

Construction of the DMreg2025

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Bendix Carstensen Clinical Epidemiology
Senior Statistician Steno Diabetes Center Copenhagen, Herlev, Denmark
 & Department of Biostatistics, University of Copenhagen
bcar0029@regionh.dk b@bxc.dk
<http://BendixCarstensen.com>

Marit Eika Jørgensen ex-Head, Clinical Epidemiology, SDCC
 Steno Diabetes Center Greenland, Nuuk, Greenland
maej@peqqik.gl

Pernille Falberg Rønn Clinical Epidemiology
Senior Scientist Steno Diabetes Center Copenhagen, Herlev, Denmark
pernille.falberg.roenn@regionh.dk

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Chapter 1

Definition of DMreg2025

1.1 A brief history of DMreg and its predecessors

The National Diabetes Register (NDR) was established at Sundhedsdatastyrelsen, 2006, covering the period from 1995 ff.

The maintenance of the NDR was discontinued by the Health Data Authority (Sundhedsdatastyrelsen, SDS) in 2012. It has been replaced by the Register of Selected Chronic Diseases (RUKS — Register for Udvalgte Kroniske Sygdomme) which however does not encompass precisely the same persons. The NDR was based on the National Patient register (NPR), the Register for Medicinal Products Statistics (RMPS) (Lægemiddelstatistikregisteret (LMS) or in colloquial terms, the Prescription Register) and the Health Services Register (HSR), but did not have a definition of diabetes type. The definition of RUKS is only based on NPR and RMPS and has an explicit focus on *specificity*, that is not identifying too many non-diabetes persons as having diabetes, but it has a subdivision of patients by diabetes type.

The section of Clinical Epidemiology at SDCC has a need for a more comprehensive register with focus on *sensitivity*, and in particular a concise definition of the type of diabetes. Therefore a register was established as a project at Statistics Denmark's research facility (DST/FSE, ForskerService) in 2016. This forms the basis of epidemiological studies of diabetes occurrence in Denmark at SDCC/Epi.

The available data sources have increased since the first version of the DMreg was established in 2016, based on NPR, RMPS, HSR, DVDD and the eye screening data base (the latter for bureaucratic reasons have not available later). Accordingly, the criteria of inclusion and definition of type of diabetes has changed between versions of DMreg.

This document describes the latest version of the register, based on the files in the project 709873, called DMreg2025, with data available to 2024-12-31.

1.2 Register definition for DMreg

The construction of a Danish diabetes register (DMreg) is made with a special view to a reliable definition of type of diabetes, where we do not only distinguish type 1 (T1) and type 2 (T2) diabetes but also define (Tx), the latter comprising persons classified as having “other” types of diabetes.

The first attempt was in 2016, and the current (January 2025) is covering the period of

diabetes diagnoses from 1996-01-01 through 2024-12-31, a period of 29 years.

The basic structure of the register is a file with one record per person, with person-id, sex, type of diabetes and dates of birth, diagnosis of diabetes and death. Only date of death has missing values. The version available to persons outside the project only contains person-id, date of diabetes (date of inclusion) and type of diabetes.

1.2.1 Location of DST registers

All registers used are located physically at the research-server at Statistics Denmark (DST, forskerservice), and so is the diabetes register DMreg.

We used SAS-programs to extract the dates of meeting each specific criterion from the available registers. The details of this is found in chapter ??, p. ?. It is not possible to deduce which files at the DST server were used without reading that section. The following is therefore a description of the *principles* of the register construction; the *technical* details are in chapter ??—and ultimately in the SAS code.

1.2.2 Date of inclusion (“diagnosis of diabetes”), doDM

The date of inclusion is defined as the earliest of a set of dates, each derived from a different register. Each of these is a date at which we consider a person to have diabetes, based on recordings in the particular register. For the sake of completeness we also maintain the last date a person is recorded with diabetes in any of the registers.

Below are the names of the registers, their periods of coverage, the name of the extracting SAS program (see chapter ??, p. ??) and the name of the date variables defined in each program:

- MFR (National birth register, 1973–), 00-getmfr, 00-gdmint
doBth, doGst Dates of births and gestation. Used to determine periods of pregnancy for women, where inclusion in the register is defined as impossible.
- NPR (National Patient Register, 1977–), 01-npr
doNPR, doNPR2 Dates of the first and second recorded date of contact with a diagnosis of diabetes in the NPR.
lastNPR Date of last NPR entry with diabetes diagnosis.
- DVDD (Danish Adult Diabetes Database), and DDiD (Danish Diabetes Database), 02-dvdd
doDVD Earliest recorded date of diagnosis in the DVDD or DDiD. If no date of diagnosis is in a record, the date of reporting is used.
lastDVDD Last recorded date of reporting to DVDD.
- NHSR (National Health Services Register, 1990–), 03-nhsr
doPod Earliest date of billing for “podiatry for diabetes patient”
lastPod Last date of billing for podiatry
- RMPS (Register of Medicines Products Statistics — “prescription register”, 1995–), 04-rmps
doIns, doIns2, lastIns Date of first, second and last recorded purchases of insulin (A10Axx).

doOAD, doOAD2, lastOAD Dates of the first, second and last recorded purchases of OAD (A10Bxxx). More precisely, non-insulin anti-diabetic drugs.

Liraglutide (A10BJ02) and semaglutide (A10BJ06) are not included (obesity indication) at all, because of the obesity indication for these drugs, and the fact that they are rarely used as first-line treatment of diabetes. Dapagliflozin (A10BK01) is excluded after 2021-01-01, empagliflozin (A10BK02) is excluded after 2021-06-01 (heart failure indication). For these drugs there has been a massive increase in prescriptions in the last few years.

- LABKA (National Laboratory Data Base, 2010–), 05-hba1c

doHbA Date of second consecutive HbA_{1c} greater or equal to 48 mmol/mol.

lastHbA Date of last HbA_{1c} measurement. Note that this is the last date where the person *potentially* could have met the criterion.

We use the earliest of these dates as the inclusion date (“date of diagnosis”) in the diabetes register, except that we do not include a person based on only one drug purchase or one record in NPR—we require two dates recorded from NPR / RMPS, and we use the second of these dates as the date from NPR / RMPS.

For the other criteria (from DVDD, NHSR or LABKA) we only require one date to include a person.

There are thus 12 different possibilities for the first criterion met (inclusion criterion, recorded in the variable **inCr**): DVD, Pod, HbA and the 9 possible combinations of 2 required NPR / drug combinations (I - insulin purchase; O - non-insulin antidiabetic purchase; N - National Patient Register): I-I, I-O, I-N, O-I, O-O, O-N, N-I, N-O and N-N. In the SAS listings we collapsed the the latter 9 criteria to 3, based on the last letter—that is the qualifying criterion met.

Similarly we define **doLast** as the latest among the dates where a person has met or has had the opportunity to meet an inclusion criterion. The purpose of this variable is to be able to assess how large a fraction of the persons in the register that are “inactive”. A long period after the **doLast** is an indication of an erroneous inclusion in the first place.

1.2.2.1 Diabetes drugs for non-diabetes indication

The GLP-1 drugs liraglutide (ATC A10BJ02) and semaglutide (A10BJ06) are mainly used for treatment of obesity and hardly ever as the first non-insulin prescription, so purchase of these is not counted as inclusion criterion.

Dapagliflozin (ATC A10BK01) were approved for treatment of heart failure as of 1 January 2021, so not counted among the inclusion criteria after this date.

Empagliflozin (ATC A10BK03) were approved for treatment of heart failure as of 1 June 2021, so not counted in the inclusion criteria after this date.

1.2.2.2 Gestational Diabetes (GDM)

We use the birth register, that covers the period 1973–2024 incl. to define intervals in which women are considered pregnant. Date of conception was defined as the date of birth minus the gestational age at birth (set to 280 days when missing), and pregnancy then defined as the period from conception to birth. This also includes still births.

We excluded all diabetes criteria met during pregnancy defined this way, on the grounds that they may represent cases of gestational diabetes.

1.2.2.3 PolyCystic Ovarian Syndrome (PCOS)

If a woman is recorded with PCOS in the NPR, she cannot be included on the basis of metformin purchase alone in the period from the earliest PCOS diagnosis until her 40th birthday.

Moreover, if a woman's only drug dispensations are metformin between ages 18 and 40, she is considered a possible PCOS case and these dispensations are not counted in defining diabetes. Dispensation of metformin after age 40 for women with a PCOS diagnosis *is* considered diabetes medication and leads to an inclusion in the register at the first date of purchase after the 40th birthday.

Algorithmically, this boils down to disregarding all metformin purchases by women between 18 and 40. But this has no bearing on inclusion in the register by other criteria in ages 18 to 40.

This will have the funny effect of having quite a large number of women included shortly after their 40th birthday—the first purchase of metformin after the (arbitrarily defined) upper limit of the exclusion ages 18–40.

1.2.2.4 Validity of date of inclusion

The DMreg is based on 5 different registers available at DST, so in principle the validity of the inclusion date in the register is only for the intersection of coverage periods of all 5 registers. Now, the main registers are the NPR, the NHR and the RMPS, so we have chosen to base completeness on the covered calendar periods of these alone.

Of the three main registers (NPR, NHR, RMPS), the RMPS has the shortest coverage, namely from 1995-01-01 ff. If the first recorded anti-diabetic drug purchase in RMPS is after 1996-01-01, we consider this as the first ever purchase. This is because we take it as unlikely for a person with diabetes to have bought anti-diabetic drugs before 1995-01-01 (where it would not have been recorded) and then have a pause of drug purchase for the entire year 1995.

Hence, we consider dates of inclusion late than 1996-01-01 as “valid” diabetes incidence dates, whereas dates of inclusion before 1996-01-01 are considered unreliable as dates of diabetes incidence. Persons with a date of inclusion before 1996-01-01 are merely considered as prevalent cases of diabetes as of 1996-01-01.

Note that the register *does* contain dates of inclusion *before* 1996-01-01—every person in DMreg has a date of inclusion recorded in data, even if we consider this as grossly inaccurate as date of diagnosis if before 1996-1-1. Therefore, any analysis relying on date of diagnosis must consider dates before 1996-01-01 as missing (or more precisely, left censored at 1996-01-01). A date of inclusion before 1996-1-1 is merely an indicator of diabetes presence as of that date.

There are no persons in the DMreg with date of death before 1996-01-01.

1.2.3 Type of diabetes

The classification of patients as T1, T2 or Tx (“other type of diabetes”) based on register data only is not accurate, and the approach chosen here is primarily designed to identify persons with T1 with reasonably high specificity.

Thus T2 and Tx will be equivalent to “cannot be classified as T1 with reasonable certainty”, and hence the type classification should be used cautiously.

We base the definition of type of diabetes on the most latest recording of type in the

registers (this is a change from versions of *DMreg* before 2023). This formally entails conditioning on the future since we define a person’s diabetes type based on information obtained later in the course of disease. Thus formally the accuracy of type of diabetes increases with duration of diabetes, which indeed is a bit odd.

The clinical background for taking this approach is that the most recent classification is likely to be the most precise. We consider the clinical reports in the DVDD (or DDiD) as the most accurate so the practical implementation of the type classification is therefore as follows:

- use the DVDD recordings of diabetes type (T1, T2, Other) and classify persons as:
 - T1 if the last record in DVDD classifies the person as T1
 - T2 if the last record in DVDD classifies the person as T2
 - Tx if the last record in DVDD classifies the person as Other (“Anden type”)
- if no classification is available from DVDD, then use the NPR to classify persons as:
 - T1 if the last record in NPR has ICD-8 code 249xx or ICD-10 code E10xx
 - T2 if the last record in NPR has ICD-8 code 250xx or ICD-10 code E11xx
 - Tx if the last record in NPR has ICD-10 code E12xx, E13xx or E14xx

Note, that before 1994, where the NPR used ICD-8, classification as Tx from NPR does not occur—no code for it existed then. This is a minor thing, though; very few persons alive at the register starting date 1996-01-01 have a last NPR record before 1994-12-31.

- Persons that have purchased insulin before age 30 are classified as T1, except if classified as T2 or Tx in DVDD. Note that this overrides a T2 or Tx classification from NPR if the person is lacking a DVDD classification.
- Persons classified as T1 without any recorded insulin purchase are always reclassified from T1 to T2, regardless of recordings in DVDD and NPR. This is really a subset of the following criterion:
- Persons classified as T1 without insulin purchase in the first year after date of inclusion are reclassified from T1 to T2, except if less than a year’s follow-up in RMPS is available.

In earlier versions of *DMreg* reclassification by this criterion did not occur for persons classified as T1 in DVDD, but it does as of the 2024 version. This is because too many persons with early dates of inclusion were erroneously classified as T1.

- Any person not classified by the above is classified as T2.

The reason that we cannot entirely dispose of the NPR in classification of diabetes is that the DVDD was not established till 2005, and hence not all patients appear in DVDD; persons who died before 2005 will have no records in DVDD, and hence no DVDD-based type classification. For these persons (and other persons that for some other reason are absent in DVDD) we can only base type of diabetes on the diagnosis recorded in NDR.

1.2.4 Summary

We have constructed a diabetes register where persons are captured by a set of criteria derived from 5 different registers. From these we derived date of diabetes (really the date of inclusion), as well as type of diabetes (T1, T2 and Tx).

Chapter 2

Construction of R-file

...now input from ../r/mkDMreg.tex

```
chr "E:/ProjektDB/SDCC/Workdata/709873/DMreg2025/"
```

2.1 SAS-version of DMreg2025 converted to R

```
> start()
```

```
-----  
Code: E:/ProjektDB/SDCC/Workdata/709873/DMreg2025/r/mkDMreg.rnw  
Time: 2025-08-07 at 12:38:45  
-----
```

```
      R      Epi      popEpi  
4.4.1    2.59    0.4.12  
-----
```

In this section we document the conversion of the SAS-version of the register to an R-version with variables defined as factors where necessary, with date variables converted to `cal.yr` and a logical ordering of the variables. There will be two versions, one with only the epidemiologically relevant variables, and one where also the administrative variables involved in defining the register are included. The latter is used for documentation of the construction of the register.

2.1.1 The administrative version of DMreg

We first read the SAS-version of the register:

```
> system.time(  
+ DMxreg <- as.data.frame(read_sas(paste0(regpath,  
+                                     "data/DMreg.sas7bdat"))))  
  bruger    system forlÃ, bet  
  10.83      0.24      31.06  
> dim(DMxreg) ; names(DMxreg)  
[1] 728585      27  
[1] "pnr"      "sex"      "doBth"    "doDM"     "doLast"   "doDth"    "DMtp"  
[8] "DMtx"     "dvdtyp"   "nprtyp"   "only1"    "inCr"     "do2nd"    "doNPR"  
[15] "doNPR2"   "doOAD"    "doOAD2"   "doIns"    "doIns2"   "doPod"    "doHbA"  
[22] "doDVD"    "hasnpr"   "hasdvdd"  "hasrmps"  "hasfoot"  "hashba"
```

We want the variable labels for reference so we get the variable labels from the attributes extracted by `read_sas`:

```
> vlabs <- sapply(DMxreg, FUN = function(x) attr(x, "label"))
> # forgot to put labels on hasdvdd and hasnpr
> vlabs[["hasdvdd"]] <- "has DVDD rec."
> vlabs[["hasnpr"]] <- "has NPR rec."
> cbind(vlabs <- unlist(vlabs))

      [,1]
pnr      "Person-id"
sex      "Sex"
doBth    "Date of birth"
doDM      "Date of inclusion (only usable >=1996-1-1)"
doLast    "Date of latest criterion"
doDth     "Date of death"
DMtp      "Type of DM (T1/T2)"
DMtx      "Type of DM (T1/T2/Tx)"
dvdtyp    "Type from DVDD"
nprtyp    "Type from NPR"
only1     "Only one criterion"
inCr      "Incl. criterion"
do2nd     "Date of 2nd of Ins/OAD/NPR"
doNPR     "Date of 1st NPR"
doNPR2    "Date of 2nd NPR"
doOAD     "Date of 1st OAD"
doOAD2    "Date of 2nd OAD"
doIns     "Date of 1st Ins"
doIns2    "Date of 2nd Ins"
doPod     "Date of Podiatry"
doHbA     "Date of HbA1c"
doDVD     "Date of DVDD"
hasnpr    "has NPR rec."
hasdvdd   "has DVDD rec."
hasrmps   "RMPS record"
hasfoot   "Pod record"
hashba    "HbA1c record"
```

Thus, `vlabs` is now a character vector with *values* that are the *labels* of the variables, and with a *names* attribute that is the variable *names* in `DMxreg`.

We do not want to carry variable attributes around with the data frame:

```
> for(vn in names(DMxreg))
+ for(at in c("label", "format.sas")) attr(DMxreg[,vn], at) <- NULL
```

Further, we define factors as needed. Note that `dvdtyp` and `nprtyp` will have missing values — they are character variables and one value that occur is "" (a zero-length character string—the SAS-representation of missing values in character variables).

```
> DMxreg <- transform(cal.yr(DMxreg),
+   sex = factor(sex),
+   DMtp = factor(DMtp),
+   DMtx = factor(DMtx),
+   inCr = factor(inCr),
+   only1 = factor(only1, labels=c("N", "Y")),
+   hasdvdd = factor(hasdvd, labels=c("N", "Y")),
+   hasnpr = factor(hasnpr, labels=c("N", "Y")),
+   dvdtyp = factor(dvdtyp, levels=c("T1", "T2", "Tx")),
+   nprtyp = factor(nprtyp, levels=c("T1", "T2", "Tx")))
> str(DMxreg, v = 0)

'data.frame':      728585 obs. of  27 variables:
 $ pnr      : chr      ...
 $ sex      : Factor w/ 2 levels "1","2": NULL ...
```

```

$ doBth : 'cal.yr' num NULL ...
$ doDM   : 'cal.yr' num NULL ...
$ doLast : 'cal.yr' num NULL ...
$ doDth  : 'cal.yr' num NULL ...
$ DMtp   : Factor w/ 2 levels "T1","T2": NULL ...
$ DMtx   : Factor w/ 3 levels "T1","T2","Tx": NULL ...
$ dvdtyp : Factor w/ 3 levels "T1","T2","Tx": NULL ...
$ nprtyp : Factor w/ 3 levels "T1","T2","Tx": NULL ...
$ only1  : Factor w/ 2 levels "N","Y": NULL ...
$ inCr   : Factor w/ 12 levels "DVD","HbA","I-I",...: NULL ...
$ do2nd  : 'cal.yr' num NULL ...
$ doNPR  : 'cal.yr' num NULL ...
$ doNPR2 : 'cal.yr' num NULL ...
$ doOAD  : 'cal.yr' num NULL ...
$ doOAD2 : 'cal.yr' num NULL ...
$ doIns  : 'cal.yr' num NULL ...
$ doIns2 : 'cal.yr' num NULL ...
$ doPod  : 'cal.yr' num NULL ...
$ doHbA  : 'cal.yr' num NULL ...
$ doDVD  : 'cal.yr' num NULL ...
$ hasnpr : Factor w/ 2 levels "N","Y": NULL ...
$ hasdvdd: Factor w/ 2 levels "N","Y": NULL ...
$ hasrmps: num NULL ...
$ hasfoot: num NULL ...
$ hashba : num NULL ...

```

```

> with(DMxreg,
+       table(DMtp, dvdtyp, nprtyp, exclude = NULL)) |>
+       addmargins() |>
+       fCtable(w = 7)

```

		nprtyp	T1	T2	Tx	NA	Sum
DMtp	dvdtyp						
T1	T1		12,840	895	357	39	14,131
	T2		.	.	.	.	.
	Tx		.	.	.	.	.
	NA		41,643	374	271	261	42,549
	Sum		54,483	1,269	628	300	56,680
T2	T1		2,644	1,454	179	274	4,551
	T2		5,742	134,390	8,554	121,472	270,158
	Tx		660	1,421	2,723	118	4,922
	NA		22,299	230,048	16,519	123,408	392,274
	Sum		31,345	367,313	27,975	245,272	671,905
Sum	T1		15,484	2,349	536	313	18,682
	T2		5,742	134,390	8,554	121,472	270,158
	Tx		660	1,421	2,723	118	4,922
	NA		63,942	230,422	16,790	123,669	434,823
	Sum		85,828	368,582	28,603	245,572	728,585

Finally, we save the register *and* the vector `vlabs` with the variable labels in the same file; it is a handy feature of `save`, that you can save several R-objects in one file, in this case `DMxreg.Rda`; the load command will then load all objects stored in the file (`v=T` causes load to print the objects it loads.)

```

> system.time(save(DMxreg, vlabs, file = "../data/DMxreg.Rda"))
  bruger    system forlÃ,bet
    7.40      0.14      8.48

> system.time(load(
Loading objects:
  DMxreg
  vlabs
  bruger    system forlÃ,bet
    1.37      0.09      1.47

```

```
> # system.time(write_parquet(list(DMxreg, vlabs),
> #                               sink = "../data/DMxreg.parquet"))
> # system.time(DMpq <- read_parquet("../data/DMxreg.parquet"))
> # str(DMpq)
```

2.1.2 The epidemiological diabetes register

DMxreg is the extended register with all the administrative variables targeted at making an overview of the register construction. For convenience of *use* of DMreg we also provide a cut-down version that only contains the epidemiologically relevant variables—this will be the register version that most people will use.

```
> wh <- c("pnr", "sex", "doBth", "doDM", "doDth", "DMtp", "DMtx")
> DMreg <- DMxreg[,wh]
> vlabs <- vlabs[wh]
> cbind(vlabs)
```

	vlabs
pnr	"Person-id"
sex	"Sex"
doBth	"Date of birth"
doDM	"Date of inclusion (only usable >=1996-1-1)"
doDth	"Date of death"
DMtp	"Type of DM (T1/T2)"
DMtx	"Type of DM (T1/T2/Tx)"

```
> str(DMreg, v = 0)
```

```
'data.frame':      728585 obs. of  7 variables:
 $ pnr  : chr      ...
 $ sex  : Factor w/ 2 levels "1","2": NULL ...
 $ doBth: 'cal.yr' num  NULL ...
 $ doDM : 'cal.yr' num  NULL ...
 $ doDth: 'cal.yr' num  NULL ...
 $ DMtp : Factor w/ 2 levels "T1","T2": NULL ...
 $ DMtx : Factor w/ 3 levels "T1","T2","Tx": NULL ...
```

```
> system.time(save(DMreg, vlabs,
+                  file = "../data/DMreg.Rda"))
```

bruger	system forlÃ	bet
2.05	0.12	2.83

```
> system.time(load(file = "../data/DMreg.Rda", v = TRUE))
```

Loading objects:

```
DMreg
vlabs
```

bruger	system forlÃ	bet
0.86	0.07	0.94

2.1.3 How many persons

The dates of diagnosis are in `cal.yr` format, and so the over-represented dates `xxxx-01-01` will be allocated wrongly to integer years if just computed by `floor()`, so we instead make the cut between years one day earlier:

```
> tt <- with(DMreg, table(pmax(1990,
+                             floor(doDM - 1/365)),
+                             DMtx))
> fCtable(addmargins(tt))
```

DMtx	T1	T2	Tx	Sum
1990	16,524	72,243	1,514	90,281
1991	1,659	5,563	224	7,446
1992	1,573	5,538	277	7,388
1993	2,472	6,353	346	9,171
1994	2,181	6,877	484	9,542
1995	5,822	25,233	1,462	32,517
1996	1,051	11,048	552	12,651
1997	1,009	10,591	530	12,130
1998	1,033	11,592	535	13,160
1999	992	12,052	600	13,644
2000	1,009	12,052	612	13,673
2001	1,037	12,341	584	13,962
2002	1,051	14,928	700	16,679
2003	987	16,512	757	18,256
2004	1,376	20,724	775	22,875
2005	948	20,961	625	22,534
2006	892	18,798	532	20,222
2007	837	19,461	537	20,835
2008	850	20,920	547	22,317
2009	845	21,507	533	22,885
2010	793	23,355	565	24,713
2011	803	25,166	650	26,619
2012	732	20,194	590	21,516
2013	803	15,501	530	16,834
2014	792	16,219	521	17,532
2015	803	18,609	599	20,011
2016	833	20,722	621	22,176
2017	855	18,643	592	20,090
2018	869	17,508	538	18,915
2019	836	17,841	543	19,220
2020	884	19,197	608	20,689
2021	879	20,780	694	22,353
2022	953	23,126	593	24,672
2023	912	25,120	535	26,567
2024	785	23,224	501	24,510
Sum	56,680	650,499	21,406	728,585

```

-----
Code: E:/ProjektDB/SDCC/Workdata/709873/DMreg2025/r/mkDMreg.rnw
Ends: 2025-08-07 at 12:39:39
Time elapsed:      00:00:54
-----

```

Chapter 3

SAS programs extracting the DMreg data

...now input from `sasprograms.tex`

The construction of the `DMreg` is done by running a number of SAS programs in sequence. Each SAS program accesses (a) register(s) at DST project 707655 and creates one or more files of data for subsequent use. The programs can be run using the `cmd-script` `do-it-`

3.1 SAS program overview

- The files used in constructing the `DMreg` are stored in `DMdat`, that is `../DMreg2025/data/`, or subfolders of this.
- Prerequisites:
 - `00-fmts` Constructs formats for grouping and labeling of diagnoses and procedures.
 - `00-getmfr` Constructs a version of the birth register 1973–2024 incl. from the three different versions from SDS.
 - `00-gdmint` Constructs a file `gdmint` in `DMdat` with intervals (conception to birth) for all live and still births for women with any recorded births. It has 26 variables, `doGstxx` and `doBthxx` (`xx`: 1–15) to be used
 - `001-base` Reads the `pdb_pnr` dataset in order to retrieve sex and date of birth and the `dod2024` to retrieve date of death, and forms the `pop` dataset. The persons in the `pop` file are not the same as in LifeLines (there are many more); we shall eventually only use the LifeLines population.
- Dates used in forming the `DMreg`:
 - `01-npr` Reads data from NPR, both the LPR2 and LPR3 versions. Derives the variables `doNPR`, `doNPR2` and `lastNPR`.
 - `02-dvdd` Reads data from DVDD and DDiD, and extracts dates of diagnosis and type of diabetes. Derives the variables `doDVDD`, `dvdtyp` and `lastDVDD`.
 - `03-nhsr` Reads data from the national health services register - podiatry data. Derives `doPod` in the file `nhsr`
 - `04-rmps` Reads the diabetes medication data. Derives the date variables `doOAD`, `doOAD2`, `lastOAD`, `doIns`, `doIns2`, `lastIns`, in the file `rmps`

- **05-hba1c** Reads data from the **hba1** file with HbA_{1c} measurements derived from DVDD and LABKA, in order to include persons at the second consecutive HbA_{1c} measurement over 48. Derives the date variables **doHba** and **lastHBa**
- **06-define** Collects the generated data from NPR, DVDD, NHSR, RMPS and LABKA, and defines the earliest of these as the inclusion date. Also constructs the last date seen and derives type of diabetes. This is the administrative **DMreg** constructed.

Chapter 4

DMreg SAS program logs and outputs

The following sections lists the code (the `.log`-files) and output (the `.lst`-files) from the SAS-programs creating the `DMreg`. The code listed constitutes the complete documentation of the construction of the register. The output includes a number of tables that can be used to gain insight in the structure of the diabetes register `DMreg`.

4.1 00-fmts

...is shown at the end—it merely defines a couple of format for use in other programs.

4.2 00-getmfr

Reads data from the 4 data frames making up the medical birth register and creates a single file with the MFR from 1973 ff.

```
1                                "Program: 00-getmfr.sas"  16:10 Wednesday, August 6, 2025
```

```
NOTE: AUTOEXEC processing completed.
```

```
1          libname grund list ;
NOTE: Libref=   GRUND
      Scope=   Program 00-getmfr.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA
      Owner Name= DSTFSE\neo
      File Size=           OKB
      File Size (bytes)= 0
```

```
2
3          proc contents data = grund.lprmfrlf1996 varnum ; run ;
```

```
NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.05 seconds
      cpu time            0.04 seconds
```

```
NOTE: The PROCEDURE CONTENTS printed page 1.
```

```
4          proc contents  data = grund.lprmfrdf1996  varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.00 seconds
 cpu time 0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 2.

```
5          proc contents  data = grund.mfr1997  varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.01 seconds
 cpu time 0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 3.

```
6          proc contents  data = grund.mfr2018  varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.02 seconds
 cpu time 0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 4.

```
7          proc contents  data = grund.mfr_nyfoedte2023  varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.01 seconds
 cpu time 0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 5.

```
8
9          *-----;
10         data mfr1 (keep = pnr doBth doGst) ;
11           set grund.lprmfrlf1996
12             grund.lprmfrdf1996 (rename = (d_foddto = d_fodtdto)) ;
13           pnr = v_mcpr ;
14           doBth = d_fodtdto ;
15           doGst = d_fodtdto - v_svlangde * 7 ;
16           run ;
```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).
 404716 at 15:33

NOTE: There were 1484969 observations read from the data set GRUND.LPRMFRLF1996.

NOTE: There were 7744 observations read from the data set GRUND.LPRMFRDF1996.

NOTE: The data set WORK.MFR1 has 1492713 observations and 3 variables.

NOTE: DATA statement used (Total process time):
 real time 0.45 seconds
 cpu time 0.32 seconds

```
17
18         *-----;
19         * for 1996-2018 data fra DST ;
20         %macro getmfr ;
21         data mfr2 (keep = pnr doBth doGst) ;
22           set %do i = 1997 %to 2018 ;
23             grund.mfr&i.
24           %end ; ;
25           pnr = cpr_moder ;
26           doBth = foedselsdato ;
27           doGst = foedselsdato - gestationsalder_dage ;
28           run ;
29           %mend ;
30           %getmfr ;
```

NOTE: Missing values were generated as a result of performing an operation on missing

values.

Each place is given by: (Number of times) at (Line):(Column).

31605 at 30:71

NOTE: There were 68221 observations read from the data set GRUND.MFR1997.
 NOTE: There were 66706 observations read from the data set GRUND.MFR1998.
 NOTE: There were 66769 observations read from the data set GRUND.MFR1999.
 NOTE: There were 67660 observations read from the data set GRUND.MFR2000.
 NOTE: There were 66003 observations read from the data set GRUND.MFR2001.
 NOTE: There were 64565 observations read from the data set GRUND.MFR2002.
 NOTE: There were 65207 observations read from the data set GRUND.MFR2003.
 NOTE: There were 65365 observations read from the data set GRUND.MFR2004.
 NOTE: There were 65037 observations read from the data set GRUND.MFR2005.
 NOTE: There were 65817 observations read from the data set GRUND.MFR2006.
 NOTE: There were 65114 observations read from the data set GRUND.MFR2007.
 NOTE: There were 66001 observations read from the data set GRUND.MFR2008.
 NOTE: There were 63828 observations read from the data set GRUND.MFR2009.
 NOTE: There were 64416 observations read from the data set GRUND.MFR2010.
 NOTE: There were 60034 observations read from the data set GRUND.MFR2011.
 NOTE: There were 58970 observations read from the data set GRUND.MFR2012.
 NOTE: There were 56886 observations read from the data set GRUND.MFR2013.
 NOTE: There were 57837 observations read from the data set GRUND.MFR2014.
 NOTE: There were 59187 observations read from the data set GRUND.MFR2015.
 NOTE: There were 62768 observations read from the data set GRUND.MFR2016.
 NOTE: There were 62330 observations read from the data set GRUND.MFR2017.
 NOTE: There were 62226 observations read from the data set GRUND.MFR2018.
 NOTE: The data set WORK.MFR2 has 1400947 observations and 3 variables.
 NOTE: DATA statement used (Total process time):
 real time 0.82 seconds
 cpu time 0.28 seconds

```

31
32      *-----;
33      * fra 2019-23 data fra SDS (?) ;
34      data mfr3 (keep = pnr doBth doGst) ;
35      set grund.mfr_nyfoedte2023 ;
36      pnr = pnr_mor ;
37      doBth = FoedselsDato_Barn ;
38      doGst = FoedselsDato_Barn - Gestationsalder ;
39      run ;

```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

32 at 38:29

NOTE: There were 303926 observations read from the data set GRUND.MFR_NYFOEDTE2023.
 NOTE: The data set WORK.MFR3 has 303926 observations and 3 variables.
 NOTE: DATA statement used (Total process time):
 real time 0.09 seconds
 cpu time 0.06 seconds

```

40
41      * 2023 data fra SDS (?) ;
42      data mfr4 (keep = pnr doBth doGst) ;
43      set sds.nyfoedte_lev1 ;
44      pnr = cprnummer_mor ;
45      doBth = FoedselsDato_Barn ;
46      doGst = FoedselsDato_Barn - Gestationsalder ;
47      run ;

```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

45 at 46:29

NOTE: There were 364099 observations read from the data set SDS.NYFOEDTE_LEV1.
 NOTE: The data set WORK.MFR4 has 364099 observations and 3 variables.
 NOTE: DATA statement used (Total process time):
 real time 0.19 seconds
 cpu time 0.03 seconds

```
48
49      data DMdat.mfr (label = "Birth register") ;
50          set mfr1 mfr2 mfr3 mfr4 ;
51          gestal = doBth - doGst ;
52          label pnr = "mother pnr"
53              doBth = "date of birth"
54              doGst = "date of gestation"
55              gestal = "gestational age, days" ;
56      run ;
```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).
436398 at 51:18

NOTE: There were 1492713 observations read from the data set WORK.MFR1.

NOTE: There were 1400947 observations read from the data set WORK.MFR2.

NOTE: There were 303926 observations read from the data set WORK.MFR3.

NOTE: There were 364099 observations read from the data set WORK.MFR4.

NOTE: The data set DMDAT.MFR has 3561685 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time	1.14 seconds
cpu time	0.68 seconds

```
57
58      * remove duplicates ;
59      proc sort data = DMdat.mfr nodupkey ; by pnr doBth ; run ;
```

NOTE: There were 3561685 observations read from the data set DMDAT.MFR.

NOTE: 354570 observations with duplicate key values were deleted.

NOTE: The data set DMDAT.MFR has 3207115 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	2.94 seconds
cpu time	3.68 seconds

```
60
61      proc tabulate data = DMdat.mfr missing noseps ;
62          class doBth ;
63          var gestal ;
64          table all doBth,
65              gestal * (n * f=comma9. nmiss * f=comma7.
66                  (p1 p5 p10 p25 p50 p75 p90 p95 p99) * f = 6.)
67              / rts = 9 ;
68          format doBth year4. ;
69      run ;
```

NOTE: There were 3207115 observations read from the data set DMDAT.MFR.

NOTE: The PROCEDURE TABULATE printed page 6.

NOTE: PROCEDURE TABULATE used (Total process time):

real time	1.00 seconds
cpu time	2.07 seconds

```
70
71      proc contents data = DMdat.mfr varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.00 seconds
cpu time	0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 7.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:

real time	7.00 seconds
cpu time	7.48 seconds

00-getmfr.lst

The SAS System

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The CONTENTS Procedure

Data Set Name	GRUND.LPRMFRLF1996	Observations	1484969
Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	27/01/2025 15:03:11	Observation Length	48
Last Modified	27/01/2025 15:03:11	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	LPRMFRLF - Levendefødte ud fra LPR		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	1092
First Data Page	*
Max Obs per Page	1361
Obs in First Data Page	1327
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA\lprmfRLF1996.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\neo
File Size	68MB
File Size (bytes)	71630848

Variables in Creation Order

#	Variable	Type	Len	Format	Label
1	V_MCPR	Char	28		
2	CPRTJEK	Char	*		CPR-tjek
3	CPRTYPE	Char	*		CPR-type
4	D_FODTDO	Num	8	DDMMYY10.	Fødselsdato
5	V_SVLANGDE	Num	8		Svangerskabslængde i uger

The SAS System

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The CONTENTS Procedure

Data Set Name	GRUND.LPRMFRDF1996	Observations	7744
Member Type	DATA	Variables	*
Engine	V9	Indexes	0
Created	27/01/2025 15:03:09	Observation Length	48
Last Modified	27/01/2025 15:03:09	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	LPRMFRDF - Dødfødte ud fra LPR		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	6
First Data Page	*
Max Obs per Page	1361
Obs in First Data Page	1332

```

Number of Data Set Repairs 0
ExtendObsCounter          YES
Filename                  E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\
                           POPA\lprmfrdf1996.sas7bdat
Release Created            9.0401M8
Host Created              X64_SRV22
Owner Name                DSTFSE\neo
File Size                 448KB
File Size (bytes)         458752

```

Variables in Creation Order

#	Variable	Type	Len	Format	Label
1	V_MCPR	Char	28		
2	V_SVLANGDE	Num	8		Svangerskabslængden i uger
3	d_foddto	Num	8	DDMMYY10.	Fødselsdato - barnet

The SAS System 16:10 Wednesday, August 6, 2025 3

The CONTENTS Procedure

Data Set Name	GRUND.MFR1997	Observations	68221
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	27/01/2025 15:03:11	Observation Length	96
Last Modified	27/01/2025 15:03:11	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	MFR - Levendefødte fra det medicinske fødselsregister		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

```

Data Set Page Size      65536
Number of Data Set Pages 101
First Data Page         *
Max Obs per Page        681
Obs in First Data Page  665
Number of Data Set Repairs 0
ExtendObsCounter        YES
Filename                E:\ProjektDB\SDCC\Rawdata\709873\
                           Grunddata\POPA\mfr1997.sas7bdat
Release Created          9.0401M8
Host Created            X64_SRV22
Owner Name              DSTFSE\neo
File Size                6MB
File Size (bytes)       6684672

```

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	CPR_MODER	Char	28			
2	PK_MFR	Char	48			
3	FOEDSELSDATO	Num	8	DATE9.	DATE9.	FOEDSELSDATO
4	GESTATIONSALDER_DAGE	Num	8	6.	6.	GESTATIONSALDER_DAGE

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The CONTENTS Procedure

Data Set Name	GRUND.MFR2018	Observations	62226
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	27/01/2025 15:03:36	Observation Length	96
Last Modified	27/01/2025 15:03:36	Deleted Observations	0

Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	MFR - Levendefødte fra det medicinske fødselsregister		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	92
First Data Page	*
Max Obs per Page	681
Obs in First Data Page	665
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA\mfr2018.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\neo
File Size	6MB
File Size (bytes)	6094848

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	CPR_MODER	Char	28			
2	PK_MFR	Char	48			
3	FOEDSELSDATO	Num	8	DATE9.	DATE9.	FOEDSELSDATO
4	GESTATIONSALDER_DAGE	Num	8	6.	6.	GESTATIONSALDER_DAGE
The SAS System						16:10 Wednesday, August 6, 2025 5

The CONTENTS Procedure

Data Set Name	GRUND.MFR_NYFOEDTE2023	Observations	303926
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	27/01/2025 15:03:12	Observation Length	56
Last Modified	27/01/2025 15:03:12	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	"		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	261
First Data Page	*
Max Obs per Page	1167
Obs in First Data Page	1137
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA\mfr_nyfoedte2023.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\neo
File Size	16MB
File Size (bytes)	17170432

Variables in Creation Order

#	Variable	Type	Len	Format	Informat
1	PNR_MOR	Char	28		
2	CPRTJEK	Char	*		
3	CPRTYPE	Char	*		
4	FOEDSELSDATO_BARN	Num	8	DDMMYY10.	DDMMYY10.
5	GESTATIONSALDER	Num	8	BEST12.	BEST32.
6	GESTATIONSALDERUGER	Num	8	BEST12.	BEST32.

The SAS System

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----- gestational age, days -----											
	N	NMiss	P1	P5	P10	P25	P50	P75	P90	P95	P99
All	2,774,968	432,147	224	255	265	273	280	287	291	294	296
date of birth											
1973	0	71,662	.	.	.	.	.	.	.	.	.
1974	0	71,033	.	.	.	.	.	.	.	.	.
1975	0	71,822	.	.	.	.	.	.	.	.	.
1976	0	65,056	.	.	.	.	.	.	.	.	.
1977	0	61,632	.	.	.	.	.	.	.	.	.
1978	42,938	18,827	224	252	266	273	280	280	287	294	294
1979	43,532	15,611	231	259	266	273	280	280	287	294	294
1980	45,427	11,528	224	259	266	273	280	280	287	294	294
1981	45,929	6,909	224	259	266	273	280	287	287	294	294
1982	52,223	159	224	259	266	273	280	287	287	294	301
1983	50,380	172	224	252	266	273	280	287	287	294	301
1984	51,284	165	224	252	266	273	280	280	287	294	301
1985	53,214	175	224	252	266	273	280	287	287	294	301
1986	54,740	224	224	252	266	273	280	287	287	294	301
1987	55,691	186	224	252	266	273	280	287	287	294	301
1988	58,247	207	224	252	266	273	280	287	287	294	301
1989	60,778	159	224	252	266	273	280	287	294	294	301
1990	62,816	168	224	259	266	273	280	287	294	294	301
1991	62,818	945	224	252	266	273	280	287	287	294	301
1992	66,187	892	224	252	259	273	280	280	287	294	294
1993	65,768	828	224	252	266	273	280	287	287	294	294
1994	67,704	1,061	224	252	266	273	280	287	287	294	294
1995	68,160	732	224	252	266	273	280	287	287	294	294
1996	65,997	688	224	252	259	273	280	287	287	294	294
1997	60,591	6,345	224	257	266	273	280	287	293	295	299
1998	63,574	1,823	224	256	265	273	280	287	293	295	299
1999	64,216	1,239	224	256	265	273	280	287	293	295	299
2000	65,129	1,203	224	256	264	273	280	287	292	295	299
2001	63,573	993	222	254	264	273	280	287	292	295	298
2002	62,194	986	223	254	263	272	280	287	292	294	298
2003	62,742	1,057	222	254	263	272	280	286	292	294	297
2004	62,760	1,147	219	254	263	272	280	286	291	294	297
2005	62,566	1,015	219	255	264	272	280	286	291	294	297
2006	63,240	1,135	222	255	264	272	280	286	291	294	296
2007	62,622	1,081	218	255	263	272	280	286	291	294	296
2008	63,356	1,183	220	255	264	272	280	286	291	294	296
2009	61,206	1,239	220	256	264	272	280	286	291	294	296
2010	61,761	1,325	221	256	264	272	280	286	291	294	296
2011	57,383	1,380	218	256	264	273	280	287	291	293	295
2012	56,310	1,416	221	256	265	273	280	287	290	292	294
2013	54,561	1,144	222	256	265	273	280	287	291	292	294
2014	55,796	957	222	256	265	273	280	287	291	292	294
2015	57,173	1,024	222	256	265	273	280	287	291	292	294
2016	60,381	1,338	222	256	265	273	281	287	291	293	294
2017	60,082	1,187	219	256	265	273	281	287	291	293	294
2018	60,248	1,044	222	256	265	273	281	287	291	293	294
2019	60,877	15	221	257	265	273	281	287	291	293	294
2020	60,622	9	222	257	265	273	281	287	291	293	294
2021	62,954	6	222	256	264	273	280	287	291	293	294
2022	58,069	0	221	256	264	273	280	286	291	292	294
2023	57,093	*	221	256	264	273	280	286	291	292	294
2024	56,349	*	218	256	264	273	280	286	291	292	294

```

2025          3,707          10      227      257      264      272      280      286      291      292      294
-----
The SAS System                                16:10 Wednesday, August 6, 2025    7

```

The CONTENTS Procedure

Data Set Name	DMDAT.MFR	Observations	3207115
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	06/08/2025 16:10:50	Observation Length	56
Last Modified	06/08/2025 16:10:50	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label	Birth register		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	2749
First Data Page	*
Max Obs per Page	1167
Obs in First Data Page	1140
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\mfr.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	172MB
File Size (bytes)	180224000

Variables in Creation Order

#	Variable	Type	Len	Label
1	pnr	Char	28	mother pnr
2	doBth	Num	8	date of birth
3	doGst	Num	8	date of gestation
4	gestal	Num	8	gestational age, days

Sort Information

Sortedby	pnr doBth
Validated	YES
Character Set	ANSI
Sort Option	NODUPKEY

4.3 00-gdmint

Reads the MFR and creates a data set with one record per woman with at least one pregnancy, and intervals for each pregnancy from doGest through doBth.

```

1                                "Program: 00-gdmint.sas"  16:10 Wednesday, August 6, 2025

```

NOTE: AUTOEXEC processing completed.

```
1      proc sort  data = DMdat.mfr
2          out = mfr (keep = pnr doGst doBth) ;
3      by pnr doGst ;
4      run ;
```

NOTE: There were 3207115 observations read from the data set DMDAT.MFR.

NOTE: The data set WORK.MFR has 3207115 observations and 3 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.49 seconds
cpu time	1.18 seconds

```
5
6      data mfr ;
7      set mfr ;
8      by pnr ;
9      if pnr eq " " then delete ;
10     if first.pnr then pno = 0 ;
11     pno + 1 ; * counts children ;
12     * missing gestational age assumed to be 280 days ;
13     if missing(doGst) then doGst = doBth - 280 ;
14     run ;
```

NOTE: There were 3207115 observations read from the data set WORK.MFR.

NOTE: The data set WORK.MFR has 3206951 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time	0.47 seconds
cpu time	0.48 seconds

```
15
16     proc transpose  data = mfr
17         out = g (drop = _NAME_ _LABEL_)
18         prefix = doGst ;
19     by pnr ;
20     var doGst ;
21     id pno ;
22     run ;
```

NOTE: There were 3206951 observations read from the data set WORK.MFR.

NOTE: The data set WORK.G has 1648098 observations and 16 variables.

NOTE: PROCEDURE TRANSPOSE used (Total process time):

real time	19.40 seconds
cpu time	19.31 seconds

```
23
24     proc transpose  data = mfr
25         out = b (drop = _NAME_ _LABEL_)
26         prefix = doBth ;
27     by pnr ;
28     var doBth ;
29     id pno ;
30     run ;
```

NOTE: There were 3206951 observations read from the data set WORK.MFR.

NOTE: The data set WORK.B has 1648098 observations and 16 variables.

NOTE: PROCEDURE TRANSPOSE used (Total process time):

real time	16.49 seconds
cpu time	15.67 seconds

```
31
32     data DMdat.gdmint ;
33     merge g b ;
34     by pnr ;
35     format doGst1 doBth1
36            doGst2 doBth2
37            doGst3 doBth3
```

```

38          doGst4  doBth4
39          doGst5  doBth5
40          doGst6  doBth6
41          doGst7  doBth7
42          doGst8  doBth8
43          doGst9  doBth9
44          doGst10 doBth10
45          doGst11 doBth11
46          doGst12 doBth12
47          doGst13 doBth13
48          doGst14 doBth14
49          doGst15 doBth15  dmmmyy10. ;
50      run ;

```

NOTE: There were 1648098 observations read from the data set WORK.G.
NOTE: There were 1648098 observations read from the data set WORK.B.
NOTE: The data set DMDAT.GDMINT has 1648098 observations and 31 variables.
NOTE: DATA statement used (Total process time):
 real time 2.31 seconds
 cpu time 0.71 seconds

```

51
52      proc contents data = DMdat.gdmint  varnum ; run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.04 seconds
 cpu time 0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 1.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:
 real time 39.39 seconds
 cpu time 37.51 seconds

00-gdmint.lst

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The CONTENTS Procedure

Data Set Name	DMDAT.GDMINT	Observations	1648098
Member Type	DATA	Variables	31
Engine	V9	Indexes	0
Created	06/08/2025 16:11:31	Observation Length	272
Last Modified	06/08/2025 16:11:31	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	6868
First Data Page	1
Max Obs per Page	240
Obs in First Data Page	225
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\gdmint.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22

```

Owner Name          DSTFSE\FDIY709873
File Size           429MB
File Size (bytes)   450166784

```

Variables in Creation Order

#	Variable	Type	Len	Format	Label
1	pnr	Char	28		mother pnr
2	doGst1	Num	8	DDMMYY10.	
3	doGst2	Num	8	DDMMYY10.	
4	doGst3	Num	8	DDMMYY10.	
5	doGst4	Num	8	DDMMYY10.	
6	doGst5	Num	8	DDMMYY10.	
7	doGst6	Num	8	DDMMYY10.	
8	doGst7	Num	8	DDMMYY10.	
9	doGst8	Num	8	DDMMYY10.	
10	doGst9	Num	8	DDMMYY10.	
11	doGst10	Num	8	DDMMYY10.	
12	doGst11	Num	8	DDMMYY10.	
13	doGst12	Num	8	DDMMYY10.	
14	doGst13	Num	8	DDMMYY10.	
15	doGst14	Num	8	DDMMYY10.	
16	doGst15	Num	8	DDMMYY10.	
17	doBth1	Num	8	DDMMYY10.	
18	doBth2	Num	8	DDMMYY10.	
19	doBth3	Num	8	DDMMYY10.	
20	doBth4	Num	8	DDMMYY10.	
21	doBth5	Num	8	DDMMYY10.	
22	doBth6	Num	8	DDMMYY10.	
23	doBth7	Num	8	DDMMYY10.	
24	doBth8	Num	8	DDMMYY10.	
25	doBth9	Num	8	DDMMYY10.	
26	doBth10	Num	8	DDMMYY10.	
27	doBth11	Num	8	DDMMYY10.	
28	doBth12	Num	8	DDMMYY10.	
29	doBth13	Num	8	DDMMYY10.	
30	doBth14	Num	8	DDMMYY10.	
31	doBth15	Num	8	DDMMYY10.	

4.4 001-base

Reads the population files for the entire population and constructs the pop dataset.

```

1                                "Program: 001-base.sas"    16:11 Wednesday, August 6, 2025

```

NOTE: AUTOEXEC processing completed.

```

1      libname DMdat list ;
NOTE: Libref=   DMDAT
      Scope=   Program 001-base.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Owner Name= DSTFSE\FDIY709873
      File Size=           OKB
      File Size (bytes)= 0
2      libname pdb list ;
NOTE: Libref=   PDB

```

```

Scope=      Program 001-base.sas
Engine=      V9
Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\PDB
Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\PDB
Owner Name= DSTFSE\neo
File Size=      OKB
File Size (bytes)= 0

3
4      %put yrf = &yrf.  yrl = &yrl.  ini = &ini.  end = &end. ;
yrf = 1996  yrl = 2024  ini = '01JAN1996'd  end = '31DEC2024'd
5      *-----;
6      * Read the population data to get sex and date of birth and death
7      *-----;
8      proc sort  data = pdb.pdb_pnr  out = x  nodupkey ; by pnr ;
9

```

NOTE: There were 12650890 observations read from the data set PDB.PDB_PNR.
 NOTE: 0 observations with duplicate key values were deleted.
 NOTE: The data set WORK.X has 12650890 observations and 5 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 3.91 seconds
 cpu time 4.51 seconds

```

10      data DMdat.pop ;
11      merge pdb.pdb_pnr (rename = (koen = sex
12                                fdato = doBth))
13      grund.dod2024 (rename = (doddato = doDth));
14      by pnr ;
15      drop cprtjek cprtype ;
16      if cprtjek eq 0 ;
17      if doBth gt .z and
18      doBth lt "01JAN2025"d ;
19      run ;

```

NOTE: Character values have been converted to numeric values at the places given by:
 (Line):(Column).
 16:6

NOTE: There were 12650890 observations read from the data set PDB.PDB_PNR.
 NOTE: There were 3077027 observations read from the data set GRUND.DOD2024.
 NOTE: The data set DMDAT.POP has 11311307 observations and 4 variables.
 NOTE: DATA statement used (Total process time):
 real time 6.78 seconds
 cpu time 4.46 seconds

```

20
21      * overview of the ages at death and 2025-1-1 in pop ;
22      data apop ;
23      set DMdat.pop ;
24      adth = floor((doDth - doBth) / 365.25) ;
25      a2025 = floor(("01JAN2025"d - doBth) / 365.25) ;
26      a2025 = min(a2025, 125) ;
27      if ^missing(doDth) then a2025 = . ;
28      label adth = "age at death (<125)"
29      a2025 = "alive age at 2025" ;
30      run ;

```

NOTE: Missing values were generated as a result of performing an operation on missing values.
 Each place is given by: (Number of times) at (Line):(Column).
 8234280 at 24:11 8234280 at 24:24 8234280 at 24:33
 NOTE: There were 11311307 observations read from the data set DMDAT.POP.
 NOTE: The data set WORK.APOP has 11311307 observations and 6 variables.
 NOTE: DATA statement used (Total process time):
 real time 3.80 seconds
 cpu time 2.21 seconds

31

```

32      * overview of the dates of birth in pop ;
33      proc tabulate data = apop missing noseps ;
34          class adth a2025 doBth sex ;
35          var doDth ;
36          table all doBth,
37              (all (n nmiss) * doDth sex) * f=comma11.
38              / rts = 7 ;
39          table all adth a2025,
40              (all sex) * f=comma11.
41              / rts = 20 ;
42          format sex $koen_kt.
43          doBth year4. ;
44      run ;

```

NOTE: There were 11311307 observations read from the data set WORK.APOP.

NOTE: The PROCEDURE TABULATE printed pages 1-2.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      2.69 seconds
cpu time       9.14 seconds

```

45

```

46      proc contents data = DMdat.pop ;

```

NOTE: The PROCEDURE CONTENTS printed page 3.

NOTE: PROCEDURE CONTENTS used (Total process time):

```

real time      0.00 seconds
cpu time       0.01 seconds

```

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:

```

real time      17.49 seconds
cpu time       20.57 seconds

```

001-base.lst

The SAS System

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	sex				
	N		NMiss		
	All			* Mand	* Kvinde
	N	Dato for dødsfald	Dato for dødsfald	N	N
All	11,311,307	3,077,027	8,234,280	5,857,668	5,453,639
doBth					
1858	1,103	*	1,10*	466	637
1859	716	0	716	487	229
1860	395	0	395	234	161
1861	339	0	339	197	142
1862	260	0	260	158	102
1863	283	*	28*	158	125
1864	252	*	25*	147	105
1865	282	*	28*	161	121
1866	248	*	24*	141	107
1867	233	10	223	136	97
1868	259	9	250	149	110
1869	241	22	219	130	111
1870	268	51	217	132	136
1871	369	69	300	179	190
1872	477	152	325	209	268
1873	588	234	354	267	321
1874	861	379	482	377	484
1875	1,222	571	651	508	714
1876	1,658	855	803	710	948
1877	2,440	1,338	1,102	1,069	1,371

1878	2,987	1,756	1,231	1,273	1,714
1879	3,838	2,335	1,503	1,611	2,227
1880	4,766	3,151	1,615	2,036	2,730
1881	5,726	4,037	1,689	2,399	3,327
1882	7,232	5,246	1,986	3,028	4,204
1883	8,464	6,346	2,118	3,539	4,925
1884	10,664	8,108	2,556	4,493	6,171
1885	12,251	9,581	2,670	5,170	7,081
1886	13,795	11,103	2,692	5,932	7,863
1887	15,768	12,881	2,887	6,637	9,131
1888	17,667	14,604	3,063	7,573	10,094
1889	19,291	16,366	2,925	8,316	10,975
1890	21,525	18,469	3,056	9,312	12,213
1891	23,982	20,872	3,110	10,393	13,589
1892	25,060	22,023	3,037	10,734	14,326
1893	28,150	24,978	3,172	12,266	15,884
1894	30,529	27,277	3,252	13,542	16,987
1895	32,851	29,574	3,277	14,427	18,424
1896	35,466	32,010	3,456	15,573	19,893
1897	36,916	33,684	3,232	16,644	20,272
1898	39,387	36,096	3,291	17,701	21,686
1899	40,132	36,883	3,249	18,016	22,116
1900	43,279	39,593	3,686	19,763	23,516
1901	45,374	41,732	3,642	20,841	24,533
1902	47,269	43,947	3,322	21,957	25,312
1903	48,068	44,856	3,212	22,541	25,527
1904	50,277	47,041	3,236	23,572	26,705
1905	51,571	48,509	3,062	24,593	26,978
1906	53,402	50,287	3,115	25,475	27,927
1907	55,263	52,052	3,211	26,531	28,732
1908	57,694	54,500	3,194	27,699	29,995
1909	60,573	57,263	3,310	29,435	31,138
1910	59,742	56,587	3,155	29,272	30,470
1911	60,331	57,210	3,121	29,601	30,730
1912	62,063	58,821	3,242	30,691	31,372
1913	61,510	58,374	3,136	30,126	31,384
1914	61,746	58,539	3,207	30,210	31,536
1915	59,198	56,144	3,054	29,233	29,965
1916	59,995	56,936	3,059	29,736	30,259
1917	59,990	56,907	3,083	29,559	30,431
1918	62,073	58,928	3,145	30,919	31,154
1919	60,623	56,818	3,805	30,290	30,333
1920	70,012	65,955	4,057	34,655	35,357
1921	67,818	63,797	4,021	33,558	34,260
1922	63,909	59,606	4,303	31,880	32,029
1923	65,495	60,855	4,640	32,542	32,953
1924	65,124	60,328	4,796	32,471	32,653
1925	63,779	58,562	5,217	31,636	32,143
1926	63,270	57,599	5,671	31,579	31,691
1927	61,844	55,678	6,166	31,163	30,681
1928	62,898	55,417	7,481	31,819	31,079
1929	60,768	52,539	8,229	30,607	30,161
1930	62,398	52,618	9,780	31,505	30,893
1931	61,263	50,293	10,970	31,139	30,124
1932	62,127	49,193	12,934	31,503	30,624
1933	61,518	46,675	14,843	31,673	29,845
1934	63,571	46,203	17,368	32,699	30,872
1935	64,521	44,286	20,235	33,190	31,331
1936	66,550	42,661	23,889	34,374	32,176
1937	68,463	41,035	27,428	35,260	33,203
1938	70,854	39,200	31,654	36,968	33,886
1939	71,433	36,710	34,723	37,543	33,890
1940	74,698	35,630	39,068	39,127	35,571
1941	76,778	34,107	42,671	40,342	36,436
1942	85,858	35,484	50,374	45,198	40,660
1943	91,469	35,157	56,312	48,054	43,415
1944	98,903	35,632	63,271	52,271	46,632
1945	103,284	34,237	69,047	54,700	48,584
1946	107,055	32,072	74,983	56,855	50,200
1947	104,158	28,557	75,601	55,087	49,071

1948	99,040	25,093	73,947	52,436	46,604
1949	94,889	22,306	72,583	49,984	44,905
1950	96,278	21,031	75,247	50,665	45,613
1951	93,378	19,132	74,246	49,609	43,769
1952	95,664	18,220	77,444	50,534	45,130
1953	97,223	17,335	79,888	51,499	45,724
1954	96,006	15,802	80,204	50,884	45,122
1955	97,424	14,893	82,531	52,006	45,418
1956	98,981	13,476	85,505	52,741	46,240
1957	98,380	12,210	86,170	52,658	45,722
1958	99,378	10,954	88,424	53,167	46,211
1959	99,762	10,252	89,510	53,500	46,262
1960	103,600	9,542	94,058	55,402	48,198
1961	104,186	8,638	95,548	55,850	48,336
1962	107,466	7,806	99,660	57,652	49,814
1963	113,760	7,720	106,040	61,047	52,713
1964	116,255	6,918	109,337	62,593	53,662
1965	119,525	6,625	112,900	64,166	55,359
1966	123,231	6,250	116,981	66,030	57,201
1967	118,532	5,258	113,274	63,824	54,708
1968	114,676	4,480	110,196	62,134	52,542
1969	110,672	4,124	106,548	59,977	50,695
1970	111,111	4,571	106,540	60,016	51,095
1971	115,221	4,447	110,774	62,317	52,904
1972	117,199	3,937	113,262	62,955	54,244
1973	114,086	3,602	110,484	61,536	52,550
1974	115,601	3,215	112,386	62,481	53,120
1975	117,558	3,043	114,515	63,387	54,171
1976	112,295	2,630	109,665	61,271	51,024
1977	110,895	2,284	108,611	60,238	50,657
1978	112,864	2,252	110,612	61,482	51,382
1979	113,095	2,002	111,093	61,804	51,291
1980	113,609	1,817	111,792	61,754	51,855
1981	111,115	1,545	109,570	60,552	50,563
1982	112,409	1,504	110,905	61,470	50,939
1983	112,196	1,353	110,843	60,987	51,209
1984	114,987	1,370	113,617	62,776	52,211
1985	118,557	1,388	117,169	64,093	54,464
1986	121,275	1,313	119,962	65,633	55,642
1987	122,423	1,258	121,165	65,886	56,537
1988	126,684	1,226	125,458	67,299	59,385
1989	127,535	1,213	126,322	67,345	60,190
1990	129,010	1,232	127,778	67,963	61,047
1991	127,175	1,126	126,049	66,591	60,584
1992	128,889	1,023	127,866	67,528	61,361
1993	125,259	895	124,364	65,100	60,159
1994	126,201	888	125,313	65,030	61,171
1995	123,387	839	122,548	63,648	59,739
1996	118,398	755	117,643	61,016	57,382
1997	115,120	716	114,404	59,093	56,027
1998	110,951	619	110,332	56,762	54,189
1999	106,006	624	105,382	54,215	51,791
2000	103,049	636	102,413	52,825	50,224
2001	98,430	582	97,848	49,767	48,663
2002	94,315	487	93,828	47,618	46,697
2003	90,147	465	89,682	45,348	44,799
2004	85,613	421	85,192	43,681	41,932
2005	81,227	437	80,790	41,638	39,589
2006	80,301	363	79,938	41,333	38,968
2007	78,222	363	77,859	40,034	38,188
2008	78,661	357	78,304	40,469	38,192
2009	75,392	280	75,112	38,748	36,644
2010	79,167	312	78,855	40,110	39,057
2011	70,147	266	69,881	35,779	34,368
2012	68,725	255	68,470	35,439	33,286
2013	66,138	241	65,897	33,873	32,265
2014	66,715	281	66,434	34,348	32,367
2015	67,160	267	66,893	34,427	32,733
2016	69,884	246	69,638	36,089	33,795
2017	68,824	264	68,560	35,383	33,441

2018	68,046	255	67,791	35,045	33,001
2019	67,544	208	67,336	34,798	32,746
2020	66,488	216	66,272	34,060	32,428
2021	68,232	220	68,012	35,043	33,189
2022	61,963	211	61,752	31,914	30,049
2023	60,096	210	59,886	30,907	29,189
2024	58,604	226	58,378	30,334	28,270

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	sex		
	All	1 Mand	2 Kvinde
	N	N	N
All	11,311,307	5,857,668	5,453,639
age at death (<125)			
.	8,234,280	4,284,704	3,949,576
0	21,798	12,601	9,197
*	1,784	1,001	783
*	1,111	646	465
*	893	532	361
4	765	430	335
5	660	384	276
6	677	391	286
7	655	395	260
8	625	402	223
9	632	392	240
10	556	331	225
11	591	356	235
12	557	334	223
13	691	445	246
14	832	514	318
15	1,047	651	396
16	1,389	931	458
17	1,546	1,084	462
18	2,146	1,620	526
19	2,246	1,672	574
20	2,279	1,706	573
21	2,248	1,676	572
22	2,238	1,635	603
23	2,301	1,681	620
24	2,454	1,807	647
25	2,433	1,767	666
26	2,494	1,838	656
27	2,638	1,883	755
28	2,619	1,867	752
29	2,882	1,967	915
30	3,000	2,094	906
31	3,197	2,175	1,022
32	3,432	2,309	1,123
33	3,552	2,366	1,186
34	3,788	2,511	1,277
35	4,181	2,725	1,456
36	4,420	2,868	1,552
37	4,763	3,125	1,638
38	5,187	3,298	1,889
39	5,855	3,705	2,150
40	6,294	3,978	2,316
41	6,875	4,246	2,629
42	7,459	4,636	2,823
43	8,151	5,018	3,133
44	9,090	5,515	3,575
45	9,736	5,888	3,848
46	10,692	6,570	4,122
47	11,717	7,076	4,641
48	13,138	7,875	5,263

49	14,240	8,599	5,641
50	15,686	9,575	6,111
51	16,956	10,298	6,658
52	18,561	11,208	7,353
53	20,061	12,101	7,960
54	21,956	13,328	8,628
55	23,755	14,471	9,284
56	25,635	15,582	10,053
57	27,729	16,986	10,743
58	30,001	18,437	11,564
59	32,463	20,010	12,453
60	35,108	21,591	13,517
61	37,926	23,348	14,578
62	40,732	24,901	15,831
63	43,677	26,789	16,888
64	46,787	28,588	18,199
65	50,082	30,389	19,693
66	53,319	32,387	20,932
67	56,660	34,274	22,386
68	60,207	36,290	23,917
69	63,920	38,167	25,753
70	68,138	40,407	27,731
71	71,506	41,874	29,632
72	75,359	43,720	31,639
73	79,465	45,681	33,784
74	82,446	46,986	35,460
75	86,672	48,499	38,173
76	90,178	49,357	40,821
77	93,242	50,451	42,791
78	95,214	50,493	44,721
79	97,314	50,486	46,828
80	98,901	49,957	48,944
81	99,375	49,146	50,229
82	99,911	48,062	51,849
83	99,816	46,630	53,186
84	98,071	44,295	53,776
85	95,494	41,909	53,585
86	92,590	39,649	52,941
87	88,922	36,438	52,484
88	83,380	32,945	50,435
89	77,287	29,725	47,562
90	70,017	25,463	44,554
91	62,071	21,678	40,393
92	54,689	18,258	36,431
93	45,666	14,452	31,214
94	37,743	11,213	26,530
95	30,166	8,599	21,567
96	23,565	6,273	17,292
97	17,343	4,413	12,930
98	12,603	2,923	9,680
99	8,772	1,935	6,837
100	6,050	1,172	4,878
101	3,889	705	3,184
102	2,368	458	1,910
103	1,409	244	1,165
104	763	116	647
105	459	65	394
106	201	28	173
107	109	12	97
108	52	6	46
109	2*	*	20
110	*	*	6
111	4	*	*
112	*	.	*
alive age at 2025			
.	3,077,027	1,572,964	1,504,063
0	58,247	30,140	28,107
*	59,891	30,798	29,093
*	61,749	31,795	29,954
*	67,987	34,926	33,061

4	66,299	33,946	32,353
5	67,331	34,683	32,648
6	67,785	34,880	32,905
7	68,542	35,228	33,314
8	69,652	35,957	33,695
9	66,832	34,247	32,585
10	66,389	34,173	32,216
11	65,865	33,725	32,140
12	68,405	35,274	33,131
13	69,846	35,626	34,220
14	78,826	39,907	38,919
15	75,066	38,561	36,505
16	78,281	40,270	38,011
17	77,912	39,831	38,081
18	79,941	41,137	38,804
19	80,781	41,357	39,424
20	85,184	43,470	41,714
21	89,709	45,086	44,623
22	93,772	47,290	46,482
23	97,793	49,380	48,413
24	102,378	52,475	49,903
25	105,435	53,849	51,586
26	110,300	56,402	53,898
27	114,404	58,676	55,728
28	117,639	60,515	57,124
29	122,464	63,091	59,373
30	125,353	64,482	60,871
31	124,377	64,566	59,811
32	127,815	66,838	60,977
33	126,067	65,888	60,179
34	127,649	67,131	60,518
35	126,422	66,637	59,785
36	125,469	66,528	58,941
37	121,128	65,051	56,077
38	119,993	64,804	55,189
39	117,187	63,185	54,002
40	113,616	61,902	51,714
41	110,940	60,187	50,753
42	110,884	60,467	50,417
43	109,589	59,601	49,988
44	111,684	60,559	51,125
45	111,247	60,578	50,669
46	110,579	59,987	50,592
47	108,585	58,768	49,817
48	109,734	59,609	50,125
49	114,428	61,416	53,012
50	112,395	60,422	51,973
51	110,516	59,286	51,230
52	113,236	60,392	52,844
53	110,817	59,491	51,326
54	106,448	56,999	49,449
55	106,613	57,314	49,299
56	110,214	59,258	50,956
57	113,287	60,412	52,875
58	116,903	61,986	54,917
59	112,901	59,874	53,027
60	109,407	58,191	51,216
61	106,097	56,199	49,898
62	99,650	52,653	46,997
63	95,574	50,388	45,186
64	94,000	49,371	44,629
65	89,593	47,020	42,573
66	88,425	46,233	42,192
67	86,209	45,033	41,176
68	85,435	44,253	41,182
69	82,563	42,741	39,822
70	80,274	41,123	39,151
71	79,880	40,744	39,136
72	77,461	39,340	38,121
73	74,256	37,849	36,407

74	75,210	37,892	37,318
75	72,639	36,420	36,219
76	73,934	37,133	36,801
77	75,605	38,013	37,592
78	74,995	37,716	37,279
79	69,061	34,371	34,690
80	63,288	31,078	32,210
81	56,338	27,477	28,861
82	50,422	24,639	25,783
83	42,650	20,647	22,003
84	39,068	18,778	20,290
85	34,787	16,574	18,213
86	31,630	15,015	16,615
87	27,479	12,630	14,849
88	23,901	11,064	12,837
89	20,242	9,239	11,003
90	17,388	8,017	9,371
91	14,848	6,863	7,985
92	12,927	5,951	6,976
93	10,988	5,005	5,983
94	9,767	4,493	5,274
95	8,257	3,816	4,441
96	7,482	3,543	3,939
97	6,168	3,028	3,140
98	5,666	2,818	2,848
99	5,233	2,565	2,668
100	4,792	2,432	2,360
101	4,643	2,463	2,180
102	4,310	2,240	2,070
103	4,023	2,110	1,913
104	4,039	2,177	1,862
105	3,741	2,018	1,723
106	3,223	1,702	1,521
107	3,092	1,611	1,481
108	3,055	1,601	1,454
109	3,058	1,600	1,458
110	3,208	1,630	1,578
111	3,134	1,617	1,517
112	3,241	1,693	1,548
113	3,120	1,617	1,503
114	3,155	1,666	1,489
115	3,312	1,721	1,591
116	3,190	1,619	1,571
117	3,215	1,701	1,514
118	3,111	1,653	1,458
119	3,065	1,670	1,395
120	3,232	1,679	1,553
121	3,216	1,718	1,498
122	3,321	1,732	1,589
123	3,383	1,767	1,616
124	3,958	2,048	1,910
125	67,865	32,983	34,882

The SAS System

16:11 Wednesday, August 6, 2025 3

The CONTENTS Procedure

Data Set Name	DMDAT.POP	Observations	11311307
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	06/08/2025 16:11:38	Observation Length	48
Last Modified	06/08/2025 16:11:38	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

```

Data Set Page Size      65536
Number of Data Set Pages 8312
First Data Page        *
Max Obs per Page       1361
Obs in First Data Page 1331
Number of Data Set Repairs 0
ExtendObsCounter       YES
Filename               E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\pop.sas7bdat
Release Created        9.0401M8
Host Created           X64_SRV22
Owner Name             DSTFSE\FDIY709873
File Size              520MB
File Size (bytes)      544800768

```

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Label
1	PNR	Char	28		
2	doBth	Num	8	DDMMYY10.	
4	doDth	Num	8	DDMMYY10.	Dato for dødsfald
3	sex	Char	*		

4.5 01-npr

Reads data from NPR, both the LPR2 and LPR3 versions. Derives the variables doNPR, doNPR2 and lastNPR

```

1                                "Program: 01-npr.sas"      16:11 Wednesday, August 6, 2025

```

NOTE: AUTOEXEC processing completed.

```

1      *-----;
2      * read the NPR datasets (three different formats) ;
3      *-----;
4
5      *-----
6      datamodel LPR2, NPR < 1994 is ICD8 coded
7      Including both primary and secondary diagnoses (A,B) from diag
8      (PFR/LDIA). Previously only A diagnoses were used
9      -----;
10     %macro mold2 ;
11     * Combine all diagnoses from 1977-1993;
12     data all_diag1977_93 ;
13         set %do i = 1977 %to 1993 ;
14             grund.lpr_diag&i. (keep = recnum c_diag c_diagtype)
15         %end ; ;
16     * the ICD-8 codes incl. PCOS ;
17     if c_diag in('24900','24901','24902','24903','24904',
18                 '24905','24906','24907','24908','24909',
19                 '25000','25001','25002','25003','25004',
20                 '25005','25006','25007','25008','25009') ;
21     if c_diagtype in ("A", "B");
22     if substr(c_diag,1,3) eq '249' then nprtyp = 'T1' ; else
23     if substr(c_diag,1,3) eq '250' then nprtyp = 'T2' ;
24     run ;
25
26     * Combine all contacts from 1977-1993 ;

```

```
27      data all_adm1977_93 ;
28          set %do i = 1977 %to 1993 ;
29              grund.lpr_adm&i. (keep = pnr recnum d_inddto)
30              %end ; ;
31      run;
32      %mend ;
33      %mold2 ;
```

NOTE: There were 27530 observations read from the data set GRUND.LPR_DIAG1977.
NOTE: There were 31885 observations read from the data set GRUND.LPR_DIAG1978.
NOTE: There were 32728 observations read from the data set GRUND.LPR_DIAG1979.
NOTE: There were 34184 observations read from the data set GRUND.LPR_DIAG1980.
NOTE: There were 34728 observations read from the data set GRUND.LPR_DIAG1981.
NOTE: There were 36687 observations read from the data set GRUND.LPR_DIAG1982.
NOTE: There were 37663 observations read from the data set GRUND.LPR_DIAG1983.
NOTE: There were 38552 observations read from the data set GRUND.LPR_DIAG1984.
NOTE: There were 39617 observations read from the data set GRUND.LPR_DIAG1985.
NOTE: There were 39757 observations read from the data set GRUND.LPR_DIAG1986.
NOTE: There were 38192 observations read from the data set GRUND.LPR_DIAG1987.
NOTE: There were 37310 observations read from the data set GRUND.LPR_DIAG1988.
NOTE: There were 36798 observations read from the data set GRUND.LPR_DIAG1989.
NOTE: There were 35929 observations read from the data set GRUND.LPR_DIAG1990.
NOTE: There were 35499 observations read from the data set GRUND.LPR_DIAG1991.
NOTE: There were 35078 observations read from the data set GRUND.LPR_DIAG1992.
NOTE: There were 36171 observations read from the data set GRUND.LPR_DIAG1993.
NOTE: The data set WORK.ALL_DIAG1977_93 has 603907 observations and 4 variables.
NOTE: DATA statement used (Total process time):
real time 0.40 seconds
cpu time 0.12 seconds

NOTE: There were 23795 observations read from the data set GRUND.LPR_ADM1977.
NOTE: There were 26918 observations read from the data set GRUND.LPR_ADM1978.
NOTE: There were 27742 observations read from the data set GRUND.LPR_ADM1979.
NOTE: There were 29069 observations read from the data set GRUND.LPR_ADM1980.
NOTE: There were 29385 observations read from the data set GRUND.LPR_ADM1981.
NOTE: There were 31088 observations read from the data set GRUND.LPR_ADM1982.
NOTE: There were 32083 observations read from the data set GRUND.LPR_ADM1983.
NOTE: There were 32818 observations read from the data set GRUND.LPR_ADM1984.
NOTE: There were 34040 observations read from the data set GRUND.LPR_ADM1985.
NOTE: There were 34193 observations read from the data set GRUND.LPR_ADM1986.
NOTE: There were 33567 observations read from the data set GRUND.LPR_ADM1987.
NOTE: There were 32962 observations read from the data set GRUND.LPR_ADM1988.
NOTE: There were 32631 observations read from the data set GRUND.LPR_ADM1989.
NOTE: There were 31827 observations read from the data set GRUND.LPR_ADM1990.
NOTE: There were 31870 observations read from the data set GRUND.LPR_ADM1991.
NOTE: There were 31598 observations read from the data set GRUND.LPR_ADM1992.
NOTE: There were 32436 observations read from the data set GRUND.LPR_ADM1993.
NOTE: The data set WORK.ALL_ADM1977_93 has 528022 observations and 3 variables.
NOTE: DATA statement used (Total process time):
real time 0.46 seconds
cpu time 0.06 seconds

```
34
35      proc sort data = all_diag1977_93; by recnum; run;
```

NOTE: There were 603907 observations read from the data set WORK.ALL_DIAG1977_93.
NOTE: The data set WORK.ALL_DIAG1977_93 has 603907 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
real time 0.10 seconds
cpu time 0.23 seconds

```
36      proc sort data = all_adm1977_93; by recnum; run;
```

NOTE: There were 528022 observations read from the data set WORK.ALL_ADM1977_93.
NOTE: The data set WORK.ALL_ADM1977_93 has 528022 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):

```

real time      0.10 seconds
cpu time       0.23 seconds

```

```

37
38      *Merge contacts and diagnoses;
39      data all_npr1977_93;
40          merge all_diag1977_93 (in = d)
41              all_adm1977_93 ;
42          by recnum;
43          if d ;
44      run;

```

NOTE: There were 603907 observations read from the data set WORK.ALL_DIAG1977_93.

NOTE: There were 528022 observations read from the data set WORK.ALL_ADM1977_93.

NOTE: The data set WORK.ALL_NPR1977_93 has 603907 observations and 6 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.16 seconds
cpu time       0.15 seconds

```

```

45
46      proc sort data = all_npr1977_93 ; by pnr ; run ;

```

NOTE: There were 603907 observations read from the data set WORK.ALL_NPR1977_93.

NOTE: The data set WORK.ALL_NPR1977_93 has 603907 observations and 6 variables.

NOTE: PROCEDURE SORT used (Total process time):

```

real time      0.17 seconds
cpu time       0.37 seconds

```

```

47
48      /*
49      title1 "Diagnosis types 1977 - 93" ;
50      proc contents data = all_npr1977_93 varnum ;
51      proc tabulate data = all_npr1977_93 missing noseps ;
52          class c_diagtype d_inddto;
53          table all d_inddto,
54                  c_diagtype * f=comma12.
55                  / rts = 15 ;
56          format d_inddto year4. ;
57      run ;
58      title ;
59      */
60
61      *-----
62      datamodel LPR2, NPR 1994-2019 is ICD10 coded
63      Including both primary and secondary diagnoses (A,B) from diag
64      (PFR/LDIA). Previously only A diagnoses were used
65      *-----;
66      %macro mnew2 ;
67      * Combine all diagnoses from 1994-2019;
68      data all_diag1994_19 ;
69          set %do i = 1994 %to 2019 ;
70              grund.lpr_diag&i. (keep = recnum c_diag c_diagtype)
71              %end ; ;
72      * the ICD-10 codes incl PCOS ;
73      if substr(c_diag,2,3) in ('E10','E11','E12','E13','E14') or
74          substr(c_diag,2,4) in ('H360') ;
75          * H360 is retinopathy ;
76      if c_diagtype in ("A", "B");
77      if substr(c_diag,2,3) eq 'E10' then nprtyp = 'T1' ;
78      if substr(c_diag,2,3) eq 'E11' then nprtyp = 'T2' ;
79      if substr(c_diag,2,3) in ('E12','E13','E14') then nprtyp = 'Tx' ;
80      run ;
81
82      * Combine all contacts from 1994-2019;
83      data all_adm1994_19 ;
84          set %do i = 1994 %to 2019 ;
85              grund.lpr_adm&i. (keep = pnr recnum d_inddto)

```

```

86          %end ; ;
87      run ;
88      %mend ;
89      %mnew2 ;

```

WARNING: Multiple lengths were specified for the variable C_DIAG by input data set(s).
This can cause truncation of data.

```

NOTE: There were 48113 observations read from the data set GRUND.LPR_DIAG1994.
NOTE: There were 51283 observations read from the data set GRUND.LPR_DIAG1995.
NOTE: There were 55873 observations read from the data set GRUND.LPR_DIAG1996.
NOTE: There were 58121 observations read from the data set GRUND.LPR_DIAG1997.
NOTE: There were 61479 observations read from the data set GRUND.LPR_DIAG1998.
NOTE: There were 71567 observations read from the data set GRUND.LPR_DIAG1999.
NOTE: There were 78848 observations read from the data set GRUND.LPR_DIAG2000.
NOTE: There were 87581 observations read from the data set GRUND.LPR_DIAG2001.
NOTE: There were 95269 observations read from the data set GRUND.LPR_DIAG2002.
NOTE: There were 102631 observations read from the data set GRUND.LPR_DIAG2003.
NOTE: There were 106356 observations read from the data set GRUND.LPR_DIAG2004.
NOTE: There were 119942 observations read from the data set GRUND.LPR_DIAG2005.
NOTE: There were 108472 observations read from the data set GRUND.LPR_DIAG2006.
NOTE: There were 104126 observations read from the data set GRUND.LPR_DIAG2007.
NOTE: There were 125021 observations read from the data set GRUND.LPR_DIAG2008.
NOTE: There were 120643 observations read from the data set GRUND.LPR_DIAG2009.
NOTE: There were 115727 observations read from the data set GRUND.LPR_DIAG2010.
NOTE: There were 131484 observations read from the data set GRUND.LPR_DIAG2011.
NOTE: There were 123544 observations read from the data set GRUND.LPR_DIAG2012.
NOTE: There were 136547 observations read from the data set GRUND.LPR_DIAG2013.
NOTE: There were 114936 observations read from the data set GRUND.LPR_DIAG2014.
NOTE: There were 143319 observations read from the data set GRUND.LPR_DIAG2015.
NOTE: There were 126635 observations read from the data set GRUND.LPR_DIAG2016.
NOTE: There were 153265 observations read from the data set GRUND.LPR_DIAG2017.
NOTE: There were 118574 observations read from the data set GRUND.LPR_DIAG2018.
NOTE: There were 107776 observations read from the data set GRUND.LPR_DIAG2019.
NOTE: The data set WORK.ALL_DIAG1994_19 has 2530945 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time          1.28 seconds
      cpu time           0.59 seconds

```

```

NOTE: There were 45730 observations read from the data set GRUND.LPR_ADM1994.
NOTE: There were 48530 observations read from the data set GRUND.LPR_ADM1995.
NOTE: There were 52827 observations read from the data set GRUND.LPR_ADM1996.
NOTE: There were 55034 observations read from the data set GRUND.LPR_ADM1997.
NOTE: There were 58258 observations read from the data set GRUND.LPR_ADM1998.
NOTE: There were 67694 observations read from the data set GRUND.LPR_ADM1999.
NOTE: There were 73535 observations read from the data set GRUND.LPR_ADM2000.
NOTE: There were 82023 observations read from the data set GRUND.LPR_ADM2001.
NOTE: There were 88438 observations read from the data set GRUND.LPR_ADM2002.
NOTE: There were 94949 observations read from the data set GRUND.LPR_ADM2003.
NOTE: There were 98257 observations read from the data set GRUND.LPR_ADM2004.
NOTE: There were 106552 observations read from the data set GRUND.LPR_ADM2005.
NOTE: There were 98932 observations read from the data set GRUND.LPR_ADM2006.
NOTE: There were 96091 observations read from the data set GRUND.LPR_ADM2007.
NOTE: There were 114621 observations read from the data set GRUND.LPR_ADM2008.
NOTE: There were 111507 observations read from the data set GRUND.LPR_ADM2009.
NOTE: There were 107148 observations read from the data set GRUND.LPR_ADM2010.
NOTE: There were 123042 observations read from the data set GRUND.LPR_ADM2011.
NOTE: There were 115450 observations read from the data set GRUND.LPR_ADM2012.
NOTE: There were 127210 observations read from the data set GRUND.LPR_ADM2013.
NOTE: There were 108323 observations read from the data set GRUND.LPR_ADM2014.
NOTE: There were 131964 observations read from the data set GRUND.LPR_ADM2015.
NOTE: There were 119276 observations read from the data set GRUND.LPR_ADM2016.
NOTE: There were 142495 observations read from the data set GRUND.LPR_ADM2017.
NOTE: There were 114206 observations read from the data set GRUND.LPR_ADM2018.
NOTE: There were 97824 observations read from the data set GRUND.LPR_ADM2019.
NOTE: The data set WORK.ALL_ADM1994_19 has 2479916 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time          1.65 seconds
      cpu time           0.45 seconds

```

```

90
91      proc sort data = all_diag1994_19; by recnum; run;

NOTE: There were 2530945 observations read from the data set WORK.ALL_DIAG1994_19.
NOTE: The data set WORK.ALL_DIAG1994_19 has 2530945 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.47 seconds
      cpu time           1.01 seconds

92      proc sort data = all_adm1994_19; by recnum; run;

NOTE: There were 2479916 observations read from the data set WORK.ALL_ADM1994_19.
NOTE: The data set WORK.ALL_ADM1994_19 has 2479916 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.49 seconds
      cpu time           0.98 seconds

93
94      *Merge contacts and diagnoses;
95      data all_npr1994_19;
96          merge all_diag1994_19 (in = d)
97              all_adm1994_19 ;
98          by recnum;
99          if d ;
100         run;

NOTE: There were 2530945 observations read from the data set WORK.ALL_DIAG1994_19.
NOTE: There were 2479916 observations read from the data set WORK.ALL_ADM1994_19.
NOTE: The data set WORK.ALL_NPR1994_19 has 2530945 observations and 6 variables.
NOTE: DATA statement used (Total process time):
      real time          0.68 seconds
      cpu time           0.70 seconds

101
102      proc sort data = all_npr1994_19; by pnr; run;

NOTE: There were 2530945 observations read from the data set WORK.ALL_NPR1994_19.
NOTE: The data set WORK.ALL_NPR1994_19 has 2530945 observations and 6 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.78 seconds
      cpu time           1.76 seconds

103
104      /*
105      title1 "Diagnosis types 1994 ff." ;
106      proc contents data = all_npr1994_19 varnum ;
107      proc tabulate data = all_npr1994_19 missing noseps ;
108          class c_diagtype c_diag d_inddto;
109          table all d_inddto,
110                  c_diagtype * f=comma12.
111                  / rts = 15 ;
112          table all c_diag, N * f=comma12.
113                  / rts = 60 ;
114          format d_inddto year4.
115                  c_diag $dob_L1L1_KT. ;
116      run ;
117      */
118
119      *-----
120      data model LPR3, diagnoses ICD10 coded
121      -----;
122      data all_diag2019_ff (keep = dw_ek_kontakt c_diag nprtyp) ;
123          set sds.diagnoser_lev1 ;
124          length c_diag $6 ; * for merging with the LPR2 data ;

```

```

125      c_diag = trim(diagnosekode) ;
126      if substr(c_diag,2,3) in ('E10','E11','E12','E13','E14') or
127         substr(c_diag,2,4) in ('H360') ;
128      if substr(c_diag,2,3) eq 'E10' then nprtyp = 'T1' ;
129      if substr(c_diag,2,3) eq 'E11' then nprtyp = 'T2' ;
130      if substr(c_diag,2,3) in ('E12','E13','E14') then nprtyp = 'Tx' ;
131      if upcase(senere_afkraeftet) eq 'NEJ' and
132         upcase(diagnosetype) in ('A', 'B')
133         then output ;
134      run;

```

NOTE: There were 4279835 observations read from the data set SDS.DIAGNOSER_LEV1.
 NOTE: The data set WORK.ALL_DIAG2019_FF has 3688440 observations and 3 variables.
 NOTE: DATA statement used (Total process time):
 real time 5.56 seconds
 cpu time 1.21 seconds

```

135
136      *-----
137      Merge with contact table to get information on pnr
138      -----;
139      proc sort data = sds.kontakter_lev1 (rename = (cpr = pnr))
140         out = kontakt ;
141         by dw_ek_kontakt ;
142      run ;

```

NOTE: There were 3537898 observations read from the data set SDS.KONTAKTER_LEV1.
 NOTE: The data set WORK.KONTAKT has 3537898 observations and 13 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 6.94 seconds
 cpu time 3.96 seconds

```

143      proc sort data = all_diag2019_ff ;
144         by dw_ek_kontakt ;
145      run ;

```

NOTE: There were 3688440 observations read from the data set WORK.ALL_DIAG2019_FF.
 NOTE: The data set WORK.ALL_DIAG2019_FF has 3688440 observations and 3 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 1.16 seconds
 cpu time 2.28 seconds

```

146
147      data all_npr2019_ff (keep = pnr c_diag nprtyp d_inddto) ;
148         merge all_diag2019_ff (in = d)
149             kontakt ;
150         by dw_ek_kontakt ;
151         if d ;
152         d_inddto = dato_start ;
153      run;

```

NOTE: There were 3688440 observations read from the data set WORK.ALL_DIAG2019_FF.
 NOTE: There were 3537898 observations read from the data set WORK.KONTAKT.
 NOTE: The data set WORK.ALL_NPR2019_FF has 3688440 observations and 4 variables.
 NOTE: DATA statement used (Total process time):
 real time 1.18 seconds
 cpu time 1.18 seconds

```

154
155      proc sort data = all_npr2019_ff nodupkey ;
156         by pnr d_inddto ;
157      run ;

```

NOTE: There were 3688440 observations read from the data set WORK.ALL_NPR2019_FF.
 NOTE: 904196 observations with duplicate key values were deleted.
 NOTE: The data set WORK.ALL_NPR2019_FF has 2784244 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

```
real time      1.13 seconds
cpu time       2.20 seconds
```

```
158
159      *-----
160      c_diag has length 6 in the old data LPR2 (1977-93) and the LPR3
161      derived files, but length 10 in the newest LPR2 data (1994-19), so the
162      data set with the longer variable length must be mentioned >first< in
163      order to avoid truncation of values
164      -----;
165      data all_npr (keep = pnr c_diag d_inddto nprtyp) ;
166          set all_npr1994_19
167              all_npr1977_93
168              all_npr2019_ff ;
169      run ;
```

NOTE: There were 2530945 observations read from the data set WORK.ALL_NPR1994_19.

NOTE: There were 603907 observations read from the data set WORK.ALL_NPR1977_93.

NOTE: There were 2784244 observations read from the data set WORK.ALL_NPR2019_FF.

NOTE: The data set WORK.ALL_NPR has 5919096 observations and 4 variables.

NOTE: DATA statement used (Total process time):

```
real time      0.62 seconds
cpu time       0.62 seconds
```

```
170
171      proc sort data = all_npr ; by pnr d_inddto ; run ;
```

NOTE: There were 5919096 observations read from the data set WORK.ALL_NPR.

NOTE: The data set WORK.ALL_NPR has 5919096 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

```
real time      0.72 seconds
cpu time       1.93 seconds
```

```
172
173      *-----
174      only records from persons in the base population (pop)
175      -----;
176      data DM ;
177          merge all_npr    ( in = npr )
178                  DMdat.pop ( in = pop ) ;
179          by pnr ;
180          length diaggr $ 4 ;
181          if npr and pop ;
182          if nprtyp in ("T1", "T2", "Tx") then output DM ;
183      run ;
```

NOTE: Variable diaggr is uninitialized.

NOTE: There were 5919096 observations read from the data set WORK.ALL_NPR.

NOTE: There were 11311307 observations read from the data set DMDAT.POP.

NOTE: The data set WORK.DM has 5547578 observations and 8 variables.

NOTE: DATA statement used (Total process time):

```
real time      4.24 seconds
cpu time       2.40 seconds
```

```
184
185      *-----;
186      title1 'DM diagnoses from NPR (no. of records)' ;
187      proc tabulate data = DM missing noseps ;
188          class c_diag nprtyp d_inddto ;
189          table all c_diag,
190                  nprtyp * f=comma7.
191                  / rts = 65 ;
192          table all d_inddto,
193                  nprtyp * ( n * f=comma9.
194                  pctn<nprtyp> * f=5.1 )
```

```

195          / rts = 10 ;
196          format c_diag $dob_L1L1_KT.
197              d_inddto year4. ;
198          run ;

```

NOTE: There were 5547578 observations read from the data set WORK.DM.

NOTE: The PROCEDURE TABULATE printed pages 1-2.

NOTE: PROCEDURE TABULATE used (Total process time):

```

      real time      1.21 seconds
      cpu time       2.31 seconds

```

```

199          title1 ;
200
201          *-----;
202          * Excluding NPR-records in the pregnancy windows from MFR ;
203          options mprint ;
204          data npr ( keep = pnr sex d_inddto nprtyp c_diag ) ;
205              merge DM ( in = DM )
206                  DMdat.gdmint
207                  DMdat.pop ( in = pop keep = pnr doBth sex ) ;
208              by pnr ;
209              if DM and pop ;
210          * Do not count NPR diagnoses during preganacy ;
211          %xgdm( d_inddto ) ; * defined in optslibs.sas using -autoexec ;
MPRINT(XGDM):  if doGst1 < d_inddto < doBth1 then delete ;
MPRINT(XGDM):  if doGst2 < d_inddto < doBth2 then delete ;
MPRINT(XGDM):  if doGst3 < d_inddto < doBth3 then delete ;
MPRINT(XGDM):  if doGst4 < d_inddto < doBth4 then delete ;
MPRINT(XGDM):  if doGst5 < d_inddto < doBth5 then delete ;
MPRINT(XGDM):  if doGst6 < d_inddto < doBth6 then delete ;
MPRINT(XGDM):  if doGst7 < d_inddto < doBth7 then delete ;
MPRINT(XGDM):  if doGst8 < d_inddto < doBth8 then delete ;
MPRINT(XGDM):  if doGst9 < d_inddto < doBth9 then delete ;
MPRINT(XGDM):  if doGst10 < d_inddto < doBth10 then delete ;
MPRINT(XGDM):  if doGst11 < d_inddto < doBth11 then delete ;
MPRINT(XGDM):  if doGst12 < d_inddto < doBth12 then delete ;
MPRINT(XGDM):  if doGst13 < d_inddto < doBth13 then delete ;
MPRINT(XGDM):  if doGst14 < d_inddto < doBth14 then delete ;
MPRINT(XGDM):  if doGst15 < d_inddto < doBth15 then delete ;
212          run ;

```

NOTE: There were 5547578 observations read from the data set WORK.DM.

NOTE: There were 1648098 observations read from the data set DMDAT.GDMINT.

NOTE: There were 11311307 observations read from the data set DMDAT.POP.

NOTE: The data set WORK.NPR has 5506646 observations and 5 variables.

NOTE: DATA statement used (Total process time):

```

      real time      4.89 seconds
      cpu time       2.87 seconds

```

```

213          options nomprint ;
214
215          *-----
216          NPR type of diabetes (nprtyp) should be the type in the last record
217          this is brought forward in the dataset npr1 - npr1 is the only
218          of the resulting datasets with the variable nprtyp
219          -----;
220          data npr1 ( keep = pnr doNPR )
221              npr2 ( keep = pnr doNPR
222                  rename = ( doNPR = doNPR2 ) )
223              npr1 ( keep = pnr doNPR nprtyp
224                  rename = ( doNPR = lastNPR ) ) ;
225          set npr ( keep = pnr d_inddto c_diag nprtyp
226                  rename = ( d_inddto = doNPR ) ) ;
227          by pnr ;
228          if first.pnr then nprN = 0 ;
229          nprN + 1 ;
230          if first.pnr then output npr1 ;
231          if nprN eq 2 then output npr2 ; * missing if only one record ;

```

```

232         if last.pnr then output npr1 ;
233         run ;

```

NOTE: There were 5506646 observations read from the data set WORK.NPR.

NOTE: The data set WORK.NPR1 has 534711 observations and 2 variables.

NOTE: The data set WORK.NPR2 has 413188 observations and 2 variables.

NOTE: The data set WORK.NPRL has 534711 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.48 seconds
cpu time       0.48 seconds

```

```

234
235         *-----
236         Classifiy persons according to the last occurring type on NPR and
237         define doNPR as the first date of diabetes in NPR, and doNPR2 as the
238         date of the second, while the NPRtyp and lastNPR come from the last
239         record in NPR
240         -----;
241         data DMdat.npr ;
242             merge npr1 npr2 nprl ;
243             by pnr ;
244             label doNPR      = '1st NPR date'
245                   doNPR2    = '2nd NPR date'
246                   lastNPR   = 'last NPR date'
247                   NPRtyp    = 'NPR type of DM' ;
248         run ;

```

NOTE: There were 534711 observations read from the data set WORK.NPR1.

NOTE: There were 413188 observations read from the data set WORK.NPR2.

NOTE: There were 534711 observations read from the data set WORK.NPRL.

NOTE: The data set DMDAT.NPR has 534711 observations and 5 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.27 seconds
cpu time       0.15 seconds

```

```

249
250         title1 'NPR - one record per person in NPR with DM diagnosis' ;
251         proc tabulate data = DMdat.npr missing noseps ;
252             class doNPR doNPR2 nprtyp lastNPR;
253             table doNPR doNPR2, nprtyp * f=comma12. / rts = 6 ;
254             table all lastNPR, nprtyp * f=comma7. / rts = 6 ;
255             format doNPR doNPR2 lastNPR year4. ;
256         run ;

```

NOTE: There were 534711 observations read from the data set DMDAT.NPR.

NOTE: The PROCEDURE TABULATE printed pages 3-4.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      0.17 seconds
cpu time       0.49 seconds

```

```

257
258         proc contents data = DMdat.npr varnum ; run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):

```

real time      0.00 seconds
cpu time       0.01 seconds

```

NOTE: The PROCEDURE CONTENTS printed page 5.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:

```

real time      35.64 seconds
cpu time       29.12 seconds

```

01-npr.lst

DM diagnoses from NPR (no. of records)

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	nprtyp		
	T1	T2	Tx
	N	N	N
-----	-----	-----	-----
All	1949139	3278310	320,129
C_DIAG			
24900 DIABETES MELLITUS,INSULINO DEPENDENTE,SINE COMPLICATIONE	13,940	.	.
24901 CATARACTA,RETINOPATHIA DIABETICA INSULINO DEPENDENTE	10,650	.	.
24902 NEPHROPATHIA DIABETICA,SYNDR. KIMMELSTIEL- WILSON,INSUL.DEPEN.	6,110	.	.
24903 NEUROPATHIA,POLYNEURITIS DIABETICA,INSULINO DEPENDENTE	4,195	.	.
24904 ANGIOPATHIA DIABETICA EXTREMITATUM,INSULINO DEPENDENTE	912	.	.
24905 GANGRAENA DIABETICA, INSULINO DEPENDENTE	2,371	.	.
24906 COMA DIABETICUM SINE KETONURIA,INSULINO DEPENDENTE	221	.	.
24907 COMA(INCL.PRAECOMA)DIABETICUM,INSULINO DEPENDENTE	2,591	.	.
24908 DIABETES MELLITUS,INSULINO DEPENDENTE,CUM COMPL.ALIA DEFIN.	5,889	.	.
24909 DIABETES MELLITUS,INSULINO DEPENDENTE	57,694	.	.
25000 DIABETES MELLITUS,INSULINO INDEPENDENTE,SINE COMPLICATIONE	.	94,020	.
25001 CATARACTA,RETINOPATHIA DIABETICA,INSULINO INDEPENDENTE	.	33,791	.
25002 NEPHROPATHIA DIAB.,SYNDR.KIMMELSTIEL-WILSON,INSULINO INDEP	.	16,454	.
25003 NEUROPATHIA,POLYNEURITIS DIABETICA,INSULINO INDEPENDENTE	.	14,909	.
25004 ANGIOPATHIA DIABETICA EXTREMITATUM,INSULINO INDEPENDENTE	.	3,121	.
25005 GANGRAENA DIABETICA,INSULINO INDEPENDENTE	.	11,003	.
25006 COMA DIABETICUM SINE KETONURIA,INSULINO INDEPENDENTE	.	1,020	.
25007 COMA(INCL.PRAECOMA)DIABETICUM, INSULINO INDEPENDENTE	.	6,883	.
25008 DIABETES MELLITUS,INSULINO INDEPENDENTE,CUM COMPL.ALIA DEFI	.	18,205	.
25009 DIABETES MELLITUS, INSULINO INDEPENDENTE	.	297,970	.
DE10 Type 1-diabetes	2,062	.	.
DE100 Type 1-diabetes med koma	6,511	.	.
DE100A Coma diabeticum, hyperosmolær ved IDDM	38	.	.
DE100B Coma diabeticum ved IDDM med ketoacidose	449	.	.
DE100C Coma diabeticum ved IDDM uden ketoacidose	37	.	.
DE100D Coma diabeticum, hyperglykæmisk ved IDDM	98	.	.
DE100E Coma diabeticum, hypoglykæmisk ved IDDM	538	.	.
DE100F Diabetes mellitus insulino dependente med coma diabeticum	554	.	.
DE101 Type 1-diabetes med ketoacidose	40,704	.	.
DE102 Type 1-diabetes med nyrekomplikation	84,959	.	.
DE103 Type 1-diabetes med øjenkomplikation	174,348	.	.
DE104 Type 1-diabetes med neurologisk komplikation	61,436	.	.
DE105 Type 1-diabetes med komplikationer i perifere karsystem	36,953	.	.
DE105A Type 1-diabetes med perifer angiopati	1,256	.	.
DE105B Type 1-diabetes med fodsår	21,151	.	.
DE105C Type 1-diabetes med gangræn	2,143	.	.
DE105D Type 1-diabetes med mikroangiopati	1,129	.	.
DE106 Type 1-diabetes med anden komplikation	23,730	.	.
DE107 Type 1-diabetes med multiple komplikationer	194,930	.	.
DE108 Type 1-diabetes med komplikation UNS	109,608	.	.
DE109 Type 1-diabetes uden komplikationer	912,659	.	.
DE109A Type 1-diabetes UNS	169,273	.	.
DE11 Type 2-diabetes	.	1,570	.
DE110 Type 2-diabetes med koma	.	10,840	.
DE110A Coma diabeticum ved NIDDM uden ketoacidose	.	48	.
DE110B Coma diabeticum, hypoglykæmisk ved NIDDM	.	214	.
DE110C Coma diabeticum, hyperosmolær ved NIDDM	.	70	.
DE110D Coma diabeticum, hyperglykæmisk ved NIDDM	.	50	.
DE110E Coma diabeticum ved NIDDM med ketoacidose	.	62	.
DE111 Type 2-diabetes med ketoacidose	.	7,914	.
DE112 Type 2-diabetes med nyrekomplikation	.	259,618	.
DE113 Type 2-diabetes med øjenkomplikation	.	84,652	.

DE114 Type 2-diabetes med neurologisk komplikation	. 116,580	.
DE115 Type 2-diabetes med komplikationer i perifere karsystem	. 63,822	.
DE115A Type 2-diabetes med perifer angiopati	. 3,305	.
DE115B Type 2-diabetes med fodsår	. 100,093	.
DE115C Type 2-diabetes med gangræn	. 4,806	.
DE115D Type 2-diabetes med mikroangiopati	. 2,782	.
DE116 Type 2-diabetes med anden komplikation	. 92,519	.
DE117 Type 2-diabetes med multiple komplikationer	. 327,441	.
DE118 Type 2-diabetes med komplikation UNS	. 238,358	.
DE119 Type 2-diabetes uden komplikationer	. 1028866	.
DE119A Type 2-diabetes UNS	. 437,324	.
DE13 Andre former for diabetes	. .	68
DE130 Anden diabetes med koma	. .	227
DE131 Anden diabetes med ketoacidose	. .	1,784
DE132 Anden diabetes med nyrekomplikation	. .	4,884
DE133 Anden diabetes med øjenkomplikationer	. .	6,777
DE134 Anden diabetes med neurologisk komplikation	. .	4,300
DE135 Anden diabetes med komplikationer i perifere karsystem	. .	1,117
DE135A Anden diabetes med perifer angiopati	. .	122
DE135B Anden diabetes med fodsår	. .	2,301
DE135C Anden diabetes med gangræn	. .	195
DE135D Anden diabetes med mikroangiopati	. .	47
DE136 Anden diabetes med anden komplikation	. .	4,863
DE137 Anden diabetes med multiple komplikationer	. .	7,612
DE138 Anden diabetes med komplikation UNS	. .	4,742
DE139 Anden diabetes uden komplikationer	. .	57,428
DE14 Ikke spec. diabetes	. .	619
DE140 Diabetes UNS med koma	. .	1,335
DE140A Coma diabeticum ved diabetes mellitus uden specifikation	. .	71
DE140B Coma diabeticum, hyperglykæmisk ved diab mell uden specifik	. .	12
DE140C Coma diabeticum, hyperosmolær ved diab mell uden specifik	. .	24
DE140D Coma diabeticum, hypoglykæmisk ved diab mell uden specifik	. .	23
DE141 Diabetes UNS med ketoacidose	. .	8,709
DE142 Diabetes UNS med nyrekomplikation	. .	4,825
DE143 Diabetes UNS med øjenkomplikation	. .	5,080
DE144 Diabetes UNS med neurologisk komplikation	. .	8,153
DE145 Diabetes UNS med komplikationer i perifere karsystem	. .	9,984
DE145A Diabetes UNS med perifer angiopati	. .	193
DE145B Diabetes UNS med fodsår	. .	20,692
DE145C Diabetes UNS med gangræn	. .	2,217
DE145D Diabetes UNS med mikroangiopati	. .	142
DE146 Diabetes UNS med anden komplikation	. .	4,558
DE147 Diabetes UNS med multiple komplikationer	. .	4,094
DE148 Diabetes UNS med komplikation UNS	. .	38,300
DE149 Diabetes UNS uden komplikationer	. .	114,631

DM diagnoses from NPR (no. of records)

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nprtyp						
T1		T2		Tx		
N	PctN	N	PctN	N	PctN	
All	1,949,139	35.1	3,278,310	59.1	320,129	5.8
D_INDDTO						
1941	* 100.0	.	.	.	.	.
1968	* 100.0	.	.	.	.	.
1970	* 100.0	.	.	.	.	.
1971	* 100.0	.	.	.	.	.
1972	1* 90.9	* 9.1	.	.	.	.
1973	2* 91.7	* 8.3	.	.	.	.
1974	1* 94.7	* 5.3	.	.	.	.
1975	1* 72.7	* *. *	.	*	*	*
1976	22 2.0	1,088 98.0	.	.	.	.
1977	10 0.0	27,442 100.0	.	.	.	.

1978	23	0.1	31,773	99.9	.	.
1979	30	0.1	32,643	99.9	.	.
1980	35	0.1	33,912	99.9	*	*
1981	32	0.1	34,542	99.9	.	.
1982	28	0.1	36,442	99.9	.	.
1983	60	0.2	37,444	99.8	.	.
1984	49	0.1	38,285	99.9	*	0.0
1985	73	0.2	39,330	99.8	4	0.0
1986	434	1.1	39,307	98.9	7	0.0
1987	13,431	35.*	24,413	64.5	*	*
1988	15,313	41.2	21,878	58.8	13	0.0
1989	16,135	43.6	20,888	56.4	24	0.1
1990	16,146	44.3	20,253	55.6	30	0.1
1991	16,589	45.2	20,091	54.7	28	0.1
1992	16,907	45.4	20,244	54.4	57	0.2
1993	28,218	52.3	25,348	47.0	407	0.8
1994	22,965	46.8	23,517	47.9	2,608	5.3
1995	22,479	45.5	24,177	49.0	2,696	5.5
1996	22,419	43.2	26,505	51.1	2,946	5.7
1997	23,402	42.6	28,252	51.4	3,296	6.0
1998	24,092	40.8	31,548	53.5	3,348	5.7
1999	28,136	40.7	37,148	53.7	3,886	5.6
2000	29,840	38.7	43,180	55.9	4,185	5.4
2001	32,159	38.2	47,022	55.8	5,060	6.0
2002	34,291	37.8	51,054	56.2	5,430	6.0
2003	34,968	35.4	56,465	57.2	7,336	7.4
2004	36,188	36.2	56,346	56.4	7,410	7.4
2005	42,175	37.7	62,270	55.7	7,400	6.6
2006	36,221	34.8	60,590	58.2	7,225	6.9
2007	32,219	33.6	54,821	57.1	8,959	9.3
2008	38,804	35.1	62,815	56.8	9,041	8.2
2009	36,932	33.9	63,505	58.3	8,550	7.8
2010	33,682	32.7	60,789	58.9	8,687	8.4
2011	37,112	33.3	65,549	58.8	8,769	7.9
2012	30,477	27.5	69,907	63.1	10,405	9.4
2013	32,659	25.5	83,503	65.3	11,701	9.2
2014	24,022	22.9	70,612	67.2	10,434	9.9
2015	33,894	25.9	87,321	66.8	9,561	7.3
2016	24,234	21.5	78,063	69.2	10,562	9.4
2017	31,004	23.9	88,287	68.2	10,174	7.9
2018	21,500	20.4	75,047	71.3	8,715	8.3
2019	157,309	39.0	224,810	55.8	20,826	5.2
2020	180,089	40.7	238,782	54.0	23,532	5.3
2021	179,550	40.7	237,150	53.7	24,577	5.6
2022	179,305	42.3	220,782	52.0	24,182	5.7
2023	180,317	42.8	217,330	51.6	23,740	5.6
2024	172,237	42.3	212,428	52.1	22,805	5.6
2025	10,849	42.1	13,403	52.0	1,506	5.8

NPR - one record per person in NPR with DM diagnosis

3

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	NPR type of DM		
	T1	T2	Tx
	N	N	N
1st			
NPR			
date			
1941	.	.	*
1968	*	.	.
1970	*	.	.
1971	*	.	.
1972	7	*	*
1973	16	*	*
1974	16	*	*
1975	15	*	.

1976	75	859	8
1977	3,165	12,060	143
1978	2,679	9,762	131
1979	2,217	8,290	124
1980	2,034	7,576	121
1981	1,805	6,889	118
1982	1,845	6,637	121
1983	1,693	6,446	121
1984	1,705	5,913	145
1985	1,694	5,946	150
1986	1,804	5,629	175
1987	1,954	5,327	149
1988	1,901	4,907	167
1989	1,787	4,841	200
1990	1,823	4,646	199
1991	1,764	4,843	203
1992	1,826	4,787	230
1993	2,327	5,426	358
1994	2,271	5,525	580
1995	2,070	5,610	509
1996	2,075	5,986	551
1997	2,108	6,257	561
1998	2,263	7,141	625
1999	2,168	7,738	718
2000	2,352	8,619	741
2001	2,408	9,208	758
2002	2,418	9,717	887
2003	2,423	10,615	949
2004	2,378	10,658	944
2005	2,342	10,618	937
2006	2,394	10,591	986
2007	2,295	10,669	962
2008	2,276	10,533	999
2009	2,229	10,852	953
2010	2,317	11,505	956
2011	2,207	12,123	1,060
2012	1,997	12,159	1,142
2013	2,062	11,714	1,215
2014	1,922	11,324	1,130
2015	1,947	11,274	988
2016	1,835	11,738	990
2017	1,525	11,441	1,132
2018	1,336	9,895	1,091
2019	1,331	8,645	853
2020	1,261	8,865	990
2021	1,353	9,219	1,030
2022	1,291	8,721	941
2023	1,151	8,772	960
2024	1,086	9,238	1,016
2025	57	522	101
2nd NPR date			
.	13,317	100,717	7,489
1972	*	.	.
1973	*	.	.
1974	*	.	.
1975	*	.	.
1976	8	106	.
1977	1,181	4,565	50
1978	1,537	5,138	68
1979	1,471	4,946	60
1980	1,525	4,723	74
1981	1,451	4,589	64
1982	1,487	4,446	67
1983	1,432	4,284	83
1984	1,596	4,096	100
1985	1,718	3,941	106
1986	1,717	3,787	102
1987	1,727	3,496	99

1988	1,868	3,251	124
1989	1,732	3,191	142
1990	1,716	3,230	145
1991	1,755	3,172	146
1992	1,629	3,230	206
1993	3,006	4,063	301
1994	2,402	4,396	450
1995	2,153	4,439	414
1996	2,024	4,606	427
1997	2,006	4,918	448
1998	2,135	5,328	450
1999	2,247	5,981	591
2000	2,186	6,707	577
2001	2,170	7,215	570
2002	2,153	7,546	639
2003	2,116	8,237	744
2004	1,999	8,050	735
2005	2,050	8,189	748
2006	1,958	8,309	673
2007	1,815	7,655	692
2008	1,819	8,412	719
2009	1,793	8,530	713
2010	1,719	8,472	725
2011	1,780	9,145	784
2012	1,442	9,176	833
2013	1,606	10,115	945
2014	1,368	8,667	768
2015	1,445	9,578	777
2016	1,342	9,279	773
2017	1,243	9,664	792
2018	1,130	8,395	794
2019	1,548	9,535	909
2020	1,176	8,159	787
2021	1,225	8,118	821
2022	1,204	7,439	784
2023	1,094	7,209	752
2024	1,016	7,341	791
2025	62	501	71

NPR - one record per person in NPR with DM diagnosis

4
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-----	----- NPR type of DM -----		
	T1	T2	Tx
	-----	-----	-----
	N	N	N
-----	-----	-----	-----
All	95,307	408,282	31,122
last			
NPR			
date			
1975	.	*	.
1976	.	25*	.
1977	.	4,537	.
1978	.	4,948	.
1979	.	5,192	.
1980	*	5,607	.
1981	.	5,511	.
1982	.	5,702	.
1983	.	5,874	.
1984	*	5,912	.
1985	.	5,841	.
1986	38	6,180	.
1987	1,016	5,142	.
1988	1,266	4,809	.
1989	1,241	4,616	.
1990	1,225	4,505	.
1991	1,310	4,438	*

1992	1,289	4,386	4
1993	1,665	4,664	20
1994	1,673	3,763	406
1995	1,527	3,654	384
1996	1,479	3,606	354
1997	1,425	3,643	368
1998	1,437	3,727	353
1999	1,455	3,961	435
2000	1,686	4,569	435
2001	1,814	4,803	453
2002	2,000	5,428	530
2003	2,060	5,867	643
2004	2,214	6,074	639
2005	2,324	6,268	704
2006	2,355	6,687	738
2007	2,418	6,741	822
2008	2,558	7,426	828
2009	2,569	7,977	832
2010	2,725	8,038	829
2011	2,716	8,854	887
2012	2,102	9,347	1,190
2013	2,022	11,174	1,292
2014	1,740	10,792	1,236
2015	1,971	12,661	971
2016	1,737	13,712	1,331
2017	1,393	14,876	1,286
2018	916	13,380	1,296
2019	941	14,213	1,140
2020	1,045	15,051	1,285
2021	1,063	16,924	1,509
2022	1,143	17,267	1,359
2023	1,867	19,749	1,679
2024	23,895	40,552	3,848
2025	7,985	9,374	1,035

 NPR - one record per person in NPR with DM diagnosis

5
 16:11 Wednesday, August 6, 2025

The CONTENTS Procedure

Data Set Name	DMDAT.NPR	Observations	534711
Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	06/08/2025 16:12:26	Observation Length	56
Last Modified	06/08/2025 16:12:26	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	459
First Data Page	*
Max Obs per Page	1167
Obs in First Data Page	1139
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\npr.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	29MB
File Size (bytes)	30146560

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	PNR	Char	28			mother pnr
2	doNPR	Num	8	DATE9.	DATE9.	1st NPR date
3	doNPR2	Num	8	DATE9.	DATE9.	2nd NPR date
4	nprtyp	Char	*			NPR type of DM
5	lastNPR	Num	8	DATE9.	DATE9.	last NPR date

4.6 02-dvdd

Reads data from DVDD and DDiD, and extracts dates of diagnosis. Derives the variables doDVDD, dvdtyp and lastDVDD.

```
1                                "Program: 02-dvdd.sas"    16:12 Wednesday, August 6, 2025
```

NOTE: AUTOEXEC processing completed.

```
1          %put yrf = &yrf.  yrl = &yrl.  ini = &ini.  end = &end. ;
yrf = 1996  yrl = 2024  ini = '01JAN1996'd  end = '31DEC2024'd
2          libname RKKP list ;
NOTE: Libref=  RKKP
      Scope=   Program 02-dvdd.sas
      Engine=  V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\RKKP
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\RKKP
      Owner Name= DSTFSE\MIA
      File Size=           OKB
      File Size (bytes)= 0
3          libname DMdat list ;
NOTE: Libref=  DMDAT
      Scope=   Program 02-dvdd.sas
      Engine=  V9
      Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Owner Name= DSTFSE\FDIY709873
      File Size=           OKB
      File Size (bytes)= 0
4
5          proc contents  data = RKKP.dvdd_lev1 ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.06 seconds
cpu time	0.04 seconds

NOTE: The PROCEDURE CONTENTS printed page 1.

```
6          proc contents  data = RKKP.ddid_lev1 ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time	0.01 seconds
cpu time	0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 2.

```
7
8          proc sort  data = rkkp.dvdd_lev1 (rename = (cpr_nr = pnr))
9              out = dvdd ( keep = pnr status_dato diag_dato diag_type );
10             by pnr status_dato diag_dato diag_type ;
11             run ;
```

NOTE: There were 725691 observations read from the data set RKKP.DVDD_LEV1.

NOTE: The data set WORK.DVDD has 725691 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.48 seconds
cpu time	0.54 seconds

```

12
13      * check values of diag_type ;
14      title1 "Records by diabetes type recorded in DVDD" ;
15      proc tabulate data = dvdd missing noseps ;
16          class diag_type diag_dato status_dato;
17          table diag_dato status_dato,
18              (diag_type all) * f=comma12. / rts = 6 ;
19          format diag_dato status_dato year4. ;
20      run ;

```

NOTE: There were 725691 observations read from the data set WORK.DVDD.

NOTE: The PROCEDURE TABULATE printed page 3.

NOTE: PROCEDURE TABULATE used (Total process time):

real time	0.13 seconds
cpu time	0.40 seconds

```

21      title1 ;
22
23      proc sort data = rkkp.ddid_lev1(rename =
24          (CPR = pnr
25              rapport_dato = status_dato
26              inklusions_dato = diag_dato
27              DiabetesType = diag_type))
28          out = ddid ( keep = pnr status_dato diag_dato diag_type );
29      by pnr status_dato diag_dato diag_type ;
30      run ;

```

NOTE: There were 107584 observations read from the data set RKKP.DDID_LEV1.

NOTE: The data set WORK.DDID has 107584 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time	0.05 seconds
cpu time	0.06 seconds

```

31
32      * check values of diag_type ;
33      title1 "Records by diabetes type recorded in DDID" ;
34      proc tabulate data = ddid missing noseps ;
35          class diag_type diag_dato status_dato ;
36          table diag_dato status_dato,
37              (diag_type all) * f=comma12. / rts = 6 ;
38          format diag_dato status_dato year4. ;
39      run ;

```

NOTE: There were 107584 observations read from the data set WORK.DDID.

NOTE: The PROCEDURE TABULATE printed page 4.

NOTE: PROCEDURE TABULATE used (Total process time):

real time	0.02 seconds
cpu time	0.01 seconds

```

40      title1 ;
41
42      data dvdd ; set dvdd ddid ; run ;

```

NOTE: There were 725691 observations read from the data set WORK.DVDD.

NOTE: There were 107584 observations read from the data set WORK.DDID.

NOTE: The data set WORK.DVDD has 833275 observations and 4 variables.

NOTE: DATA statement used (Total process time):

real time	0.10 seconds
cpu time	0.10 seconds

```
43      proc sort data = dvdd ; by pnr ; run;
```

NOTE: There were 833275 observations read from the data set WORK.DVDD.

NOTE: The data set WORK.DVDD has 833275 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

real time 0.12 seconds

cpu time 0.28 seconds

```
44
45      * only persons in base and included before end-date
46      and not during pregnancy ;
47      options mprint ;
48      data dvdd      ;
49      merge dvdd      (in = dv)
50      DMdat.pop (in = pop )
51      DMdat.gdmint ; * pregnancy periods used in xgdm ;
52      by pnr ;
53      if pop and dv ;
54
55      * remove status records after the end date ;
56      if status_dato > &end. then delete ;
57
58      * remove records with diag_type '-Ingen-' ;
59      if diag_type eq "-Ingen-" then delete ;
60
61      * do not count diagnosis dates during pregnancy ;
62      %xgdm(diag_dato) ;
MPRINT(XGDM):  if doGst1 < diag_dato < doBth1 then delete ;
MPRINT(XGDM):  if doGst2 < diag_dato < doBth2 then delete ;
MPRINT(XGDM):  if doGst3 < diag_dato < doBth3 then delete ;
MPRINT(XGDM):  if doGst4 < diag_dato < doBth4 then delete ;
MPRINT(XGDM):  if doGst5 < diag_dato < doBth5 then delete ;
MPRINT(XGDM):  if doGst6 < diag_dato < doBth6 then delete ;
MPRINT(XGDM):  if doGst7 < diag_dato < doBth7 then delete ;
MPRINT(XGDM):  if doGst8 < diag_dato < doBth8 then delete ;
MPRINT(XGDM):  if doGst9 < diag_dato < doBth9 then delete ;
MPRINT(XGDM):  if doGst10 < diag_dato < doBth10 then delete ;
MPRINT(XGDM):  if doGst11 < diag_dato < doBth11 then delete ;
MPRINT(XGDM):  if doGst12 < diag_dato < doBth12 then delete ;
MPRINT(XGDM):  if doGst13 < diag_dato < doBth13 then delete ;
MPRINT(XGDM):  if doGst14 < diag_dato < doBth14 then delete ;
MPRINT(XGDM):  if doGst15 < diag_dato < doBth15 then delete ;
63      run ;
```

NOTE: There were 833275 observations read from the data set WORK.DVDD.

NOTE: There were 11311307 observations read from the data set DMDAT.POP.

NOTE: There were 1648098 observations read from the data set DMDAT.GDMINT.

NOTE: The data set WORK.DVDD has 831472 observations and 37 variables.

NOTE: DATA statement used (Total process time):

real time 2.23 seconds

cpu time 2.23 seconds

```
64      options nomprint ;
65
66      * clean out multiple status dates and return a date of diagnosis ;
67      data dvdd (keep = pnr doDVDD dvdtyp lastDVDD diag_type) ;
68      set dvdd (keep = pnr status_dato diag_dato diag_type) ;
69      by pnr status_dato diag_dato ;
70
71      * use only the first among identical status dates within each person ;
72      if first.status_dato ;
73
74      * set the revised DM date to the earlier of diag_dato and
75      status_dato across all records for each person ;
76      retain doDVDD ;
77      if first.pnr then doDVDD = min(          diag_dato, status_dato) ;
```

```

78             else doDVDD = min(doDVDD, diag_dato, status_dato) ;
79
80         * output last record per person ;
81         if last.pnr then do ;
82             * Type classification: diag_type from LAST status record ;
83             if substr(diag_type, 1, 2) eq "Ty"
84                 then dvdtyp = "T" || substr(diag_type, 6, 1) ;
85             else
86                 if diag_type in ("1", "2")
87                     then dvdtyp = "T" || diag_type ;
88                 else dvdtyp = "Tx" ; * "Anden type" ;
89
90             * last date of meeeting the dvdd criterion (i.e. being there) ;
91             lastDVDD = status_dato ;
92             output ;
93             end ;
94         run ;

```

NOTE: There were 831472 observations read from the data set WORK.DVDD.

NOTE: The data set WORK.DVDD has 293762 observations and 5 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.25 seconds
cpu time       0.25 seconds

```

```

95
96         proc tabulate data = dvdd noseps missing;
97             class diag_type dvdtyp doDVDD ;
98             table diag_type doDVDD,
99                 (all dvdtyp) * f=comma9. / rts = 15 ;
100            format doDVDD year4. ;
101            run ;

```

NOTE: There were 293762 observations read from the data set WORK.DVDD.

NOTE: The PROCEDURE TABULATE printed page 5.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      0.05 seconds
cpu time       0.20 seconds

```

```

102
103         data DMdat.dvdd (label = "DVDD/DDiD status and -date") ;
104         set dvdd ;
105         drop diag_type ;
106         label pnr = "";
107         run ;

```

NOTE: There were 293762 observations read from the data set WORK.DVDD.

NOTE: The data set DMDAT.DVDD has 293762 observations and 4 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.11 seconds
cpu time       0.06 seconds

```

```

108
109         title1 'Seasonality of DVDD dates (persons)' ;
110         data dvdd ;
111         set dvdd ;
112         moDVDD = put(doDVDD, month.) ;
113         run ;

```

NOTE: There were 293762 observations read from the data set WORK.DVDD.

NOTE: The data set WORK.DVDD has 293762 observations and 6 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.07 seconds
cpu time       0.07 seconds

```

```

114
115         proc tabulate data = dvdd missing noseps order=fmt ;

```

```

116      class moDVDD doDVDD ;
117      table all doDVDD="Date",
118            all * f=comma7.
119      moDVDD * f=5.
120      / rts=6 ;
121      table all doDVDD="Date",
122            all * pctn<all doDVDD>* f=5.1
123      moDVDD * pctn<all doDVDD * moDVDD>* f=5.1
124      / rts=6 ;
125      format doDVDD day. ;
126      run ;

```

NOTE: There were 293762 observations read from the data set WORK.DVDD.
 NOTE: At least one W.D format was too small for the number to be printed. The decimal may be shifted by the "BEST" format.
 NOTE: The PROCEDURE TABULATE printed pages 6-7.
 NOTE: PROCEDURE TABULATE used (Total process time):
 real time 0.04 seconds
 cpu time 0.09 seconds

```

127
128      title1 'Range of DVDD dates (persons)' ;
129      proc tabulate data = DMdat.dvdd missing noseps ;
130      class doDVDD dvdtyp ;
131      table all doDVDD,
132            ( all dvdtyp ) * f=comma8.
133      / rts = 10 ;
134      format doDVDD year4. ;
135      run ;

```

NOTE: There were 293762 observations read from the data set DMDAT.DVDD.
 NOTE: The PROCEDURE TABULATE printed page 8.
 NOTE: PROCEDURE TABULATE used (Total process time):
 real time 0.09 seconds
 cpu time 0.09 seconds

```

136
137      proc tabulate data = DMdat.dvdd missing noseps ;
138      where doDVDD ge '01Jan2019'd ;
139      class doDVDD dvdtyp ;
140      table all doDVDD,
141            ( all dvdtyp ) * f=comma8.
142      / rts = 10 ;
143      format doDVDD yymms8. ;
144      run ;

```

NOTE: There were 84559 observations read from the data set DMDAT.DVDD.
 WHERE doDVDD>='01JAN2019'D;
 NOTE: The PROCEDURE TABULATE printed page 9.
 NOTE: PROCEDURE TABULATE used (Total process time):
 real time 0.03 seconds
 cpu time 0.04 seconds

```

145
146      title1 ;
147      proc contents data = DMdat.dvdd varnum ;
148      run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.00 seconds
 cpu time 0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 10.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
 NOTE: The SAS System used:
 real time 4.12 seconds

cpu time 4.71 seconds

02-dvdd.lst

The SAS System

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The CONTENTS Procedure

Data Set Name	RKKP.DVDD_LEV1	Observations	725691
Member Type	DATA	Variables	10
Engine	V9	Indexes	0
Created	08/05/2025 12:39:05	Observation Length	146
Last Modified	08/05/2025 12:39:05	Deleted Observations	0
Protection		Compressed	CHAR
Data Set Type		Reuse Space	NO
Label		Point to Observations	YES
Data Representation	WINDOWS_64	Sorted	YES
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	1029
Number of Data Set Repairs	0
Filename	E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\RKKP\dvdd_lev1.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV19
Owner Name	DSTFSE\MIA
File Size	64MB
File Size (bytes)	67502080

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat	Label
*	HbA1c	Num	8			HbA1c (værdi)
4	HbA1c_maalt	Char	13	\$13.	\$13.	HbA1c undersøgt
5	HbA1c_npu	Char	8	\$8.	\$8.	HbA1c NPU
6	HbA1c_undersoegelse_kode	Char	20	\$20.	\$20.	HbA1c undersøgelseskode
*	cpr_nr	Char	28			
*	diag_dato	Num	8	DDMMYY10.	DDMMYY10.	Diagnosetidspunkt
7	diag_dato_kode	Char	14	\$14.	\$14.	Diagnosetidspunkt præcision
8	diag_klassifikation_kode	Char	20	\$20.	\$20.	Diagnosekode
9	diag_type	Char	19	\$19.	\$19.	Diabetestype
10	status_dato	Num	8	DDMMYY10.	DDMMYY10.	NIP-statusdato

Sort Information

Sortedby cpr_nr
Validated YES
Character Set ANSI

The SAS System

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The CONTENTS Procedure

Data Set Name	RKKP.DDID_LEV1	Observations	107584
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	08/05/2025 12:39:20	Observation Length	65
Last Modified	08/05/2025 12:39:20	Deleted Observations	0
Protection		Compressed	CHAR
Data Set Type		Reuse Space	NO
Label		Point to Observations	YES

Data Representation WINDOWS_64 Sorted YES
 Encoding wlatin1 Western (Windows)

Engine/Host Dependent Information

Data Set Page Size 65536
 Number of Data Set Pages 107
 Number of Data Set Repairs 0
 Filename E:\ProjektDB\SDCC\Rawdata\709873\Eksterne
 data\POPA\RKKP\ddid_lev1.sas7bdat
 Release Created 9.0401M8
 Host Created X64_SRV19
 Owner Name DSTFSE\MIA
 File Size 7MB
 File Size (bytes) 7077888

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Label
1	CPR	Char	28		
4	DiabetesType	Char	5		DiabetesType
6	HbA1c_seneste	Num	8		Seneste HbA1c målt de seneste 12 mdr
5	HbA1c_seneste_Dato	Num	8	YYMMDD10.	Dato for seneste HbA1c målt de seneste 12 mdr
2	inklusions_dato	Num	8	YYMMDD10.	Dato for inklusion i databasen
3	rapport_dato	Num	8	YYMMDD10.	Indexdato hvorpå indikatorer opgøres

Sort Information

Sortedby CPR
 Validated YES
 Character Set ANSI

Records by diabetes type recorded in DVDD

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Diabetestype					
-Ingen-	Anden type		Type *	Type *	All
N	N		N	N	N
Dia-					
gno-					
set-					
ids-					
pun-					
kt					
2005	5	666	7,252	38,228	46,151
2006	6	717	8,050	38,475	47,248
2007	5	869	8,267	42,259	51,400
2008	6	971	7,929	48,098	57,004
2009	.	932	7,666	48,160	56,758
2010	*	1,08*	6,604	54,491	62,183
2011	.	976	5,485	63,610	70,071
2012	.	1,110	4,980	46,941	53,031
2013	*	1,14*	4,317	32,807	38,266
2014	.	1,040	3,812	27,189	32,041
2015	.	1,067	3,467	25,575	30,109
2016	.	956	2,947	28,060	31,963
2017	.	884	2,689	27,562	31,135
2018	.	726	2,647	57,708	61,081
2019	.	611	1,897	24,062	26,570
2020	.	453	1,116	15,982	17,551
2021	.	246	515	9,722	10,483
2022	.	53	96	2,497	2,646
NIP-					

sta-					
tus-					
dato					
2003	.	.	.	*	*
2005	.	5	13	123	141
2006	*	40	17*	1,131	1,350
2007	4	94	628	2,990	3,716
2008	11	227	1,123	6,106	7,467
2009	.	394	1,721	9,190	11,305
2010	.	387	2,466	12,977	15,830
2011	.	515	4,672	25,136	30,323
2012	*	684	3,04*	39,788	43,523
2013	*	788	3,52*	59,448	63,758
2014	.	1,098	4,491	53,397	58,986
2015	*	1,141	4,69*	11,621	17,453
2016	*	1,288	5,46*	12,936	19,687
2017	*	1,157	4,58*	12,394	18,132
2018	.	1,051	5,574	68,013	74,638
2019	.	1,268	7,857	83,987	93,112
2020	.	1,501	8,973	51,988	62,462
2021	.	1,634	10,104	64,619	76,357
2022	.	1,233	10,636	115,581	127,450
----	-----	-----	-----	-----	-----

Records by diabetes type recorded in DDID 16:12 Wednesday, August 6, 2025 4

DiabetesType				

	*	*	Anden	All

	N	N	N	N

Dato				
for				
ink-				
lus-				
ion				
i				
dat-				
aba-				
sen				
2022	1,388	32,413	755	34,556
2023	1,697	47,242	896	49,835
2024	751	21,986	456	23,193
Ind-				
exd-				
ato				
hvo-				
rpå				
ind-				
ika-				
tor-				
er				
opg-				
øres				
2022	441	11,352	256	12,049
2023	1,293	34,855	701	36,849
2024	2,102	55,434	1,150	58,686
----	-----	-----	-----	-----

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dvdtyp				

	All	T1	T2	Tx

	N	N	N	N

Diabetestype				
*	2,151	2,151	.	.
*	57,161	.	57,161	.
Anden	1,234	.	.	1,234
Anden type	3,688	.	.	3,688
Type *	16,531	16,531	.	.
Type *	212,997	.	212,997	.
doDVDD				
2003	*	.	*	.
2005	14,95*	1,266	13,50*	180
2006	13,744	1,296	12,284	164
2007	15,304	1,486	13,630	188
2008	17,553	1,645	15,672	236
2009	17,441	1,685	15,529	227
2010	19,117	1,201	17,699	217
2011	21,445	1,000	20,227	218
2012	16,483	958	15,283	242
2013	11,829	805	10,795	229
2014	10,218	787	9,193	238
2015	10,025	710	9,074	241
2016	11,073	685	10,128	260
2017	11,231	673	10,323	235
2018	18,785	841	17,722	222
2019	10,323	644	9,491	188
2020	7,290	454	6,644	192
2021	5,169	323	4,674	172
2022	13,314	572	12,403	339
2023	25,325	902	23,942	481
2024	23,138	749	21,936	453

Seasonality of DVDD dates (persons)

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moDVDD													
	All	*	*	*	4	5	6	7	8	9	10	11	12
	N	N	N	N	N	N	N	N	N	N	N	N	N
All	293,762	104E3	11671	13307	11279	12558	75639	8165	11106	12564	11867	11784	9924
Date													
*	103,749	92208	965	1105	663	1307	3150	683	677	693	700	859	739
*	4,293	286	442	382	274	485	338	243	288	325	380	393	457
*	4,177	337	340	345	439	482	326	307	231	272	488	320	290
4	4,450	369	243	333	490	333	389	437	220	434	522	329	351
5	4,083	414	356	361	357	211	100	361	201	571	385	296	470
6	4,633	312	486	537	194	316	583	395	200	493	346	347	424
7	4,367	204	490	506	195	367	487	257	255	356	338	514	398
8	4,537	301	438	472	313	468	450	219	384	377	338	424	353
9	4,353	464	470	383	295	390	308	190	356	364	430	362	341
10	4,344	461	340	328	359	393	357	262	283	389	554	344	274
11	4,546	434	245	382	520	335	422	325	279	437	512	286	369
12	4,590	448	309	376	466	230	512	305	252	521	414	278	479
13	4,597	316	363	534	308	320	544	276	241	494	323	353	525
14	4,354	254	366	520	297	338	562	210	367	403	237	421	379
15	67,342	580	564	744	519	735	61319	495	547	478	334	527	500
16	4,372	501	352	408	360	468	301	167	475	343	280	346	371
17	4,128	431	243	325	432	459	362	225	388	313	342	304	304
18	4,258	490	234	382	439	222	390	272	311	407	350	371	390
19	4,587	449	350	442	480	262	472	251	295	545	279	276	486
20	4,412	342	482	511	349	161	523	186	278	512	271	362	435
21	4,332	256	472	515	230	302	491	185	364	392	271	513	341
22	4,410	305	449	470	211	519	373	185	507	344	315	458	274
23	4,403	474	448	372	356	504	314	135	471	343	384	382	220
24	4,021	483	328	255	491	441	279	206	386	318	496	323	15
25	4,027	449	269	320	470	318	346	266	345	422	446	362	14
26	4,146	438	389	345	455	298	481	226	339	490	372	305	8
27	4,314	360	517	442	311	345	460	172	341	476	340	371	179
28	4,029	251	523	332	295	302	437	161	384	366	322	478	178

29	3,684	304	198	269	318	325	314	182	522	347	280	453	172
30	3,845	484	.	305	393	435	249	165	515	339	369	427	164
31	2,379	493	.	306	.	487	.	216	404	.	449	.	24

Seasonality of DVDD dates (persons)

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moDVDD													
All	*	*	*	4	5	6	7	8	9	10	11	12	
PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Date													
*	100.0	31.4	0.3	0.4	0.2	0.4	1.1	0.2	0.2	0.2	0.2	0.3	0.3
*	100.0	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
*	100.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1
4	100.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
5	100.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2
6	100.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1
7	100.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1
8	100.0	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
9	100.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10	100.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
11	100.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
12	100.0	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2
13	100.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2
14	100.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
15	100.0	0.2	0.2	0.3	0.2	0.3	20.9	0.2	0.2	0.2	0.1	0.2	0.2
16	100.0	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1
17	100.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
18	100.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19	100.0	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2
20	100.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1
21	100.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1
22	100.0	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1
23	100.0	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.1
24	100.0	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.0
25	100.0	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0
26	100.0	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.0
27	100.0	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1
28	100.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
29	100.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1
30	100.0	0.2	.	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
31	100.0	0.2	.	0.1	.	0.2	.	0.1	0.1	.	0.2	.	0.0

Range of DVDD dates (persons)

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dvdtyp				
All	T1	T2	Tx	
N	N	N	N	
All	293,762	18,682	270,158	4,922
doDVDD				
2003	*	.	*	.
2005	14,954	1,266	13,508	180
2006	13,744	1,296	12,284	164
2007	15,304	1,486	13,630	188
2008	17,553	1,645	15,672	236
2009	17,441	1,685	15,529	227
2010	19,117	1,201	17,699	217
2011	21,445	1,000	20,227	218
2012	16,483	958	15,283	242
2013	11,829	805	10,795	229

2014	10,218	787	9,193	238
2015	10,025	710	9,074	241
2016	11,073	685	10,128	260
2017	11,231	673	10,323	235
2018	18,785	841	17,722	222
2019	10,323	644	9,491	188
2020	7,290	454	6,644	192
2021	5,169	323	4,674	172
2022	13,314	572	12,403	339
2023	25,325	902	23,942	481
2024	23,138	749	21,936	453

Range of DVDD dates (persons)

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	dvdtyp			
	All	T1	T2	Tx
	N	N	N	N
All	84,559	3,644	79,090	1,825
doDVDD				
2019/01	6,313	340	5,876	97
2019/02	439	23	412	4
2019/03	493	36	447	10
2019/04	387	22	355	10
2019/05	443	32	395	16
2019/06	339	27	30*	*
2019/07	237	15	212	10
2019/08	327	33	286	8
2019/09	404	25	374	5
2019/10	338	30	300	8
2019/11	328	37	283	8
2019/12	275	24	242	9
2020/01	6,213	255	5,863	95
2020/02	269	26	235	8
2020/03	244	24	212	8
2020/04	123	16	101	6
2020/05	62	16	38	8
2020/06	68	17	43	8
2020/07	34	15	11	8
2020/08	49	13	27	9
2020/09	67	24	36	7
2020/10	52	18	24	10
2020/11	50	14	26	10
2020/12	59	16	28	15
2021/01	4,732	202	4,448	82
2021/02	48	13	29	6
2021/03	58	15	29	14
2021/04	40	11	22	7
2021/05	49	13	21	15
2021/06	44	12	27	5
2021/07	25	9	1*	*
2021/08	30	9	13	8
2021/09	43	13	23	7
2021/10	27	8	13	6
2021/11	39	14	17	8
2021/12	34	4	18	12
2022/01	1,519	62	1,423	34
2022/02	23	*	1*	5
2022/03	28	8	12	8
2022/04	1*	4	7	*
2022/05	8	*	*	*
2022/06	*	*	*	.
2022/07	1,470	74	1,354	42
2022/08	2,079	78	1,951	50
2022/09	2,106	90	1,962	54
2022/10	1,890	85	1,764	41

2022/11	2,147	87	2,015	45
2022/12	2,027	77	1,895	55
2023/01	2,634	84	2,493	57
2023/02	2,218	81	2,096	41
2023/03	2,583	92	2,443	48
2023/04	1,889	88	1,778	23
2023/05	2,246	80	2,127	39
2023/06	2,282	69	2,178	35
2023/07	1,422	46	1,346	30
2023/08	2,083	86	1,944	53
2023/09	2,093	73	1,985	35
2023/10	2,070	62	1,963	45
2023/11	2,078	65	1,971	42
2023/12	1,727	76	1,618	33
2024/01	2,079	74	1,957	48
2024/02	2,015	64	1,915	36
2024/03	1,925	60	1,831	34
2024/04	2,195	74	2,088	33
2024/05	2,046	63	1,952	31
2024/06	1,986	61	1,878	47
2024/07	1,505	72	1,393	40
2024/08	1,845	64	1,746	35
2024/09	1,972	63	1,879	30
2024/10	2,014	59	1,918	37
2024/11	1,962	63	1,859	40
2024/12	1,594	32	1,520	42

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The CONTENTS Procedure

Data Set Name	DMDAT.DVDD	Observations	293762
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	06/08/2025 16:12:31	Observation Length	64
Last Modified	06/08/2025 16:12:31	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	DVDD/DDiD status and -date		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	288
First Data Page	*
Max Obs per Page	1021
Obs in First Data Page	999
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\dvdd.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	18MB
File Size (bytes)	18939904

Variables in Creation Order

#	Variable	Type	Len	Label
1	pnr	Char	28	'
2	doDVDD	Num	8	
3	dvdtyp	Char	20	
4	lastDVDD	Num	8	

4.7 03-nhsr

Reads data from the national health services register - podiatry data. Derives the variables doPod and lastPod.

1 "Program: 03-nhsr.sas" 16:12 Wednesday, August 6, 2025

NOTE: AUTOEXEC processing completed.

```

1      %put yrf = &yrf.  yrl = &yrl.  ini = &ini.  end = &end. ;
yrf = 1996  yrl = 2024  ini = '01JAN1996'd  end = '31DEC2024'd
2      libname sds list ;
NOTE: Libref=    SDS
      Scope=    Program 03-nhsr.sas
      Engine=    V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Owner Name= DSTFSE\neo
      File Size=    OKB
      File Size (bytes)= 0
3      libname DMdat list ;
NOTE: Libref=    DMDAT
      Scope=    Program 03-nhsr.sas
      Engine=    V9
      Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Owner Name= DSTFSE\FDIY709873
      File Size=    OKB
      File Size (bytes)= 0
4
5      data ssik (keep = pnr doP) ;
6          set sds.t_ssi_lev1 (rename = (v_cpr = pnr));
7          doP = (v_honaar + 1900 + 100 * (v_honaar < 50) - 1960) * 365.25
8              + v_honuge * 7 ;
9          if C_speciale eq "54" ;
10         run ;

```

NOTE: There were 6089105 observations read from the data set SDS.T_SSIK_LEV1.

NOTE: The data set WORK.SSIK has 6089105 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```

real time      2.43 seconds
cpu time       1.06 seconds

```

```

11
12     data ssr (keep = pnr doP) ;
13         set sds.t_ssr_lev1 (rename = (sikredes_cpr = pnr
14                                     BEHANDLINGS_DATO = doP)) ;
15         if yderens_speciale eq "54" ;
16     run ;

```

NOTE: There were 7590010 observations read from the data set SDS.T_SSR_LEV1.

NOTE: The data set WORK.SSR has 7590010 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```

real time      3.03 seconds
cpu time       0.79 seconds

```

```

17
18     data foot ;
19         set ssik ssr ;
20     run ;

```

NOTE: There were 6089105 observations read from the data set WORK.SSIK.
 NOTE: There were 7590010 observations read from the data set WORK.SSR.
 NOTE: The data set WORK.FOOT has 13679115 observations and 2 variables.
 NOTE: DATA statement used (Total process time):
 real time 1.29 seconds
 cpu time 1.29 seconds

```

21
22      /*
23      * leftover from when data were accessed from DSTs copy ;
24      %macro getssy ;
25      data foot ( keep = pnr doP speciale ) ;
26          set %do i = 1990 %to 2005 ;
27              grund.sysi&i. ( keep = pnr speciale honuge )
28              %end ;
29              %do i = 2005 %to 2023 ;
30                  grund.sssy&i. ( keep = pnr speciale honuge )
31                  %end ;
32          if substr(speciale, 1, 2) eq '54' ;
33          if pnr ne " " ;
34          yr = input(substr(honuge, 1, 2), 2. ) ;
35          wk = input(substr(honuge, 3, 2), 2. ) ;
36          doP = (1900 + yr + 100 * (yr<50) - 1960) * 365.25 + wk * 7 ;
37      run ;
38      %mend ;
39
40      %getssy ;
41      */
42
43      proc sort  data = foot  nodupkey ;  by pnr doP ;  run ;

```

NOTE: There were 13679115 observations read from the data set WORK.FOOT.
 NOTE: 3649816 observations with duplicate key values were deleted.
 NOTE: The data set WORK.FOOT has 10029299 observations and 2 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 6.56 seconds
 cpu time 11.76 seconds

```

44      options mprint ;
45      data foot ;
46          merge foot ( in = f )
47                  DMdat.gdmint
48                  DMdat.pop ( in = b  keep = pnr doBth sex ) ;
49      by pnr ;
50      if f and b ;
51      %xgdm( dop ) ;
MPRINT(XGDM):  if doGst1 < dop < doBth1 then delete ;
MPRINT(XGDM):  if doGst2 < dop < doBth2 then delete ;
MPRINT(XGDM):  if doGst3 < dop < doBth3 then delete ;
MPRINT(XGDM):  if doGst4 < dop < doBth4 then delete ;
MPRINT(XGDM):  if doGst5 < dop < doBth5 then delete ;
MPRINT(XGDM):  if doGst6 < dop < doBth6 then delete ;
MPRINT(XGDM):  if doGst7 < dop < doBth7 then delete ;
MPRINT(XGDM):  if doGst8 < dop < doBth8 then delete ;
MPRINT(XGDM):  if doGst9 < dop < doBth9 then delete ;
MPRINT(XGDM):  if doGst10 < dop < doBth10 then delete ;
MPRINT(XGDM):  if doGst11 < dop < doBth11 then delete ;
MPRINT(XGDM):  if doGst12 < dop < doBth12 then delete ;
MPRINT(XGDM):  if doGst13 < dop < doBth13 then delete ;
MPRINT(XGDM):  if doGst14 < dop < doBth14 then delete ;
MPRINT(XGDM):  if doGst15 < dop < doBth15 then delete ;
52      run ;

```

NOTE: There were 10029299 observations read from the data set WORK.FOOT.
 NOTE: There were 1648098 observations read from the data set DMDAT.GDMINT.
 NOTE: There were 11311307 observations read from the data set DMDAT.POP.
 NOTE: The data set WORK.FOOT has 10023957 observations and 34 variables.

NOTE: DATA statement used (Total process time):
real time 8.61 seconds
cpu time 6.76 seconds

```
53      options nomprint ;  
54  
55      data foot ;  
56          set foot ;  
57          by pnr ;  
58          if first.pnr then which = "first" ;  
59              else which = "later" ;  
60      run ;
```

NOTE: There were 10023957 observations read from the data set WORK.FOOT.
NOTE: The data set WORK.FOOT has 10023957 observations and 35 variables.
NOTE: DATA statement used (Total process time):
real time 4.19 seconds
cpu time 3.92 seconds

```
61  
62      title1 'Date of podiatry' ;  
63      proc tabulate data = foot noseps missing ;  
64          class doP which ;  
65          table all doP = 'doPod', which * f=comma10. /rts = 10 ;  
66          format doP year4. ;  
67      run ;
```

NOTE: There were 10023957 observations read from the data set WORK.FOOT.
NOTE: The PROCEDURE TABULATE printed page 1.
NOTE: PROCEDURE TABULATE used (Total process time):
real time 2.21 seconds
cpu time 4.92 seconds

```
68  
69      data DMdat.foot (label = "Podiatry for diabetes pts.") ;  
70          set foot (keep = pnr doP) ;  
71          by pnr doP ;  
72          drop doP ;  
73          retain doPod ;  
74          if first.pnr then doPod = doP ;  
75          if last.pnr then do ;  
76              lastPod = doP ;  
77              output ;  
78              end ;  
79          label doPod = 'Date of first podiatry'  
80              lastPod = 'Date of last podiatry' ;  
81      run ;
```

NOTE: There were 10023957 observations read from the data set WORK.FOOT.
NOTE: The data set DMDAT.FOOT has 368785 observations and 3 variables.
NOTE: DATA statement used (Total process time):
real time 2.73 seconds
cpu time 2.65 seconds

```
82  
83      title1 "Podiatry dates" ;  
84      proc contents data = DMdat.foot varnum ; run ;
```

NOTE: PROCEDURE CONTENTS used (Total process time):
real time 0.01 seconds
cpu time 0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 2.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:

real time 31.31 seconds
cpu time 33.49 seconds

03-nhsr.lst

!Date of podiatry 16:12 Wednesday, August 6, 2025 1

	which	
	-----	-----
	first	later
	-----	-----
	N	N
	-----	-----
All	368,785	9,655,172
doPod		
1990	19,114	84,042
1991	5,501	107,507
1992	5,711	119,618
1993	6,082	128,691
1994	6,762	142,202
1995	7,722	160,309
1996	7,910	176,022
1997	8,333	196,016
1998	8,998	215,187
1999	9,781	239,247
2000	8,006	205,596
2001	5,013	101,469
2002	16,085	248,662
2003	14,250	342,442
2004	14,348	383,506
2005	6,955	198,622
2006	1,457	46,986
2007	1,584	49,078
2008	1,598	51,701
2009	1,402	52,145
2010	1,881	51,505
2011	35,302	186,304
2012	18,518	355,754
2013	14,115	402,592
2014	12,480	441,169
2015	12,076	461,264
2016	12,550	481,688
2017	12,710	500,186
2018	13,019	507,459
2019	12,356	514,705
2020	11,413	473,434
2021	13,121	503,281
2022	14,116	514,497
2023	15,162	539,742
2024	13,354	472,544

Podiatry dates 16:12 Wednesday, August 6, 2025 2

The CONTENTS Procedure

Data Set Name	DMDAT.FOOT	Observations	368785
Member Type	DATA	Variables	*
Engine	V9	Indexes	0
Created	06/08/2025 16:13:00	Observation Length	48
Last Modified	06/08/2025 16:13:00	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	Podiatry for diabetes pts.		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

```

Data Set Page Size      65536
Number of Data Set Pages 271
First Data Page         *
Max Obs per Page        1361
Obs in First Data Page  1332
Number of Data Set Repairs 0
ExtendObsCounter        YES
Filename                E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\foot.sas7bdat
Release Created         9.0401M8
Host Created            X64_SRV22
Owner Name              DSTFSE\FDIY709873
File Size               17MB
File Size (bytes)       17825792

```

Variables in Creation Order

#	Variable	Type	Len	Label
1	pnr	Char	28	mother pnr
2	doPod	Num	8	Date of first podiatry
3	lastPod	Num	8	Date of last podiatry

4.8 04-rmps

Reads the diabetes medication data from the files with all dispensations of A10Axxxx and A10Bxxxx. Derives the date variables doOAD, doOAD2, lastOAD, doIns, doIns2, lastIns.

```

1                                "Program: 04-rmps.sas"    16:13 Wednesday, August 6, 2025

```

NOTE: AUTOEXEC processing completed.

```

1      libname grund list ;
NOTE: Libref=   GRUND
      Scope=   Program 04-rmps.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Grunddata\POPA
      Owner Name= DSTFSE\neo
      File Size=           OKB
      File Size (bytes)= 0
2      libname sds list ;
NOTE: Libref=   SDS
      Scope=   Program 04-rmps.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Owner Name= DSTFSE\neo
      File Size=           OKB
      File Size (bytes)= 0
3      libname DMdat list ;
NOTE: Libref=   DMDAT
      Scope=   Program 04-rmps.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Owner Name= DSTFSE\FDIY709873

```

```

File Size=          OKB
File Size (bytes)= 0
4      %put yrf = &yrf.  yrl = &yrl.  ini = &ini.  end = &end.  pcoslo = &pcoslo.
4      ! pcoshi = &pcoshi. ;
yrf = 1996  yrl = 2024  ini = '01JAN1996'd  end = '31DEC2024'd  pcoslo = 18  pcoshi = 40
5
6      %macro matc ;
7      * Combine all diagnoses from 1977-1993;
8      data rmps ;
9      set %do i = 1995 %to 2023 ;
10         grund.lmdb&i.12 (keep = pnr eksd atc)
11         %end ;
12         grund.lmdb202406 (keep = pnr eksd atc)
13         sds.epikur_lev1_fra20240701 (keep = cpr eksd atc
14             rename = (cpr = pnr))
15     ;
16     * delete all liraglutide (A10BJ02) & semaglutide (A10BJ06) ;
17     if atc in ("A10BJ02", "A10BJ06") then delete ;
18     * delete dapagliflozin after approval for heart failure ;
19     if atc eq "A10BK01" and eksd ge "01JAN2021"d then delete ;
20     * delete empagliflozin after approval for heart failure ;
21     if atc eq "A10BK03" and eksd ge "01JUN2021"d then delete ;
22     if substr(atc, 1, 4) eq "A10A" then tp = "ins" ;
23     if substr(atc, 1, 4) eq "A10B" then tp = "oad" ;
24     run ;
25     %mend ;
26     %matc ;

```

WARNING: Multiple lengths were specified for the variable eksd by input data set(s). This can cause truncation of data.

```

NOTE: There were 561599 observations read from the data set GRUND.LMDB199512.
NOTE: There were 626172 observations read from the data set GRUND.LMDB199612.
NOTE: There were 670759 observations read from the data set GRUND.LMDB199712.
NOTE: There were 732363 observations read from the data set GRUND.LMDB199812.
NOTE: There were 795049 observations read from the data set GRUND.LMDB199912.
NOTE: There were 826889 observations read from the data set GRUND.LMDB200012.
NOTE: There were 906757 observations read from the data set GRUND.LMDB200112.
NOTE: There were 985120 observations read from the data set GRUND.LMDB200212.
NOTE: There were 1066934 observations read from the data set GRUND.LMDB200312.
NOTE: There were 1179915 observations read from the data set GRUND.LMDB200412.
NOTE: There were 1290865 observations read from the data set GRUND.LMDB200512.
NOTE: There were 1407844 observations read from the data set GRUND.LMDB200612.
NOTE: There were 1519880 observations read from the data set GRUND.LMDB200712.
NOTE: There were 1659373 observations read from the data set GRUND.LMDB200812.
NOTE: There were 1751002 observations read from the data set GRUND.LMDB200912.
NOTE: There were 1875270 observations read from the data set GRUND.LMDB201012.
NOTE: There were 2003071 observations read from the data set GRUND.LMDB201112.
NOTE: There were 2101640 observations read from the data set GRUND.LMDB201212.
NOTE: There were 2130914 observations read from the data set GRUND.LMDB201312.
NOTE: There were 2152130 observations read from the data set GRUND.LMDB201412.
NOTE: There were 2164261 observations read from the data set GRUND.LMDB201512.
NOTE: There were 2252501 observations read from the data set GRUND.LMDB201612.
NOTE: There were 2312986 observations read from the data set GRUND.LMDB201712.
NOTE: There were 2370541 observations read from the data set GRUND.LMDB201812.
NOTE: There were 2481070 observations read from the data set GRUND.LMDB201912.
NOTE: There were 2645024 observations read from the data set GRUND.LMDB202012.
NOTE: There were 2841515 observations read from the data set GRUND.LMDB202112.
NOTE: There were 3142670 observations read from the data set GRUND.LMDB202212.
NOTE: There were 4088121 observations read from the data set GRUND.LMDB202312.
NOTE: There were 2187023 observations read from the data set GRUND.LMDB202406.
NOTE: There were 2339933 observations read from the data set SDS.EPIKUR_LEV1_FRA20240701.
NOTE: The data set WORK.RMPS has 46649609 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time          21.94 seconds
      cpu time           7.43 seconds

```

```

27
28     *-----;
29     * delete duplicates ;

```

```
30      proc sort  data = rmps  nodupkey ; by pnr eksd atc ; run ;
```

NOTE: There were 46649609 observations read from the data set WORK.RMPS.

NOTE: 928854 observations with duplicate key values were deleted.

NOTE: The data set WORK.RMPS has 45720755 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

```
      real time          7.18 seconds
      cpu time           16.76 seconds
```

```
31
32      title "All filled prescriptions that counts" ;
33      proc tabulate data = rmps  noseps  missing ;
34          class eksd atc ;
35          table all atc, eksd * f=comma7.
36              / rts = 42 ;
37          format eksd year4.
38              atc  $ATC_L1L1_KT. ;
39          keylabel n = ' ' ;
40      run ;
```

NOTE: There were 45720755 observations read from the data set WORK.RMPS.

NOTE: The PROCEDURE TABULATE printed pages 1-5.

NOTE: PROCEDURE TABULATE used (Total process time):

```
      real time          7.13 seconds
      cpu time           11.51 seconds
```

```
41
42      /*
43      * tables of first dispensations just for general information ;
44      %macro tt(tp) ;
45      title "Persons by type of first filled prescription of &tp. after 2010" ;
46      proc sort data = rmps (where = (tp eq "&tp."))
47          out = &tp.  nodupkey ;
48      by pnr eksd atc ;
49      run;
50
51      data &tp. ; set &tp. ; by pnr eksd ; if first.pnr ; run ;
52      proc tabulate data = &tp.  noseps  missing ;
53          where eksd ge '01JAN2010'd ;
54          class eksd atc ;
55          table all atc, eksd * f=comma9.
56              / rts = 42 ;
57          format eksd  year4.
58              atc  $ATC_L1L1_KT. ;
59          keylabel n = ' ' ;
60      run ;
61      %mend ;
62      %tt(ins) ;
63      %tt(oad) ;
64      */
65      *-----;
66      * we need sex and doBth as variables ;
67      options mprint ;
68      data allOAD
69          allIns
70          metdel ;
71          merge rmps          ( in = r )
72                  DMdat.gdmint
73                  DMdat.pop ( in = b  keep = pnr doBth sex ) ;
74      by pnr ;
75      if r and b ;
76
77      * exclude drug dispenses in the GDM-windows ;
78      %xgdm( eksd ) ;
MPRINT(XGDM):  if doGst1 < eksd < doBth1 then delete ;
MPRINT(XGDM):  if doGst2 < eksd < doBth2 then delete ;
MPRINT(XGDM):  if doGst3 < eksd < doBth3 then delete ;
MPRINT(XGDM):  if doGst4 < eksd < doBth4 then delete ;
```

```

MPRINT(XGDM):  if doGst5 < eksd < doBth5 then delete ;
MPRINT(XGDM):  if doGst6 < eksd < doBth6 then delete ;
MPRINT(XGDM):  if doGst7 < eksd < doBth7 then delete ;
MPRINT(XGDM):  if doGst8 < eksd < doBth8 then delete ;
MPRINT(XGDM):  if doGst9 < eksd < doBth9 then delete ;
MPRINT(XGDM):  if doGst10 < eksd < doBth10 then delete ;
MPRINT(XGDM):  if doGst11 < eksd < doBth11 then delete ;
MPRINT(XGDM):  if doGst12 < eksd < doBth12 then delete ;
MPRINT(XGDM):  if doGst13 < eksd < doBth13 then delete ;
MPRINT(XGDM):  if doGst14 < eksd < doBth14 then delete ;
MPRINT(XGDM):  if doGst15 < eksd < doBth15 then delete ;
79
80      * drop metformin in PCOSrange ;
81      inPCOSrg = ( doBth + 365.25 * &pcoslo. )
82                  < eksd <
83                  ( doBth + 365.25 * &pcoshi. ) ;
84      if inPCOSrg and
85          sex eq "2" and
86          atc eq "A10BA02" then do ; output metdel ; delete ; end ;
87
88      * output insulin and OAD separately ;
89      if substr( atc, 1, 4 ) eq "A10A" then output allIns ;
90      if substr( atc, 1, 4 ) eq "A10B" then output allLOAD ;
91      run ;

```

NOTE: There were 45720755 observations read from the data set WORK.RMPS.
 NOTE: There were 1648098 observations read from the data set DMDAT.GDMINT.
 NOTE: There were 11311307 observations read from the data set DMDAT.POP.
 NOTE: The data set WORK.ALLOAD has 29711131 observations and 37 variables.
 NOTE: The data set WORK.ALLINS has 15482901 observations and 37 variables.
 NOTE: The data set WORK.METDEL has 434665 observations and 37 variables.
 NOTE: DATA statement used (Total process time):
 real time 19.81 seconds
 cpu time 18.75 seconds

```

92      options nomprint ;
93
94      *-----;
95      proc sort data = allIns; by pnr eksd ; run ;

```

NOTE: There were 15482901 observations read from the data set WORK.ALLINS.
 NOTE: The data set WORK.ALLINS has 15482901 observations and 37 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 7.33 seconds
 cpu time 9.90 seconds

```

95      !                               *Added by LDIA/PFR;
96      proc sort data = allLOAD; by pnr eksd ; run ;

```

NOTE: There were 29711131 observations read from the data set WORK.ALLOAD.
 NOTE: The data set WORK.ALLOAD has 29711131 observations and 37 variables.
 NOTE: PROCEDURE SORT used (Total process time):
 real time 17.02 seconds
 cpu time 22.84 seconds

```

96      !                               *Added by LDIA/PFR;
97
98      * generate data sets with first, second and last date of OAD / Ins ;
99      %macro second( tp ) ;
100      data &tp. ( keep = pnr do&tp. atc&tp. ) ;
101          set all&tp. ( rename = ( eksd = do&tp. ) ) ;
102          by pnr ;
103          if first.pnr ;
104              atc&tp. = atc ;
105      run ;
106
107      data &tp.2 ( keep = pnr do&tp.2 ) ;

```

```

108      set all&tp. ( rename = ( eksd = do&tp.2 ) ) ;
109      by pnr ;
110      if first.pnr then dno = 0 ;
111      dno + 1 ;
112      if dno eq 2 then output ;
113      run ;
114
115      data &tp.1 ( keep = pnr last&tp. ) ;
116      set all&tp. ( rename = ( eksd = last&tp. ) ) ;
117      by pnr ;
118      if last.pnr then output ;
119      run ;
120      %mend ;

```

```

121
122      options mprint ;
123      %second( OAD ) ;
MPRINT(SECOND):  data OAD ( keep = pnr doOAD atcOAD ) ;
MPRINT(SECOND):  set alloAD ( rename = ( eksd = doOAD ) ) ;
MPRINT(SECOND):  by pnr ;
MPRINT(SECOND):  if first.pnr ;
MPRINT(SECOND):  atcOAD = atc ;
MPRINT(SECOND):  run ;

```

NOTE: There were 29711131 observations read from the data set WORK.ALLOAD.

NOTE: The data set WORK.OAD has 533100 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

      real time          4.10 seconds
      cpu time           3.95 seconds

```

```

MPRINT(SECOND):  data OAD2 ( keep = pnr doOAD2 ) ;
MPRINT(SECOND):  set alloAD ( rename = ( eksd = doOAD2 ) ) ;
MPRINT(SECOND):  by pnr ;
MPRINT(SECOND):  if first.pnr then dno = 0 ;
MPRINT(SECOND):  dno + 1 ;
MPRINT(SECOND):  if dno eq 2 then output ;
MPRINT(SECOND):  run ;

```

NOTE: There were 29711131 observations read from the data set WORK.ALLOAD.

NOTE: The data set WORK.OAD2 has 501806 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```

      real time          4.31 seconds
      cpu time           4.23 seconds

```

```

MPRINT(SECOND):  data OAD1 ( keep = pnr lastOAD ) ;
MPRINT(SECOND):  set alloAD ( rename = ( eksd = lastOAD ) ) ;
MPRINT(SECOND):  by pnr ;
MPRINT(SECOND):  if last.pnr then output ;
MPRINT(SECOND):  run ;

```

NOTE: There were 29711131 observations read from the data set WORK.ALLOAD.

NOTE: The data set WORK.OAD1 has 533100 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```

      real time          5.33 seconds
      cpu time           5.00 seconds

```

```

124      %second( Ins ) ;
MPRINT(SECOND):  data Ins ( keep = pnr doIns atcIns ) ;
MPRINT(SECOND):  set allIns ( rename = ( eksd = doIns ) ) ;
MPRINT(SECOND):  by pnr ;
MPRINT(SECOND):  if first.pnr ;
MPRINT(SECOND):  atcIns = atc ;
MPRINT(SECOND):  run ;

```

NOTE: There were 15482901 observations read from the data set WORK.ALLINS.

NOTE: The data set WORK.INS has 211406 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

      real time          2.53 seconds

```

cpu time 2.53 seconds

```
MPRINT(SECOND): data Ins2 ( keep = pnr doIns2 ) ;
MPRINT(SECOND): set allIns ( rename = ( eksd = doIns2 ) ) ;
MPRINT(SECOND): by pnr ;
MPRINT(SECOND): if first.pnr then dno = 0 ;
MPRINT(SECOND): dno + 1 ;
MPRINT(SECOND): if dno eq 2 then output ;
MPRINT(SECOND): run ;
```

NOTE: There were 15482901 observations read from the data set WORK.ALLINS.

NOTE: The data set WORK.INS2 has 192645 observations and 2 variables.

NOTE: DATA statement used (Total process time):

real time 2.46 seconds
cpu time 2.46 seconds

```
MPRINT(SECOND): data Insl ( keep = pnr lastIns ) ;
MPRINT(SECOND): set allIns ( rename = ( eksd = lastIns ) ) ;
MPRINT(SECOND): by pnr ;
MPRINT(SECOND): if last.pnr then output ;
MPRINT(SECOND): run ;
```

NOTE: There were 15482901 observations read from the data set WORK.ALLINS.

NOTE: The data set WORK.INSL has 211406 observations and 2 variables.

NOTE: DATA statement used (Total process time):

real time 2.62 seconds
cpu time 2.62 seconds

```
125 options nomprint ;
126
127 title "Persons with antidiabetic drug purchase DK 1995-2021" ;
128 data DMdat.rmps ( label = "Antidiabetic drug purchase DK 1995-2019" ) ;
129 merge OAD OAD2 OAD1
130       Ins Ins2 Insl ;
131 by pnr ;
132 label doOAD = 'Date of 1st OAD'
133       atcOAD = 'Type of 1st OAD'
134       doOAD2 = 'Date of 2nd OAD'
135       lastOAD = 'Date of last OAD'
136       doIns = 'Date of 1st Ins'
137       atcIns = 'Type of 1st Ins'
138       doIns2 = 'Date of 2nd Ins'
139       lastIns = 'Date of last Ins' ;
140 format doOAD doOAD2 lastOAD doIns doIns2 lastIns ddmmyys10.
141       atcIns atcOAD $ATC_L1L1_KT. ;
142 run ;
```

NOTE: There were 533100 observations read from the data set WORK.OAD.

NOTE: There were 501806 observations read from the data set WORK.OAD2.

NOTE: There were 533100 observations read from the data set WORK.OADL.

NOTE: There were 211406 observations read from the data set WORK.INS.

NOTE: There were 192645 observations read from the data set WORK.INS2.

NOTE: There were 211406 observations read from the data set WORK.INSL.

NOTE: The data set DMDAT.RMPS has 598167 observations and 9 variables.

NOTE: DATA statement used (Total process time):

real time 0.46 seconds
cpu time 0.29 seconds

```
143
144 proc tabulate data = DMdat.rmps noseps missing ;
145     class doIns doOAD
146         atcIns atcOAD ;
147     var doIns2 doOAD2 ;
148     table all doOAD = "doOAD",
149           all * f=comma9.
150           doOAD2 = ' N(OAD2)' * n * f=comma8.
```

```

151          doIns2 = ' N(Ins2)' * n * f=comma8.
152          doIns = "doIns"          * f=comma7.
153          / rts = 7 ;
154          * table all atcIns, doIns * f=comma7. / rts = 40 ;
155          * table all atcOAD, doOAD * f=comma7. / rts = 40 ;
156          format doINS doOAD
157          doINS2 doOAD2 year4. ;
158          keylabel n = ' ' ;
159          run ;

```

NOTE: There were 598167 observations read from the data set DMDAT.RMPS.

NOTE: The PROCEDURE TABULATE printed pages 6-9.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      0.22 seconds
cpu time       0.26 seconds

```

```

160
161          proc contents data = DMdat.rmps ; run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):

```

real time      0.00 seconds
cpu time       0.01 seconds

```

NOTE: The PROCEDURE CONTENTS printed page 10.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:

```

real time      1:42.70
cpu time       1:48.73

```

04-rmps.lst

All filled prescriptions that counts

16:13 Wednesday, August 6, 2025 1

----- Ekspeditionsdato -----						
	1995	1996	1997	1998	1999	2000
All	551,778	614,775	658,034	717,554	778,158	806,767
ATC-kode 5. niveau						
A10AB01 insulin (human)	92,698	102,843	108,814	114,378	113,855	102,484
A10AB04 insulin lispro	.	427	2,466	4,684	7,941	7,852
A10AB05 insulin aspart	.	.	.	.	291	5,430
A10AB06 insulin glulisin	.	.	.	.	.	.
A10AC01 insulin (human)	118,117	127,474	132,144	141,435	147,619	142,368
A10AD01 insulin (human)	36,843	44,411	49,756	57,769	66,502	68,694
A10AD04 insulin lispro	.	.	.	.	189	629
A10AD05 insulin aspart	.	.	.	.	.	.
A10AD06 insulin degludec og insulin						
aspart	.	.	.	.	.	.
A10AE01 insulin (human)	.	26	38	44	42	35
A10AE04 insulin glargin	.	.	.	.	.	.
A10AE05 insulin detemir	.	.	.	.	.	.
A10AE06 insulin degludec	.	.	.	.	.	.
A10AE54 insulin glargin og lixisenatid	.	.	.	.	.	.
A10AE56 insulin degludec og liraglutid	.	.	.	.	.	.
A10BA02 metformin	74,044	85,832	94,607	107,417	131,075	168,330
A10BB01 glibenclamid	116,585	123,063	123,776	121,383	111,523	98,688
A10BB03 tolbutamid	45,778	47,238	45,832	43,341	38,553	33,836
A10BB04 glibornurid	117	.	.	.	.	.
A10BB07 glipizid	52,443	57,844	59,074	58,252	53,297	45,760
A10BB09 gliclazid	13,150	16,612	17,835	18,847	18,238	18,445
A10BB12 glimepirid	.	2,270	13,640	37,532	65,215	86,185
A10BD03 metformin og rosiglitazon	.	.	.	.	.	.
A10BD04 glimepirid og rosiglitazon	.	.	.	.	.	.

A10BD07	metformin og sitagliptin	.	.	.	.	.	.
A10BD08	metformin og vildagliptin	.	.	.	.	.	.
A10BD09	pioglitazon og alogliptin	.	.	.	.	.	.
A10BD10	metformin og saxagliptin	.	.	.	.	.	.
A10BD11	metformin og linagliptin	.	.	.	.	.	.
A10BD13	metformin og alogliptin	.	.	.	.	.	.
A10BD15	metformin og dapagliflozin	.	.	.	.	.	.
A10BD16	metformin og canagliflozin	.	.	.	.	.	.
A10BD19	linagliptin og empagliflozin	.	.	.	.	.	.
A10BD20	metformin og empagliflozin	.	.	.	.	.	.
A10BD21	saxagliptin og dapagliflozin	.	.	.	.	.	.
A10BD23	metformin og ertugliflozin	.	.	.	.	.	.
A10BD24	sitagliptin og ertugliflozin	.	.	.	.	.	.
A10BF01	acarbose	2,003	6,735	10,052	11,931	11,742	10,379
A10BG02	rosiglitazon	.	.	.	.	.	132
A10BG03	pioglitazon	.	.	.	.	.	7
A10BH01	sitagliptin	.	.	.	.	.	.
A10BH02	vildagliptin	.	.	.	.	.	.
A10BH03	saxagliptin	.	.	.	.	.	.
A10BH04	alogliptin	.	.	.	.	.	.
A10BH05	linagliptin	.	.	.	.	.	.
A10BJ01	exenatid	.	.	.	.	.	.
A10BJ03	lixisenatid	.	.	.	.	.	.
A10BJ05	dulaglutid	.	.	.	.	.	.
A10BK01	dapagliflozin	.	.	.	.	.	.
A10BK02	canagliflozin	.	.	.	.	.	.
A10BK03	empagliflozin	.	.	.	.	.	.
A10BK04	ertugliflozin	.	.	.	.	.	.
A10BX02	repaglinid	.	.	.	541	12,076	17,513
A10BX03	nateglinid	.	.	.	.	.	.
A10BX16	tirzepatid	.	.	.	.	.	.

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		Ekspeditionsdato					
		2001	2002	2003	2004	2005	2006
All		889,644	967,264	1047669	1157806	1267262	1381270
ATC-kode 5. niveau							
A10AB01	insulin (human)	104,262	102,212	87,304	78,345	72,774	67,113
A10AB04	insulin lispro	8,293	7,993	7,600	7,257	7,024	6,684
A10AB05	insulin aspart	11,231	19,269	31,886	43,471	55,675	68,486
A10AB06	insulin glulisin	.	.	.	.	.	43
A10AC01	insulin (human)	155,088	169,618	178,739	185,221	179,620	175,161
A10AD01	insulin (human)	77,765	83,570	83,453	84,922	83,574	78,584
A10AD04	insulin lispro	1,439	2,310	2,366	2,263	1,877	1,589
A10AD05	insulin aspart	.	1,417	11,596	26,578	41,255	59,854
A10AD06	insulin degludec og insulin aspart	.	.	.	.	.	.
A10AE01	insulin (human)	.	.	.	.	.	.
A10AE04	insulin glargin	.	.	.	2,913	14,282	20,093
A10AE05	insulin detemir	.	.	.	1,922	16,758	27,878
A10AE06	insulin degludec	.	.	.	.	.	.
A10AE54	insulin glargin og lixisenatid	.	.	.	.	.	.
A10AE56	insulin degludec og liraglutid	.	.	.	.	.	.
A10BA02	metformin	209,969	257,278	309,304	374,682	433,285	506,103
A10BB01	glibenclamid	85,037	73,003	64,856	57,075	51,970	48,907
A10BB03	tolbutamid	29,510	26,263	24,105	21,881	19,642	9,842
A10BB04	glibornurid	.	.	.	.	.	.
A10BB07	glipizid	41,788	37,800	35,123	33,447	31,208	29,220
A10BB09	gliclazid	20,503	24,734	28,01*	31,645	35,154	37,296
A10BB12	glimepirid	112,890	130,156	152,301	174,234	186,460	199,629
A10BD03	metformin og rosiglitazon	.	.	*	3,416	9,627	17,900
A10BD04	glimepirid og rosiglitazon	.	.	.	.	.	.
A10BD07	metformin og sitagliptin	.	.	.	.	.	.
A10BD08	metformin og vildagliptin	.	.	.	.	.	.

A10BD09	pioglitazon og alogliptin	.	.	.	.	.	.
A10BD10	metformin og saxagliptin	.	.	.	.	.	.
A10BD11	metformin og linagliptin	.	.	.	.	.	.
A10BD13	metformin og alogliptin	.	.	.	.	.	.
A10BD15	metformin og dapagliflozin	.	.	.	.	.	.
A10BD16	metformin og canagliflozin	.	.	.	.	.	.
A10BD19	linagliptin og empagliflozin	.	.	.	.	.	.
A10BD20	metformin og empagliflozin	.	.	.	.	.	.
A10BD21	saxagliptin og dapagliflozin	.	.	.	.	.	.
A10BD23	metformin og ertugliflozin	.	.	.	.	.	.
A10BD24	sitagliptin og ertugliflozin	.	.	.	.	.	.
A10BF01	acarbose	9,310	7,564	6,512	5,662	5,136	4,708
A10BG02	rosiglitazon	1,578	1,704	2,187	3,187	4,176	5,669
A10BG03	pioglitazon	1,268	2,101	2,129	1,895	1,634	1,471
A10BH01	sitagliptin	.	.	.	.	.	.
A10BH02	vildagliptin	.	.	.	.	.	.
A10BH03	saxagliptin	.	.	.	.	.	.
A10BH04	alogliptin	.	.	.	.	.	.
A10BH05	linagliptin	.	.	.	.	.	.
A10BJ01	exenatid	.	.	.	.	.	.
A10BJ03	lixisenatid	.	.	.	.	.	.
A10BJ05	dulaglutid	.	.	.	.	.	.
A10BK01	dapagliflozin	.	.	.	.	.	.
A10BK02	canagliflozin	.	.	.	.	.	.
A10BK03	empagliflozin	.	.	.	.	.	.
A10BK04	ertugliflozin	.	.	.	.	.	.
A10BX02	repaglinid	19,696	20,220	20,177	17,780	16,131	15,040
A10BX03	nateglinid	17	52	12	10	.	.
A10BX16	tirzepatid	.	.	.	.	.	.

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		Ekspeditionsdato					
		2007	2008	2009	2010	2011	2012
All		1488818	1625714	1712290	1785818	1856861	1919881
ATC-kode 5. niveau							
A10AB01	insulin (human)	62,286	57,088	50,983	44,991	24,215	21,663
A10AB04	insulin lispro	6,447	5,983	5,717	5,611	5,158	4,822
A10AB05	insulin aspart	80,842	94,346	105,483	116,233	136,251	145,464
A10AB06	insulin glulisin	78	755	1,664	1,998	2,377	1,970
A10AC01	insulin (human)	170,641	158,321	139,359	128,372	117,943	112,348
A10AD01	insulin (human)	71,820	52,642	10,443	8,640	7,422	6,514
A10AD04	insulin lispro	1,324	1,179	1,022	765	653	554
A10AD05	insulin aspart	79,968	100,538	135,352	127,220	118,000	111,075
A10AD06	insulin degludec og insulin aspart	.	.	.	.	.	.
A10AE01	insulin (human)	.	.	.	.	.	.
A10AE04	insulin glargin	24,482	34,046	48,927	62,081	74,578	89,318
A10AE05	insulin detemir	36,679	56,127	77,584	86,564	92,706	96,748
A10AE06	insulin degludec	.	.	.	.	.	.
A10AE54	insulin glargin og lixisenatid	.	.	.	.	.	.
A10AE56	insulin degludec og liraglutid	.	.	.	.	.	.
A10BA02	metformin	573,113	662,697	733,620	814,596	911,024	978,852
A10BB01	glibenclamid	43,368	38,100	32,995	27,310	22,059	17,838
A10BB03	tolbutamid	8,891	7,633	6,322	5,617	4,401	3,446
A10BB04	glibornurid	.	.	.	.	.	.
A10BB07	glipizid	26,007	23,548	20,472	15,846	12,749	10,388
A10BB09	gliclazid	38,021	37,401	34,601	32,099	29,641	26,432
A10BB12	glimepirid	207,941	214,071	206,689	198,789	185,914	164,031
A10BD03	metformin og rosiglitazon	25,020	23,192	20,276	15,065	86	.
A10BD04	glimepirid og rosiglitazon	49	63	95	69	.	.
A10BD07	metformin og sitagliptin	.	1,035	8,807	14,767	21,923	26,480
A10BD08	metformin og vildagliptin	.	996	7,255	15,896	25,899	32,378
A10BD09	pioglitazon og alogliptin	.	.	.	.	.	.
A10BD10	metformin og saxagliptin	.	.	.	.	.	.

A10BD11	metformin og linagliptin	.	.	.	.	.	6
A10BD13	metformin og alogliptin	.	.	.	.	.	.
A10BD15	metformin og dapagliflozin	.	.	.	.	.	.
A10BD16	metformin og canagliflozin	.	.	.	.	.	.
A10BD19	linagliptin og empagliflozin	.	.	.	.	.	.
A10BD20	metformin og empagliflozin	.	.	.	.	.	.
A10BD21	saxagliptin og dapagliflozin	.	.	.	.	.	.
A10BD23	metformin og ertugliflozin	.	.	.	.	.	.
A10BD24	sitagliptin og ertugliflozin	.	.	.	.	.	.
A10BF01	acarbose	4,183	3,790	3,015	2,459	2,092	1,796
A10BG02	rosiglitazon	6,871	6,008	5,553	4,250	.	.
A10BG03	pioglitazon	1,464	1,577	1,555	603	1,411	1,130
A10BH01	sitagliptin	5,403	27,151	31,679	34,144	38,073	41,770
A10BH02	vildagliptin	.	160	1,764	4,006	5,978	7,321
A10BH03	saxagliptin	.	.	42	2,734	5,646	6,672
A10BH04	alogliptin	.	.	.	.	.	.
A10BH05	linagliptin	.	.	.	.	58	1,174
A10BJ01	exenatid	358	5,085	10,827	6,228	3,434	3,651
A10BJ03	lixisenatid	.	.	.	.	.	.
A10BJ05	dulaglutid	.	.	.	.	.	.
A10BK01	dapagliflozin	.	.	.	.	.	20
A10BK02	canagliflozin	.	.	.	.	.	.
A10BK03	empagliflozin	.	.	.	.	.	.
A10BK04	ertugliflozin	.	.	.	.	.	.
A10BX02	repaglinid	13,562	12,182	10,189	8,865	7,170	6,020
A10BX03	nateglinid	.	.	.	.	.	.
A10BX16	tirzepatid	.	.	.	.	.	.

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		Ekspeditionsdato					
		2013	2014	2015	2016	2017	2018
All		1933347	1949747	1949215	2030475	2093946	2132922
ATC-kode 5. niveau							
A10AB01	insulin (human)	20,469	19,921	19,703	18,774	17,498	16,500
A10AB04	insulin lispro	4,483	4,303	4,183	3,976	3,696	3,414
A10AB05	insulin aspart	150,929	156,001	161,815	169,673	178,676	188,132
A10AB06	insulin glulisin	2,404	2,806	3,267	3,837	4,099	4,008
A10AC01	insulin (human)	110,587	108,261	102,467	90,930	74,103	60,490
A10AD01	insulin (human)	5,646	4,824	4,266	3,613	2,837	2,279
A10AD04	insulin lispro	458	442	443	379	256	101
A10AD05	insulin aspart	105,74*	100,778	93,193	80,481	65,238	53,586
A10AD06	insulin degludec og insulin aspart	.	22	51	72	116	182
A10AE01	insulin (human)	.	.	.	.	.	.
A10AE04	insulin glargin	103,208	123,205	150,260	172,172	174,125	174,435
A10AE05	insulin detemir	95,574	92,329	87,122	71,676	52,332	39,934
A10AE06	insulin degludec	868	3,827	6,800	40,145	89,318	123,262
A10AE54	insulin glargin og lixisenatid	.	.	.	.	.	63
A10AE56	insulin degludec og liraglutid	.	.	.	.	4,065	9,514
A10BA02	metformin	988,203	981,484	948,308	977,284	990,839	982,552
A10BB01	glibenclamid	13,498	7,438	5,178	4,076	2,960	2,169
A10BB03	tolbutamid	2,462	1,319	877	661	294	.
A10BB04	glibornurid	.	.	.	.	.	.
A10BB07	glipizid	8,226	6,887	5,797	4,599	1,947	1,494
A10BB09	gliclazid	23,474	21,163	18,727	16,543	14,439	13,006
A10BB12	glimepirid	144,207	130,791	117,626	105,761	93,697	79,093
A10BD03	metformin og rosiglitazon	.	.	.	.	.	.
A10BD04	glimepirid og rosiglitazon	.	.	.	.	.	.
A10BD07	metformin og sitagliptin	32,150	37,356	43,735	50,239	57,105	61,564
A10BD08	metformin og vildagliptin	37,137	40,963	41,957	42,971	42,868	41,817
A10BD09	pioglitazon og alogliptin	.	14	11	26	18	.
A10BD10	metformin og saxagliptin	13	45	58	92	132	118
A10BD11	metformin og linagliptin	134	365	427	615	663	727
A10BD13	metformin og alogliptin	.	574	2,184	2,920	3,069	3,088

A10BD15	metformin og dapagliflozin	.	271	762	1,931	2,968	5,120
A10BD16	metformin og canagliflozin	.	.	61	143	11	.
A10BD19	linagliptin og empagliflozin	.	.	.	.	.	29
A10BD20	metformin og empagliflozin	.	.	105	2,385	6,410	11,484
A10BD21	saxagliptin og dapagliflozin	.	.	.	.	145	36*
A10BD23	metformin og ertugliflozin	.	.	.	.	.	*
A10BD24	sitagliptin og ertugliflozin	.	.	.	.	.	14
A10BF01	acarbose	1,533	909	769	268	.	.
A10BG02	rosiglitazon	.	.	.	.	.	.
A10BG03	pioglitazon	908	514	340	269	316	333
A10BH01	sitagliptin	43,730	46,740	50,254	54,895	59,303	62,074
A10BH02	vildagliptin	9,529	12,757	14,007	13,516	12,990	12,610
A10BH03	saxagliptin	6,064	5,677	5,140	4,432	3,692	3,136
A10BH04	alogliptin	7	671	1,869	2,611	3,103	3,241
A10BH05	linagliptin	6,446	12,489	18,435	24,694	29,246	30,588
A10BJ01	exenatid	3,660	2,901	2,912	2,747	2,008	1,656
A10BJ03	lixisenatid	90	777	859	620	495	357
A10BJ05	dulaglutid	.	.	173	3,436	10,651	15,181
A10BK01	dapagliflozin	6,231	15,398	24,460	30,119	37,995	45,928
A10BK02	canagliflozin	.	256	1,569	2,370	2,403	3,207
A10BK03	empagliflozin	.	365	4,357	20,547	44,343	73,138
A10BK04	ertugliflozin	.	.	.	.	.	34
A10BX02	repaglinid	5,270	4,904	4,688	3,977	3,477	2,896
A10BX03	nateglinid	.	.	.	.	.	.
A10BX16	tirzepatid	.	.	.	.	.	.

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		Ekspeditionsdato					
		2019	2020	2021	2022	2023	2024
All		2159145	2218664	2050745	1987281	2004532	1983373
ATC-kode 5. niveau							
A10AB01	insulin (human)	15,384	14,186	12,222	8,947	3,011	793
A10AB04	insulin lispro	3,252	3,257	3,172	2,524	1,151	1,462
A10AB05	insulin aspart	195,408	205,006	211,661	222,300	232,657	237,737
A10AB06	insulin glulisin	3,950	3,910	3,787	2,970	1,270	914
A10AC01	insulin (human)	49,303	39,703	31,612	24,620	18,616	14,644
A10AD01	insulin (human)	1,869	1,562	1,202	949	748	264
A10AD04	insulin lispro	82	73	92	71	49	28
A10AD05	insulin aspart	43,056	35,487	29,186	24,142	20,159	16,668
A10AD06	insulin degludec og insulin aspart	169	131	113	89	62	55
A10AE01	insulin (human)	.	.	.	.	.	.
A10AE04	insulin glargin	176,075	182,262	186,222	193,431	202,260	203,444
A10AE05	insulin detemir	31,514	25,501	21,041	18,731	17,510	13,849
A10AE06	insulin degludec	143,859	152,829	152,895	150,527	143,554	136,362
A10AE54	insulin glargin og lixisenatid	97	28	.	.	.	.
A10AE56	insulin degludec og liraglutid	9,238	7,725	6,058	4,596	3,441	2,755
A10BA02	metformin	989,852	1020544	1026472	1062452	1106916	1083634
A10BB01	glibenclamid	1,538	1,199	827	60	.	.
A10BB03	tolbutamid	.	.	.	.	.	.
A10BB04	glibornurid	.	.	.	.	.	.
A10BB07	glipizid	1,095	852	673	585	543	387
A10BB09	gliclazid	11,886	10,810	9,404	8,778	8,265	8,817
A10BB12	glimepirid	65,832	57,222	48,514	42,035	36,132	36,671
A10BD03	metformin og rosiglitazon	.	.	.	.	.	.
A10BD04	glimepirid og rosiglitazon	.	.	.	.	.	.
A10BD07	metformin og sitagliptin	60,259	55,532	48,234	43,569	38,956	37,463
A10BD08	metformin og vildagliptin	38,709	35,050	29,444	19,692	11,354	11,050
A10BD09	pioglitazon og alogliptin	.	.	.	.	.	.
A10BD10	metformin og saxagliptin	124	110	113	90	101	22
A10BD11	metformin og linagliptin	611	484	309	282	276	208
A10BD13	metformin og alogliptin	2,866	2,450	2,101	1,931	1,693	1,396
A10BD15	metformin og dapagliflozin	7,508	9,832	12,743	14,074	16,351	18,128
A10BD16	metformin og canagliflozin	103	467	511	523	471	412

A10BD19	linagliptin og empagliflozin	135	170	167	188	230	145
A10BD20	metformin og empagliflozin	16,717	20,736	24,908	27,308	30,501	34,091
A10BD21	saxagliptin og dapagliflozin	325	276	205	183	186	146
A10BD23	metformin og ertugliflozin	39	48	56	60	10	.
A10BD24	sitagliptin og ertugliflozin	63	53	40	23	9	.
A10BF01	acarbose	.	.	.	.	.	.
A10BG02	rosiglitazon	.	.	.	.	.	.
A10BG03	pioglitazon	345	378	378	198	.	.
A10BH01	sitagliptin	61,958	59,536	55,070	51,264	48,783	66,018
A10BH02	vildagliptin	11,877	11,287	10,481	9,612	7,651	8,222
A10BH03	saxagliptin	2,626	2,054	1,415	1,096	982	779
A10BH04	alogliptin	3,356	3,344	3,273	2,973	2,706	2,119
A10BH05	linagliptin	31,001	30,327	28,509	26,624	24,581	22,233
A10BJ01	exenatid	1,164	815	593	402	15	.
A10BJ03	lixisenatid	261	146	.	.	.	.
A10BJ05	dulaglutid	12,926	11,951	10,655	8,776	13,584	11,890
A10BK01	dapagliflozin	53,132	67,965	.	.	.	.
A10BK02	canagliflozin	5,776	8,959	9,387	8,629	8,200	7,760
A10BK03	empagliflozin	101,158	132,048	64,897	.	.	.
A10BK04	ertugliflozin	141	167	204	209	51	.
A10BX02	repaglinid	2,506	2,192	1,899	1,768	1,497	1,232
A10BX03	nateglinid	.	.	.	.	.	.
A10BX16	tirzepatid	.	.	.	.	.	1,575

Persons with antidiabetic drug purchase DK 1995-2021

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----- doIns -----									
	All	N(OAD2)	N(Ins2)	.	1995	1996	1997	1998	1999
All	598,167	501,806	192,645	386,761	33,523	4,816	4,026	4,370	4,808
doOAD									
.	65,067	0	59,408	.	27,052	1,999	1,196	1,142	1,125
1995	49,059	47,405	22,098	25,747	2,705	2,165	1,970	2,001	2,069
1996	10,919	10,204	4,982	5,680	371	290	262	280	321
1997	10,161	9,483	4,613	5,288	268	49	274	249	275
1998	11,181	10,528	5,256	5,629	277	27	62	329	304
1999	11,441	10,764	5,313	5,835	292	32	29	75	381
2000	11,547	10,950	5,244	5,987	271	28	25	37	63
2001	12,246	11,692	5,533	6,373	230	15	19	24	30
2002	12,114	11,546	5,277	6,475	213	24	20	20	36
2003	14,291	13,698	5,917	7,972	177	16	21	18	28
2004	14,693	13,980	5,505	8,720	123	17	8	16	21
2005	14,490	13,899	5,437	8,633	119	7	8	11	18
2006	15,039	14,384	5,233	9,386	99	9	15	14	16
2007	16,503	15,824	5,282	10,740	124	13	14	24	15
2008	18,241	17,476	5,205	12,516	112	13	9	12	13
2009	19,101	18,301	4,993	13,572	129	13	9	16	12
2010	21,145	20,272	4,865	15,740	99	5	9	9	10
2011	24,846	23,870	4,586	19,660	99	10	7	16	6
2012	21,779	20,761	3,860	17,370	106	9	6	13	5
2013	15,948	15,205	3,093	12,42*	78	4	5	9	*
2014	14,884	14,228	2,770	11,701	54	11	5	*	*
2015	16,672	15,937	2,678	13,544	43	8	8	4	8
2016	17,647	16,923	2,492	14,718	53	4	6	*	*
2017	16,909	16,279	2,321	14,206	55	5	7	10	6
2018	16,743	16,111	2,015	14,334	47	8	6	7	7
2019	17,388	16,650	1,950	15,040	79	4	5	7	10
2020	19,588	18,564	1,788	17,38*	82	5	8	5	*
2021	21,752	20,479	1,571	19,754	51	6	*	6	*
2022	22,322	20,778	1,377	20,56*	46	10	4	*	5
2023	22,279	20,360	1,132	20,789	37	7	*	4	*
2024	22,172	15,255	851	20,983	32	*	*	4	*

(Continued)

Persons with antidiabetic drug purchase DK 1995-2021

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	doIns									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
All	4,963	4,875	5,212	5,962	6,398	6,236	6,298	6,548	6,212	6,296
doOAD										
.	1,130	1,118	1,148	1,108	1,180	1,174	1,244	1,251	1,278	1,262
1995	1,854	1,413	1,419	1,407	1,205	933	773	628	439	365
1996	365	327	335	356	363	281	277	244	177	152
1997	269	336	308	376	347	321	267	233	190	141
1998	303	336	334	431	410	361	311	325	239	200
1999	281	285	323	407	418	349	339	340	278	233
2000	404	290	270	382	379	383	346	354	281	267
2001	70	452	302	371	392	398	362	409	332	305
2002	35	60	460	323	379	355	349	339	301	317
2003	24	34	63	477	404	405	416	436	370	373
2004	24	28	33	61	558	374	345	342	378	350
2005	21	25	31	20	62	599	358	365	324	346
2006	14	19	19	31	34	60	567	354	323	366
2007	14	16	21	17	33	44	64	616	325	329
2008	21	14	16	30	30	23	34	74	684	318
2009	16	15	17	18	27	18	34	33	67	713
2010	10	16	17	15	22	23	27	39	30	74
2011	16	14	14	23	21	25	28	27	30	33
2012	13	12	6	13	17	19	25	20	21	27
2013	1*	9	12	12	12	12	20	12	18	17
2014	5	12	6	13	10	7	21	23	24	9
2015	5	4	6	6	18	12	15	18	16	10
2016	8	*	5	5	13	6	8	7	8	12
2017	7	8	6	12	17	9	10	10	21	10
2018	8	9	7	11	11	10	14	12	14	11
2019	10	8	7	11	9	8	10	12	1*	11
2020	7	*	8	4	*	1*	11	*	9	15
2021	5	5	4	6	6	4	4	6	9	9
2022	6	*	5	8	6	5	9	6	6	11
2023	4	.	6	*	7	*	6	9	6	6
2024	*	4	4	*	*	4	4	*	*	4

(Continued)

Persons with antidiabetic drug purchase DK 1995-2021

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	doIns									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All	5,981	6,297	6,332	6,635	6,679	7,027	7,191	7,394	6,949	6,387
doOAD										
.	1,265	1,191	1,135	1,335	1,308	1,259	1,299	1,403	1,354	1,379
1995	313	290	238	202	175	143	133	109	68	85
1996	121	115	92	82	77	70	44	56	53	32
1997	140	138	116	82	81	80	65	46	47	47
1998	180	170	150	145	92	91	90	84	67	39
1999	186	187	173	164	140	134	120	93	83	60
2000	211	219	197	161	171	165	119	115	79	74
2001	260	245	241	233	176	161	158	131	120	105
2002	256	258	228	228	225	204	178	195	142	117
2003	302	334	289	284	279	257	241	208	185	145
2004	294	343	301	320	274	279	285	237	195	165
2005	310	320	349	314	286	313	282	279	217	168
2006	307	328	328	304	306	301	309	304	214	204
2007	288	334	334	357	377	358	337	331	281	198
2008	286	278	336	359	358	375	361	378	283	254
2009	298	297	305	338	349	368	360	343	307	257
2010	702	318	272	278	307	386	402	382	340	285
2011	70	706	309	280	304	317	374	367	359	297

2012	57	58	714	289	262	257	292	315	315	244
2013	20	20	68	691	226	250	249	270	258	181
2014	24	21	21	61	708	260	243	230	230	197
2015	6	18	28	26	65	788	275	257	252	211
2016	15	17	22	13	37	62	782	256	224	222
2017	7	20	13	20	18	33	65	823	254	190
2018	12	13	13	8	19	28	29	63	815	217
2019	7	18	10	16	15	19	31	31	98	852
2020	12	11	14	13	14	16	18	30	42	84
2021	6	8	10	8	6	20	13	16	23	35
2022	13	10	10	6	14	18	9	15	16	18
2023	5	4	9	5	4	5	13	16	17	11
2024	8	8	7	13	6	10	15	11	11	14

(Continued)

Persons with antidiabetic drug purchase DK 1995-2021

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doIns					
	2020	2021	2022	2023	2024
All	6,718	7,094	6,986	6,703	6,490
doOAD					
.	1,453	1,563	1,543	1,579	1,594
1995	65	45	44	32	24
1996	23	18	28	14	13
1997	36	28	29	18	17
1998	47	51	38	36	23
1999	51	49	43	26	35
2000	77	68	39	54	31
2001	83	83	70	52	44
2002	77	92	92	71	45
2003	120	126	115	90	82
2004	142	150	111	98	101
2005	162	169	140	118	116
2006	177	205	146	152	128
2007	211	188	167	191	142
2008	226	240	223	188	177
2009	262	243	269	195	201
2010	276	260	289	247	256
2011	302	287	306	274	265
2012	253	286	270	253	232
2013	230	257	188	187	195
2014	193	210	208	193	177
2015	193	212	203	196	217
2016	211	231	225	230	233
2017	209	209	216	200	233
2018	223	216	190	200	181
2019	255	214	226	164	189
2020	972	249	196	195	161
2021	105	998	261	191	171
2022	38	86	967	234	176
2023	22	34	104	928	209
2024	24	27	40	97	822

Persons with antidiabetic drug purchase DK 1995-2021

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The CONTENTS Procedure

Data Set Name	DMDAT.RMPS	Observations	598167
Member Type	DATA	Variables	9
Engine	V9	Indexes	0
Created	06/08/2025 16:14:46	Observation Length	68
Last Modified	06/08/2025 16:14:46	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO

Label Antidiabetic drug purchase DK 1995-2019
 Data Representation WINDOWS_64
 Encoding wlatin1 Western (Windows)

Engine/Host Dependent Information

Data Set Page Size 65536
 Number of Data Set Pages 623
 First Data Page *
 Max Obs per Page 961
 Obs in First Data Page 930
 Number of Data Set Repairs 0
 ExtendObsCounter YES
 Filename E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\rmpts.sas7bdat
 Release Created 9.0401M8
 Host Created X64_SRV22
 Owner Name DSTFSE\FDIY709873
 File Size 39MB
 File Size (bytes) 40894464

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat	Label
7	atcIns	Char	8	\$ATC_L1L1_KT.		Type of 1st Ins
3	atcOAD	Char	8	\$ATC_L1L1_KT.		Type of 1st OAD
6	doIns	Num	4	DDMMYY10.	DATE9.	Date of 1st Ins
8	doIns2	Num	4	DDMMYY10.	DATE9.	Date of 2nd Ins
2	doOAD	Num	4	DDMMYY10.	DATE9.	Date of 1st OAD
4	doOAD2	Num	4	DDMMYY10.	DATE9.	Date of 2nd OAD
9	lastIns	Num	4	DDMMYY10.	DATE9.	Date of last Ins
5	lastOAD	Num	4	DDMMYY10.	DATE9.	Date of last OAD
1	pnr	Char	28			mother pnr

4.9 05-hba1c

Reads data from the hba1 file with HbA_{1c} measurements from DVDD and LABKA, in order to include persons with two consecutive HbA_{1c} measurements over 48. Derives doHbA and lastHbA

1 "Program: 05-hba1c.sas" 16:14 Wednesday, August 6, 2025

NOTE: AUTOEXEC processing completed.

```
1      libname sds list ;
NOTE: Libref=   SDS
      Scope=   Program 05-hba1c.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\SDS
      Owner Name= DSTFSE\neo
      File Size=           OKB
      File Size (bytes)= 0
2      libname rkkp list ;
NOTE: Libref=   RKKP
      Scope=   Program 05-hba1c.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\RKKP
```

```

Filename= E:\ProjektDB\SDCC\Rawdata\709873\Eksterne data\POPA\RKKP
Owner Name= DSTFSE\MIA
File Size= OKB
File Size (bytes)= 0
3      libname DMdat list ;
NOTE: Libref= DMDAT
Scope= Program 05-hba1c.sas
Engine= V9
Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
Owner Name= DSTFSE\FDIY709873
File Size= OKB
File Size (bytes)= 0
4      %put yrf = &yrf. yrl = &yrl. ini = &ini. end = &end. ;
yrf = 1996 yrl = 2024 ini = '01JAN1996'd end = '31DEC2024'd
5
6      *-----
7      HbA1c measurements from DVDD
8      -----;
9      title1 "HbA1c measurements from DVDD" ;
10     data dvh (keep = pnr HbA1c doHbA) ;
11         set RKKP.dvdd_lev1 (rename = (cpr_nr = pnr
12                                 status_dato = doHbA) ) ;
13
14     * if either date or measurement value is missing it is useless ;
15     if not (missing(HbA1c) or missing(doHbA)) ;
16
17     * early entries considered errors only use 2005+ ;
18     if doHbA gt '31DEC2004'd ;
19
20     * convert percent to mmol/mol -
21     conversion formula is only sensible for percentages >= 3 ;
22     if HbA1c_npu eq "NPU03835" then do ;
23         if HbA1c < 3 then delete ;
24         HbA1c = 10.93 * HbA1c - 23.54 ;
25     end ;
26     run ;

```

NOTE: There were 725691 observations read from the data set RKKP.DVDD_LEV1.

NOTE: The data set WORK.DVH has 691562 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

real time      1.19 seconds
cpu time       0.34 seconds

```

```

27
28     *-----
29     HbA1c measurements from DDID
30     -----;
31     title1 "HbA1c measurements from DDID" ;
32     data dih (keep = pnr HbA1c doHbA) ;
33         set RKKP.ddid_lev1 (rename = (cpr = pnr
34                                 HbA1c_seneste = HbA1c
35                                 HbA1c_seneste_Dato = doHbA) ) ;
36
37     * if either date or measurement value is missing it is useless ;
38     if not (missing(HbA1c) or missing(doHbA)) ;
39
40     * early entries considered errors only use 2005+ ;
41     if doHbA gt '31DEC2004'd ;
42
43     * it is assumed that all measurements in DDID are i mmol/mol ;
44     run ;

```

NOTE: There were 107584 observations read from the data set RKKP.DDID_LEV1.

NOTE: The data set WORK.DIH has 101894 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

real time      0.13 seconds
cpu time       0.01 seconds

```

```

45
46     data dh ;
47         set dvh (in = v) dih ;
48         if v then opr = "dvdd" ; else opr = "didd" ;
49     run ;

```

NOTE: There were 691562 observations read from the data set WORK.DVH.
 NOTE: There were 101894 observations read from the data set WORK.DIH.
 NOTE: The data set WORK.DH has 793456 observations and 4 variables.
 NOTE: DATA statement used (Total process time):
 real time 0.12 seconds
 cpu time 0.12 seconds

```

50
51     title1 "HbA1c from RKKP sources" ;
52     proc tabulate data = dh missing noseps ;
53         class doHbA opr ;
54         var HbA1c ;
55         table all doHbA,
56             opr * f=comma9.
57             HbA1c * (n * f=comma9.
58                 (p5 p25 p50 p75 p95) * f=7.1)
59             / rts = 14 ;
60         format doHbA year4. ;
61     run ;

```

NOTE: There were 793456 observations read from the data set WORK.DH.
 NOTE: The PROCEDURE TABULATE printed page 1.
 NOTE: PROCEDURE TABULATE used (Total process time):
 real time 0.29 seconds
 cpu time 0.62 seconds

```

62     title1 ;
63
64     *-----
65     HbA1c measurements from LABKA
66     *-----;
67     data labka ;
68         set sds.lab_dm_forsker_lev1_til20240806 (rename = (PATIENT_CPR = pnr))
69             sds.lab_dm_forsker_lev1_fra20240801 (rename = (PATIENT_CPR = pnr)) ;
70     run ;

```

NOTE: There were 61429464 observations read from the data set
 SDS.LAB_DM_FORSKER_LEV1_TIL20240806.
 NOTE: There were 1979095 observations read from the data set
 SDS.LAB_DM_FORSKER_LEV1_FRA20240801.
 NOTE: The data set WORK.LABKA has 63408559 observations and 6 variables.
 NOTE: DATA statement used (Total process time):
 real time 1:52.29
 cpu time 36.50 seconds

```

71
72     title1 "HbA1c measurements directly from LABKA" ;
73     proc contents data = labka varnum ; run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):
 real time 0.01 seconds
 cpu time 0.00 seconds

NOTE: The PROCEDURE CONTENTS printed page 2.

```

74
75     * Background for the fidgeting with the values
76     - results NOT to be transmitted ;
77     proc tabulate data = labka noseps missing ;
78         class analysiscode value unit samplingdate ;

```

```

79      table all analysiscode samplingdate,
80          unit * f=comma12. / rts = 15 ;
81      * table value,
82          unit * f=comma12. / rts = 15 ; * too long ;
83      format samplingdate year4. ;
84      run ;

```

NOTE: There were 63408559 observations read from the data set WORK.LABKA.

NOTE: The PROCEDURE TABULATE printed page 3.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      12.19 seconds
cpu time       37.89 seconds

```

```

85      title1 ;
86
87      data labka (keep = pnr HbA1c doHbA) ;
88      set labka (rename = (SAMPLINGDATE = doHbA)) ;
89
90      * only NPU27300 - data are duplicated ;
91      if analysiscode eq 'NPU27300' ;
92
93      * early entries considered errors ;
94      if doHbA gt '31DEC2004'd ;
95
96      * incredible and untranslatable values deleted ;
97      if VALUE in ("0", "Positiv", "Negativ") then delete ;
98      if substr(VALUE, 1, 1) in ("<", ">") then delete ;
99
100     * comma to dot ;
101     VALUE = translate(VALUE, '.', ',') ;
102
103     * convert to numeric ;
104     HbA1c = input(VALUE, best10.) ;
105     if HbA1c < 100 ; * only in credible range ;
106
107     run ;

```

NOTE: There were 63408559 observations read from the data set WORK.LABKA.

NOTE: The data set WORK.LABKA has 31513923 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```

real time      16.68 seconds
cpu time       16.14 seconds

```

```

108
109     title1 "HbA1c measurements from LABKA" ;
110     proc tabulate data = labka missing noseps ;
111         where doHbA gt '01JAN2006'd ; * avoiding quantiles based on few persons ;
112         class doHbA ;
113         var HbA1c ;
114         table doHbA,
115             n * f=comma7.
116             HbA1c * (p5 p25 p50 p75 p95) * f=5.1
117             / rts = 13 ;
118         format doHbA year4. ;
119     run ;

```

NOTE: There were 31513923 observations read from the data set WORK.LABKA.

WHERE doHbA>'01JAN2006'D;

NOTE: The PROCEDURE TABULATE printed page 4.

NOTE: PROCEDURE TABULATE used (Total process time):

```

real time      7.00 seconds
cpu time       16.42 seconds

```

```

120
121     *-----
122     collect all HbA1c measurements from RKKP and LABKA
123     -----;

```

```
124      data labka ; set labka dh ; run ;
```

NOTE: There were 31513923 observations read from the data set WORK.LABKA.

NOTE: There were 793456 observations read from the data set WORK.DH.

NOTE: The data set WORK.LABKA has 32307379 observations and 4 variables.

NOTE: DATA statement used (Total process time):

```
      real time      5.01 seconds
      cpu time       4.78 seconds
```

```
125
```

```
126      *-----
127      Sort the dataset with HbA1c descending within sampling date for each
128      person so that we take the largest recorded value if more than one is
129      recorded on the same day.
```

```
130      -----;
```

```
131      proc sort  data = labka ; by pnr doHbA descending HbA1c ; run ;
```

NOTE: There were 32307379 observations read from the data set WORK.LABKA.

NOTE: The data set WORK.LABKA has 32307379 observations and 4 variables.

NOTE: PROCEDURE SORT used (Total process time):

```
      real time      5.99 seconds
      cpu time       17.65 seconds
```

```
132
```

```
133      * Remove HbA-measurements during pregnancy ;
134      options mprint ;
135      data labka (keep = pnr HbA1c doHbA) ;
136      merge labka (in = lab)
137      DMdat.gdmint
138      DMdat.pop ( in = pop keep = pnr doBth sex ) ;
139      by pnr ;
140      if lab and pop ;
141      %xgdm( doHbA ) ;
```

```
MPRINT(XGDM):  if doGst1 < doHbA < doBth1 then delete ;
MPRINT(XGDM):  if doGst2 < doHbA < doBth2 then delete ;
MPRINT(XGDM):  if doGst3 < doHbA < doBth3 then delete ;
MPRINT(XGDM):  if doGst4 < doHbA < doBth4 then delete ;
MPRINT(XGDM):  if doGst5 < doHbA < doBth5 then delete ;
MPRINT(XGDM):  if doGst6 < doHbA < doBth6 then delete ;
MPRINT(XGDM):  if doGst7 < doHbA < doBth7 then delete ;
MPRINT(XGDM):  if doGst8 < doHbA < doBth8 then delete ;
MPRINT(XGDM):  if doGst9 < doHbA < doBth9 then delete ;
MPRINT(XGDM):  if doGst10 < doHbA < doBth10 then delete ;
MPRINT(XGDM):  if doGst11 < doHbA < doBth11 then delete ;
MPRINT(XGDM):  if doGst12 < doHbA < doBth12 then delete ;
MPRINT(XGDM):  if doGst13 < doHbA < doBth13 then delete ;
MPRINT(XGDM):  if doGst14 < doHbA < doBth14 then delete ;
MPRINT(XGDM):  if doGst15 < doHbA < doBth15 then delete ;
```

```
142      run ;
```

NOTE: There were 32307379 observations read from the data set WORK.LABKA.

NOTE: There were 1648098 observations read from the data set DMDAT.GDMINT.

NOTE: There were 11311307 observations read from the data set DMDAT.POP.

NOTE: The data set WORK.LABKA has 32074549 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```
      real time      16.46 seconds
      cpu time       13.43 seconds
```

```
143      options nomprint ;
```

```
144
```

```
145      * if two measurements on the same day, take first (i.e. largest) ;
```

```
146      data labka ;
```

```
147      set labka ;
```

```
148      by pnr doHbA descending HbA1c ;
```

```
149      if first.doHbA ;
```

```
150      run ;
```

NOTE: There were 32074549 observations read from the data set WORK.LABKA.

NOTE: The data set WORK.LABKA has 31802317 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```
real time      7.24 seconds
cpu time       7.01 seconds
```

```
151
152 *-----
153 Now extract (at most) one record per person, namely the record with
154 the first occurrence of a second consecutive HbA1c >= 48
155 Also collect the last date of HbA measurement for included persons
156 -----;
157 title1 'Date with second consecutive HbA1c >= 48' ;
158 data hba1c (keep = pnr doHbA HbA1c lagHb)
159       hbalast (keep = pnr lastHbA) ;
160 set labka ;
161 by pnr ;
162 retain pdone ;
163
164 * previous HbA1c and distance in days ;
165 lagHb = lag1(HbA1c) ;
166 difHb = dif1(doHbA) ;
167
168 * reset indicator of completed output to 0 at each new person ;
169 if first.pnr then pdone = 0 ;
170
171 * select records to use as doHbA, namely two consecutive measurements
172   at least one day apart, both at least 48 mmol/mol ;
173 * 'not first.pnr' ensures that HbA1c and lagHb are from same person ;
174 if (not first.pnr) and
175     (not pdone) and
176     (lagHb ge 48) and
177     (HbA1c ge 48) and
178     (difHb ge 1) then do ;
179         output hba1c ;
180         pdone = 1 ;
181         end ;
182 if last.pnr and
183     pdone then do ;
184         lastHbA = doHbA ;
185         output hbalast ;
186         end ;
187 run ;
```

NOTE: There were 31802317 observations read from the data set WORK.LABKA.

NOTE: The data set WORK.HBA1C has 439904 observations and 4 variables.

NOTE: The data set WORK.HBALAST has 439904 observations and 2 variables.

NOTE: DATA statement used (Total process time):

```
real time      4.90 seconds
cpu time       4.90 seconds
```

```
188
189 data DMdat.hba (label = "HbA1c events for DMreg") ;
190 merge hba1c
191       hbalast ;
192 by pnr ;
193 label doHbA = "Date of 2nd value >= 48"
194       HbA1c = "HbA1c (2nd value >= 48)"
195       lagHb = "HbA1c (1st value >= 48)"
196       lastHbA = "Date of last HbA1c" ;
197 format doHbA lastHbA ddmmyy10. ;
198 run ;
```

NOTE: There were 439904 observations read from the data set WORK.HBA1C.

NOTE: There were 439904 observations read from the data set WORK.HBALAST.

NOTE: The data set DMDAT.HBA has 439904 observations and 5 variables.

NOTE: DATA statement used (Total process time):

```
real time      0.28 seconds
```

cpu time 0.10 seconds

```

199
200     title1 "HbA1c measurements triggering inclusion" ;
201     proc tabulate data = DMdat.hba missing noseps ;
202         where doHbA gt '01JAN2006'd ; * avoiding quantiles based on few persons ;
203         class doHbA ;
204         var HbA1c lagHb ;
205         table doHbA,
206             n * f=comma7.
207             (lagHb HbA1c) * (p10 p25 p50 p75 p90) * f=5.1
208             / rts = 13 ;
209     format doHbA year4. ;
210     run ;

```

NOTE: There were 439904 observations read from the data set DMDAT.HBA.
WHERE doHbA>'01JAN2006'D;

NOTE: The PROCEDURE TABULATE printed page 5.

NOTE: PROCEDURE TABULATE used (Total process time):

real time 0.38 seconds
cpu time 0.28 seconds

```

211
212     title1 ;
213     proc contents data = DMdat.hba varnum ; run ;

```

NOTE: PROCEDURE CONTENTS used (Total process time):

real time 0.00 seconds
cpu time 0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 6.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

NOTE: The SAS System used:

real time 3:10.50
cpu time 2:36.51

05-hba1c.lst

HbA1c from RKKP sources

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	opr		HbA1c (værdi)					
	didd	dvdd						
	N	N	N	P5	P25	P50	P75	P95
All	101,894	691,562	793,456	38.0	45.0	50.0	59.0	83.0
NIP-								
statusdato								
2005	.	140	140	33.3	40.4	48.6	59.0	90.7
2006	.	1,330	1,330	35.5	43.1	48.6	56.2	92.3
2007	.	3,467	3,467	36.6	44.2	49.7	60.6	90.1
2008	.	6,636	6,636	36.6	44.2	49.7	60.6	89.0
2009	.	10,593	10,593	37.7	44.2	50.8	60.6	89.0
2010	.	15,112	15,112	38.8	45.3	51.9	63.9	90.1
2011	.	28,315	28,315	38.8	45.3	51.0	62.8	88.0
2012	.	41,318	41,318	37.7	43.1	48.0	56.2	82.5
2013	.	60,811	60,811	37.0	43.0	48.0	55.0	80.0
2014	.	56,759	56,759	38.0	44.0	49.0	58.0	83.0
2015	.	17,380	17,380	40.0	50.0	59.0	71.0	96.0
2016	.	19,563	19,563	41.0	51.0	60.0	72.0	96.0
2017	.	17,863	17,863	41.0	50.0	59.0	70.0	94.0
2018	.	67,432	67,432	39.0	46.0	51.0	60.0	82.0

2019	.	87,882	87,882	39.0	46.0	52.0	60.0	82.0
2020	.	59,904	59,904	40.0	47.0	53.0	62.0	86.0
2021	.	75,274	75,274	40.0	46.0	52.0	60.0	83.0
2022	11,788	121,783	133,571	39.0	46.0	50.0	57.0	78.0
2023	35,346	.	35,346	36.0	43.0	47.0	52.0	75.0
2024	54,760	.	54,760	36.0	43.0	47.0	51.0	69.0

HbA1c measurements directly from LABKA

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The CONTENTS Procedure

Data Set Name	WORK.LABKA	Observations	63408559
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	06/08/2025 16:14:52	Observation Length	144
Last Modified	06/08/2025 16:14:52	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	139667
First Data Page	*
Max Obs per Page	454
Obs in First Data Page	443
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	F:\SASWork\TD109368_SRVFSESAS8\labka.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	9GB
File Size (bytes)	9153282048

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	pnr	Char	28			
2	ANALYSISCODE	Char	17	\$17.	\$17.	ANALYSISCODE
3	SAMPLINGDATE	Num	8	DATE9.	DATE9.	SAMPLINGDATE
4	UNIT	Char	35	\$35.	\$35.	UNIT
5	VALUE	Char	25	\$25.	\$25.	VALUE
6	LABORATORIUM_IDCODE	Char	28			

HbA1c measurements directly from LABKA

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UNIT				
		mmol/L	mmol/l	mmol/mol
	N	N	N	N
All	1,309,356	17,952,825	12,466,774	31,679,604
ANALYSISCODE				
NPU03835	1,309,347	.	.	.
NPU27300	9	.	.	31,679,604
NPU27412	.	17,952,825	12,466,774	.
SAMPLINGDATE				
2008	144,609	5	.	5
2009	210,996	67	*	70
2010	232,274	50,014	312,351	362,449
2011	284,743	80,937	431,09*	512,278
2012	426,962	252,541	512,651	765,352

2013	9,745	397,571	545,339	943,372
2014	18	533,281	1,072,875	1,654,204
2015	.	715,628	1,075,642	1,984,177
2016	.	1,021,238	864,192	2,475,955
2017	.	1,281,492	889,126	2,586,792
2018	.	1,755,145	893,396	2,648,858
2019	.	1,700,031	903,509	2,603,956
2020	.	1,814,108	891,950	2,706,419
2021	*	2,012,262	992,025	3,006,559
2022	6	2,122,673	1,034,906	3,160,136
2023	.	2,244,165	1,086,169	3,333,471
2024	*	1,971,667	961,545	2,935,551

HbA1c measurements from LABKA

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HbA1c						
N	P5	P25	P50	P75	P95	
SAMPLINGDATE						
2008	5	30.0	35.0	36.0	37.0	42.0
2009	69	30.0	34.0	38.0	48.0	68.0
2010	358,903	33.0	38.0	43.0	52.0	73.0
2011	506,883	33.0	38.0	43.0	52.0	74.0
2012	759,381	32.0	37.0	41.0	49.0	71.0
2013	937,970	30.0	35.0	39.0	45.0	67.0
2014	1645491	31.0	35.0	38.0	45.0	66.0
2015	1972734	31.0	35.0	39.0	45.0	67.0
2016	2461277	31.0	35.0	39.0	46.0	67.0
2017	2571984	30.0	35.0	38.0	45.0	67.0
2018	2635400	30.0	34.0	38.0	45.0	66.0
2019	2590830	30.0	34.0	38.0	44.0	65.0
2020	2691912	30.0	34.8	38.0	45.0	65.0
2021	2991268	30.0	35.0	38.0	45.0	64.0
2022	3145579	31.0	35.0	38.0	44.0	63.0
2023	3319736	31.0	35.0	38.0	44.0	62.0
2024	2924501	31.0	35.0	38.0	44.0	61.0

HbA1c measurements triggering inclusion

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HbA1c (1st value >= 48)											
HbA1c (2nd value >= 48)											
N	P10	P25	P50	P75	P90	P10	P25	P50	P75	P90	
Date of 2nd value >= 48											
2006	20	50.8	54.1	60.6	69.4	79.2	48.6	49.7	57.9	65.5	73.2
2007	239	49.7	51.9	57.3	66.1	82.5	49.7	53.0	57.3	65.0	75.9
2008	783	50.8	54.1	59.5	73.7	86.9	49.7	53.0	59.5	71.6	85.8
2009	1,603	49.7	51.9	59.5	70.5	89.0	49.7	53.0	59.5	70.5	85.8
2010	35,808	49.0	52.0	58.0	68.0	80.0	49.0	51.0	57.0	66.0	77.0
2011	33,479	49.0	51.0	56.2	68.0	81.0	49.0	51.0	57.0	67.0	79.2
2012	25,238	48.0	50.0	55.0	66.0	82.0	49.0	50.0	55.0	65.0	79.0
2013	21,173	48.6	50.0	55.0	66.0	83.0	49.0	50.0	55.0	65.0	80.0
2014	40,947	48.0	50.0	55.0	66.0	81.0	49.0	50.0	55.0	65.0	78.0
2015	37,042	48.0	49.0	53.0	63.0	78.0	48.0	50.0	54.0	63.0	77.0
2016	43,026	48.0	49.0	52.0	61.0	78.0	48.0	50.0	53.0	62.0	76.0
2017	27,314	48.0	49.0	52.0	61.0	81.0	48.0	49.0	53.0	61.0	77.0
2018	23,243	48.0	49.0	52.0	62.0	82.0	48.0	50.0	53.0	61.0	78.0
2019	22,280	48.0	49.0	52.0	60.0	81.0	48.0	49.0	52.0	60.0	76.0
2020	24,675	48.0	49.0	51.0	59.0	79.0	48.0	49.0	52.0	60.0	76.0
2021	27,693	48.0	49.0	51.0	58.0	79.0	48.0	49.0	52.0	59.0	74.7
2022	27,201	48.0	49.0	51.0	59.0	79.0	48.0	49.0	52.0	59.0	75.0
2023	26,064	48.0	49.0	51.0	58.0	78.0	48.0	49.0	52.0	58.0	73.0
2024	22,076	48.0	49.0	51.0	58.0	79.0	48.0	49.0	51.0	58.0	73.0

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The CONTENTS Procedure

Data Set Name	DMDAT.HBA	Observations	439904
Member Type	DATA	Variables	5
Engine	V9	Indexes	0
Created	06/08/2025 16:18:00	Observation Length	64
Last Modified	06/08/2025 16:18:00	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label	HbA1c events for DMreg		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	431
First Data Page	*
Max Obs per Page	1021
Obs in First Data Page	996
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\hba.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	27MB
File Size (bytes)	28311552

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	pnr	Char	28			mother pnr
2	doHbA	Num	8	DDMMYY10.	DATE9.	Date of 2nd value >= 48
3	HbA1c	Num	8			HbA1c (2nd value >= 48)
4	lagHb	Num	8			HbA1c (1st value >= 48)
5	lastHbA	Num	8	DDMMYY10.		Date of last HbA1c

4.10 06-define

Collects the generated data from NPR, DVDD, NHSR, RMPS and LABKA, and defines the earliest date as inclusion date, constructs the last data seen. Also derives type of diabetes. This is the administrative DMreg constructed.

```
1                                "Program: 06-define.sas"    12:30 Thursday, August 7, 2025
```

```
NOTE: Copyright (c) 2023 by SAS Institute Inc., Cary, NC, USA.
```

```
NOTE: SAS (r) Proprietary Software 9.4 (TS1M8)
```

```
      Licensed to FORSKNING 2, Site 50800723.
```

```
NOTE: This session is executing on the X64_SRV22 platform.
```

```
NOTE: Analytical products:
```

```
      SAS/STAT 15.3
```

```
NOTE: Additional host information:
```

```
      X64_SRV22 WIN 10.0.20348 Server
```

```
NOTE: SAS initialization used:
```

```

real time          0.17 seconds
cpu time           0.21 seconds

```

NOTE: AUTOEXEC processing beginning; file is
E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\sas\optslibs.sas.

NOTE: AUTOEXEC processing completed.

```

1      libname DMdat list ;
NOTE: Libref=   DMDAT
      Scope=   Program 06-define.sas
      Engine=   V9
      Physical Name= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Filename= E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data
      Owner Name= DSTFSE\FDIY709873
      File Size=      OKB
      File Size (bytes)= 0
2
3      * Constants used ;
4      %put ini = &ini. end = &end. t1ins = &t1ins. ;
ini = '01JAN1996'd end = '31DEC2024'd t1ins = 30
5
6      * A data set of all persons mentioned in any of the source registers (excl.
6      ! DiaBasen);
7      data DMreg ;
8          label pnr      = "Person-id"
9                  sex    = "Sex"
10                 doBth   = "Date of birth"
11                 doDM    = "Date of inclusion (only usable >=1996-1-1)"
12                 doLast  = "Date of latest criterion"
13                 doDth   = "Date of death"
14                 DMtp    = "Type of DM (T1/T2)"
15                 DMtx    = "Type of DM (T1/T2/Tx)"
16                 dvdtyp  = "Type from DVDD"
17                 nprtyp  = "Type from NPR"
18                 only1   = "Only one criterion"
19                 inCr    = "Incl. criterion"
20                 do2nd   = "Date of 2nd of Ins/OAD/NPR"
21                 doNPR   = "Date of 1st NPR"
22                 doNPR2  = "Date of 2nd NPR"
23                 doOAD   = "Date of 1st OAD"
24                 doOAD2  = "Date of 2nd OAD"
25                 doIns   = "Date of 1st Ins"
26                 doIns2  = "Date of 2nd Ins"
27                 doPod   = "Date of Podiatry"
28                 doHbA   = "Date of HbA1c"
29                 doDVD   = "Date of DVDD"
30                 hasnpr  = "NPR record"
31                 hasdvdd = "DVDD record"
32                 hasrmps = "RMPS record"
33                 hasfoot = "Pod record"
34                 hashba  = "HbA1c record" ;
35      merge DMdat.npr  ( in = npr   keep = pnr doNPR doNPR2 nprtyp lastNPR )
36              DMdat.dvdd ( in = dvdd keep = pnr doDVDD          dvdtyp lastDVDD )
37              DMdat.rmps ( in = rmps keep = pnr doOAD doOAD2          lastOAD )
38                      doIns doIns2          lastIns )
39              DMdat.foot ( in = foot keep = pnr doPod              lastPod )
40              DMdat.hba  ( in = hba  keep = pnr doHbA              lastHbA )
41              DMdat.pop  ( in = pop  ) ;
42      by pnr ;
43      format doBth doDM doLast doDth
44              doNPR doOAD doIns
45              doNPR2 doOAD2 doIns2 do2nd doDVD doPod doHbA
46              ddmmyy10. ;
47      * must be in the population and meet at least one criterion ;
48      if pop and ( npr or dvdd or rmps or foot or hba ) ;
49      hasnpr = npr ;
50      hasdvdd = dvdd;

```

```

51      hasrmps = rmps;
52      hasfoot = foot;
53      hashba = hba ;
54
55      doDVD = doDVDD ;
56
57      *-----;
58      * Date of diagnosis as 2nd date of EITHER dispense OR NPR diagnosis:
59      1) find the date of the 1st and 2nd criterion met
60      2) record the criterion met at the earliest date ;
61      if doOAD eq min(doOAD ,doIns ,doNPR ) then do ;
62          do2nd = min(doOAD2,doIns ,doNPR ) ; fC = "O" ; end ;
63      if doIns eq min(doOAD ,doIns ,doNPR ) then do ;
64          do2nd = min(doOAD ,doIns2,doNPR ) ; fC = "I" ; end ;
65      if doNPR eq min(doOAD ,doIns ,doNPR ) then do ;
66          do2nd = min(doOAD ,doIns ,doNPR2) ; fC = "N" ; end ;
67      * compute the type of 2nd criterion between OAD, Ins and NPR ;
68      if do2nd eq doOAD or do2nd eq doOAD2 then inCr = fC||"-O" ;
69      if do2nd eq doIns or do2nd eq doIns2 then inCr = fC||"-I" ;
70      if do2nd eq doNPR or do2nd eq doNPR2 then inCr = fC||"-N" ;
71
72      * Date of inclusion using 2nd record of dispense OR NPR ;
73      doDM = min( do2nd, doPod, doHbA, doDVD ) ;
74      * Inclusion criterion based on 2nd purchase / 2nd NPR ;
75      if doDM le .z then inCr = "---" ; * never happens... ;
76      else do ;
77          if doDM eq doDVD then inCr = "DVD" ;
78          if doDM eq doPod then inCr = "Pod" ;
79          if doDM eq doHbA then inCr = "HbA" ;
80      end ;
81
82      *-----;
83      * indicator of only a single criterion met ;
84      only1 = nmiss(do2nd, doDVD, doPod, doHbA) eq 3 ;
85
86      * date of last criterion met;
87      doLast = max(lastNPR , lastOAD, lastIns,
88                  lastDVDD, lastPod, lastHbA) ;
89
90      *-----;
91      * Type definintion of diabetes (3 levels T1, T2, Tx);
92
93      * Using DVDD and NPR criteria ;
94      if dvdtyp ne " " then DMtx = dvdtyp ;
95      else DMtx = nprtyp ;
96
97      * unknown type is classified as T2 ;
98      if DMtx eq " " then DMtx = "T2" ;
99
100     * if missing DVDD record always use insulin age criterion ;
101     if not hasdvdd and
102         .z < (doIns - doBth) < ( 365.25 * &t1ins. ) then DMtx = "T1" ;
103
104     * it is impossible to be T1 without insulin ;
105     if doDM le (&end. - 365) and
106         missing(doIns) and
107         DMtx eq "T1"
108     then DMtx = "T2" ;
109
110     * also, for T1 without dvdd, insulin must be in the first year after
110     ! diagnosis -
111     but only for persons with a reliable date of diagnosis, but regardless of
111     ! DVDD
112     typing (the latter is a 2024 feature introduced) ;
113     if ("01JAN1996"d < doDM < (doIns - 365)) and /* always false for missing
113     ! doIns */
114         (DMtx eq "T1") then DMtx = "T2" ;
115
116     * only sane results accepted ;
117     if doDM gt doBth and

```

```

118          doDM le &end. ;
119
120          * the dichotomized type in DMtp is just Tx -> T2 ;
121          if DMtx eq "Tx" then DMtp = "T2" ;
122                  else DMtp = DMtx ;
123          run ;

```

NOTE: Missing values were generated as a result of performing an operation on missing values.

Each place is given by: (Number of times) at (Line):(Column).

```

55104 at 61:15      75704 at 62:15      55104 at 63:15      58638 at 64:15
55104 at 65:15      113395 at 66:15      66653 at 73:13      583968 at 102:18
583968 at 113:36

```

NOTE: There were 534711 observations read from the data set DMDAT.NPR.

NOTE: There were 293762 observations read from the data set DMDAT.DVDD.

NOTE: There were 598167 observations read from the data set DMDAT.RMPS.

NOTE: There were 368785 observations read from the data set DMDAT.FOOT.

NOTE: There were 439904 observations read from the data set DMDAT.HBA.

NOTE: There were 11311307 observations read from the data set DMDAT.POP.

NOTE: The data set WORK.DMREG has 728585 observations and 35 variables.

NOTE: DATA statement used (Total process time):

```

real time          7.18 seconds
cpu time           3.73 seconds

```

```

124
125          title1 "The diabetes register through 2025-1-1" ;
126          data DMdat.DMreg ( label = "DMreg as of 2025-1-1 (admin version)"
127                          keep = pnr sex DMtp DMtx dvdtyp nprtyp
128                          inCr only1
129                          hasnpr hasdvdd hasrmps hasfoot hashba
130                          doBth doDM doDth doLast
131                          doNPR doOAD doIns
132                          doNPR2 doOAD2 doIns2 do2nd
133                          doDVD doPod doHbA ) ;
134          set DMreg ;
135          run ;

```

NOTE: There were 728585 observations read from the data set WORK.DMREG.

NOTE: The data set DMDAT.DMREG has 728585 observations and 27 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.68 seconds
cpu time           0.28 seconds

```

```

136
137          * temporary variables for the tabulation ;
138          data a ;
139          set DMreg ;
140          * age at diagnosis ;
141          ageDM = ( doDM - doBth ) / 365.25 ;
142          a1 = floor( ageDM ) ;
143          * date of diagnosis moved to 1980 ;
144          doDM = max(doDM , "31DEC1980"d) + doDM - doDM ;
145          o1 = only1 * 100 ;
146          if index(inCr, "-") then inCR = substr(inCr, 3, 1) ;
147          run ;

```

NOTE: There were 728585 observations read from the data set WORK.DMREG.

NOTE: The data set WORK.A has 728585 observations and 38 variables.

NOTE: DATA statement used (Total process time):

```

real time          0.36 seconds
cpu time           0.36 seconds

```

```

148
149          proc format ;
150          value onlyone 0 = ">1 crit" 1 = " only 1" ;
NOTE: Format ONLYONE has been output.
151          run ;

```

NOTE: PROCEDURE FORMAT used (Total process time):

```
real time      0.00 seconds
cpu time       0.01 seconds
```

```
152
153     title2 "Inclusion using 2nd OAD/Ins/NPR" ;
154     proc tabulate data = a ( where = (doDM > .z) ) missing noseps ;
155         class sex doDth doDM inCr a1 ageDM
156             only1 dvdtyp nprtyp DMtp DMtx ;
157     var o1 doIns
158         hasnpr
159         hasdvdd
160         hasrmps
161         hasfoot
162         hashba ;
163     keylabel n = " "
164         mean = " " ;
165     table all
166         dvdtyp = "DVDD" * nprtyp = "NPR"
167         doDM,
168         ( all DMtp DMtx ) * f=comma10.
169         / rts = 13 ;
170     table (all only1) * (all doDM),
171         all * f = comma7.
172         inCr * f = comma7.
173         / rts = 15 indent = 2 ;
174     table (all doDM),
175         all * f = comma7.
176         sum * (hasnpr
177             hasdvdd
178             hasrmps
179             hasfoot
180             hashba) * f = comma8.
181         / rts = 15 indent = 2 box = "Any crit." ;
182     table all only1 * (all doDM),
183         all * f = comma7.
184         (all inCr) * pctn<all inCr> * f = 5.1
185         / rts = 15 indent = 2 ;
186     * table only1 * (all doDM),
187         all * f = comma7.
188         (all inCr) * pctn<only1> * f = 5.1
189         / rts = 15 indent = 2
190         box = "% meeting >1 criterion (resp. only 1)" ;
191     format doDM year4.
192         ageDM agr.
193         only1 onlyone. ;
194     label doDM = only1 = ;
195     run ;
```

NOTE: There were 728585 observations read from the data set WORK.A.
WHERE doDM>.Z;

NOTE: The PROCEDURE TABULATE printed pages 1-4.

NOTE: PROCEDURE TABULATE used (Total process time):

```
real time      0.65 seconds
cpu time       2.25 seconds
```

```
196
197     title2 ;
198
199     data DMdat.DMreg2025 (label = "The DMreg as of 2025-1-1") ;
200     set DMdat.DMreg (keep = pnr doDM DMtx) ;
201     run ;
```

NOTE: There were 728585 observations read from the data set DMDAT.DMREG.

NOTE: The data set DMDAT.DMREG2025 has 728585 observations and 3 variables.

NOTE: DATA statement used (Total process time):

```
real time      1.44 seconds
```

```

      cpu time          0.15 seconds

202
203      proc sort  data = DMdat.DMreg2025 ; by pnr ; run ;

NOTE: There were 728585 observations read from the data set DMDAT.DMREG2025.
NOTE: The data set DMDAT.DMREG2025 has 728585 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.57 seconds
      cpu time           0.37 seconds

204      proc sort  data = DMdat.DMreg      ; by pnr ; run ;

NOTE: There were 728585 observations read from the data set DMDAT.DMREG.
NOTE: The data set DMDAT.DMREG has 728585 observations and 27 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          2.05 seconds
      cpu time           0.65 seconds

205
206      proc contents  data = DMdat.DMreg      varnum ; run ;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 5.

207      proc contents  data = DMdat.DMreg2025  varnum ; run ;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds

NOTE: The PROCEDURE CONTENTS printed page 6.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time          13.77 seconds
      cpu time           8.15 seconds

```

06-define.lst

The diabetes register through 2025-1-1
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		Type of DM (T1/T2)			Type of DM (T1/T2/Tx)		
		All	T1	T2	T1	T2	Tx
All		728,585	56,680	671,905	56,680	650,499	21,406
DVDD	NPR	123,669	261	123,408	261	123,408	.
	T1	63,942	41,643	22,299	41,643	22,299	.
	T2	230,422	374	230,048	374	230,048	.
	Tx	16,790	271	16,519	271	35	16,484
T1		313	39	274	39	274	.
	T1	15,484	12,840	2,644	12,840	2,644	.
	T2	2,349	895	1,454	895	1,454	.
	Tx	536	357	179	357	179	.
T2		121,472	.	121,472	.	121,472	.
	T1	5,742	.	5,742	.	5,742	.
	T2	134,390	.	134,390	.	134,390	.

	Tx	8,554	.	8,554	.	8,554	.
Tx		118	.	118	.	.	118
	T1	660	.	660	.	.	660
	T2	1,421	.	1,421	.	.	1,421
	Tx	2,723	.	2,723	.	.	2,723
doDM							
1980		25,440	4,035	21,405	4,035	21,168	237
1981		6,103	1,004	5,099	1,004	5,039	60
1982		5,999	985	5,014	985	4,948	66
1983		5,798	960	4,838	960	4,762	76
1984		5,791	1,085	4,706	1,085	4,620	86
1985		5,765	1,211	4,554	1,211	4,450	104
1986		5,606	1,163	4,443	1,163	4,348	95
1987		5,322	1,031	4,291	1,031	4,195	96
1988		5,242	1,158	4,084	1,158	3,963	121
1989		5,065	1,154	3,911	1,154	3,783	128
1990		14,096	2,707	11,389	2,707	10,947	442
1991		7,422	1,659	5,763	1,659	5,540	223
1992		7,439	1,588	5,851	1,588	5,571	280
1993		9,121	2,442	6,679	2,442	6,333	346
1994		9,402	2,153	7,249	2,153	6,780	469
1995		32,679	5,893	26,786	5,893	25,308	1,478
1996		12,704	1,054	11,650	1,054	11,099	551
1997		12,092	1,003	11,089	1,003	10,561	528
1998		13,189	1,039	12,150	1,039	11,613	537
1999		13,647	992	12,655	992	12,054	601
2000		13,675	1,008	12,667	1,008	12,055	612
2001		13,873	1,032	12,841	1,032	12,262	579
2002		16,725	1,051	15,674	1,051	14,969	705
2003		18,263	992	17,271	992	16,516	755
2004		18,409	996	17,413	996	16,718	695
2005		23,023	934	22,089	934	21,456	633
2006		19,994	906	19,088	906	18,555	533
2007		20,610	869	19,741	869	19,202	539
2008		22,492	839	21,653	839	21,111	542
2009		21,763	853	20,910	853	20,392	518
2010		25,091	844	24,247	844	23,673	574
2011		27,071	779	26,292	779	25,654	638
2012		22,415	757	21,658	757	21,067	591
2013		16,615	801	15,814	801	15,277	537
2014		16,875	808	16,067	808	15,533	534
2015		19,773	827	18,946	827	18,334	612
2016		22,226	862	21,364	862	20,768	596
2017		20,152	865	19,287	865	18,706	581
2018		18,617	869	17,748	869	17,188	560
2019		19,040	883	18,157	883	17,621	536
2020		21,739	905	20,834	905	20,210	624
2021		25,168	982	24,186	982	23,454	732
2022		25,880	1,003	24,877	1,003	24,258	619
2023		26,583	907	25,676	907	25,143	533
2024		24,591	792	23,799	792	23,295	504

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Incl. criterion							
	All	DVD	HbA	I	N	O	Pod
All							
All	728,585	164,707	142,296	15,858	164,587	174,220	66,917
1980	25,440	.	.	.	25,440	.	.
1981	6,103	.	.	.	6,103	.	.
1982	5,999	.	.	.	5,999	.	.
1983	5,798	.	.	.	5,798	.	.
1984	5,791	.	.	.	5,791	.	.
1985	5,765	.	.	.	5,765	.	.
1986	5,606	.	.	.	5,606	.	.
1987	5,322	.	.	.	5,322	.	.

1988	5,242	.	.	.	5,242	.	.
1989	5,065	.	.	.	5,065	.	.
1990	14,096	.	.	.	4,409	.	9,687
1991	7,422	.	.	.	4,118	.	3,304
1992	7,439	.	.	.	3,951	.	3,488
1993	9,121	.	.	.	5,369	.	3,752
1994	9,402	.	.	.	5,590	.	3,812
1995	32,679	.	.	3,977	3,564	22,468	2,670
1996	12,704	.	.	713	2,976	6,950	2,065
1997	12,092	.	.	597	2,943	6,354	2,198
1998	13,189	.	.	536	3,158	7,076	2,419
1999	13,647	.	.	559	3,283	7,072	2,733
2000	13,675	.	.	538	3,724	7,069	2,344
2001	13,873	.	.	541	3,901	7,867	1,564
2002	16,725	.	.	536	3,974	7,565	4,650
2003	18,26*	*	.	490	4,276	8,687	4,809
2004	18,409	.	.	558	4,068	9,024	4,759
2005	23,02*	10,29*	.	360	2,819	7,352	2,198
2006	19,994	9,637	.	348	2,527	7,115	367
2007	20,610	10,288	.	393	2,270	7,214	445
2008	22,492	11,82*	*	421	2,172	7,616	455
2009	21,763	11,601	.	381	2,053	7,393	335
2010	25,091	13,45*	1,99*	320	1,963	7,034	324
2011	27,071	13,632	2,481	314	1,801	6,526	2,317
2012	22,415	10,970	3,086	305	1,594	5,402	1,058
2013	16,615	7,611	2,712	371	1,480	3,857	584
2014	16,875	6,202	5,343	335	1,380	3,099	516
2015	19,773	6,391	7,800	307	1,358	3,277	640
2016	22,226	6,440	11,074	304	1,269	2,689	450
2017	20,152	6,290	9,709	326	1,202	2,261	364
2018	18,617	6,386	8,552	348	1,052	1,986	293
2019	19,040	6,147	8,765	430	1,035	2,346	317
2020	21,739	5,601	11,617	453	1,040	2,747	281
2021	25,168	4,365	15,410	540	1,214	3,254	385
2022	25,880	4,529	17,778	365	699	2,066	443
2023	26,583	6,246	19,371	91	123	251	501
2024	24,591	6,794	16,602	101	101	603	390
>1 crit							
All	541,004	157,837	122,261	9,384	79,712	123,529	48,281
1980	5,486	.	.	.	5,486	.	.
1981	1,545	.	.	.	1,545	.	.
1982	1,608	.	.	.	1,608	.	.
1983	1,622	.	.	.	1,622	.	.
1984	1,842	.	.	.	1,842	.	.
1985	2,105	.	.	.	2,105	.	.
1986	2,124	.	.	.	2,124	.	.
1987	2,118	.	.	.	2,118	.	.
1988	2,365	.	.	.	2,365	.	.
1989	2,567	.	.	.	2,567	.	.
1990	9,532	.	.	.	2,222	.	7,310
1991	4,524	.	.	.	2,055	.	2,469
1992	4,803	.	.	.	2,089	.	2,714
1993	6,412	.	.	.	3,433	.	2,979
1994	6,755	.	.	.	3,636	.	3,119
1995	21,302	.	.	2,437	2,466	14,489	1,910
1996	8,809	.	.	452	2,160	4,733	1,464
1997	8,643	.	.	403	2,178	4,494	1,568
1998	9,715	.	.	378	2,411	5,156	1,770
1999	9,988	.	.	386	2,451	5,135	2,016
2000	9,893	.	.	363	2,680	5,171	1,679
2001	10,179	.	.	375	2,815	5,936	1,053
2002	12,387	.	.	391	2,955	5,829	3,212
2003	13,44*	*	.	334	3,124	6,715	3,273
2004	13,578	.	.	381	2,922	6,838	3,437
2005	18,459	10,130	.	151	1,549	5,108	1,521
2006	15,896	9,419	.	114	1,318	4,820	225
2007	16,520	9,997	.	142	1,170	4,988	223
2008	18,26*	11,369	*	184	1,153	5,350	204
2009	17,914	11,172	.	143	1,129	5,306	164
2010	21,232	12,93*	1,66*	135	1,100	5,247	149

2011	22,313	13,032	2,018	152	1,030	4,802	1,279
2012	18,764	10,613	2,458	154	914	3,890	735
2013	13,921	7,445	2,191	183	827	2,839	436
2014	14,268	6,091	4,450	173	828	2,318	408
2015	16,725	6,331	6,375	186	842	2,481	510
2016	18,672	6,378	9,010	187	793	1,978	326
2017	16,999	6,214	7,896	186	787	1,649	267
2018	15,832	6,079	7,241	195	705	1,392	220
2019	16,109	5,960	7,277	275	668	1,653	276
2020	17,813	5,536	9,331	299	660	1,770	217
2021	19,822	4,333	11,942	362	793	2,082	310
2022	21,744	4,109	15,433	227	407	1,250	318
2023	24,930	5,614	18,861	30	40	70	315
2024	21,461	5,079	16,111	6	20	40	205
only 1							
All	187,581	6,870	20,035	6,474	84,875	50,691	18,636
1980	19,954	.	.	.	19,954	.	.
1981	4,558	.	.	.	4,558	.	.
1982	4,391	.	.	.	4,391	.	.
1983	4,176	.	.	.	4,176	.	.
1984	3,949	.	.	.	3,949	.	.
1985	3,660	.	.	.	3,660	.	.
1986	3,482	.	.	.	3,482	.	.
1987	3,204	.	.	.	3,204	.	.
1988	2,877	.	.	.	2,877	.	.
1989	2,498	.	.	.	2,498	.	.
1990	4,564	.	.	.	2,187	.	2,377
1991	2,898	.	.	.	2,063	.	835
1992	2,636	.	.	.	1,862	.	774
1993	2,709	.	.	.	1,936	.	773
1994	2,647	.	.	.	1,954	.	693
1995	11,377	.	.	1,540	1,098	7,979	760
1996	3,895	.	.	261	816	2,217	601
1997	3,449	.	.	194	765	1,860	630
1998	3,474	.	.	158	747	1,920	649
1999	3,659	.	.	173	832	1,937	717
2000	3,782	.	.	175	1,044	1,898	665
2001	3,694	.	.	166	1,086	1,931	511
2002	4,338	.	.	145	1,019	1,736	1,438
2003	4,816	.	.	156	1,152	1,972	1,536
2004	4,831	.	.	177	1,146	2,186	1,322
2005	4,564	164	.	209	1,270	2,244	677
2006	4,098	218	.	234	1,209	2,295	142
2007	4,090	291	.	251	1,100	2,226	222
2008	4,231	458	.	237	1,019	2,266	251
2009	3,849	429	.	238	924	2,087	171
2010	3,859	520	329	185	863	1,787	175
2011	4,758	600	463	162	771	1,724	1,038
2012	3,651	357	628	151	680	1,512	323
2013	2,694	166	521	188	653	1,018	148
2014	2,607	111	893	162	552	781	108
2015	3,048	60	1,425	121	516	796	130
2016	3,554	62	2,064	117	476	711	124
2017	3,153	76	1,813	140	415	612	97
2018	2,785	307	1,311	153	347	594	73
2019	2,931	187	1,488	155	367	693	41
2020	3,926	65	2,286	154	380	977	64
2021	5,346	32	3,468	178	421	1,172	75
2022	4,136	420	2,345	138	292	816	125
2023	1,653	632	510	61	83	181	186
2024	3,130	1,715	491	95	81	563	185

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Any crit.	Sum				
All	NPR record	DVDD record	RMPS record	Pod record	HbA1c record

All	728,585	483,013	293,762	583,068	368,785	439,904
1980	25,440	25,440	470	5,204	5,215	2,382
1981	6,103	6,103	111	1,428	1,456	626
1982	5,999	5,999	137	1,455	1,533	614
1983	5,798	5,798	119	1,498	1,555	620
1984	5,791	5,791	155	1,702	1,736	688
1985	5,765	5,765	172	1,923	1,995	791
1986	5,606	5,606	190	1,960	2,023	774
1987	5,322	5,322	153	1,909	2,029	654
1988	5,242	5,242	190	2,153	2,247	786
1989	5,065	5,065	214	2,299	2,441	800
1990	14,096	12,429	543	8,008	11,799	1,926
1991	7,422	6,744	367	4,480	5,232	1,340
1992	7,439	6,766	410	4,910	5,440	1,419
1993	9,121	8,311	693	6,844	6,853	2,534
1994	9,402	8,542	816	7,651	7,152	2,643
1995	32,679	27,436	2,838	31,356	20,710	8,994
1996	12,704	10,712	1,594	11,617	8,746	4,406
1997	12,092	10,312	1,712	11,010	8,545	4,697
1998	13,189	11,360	2,108	12,032	9,527	5,565
1999	13,647	11,555	2,378	12,360	9,683	6,053
2000	13,675	11,778	2,587	12,375	9,429	6,368
2001	13,873	12,017	2,929	12,702	9,193	6,902
2002	16,725	13,851	3,907	14,356	12,316	8,491
2003	18,263	14,873	4,881	15,786	13,000	9,859
2004	18,409	14,895	5,513	16,140	12,591	10,331
2005	23,023	18,730	14,268	21,091	13,912	15,652
2006	19,994	16,035	12,789	18,608	10,944	13,623
2007	20,610	15,884	13,369	19,028	11,438	14,009
2008	22,492	16,571	15,090	20,534	12,348	15,313
2009	21,763	15,516	14,747	20,034	11,822	14,964
2010	25,091	16,917	17,109	22,736	13,748	18,364
2011	27,071	16,718	17,426	23,536	15,508	18,881
2012	22,415	13,912	14,214	20,062	11,883	16,979
2013	16,615	10,388	10,081	14,996	8,423	13,207
2014	16,875	10,177	9,160	15,109	8,082	14,443
2015	19,773	10,918	9,862	17,442	9,428	17,428
2016	22,226	10,864	10,848	19,146	10,027	20,134
2017	20,152	9,224	9,899	17,425	8,728	18,224
2018	18,617	7,840	9,432	16,331	7,832	16,526
2019	19,040	7,108	8,158	16,674	7,534	16,943
2020	21,739	7,161	6,387	18,705	8,096	19,479
2021	25,168	6,942	4,626	20,954	8,747	22,494
2022	25,880	6,060	13,051	20,547	7,875	22,383
2023	26,583	4,872	25,169	20,046	6,879	22,367
2024	24,591	3,464	22,890	16,906	3,085	18,228

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Incl. criterion								
	All	DVD	HbA	I	N	O	Pod	
	PctN	PctN	PctN	PctN	PctN	PctN	PctN	PctN
All	728,585	100.0	100.0	100.0	100.0	100.0	100.0	100.0
>1 crit								
All	541,004	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1980	5,486	100.0	.	.	100.0	.	.	.
1981	1,545	100.0	.	.	100.0	.	.	.
1982	1,608	100.0	.	.	100.0	.	.	.
1983	1,622	100.0	.	.	100.0	.	.	.
1984	1,842	100.0	.	.	100.0	.	.	.
1985	2,105	100.0	.	.	100.0	.	.	.
1986	2,124	100.0	.	.	100.0	.	.	.
1987	2,118	100.0	.	.	100.0	.	.	.
1988	2,365	100.0	.	.	100.0	.	.	.

1989	2,567	100.0	.	.	.	100.0	.	.
1990	9,532	100.0	.	.	.	23.3	.	76.7
1991	4,524	100.0	.	.	.	45.4	.	54.6
1992	4,803	100.0	.	.	.	43.5	.	56.5
1993	6,412	100.0	.	.	.	53.5	.	46.5
1994	6,755	100.0	.	.	.	53.8	.	46.2
1995	21,302	100.0	.	.	11.4	11.6	68.0	9.0
1996	8,809	100.0	.	.	5.1	24.5	53.7	16.6
1997	8,643	100.0	.	.	4.7	25.2	52.0	18.1
1998	9,715	100.0	.	.	3.9	24.8	53.1	18.2
1999	9,988	100.0	.	.	3.9	24.5	51.4	20.2
2000	9,893	100.0	.	.	3.7	27.1	52.3	17.0
2001	10,179	100.0	.	.	3.7	27.7	58.3	10.3
2002	12,387	100.0	.	.	3.2	23.9	47.1	25.9
2003	13,447	100.0	0.0	.	2.5	23.2	49.9	24.3
2004	13,578	100.0	.	.	2.8	21.5	50.4	25.3
2005	18,459	100.0	54.9	.	0.8	8.4	27.7	8.2
2006	15,896	100.0	59.3	.	0.7	8.3	30.3	1.4
2007	16,520	100.0	60.5	.	0.9	7.1	30.2	1.3
2008	18,261	100.0	62.3	0.0	1.0	6.3	29.3	1.1
2009	17,914	100.0	62.4	.	0.8	6.3	29.6	0.9
2010	21,232	100.0	60.9	7.8	0.6	5.2	24.7	0.7
2011	22,313	100.0	58.4	9.0	0.7	4.6	21.5	5.7
2012	18,764	100.0	56.6	13.1	0.8	4.9	20.7	3.9
2013	13,921	100.0	53.5	15.7	1.3	5.9	20.4	3.1
2014	14,268	100.0	42.7	31.2	1.2	5.8	16.2	2.9
2015	16,725	100.0	37.9	38.1	1.1	5.0	14.8	3.0
2016	18,672	100.0	34.2	48.3	1.0	4.2	10.6	1.7
2017	16,999	100.0	36.6	46.4	1.1	4.6	9.7	1.6
2018	15,832	100.0	38.4	45.7	1.2	4.5	8.8	1.4
2019	16,109	100.0	37.0	45.2	1.7	4.1	10.3	1.7
2020	17,813	100.0	31.1	52.4	1.7	3.7	9.9	1.2
2021	19,822	100.0	21.9	60.2	1.8	4.0	10.5	1.6
2022	21,744	100.0	18.9	71.0	1.0	1.9	5.7	1.5
2023	24,930	100.0	22.5	75.7	0.1	0.2	0.3	1.3
2024	21,461	100.0	23.7	75.1	0.0	0.1	0.2	1.0
only 1								
All	187,581	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1980	19,954	100.0	.	.	.	100.0	.	.
1981	4,558	100.0	.	.	.	100.0	.	.
1982	4,391	100.0	.	.	.	100.0	.	.
1983	4,176	100.0	.	.	.	100.0	.	.
1984	3,949	100.0	.	.	.	100.0	.	.
1985	3,660	100.0	.	.	.	100.0	.	.
1986	3,482	100.0	.	.	.	100.0	.	.
1987	3,204	100.0	.	.	.	100.0	.	.
1988	2,877	100.0	.	.	.	100.0	.	.
1989	2,498	100.0	.	.	.	100.0	.	.
1990	4,564	100.0	.	.	.	47.9	.	52.1
1991	2,898	100.0	.	.	.	71.2	.	28.8
1992	2,636	100.0	.	.	.	70.6	.	29.4
1993	2,709	100.0	.	.	.	71.5	.	28.5
1994	2,647	100.0	.	.	.	73.8	.	26.2
1995	11,377	100.0	.	.	13.5	9.7	70.1	6.7
1996	3,895	100.0	.	.	6.7	20.9	56.9	15.4
1997	3,449	100.0	.	.	5.6	22.2	53.9	18.3
1998	3,474	100.0	.	.	4.5	21.5	55.3	18.7
1999	3,659	100.0	.	.	4.7	22.7	52.9	19.6
2000	3,782	100.0	.	.	4.6	27.6	50.2	17.6
2001	3,694	100.0	.	.	4.5	29.4	52.3	13.8
2002	4,338	100.0	.	.	3.3	23.5	40.0	33.1
2003	4,816	100.0	.	.	3.2	23.9	40.9	31.9
2004	4,831	100.0	.	.	3.7	23.7	45.2	27.4
2005	4,564	100.0	3.6	.	4.6	27.8	49.2	14.8
2006	4,098	100.0	5.3	.	5.7	29.5	56.0	3.5
2007	4,090	100.0	7.1	.	6.1	26.9	54.4	5.4
2008	4,231	100.0	10.8	.	5.6	24.1	53.6	5.9
2009	3,849	100.0	11.1	.	6.2	24.0	54.2	4.4
2010	3,859	100.0	13.5	8.5	4.8	22.4	46.3	4.5
2011	4,758	100.0	12.6	9.7	3.4	16.2	36.2	21.8

2012	3,651	100.0	9.8	17.2	4.1	18.6	41.4	8.8
2013	2,694	100.0	6.2	19.3	7.0	24.2	37.8	5.5
2014	2,607	100.0	4.3	34.3	6.2	21.2	30.0	4.1
2015	3,048	100.0	2.0	46.8	4.0	16.9	26.1	4.3
2016	3,554	100.0	1.7	58.1	3.3	13.4	20.0	3.5
2017	3,153	100.0	2.4	57.5	4.4	13.2	19.4	3.1
2018	2,785	100.0	11.0	47.1	5.5	12.5	21.3	2.6
2019	2,931	100.0	6.4	50.8	5.3	12.5	23.6	1.4
2020	3,926	100.0	1.7	58.2	3.9	9.7	24.9	1.6
2021	5,346	100.0	0.6	64.9	3.3	7.9	21.9	1.4
2022	4,136	100.0	10.2	56.7	3.3	7.1	19.7	3.0
2023	1,653	100.0	38.2	30.9	3.7	5.0	10.9	11.3
2024	3,130	100.0	54.8	15.7	3.0	2.6	18.0	5.9

The diabetes register through 2025-1-1

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The CONTENTS Procedure

Data Set Name	DMDAT.DMREG	Observations	728585
Member Type	DATA	Variables	27
Engine	V9	Indexes	0
Created	07/08/2025 12:30:46	Observation Length	224
Last Modified	07/08/2025 12:30:46	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label	DMreg as of 2025-1-1 (admin version)		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	2496
First Data Page	*
Max Obs per Page	292
Obs in First Data Page	273
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\dmreg.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	156MB
File Size (bytes)	163643392

Variables in Creation Order

#	Variable	Type	Len	Format	Informat	Label
1	pnr	Char	28			Person-id
2	sex	Char	*			Sex
3	doBth	Num	8	DDMMYY10.		Date of birth
4	doDM	Num	8	DDMMYY10.		Date of inclusion (only usable >=1996-1-1)
5	doLast	Num	8	DDMMYY10.		Date of latest criterion
6	doDth	Num	8	DDMMYY10.		Date of death
7	DMtp	Char	*			Type of DM (T1/T2)
8	DMtx	Char	20			Type of DM (T1/T2/Tx)
9	dvdtyp	Char	20			Type from DVDD
10	nprrtyp	Char	*			Type from NPR
11	only1	Num	8			Only one criterion
12	inCr	Char	*			Incl. criterion
13	do2nd	Num	8	DDMMYY10.		Date of 2nd of Ins/OAD/NPR
14	doNPR	Num	8	DDMMYY10.	DATE9.	Date of 1st NPR
15	doNPR2	Num	8	DDMMYY10.	DATE9.	Date of 2nd NPR
16	doOAD	Num	4	DDMMYY10.	DATE9.	Date of 1st OAD
17	doOAD2	Num	4	DDMMYY10.	DATE9.	Date of 2nd OAD
18	doIns	Num	4	DDMMYY10.	DATE9.	Date of 1st Ins

19	doIns2	Num	4	DDMMYY10.	DATE9.	Date of 2nd Ins
20	doPod	Num	8	DDMMYY10.		Date of Podiatry
21	doHbA	Num	8	DDMMYY10.	DATE9.	Date of HbA1c
22	doDVD	Num	8	DDMMYY10.		Date of DVDD
23	hasnpr	Num	8			NPR record
24	hasdvdd	Num	8			DVDD record
25	hasrmps	Num	8			RMPS record
26	hasfoot	Num	8			Pod record
27	hashba	Num	8			HbA1c record

Sort Information

Sortedby pnr
Validated YES
Character Set ANSI

The diabetes register through 2025-1-1

12:30 Thursday, August 7, 2025 6

The CONTENTS Procedure

Data Set Name	DMDAT.DMREG2025	Observations	728585
Member Type	DATA	Variables	*
Engine	V9	Indexes	0
Created	07/08/2025 12:30:46	Observation Length	56
Last Modified	07/08/2025 12:30:46	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label	The DMreg as of 2025-1-1		
Data Representation	WINDOWS_64		
Encoding	wlatin1 Western (Windows)		

Engine/Host Dependent Information

Data Set Page Size	65536
Number of Data Set Pages	625
First Data Page	*
Max Obs per Page	1167
Obs in First Data Page	1142
Number of Data Set Repairs	0
ExtendObsCounter	YES
Filename	E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\data\dmreg2025.sas7bdat
Release Created	9.0401M8
Host Created	X64_SRV22
Owner Name	DSTFSE\FDIY709873
File Size	39MB
File Size (bytes)	41025536

Variables in Creation Order

#	Variable	Type	Len	Format	Label
1	pnr	Char	28		Person-id
2	doDM	Num	8	DDMMYY10.	Date of inclusion (only usable >=1996-1-1)
3	DMtx	Char	20		Type of DM (T1/T2/Tx)

Sort Information

Sortedby pnr
Validated YES
Character Set ANSI

4.11 00-fmts

Constructs formats for grouping and labeling.

```
1                                "Program: 00-fmts.sas"    16:10 Wednesday, August 6, 2025
```

NOTE: AUTOEXEC processing completed.

```
1      title1 'Format with names of diagnoses, operations and behandlinger' ;
2      *-----;
3      * FORMATS used for grouping and labeling ;
4      * A collected format with names of
5      Diagnoses (ICD 8 & 10), Operation and Behandling) - dob ;
6      proc format library = dsfmt.sundhed
7      cntlout = dob ( keep = fmtname start label type ) ;
8      select $OPR95_L1L1_KT
9              $ICD8_L1L1_KT
10             $ICD10_L1L1_KT
11             $OPR_L1L1_KT
12             $BEH_L1L1_KT ;
13      run ;
```

NOTE: PROCEDURE FORMAT used (Total process time):

```
real time      0.16 seconds
cpu time       0.04 seconds
```

NOTE: The data set WORK.DOB has 57540 observations and 4 variables.

```
14
15      data dob ;
16      set dob ;
17      * The OPR95 format have common start-values (inputs) as ICD8, so
18      to distinguish we amende with an X - this also needs to be done
19      when reading the operation codes from ICD8 ;
20      if fmtname eq "OPR95_L1L1_KT" then start = "X" || start ;
21      fmtname = 'dob_L1L1_KT' ;
22      label = tranwrd(label, " ", " ") ; * double blanks to single blank ;
23      run ;
```

NOTE: There were 57540 observations read from the data set WORK.DOB.

NOTE: The data set WORK.DOB has 57540 observations and 4 variables.

NOTE: DATA statement used (Total process time):

```
real time      0.05 seconds
cpu time       0.04 seconds
```

```
24
25      options source2 ;
26      proc format library = DMfmt.DMreg
27      cntlin = dob ;
NOTE: Format $DOB_L1L1_KT is already on the library DMFMT.DMREG.
NOTE: Format $DOB_L1L1_KT has been written to DMFMT.DMREG.
NOTE: A byte-order mark in the file
      "E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\fmts\NPufmt.sas" (for fileref
      "#LN00075") indicates that the data is encoded in "utf-8". This encoding will be
      used to process the file.
27      !                                * Diagnosis/Operation/Behandling ;
28      * Formats (NPUD / NPUe - Danish English) grouping lab-measurements ;
29      %inc './fmts/NPufmt.sas' ;
NOTE: %INCLUDE (level 1) file ../fmts/NPufmt.sas is file
      E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\fmts\NPufmt.sas.
30      +* proc format ;
31      +
```

```

32      ** Defines two formats:
33      +   one with Danish long texts ($NPUD) and
34      +   one with English short texts ($NPUE) - max 4 characters ;
35      +
36      +value $NPUD
37      +
38      +'NPU29748',
39      +'NPU28969',
40      +'NPU28586',
41      +'NPU19763',
42      +'NPU03899',
43      +'DNK05012' = "Ferritin"
44      +
45      +'NPU19111',
46      +'NPU19275',
47      +'NPU19276',
48      +'NPU20192',
49      +'NPU33952' = 'HFE-gen'
50      +
51      +'NPU27412',
52      +'NPU27300',
53      +'DNK35249',
54      +'NPU29296',
55      +'NPU03835',
56      +'NPU02307' = 'HbA1'
57      +
58      +'NPU02187',
59      +'NPU02192',
60      +'NPU21531',
61      +'NPU22089',
62      +'NPU04173',
63      +'NPU04177',
64      +'NPU08572',
65      +'NPU08571' = 'Glukose'
66      +
67      +'DNK35842',
68      +'NPU10047',
69      +'NPU08503',
70      +'NPU22127',
71      +'NPU21532',
72      +'NPU02193',
73      +'NPU02195',
74      +'NPU08972',
75      +'NPU02188',
76      +'NPU22069' = 'Glukose 0'
77      +
78      +'NPU10048',
79      +'NPU08504',
80      +'NPU22129',
81      +'NPU04174' = 'Glukose 30'
82      +
83      +'NPU10051',
84      +'NPU08507',
85      +'NPU22134',
86      +'NPU21530' = 'Glukose 120'
87      +
88      +'NPU18412',
89      +'NPU01566',
90      +'NPU01549',
91      +'NPU17029',
92      +'NPU10033',
93      +'NPU18411' = 'Total kolesterol'
94      +
95      +'NPU10157',
96      +'NPU01567',
97      +'NPU18107' = 'HDL kolesterol'
98      +
99      +'NPU29055',
100     +'NPU61094' = 'non-HDL kolesterol'
101     +

```

```
102      +'NPU10171',
103      +'NPU01568',
104      +'DNK35308' = 'LDL kolesterol'
105      +
106      +'NPU09256',
107      +'NPU01569' = 'VLDL kolesterol'
108      +
109      +'NPU03620',
110      +'NPU04094',
111      +'NPU18413',
112      +'NPU18106' = 'Triglycerid'
113      +
114      +'NPU01807',
115      +'NPU01808',
116      +'NPU04998',
117      +'NPU09101',
118      +'NPU09102',
119      +'NPU18016' = 'Plasma Kreatinin'
120      +
121      +'NPU17997',
122      +'NPU19676',
123      +'NPU19677',
124      +'NPU19678',
125      +'NPU19679',
126      +'NPU19680',
127      +'NPU19681' = "Albumin"
128      +
129      +'NPU19661',
130      +'NPU28842',
131      +'DNK05289',
132      +'NPU03918' = 'Ualbcrea'
133      +
134      +'NPU03230' = 'Kalium'
135      +
136      +'NPU03429' = 'Natrium'
137      +
138      +'NPU03577',
139      +'NPU27547' = 'TSH'
140      +
141      +'NPU03246',
142      +'NPU03247',
143      +'NPU03248',
144      +'NPU04149',
145      +'NPU18004',
146      +'NPU18005',
147      +'NPU04154',
148      +'NPU04020',
149      +'NPU10390',
150      +'NPU18007',
151      +'NPU08978' = 'C-peptid/Proinsulin'
152      +
153      +'NPU01422',
154      +'DNK05027',
155      +'NPU19748',
156      +'NPU01423' = 'CRP'
157      +
158      +'NPU12544',
159      +'NPU12546',
160      +'NPU14507',
161      +'NPU16484',
162      +'NPU26737',
163      +'NPU28103',
164      +'NPU29550',
165      +'NPU28627',
166      +'NPU28628',
167      +'NPU54726',
168      +'NPU54727' = 'GAD65'
169      +
170      +'DNK35131',
171      +'NPU28811',
```

```

172      +'DNK35301',
173      +'DNK35302',
174      +'DNK35303',
175      +'DNK35304' = 'eGFR'
176      +
177      +'NPU19597',
178      +'NPU28271',
179      +'NPU10295' = 'GFR'
180      +
181      +'NPU01121',
182      +'NPU19981',
183      +'NPU19651',
184      +'DNK05051' = 'ALAT'
185      +
186      +'NPU19655',
187      +'NPU27783',
188      +'NPU53077',
189      +'NPU57047',
190      +'DNK05098',
191      +'DNK05431',
192      +'DNK05050' = 'Basisk fosfatase'
193      +
194      +'NPU01700' = 'Cobalamin'
195      +
196      +'NPU03568',
197      +'NPU26813' = 'Trombocytter'
198      +
199      +'NPU02593',
200      +'NPU04851',
201      +'NPU02596',
202      +'NPU17027',
203      +'NPU18245',
204      +'NPU18156',
205      +'NPU17580',
206      +'NPU04100' = 'Leucocytter'
207      +
208      +'NPU02319' = 'Hæmoglobin' ;
NOTE: Format $NPUD is already on the library DMFMT.DMREG.
NOTE: Format $NPUD has been written to DMFMT.DMREG.
209      +
210      +value $NPUE
211      +
212      +'NPU29748',
213      +'NPU28969',
214      +'NPU28586',
215      +'NPU19763',
216      +'NPU03899',
217      +'DNK05012' = "Ferritin"
218      +
219      +'NPU19111',
220      +'NPU19275',
221      +'NPU19276',
222      +'NPU20192',
223      +'NPU33952' = 'HFE-gene'
224      +
225      +'NPU27300',
226      +'NPU27412',
227      +'DNK35249',
228      +'NPU29296',
229      +'NPU03835',
230      +'NPU02307' = 'HbA1'
231      +
232      +'NPU02187',
233      +'NPU04173',
234      +'NPU04177',
235      +'NPU08572',
236      +'NPU08571',
237      +'NPU02192',
238      +'NPU21531',
239      +'NPU22089' = 'Gluc'

```

```
240      +
241      +'DNK35842',
242      +'NPU10047',
243      +'NPU08503',
244      +'NPU22127',
245      +'NPU21532',
246      +'NPU02193',
247      +'NPU02195',
248      +'NPU08972',
249      +'NPU02188',
250      +'NPU22069' = 'Glu0'
251      +
252      +'NPU10048',
253      +'NPU08504',
254      +'NPU22129',
255      +'NPU04174' = 'G130'
256      +
257      +'NPU10051',
258      +'NPU08507',
259      +'NPU22134',
260      +'NPU21530' = 'G120'
261      +
262      +'NPU18412',
263      +'NPU01566',
264      +'NPU01549',
265      +'NPU17029',
266      +'NPU10033',
267      +'NPU18411' = 'Tchl'
268      +
269      +'NPU10157',
270      +'NPU01567',
271      +'NPU18107' = 'HDL'
272      +
273      +'NPU29055',
274      +'NPU61094' = 'nHDL'
275      +
276      +'NPU10171',
277      +'NPU01568',
278      +'DNK35308' = 'LDL'
279      +
280      +'NPU09256',
281      +'NPU01569' = 'VLDL'
282      +
283      +'NPU03620',
284      +'NPU04094',
285      +'NPU18413',
286      +'NPU18106' = 'Trig'
287      +
288      +'NPU01807',
289      +'NPU01808',
290      +'NPU04998',
291      +'NPU09101',
292      +'NPU09102',
293      +'NPU18016' = 'PlCr'
294      +
295      +'NPU17997',
296      +'NPU19676',
297      +'NPU19677',
298      +'NPU19678',
299      +'NPU19679',
300      +'NPU19680',
301      +'NPU19681' = 'Alb'
302      +
303      +'NPU19661',
304      +'NPU28842',
305      +'DNK05289',
306      +'NPU03918' = 'Uacr'
307      +
308      +'NPU03230' = 'Pota'
309      +
```

```

310      +'NPU03429' = 'Sodi'
311      +
312      +'NPU03577',
313      +'NPU27547' = 'TSH'
314      +
315      +'NPU03246',
316      +'NPU03247',
317      +'NPU03248',
318      +'NPU04149',
319      +'NPU18004',
320      +'NPU18005',
321      +'NPU04154',
322      +'NPU04020',
323      +'NPU10390',
324      +'NPU18007',
325      +'NPU08978' = 'Cpep'
326      +
327      +'NPU01422',
328      +'DNK05027',
329      +'NPU19748',
330      +'NPU01423' = 'CRP'
331      +
332      +'NPU12544',
333      +'NPU12546',
334      +'NPU14507',
335      +'NPU16484',
336      +'NPU26737',
337      +'NPU28103',
338      +'NPU28627',
339      +'NPU28628',
340      +'NPU29550',
341      +'NPU54726',
342      +'NPU54727' = 'GAD'
343      +
344      +'DNK35131',
345      +'NPU28811',
346      +'DNK35301',
347      +'DNK35302',
348      +'DNK35303',
349      +'DNK35304' = 'eGFR'
350      +
351      +'NPU19597',
352      +'NPU28271',
353      +'NPU10295' = 'GFR'
354      +
355      +'NPU01121',
356      +'NPU19981',
357      +'NPU19651',
358      +'DNK05051' = 'ALAT'
359      +
360      +'NPU19655',
361      +'NPU27783',
362      +'NPU53077',
363      +'NPU57047',
364      +'DNK05098',
365      +'DNK05431',
366      +'DNK05050' = 'AlcP'
367      +
368      +'NPU01700' = 'Cobl'
369      +
370      +'NPU03568',
371      +'NPU26813' = 'Trmb'
372      +
373      +'NPU02593',
374      +'NPU04851',
375      +'NPU02596',
376      +'NPU17027',
377      +'NPU18245',
378      +'NPU18156',
379      +'NPU17580',

```

```

380      +'NPU04100' = 'Leuc'
381      +
382      +'NPU02319' = 'Hmgb' ;
NOTE: Format $NPUE is already on the library DMFMT.DMREG.
NOTE: Format $NPUE has been written to DMFMT.DMREG.
383      +
384      +* run ;
NOTE: %INCLUDE (level 1) ending.
385      %inc './fmts/CIVfmt.sas' ; * civilstatus in SDS ;
NOTE: %INCLUDE (level 1) file ./fmts/CIVfmt.sas is file
      E:\ProjektDB\SDCC\Workdata\709873\DMreg2025\fmts\CIVfmt.sas.
386      +value $CIVfmt
387      +'01' = "01 Alive DK"
388      +'03' = "03 Alive DK"
389      +'05' = "05 Alive Greenland"
390      +'07' = "07 Alive Greenland"
391      +'20' = "20 Only PNR"
392      +'30' = "30 Anull PNR"
393      +'50' = "50 Del PNR"
394      +'60' = "60 Del PNR"
395      +'70' = "70 Disappeared"
396      +'80' = "80 Emigrated"
397      +'90' = "90 Dead" ;
NOTE: Format $CIVFMT is already on the library DMFMT.DMREG.
NOTE: Format $CIVFMT has been written to DMFMT.DMREG.
NOTE: %INCLUDE (level 1) ending.
398      run ;

```

NOTE: PROCEDURE FORMAT used (Total process time):

```

      real time          0.27 seconds
      cpu time           0.14 seconds

```

NOTE: There were 57540 observations read from the data set WORK.DOB.

```

399
400      *-----;
401      * Formats used for the diabase and for grouping drugs and
402      socio-economic variables ;
403      proc format library = DMfmt.DMreg
404      /*
405          cntlin = ekstn.s125_format ; * Formats for the diabase ;
406      exclude dwh_afdeling
407          dwh_hospital
408          $dwh_shak ; * Very long formats we are not using ;
409      */ ;
410
411      * For convenience ;
412      value yesno
413      0 = 'No'
414      1 = 'Yes'
415      ;
NOTE: Format YESNO is already on the library DMFMT.DMREG.
NOTE: Format YESNO has been written to DMFMT.DMREG.
416
417      * regions ;
418      value region
419      81 = "Nord"
420      82 = "Midt"
421      83 = "Syd"
422      84 = "Hov"
423      85 = "Sjll"
424      ;
NOTE: Format REGION is already on the library DMFMT.DMREG.
NOTE: Format REGION has been written to DMFMT.DMREG.
425
426      * income groups ;
427      value $indk
428      "< = 0,00" = "000"
429      "0,01 - 50.000,00" = "001"
430      "50.000,01 - 100.000,00" = "050"

```

```

431      "100.000,01 - 150.000,00" = "100"
432      "150.000,01 - 200.000,00" = "150"
433      "200.000,01 - 250.000,00" = "200"
434      "250.000,01 - 300.000,00" = "250"
435      "300.000,01 - 350.000,00" = "300"
436      "350.000,01 - 400.000,00" = "350"
437      "400.000,01 - 450.000,00" = "400"
438      "450.000,01 - 500.000,00" = "450"
439      "500.000,01 - 550.000,00" = "500"
440      "550.000,01 - 600.000,00" = "550"
441      "600.000,01 - 650.000,00" = "600"
442      " >= 650.000,01"          = "650"
443      other                      = "oth"
444      ;
NOTE: Format $INDK is already on the library DMFMT.DMREG.
NOTE: Format $INDK has been written to DMFMT.DMREG.
445
446      value $indgr
447      "< = 0,00",
448      "0,01 - 50.000,00",
449      "50.000,01 - 100.000,00" = "000"
450      "100.000,01 - 150.000,00",
451      "150.000,01 - 200.000,00" = "100"
452      "200.000,01 - 250.000,00",
453      "250.000,01 - 300.000,00" = "200"
454      "300.000,01 - 350.000,00",
455      "350.000,01 - 400.000,00" = "300"
456      "400.000,01 - 450.000,00",
457      "450.000,01 - 500.000,00" = "400"
458      "500.000,01 - 550.000,00",
459      "550.000,01 - 600.000,00",
460      "600.000,01 - 650.000,00",
461      " >= 650.000,01"          = "500"
462      other                      = "oth"
463      ;
NOTE: Format $INDGR is already on the library DMFMT.DMREG.
NOTE: Format $INDGR has been written to DMFMT.DMREG.
464
465      * texts for socio_13
466      value $soclong
467      "100" = "Self-employed"
468      "200" = "Top manager"
469      "300" = "Wage-earner"
470      "400" = "Trainee"
471      "500" = "Unemployed 6mth+"
472      "600" = "Sick leave, mat leave, activation"
473      "700" = "Social welfare"
474      "800" = "Early pension"
475      "900" = "Retired"
476      "950" = "Other, children"
477      "999" = "Unknown"
478      ;
479      value $socshort
480      "100" = "s-Emp"
481      "200" = "TopMn"
482      "300" = "WageE"
483      "400" = "Train"
484      "500" = "Unemp"
485      "600" = "Leave"
486      "700" = "SWelf"
487      "800" = "e-Pen"
488      "900" = "Retir"
489      "950" = "Other"
490      "999" = "Unkn"
491      ;
NOTE: Format $SOCSHORT is already on the library DMFMT.DMREG.
NOTE: Format $SOCSHORT has been written to DMFMT.DMREG.
492      value $socshortlong
493      "s-Emp" = "Self-employed"
494      "TopMn" = "Top manager"

```

```

495     "WageE" = "Wage-earner"
496     "Train" = "Trainee"
497     "Unemp" = "Unemployed 6mth+"
498     "Leave" = "Sick leave, maternal leave, activation"
499     "SWelf" = "Social welfare"
500     "e-Pen" = "Early pension"
501     "Retir" = "Retired"
502     "Other" = "Other, children"
503     "Unkn" = "Unknown"
504 ;
NOTE: Format $SOCSHORTLONG is already on the library DMFMT.DMREG.
NOTE: Format $SOCSHORTLONG has been written to DMFMT.DMREG.
505
506     * Classifies from the variable 'afdeling' in DVDD to the 5 SDC,
507       based on reporting clinic ;
508       value $sdc
509       "1507010",
510       "1507019",
511       "150701R" = "SDCC"
512       "3800DOE",
513       "3800HOE",
514       "3800LOE",
515       "3800NOE",
516       "3800ROE",
517       "3800VOE",
518       "3800VOQ" = "SDCS"
519       "4202080",
520       "4202089" = "SDCQ"
521       "6620076",
522       "6620079",
523       "7003079",
524       "7003279",
525       "7004069" = "SDCA"
526       "8001099" = "SDCN"
527       other = "notSDC"
528 ;
NOTE: Format $SDC is already on the library DMFMT.DMREG.
NOTE: Format $SDC has been written to DMFMT.DMREG.
529
530     * Classifies from the variable 'afdeling' in DVDD to ambl/prak ;
531     value $amb
532     "8001099", "800109", "8001329", "665033C", "665033B", "5003037",
533     "1330559", "1330550", "133032E", "1351309", "1309539", "663030C",
534     "663004C", "550155E", "700505B", "8003207", "200027E", "200076A",
535     "8001609", "8005039", "7005059", "200027B", "8003209", "8003201",
536     "200054A", "3800HOE", "3800HOQ", "1401297", "800159H", "800503H",
537     "1351110", "3800LOE", "3800LOD", "3800DOE", "3800DOD", "1401069",
538     "1516435", "130185F", "6501044", "6502066", "7003279", "7004069",
539     "6006049", "665033T", "1309699", "7003079", "6620076", "6620079",
540     "4212031", "6504020", "6007200", "2501059", "5002035", "4212039",
541     "4001039", "5004039", "6504029", "5001059", "1502069", "1351119",
542     "6007209", "6007059", "7601047", "7601049", "7002056", "1516339",
543     "1301719", "1501099", "3800NOE", "3800NOD", "3800P9D", "3800VOE",
544     "3800VOQ", "4202739", "4202080", "4202089", "3800C2D", "200027G",
545     "5000649", "5000409", "5000407", "5000637", "3800ROE", "600705E",
546     "6008056", "6008059", "550105E", "550145E", "150701R", "1507019",
547     "1507010", "7603049", "7603041"
548     = "Ambu"
549     other = "Prak"
550 ;
NOTE: Format $AMB is already on the library DMFMT.DMREG.
NOTE: Format $AMB has been written to DMFMT.DMREG.
551
552     * English sex ;
553     value sex
554         1 = 'M'
555         2 = 'F' ;
NOTE: Format SEX is already on the library DMFMT.DMREG.
NOTE: Format SEX has been written to DMFMT.DMREG.
556

```

```

557      * 5-year age-groups for tabulation ;
558      value agr ( fuzz=0)
559      0-<5  = ' 0 '
560      5-<10 = ' 5 '
561      10-<15 = '10 '
562      15-<20 = '15 '
563      20-<25 = '20 '
564      25-<30 = '25 '
565      30-<35 = '30 '
566      35-<40 = '35 '
567      40-<45 = '40 '
568      45-<50 = '45 '
569      50-<55 = '50 '
570      55-<60 = '55 '
571      60-<65 = '60 '
572      65-<70 = '65 '
573      70-<75 = '70 '
574      75-<80 = '75 '
575      80-<85 = '80 '
576      85-<90 = '85 '
577      90-<95 = '90 '
578      95-high= '95+' ;
NOTE: Format AGR is already on the library DMfmt.DMreg.
NOTE: Format AGR has been written to DMfmt.DMreg.
579
580      run ;

```

```

NOTE: PROCEDURE FORMAT used (Total process time):
      real time          0.00 seconds
      cpu time           0.00 seconds

```

```

581      title1 ;
582
583      *-----:
584      * Now list all the formats in the catalogs ;
585      proc catalog  catalog = DMfmt.DMreg ;
586      contents catalog = DMfmt.DMreg ; run ;
587
588      * List all the codings in the NPU formats ;

```

```

NOTE: The PROCEDURE CATALOG printed page 1.
NOTE: PROCEDURE CATALOG used (Total process time):
      real time          0.03 seconds
      cpu time           0.03 seconds

```

```

589      proc format  fmtlib  library = DMfmt.DMreg ;
590      select $npue: ;
591      run ;

```

```

NOTE: PROCEDURE FORMAT used (Total process time):
      real time          0.00 seconds
      cpu time           0.00 seconds

```

```

NOTE: The PROCEDURE FORMAT printed page 2.

```

```

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time          0.77 seconds
      cpu time           0.51 seconds

```

00-fmts.lst

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Contents of Catalog DMFMT.DMREG

#	Name	Type	Create Date	Modified Date	Description
1	AGR	FORMAT	06/08/2025 16:10:46	06/08/2025 16:10:46	
2	REGION	FORMAT	06/08/2025 16:10:46	06/08/2025 16:10:46	
3	SEX	FORMAT	06/08/2025 16:10:46	06/08/2025 16:10:46	
4	YESNO	FORMAT	06/08/2025 16:10:46	06/08/2025 16:10:46	
5	AMB	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
6	CIVFMT	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
7	DOB_L1L1_KT	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
8	INDGR	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
9	INDK	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
10	NPUD	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
11	NPUE	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
12	SDC	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
13	SOCSHORT	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	
14	SOCSHORTLONG	FORMATC	06/08/2025 16:10:46	06/08/2025 16:10:46	

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FORMAT NAME: \$NPUE			LENGTH: 8	NUMBER OF VALUES: 142
MIN LENGTH: 1	MAX LENGTH: 40	DEFAULT LENGTH: 8	FUZZ: 0	
START	END	LABEL (VER. V7 V8	06AUG2025:16:10:46)	
DNK05012	DNK05012	Ferritin		
DNK05027	DNK05027	CRP		
DNK05050	DNK05050	AlcP		
DNK05051	DNK05051	ALAT		
DNK05098	DNK05098	AlcP		
DNK05289	DNK05289	Uacr		
DNK05431	DNK05431	AlcP		
DNK35131	DNK35131	eGFR		
DNK35249	DNK35249	HbA1		
DNK35301	DNK35301	eGFR		
DNK35302	DNK35302	eGFR		
DNK35303	DNK35303	eGFR		
DNK35304	DNK35304	eGFR		
DNK35308	DNK35308	LDL		
DNK35842	DNK35842	Glu0		
NPU01121	NPU01121	ALAT		
NPU01422	NPU01422	CRP		
NPU01423	NPU01423	CRP		
NPU01549	NPU01549	TChl		
NPU01566	NPU01566	TChl		
NPU01567	NPU01567	HDL		
NPU01568	NPU01568	LDL		
NPU01569	NPU01569	VLDL		
NPU01700	NPU01700	Cobl		
NPU01807	NPU01807	PlCr		
NPU01808	NPU01808	PlCr		
NPU02187	NPU02187	Gluc		
NPU02188	NPU02188	Glu0		
NPU02192	NPU02192	Gluc		
NPU02193	NPU02193	Glu0		
NPU02195	NPU02195	Glu0		
NPU02307	NPU02307	HbA1		
NPU02319	NPU02319	Hmgb		
NPU02593	NPU02593	Leuc		
NPU02596	NPU02596	Leuc		
NPU03230	NPU03230	Pota		
NPU03246	NPU03246	Cpep		
NPU03247	NPU03247	Cpep		
NPU03248	NPU03248	Cpep		
NPU03429	NPU03429	Sodi		
NPU03568	NPU03568	Trmb		
NPU03577	NPU03577	TSH		
NPU03620	NPU03620	Trig		

NPU03835	NPU03835	HbA1
NPU03899	NPU03899	Ferritin
NPU03918	NPU03918	Uacr
NPU04020	NPU04020	Cpep
NPU04094	NPU04094	Trig
NPU04100	NPU04100	Leuc
NPU04149	NPU04149	Cpep
NPU04154	NPU04154	Cpep
NPU04173	NPU04173	Gluc
NPU04174	NPU04174	G130
NPU04177	NPU04177	Gluc
NPU04851	NPU04851	Leuc
NPU04998	NPU04998	PlCr
NPU08503	NPU08503	Glu0
NPU08504	NPU08504	G130
NPU08507	NPU08507	G120
NPU08571	NPU08571	Gluc
NPU08572	NPU08572	Gluc
NPU08972	NPU08972	Glu0
NPU08978	NPU08978	Cpep
NPU09101	NPU09101	PlCr
NPU09102	NPU09102	PlCr
NPU09256	NPU09256	VLDL
NPU10033	NPU10033	TChl
NPU10047	NPU10047	Glu0
NPU10048	NPU10048	G130
NPU10051	NPU10051	G120
NPU10157	NPU10157	HDL
NPU10171	NPU10171	LDL
NPU10295	NPU10295	GFR
NPU10390	NPU10390	Cpep
NPU12544	NPU12544	GAD
NPU12546	NPU12546	GAD
NPU14507	NPU14507	GAD
NPU16484	NPU16484	GAD
NPU17027	NPU17027	Leuc
NPU17029	NPU17029	TChl
NPU17580	NPU17580	Leuc
NPU17997	NPU17997	Alb
NPU18004	NPU18004	Cpep
NPU18005	NPU18005	Cpep
NPU18007	NPU18007	Cpep
NPU18016	NPU18016	PlCr
NPU18106	NPU18106	Trig
NPU18107	NPU18107	HDL
NPU18156	NPU18156	Leuc
NPU18245	NPU18245	Leuc
NPU18411	NPU18411	TChl
NPU18412	NPU18412	TChl
NPU18413	NPU18413	Trig
NPU19111	NPU19111	HFE-gene
NPU19275	NPU19275	HFE-gene
NPU19276	NPU19276	HFE-gene
NPU19597	NPU19597	GFR
NPU19651	NPU19651	ALAT
NPU19655	NPU19655	AlcP
NPU19661	NPU19661	Uacr
NPU19676	NPU19676	Alb
NPU19677	NPU19677	Alb
NPU19678	NPU19678	Alb
NPU19679	NPU19679	Alb
NPU19680	NPU19680	Alb
NPU19681	NPU19681	Alb
NPU19748	NPU19748	CRP
NPU19763	NPU19763	Ferritin
NPU19981	NPU19981	ALAT
NPU20192	NPU20192	HFE-gene
NPU21530	NPU21530	G120
NPU21531	NPU21531	Gluc
NPU21532	NPU21532	Glu0

NPU22069	NPU22069	Glu0
NPU22089	NPU22089	Gluc
NPU22127	NPU22127	Glu0
NPU22129	NPU22129	G130
NPU22134	NPU22134	G120
NPU26737	NPU26737	GAD
NPU26813	NPU26813	Trmb
NPU27300	NPU27300	HbA1
NPU27412	NPU27412	HbA1
NPU27547	NPU27547	TSH
NPU27783	NPU27783	AlcP
NPU28103	NPU28103	GAD
NPU28271	NPU28271	GFR
NPU28586	NPU28586	Ferritin
NPU28627	NPU28627	GAD
NPU28628	NPU28628	GAD
NPU28811	NPU28811	eGFR
NPU28842	NPU28842	Uacr
NPU28969	NPU28969	Ferritin
NPU29055	NPU29055	nHDL
NPU29296	NPU29296	HbA1
NPU29550	NPU29550	GAD
NPU29748	NPU29748	Ferritin
NPU33952	NPU33952	HFE-gene
NPU53077	NPU53077	AlcP
NPU54726	NPU54726	GAD
NPU54727	NPU54727	GAD
NPU57047	NPU57047	AlcP
NPU61094	NPU61094	nHDL
