment. A Meta-Analysis of 104 studies concludes a causation effect of both mental and physical poor health; the conclusion was based on longitudinal studies where health status deteriorates in times of unemployment but improves in times of reemployment (McKee-Ryan et al., 2005). A Swedish study shows a selection effect; individuals on sick leave before assessment have an elevated risk of unemployment (Lundin et al., 2010). Another study from Sweden reveals, however, that poor mental health is associated with unemployment even after adjustment for previous sickness absence, with longer spells of unemployment giving the highest significance (Backhans & Hemmingsson, 2011). A Finnish study shows a health selection effect when comparing unemployed individuals in a boom and in a recession. Unemployed individuals in a boom have poorer health compared to unemployed individuals in a recession. In prosperous times mostly those with poor health will remain unemployed, while in recessions also "healthier" individuals become unemployed (Martikainen & Valkonen, 1996). Other studies mean that predictors of future unemployment already can be seen in childhood and adolescence (Caspi et al., 1998; Montgomery et al., 1996).

A study from Sweden investigates five groups of theories in search for the most plausible causal link between unemployment and poor health (Janlert & Hammarstrom, 2009). The economic deprivation models assume that unemployment means having less money and this will affect the prerequisites for good health. The control models assume that the passive situation means low control over the life which is a risk factor for poor health. The stress models focus on how individuals can cope with the situation of unemployment, and the social support models assume that human contact means that individuals can handle stress in a better way. Finally the models of latent functions assume that work, almost without restrictions, will have a profound effect on health so when an individual loses the job those protective functions will be lost. The most well-known theory of latent functions is developed by Jahoda already in the 1930s (Jahoda, 1979). The conclusion is that all models correlate fairly well to unemployment and poor health, and thereby support the causation theory (Janlert & Hammarstrom, 2009).

The recession in the beginning of the 1990s led to unemployment rates not seen since the 1930s and affected almost all branches in Sweden. The rise in unemployment rate was a direct consequence of the recession and also individuals with good initial health were affect-

ed by unemployment. In this study, we adjusted for earlier sickness absence two years before baseline but that did not change the Odds Ratios between unemployed and non-unemployed more than marginally.

Sickness absence and disability pension

This study revealed an association between unemployment and both sickness absence and disability pension. Very few studies have, to our knowledge, studied exposure to unemployment and used sickness absence and disability pension as outcomes. Some studies show, however, an association between unemployment and poor well-being, a state that can be associated with work disability (McKee-Ryan et al., 2005; Paul & Moser, 2009).

There was a dose response relationship between unemployment and later sickness absence, most pronounced in native Swedes. It was seen in all three time-periods, but was rather moderate. A study from Australia shows that individuals unemployed nine months or more have less well-being than those unemployed both less than three months and between four and eight months, longer spells of unemployment seem to give more health problems (Winefield & Tiggemann, 1990). A British study show that individuals adapt to the situation of unemployment. The well-being is least in unemployment periods of six to eighteen months but better in periods both under six months and over eighteen months (Warr & Jackson, 1985). In the current study sickness absence is less pronounced in the latter two time periods.

Sickness absence and disability pension may be regarded as health measures, because illness should be the sole reason for receiving those benefits for people in this age group. Disability pension was though in Sweden allowed to individuals near to retirement age (60 to 65 years) in regions with high unemployment until 1997, but in this young cohort such considerations should be rare (SOU 1995:149, 1995). In Sweden you can receive sickness benefit for all forms of disease so the severity and character of illness for individuals on sick leave can hence differ substantially. The employers were from the first of January 1992 imposed to pay the first two weeks of every period of sickness absence; this period is not present in the official registers. Sickness absence due to the mildest diseases should have been reduced during the follow-up among individuals with an employer. Among individuals without an employer, payments come directly from the National Insurance Office and are registered from day two. This may lead to a situation where unemployed individuals end up with more days in the registers for short-term sickness absence, and hence easier reach the limit of ≥ 60 days in our study. There is however no incitement for unemployed persons to report sick in short periods of sickness because they will lose one day of payment due to a waiting day in the sickness insurance.

Sickness absence may affect individuals in terms of absence from work by some of the same mechanisms as unemployed individuals. It was in our study not possible to distinguish those on long-term sickness absence at the baseline year. If people on long-term sickness absence were affected by being out of work in a similar way as the unemployed, i.e. they lost income; lost social support etc.; and then the risk of future unemployment, sickness absence and disability pension would be underestimated in our study because people on sickness absence were counted as non-unemployed.

Death

This study showed a slight increase of death for unemployed individuals compared to non-unemployed individuals for all groups except Swedish women. The elevated risks were highest in native Swedish men and immigrant women on long-term unemployment in 1992. One should bear in mind that our cohort is rather young, not so many have died during the follow-up. Roelfs and co-workers show a similar elevated Odds Ratio (OR) for death among unemployed individuals compared to employed, especially among young ones, in a Meta-Analysis of worldwide data. The reasons discussed behind these findings were the latent sickness hypothesis, health related behaviors and/or coping/stress hypothesis (Roelfs et al., 2011). Lundin and co-workers found that the elevated risk of death among unemployed individuals compared to employed individuals disappeared when adjusting for previous sickness absence (Lundin et al., 2010). In our study, adjusting for previous sickness absence did not alter the result.

Unemployment

The current study showed that unemployment in early working life affected future unemployment fifteen years after exposure. This finding was in line with studies from Sweden and Norway, in those studies exposure to unemployment affected future unemployment in a follow-up of five to eight years. In the Swedish study (Hammarstrom & Janlert, 2000) individuals who became unemployed directly after compulsory school had a more than a twofold risk of unemployment during the five year follow-up compared to individuals in work or in labour market programs. In the Norwegian study (Hammer, 1997) previous unemployment increases the risk of future unemployment substantially, higher than e.g. education and school dropout.

From the 1970s and continuously companies have reorganized in order to become more flexible and better adapted to market fluctuation. The core-periphery theory is a way to explain why unemployment leads to further unemployment. The “core” of a company consists of managers and other key positions in the company. Around this core there is a “periphery” of workers who have more temporary job contracts and who are the first to be dismissed when the need for workers decreases (Atkinson, 1984). Around 14 per cent of the workforce in Europe is considered to be in the peripheral labour market (Waenerlund et al., 2011). However the labour market laws in Sweden protect workers from easy dismissal and this theory is of less importance here according to laws and regulations between employer associations and trade unions. Unemployment can also be a signal to employers that something is wrong and the productivity of the worker is low. Employers may therefore not be willing to take the risk of hiring that person and unemployment becomes a stigma (Ayllón, 2013). In Sweden the regulating laws on the labor market have been debated for decades. Extensive state regulation paired with centralized bargaining on wages and high minimum wages can build up thresholds for employers to hire. This mostly affects young inexperienced individuals (Kahn, 2012).

A dose response relationship between unemployment in 1992 and future unemployment were seen for every step of 50 days all up to the maximum of ≥ 300 days. An English study has a similar outcome, the longer the period of unemployment in age 16 to 23 the more months of unemployment later on (Gregg & Tominey, 2005). The similarity with UK is interesting because the relatively large differences in labour market regulations and Social Insurance policies between Sweden and the UK.

Active Labour Market Programs (ALMPs)

In the current study, participation by long-term unemployed individuals in ALMPs increased the risk of future unemployment compared with non-participants. ALMPs did not, however, increase the risk of sickness absence. There is evidence from Norwegian and German studies that participation in programs, especially among young people, leads to an increased risk of further participation in other programs and later unemployment (Hammer, 1993; Huber et al., 2009; Kluve, 2006). There are, however, differences between programs. Works with wage subsidies seem to be a way back to the labour market in Sweden (Forslund et al., 2004), also short programs seems to be effective according to a German study (Huber et al., 2009). Unfortunately we could not differentiate between different ALMPs in this study.

Participation in programs may not, however, in general be beneficial for future work participation. One reason can be lock-in effects; i.e. participation in ALMP:s decreases the search process for a real job, and hence delays return to the regular labour market (Forslund et al., 2011). Participation in ALMPs will in little extent reduce the future welfare payments, e.g. sickness benefit and unemployment benefit, participation in one program seems to increase the risk of participation in another ALMP later on (Forslund et al., 2004; Gerfin & Lechner, 2002; Huber et al., 2009). It seems especially difficult to develop successful programs for young people and immigrants (Huber et al., 2009).

Education

In the current study there was a negative relation between education and the risk of future unemployment. Young individuals without education were particularly at risk of being unemployed. Hammer found no significant effect on educational level and future unemployment (Hammer, 1997). In the study by Hammer, the cohort was 17-20 years of age when education was measured, which excludes a university education. In the current study, the population was 25-29 years old when attainment of education was measured; most of them would have had time to finish both upper secondary and university studies. Therefore, education might have a stronger impact on future unemployment in the current study. Long-term unemployed individuals who had a higher educational level in 1997 compared with 1992, and hence had studied during the recession, had a decreased risk of future unemployment. The labour market in all western countries has changed since the prosperous times in the 1950s and the 1960s where there was abundance of manual labour jobs. An example is the forest industry in Sweden where machines almost erased the need of manual labour from the 1990s. Most jobs on the labour market of today will need some sort of education, without skills and education the individual have much fewer opportunities.

Immigrants

This study showed that immigrants per se had a higher general risk of unemployment than did native Swedes both at baseline and in the follow-up period. The study also showed, however, that unemployed young immigrants followed the same pattern as native Swedes when exposed to unemployment, i.e. immigrants were not more vulnerable to exposure of unemployment than were native Swedes. Previous research have indicated that the mental health of young immigrants in general are worse than the mental health of young native Swedes (Malmberg-Heimonen & Julkunen, 2006) and that immigrants in all age groups are hit hard-

er by the crisis in the early 1990s (Bergmark & Palme, 2003). Immigrants and native Swedes participated equally in the labor force until the early 1980s. Thereafter the gap between the unemployment rate of immigrants and that of native Swedes has gradually increased (SCB). The potential reasons for this are many, e.g. changed pattern of immigration and a changed labor market. Changed attitudes towards immigration in society can also be an explanation (Knocke, 2000). This study comprise a young cohort; the discrepancy between native Swedes and young immigrants may have become diluted because most young immigrants came to Sweden in early or late childhood and have attended the Swedish education system. Foreign-born inhabitants in Sweden in all ages have according to a Swedish study a higher risk of premature death and severe morbidity than native Swedes. The difference disappears when adjusting for education and socioeconomic factors (Klinthall, 2008). In this study, no difference is seen either before or after adjustments for education and income. The study population was, however, young at baseline so many of them have not yet finished university studies.

Gender

The current study showed no consistent differences between men and women. A recent Swedish study concludes the same, no differences in health outcome between men and women when exposed to unemployment (Hammarstrom et al., 2011). There has been an ongoing debate about gender differences in health following periods of unemployment. Two Meta Analyses show contrasting results in mental health between men and women when exposed to unemployment: one of them states that women have less psychological well-being following unemployment than do men (McKee-Ryan et al., 2005) while the other concludes the opposite (Paul & Moser, 2009). The differences were, however, small.

Confounders

Confounders adjusted for in this study were age, income, place of residence in Sweden, native country, education and sickness absence before baseline. The age span in the study population was not so wide; nevertheless relative differences in work experience can be rather large in young age groups. Young individuals, 18 to 20 years, have less Quality of life (QoL) than 21 to 24 year-olds (Hultman & Hemlin, 2008). Socioeconomic background has affected the health outcomes of individuals exposed to unemployment. Less income often means worse health, which has been showed in studies (Marmot, 2001). Immigrants have in general lower income than do native Swedes; the differences are greatest between native Swedes and non-European immigrants. Such differences tend to increase in a recession (Nordin & Rooth, 2009). There are differences in sickness absence rates between different parts of Sweden; the sickness absence rate is higher in the north of Sweden (Asplund et al., 2007). Also the labour market differs between regions and this polarity has risen during the study period, when parts of the industry have downsized or moved their production out of Sweden (Magnusson, 2000). Land of origin has an impact on labour market outcomes; the impact increases with the extent of the difference in culture and language between land of origin and the immigration country (Adsera & Chiswick, 2007). A study from Norway has concluded that the level of education plays a major role in determining the incidence of poor health (Hammer, 2007). We have also adjusted for earlier sickness absence; in a study from Sweden sickness absence explains most of the risk difference in death between unemployed and employed individuals (Lundin et al., 2010).

Social Insurance in Sweden

Unemployment benefit and sickness benefit has from studies in Sweden been regarded as different sides of the same coin, i.e. benefits for work absence (Holmlund, 2004). There is a clear interaction between unemployment and sickness benefits (Larsson, 2006). Regulations, for example ceilings for replaced income loss, time limits etc. can have a great impact. Finland and Sweden, rather similar with regard to both welfare and labour market, has differences in usage of sickness absence and unemployment. In Finland, individuals are more likely to be on unemployment benefit whereas in Sweden individuals are more likely to be on sickness benefit (Hytti, 2006). There have in Sweden been profitable to migrate from unemployment benefit to sickness benefit (Larsson, 2006). Due to the context dependence on research in this field, one should be cautious when generalizing the results to other countries.

Strengths and weaknesses

Sweden has a well-developed register system, which allows a comprehensive longitudinal approach. There is also considerable scope to make adjustments for a number of confounding factors. In our investigation we have followed a cohort, established in 1992, for 15 years and measured the number of days of unemployment year by year. The current study had a large study population and was a total investigation of immigrants.

As with all registers there are, however, shortcomings. Data on educational background were self-reported if an immigrant had never participated in the Swedish school system. The information was therefore more uncertain in this group and missing values were more common.

There were about 7,000 individuals at baseline that did not work, at least not in the regular labour market, and did not receive any benefits from society. These individuals are classified as being outside the labour market and are thus included in the reference group of people who are not unemployed. If the group of people outside the labour market were actually unemployed, the ORs might be underestimated.

Information about poor health, and foremost poor mental health, is not comprehensive in registers for a young population. Therefore it is not possible to exclude all health selection into unemployment.

Conclusion

Unemployment among young individuals was associated with sickness absence, disability pension, death and future unemployment fifteen years after exposure. Health selection probably explained part of the result, but regardless if it is a selection the cost to individuals and societies are the same. This emphasizes the importance of making efforts to reduce unemployment among young individuals in order to maintain a high employment rate and thereby preserve economic growth and reduce future spending on social insurance.

Young immigrants had a higher general risk of unemployment, but they followed the pattern of native Swedes. The risk of future unemployment, sickness absence and disability pension were almost similar between immigrants and native swedes but also between men and women when exposed to both short-term (1 -99 days) and long-term unemployment (≥ 100 days).

Higher education had a protective effect on future unemployment which makes individuals with low education especially vulnerable. ALMPs were not associated with decreased risk of future unemployment.

Sammanfattning

Ungdomsarbetslösheten har ökat kraftigt runt om i världen de senaste 20 åren. I Sverige ökade arbetslösheten kraftigt bland unga i början av 1990-talet och har sedan dess varit på en relativt hög nivå. De senaste åren har den legat på över 20 procent. För länder med utbyggda välfärdssystem betyder arbetslöshet ökade utgifter. För de arbetslösa individerna betyder det även en relativt låg inkomst och svårigheter att långsiktigt etablera sig på arbetsmarknaden. Denna registerbaserade kohortstudie har undersökt sambandet mellan arbetslöshet bland unga personer (20-24 år) och senare arbetslöshet, sjukfrånvaro, förtidspension och död. En jämförelse gjordes också mellan immigranter och infödda svenskar eftersom Sverige har en relativt stor andel av befolkningen som är född utanför Sverige. Ett annat syfte med studien var att undersöka om deltagande i ett arbetsmarknadspolitiskt program eller utbildning förändrade utfallet.

Basåret var 1992, ett år med kraftig ekonomisk nedgång. Uppföljningsperioden var 15 år, uppdelat i tre femårsperioder 1993-1997, 1998-2002 samt 2003-2007. Studiepopulationen på 199 623 individer omfattade alla utlandsfödda personer, födda mellan 1968 och 1972, som immigrerat till Sverige innan 1990 (N=25 607) samt ett slumpmässigt urval av infödda svenskar i samma åldersgrupp (n=174 016). Personer med arbetslöshetsersättning under 1990-1991, förtidspension under 1990-1992 eller sjukdomar som föranlett sjukhusvård under 1990-1992 uteslöts för att skapa en så frisk kohort som möjligt och så långt som möjligt minimera en selektion av redan sjuka till kohorten.

De som var arbetslösa under 1992 hade förhöjd risk, mätta som oddskvoter, för ≥ 60 dagar av sjukfrånvaro, förtidspension, ≥ 100 dagars arbetslöshet och alla, utom svenskfödda kvinnor, hade förhöjd risk för död under uppföljningstiden. Risken för framtida arbetslöshet sjönk till sista uppföljningsperiod, medan den förhöjda risken för framtida sjukfrånvaro var ungefär densamma i alla tre uppföljningsperioder. Högre utbildningsnivå vid baslinjen minskade risken för framtida arbetslöshet. Individer som deltog i aktiva arbetsmarknadsåtgärder hade en ökad risk för framtida arbetslöshet och invandrarkvinnor hade en ökad risk för sjukfrånvaro, jämfört med icke- deltagande individer. Uppnådd utbildning mellan 1993 och 1997 minskade risken för framtida arbetslöshet och minskade risken för sjukfrånvaro bland invandrare. Risken för både arbetslöshet och sjukfrånvaro ökade med längden på arbetslösheten 1992. Invandrare hade högre risk för arbetslöshet både vid baslinjen och vid uppföljning jämfört med infödda svenskar, men följde mönstret för infödda svenskar.

Slutsatsen är att exponering för arbetslöshet är förknippat med förhöjd risk för framtida arbetslöshet, sjukfrånvaro, sjukpension och död femton år efter exponering. Arbetslösheten betyder förutom kostnader för arbetslöshetsförsäkringen även kostnader på längre sikt i form av ökade utgifter för sjukdom och sjukfrånvaro. Selektion till arbetslöshet bland individer som är sjuka, kan åtminstone förklara en del av sambandet mellan arbetslöshet och de studerade utfallen. Oavsett om sjukdom och arbetslöshet är en direkt följd av exponering för arbetslöshet eller beror på omvänd kausalitet så kommer samhället att få en ökad kostnad för de individer som inte kan beredas en plats i arbetslivet.

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