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Databases on sickness absence (SA), disability pension (DP) and diagnoses

A sick-leave spell (SLS) consists of one or more consecutive sick-leave periods (SLPs), and a SLP consists of at least one sick-leave day (SLD), hence $SLD \geq SLP \geq SLS$.

Data from IO [Swedish Social Insurance Agency] “Long file”

ID	Degree	First day	Last day	Diagnosis
A0001		2009-02-26	2009-03-15	F32
A0001	0.75	2009-03-16	2009-05-05	F32
A0001	0.5	2009-05-06	2009-06-04	F32
A0001	0.25	2009-06-05	2009-08-18	F32
A0001	1	2009-08-19	2009-08-27	F32
A0001	0.25	2009-08-28	2009-09-17	F32
A0003	1	2007-07-09	2007-07-22	F32
A0003	1	2007-07-23	2007-09-02	F32
A0004	1	2008-12-01	2008-12-14	F41
A0004	1	2008-12-15	2009-05-17	F41
A0004	0.25	2009-05-18	2009-07-01	F41
A0006	1	2006-03-01	2006-03-14	M53
A0006	1	2006-03-15	2006-03-17	M53
A0006	0.25	2006-03-18	2007-01-17	M53
A0006	0.5	2007-01-18	2007-04-30	M53
A0006	1	2007-10-16	2007-11-11	M53
C0308	1	2007-06-02	2007-06-04	R25
C0308	1	2007-06-05	2007-06-07	R25
C0308	1	2008-01-15	2008-01-17	F43
C0308	1	2008-01-18	2008-01-18	F43

ICD-10 codes

International Statistical Classification of Diseases and Related Health Problems 10th Revision

Chapter	Blocks	Title
I	A00- B99	Certain infectious and parasitic diseases
II	C00- D48	Neoplasms
III	D50- D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV	E00- E90	Endocrine, nutritional and metabolic diseases
V	F00- F99	Mental and behavioural disorders
VI	G00- G99	Diseases of the nervous system
VII	H00- H59	Diseases of the eye and adnexa
VIII	H60- H95	Diseases of the ear and mastoid process
IX	I00-I99	Diseases of the circulatory system
X	J00- J99	Diseases of the respiratory system
XI	K00- K93	Diseases of the digestive system
XII	L00- L99	Diseases of the skin and subcutaneous tissue
XIII	M00- M99	Diseases of the musculoskeletal system and

		connective tissue
XIV	<u>N00-</u> <u>N99</u>	Diseases of the genitourinary system
XV	<u>O00-</u> <u>O99</u>	Pregnancy, childbirth and the puerperium
XVI	<u>P00-</u> <u>P96</u>	Certain conditions originating in the perinatal period
XVII	<u>Q00-</u> <u>Q99</u>	Congenital malformations, deformations and chromosomal abnormalities
XVIII	<u>R00-</u> <u>R99</u>	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX	<u>S00-</u> <u>T98</u>	Injury, poisoning and certain other consequences of external causes
XX	<u>V01-</u> <u>Y98</u>	External causes of morbidity and mortality
XXI	<u>Z00-</u> <u>Z99</u>	Factors influencing health status and contact with health services
XXII	<u>U00-</u> <u>U99</u>	Codes for special purposes

- 1 A00-A79 - Bacterial infections, and other intestinal infectious diseases, and STDs
 - 1.1 (A00-A09) Intestinal infectious diseases
 - 1.2 (A15-A19) Tuberculosis
 - 1.3 (A20-A28) Certain zoonotic bacterial diseases
 - 1.4 (A30-A49) Other bacterial diseases
 - 1.5 (A50-A64) Infections with a predominantly sexual mode of transmission
 - 1.6 (A65-A69) Other spirochaetal diseases
 - 1.7 (A70-A74) Other diseases caused by chlamydiae
 - 1.8 (A75-A79) Rickettsioses
- 2 A80-B34 - Viral infections
 - 2.1 (A80-A89) Viral infections of the central nervous system
 - 2.2 (A90-A99) Arthropod-borne viral fevers and viral haemorrhagic fevers
 - 2.3 (B00-B09) Viral infections characterized by skin and mucous membrane lesions
 - 2.4 (B15-B19) Viral hepatitis
 - 2.5 (B20-B24) Human immunodeficiency virus (HIV) disease
 - 2.6 (B25-B34) Other viral diseases

○

(A75-A79) Rickettsioses

- ([A75.](#)) [Typhus fever](#)
 - ([A75.0](#)) [Epidemic louse-borne typhus fever](#) due to [Rickettsia prowazekii](#)
 - ([A75.1](#)) [Recrudescent typhus](#) ([Brill's disease](#))
 - [Brill-Zinsser disease](#)
 - ([A75.2](#)) [Typhus fever](#) due to [Rickettsia typhi](#)
 - ([A75.3](#)) [Typhus fever](#) due to [Rickettsia tsutsugamushi](#)
 - [Scrub typhus](#)

(A90-A99) Arthropod-borne viral fevers and viral haemorrhagic fevers

- ([A90.](#)) [Dengue fever](#) ([classical dengue](#))
- ([A91.](#)) [Dengue haemorrhagic fever](#)
- ([A92.](#)) Other [mosquito](#)-borne [viral fevers](#)
 - ([A92.0](#)) [Chikungunya virus disease](#)

We have used the following principles when coding to the 18 main chapters of **ICD 8**.

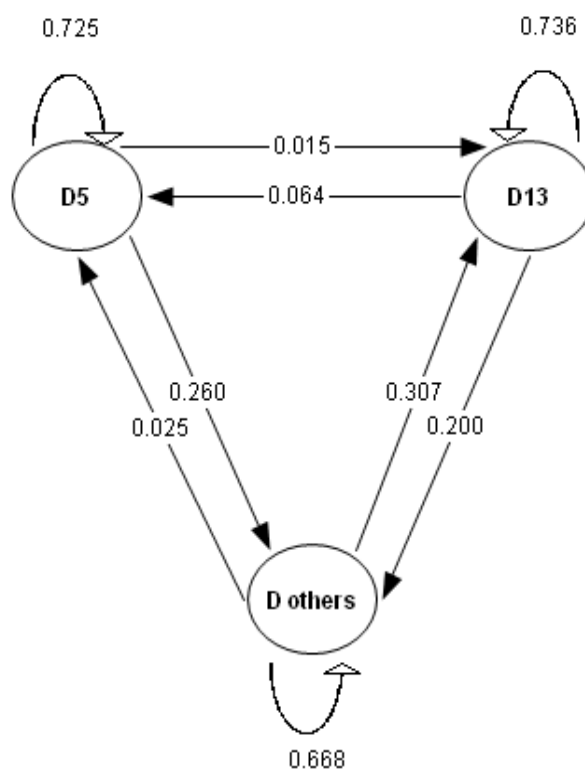
1. Diagnoses that are listed in Chapter 16 and Chapter i , $i=1,...,15,17,18$ are coded as i .
2. Diagnoses that are listed in Chapter 16 and Chapter i , $i=1,...,15,17,18$ and $j \neq i$, $j=1,...,15,17,18$ are coded as 16.

Distribution of sick-leave periods and sick-leave days according to sick-leave diagnoses during 12 year follow up of a cohort of 213 young adults initially sickness absent for more than for weeks due to back, neck, or shoulder diagnoses. (DPG = Disability Pension Group, DPG* = complement of DPG)

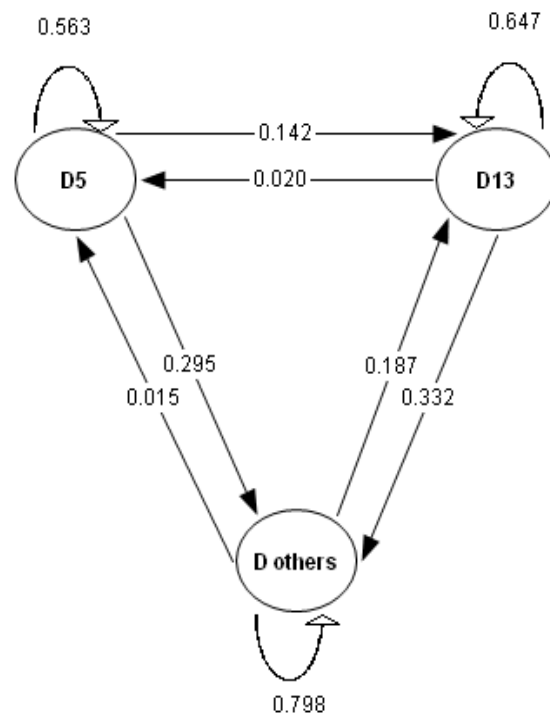
Diagnostic category, according to ICD 8 categories		SLPs n (%)		SLDs n (%)		SLDs/SLPs	
		DPG	DPG*	DPG	DPG*	DPG	DPG*
D1	Certain infectious and parasitic diseases	142 (7.1)	620 (11.3)	896 (1.2)	2922 (3.2)	6.3	4.7
D5	Mental and behavioural disorders	119 (6.0)	194 (3.5)	8594 (11.3)	6347 (7.0)	72.2	32.7
D6	Disease of central nervous system	25 (1.3)	117 (2.1)	390 (0.5)	2679 (2.9)	15.6	22.9
D8	Diseases of the respiratory system	229 (11.5)	1004 (18.2)	2052 (2.7)	5246 (5.8)	9.0	5.2
D13	Diseases of musculoskeletal system and connective tissue	1010 (50.7)	1969 (35.8)	54698 (71.6)	57124 (62.8)	54.2	29.0
D16	Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified	164 (8.2)	839 (15.2)	1096 (1.4)	4694 (5.2)	6.7	8.6
D17	Injury, poisoning, and certain other consequences of external causes	125 (6.3)	230 (4.2)	3991 (5.2)	3562 (3.9)	31.9	15.5
Total		1994	5505	76348	90925	38.2	16.5

Numbers illustrate probability of change from one sick-leave diagnoses to another in the following sick-leave period. Diagnoses according to ICD8; D5=mental diagnoses, D13= musculoskeletal diagnoses, D others = All other diagnoses. Shown for persons initially sickness absent with back, neck, or shoulder diagnoses for >four weeks, for those granted (a) and not granted (b) disability pension, respectively, during 12-year follow up

a) DPG; that is, persons in the cohort granted disability pension during follow up



b) DPG* = persons not granted disability pension during follow up



Data from county to be merged with IO-data

ID	Intervention	Age	Sex
R0569	2009/12/07	52	1
R0787	2009/12/07	44	0
P0015	2009/12/04	29	0
P0018	2009/12/04	35	0
R0761	2009/12/04	37	0
R0759	2009/12/03	38	0
R0736	2009/12/03	47	1
P0927	2009/12/03	62	0
O0009	2009/12/02	40	1
O0376	2009/12/02	52	0
P1125	2009/12/02	36	0
T0419	2009/12/02	25	0

Calculate the weighted number of sick-leave days and DP days

180 days before -----INTERVENTION -----180 days after

Errors in data, e.g.

Degrees are missing

100% SA and 50% DP in one SLP

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SYNTAX: example at the end of the document  
*****  
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DATA  
*****
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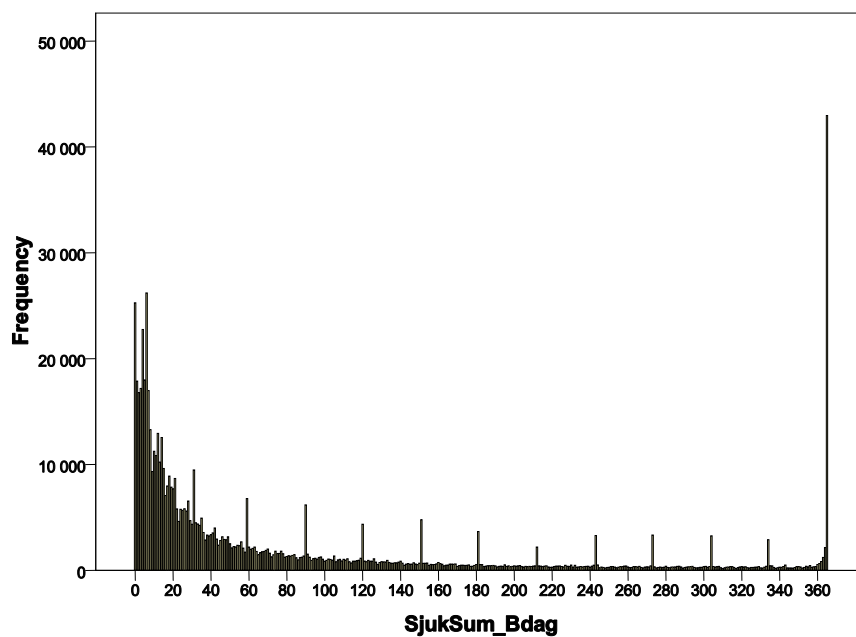
Period	Mean no. of SLDs (including DP)
B_1	17,4
B_2	18,0
B_3	18,5
B_4	19,1
B_5	19,4
B_6	19,6
Intervention	
A_1	21,2
A_2	20,0
A_3	18,8
A_4	17,6
A_5	16,3
A_6	14,8

Data will be linked to the longitudinal integration database for health insurance and labour market studies (**LISA**) as well as the national inpatient register (**NPR**) and the cause of death register (**CDR**) from the National board of health and welfare (Socialstyrelsen).

LISA database holds annual registers between 1990 and 2009 and includes all individuals 16 years of age and older that were registered in Sweden as of December 31 for each year. LISA holds the variables included in the censuses, along with information on sickness absence from the Swedish Social Insurance Agency.

LISA-data (1995)

Number of sick-leave days among them with at least one day of sick-leave during the year.



There are peaks at 31, 59, 90, 120, 151, 181, 212, 243, 273, 304, 334 and 365 days. **Why?**

LISA data

Age 1996	Frequency	Percent
56	95221	10,2
57	95884	10,3
58	91883	9,9
59	87490	9,4
60	85018	9,1
61	81316	8,7
62	78860	8,5
63	77216	8,3
64	79840	8,6
65	79361	8,5
66	80302	8,6
Total	932391	100,0

Age 2003	Frequency	Percent
63	91059	10,6
64	90823	10,6
65	86512	10,1
66	81793	9,5
67	78924	9,2
68	74837	8,7
69	71747	8,4
70	69615	8,1
71	71350	8,3
72	70158	8,2
73	70127	8,2
Total	856945	100,0

Sex 2003	Frequency	Percent
M	411587	48,0
F	445358	52,0
Total	856945	100,0

National inpatient register

Data from the NPR from 1964 and on provides information on individual hospital discharges for somatic diseases, including the diagnosis assigned by the treating physician according to ICD. NPR covers *all* public, in-patient care in Sweden from 1987.

“Long-file” data. Some individuals have more than 400 cases.

Sex is not necessarily constant over the years.

Recycled ID-numbers

Different counties might change ICD edition at different time points.

Cause of death register

CDR contains data from 1961 on mortality for different diseases of persons who were registered in Sweden at the time of death. The cause of death is established from the medical death certificate made by the physician. The overall completeness of the register is estimated to be more than 99% .

If the day of death is unknown

Standard: e.g. 1997-10-xx => 1997-10-15

If also the month of death is unknown

Standard: e.g. 1997-xx-xx => 1997-07-01

If auxiliary data are available, the standard recoding can be improved.

*Syntax example

*Sick-leave days and DP-days after intervention (rehabilitation)

First (swe) = first (eng)

Last (swe) = last (eng)

Omfattning = degree of sickness absence, 25%, 50%, 75%, 100%

* Date and Time Wizard: Estart1.

COMPUTE Estart1=DATESUM(Rehabstart, 1, "days", 'closest').

EXECUTE.

DO IF (DEL_FROM_DATUM.1<=Rehabstart).

COMPUTE Astart1= Astart1.

ELSE.

COMPUTE Astart1=DEL_FROM_DATUM.1.

END IF.

execute.

* Date and Time Wizard: A1_first.

COMPUTE A1_first=DATEDIF(Astart1, Rehabstart_y, "days").

EXECUTE.

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*A1

*1 - 6

*1

DO IF (A1_first_30>=(1/30) & A1_last_30<=1).

compute A_Dmonth1_SA=omfattning.1*30*(A1_last_30+(1/30)-A1_first_30).

ELSE.

compute A_Dmonth1_SA=0.

compute A_Dmonth2_SA=0.

compute A_Dmonth3_SA=0.

compute A_Dmonth4_SA=0.

compute A_Dmonth5_SA=0.

compute A_Dmonth6_SA=0.

END IF.

EXECUTE.

*2

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DO IF (A1_first_30>=(1/30)& A1_first_30<=1 & A1_last_30>1& A1_last_30<=2).
compute A_Dmonth1_SA=omfattning.1*30*( 1+(1/30)-A1_first_30).
compute A_Dmonth2_SA= omfattning.1*30*( A1_last_30-1).
ELSE.
compute A_Dmonth1_SA=A_Dmonth1_SA.
compute A_Dmonth2_SA=A_Dmonth2_SA.
compute A_Dmonth3_SA=A_Dmonth3_SA.
compute A_Dmonth4_SA=A_Dmonth4_SA.
compute A_Dmonth5_SA=A_Dmonth5_SA.
compute A_Dmonth6_SA=A_Dmonth6_SA.
END IF.
EXECUTE.
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*21

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DO IF (E4_first_30> 5& E4_first_30<=6& E4_last_30<=6).
compute A_Dmonth6_SA4=omfattning.4*30*( E4_last_30+(1/30)-E4_first_30).
ELSE.
compute A_Dmonth1_SA4=A_Dmonth1_SA4.
compute A_Dmonth2_SA4=A_Dmonth2_SA4.
compute A_Dmonth3_SA4=A_Dmonth3_SA4.
compute A_Dmonth4_SA4=A_Dmonth4_SA4.
compute A_Dmonth5_SA4=A_Dmonth5_SA4.
compute A_Dmonth6_SA4=A_Dmonth6_SA4.
END IF.
EXECUTE.
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*A33

*21

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DO IF (A39_first_30> 5& A39_first_30<=6& A39_last_30<=6).
compute A_Dmonth6_SA39=omfattning.39*30*( A39_last_30+(1/30)-A39_first_30).
ELSE.
compute A_Dmonth1_SA39=A_Dmonth1_SA39.
compute A_Dmonth2_SA39=A_Dmonth2_SA39.
compute A_Dmonth3_SA39=A_Dmonth3_SA39.
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compute A_Dmonth4_SA39=A_Dmonth4_SA39.
compute A_Dmonth5_SA39=A_Dmonth5_SA39.
compute A_Dmonth6_SA39=A_Dmonth6_SA39.
END IF.
EXECUTE.

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compute A_nDMonth1_SA= A_Dmonth1_SA+ A_Dmonth1_SA2+ A_Dmonth1_SA3+
A_Dmonth1_SA4+ A_Dmonth1_SA5+ A_Dmonth1_SA6+ A_Dmonth1_SA7+ A_Dmonth1_SA8+
A_Dmonth1_SA9+ A_Dmonth1_SA10+ A_Dmonth1_SA11+ A_Dmonth1_SA12+ A_Dmonth1_SA13+
A_Dmonth1_SA14+ A_Dmonth1_SA15+ A_Dmonth1_SA16+ A_Dmonth1_SA17+ A_Dmonth1_SA18+
A_Dmonth1_SA19+ A_Dmonth1_SA20+ A_Dmonth1_SA21+ A_Dmonth1_SA22+ A_Dmonth1_SA23+
A_Dmonth1_SA24+ A_Dmonth1_SA25+ A_Dmonth1_SA26+ A_Dmonth1_SA27+ A_Dmonth1_SA28+
A_Dmonth1_SA29+ A_Dmonth1_SA30+ A_Dmonth1_SA31+ A_Dmonth1_SA32+ A_Dmonth1_SA33+
A_Dmonth1_SA34+ A_Dmonth1_SA35+ A_Dmonth1_SA36+ A_Dmonth1_SA37+ A_Dmonth1_SA38+
A_Dmonth1_SA39.
EXECUTE.

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compute A_nDMonth6_SA= A_DMonth6_SA+ A_DMonth6_SA2+ A_DMonth6_SA3+
A_DMonth6_SA4+ A_DMonth6_SA5+ A_DMonth6_SA6+ A_DMonth6_SA7+ A_DMonth6_SA8+
A_DMonth6_SA9+ A_DMonth6_SA10+ A_DMonth6_SA11+ A_DMonth6_SA12+ A_DMonth6_SA13+
A_DMonth6_SA14+ A_DMonth6_SA15+ A_DMonth6_SA16+ A_DMonth6_SA17+ A_DMonth6_SA18+
A_DMonth6_SA19+ A_DMonth6_SA20+ A_DMonth6_SA21+ A_DMonth6_SA22+ A_DMonth6_SA23+
A_DMonth6_SA24+ A_DMonth6_SA25+ A_DMonth6_SA26+ A_DMonth6_SA27+ A_DMonth6_SA28+
A_DMonth6_SA29+ A_DMonth6_SA30+ A_DMonth6_SA31+ A_DMonth6_SA32+ A_DMonth6_SA33+
A_DMonth6_SA34+ A_DMonth6_SA35+ A_DMonth6_SA36+ A_DMonth6_SA37+ A_DMonth6_SA38+
A_DMonth6_SA39.
EXECUTE.

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